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GENERAL NOTICES • ALGEMENE KENNISGEWINGS

DEPARTMENT OF AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT

NOTICE 3266 OF 2025

NOTICE IN TERMS SECTION 18 (1) AND (3) OF THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (ACT NO. 16 OF 2013)

I, Mzwanele Nyhontso, Minister of Land Reform and Rural Development, after consultation with the Premiers of Gauteng, Free State, Mpumalanga and North West Province and the Municipal Councils of Emfuleni, Midvaal, Lesedi, Mafube, Metsimaholo, Ngwathe, Dipaleseng and JB Marks Local Municipalities, hereby declare Vaal-River Region as a region in terms of Section 18 (3) of the SPLUMA as delineated in the attached Map and schedule 1 and further approve the Vaal-River Regional Spatial Development Framework in terms of Section 18 (1) of the SPLUMA

MR MZWANELE NYHONTSO (MP)
MINISTER OF LAND REFORM AND RURAL DEVELOPMENT
DATE: 13/07/25

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SCHEDULE 1

DELINEATION OF THE REGION FOR THE VAAL-RIVER REGIONAL SPATIAL DEVELOPMENT FRAMEWORK

The region will cover the portion of the geographic areas of the Province of Gauteng, Free State, Mpumalanga, Northwest, District and Local municipalities as per the attached Table 1 and Figure 1.

Table 1: List of affected Municipalities

GAUTENG PROVINCE:

SEDIBENG District Municipality
Emfuleni Local Municipality
Midvaal Local Municipality
Lesedi Local Municipality

FREE STATE PROVINCE:

FEZILE DABI District Municipality
Mafube Local Municipality
Metsimaholo Local Municipality
Ngwathe Local Municipality
Moqhaka Local Municipality

MPUMALANGA PROVINCE:

GERT SIBANDE District Municipality
Dipaleseng Local Municipality

NORTHWEST PROVINCE:

DR KENNETH KAUNDA District Municipality
JB Marks Local Municipality

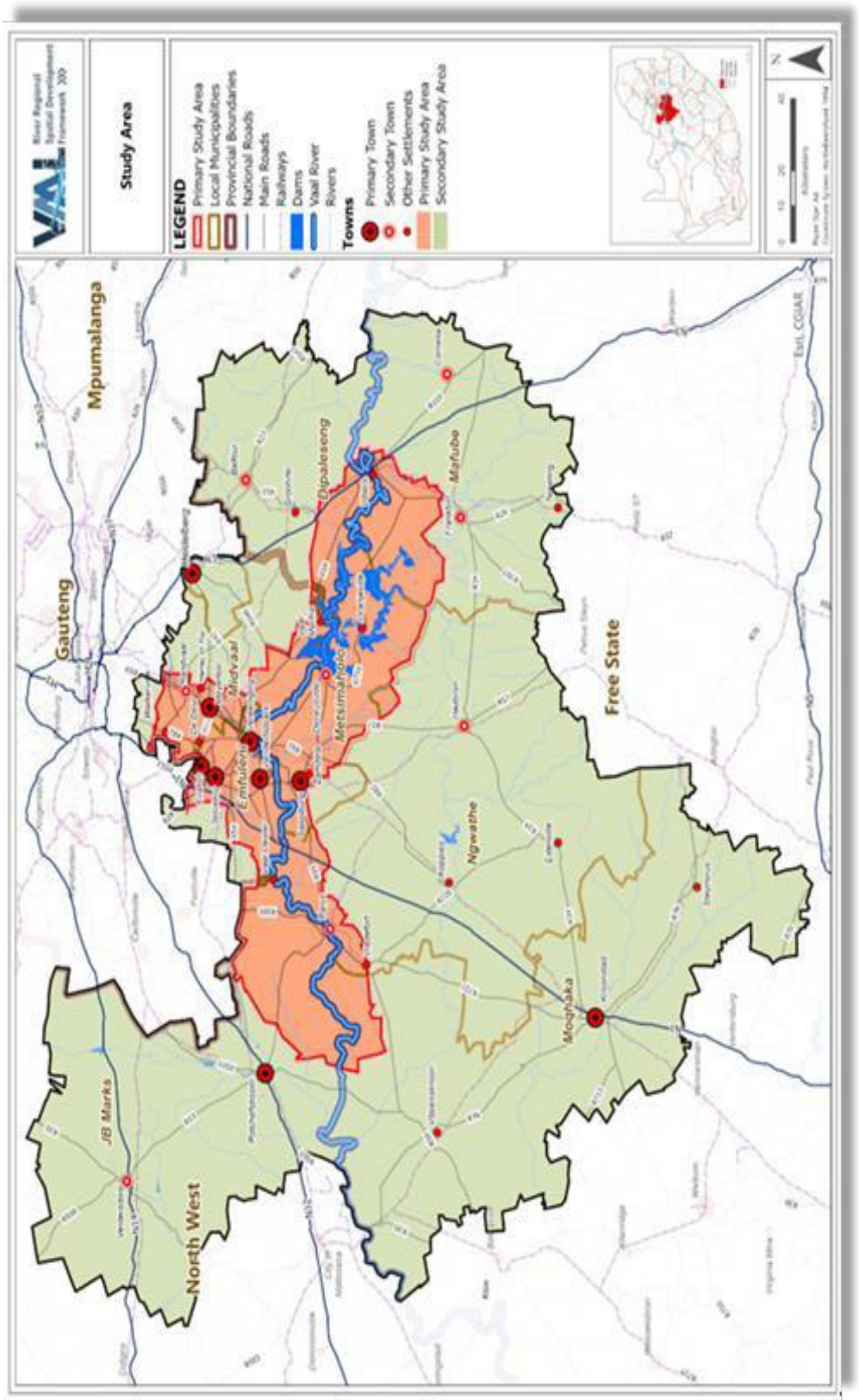


FIGURE 1: THE PROPOSED VAAL-RIVER REGION MAP.

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VAAL RIVER REGIONAL SPATIAL DEVELOPMENT FRAMEWORK

MARCH 2025

VAL River Regional Spatial Development Framework

LIST OF ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AAMP	Agriculture and Agro-processing Master Plan
AFA	Agri-business and Agri-industry Focus Areas
AMD	Acid Mine Drainage
APAP	Agricultural Policy Action Plan
CBA	Critical Biodiversity Area
CGA	Citrus Growers Association
COGTA	Cooperative Governance and Traditional Affairs
CoJ	City of Johannesburg
CMA	Catchment Management Agency
DALRRD	Department of Agriculture, Land Reform and Rural Development
DCOG	Department of Cooperative Governance
DFA	Development Facilitation Act
DFFE	Department of Forestry, Fisheries and the Environment
DM	District Municipality
DoSBD	Department of Small Business Development
DTIC	Department of Trade, Industry and Competition
DWS	Department of Water and Sanitation
EMF	Environmental Management Framework
FPSUs	Farmer Production Support Units

ABBREVIATION	DESCRIPTION
GDARDE	Gauteng Department of Agriculture, Rural Development and Environment
GIS	Geographic Information System
GSDF	Gauteng (Provincial) Spatial Development Framework
GVA	Gross Value Added
IEDP	Industrialisation and Economic Development Precincts
IPAP	Industrial Policy Action Plan
I&AP	Interested and Affected Parties
ISRDP	Integrated Sustainable Development Strategy
IUDF	Integrated Urban Development Framework
IVRS	Integrated Vaal River System
LM	Local Municipality
LOM	Life of Mine
LUS	Land Use Scheme
MDB	Municipal Demarcation Board
LQ	Location Quotient
MEC	Members of the Executive Council
ML/day	Megalitre per day
MICI	Municipal Investment Competitiveness Index
MMC	Member of the Mayoral Committee
MTSF	Medium-term Strategic Framework

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ABBREVIATION	DESCRIPTION
NATMAP	National Transport Master Plan
NDP	National Development Plan
NGO	Non-Governmental Organisation
NGP	New Growth Path
NGVA	National Gross Value Added
NSDF	National Spatial Development Framework
NSDP	National Spatial Development Plan
NWRS	National Water Resources Strategy
PGDP	Provincial Growth and Development Plans
PGVA	Provincial Gross Value Added
PHSHDA	Priority Human Settlements and Housing Development Areas
PSC	Project Steering Committee
PSDF	Provincial Spatial Development Framework
R&D	Research and Development
RDP	Reconstruction and Development Programme
REDZ	Renewable Energy Development Zone
RGVA	Regional Gross Value Added
RSDF	Regional Spatial Development Framework
SACPLAN	South African Council for Planners
SANRAL	South African National Roads Agency SOC Ltd
SAL	Small Area Layer
SALGA	South African Local Government Association

ABBREVIATION	DESCRIPTION
SDF	Spatial Development Framework
SDGs	Sustainable Development Goals
SEZ	Special Economic Zone
SOE	State-owned Enterprise
SPLUMA	Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)
SuDs	Sustainable Urban Drainage Systems
SWOT	Strengths, Weaknesses, Opportunities, Threats (Analysis)
SWSA	Strategic Water Source Areas
TREP	Township and Rural Entrepreneurship Programme
UN	United Nations
UNFCC	United Nations Framework Convention on Climate Change
URR	Urban-Rural Regeneration and Integration Areas
VRRSDF	Vaal River Regional Spatial Development Framework
(VD)WHS	(Vredefort Dome) World Heritage Site
WMA	Water Management Area
WUL	Water Use Licence
WWTW	Wastewater Treatment Works

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1. INTRODUCTION AND BACKGROUND

Since the introduction of the democratic dispensation in South Africa, spatial planning in the form of spatial development plans and spatial targeting has gained momentum in all spheres of government.

Spatial targeting was first built into the Integrated Sustainable Rural Development Strategy (ISRDS) of November 2000, identifying 13 nodal areas. Then, shortly afterwards, in the early 2000s, the introduction of the National Spatial Development Perspective (NSDP) had a profound impact on spatial planning at a national level. The NSDP has since been replaced by the National Development Plan 'Vision 2030' (NDP) which is now widely acclaimed as South Africa's blueprint for development.

On 1 July 2015, the Spatial Planning and Land Use Management Act (SPLUMA) (No 16 of 2013) came into force, replaced the Development Facilitation Act (No 67 of 1995), while repealing the Removal of Restrictions Act (No 84 of 1967) and the Physical Planning Act (No 88 of 1967), in addition to other laws. SPLUMA provides, amongst other things, a uniform, effective, efficient and integrated regulatory framework for spatial planning and land use management that promotes the principles of cooperative government and public interest.



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Section 18(1) of SPLUMA specifically empowers the Minister (Agriculture, Land Reform and Rural Development), after consultation with the Premier and Municipal Council responsible for a geographic area, to publish a Regional Spatial Development Framework (RSDF) to guide spatial planning, land development and land use management in any region of the Republic. In 2019, the Planning Division of the Gauteng Premier's Office requested that formulating a Regional Spatial Development Framework for the Vaal River Region, be investigated. Based on the findings of the above feasibility study, this "Development of the Vaal River Regional Spatial Development Framework" has been commissioned. The Vaal River Region

1.1 The Vaal River Region

For this study, the Vaal River Region has been demarcated as an inter-provincial area covering parts of four provinces, i.e., Gauteng, Free State, North West and Mpumalanga. The Vaal River Region comprises the Midvaal and Emfuleni Local Municipalities (LMs) and a portion of Lesedi Municipality of the Sedibeng District (Gauteng), Metsimaholo, Moqhaka, Ngwathe and Mafube LMs of the Fezile Dabi District (Free State), JB Marks LM of the Dr Kenneth Kaunda District (Dr KKDM) (North West), and Dipaleseng LM of the Gert Sibande District (Mpumalanga).

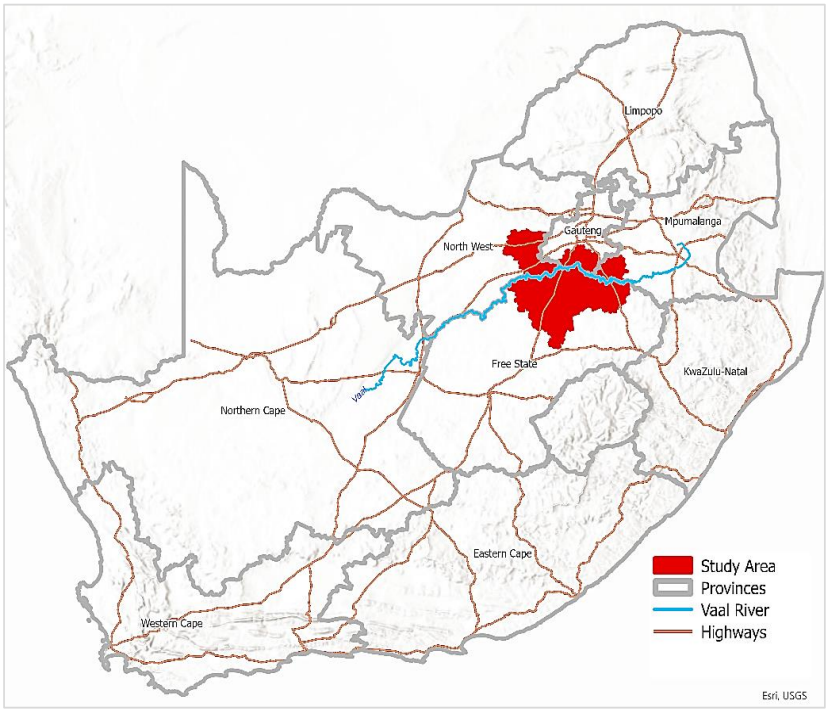


Figure 1: Location of the Study Area (Vaal River Region)

The Vaal River, which is central to the region, is important as it provides water for domestic, industrial, agricultural and other purposes. The region consists of urban centres varying in size and typology, world heritage sites, and agricultural areas, such as Vanderbijlpark, Vereeniging, Sebokeng, Meyerton, Heidelberg, Potchefstroom, Parys, Kroonstad, Frankfort, and Balfour. Further details of the study area/region can be found in Chapter 2.

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1.2 Requirements for a Regional Spatial Development Framework

According to section 18 of SPLUMA, RSDFs should be prepared to effect national land use policies or priorities in any specific geographic area and to guide spatial planning, land development, and land use management in the Region. The SDF Guidelines (2017), prepared by the Department of Agriculture, Land Reform and Rural Development (DALRRD) (formerly Department of Rural Development and Land Reform), further clarify the roles and legislative mandates of RSDFs. According to the SDF Guidelines, an RSDF must be prepared to address unique needs and circumstances within or across administrative boundaries. Furthermore, as an inter-municipal and inter-provincial strategic plan, an RSDF must be aligned with the spatial development frameworks of those provinces, districts and municipalities that form part of a region and must be developed in collaboration with the affected authorities.

Section 19 of SPLUMA specifies the content of an RSDF, while the SDF Guidelines describe how to prepare an RSDF to ensure that it contains all items suggested in SPLUMA. Table 1 below provides an overview of the content of an RSDF (as suggested by SPLUMA) and how to prepare it (as mentioned in the SDF Guidelines).

Table 1: Basic Guidelines for a Regional Spatial Development Framework

SPLUMA (CHAPTER 4, PART D) DETERMINES THAT AN RSDF MUST:	TO PREPARE AN RSDF, THE SDF GUIDELINES (DALRRD, 2017) PROPOSE THAT:
(19a) give effect to the development principles and applicable norms and standards set out in Chapter 2 of SPLUMA;	the vision and proposal of the RSDF must be based on the five SPLUMA principles;
(19b) give effect to national and provincial policies, priorities, plans, and planning legislation;	the vision and proposals of the RSDF be based on the relevant national and provincial policy objectives;
(19c) reflect the current state of affairs in that area from a spatial and land use perspective of the region;	conceptual mapping of the key status quo elements of the region be performed;
(19d) indicate desired patterns of land use in that area;	spatial proposals for land use be made;
(19e) provide basic guidelines for spatial planning, land development, and land use management in that area;	guidelines and a management framework be provided;
(19f) propose how the framework is to be implemented and funded; and	an implementation framework and possible funding plan by the authority concerned be set up; and
(19g) comply with environmental legislation.	the RSDF's spatial proposals must be based on NEMA principles.

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1.3 Objectives of the Vaal River Region Spatial Development Framework

Based on the SPLUMA legislative mandates, the SDF Guidelines, and the purposes of the project, as mentioned in the terms of reference, the following objectives have been identified for the Vaal River Region Spatial Development Framework (VRRSDF). The VRRSDF must:

- promote regional thinking in planning, present a shared spatial development vision for the Vaal River Region (the Region) and guide the Region's planning and development decisions across all government sectors;
- give effect to the SPLUMA principles at a regional level through the integration of various regional and environmental policies and guidelines;
- align and rationalise various plans, strategies, policies, frameworks, and programmes that operate in the Region to streamline the Region's development and avoid duplication of efforts by agencies involved in the Region's development. It is furthermore expected that the VRRSDF will improve the level of cooperation and coordination among the Region's various land development authorities, leading to alignment in development authorisations (SPLUMA sections 29 and 30);
- create a unique identity for the Vaal River Region and promote its development by enhancing its unique strengths and niche opportunities (regional drivers), developing a resource base, and minimising the development challenges and bottlenecks. Thus, even though the regional drivers may be insignificant at a municipal level and anything below that, they are important at a regional level;
- identify spatial structuring elements of the Region and strengthen the functions and nodes to accelerate development in the Region;
- identify the Vaal River Region's spatial targets or priority areas. These spatial targets may be where the Region's socio-economic development needs are most pressing or where economic development prospects are greatest and align with the capital investment programmes of different government departments to achieve those spatial targets;
- acknowledge the spatial dynamics of the surrounding areas and address the relevant inter-provincial and inter-municipal spatial issues;
- indicate the desired spatial pattern of the Region and its functionality that links rural and urban economies within the Region;
- functionally link the Region with the surrounding areas and ensure that the Region plays a pivotal role in the larger national economy;
- address existing and foreseeable social exclusion, socio-economic issues, environmental threats, economic decline and inefficiencies, logistical bottlenecks, urban insecurity, decaying infrastructure and impacts of new technologies;
- develop a clear plan of action to efficiently implement the VRRSDF proposals by specifying resource requirements, implementation timeframes, responsible parties and funding;
- provide basic guidelines for spatial planning, land development and land use in the Vaal River Region; and
- enhance cooperation between the various spheres of government and align regional resources and capabilities to support the Region's development.

It must be noted that the VRRSDF is a strategic and discretionary planning instrument that serves national and regional interests. The VRRSDF does not give or limit any person from using or developing the land within the context of the Municipal Spatial Development Framework or the relevant Municipal Land Use Scheme.

1.4 Report Objectives and Outline

The primary objectives of this report are to:

- describe the spatial development vision and objectives adopted for the development of the Region;
- describe the spatial planning approach adopted to translate the development vision and objectives into spatial development proposals;
- describe the spatial development proposals, along with the measures to be taken to implement the proposals; and
- identify the agencies that must be involved in implementing the spatial development proposals or parts of the proposals.

The report is divided into the following chapters:

CHAPTER 1: INTRODUCTION AND BACKGROUND

Chapter 1 provides an overview of the context that necessitated undertaking this project. The chapter further highlights the project objectives and describes the purposes of this report.

CHAPTER 2: THE STUDY AREA

Chapter 2 alludes to the defined primary and secondary study areas and provides a valuable regional perspective to contextualise these study areas and the project.

CHAPTER 3: SUMMARY OF STATUS QUO FINDINGS

Chapter 3 provides a summary of the findings of the comprehensive status quo analysis that was carried out in the previous phase. This analysis wanted to establish the Region's status quo concerning its biophysical, built-environmental, socio-economic, regional economic, and governance conditions. It also wanted to determine the opportunities and challenges in spatial development.

CHAPTER 4: SPATIAL DEVELOPMENT VISION AND OBJECTIVES

Chapter 4 outlines the VRRSDF's spatial development vision and objectives. At this stage, the conceptualised vision and objectives as set out in Phase 2 were refined after consultation with stakeholders, hence the difference between the vision and objectives contained in this report and those of Phase 2. The vision and objectives are informed by the legislative and policy context within which the VRRSDF operates and the spatial development opportunities and challenges described in the previous chapter.

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CHAPTER 5: SPATIAL DEVELOPMENT PLANNING

Chapter 5 lays the foundation for the spatial development proposals by outlining the Region's macro spatial structure, its spatial planning principles and the spatial development concept. The Region has been divided into subregions according to the macro spatial structure, which resulted from the unique compositions, character, land uses and spatial forms that are present in various parts of the Region. In this chapter, the appropriate planning principles are defined by the spatial planning principles that underpin the way forward for this Region. These planning principles are drawn together in a broad spatial development concept.

CHAPTER 6: SPATIAL DEVELOPMENT FRAMEWORK

Chapter 6 provides a spatial development framework for every subregion within the Region. Each spatial development framework was compiled to assist local municipalities and developers in easily accessing spatial trends and directives for that specific subregion, thereby facilitating an understanding of the way forward for the subregions and the collective Region. The VRRSDF serves as the foundation for the spatial structure of the overall Region on which the objectives and the implementation plan hinge.

CHAPTER 7: SPATIAL DEVELOPMENT PROPOSALS AND IMPLEMENTATION FRAMEWORK

Chapter 7 contains instructions for implementing the development framework, i.e., the wise and productive development of the Vaal River Region. The five development objectives supporting the implementation of the VRRSDF are further refined into detailed implementation proposals and action plans, which indicate each task's content, timeframe, implementation, and support agencies.

CHAPTER 8 – VRRSDF IMPLEMENTATION GUIDE

Chapter 8 highlights the measures needed to implement the VRRSDF effectively.

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1.5 Spatial Development Proposal Formulation Process

The planning process in Figure 2 below depicts the preparation of spatial development proposals. It also captures the structure of this report, which starts with a short summary of Phase 2's content, which consists of the relevant policy guidance, the key spatial development opportunities and challenges, and the fine-tuned spatial development vision and objectives.

Figure 2 also illustrates the spatial development planning elements of Phase 3, which commenced with the area being divided into four subregions for their unique composition and role and function within the Region. Figure 2 indicates sound spatial planning principles (based on Chapter 7 SPLUMA principles which, when applied, will lead to a comprehensive spatial development framework) that will be applied to govern the way forward as well as a follow-on spatial development concept.

The latter is translated into spatial development frameworks, one for each subregion, so that each local municipality and its developers would have quick and easy access to the planning proposals for that subregion. This should make spatial implementation and embracing of the key components at the grassroots level easier for all applicable parties.

The report includes an implementation plan, which transforms the development objectives into meaningful, implementable strategies coupled with timeframes.

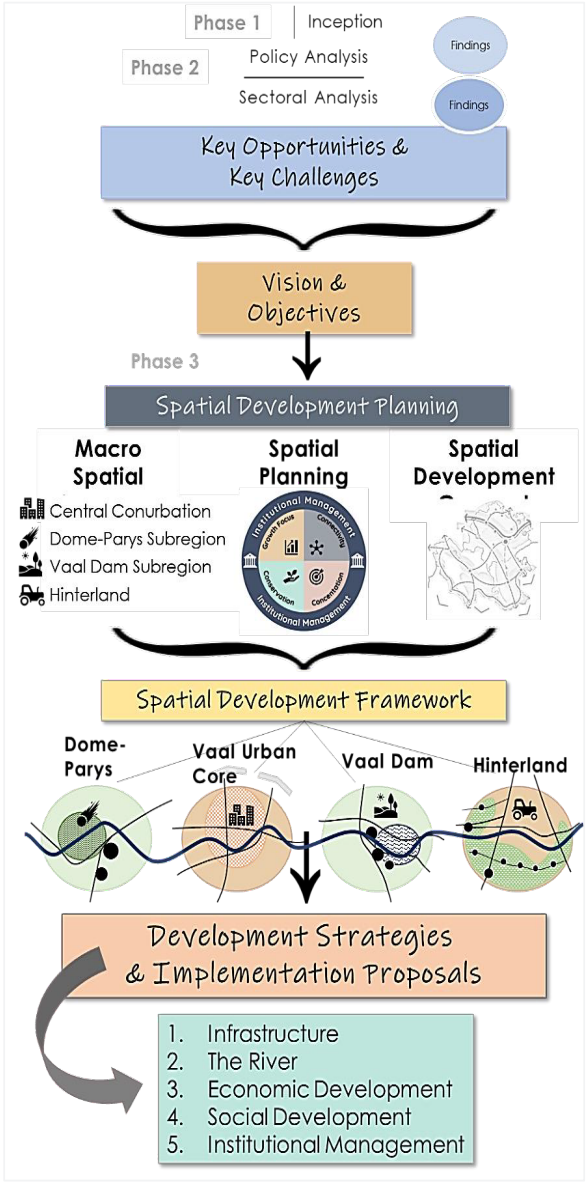


Figure 2: Spatial Development Proposal Formulation Process

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2. THE STUDY AREA

The Vaal River, which, for purposes of this report, includes its surrounding areas, was identified at National and Provincial levels as a vitally important resource for the country, Gauteng province, and the river's immediate surrounding regions, sub-regions, and adjoining areas. This project has found and explored the value of the Vaal River, which lies in many strategic components.

Due to its unique composition, the study area has been delineated into a primary and a secondary study area.

The primary study area was delineated in a previously undertaken feasibility study (such as the Feasibility Study Towards the Vaal River Regional Spatial Development Framework of 2019), which determined that certain areas should be included and others excluded. This Feasibility Study served as the origin of and foundation for the VRRSDF as it presented the primary study area as the focus or the core area of attention of this project on which the way forward hinges.

However, as the unique delineation of the primary study area did not follow local municipal boundaries and as it cut across various municipalities it presented a problem concerning data sets and spatial information. Where local planning is concerned, most data sets and spatial information are funnelled into the prevailing local municipal areas/delineated boundaries. Hence, it is near impossible to find valuable status quo information that only covers selected areas or areas not in line with municipal boundaries. Thus, to ensure a thorough status quo analysis and ensure that the base information is accurate and reliable, a secondary study area was delineated on the outside boundaries of the eight local municipalities that form part of the study area.



2.1 Primary Study Area

As delineated in the feasibility study and affirmed in the project's Terms of Reference, the VRRSDF study area is an inter-provincial functional area comprising parts of Gauteng, Free State, North West, and Mpumalanga provinces (see Figure 3 below). Thus, it is important to understand that the study area is a functional spatial area.

In conjunction with the above, Table 2 shows the district and local municipalities that fall within the delineated VRRSDF primary study area. What is unique and complex about the primary study area is that no municipality in its entirety forms part of the delineated VRRSDF primary study area, as it is a composition of parts of provinces, districts, and local municipal areas.

The extent of the different district municipalities that make up the primary study area varies significantly. The district municipality most represented in the primary study area is Sedibeng DM, as most of Midvaal and Emfuleni fall within the primary study area. As for the other district municipalities, only small portions of their local municipalities (Dipaleseng, Mafube, Metsimaholo, Ngwathe, Moqhaka and JB Marks) form part of the primary study area. This matter complicated the status quo analysis since **no** local municipality fell within the primary study area.

However, central to the primary study area is the Vaal River which is common to all four provinces and plays a meaningful role in delineating the provincial boundaries. The study area/region consists of urban centres varying in size and typology, world heritage sites, agricultural areas, a 305 km stretch of the

Vaal River and the Vaal Dam which covers a surface area of 32 107 ha with a shoreline of over 870 km.

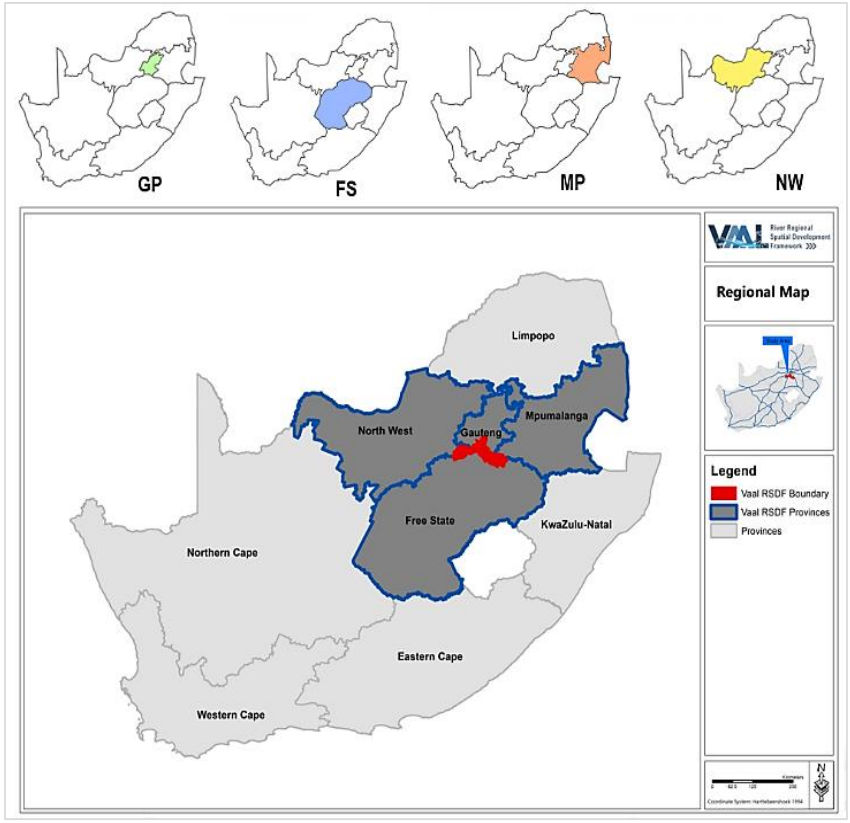


Figure 3: Geographic Footprint of the Primary Study Area

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Table 2: Composition of Primary Study Area per District and Local Municipality

	DISTRICT MUNICIPALITY	LOCAL MUNICIPALITY
GAUTENG	Sedibeng	Emfuleni, Midvaal
FREE STATE	Fezile Dabi	Mafube, Metsimaholo, Ngwathe, Moqhaka

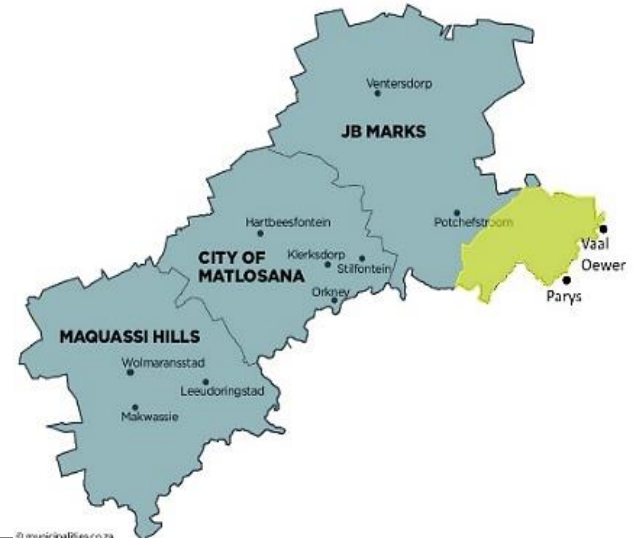
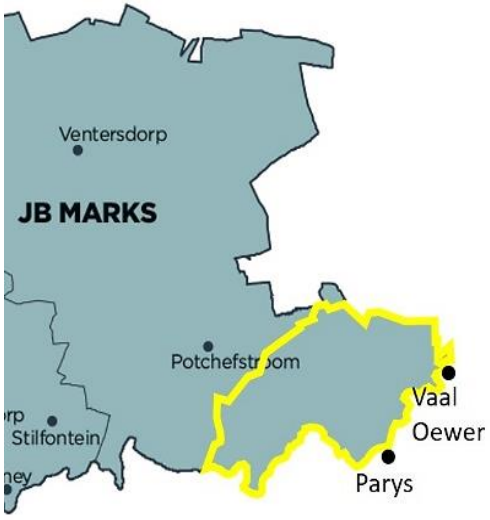








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	DISTRICT MUNICIPALITY	LOCAL MUNICIPALITY
MPUMALANGA	**Gert Sibande** 	**Dipaleseng** 
NORTH WEST	**Dr Kenneth Kaunda** 	**JB Marks** 

2.2 Secondary Study Area

Since no municipality in its entirety fell within the delineated primary study area, it was important to delineate a secondary study area. As mentioned, where local planning is concerned, most data sets and spatial information are funnelled into the prevailing local municipal areas/delineated boundaries. By delineating this secondary study area it was possible to do a meaningful and accurate status quo analysis to set the project on the right path. In addition, by including the larger secondary study area in the project area, spatial and development proposals that reached beyond the primary impact zone of the Vaal River had to be made, making this project far more comprehensive than what was initially anticipated.

The secondary study area covers nearly 32 500 km^2, which is much larger than the primary study area, which measures approximately 6 400 km^2. The areas that constitute the secondary study area are shown in Table 3 below. Following it is the delineated study area, showing both the primary and secondary study areas with respect to one another.

It should be noted that the boundaries of both the primary and secondary study areas could be adjusted, if necessary, during the VRRSDF's review and implementation.



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Table 3: Composition of Secondary Study Area per District and Local Municipality

GAUTENG	MPUMALANGA
Sedibeng: Emfuleni, Midvaal, and a portion of Lesedi	**Gert Sibande**: Dipaleseng
	
FREE STATE	**NORTH WEST**
Fezile Dabi: Mafube, Metsimaholo, Ngwathe, Moqhaka	**Dr Kenneth Kaunda**: JB Marks
	

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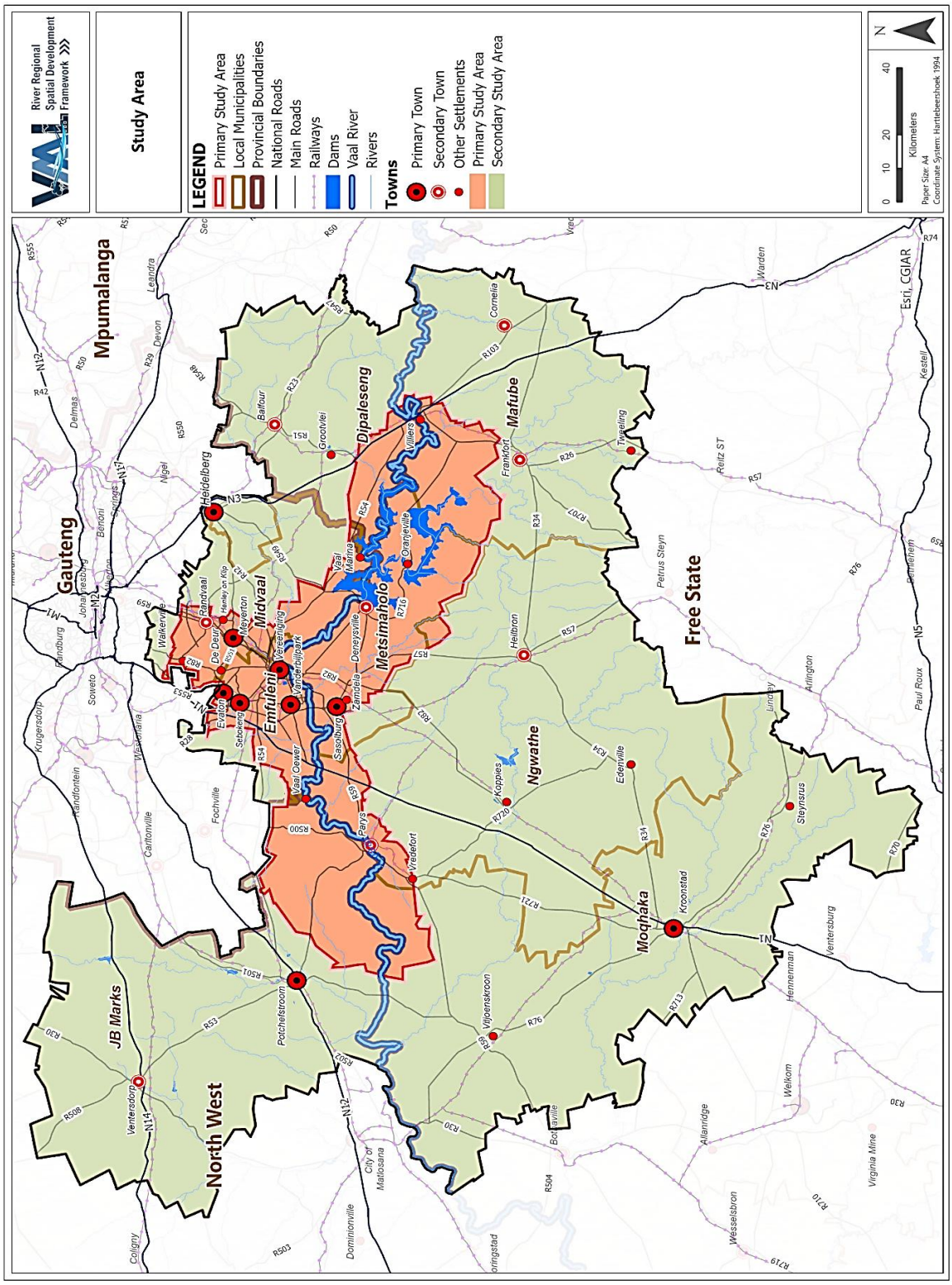


Figure 4: Vaal River RSDF Primary and Secondary Study Areas

2.3 Regional Context

The regional context sets the scene for the status quo analysis, providing background and context for the study area by highlighting functional concentrations, unique characteristics, linkages and regional similarities.

2.3.1 *Urban Perspective*

The study area comprises several urban centres or concentrations varying in size, typology and function, such as the towns of Meyerton, Vereeniging, Vanderbijlpark, Sebokeng, Evaton and Sasolburg (see Figure 5). These areas also have a functional linkage with Gauteng, which benefits residential and commercial development. The study area's residential character varies from formal high-income residential neighbourhoods to lower-income high-density settlements. Due to a high demand for residential land, it is common for informal settlements to develop vacant land in proximity to employment opportunities.

Sasol's petrochemical plant in Sasolburg plays an important role in the national and local economy, however, this plant offers limited expansion opportunities for various reasons, primarily because it cannot compete with the low cost of fuel imports.

Midvaal's developed core is supported by a limited residential component but a large rural hinterland that offers opportunities for a rural residential lifestyle in close proximity to Gauteng.

The towns in the study area developed and grew according to their own resources and residents. Higher-order towns, such as Kroonstad (Maokeng), Potchefstroom, and Ventersdorp, are mostly located along national routes, whereas smaller towns such as Parys, Vredefort, Villiers, Balfour, Frankfort, and Heilbron, act as service, rural service, or tourism centres.

2.3.2 *Connectivity*

The study area is well connected with a system of radial linkages emanating from the urban concentration.

The N1, N3 and N12 national routes (see Figure 5) provide high-level mobility and are important freight corridors.

Regional and intra-regional connectivity corridors of different orders, such as roads and railway networks, are well established between the various towns and nodes. However, the successful movement of goods, services and people is hampered by the poor maintenance of these networks.

Railway transport, for instance, is underutilised as the service's turnaround times cannot compete with road freight transport. The main railway route from Gauteng to the Northern and Western Cape runs through Potchefstroom. The Cape-Gauteng line runs through Vereeniging, Sasolburg, and Kroonstad and connects the Region to Johannesburg, Bloemfontein, East London, Gqeberha, and Cape Town. The Johannesburg-Vereeniging line connects the Region to Johannesburg. The Johannesburg-KwaZulu-Natal railway line passes through Balfour, which is on the eastern edge of the secondary study area. The Balfour-Bethlehem line runs through Villiers, Frankfort, and Tweeling. In addition, the Region's towns are connected by a few minor rail lines. Such rail lines include the Skansdam-Springs line, the Parys Branch line, the Arlington-Heilbron line, and the Heilbron Branch line.

Airports in the Region are limited to local and municipal airports or airfields, except for the Potchefstroom airport, which can accommodate larger aeroplanes due to its military use. A new airport (Vaal Aerotropolis) has been proposed for Emfuleni, which will be located to the west of the N1.

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2.3.3 Vaal River and Vaal Dam

The Vaal Dam and Vaal River are both strategic to this Region – as a water source and as popular areas for real estate and aquatic activities. The Vaal River runs through eight local municipalities. It further serves as a water source for Gauteng, municipalities adjacent or close to the river, and various agriculture and tourism sectors. Thus, to advocate for the sustainable development of the Vaal River Region, cooperative governance and coordination between all relevant role players are of the utmost importance. Through cooperative governance, these municipalities, districts, and provinces could also tackle existing social, economic and environmental challenges as well as foreseeable issues, such as social exclusion, economic stagnation, decaying infrastructure and the use of old or new technologies.

Currently, one of the largest bulk water utilities in the world, Rand Water, provides bulk potable water from the Vaal Dam to more than 11 million people in Gauteng, parts of Mpumalanga, the Free State and North West.

Accessibility to the Vaal Dam seems to be limited; this could be because of the ever-increasing densification through the subdivision of agricultural land along the shores of the dam. However, as this mostly appears to be for high-value residential units, it could be argued that such developments add value in terms of increased rates and taxes payable to the relevant municipalities.

Both the Vaal River and Vaal Dam offer a variety of aquatic activities; once the severe pollution problem has been resolved, the area's recreational role could be further explored and developed.

This area is an excellent example of considering trade-offs to ensure that the three pillars of sustainable development (social, economic, and environmental) are not compromised. It is paramount that this natural resource and its biodiverse area be protected against exploitation and pollution to ensure that human beings have access to its water, activities, and beauty and to maintain its role in supporting the Region's economy and creating job opportunities.

2.3.4 Natural and Heritage Resources

The study area includes various natural areas formed by topographical features, such as water courses, dams, and grassland. The Region is home to the Vredefort Dome World Heritage Site (see Figure 5), which includes Parys, Vredefort and a section of the Vaal River. The Vredefort Dome offers various unique tourism and eco-tourism facilities in a landscape intercepted by long-standing agricultural activities.

In the Emfuleni area, there is a rich history that encapsulates the Anglo-Boer War and the struggle against apartheid, such as the Sharpeville Memorial, where the South African Constitution was signed in 1996. Further south, Koppies is known for attracting tourists to the R82 Battlefield Route, which consists of several historical battlefields.

2.3.5 Agriculture

The agricultural activities of the Region range in intensity, scale and type. Commercial farming mainly focuses on grain and animal production units. In the North West province, Ventersdorp is a large grain production area, whereas farmers in the Kroonstad area (Free State), focus more on grain and animal production. Kroonstad is also seen as a high order service centre for the agriculture sector. The Koppies, Weltevrede and Roodepoort dams can be found in the Renoster River, Northeast of Kroonstad. These dams all serve as prominent agricultural water sources to farmers in the area. Further to the east, farmers of the small agricultural town of Vredefort, in the Free State, produce cattle, peanuts, sorghum, sunflowers and maize while Frankfort serves as a rural service centre to the agricultural community of the hinterland where sheep and cattle farming, and maize and sunflower seed production prevail. Situated close to the N3 is Villiers, where products such as maize, sunflower, wheat, grain, sorghum, meat and dairy are produced. Due to its location this town is the main concentration point for agricultural products in the district and serves a pertinent distribution function.

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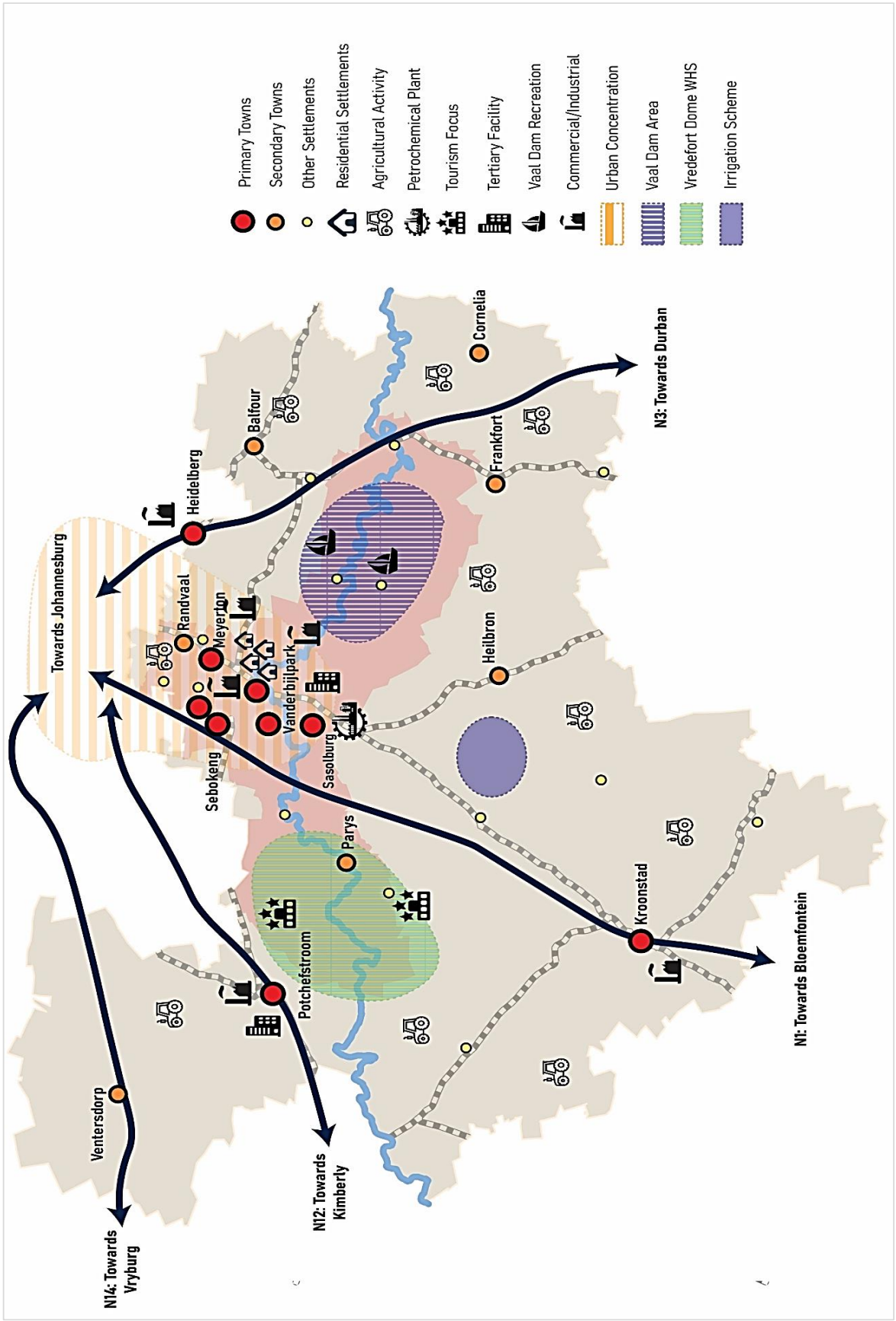


Figure 5: Regional Perspective

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3. SUMMARY OF STATUS QUO FINDINGS

3.1 National Policy Environment

According to the National Development Plan 2030 (NDP) and the National Spatial Development Framework (NSDF), as gazetted in February 2023, the Vaal River Region is a nationally recognised spatial area of importance and development priority. The NDP further identified the upper and middle Vaal sub-catchments as areas requiring institutional development, thus, the VRRSDF must facilitate the implementation of the NDP by prioritising the development of the Vaal catchments. The NDP also emphasised that the environment and water resources upstream of the Vaal Dam must be conserved.

The Vaal River Region forms part of the Central Innovation Belt, National Spatial Transformation and Economic Transition Regions (Gauteng), and Upper Vaal National Resource Risk Area of the NSDF's National Spatial Action Areas. In addition, the region falls within four NSDF subframes, namely the National System of Nodes and Corridors, the National Resource Economy Regions, the National Movement and Connectivity Infrastructure System, and the National Ecological Infrastructure Network.

Based on the NSDF proposals and guidance, the VRRSDF must be sure to:

- diversify the economy, rebuild, support and upscale the secondary sector, and strengthen the tertiary sector;
- create transformed, well-functioning settlements;
- strengthen existing connections to and links with the core areas of the Gauteng Urban Region;
- strengthen infrastructure networks to facilitate regional, national and cross-border flows;



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- support agro-processing, viable mineral and metals beneficiation and alternative energy production;
- ensure the sustainable use of resources and prevent pollution and resource depletion;
- manage and mediate the impacts of (1) dense human settlement and (2) intense economic activity on critical national water resources, e.g., the pollution mitigation actions in the case of the Vaal River;
- prioritise natural resource management by, amongst others, introducing far more stringent protection and wise management of the country's scarce natural resources, including the notably high-value agricultural land;
- manage competing and incompatible land uses, e.g., mining, agriculture and eco-tourism;
- protect high-value agricultural land and put it to good use, and manage competition for development on such land, within the pursuit of (1) national food security, (2) economic growth, and (3) social stability;
- manage the development of land with high-agricultural production potential and encourage small-scale agriculture and resource enterprise development;
- apply intensive rehabilitation and strict control in accordance with the Mineral and Petroleum Resources Development (Act 28 of 2022) (MPRDA) required in existing and new mining areas to limit water, air and soil pollution and land degradation;
- rehabilitate degraded land and implement effective land-use management;
- improve rural-rural connections, market accessibility and key agricultural-production infrastructure; and
- enhance connectivity through well-planned infrastructure investment and settlement consolidation in well-connected regional development anchors.

According to the Agricultural Policy Action Plan (APAP), the agriculture sector has significant job creation potential while providing other benefits, such as food security. The Vaal Region comprises vast agricultural land used for agricultural activities, while other vacant areas remain high-potential agricultural soil. It is also up to the VRRSDF to ensure that these agricultural sources are further developed and exploited.

3.2 Provincial Policy Environment

The review of the provincial policy environment of the four provinces (Gauteng, Free State, North West, and Mpumalanga) provided several development proposals that covered all sectors of development and growth and included specific projects in dedicated areas. Industrial, commercial, and mining development proposals prevailed in Gauteng and the Free State, while tourism, agriculture, and mining were featured in the Free State, North West, and Mpumalanga provinces. All four provinces reported challenges related to old and deteriorating infrastructure, inadequate housing, poor sanitation and water supply, and backlogs in engineering provision.

It is valuable to note that these provinces realise the importance of the Vaal River Region and have dedicated proposals and projects for each area related to the Vaal River. Due to this, cross-border awareness coordination between these provinces should be attainable.

3.3 District and Local Policy Environment

The analysis of the district and local municipal policy environments found many focused development proposals for the entire Vaal River Region. At a municipal level, the Vaal River Region is already seen as a Region of insurmountable value with much further potential.

There are various and staggered development proposals. These proposed developments focus on the region's central part, followed by the Vaal Dam and Vredefort Dome/Parys areas. There are currently no economic

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development proposals for the Dr KKDM and Gert Sibande DM areas, as these regions are primarily used for commercial agriculture.

Specific development proposals include the following:

- Industrial: the proposed industrial developments are mostly situated in the central area and, therefore, related to proposals made by the Sedibeng and Fezile Dabi DMs. The subject areas from Sedibeng include Vaal Special Economic Zone (SEZ) Sites (Heidelberg, Langlaagte, Leeuwkuil, Zwartkopjies, Kookfontein, Rietspruit, Boipatong, Cyferpan, and Sebokeng CBD). While the subject areas from Fezile Dabi include The Chem City and Naledi Park. These proposed developments range from light to heavy industries, providing a good mix and scale of potential developments.
- Energy: proposed green energy and related industrial development opportunities in Sasolburg and Sedibeng District.
- Commercial: proposed commercial developments are also mostly situated in the central areas of Sedibeng, including Savannah City, Sicelo, Mamello, Evaton, Beverley Hills, Palm Springs, Boipatong, Bophalong and Sebokeng.
- Tourism: proposed tourism developments and proposals are found across the study area. The subject areas from Sedibeng include Sharpville Struggle, Three Rivers, River Road, River Front, Walkerville, Sebokeng Struggle, Suikerbosrand, R42 Scenic, R54 Marina, R550 Klip Route, and Vanderbijlpark (Emerald Casino). Subject areas from Fezile Dabi include Parys, Deneysville and Oranjeville, and the subject area in Dr KKMD is the Vredefort Dome.
- Mining: there are existing mining activities in the study area. No new mining proposals or developments have been identified. The existing mines are situated in the central area and include Bantu Bonke (Sand quarry along the Vaal River) and New Vaal Colliery (coal mine).
- Agricultural: proposed agricultural developments are situated in all three subregions of the study area, namely the Sedibeng, Fezile Dabi, and Dr Kenneth Kaunda DMs. The subject areas from Sedibeng DM include Rietkuil Agri-Hub, Sebokeng Agri-Park, and Bantu Bonke (potential agri-villages). Subject areas from Fezile Dabi DM include the Farm Mooidraai 44. The portion covered by the Gert Sibande DM is already predominantly agricultural, whereas the Dr Kenneth Kaunda DM identified some parts of the study area as high-potential agricultural land. In addition, there are proposals for developing agrivoltaics industries in the Region.

3.4 Bio-Physical Environment

- The Vaal River, Vaal Dam, and its tributaries are invaluable human and economic resources in the Region and the four provinces they border.
- The Vaal River is in a critical state, with escalating pollution that renders the water unfit for human consumption and destroys the ecosystems. Currently, this resource is threatened in its entirety.
- Agriculture, tourism and recreation are under threat due to the state of the Vaal River.
- Although present water demand is broadly in balance with water supply, there is no capacity for future growth and an increase in demand – this is problematic since there is limited groundwater.
- A minor portion of the study area in various regions is unsuitable for development due to the presence of dolomitic rock, ridges, water bodies and protected areas.
- Most of the area is suitable for agricultural activities (good rainfall, good temperatures, high-potential agricultural land, etc.) and can accommodate commercial or small-scale farming, agri-villages, intensive farming, dry-land cultivation or livestock farming. The agricultural profile of the Region is beneficially diverse.
- Large areas are environmentally sensitive and have already been classified as critical biodiverse areas (CBAs) that are protected from further development. This is beneficial for the development of tourism

and eco-tourism, specifically the Vredefort Dome, which area must be protected to enhance the scenic value of the Region.

- Minerals are found in the Region and may lead to mining. Mining has a negative visual and environmental impact but also a positive economic impact, and it is a needed economic resource.
- The region includes a portion of the Klerksdorp Renewable Energy Development Zone (REDZ). Hence, there is an opportunity to generate renewable energy in the Region. However, since the REDZ overlaps with the Vredefort World Heritage Site, this must be environmentally managed to secure the region's tourism value.
- The Region offers opportunities for agrivoltaics. Developing sustainable and renewable energy plants will help achieve energy security and support emerging, existing and small, medium and micro enterprises (SMMEs) that face negative consequences due to electricity cuts.
- The Vaal River Region is vulnerable to climate change. Climate change can decrease the quantity and quality of the water in the Vaal River System, threaten biodiversity and ecosystems, increase heat stress and cause severe weather events. The effects of climate change may lead to less water being available for natural purposes and consumption (irrigation, drinking, industrial purposes, etc.), loss of wetlands and water bodies, change in agriculture production, reduced food security, tourism and economic activities, and the migration of rural people to urban and peri-urban areas.



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BIO-PHYSICAL ENVIRONMENT SUMMARY

TOPOGRAPHY & CLIMATE

The Region is generally flat with two major ridges in the Central Urban Conurbation and Vredefort Dome Sub Region. Vredefort Dome Sub Region comprises some valleys along the Vaal River.

The Region is generally associated with moderate temperatures. The average annual temperature of the whole region ranges between 16°C and 18°C. The average rainfall in the Region ranges between 800 mm to 1600 mm.

BIODIVERSITY

The Region is rich in biodiversity with several nature reserves, critical biodiversity areas, irreplaceable areas and linear ecological corridors.

The Region also contains several wetlands, rives, and dams - making it rich in aquatic biodiversity.

However, there is a decline in the biodiversity due to the destruction of natural habitat; invasive alien species, over-abstraction of water, and climate change.

WATER RESOURCES

Vaal River, its tributaries, and dams are major water resources in the region. The Vaal River is in a critical state, due to pollution and over utilisation. The Region also includes several wetlands which play a significant role in reducing soil erosion and water pollution

Availability of ground water is limited. A few strategic ground water resource areas (SWSA) exist in the region. Conservation of these SWSAs is essential for ensuring future availability of water.

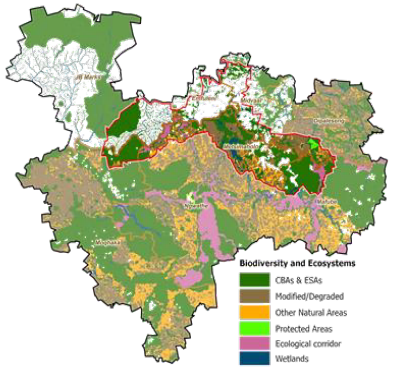
NATURAL HAZARD

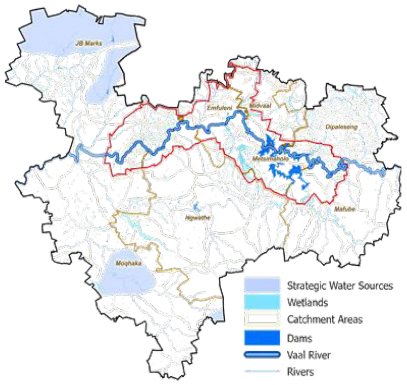
Parys and Vredefort are most likely to experience wildfire; whereas Vereeniging, Sasolburg, Vanderbiljpark, Villiers, Vaal Marina show traces of the likelihood of wildfire.

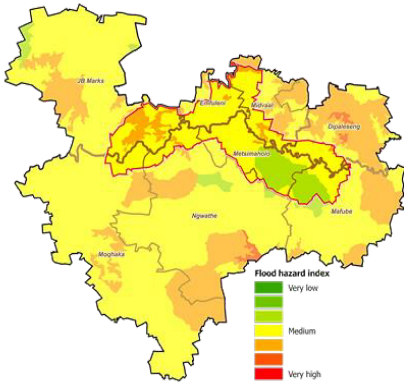
The Region shows a medium flood hazard index. Walkerville, Rooipoort, Cooperville AH have a medium flood index within the primary study area. The Vaal Dam area have a low flood hazard index.

LAND USES/COVER

Major Land Uses/Covers: temporal crops (31%), natural grassland (41%), urban & rural built-up, infrastructure and mining (10%), artificial water bodies/ dams (5%), and natural wooded land 4%.







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3.5 Built Environment

- The Region is strategically located with radial connectivity that provides good internal integration across and around the Vaal River and links externally to Gauteng and other major centres in all directions.
- Several larger and more vibrant industrial areas drive the economy of the Region, and the R59 Corridor, which links through to the Gauteng City Region, is a critical component. The Region's proximity to markets is good.
- Manufacturing is thriving in Sasolburg, and agricultural operations can be found throughout the Region, with tourism that offers countless untapped opportunities and the development of logistics that might be on the horizon. Where manufacturing is not thriving, a good base exists on which manufacturing sectors can be developed.
- The state of the existing infrastructure (i.e., all networks and systems) is problematic. It is old, it is not being maintained, and it does not get upgraded. Local and provincial roads are in a dire state, are not maintained, and no new roads are being built. Water and sanitation systems are in disrepair, with raw sewerage that is pumped out on streets and into water courses that flow into the Vaal River; water supply and quality are also poor. Apart from load shedding, electricity supply is frequently interrupted. These issues all have a significantly negative economic impact.
- The increased demand for potable water has become problematic, so much so that the Emfuleni Municipality has halted new developments. The Region's future water security depends on wise water use, recycling and reusing treated wastewater, and sourcing water from other river basins.
- Pollution caused by failing sanitation systems up and down the Vaal River is exceedingly problematic. This infrastructure sector is in dire need of financial assistance and re-administration.
- There is a high and unmet need for housing that is aggravated by the lack of serviced land suitable for further development.
- The existing housing developments and informal settlements have resulted in a fragmented urban footprint that is difficult to repair.
- Although the Region has an extensive railway network, it is totally underutilised. However, this is the result of Transnet issues, so this region cannot resolve the problem. Rail revival is a national priority.
- The decline in the mining and iron sectors must be navigated with economic strategies to avoid detrimental impacts on the overall economy and employment in the Region.
- Urban areas, such as Vereeniging, Vanderbijlpark and Sasolburg, are characterised by formalised medium-density housing, informal settlements, commercial and industrial activities, CBDs, and mixed-use areas. Generally, the urban areas have a grid-like street pattern and are well connected to the other centres.
- The peri-urban areas comprise a mix of residential, commercial, and agricultural land uses. These areas often have larger plots with more green space than urban areas with less formal street patterns.
- Rural areas are mostly characterised by agricultural land uses, scattered settlements, and open spaces. The spatial pattern is less structured, and the settlements are often located along major roads or rivers. The rural hinterland comprises a diverse range of agricultural activities.

3.6 Socio-Economic Profile

- The population of the nine municipalities (including parts of Lesedi) is expected to grow to 2.06 million in 2050 — up from 1.93 million in 2022.
- The socio-economic conditions of the Region's municipalities portray a mixed picture. Some experience population decline (probably due

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to migration due to limited economic opportunities), while others register decent population growth.

- The Region has a good share of youth and working-age population (68% of the total population), highlighting the availability of a labour force. The substantial proportion of the youth and working-age population represents a demographic window of opportunity. The NDP 2030 estimates that South Africa's demographic window of opportunity will close by 2030. If the working-age population is engaged in constructive economic activities, this window of opportunity can be converted into a demographic dividend that will support economic development and social upliftment. However, the current high unemployment rate, specifically youth unemployment, indicates a lack of economic opportunities and that the available labour force is not being utilised.
- The Region has a higher tax-paying populace than the national average but a lower average annual household income.
- Although a distinctive spatial pattern of socio-economic conditions cannot be observed, the conditions of Dipaleseng, Mafube, Moqhaka, and Ngwathe are poorer and more prone to socio-economic vulnerabilities. A possible reason for this pattern is that these municipalities do not have strong economic bases and are not integrated with the key economic bases of the Region, such as Vereeniging, Vanderbijlpark, Meyerton and Sasolburg. This calls for better spatial integration and the creation of better socio-economic conditions in the poorer municipalities.
- The inequality in income, skills, and employment is high throughout the Region.
- There are opportunities for higher education and for the expansion of this sector. This would allow more people to be educated, which would be advantageous to the Region.
- It is expected that the population will grow and that this will place more pressure on all the Region's resources, such as land, housing, infrastructure, the economy, and employment.
- Economic decline will significantly impact the social status of the populace and the inability to achieve social betterment.



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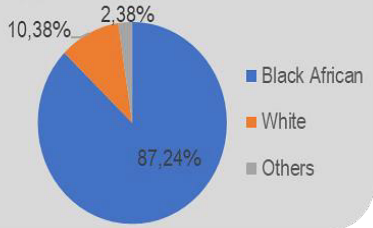
SOCIO-ECONOMIC PROFILE SUMMARY

POPULATION

2022 : 1,93 million (estimated)
Highest in Emfuleni: 945 650
Lowest in Dipaleseng: 35 980

2050: 2,06 million (estimated)
Highest in Emfuleni: 792 567
Lowest in Dipaleseng: 47 764

ETHNIC COMPOSITION



UNEMPLOYMENT

Unemployment Rate: 34,60%
Highest in Dipaleseng: 44,92%
Lowest in Midvaal: 17,81%

Youth Unemployment Rate: 48,52%
Highest in Dipaleseng: 60,08%
Lowest in Midvaal: 27,05%

EDUCATION

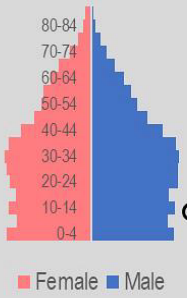
Attendance at an Edu. Inst.: 73,38%
Highest in Moqhaka: 77,27%
Lowest in Midvaal: 70,58%

People with Higher Edu.: 11,85%
Highest in Emfuleni: 12,8%
Lowest in Dipaleseng: 5,4%

GENDER AND AGE STRUCTURE

50,96% Female

49,04% Male



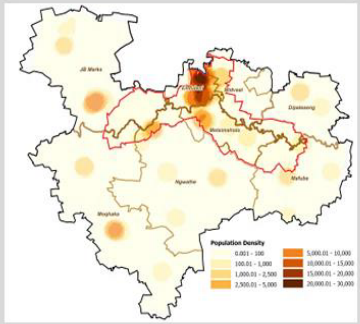
Elderly (65+): 6,89%

Working Age (15-64): 68,52%

Children (0-14): 24,59%

POPULATION DENSITY

Population Density (People/ sq Km): 59,30
Highest in Emfuleni: 978
Lowest in Dipaleseng: 14



The Region has a large proportion of youth and working-age people and can provide labour for economic activities. The existence of tertiary and vocational institutes allows for the training and upskilling of the labour force.

The Region's average household income is lower than the national average, even though the region is home to several industrial activities. Midvaal has the highest average household income and Dipaleseng has the lowest.

The Region has significant income disparities. Income disparities in Midvaal, Emfuleni, JB Marks, and Metsimaholo are higher than the national average.

In general, the crime rate in the Region is lower than the national average. The project municipalities' socioeconomic vulnerabilities range from low to moderate. The socio-economic scores of highly urbanised municipalities such as Emfuleni, Metsimaholo, Midvaal, and JB Marks are lower than those of rural municipalities..

The population of the region is projected to decrease from 1.93 million in 2022 to 1.87 million in 2030 and then increase to 2.06 million in 2050 (CSIR, Greenbook 2019).

Table 4: Estimated Future Population of Vaal River Region

MUNICIPALITY	2022	2030	2050
Metsimaholo	158 391	192 547	261 188
Mafube	61 150	54 310	52 488
Moqhaka	112 254	129 767	103 927
Ngwathe	134 962	106 692	96 421
JB Marks	212 670	315 297	397 685
Midvaal	112 254	158 016	243 747
Emfuleni	945 650	746 789	688 656
Lesedi (Heidelberg and Ratanda)	110 210	116 009	164 623
Dipaleseng	35 980	47 083	47 310
Total	**1 926 677**	**1 866 510**	**2 056 045**

Source: StatsSA Census 2022, CSIR Greenbook 2019 (medium growth scenario)

In 2050, the Vaal Urban Core, Vaal Dam Subregion, Dome-Parys Subregion, and secondary study area are projected to have populations of 1.11 million, 41 237, 48 946, and 0.86 million, respectively.

Table 5: Estimated Future Population of Subregions

SUBREGION	2030	2050
Vaal Urban Core	1 024 478	1 109 735
Vaal Dam Area	32 594	41 237
Dome-Parys Area	55 192	48 946
Hinterland/Secondary Area (includes Potchefstroom, Heidelberg and Kroonstad)	754 246	856 127

Source: CSIR Greenbook 2019 (medium growth scenario)

The population growth in the Region's municipalities and settlements will be uneven. High to extreme growth pressure is expected in Sasolburg, Potchefstroom, Meyerton, Heidelberg, and several smaller settlements in Lesedi and Midvaal. The areas of Sebokeng, Vereeniging, Kroonstad, Parys, Vredefort, and Frankfort, and many smaller settlements in Free State, are likely to see population declines (see Figure 6).

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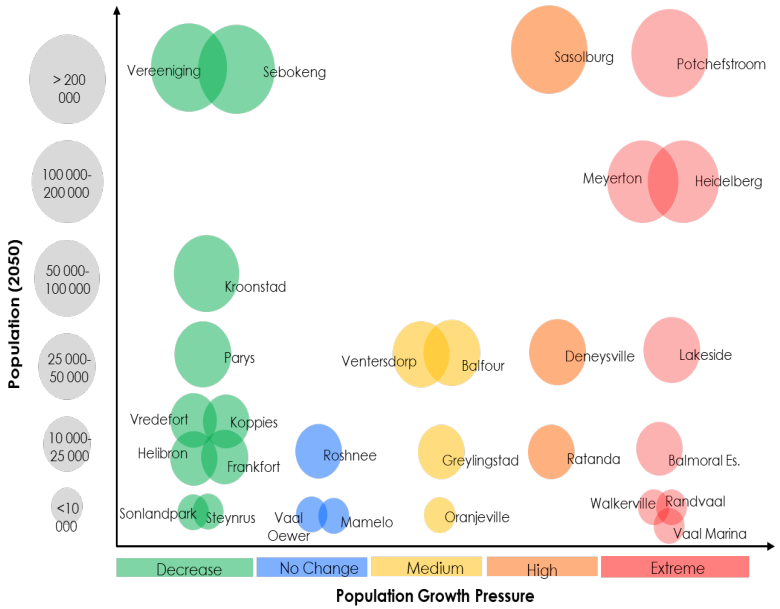


Figure 6: Population (2050) and Population Growth Pressure on Settlements

Source: CSIR Greenbook 2019 (medium growth scenario)

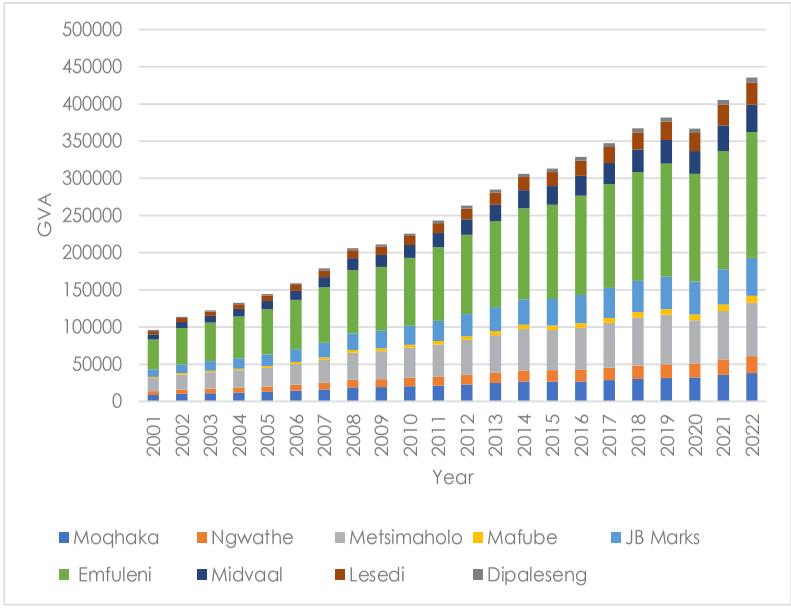


Figure 7: GVAs of the Vaal River Region's Municipalities

Source: Quantec, 2023

3.7 Regional Economic Profile

The combined gross value added (GVA) of the nine local municipalities that form the Vaal River Region is R435627,886 million (2022) in current prices. This value contributes 3,31% to the national GVA. The economic growth from 2001 to 2022 for each of the nine local municipalities is shown in Figure 7 below. Due to the COVID-19 pandemic, all of the Region's municipalities reflected a decline in their positive growth trajectories between 2019 and 2020. However, this has, in the meantime, been reversed due to a positive growth observed since 2021, albeit from a lower level.

Economically the most dominant municipalities in the region are Emfuleni (38,89% — contribution to the regional GVA), Metsimaholo (16.52%), and JB Marks (11,66%), and the least dominant municipalities are Dipaleseng (1,54%), and Mafube (2.18%) as illustrated in Figure 8 below.

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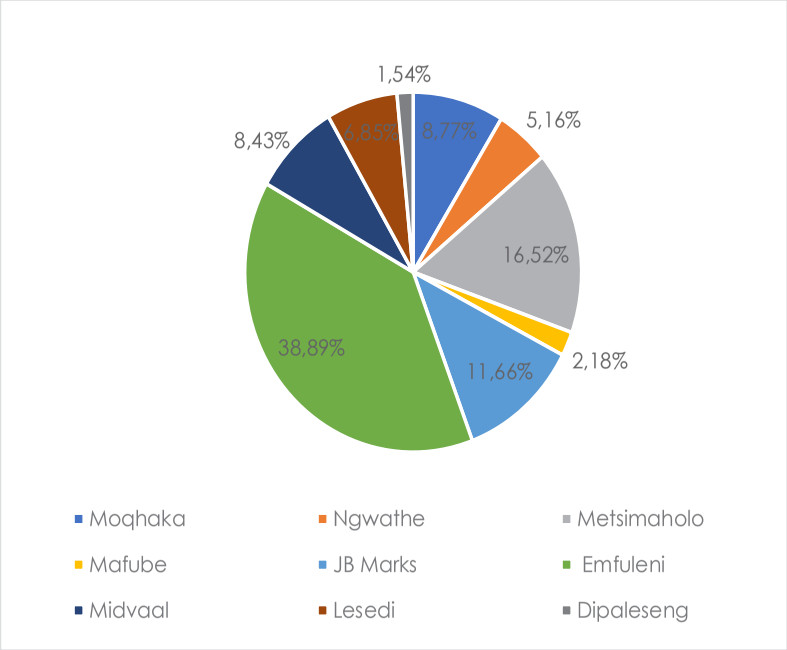


Figure 8: Municipal Contribution to Regional GVA (2022)

(Source: Quantec, 2023)

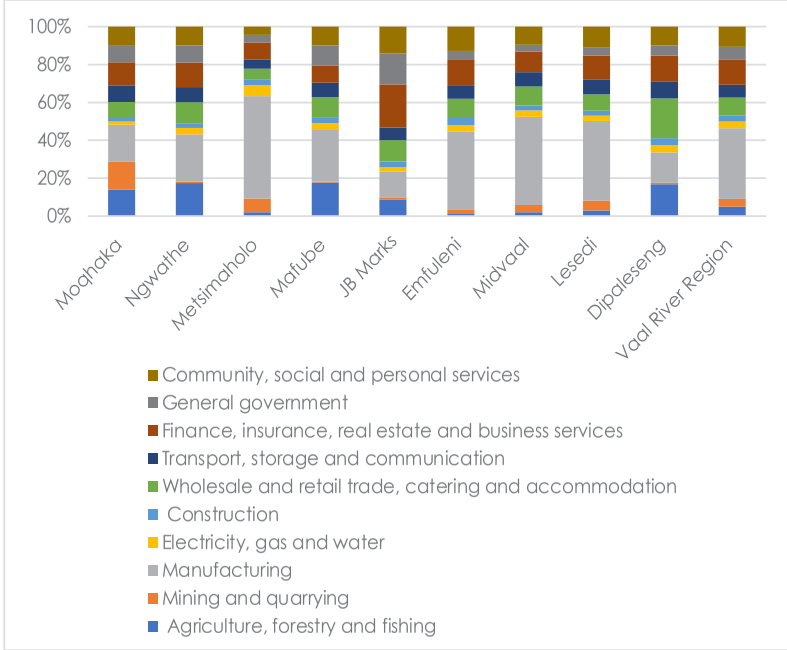


Figure 9: Regional Economic Structure

(Source: Quantec, 2023)

Of the different economic sectors, manufacturing is the most dominant, contributing 37% to the Vaal River Regional GVA (Figure 9). The other important economic sectors are finance, insurance, real estate and business services (13%), and community, social and personal services (11%).

3.7.1 Key Economic Features and Structural Elements

ENVIRONMENTAL ASSETS: The Region has valuable environmental assets, such as the Vaal Dam, Vaal River, Vredefort Dome, Parys, the petro-chemical developments in Sasolburg, the iron and steel industry (ArcelorMittal) in Vereeniging (although declining), tourism, agriculture, and agro-processing activities, as well as well-established tertiary institutions such as the Vaal University of Technology and North West University that serve as the Region's innovation and technology custodians.

MIXED ECONOMY: The Region reflects diverse and mixed economic use patterns with agriculture, mining and manufacturing industries and the potential for tourism development.

REGIONAL LINKAGES: The Region has strong regional linkages to major economic centres such as Johannesburg and Ekurhuleni, and strong internal or local linkages within the Vereeniging-Vanderbijlpark-Sasolburg complex. These include road networks such as the R59, R82, R53, R54 and N12.

ECONOMIC CONCERTATION: Emfuleni, Metsimaholo, and JB Marks municipalities are the largest contributors to regional gross value added (RGVA) and comprise established commercial farming, mining, and manufacturing industries linked to the petrochemicals sector around Sasolburg and the iron industry in Vereeniging. The smaller settlements and agricultural holdings in the surrounding areas are dependent on urban centres for employment and economic opportunities.

UNEMPLOYMENT: The local population is predominantly unskilled, with high unemployment levels compared to provincial and national averages.

3.7.2 Key Economic Drivers

The key economic drivers for economic development include:

SKILLS: General skills, training and quality, and scale.

INFRASTRUCTURE: Transport, utilities, and other public infrastructure.

REGULATORY RELIEF: Policy and good governance support through, for example, environmental, land use and planning regulation.

INNOVATION AND R&D: Adopting business models and innovative and new technologies.

NATURAL RESOURCE ENDOWMENT: Diverse and unique natural resources are available to underpin economic growth in the Region.

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3.7.3 Key Economic Constraints

NARROW INDUSTRIAL BASE: A narrow industrial base in an individual regional economy implies higher exposure to boom-and-bust cycles and associated social costs. Hence, public interventions that aim to increase regional development should encourage industrial diversity as this would foster community resilience while building local leadership capacity, enabling a region to capitalise on opportunities.

POOR LOGISTICS INFRASTRUCTURE: The anticipated growth in agricultural, mineral and manufacturing exports from South Africa will likely place pressure on the country's logistics infrastructure, from handling facilities to transport (road and rail) to shipping ports. Industry players (such as the Citrus Growers Association) have expressed concern over the country's logistics systems after struggling with port congestion and a shortage of refrigeration equipment in recent years.

POLICY IMPLEMENTATION RISK: Implementation risk continues threatening the South African government's efforts to reform the agriculture and mining sectors.

SAFETY AND QUALITY OF AGRICULTURE PRODUCE: Consumers are expected to increasingly emphasise safety, reliability of quality and supply, and ethics in food production and manufacturing.

3.7.4 Key Influencing Factors

The following factors are currently influencing or will in the future influence the development of the Region:

ECONOMIC DIVERSIFICATION: Given the continuing uncertainty in the global economic climate and rising concerns about continued slow growth and potential stagnation, developing countries are increasingly challenged to diversify their economies to drive economic growth and offset the risks related to commodity-dependent regions or small-scale production and exports. Diversification strategies are required to deliver sustained, job-intensive, and inclusive growth.

GROWTH IN SECTORS WITH A COMPETITIVE ADVANTAGE: Revitalising the manufacturing base and creating globally competitive export industries is an important pillar of South Africa's Economic Reconstruction and Recovery Plan. Low economic growth drives higher unemployment levels in the country; for the Vaal River Region, a greater focus on agriculture, manufacturing, tourism, and trade sectors is expected to leverage the Region's competitive advantages and create jobs.

REGIONAL INFRASTRUCTURE AND CONNECTIVITY: Infrastructure investments and coordinated policy reforms that reduce trade costs are required. Declining trade costs and more efficient trade logistics support integration into regional and national economies which will lead to more diversified economies and less risk.

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ECONOMIC PROFILE SUMMARY

GROSS VALUE ADDED

Total GVA: R436 billion at basic prices (2022), contributing only 3,31% to the National GVA.
Highest municipal GVA – Emfuleni (R169 billion)
Lowest municipal GVA – Dipaleseng (R6,7 billion)

GVA GROWTH

GVA grew from R243 billion in 2011 to R436 billion in 2022

Average GVA growth rate over 2011 - 2022 was 5,45% for the region (lower than the national average 6,45%),

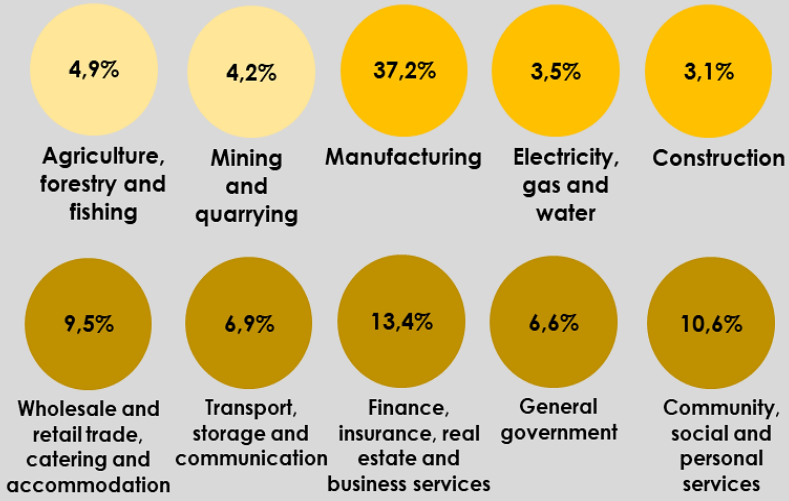
GVA PER CAPITA

GVA per capita: R231 893 (2021)
Highest in Metsimaholo: R517 481
Lowest in Dipaleseng: R114 713
The regional GVA per capita is higher than the national average (R204 527)

GVA PER SECTOR

Primary Sector: 9% (Agriculture, & Mining)
Secondary Sector: 44% (Electricity, Manufacturing, Construction)
Tertiary Sector: 47% (Trade, Transport, Finance, Government, Community Services)

GVA CONTRIBUTION PER SECTOR



ECONOMIC OPPORTUNITIES

Value Generation
- Manufacturing
- Mining/exploration
- Agriculture and agro-processing
- Personal services
- Residential real estate
- Tourism

Employment Generation
- Manufacturing
- Agriculture and agro-processing
- Commercial activities
- Services and trade
- Education
- Tourism

FOCUS ECONOMIC SECTORS/INDUSTRIES

- Agriculture and agro-processing
- Mining and quarrying
- Manufacturing
- Construction
- Personal services
- Tourism
- Education
- SEZ

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3.8 Regional Governance Profile

The governance structure of the project municipalities portrays a mixed picture with concerning and significant elements that could be debilitating. Poor management has resulted in limited infrastructure, maintenance, and upgrades, which have largely contributed to the Vaal River's pollution crisis.

Many of the municipalities in the Region are in financial distress and have severe human resource shortages, and only one municipality has received a clean audit. Four of the Region's nine municipalities are experiencing dire financial crises that raise concerns about the implementation of the VRRSDF, as the project will require financial commitments from all project stakeholders. There will thus be a need for financial assistance.

As there are multiple project stakeholders in the Region, the project's implementation could be complex, which could impact the VRRSDF's outcome. Hence, cooperative governance should be facilitated through the participating local municipalities, districts, and provinces, as well as the national government, to ensure regional resources and capabilities are aligned with the VRRSDF. This approach could also help solve financial and poor management issues.

Many of the project municipalities have good levels of SPLUMA compliance that provide some level of certainty about the direction of their spatial development. This certainty boosts prospective investors' confidence regarding the type of development that can take place and where it can take place. In many cases national and provincial departments provided financial and technical assistance to these municipalities to ensure their SPLUMA compliance, which serves as excellent examples of inter-governmental cooperation and collaboration.

This type of inter-governmental cooperation and collaboration may be required to effectively implement the VRRSDF as many project municipalities may need access to financial and technical resources from higher-order government bodies.



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3.10 Key Opportunities and Challenges

Following the status quo analysis, key opportunities and challenges were identified to highlight the issues and direct the way forward for the spatial development framework.

3.10.1 Key Opportunities

A NATIONAL PRIORITY: Regarding the NDP and NSDF, the Vaal River has been recognised as a national priority area. With such a high ranking, there should be national buy-in, commitment, support and focus on the area. By drawing attention to the area, improved protection, conservation, and meaningful and sustainable development could also be achieved. The opportunity lies in attracting the right kind of attention, funding, and commitment to the area to drive development initiatives and projects so that meaningful change and growth can be attained — growth being beneficial for all people and all sectors.

AGRICULTURAL DIVERSITY: The production of agricultural goods is another key opportunity not only because of the high-potential agricultural land, good rainfall and climate, established farming, etc., but because its value is recognised at a national level, giving it the necessary impetus to obtain funding, commitment, and resources. Although all kinds of agricultural activities are deemed valuable, particular focus is placed on agro-processing, agri-villages, agri-parks and commercial farming. Agriculture is further considered a valued sector for job creation and livelihood enablement. Combined with the reality that South Africa is seen as the food basket of Africa, the agriculture sector will remain relevant and should be encouraged.

The Region's agricultural profile is beneficially diverse and allows for a host of farming activities that are diverse in type, scale, location, beneficiaries, etc. However, while the farming industry does employ unskilled labour, modern farming techniques also require skilled labour. To farm successfully, knowledge, experience, funding, resources, and facilitation are required. For these reasons, national policy support is a necessity.

ECONOMIC DRIVERS: The Region has a range of solid economic drivers that can result in good economic development, which is an enormously beneficial factor that should not be undervalued. These drivers can achieve good economic diversification, contributing to regional economic stability and allowing thriving sectors to grow stronger. While some sectors have greater employment spin-offs than others, all employment opportunities benefit the Region and should be supported.

While economic growth should explore opportunities in new and/or untapped markets, it is of utmost importance that economic growth initiatives also find ways to strengthen existing and declining sectors since such decline will bring with it immediate and continued job losses, which the Region cannot afford. For the economy to stabilise, sustaining jobs, enabling people, and facilitating economic drivers is critical. Finding the stimuli for economic growth is essential. The concern lies with finding and sustaining the stimuli that will lead those economic drivers into fully-fledged economic development in the sectors of tourism, agriculture, recreation, mining, industry and logistics. The role of infrastructure provision, maintenance and growth in this regard should not be underestimated.

ENVIRONMENTAL PROTECTION AND TOURISM: Large portions of the study area have already been flagged for protection or defined as CBAs. When land has been flagged for protection or defined as a CBA, it is seen as a key opportunity because the process of land use change and development could be expedited as the pockets of land where no development will be permitted have already been identified. Such a classification is further important as the project municipalities could prepare dedicated development guidelines for land in or near protected areas to ensure that those developments are tourism-, eco-tourism-, recreation- and/or nature-based. These applications could then also be expedited. Because tourism

development is regarded as a tremendous employment multiplier, the opportunity to have tourism-based developments should be harnessed and planned so that the development is aligned with what is possible and beneficial for the Region.

GOOD CONNECTIVITY: The Region boasts good regional and local connectivity despite the poor condition of some of the roads. The area is bisected by national roads, namely the N1, N12, N14 and the N3, and provincial roads, namely the R59, R53, R54, R57, R82, R42, R 551, R557, R553, R550, R549, R716, etc. These roads offer radial mobility in nearly all directions and allow for the easy movement of people, goods, and services in, out and through the Region.

Internal mobility is equally good, as efficient and effective movement occurs between centres, CBDs, nodes, employment areas, etc.

Connectivity is dominated by road transport, and although the rail infrastructure is available, rail operations are constrained at a national level, which has greatly impacted the railway's competitive advantage, causing much of the railway's transportation role to become absorbed by road infrastructure. For the purpose of this project, it is important to do connectivity planning around road transport rather than rail transport, as rail transport cannot, at this stage, deliver the needs of people and freight.

There is a definite opportunity to build on the Region's good connectivity, if not as a sector per se, then as an aid to stimulate other sectoral development proposals.

HIGHER EDUCATION: Providing higher education is another key opportunity that lies within the heartland of the study area. However, a growing economy will demand more and higher education. Thus, although the Region offers many schools and two tertiary institutions, this offering could be expanded to include specialised schools and technology-based colleges and universities where a more practical hands-on tertiary education could be attained.

Currently, there are two tertiary institutions in Vanderbijlpark. These institutions in one location present a good opportunity to create a student hub or village. This offering may be further improved if these tertiary institutions could offer subjects and courses in tourism management, agriculture practices and farming, mining, logistics, project management, etc. These skills would contribute to expanding the Region's people with much-needed skill sets and support local economic drivers.

COORDINATION: The local municipalities that fall within the study area are all SPLUMA compliant, and their land use policies and development plans generally align with one another. As such, these development plans can be aligned with each other, which means much has been achieved towards coordinated and integrated development, even across boundaries. This is a key opportunity that should be harnessed for the implementation of the VRRSDF, which will, in all likelihood require cross-border cooperation and coordination. This should also be important in approving land use development applications, particularly where cross-border inputs are required, and project municipalities should continue working together for the region's greater good. Further, as various overarching governing structures already exist, meaningful opportunities exist for efficient and effective interaction between the project municipalities to achieve on-the-ground implementation.

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3.10.2 Key Challenges

DEMISE OF THE VAAL RIVER: The most pertinent challenge for the RSDF is the imminent threat of losing the use of the Vaal River's water, which is in critical condition.

The Vaal River is a freshwater resource for more than 45% of South Africa's population. However, in 2021, the South African Human Rights Commission classified the Vaal River's water as unfit for human consumption, and more recently, in 2023, traces of cholera were found in it (Mail and Gurdian).

Currently, for the water of the Vaal River to be at an acceptable level for consumption and distribution via the urban piped network, it must be purified beyond the normal purification process. This process puts extra stress on the purification works, which could break down due to little or no maintenance, causing major health issues.

As the municipalities in the Region have significant economic growth potential that hinges on the river's health, the river's economic resource value could have shown a strong upward trajectory. However, due to this unsavoury situation, the Vaal River's economic resource value is tapering off.

The Vaal River is a national treasure that should offer various tourism, eco-tourism, active and passive recreational activities and major and minor development investment opportunities. Yet, none of these opportunities can be utilised due to the demise of the river system — with sewer accumulating on the banks of the River, with Inkberry, which is poisonous to livestock, growing on farms adjacent to the river, with it being unsafe to swim in or do water sports, and with the stench that renders all river properties unviable for growth-generating development.

The economic benefit lost due to the Vaal River's condition is almost immeasurable. This value is lost to the local and regional economies, causing a downturn in job opportunities and less income for municipalities. This, in turn, means less municipal funding for projects and, again, fewer job opportunities. This is a serious challenge, as the Vaal River should be a resource offering benefits and bringing untold economic multipliers.

POOR INFRASTRUCTURE: Another major challenge is the poor state of the infrastructure in the Region, which is becoming economically debilitating.

While the Region may have a large labour force and valuable economic drivers, these opportunities cannot come to fruition unless the infrastructure is fixed, upgraded and expanded.

Municipalities must provide and maintain infrastructure, which means considering all its components, such as sanitation, water supply, roads, stormwater, and electricity. Providing and maintaining such infrastructure should be seen as an ongoing commitment and investment in the future and prosperity of the Region's municipalities.

To make matters worse, South Africa must also deal with regular load shedding. The calculated impact of load shedding on the small business, manufacturing, mining, intensive agriculture, and logistics sectors and the associated job security is hard to grasp. This situation is made worse as the Region's economy is highly reliant on the primary and secondary sectors, where interrupted electricity supply is difficult to circumvent and where job and business shedding can, at any time, impact the Region's economy detrimentally.

Local and provincial roads are in a poor state, with potholes and unmaintained stormwater channels making the roads difficult and dangerous to navigate. These problems are specifically prevalent in the Region's economic heartland (on main roads, in CBDs, and in industrial areas), the exact areas where economic activity and growth should be promoted.

With poor infrastructure little or no development can be approved. For example, for land use development applications to be approved, whether for a bed-and-breakfast establishment or a new manufacturing site, applicants must indicate they have access to municipal services such as water, sanitation, electricity, roads and stormwater systems; if not, the application would be denied. The result is no approvals and therefore no development.

DECLINING ECONOMIC SECTORS AND UNEMPLOYMENT: The Region is known for its iron and manufacturing sectors. However, these sectors are declining and shedding employment of (mostly) unskilled and semi-skilled labourers. Unskilled or semi-skilled workers often do not have resources or alternatives to fall back on, making them socio-economically highly vulnerable. Within a region that already suffers from high unemployment, specifically among the youth, the knock-on effect of more unemployment is immense and could lead to regional downfall.

To address this key challenge, it is essential to intervene in existing and declining economic sectors to stimulate new sectoral developments. The goal should be to retain the Region's existing jobs and create a platform for new jobs. Where there are jobs, there is growth; where there is growth, there is social betterment; and where there is social betterment, there is more growth — with positive economic cycles come employment opportunities and social upliftment.

FRAGMENTED URBAN FORM: Another key challenge in the Region is the high demand for housing. The lack of housing supply has already led to the sprouting and growing of informal settlements in the Region, which has caused the urban form to become fragmented. To manage and maintain a fragmented urban form is generally more expensive than to plan for housing, as a fragmented urban form puts pressure on infrastructure supply and upgrades. The Region's challenge is finding and serving available land and providing for the housing demand.

POOR ADMINISTRATION AND ACCOUNTABILITY: The disorder of many of the Region's municipalities is a major challenge that has resulted in decaying and overburdened infrastructure and a total lack of service delivery. Due to poor governance and management, the decline can be seen in most of the urban areas and the hinterlands of the Region.

The task of the South African government is clear. It has to build, install and maintain roads, sewerage systems, water purification plants, water and stormwater systems, wastewater treatment works, power stations and sufficient power grids. These are the mandated responsibilities of the government. Once the government has fulfilled its constitutional duties, it is up to the private sector to establish businesses, build manufacturing sites, discover sectoral opportunities, take on new initiatives, start farming, build new townships, and develop tertiary educational institutions, etc. In this Region, getting the government to execute its duties has become a major challenge, limiting the private sector from exploring the Region's latent opportunities.



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4. SPATIAL DEVELOPMENT VISION AND OBJECTIVES

A key component of any RSDF is an approved and adopted vision and associated objectives. These are important for governance and management, considering land use development applications and development projects and principally directing the spatial plan itself.

The agreed-upon and accepted vision and development objectives for the Vaal River Region are discussed in the next section.

4.1 Spatial Development Vision

SPATIAL VISION

A spatially connected Vaal River Region actively driving progress and innovative development



Figure 10: Spatial Development Vision

The following core statements define the vision of the VRRSDF:

- To achieve functional spatial integration and development by protecting urban and rural resources and using and protecting the vast opportunities of the Region as equitable assets.
- To actively drive economic development and job creation by optimally utilising all urban and rural resources — all economic development and job creation opportunities are important to the Region.
- To ensure that the Vaal River Region governments urgently deal with the state of the Vaal River and implement all measures to restore it to health, including maintaining, restoring and enhancing all ecosystems to achieve the Region's sustainable economic and environmental development.
- To ensure that the Vaal River Region governments urgently re-instate, upgrade and expand all infrastructure systems.
- To ensure that the Vaal River Region drives inclusive socio-economic development, job creation and poverty alleviation.
- To achieve cooperative cross-border alliances and the development aims of the Region through good governance and to be consistent with the NSDF's transformation agenda.



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4.2 Development Objectives

Figure 11 depicts the agreed spatial development objectives.



Figure 11: Spatial Development Objectives

5. SPATIAL DEVELOPMENT PLANNING



5.1 Macro Spatial Structure

The status quo analysis clearly indicates that all of the study areas are not uniform and comprise unique and diverse subregions. Each subregion has its own composition, character, use, and spatial form. This finding reaffirms the results of the 2019 Feasibility Study and is important in formulating a spatial development concept and the spatial development framework.

The following distinct subregions have been identified over the entire study area:

- Vaal Urban Core Subregion
- Dome-Parys Subregion
- Vaal Dam Subregion
- Hinterland Subregion.

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5.1.1 Vaal Urban Core Subregion



VAAL URBAN CORE SUBREGION

The Vaal Urban Core is centrally located in the primary study area and comprises the southern part of Gauteng and the northern part of Free State that includes Meyerton, Vereeniging, Sebokeng, Evaton, Vanderbijlpark, Sasolburg and Zamdela. The area hosts an array of industrial and manufacturing activities, namely the steel and iron industries in Meyerton, Vereeniging and Vanderbijlpark, the petrochemical industries in Sasolburg, and the R59 manufacturing corridor in Meyerton linking through to Alberton. This subregion is the economic heartland of the study area.

The status quo analysis indicated that this area has:

- the highest population density;
- the highest concentration and distribution of informal dwelling units and housing projects;
- the highest proportion of land used for economic activities with its land cover dedicated to residential development, industrial use, commercial use and roads;
- a significantly large concentration of municipal economic development projects, including commercial, industrial, mining, and residential;
- the highest proportion of GVA at current prices, growth of GVA, and GVA per capita (except for Deneysville, which also shows a high ranking);
- the highest proportion of crime rate with a leaning towards Midvaal, Three Rivers and the Vaal Dam, which are also the areas with the highest household income, i.e., greater affluence;
- the highest and second highest levels of literacy and higher education, which can in part be ascribed to the tertiary education institutions in Vanderbijlpark;
- the highest ranking for towns with most of the sub-area comprising 'Urban Core' which ranks higher than regional anchors;
- the least socio-economically vulnerable areas; and
- extreme unemployment disparity with one portion having the lowest unemployment rate and another portion having the highest unemployment rate — which is characteristic of urban concentration areas in South African cities.

The Vaal Urban Core Subregion is unique in its composition. It is mostly urbanised and commercialised and is the heartland of the study area. Its central positioning is beneficial for improved accessibility, proximity and integration and it has a good radial transportation framework that can support regional integration and connectivity.

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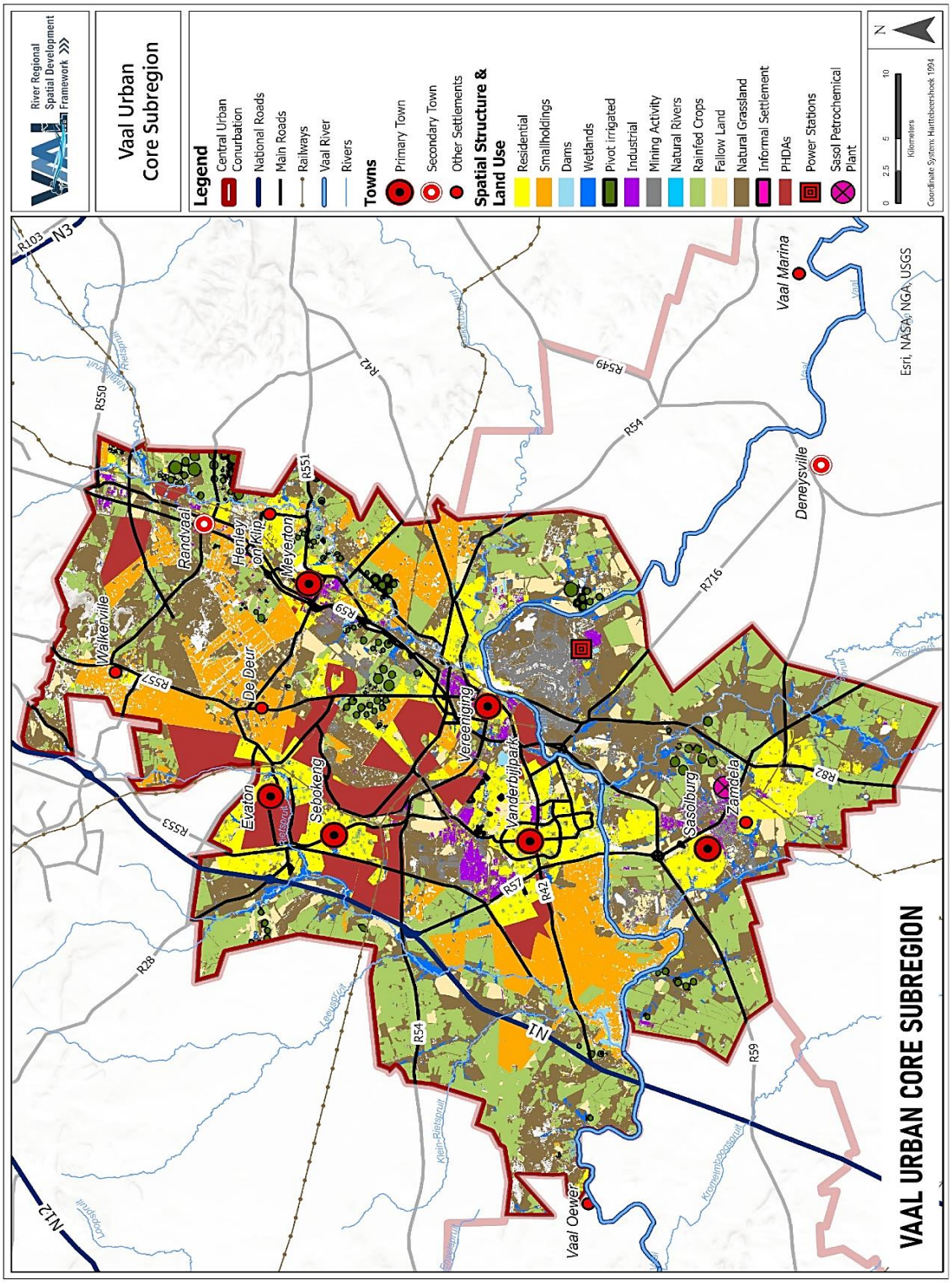


Figure 12: Vaal Urban Core Subregion

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5.1.2 Dome-Parys Subregion



DOME-PARYS SUBREGION

This subregion is located on the western boundary of the primary study area and straddles the Free State and North West provinces, with a small area forming part of Gauteng province. It includes the Vredefort Dome, Parys and Vredefort town and their hinterlands, and parts of the Vaal River. The subregion's prime components are conservation, tourism and agriculture.

The status quo analysis indicated that this area:

- has the highest undulating topography, which is an outcome of its dome formation that has produced scenic landscapes, and ideal opportunities for tourism, eco-tourism and recreation-based tourism;
- has a moderate annual rainfall (1200 mm) which supports crop farming and the natural landscape creating wooded areas along the ridges and fertile land in the valleys;
- has a dome area that is a protected world heritage site which, due to this status, faces few threats or vulnerabilities. This status has also afforded the subregion strength in protecting other conservation-sensitive areas in the Region;
- has natural agricultural land classified as a grassland biome. As for biodiversity and ecosystems, the area exhibits an ecological support zone, very little modified and degraded areas (only to the east of the Vaal River), natural areas, ecological corridors, the Dome World Heritage Site and critical biodiversity areas;
- has residential developments that are concentrated in Parys, Vredefort and the Vaal Oewer, with a low overall population density that is the highest in Parys;
- has Parys and Vredefort as registered rural service centres;
- has a population with moderate literacy and higher education and relatively low unemployment since most of the rural areas are actively used for rural-related land uses;
- has moderate to high land capability, with commercial agriculture blended with tourism uses; and
- forms part of an identified renewable energy or power corridor that sets this subregion apart from the rest of the study area.

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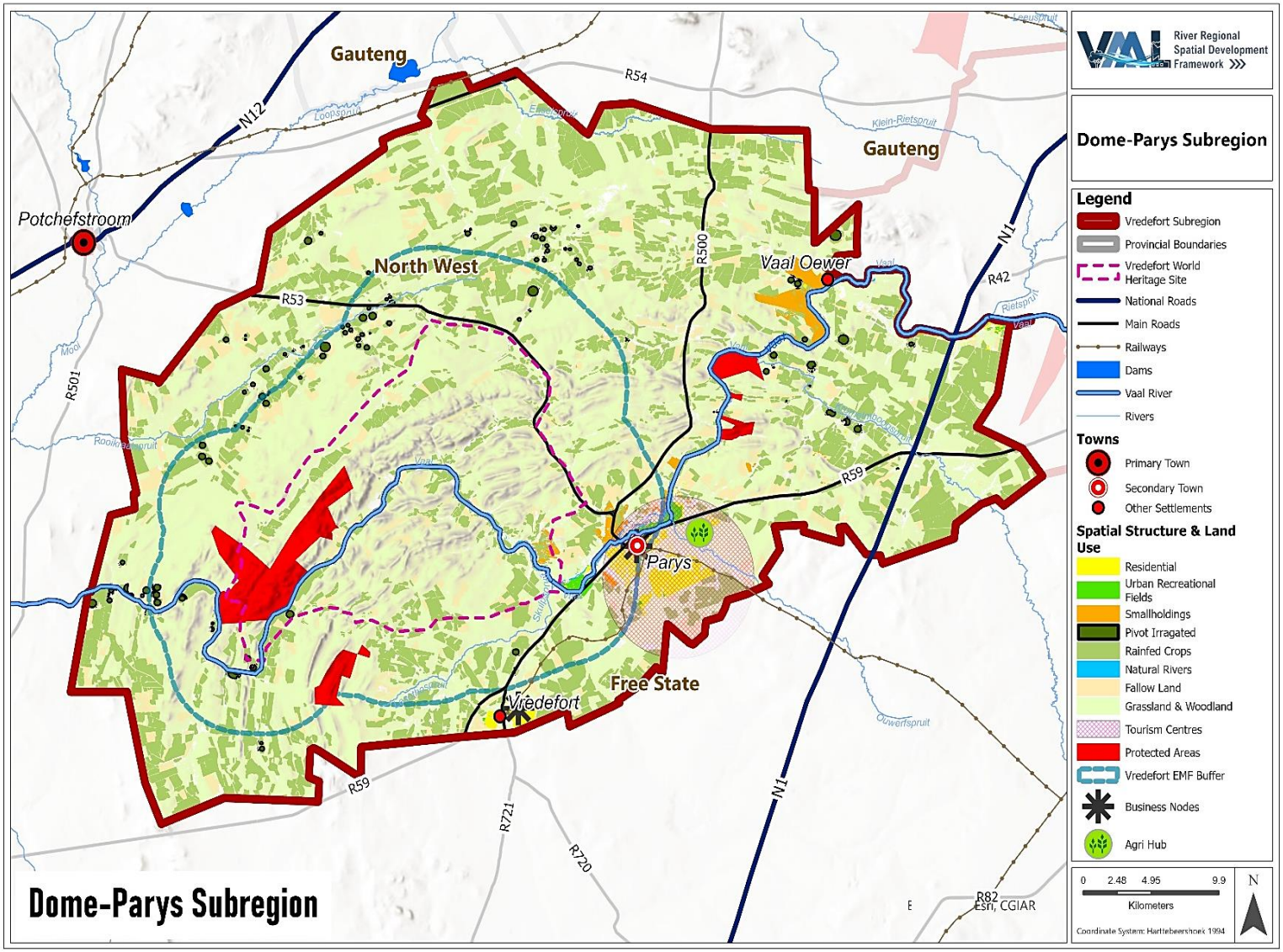


Figure 13: Dome-Parys Subregion

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5.1.3 *Vaal Dam Subregion*



VAAL DAM SUBREGION

At the heart of the Vaal Dam Subregion is the Vaal Dam covering a 320 m^2 surface area. The Vaal Dam is critically important; both environmentally and as a water-supply resource to the study area and all of Gauteng province. This subregion includes the towns of Vaal Marina, Deneysville and Oranjeville which are all located on the shores of the Dam. The subregion also includes the town of Villiers, which is located on the N3 along the Vaal River. The area's hinterland is agricultural land. Most of this area falls in the province of the Free State, though a small part is situated in Mpumalanga province.

The status quo analysis indicated that this area has:

- some undulating topography, but most of the land is accessible and suitable for general farming practices which coincides with its land capability that is low to moderate and its economic land cover which designates the area for agriculture combined with natural land and residential purposes;
- vegetation comprising mostly natural grasslands and agriculture, which includes significant commercial pivot irrigation/farming (especially around the southern parts of the Dam) but also rainfed commercial cultivation. This area has little fallow land as most of the subregion is commercially farmed;
- ecosystems that are not under threat or vulnerable because the land is already used for commercial farming, and the scenic areas along the northern boundary of the Vaal Dam are already protected, although not specifically or officially as conservation areas;
- economic development projects focused on the tourism and commercial sectors as they provide better opportunities;
- a general population with a high household income around the Dam and nearer to the central conurbation and low heading east;
- moderate to low literacy levels and a low population density;
- low-ranking towns within the subregion supported by higher-order rural service centres outside the subregion and few built-up areas around Deneysville, Vaal Marina, Oranjeville and Villiers, while most of the land is covered by cultivated crops, grasslands, and water bodies. Of these towns, Villiers is the most developed featuring the most high-order services, facilities, amenities and infrastructure;
- the most diversified economy and lends itself to tourism facilitation and development, industrial and agri-industry development, and logistics opportunities; and
- biodiverse ecosystems, ecological support zones, modified and degraded areas, natural areas, and ecological corridors, but no protected areas.

While the Vaal Dam and Dome-Parys Subregions have many similar attributes they are fundamentally different in their role distribution between farming, conservation, recreation, tourism and eco-focus. In short, the Dome-Parys Subregion has a far greater prevalence for tourism and eco-tourism supported by agriculture, while the Vaal Dam Subregion has a greater prevalence for agriculture, and in that commercial agriculture, supplemented by tourism and water-based recreation and/or tourism.

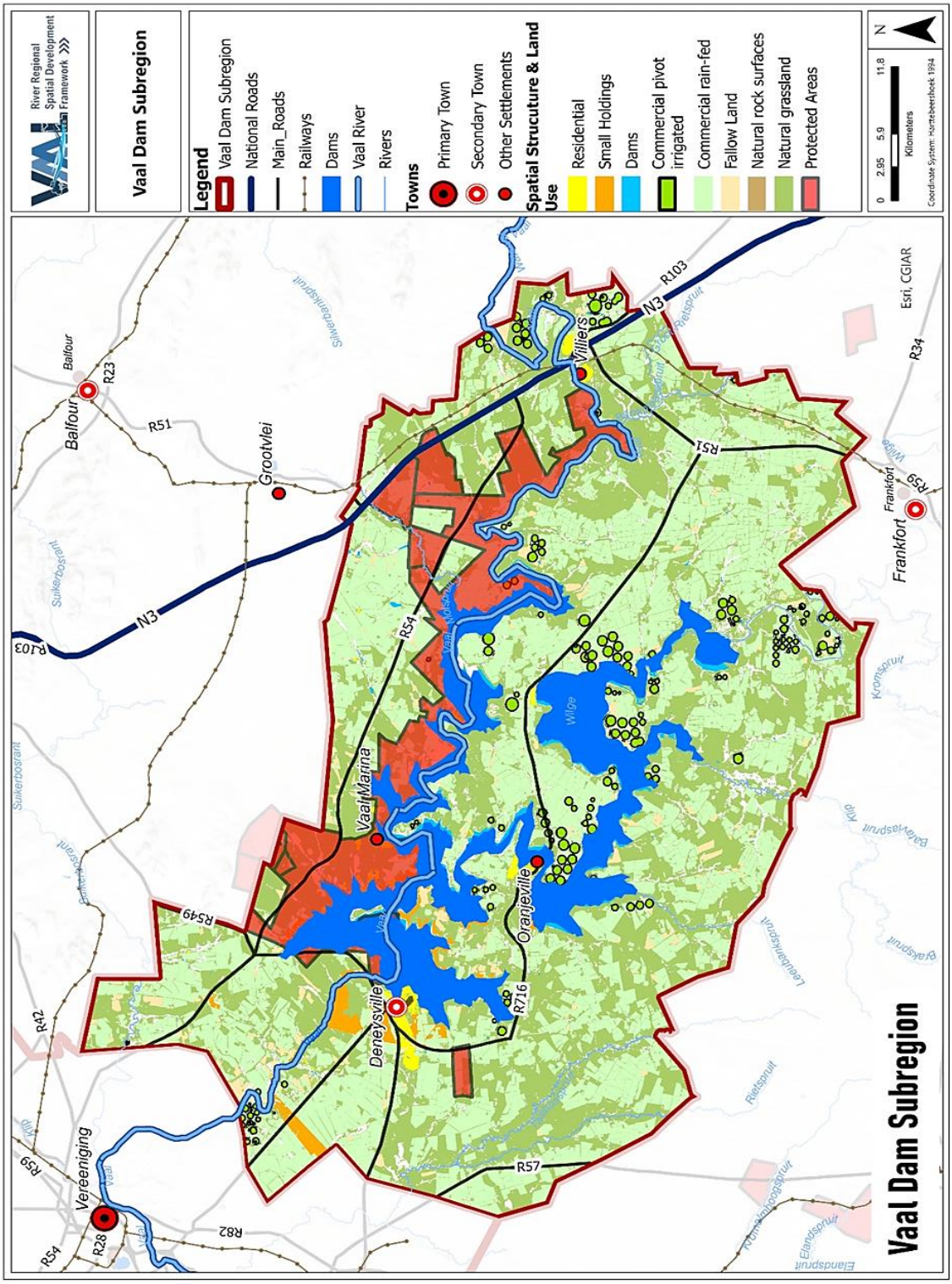


Figure 14: Vaal Dam Subregion

5.1.4 Hinterland Subregion



HINTERLAND SUBREGION

The fourth subregion is broadly defined and referred to as the Hinterland. It constitutes all of the areas outside of the other three subregions but that is still within the boundaries of the secondary study area. It is a considerable area that largely comprises rural land intercepted by rural service centres of varying sizes. There are three major towns in the Hinterland, namely Potchefstroom, Kroonstad (Maokeng), and Ventersdorp. They each function in their own right and play their roles in supporting their rural landscapes which areas are also supported by a host of smaller service centres scattered throughout the subregion.

What makes the Hinterland subregion different from the Dome-Parys and Vaal Dam subregions is that the Hinterland's prime land cover, biome and land capability is only focused on agriculture. With a generally flat landscape, the prominent land use activity is commercial farming. Tourism, recreation, eco-tourism and water bodies do not prevail as they do in the other more rural subregions. Should the climate, rainfall and agricultural potential of this subregion stay consistent the Hinterland's land use is destined to stay the same. Considering that agriculture is a national priority the South African government will most probably ensure that this subregion remains protected for agricultural production.

The Hinterland's impact on the primary study area is less significant than the other three subregions essentially because of its singular land use and because of its detachment from the Vaal River. Thus, while the three major towns in the Hinterland (Kroonstad, Potchefstroom and Ventersdorp) support their areas, play influential roles, and are destined for development based on their municipal spatial development frameworks, these towns do not add meaningful value to the VRRSDF. It is for this reason that the other three subregions were drawn out as leading areas as they will undoubtedly shape the outcome of the VRRSDF.

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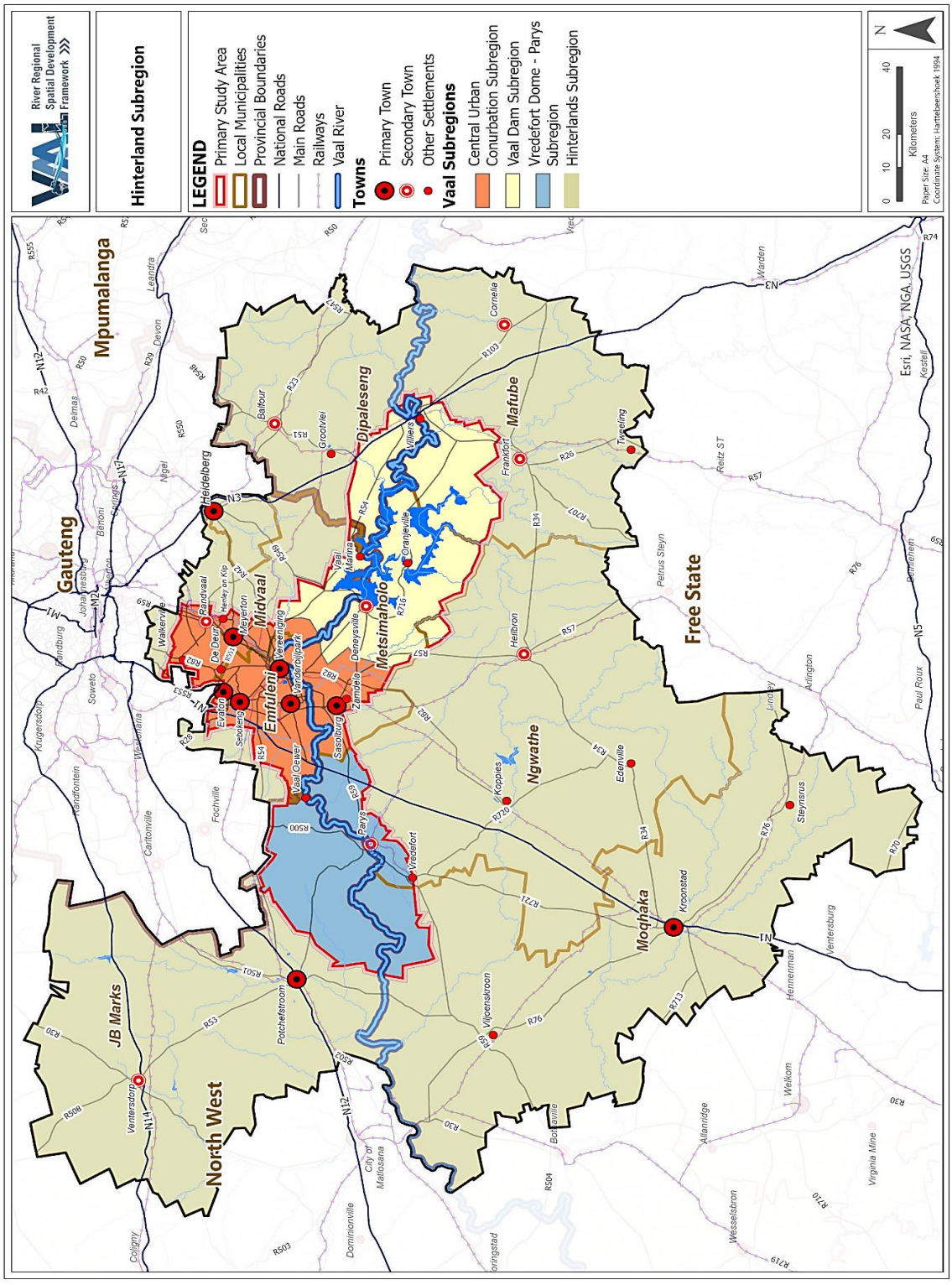


Figure 15: Hinterland Subregion

5.2 Spatial Planning Principles

Based on the status quo analysis, its findings, the key opportunities and challenges, knowledge of good spatial planning, and the desire to attain the best outcomes for the Vaal River Region, the following Spatial Development Principles were assembled to guide the VRRSDF.



Figure 16: Five Spatial Planning Principles

There are **planning principles**:

- Institutional management
- Growth focus
- Connectivity
- Concentration
- Conservation

These spatial planning principles are relevant to the entire study area, particularly the three primary subregions. To ensure that all proposals are focused on what is good for the Region, these principles must underpin each decision and each project moving forward.

Each spatial planning principle is unpacked in the next section.

5.2.1 Institutional Management

Good institutional management is vitally important and is key in determining the success of the entire VRRSDF. It has been illustrated to encapsulate the other spatial principles, giving it a higher ranking.

The status quo analysis found that governmental management is generally lacking, institutional capacity is limited, and most municipalities are in disorder. Across the Region, this state of affairs is evidenced by the deterioration of municipal infrastructure, such as waterworks, sanitation, roads, electricity, social services, pollution, etc.

Good institutional management is the golden key that will unlock the Region's potential. However, to ensure good institutional management, the government must be assisted to enable it to deliver on its mandated tasks. The private sector must be able to act on the area's latent opportunities to produce development and the much-wanted and urgently needed economic growth.

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The entire study area, which translates to portions of four provinces, four district municipalities, and nine local municipalities, must be examined for issues such as financial distress, lack of capacity, poor management, etc.

5.2.2 Growth Focus

To ensure livelihoods, social betterment, good quality of life and more, it is crucial that there is economic growth. When considering the upliftment of its citizens, no other factor has such an incredible multiplier effect and positive impact. Economic growth creates jobs; jobs improve people's lives allowing for greater choice and better quality of life. It increases the rate base, which helps the government to meet its responsibilities, improve engineering and social infrastructure, and the health and welfare of its citizens. Jobs lead to social betterment and reduce crime and instability.

Therefore, the absolute need to achieve economic growth as widely as possible is fundamental to the approach. This means not negating one sector over another or being uninterested in small-scale activities. Any growth at any scale is beneficial for the Region. Thus, as long as the growth fits into its social, economic, and environmental surroundings, it should be encouraged.

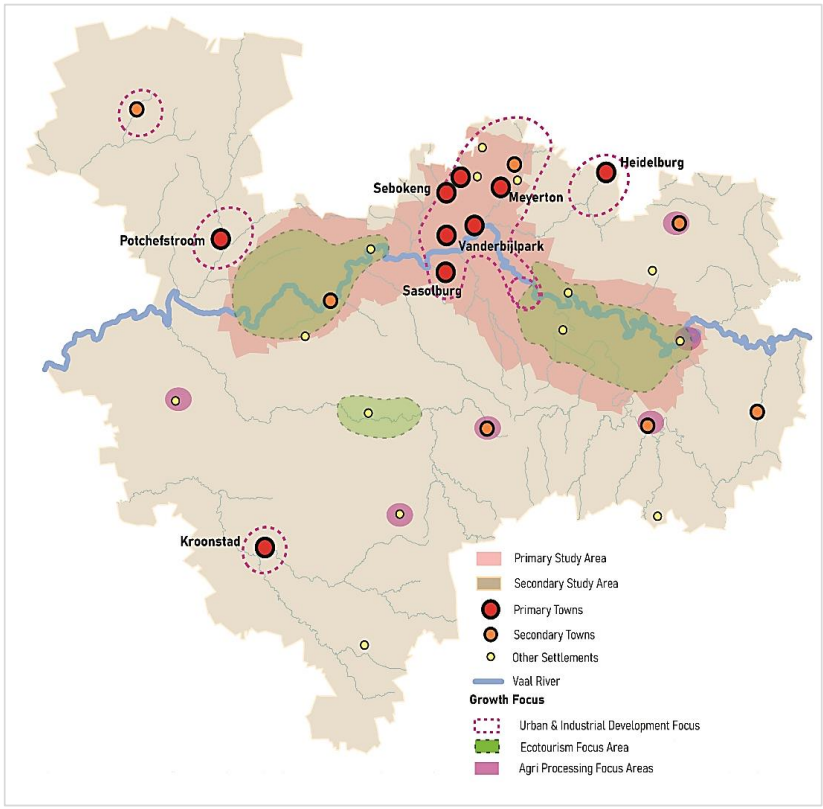


Figure 17: Concept: Growth Focus

The growth focus of the Vaal Urban Core is easy to understand as it refers to the industrial, commercial, retail, corridor, and other kinds of development. However, this approach means there is value in developing, for example, a crèche, nail bar, barber shop, tavern, home office, home industry, etc. There is also value in residential development, formalising land and providing housing, etc. Such developments also achieve growth, provide jobs, and expand the region's tax base.

Growth focus is also important in the Dome-Parys and Vaal Dam Subregions, although their growth focus differs vastly from that of the Vaal Urban Core

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Subregion. Here, industrial, corridor and large-scale residential developments are undesirable, but tourism, eco-tourism, water-based tourism, agri-parks, agri-villages, commercial farming, etc., are desirable and advantageous in affirming the subregions' character and content.

5.2.3 Connectivity



Connectivity can be described as the 'veins' that sustain life in the Region. It ensures that all relevant components are physically or virtually connected to achieve integration, efficiency, growth and development. Connectivity within and beyond the subregions enables functionality as it enables the flow of people, goods and services. With connectivity, neighbourhoods are connected to business areas, people to jobs, children to schools and learning, and the sick to healthcare — it is about making resources accessible to residents.

The Region is well-connected nationally, regionally, and locally through good regional transport routes. However, these connections are under threat due to the deterioration of the infrastructure. This regression must stop, and efforts must be made to expand and improve connecting infrastructure, particularly in the light of the Growth Focus spatial principles. Whether small or abundant economic growth is attained, connections to the rest of the Region and beyond are essential.

It should be noted that connectivity does not only refer to roads, although roads are the major life-carrying veins of this Region; connectivity also refers to rail, public transport, air linkages, telecommunications, etc.

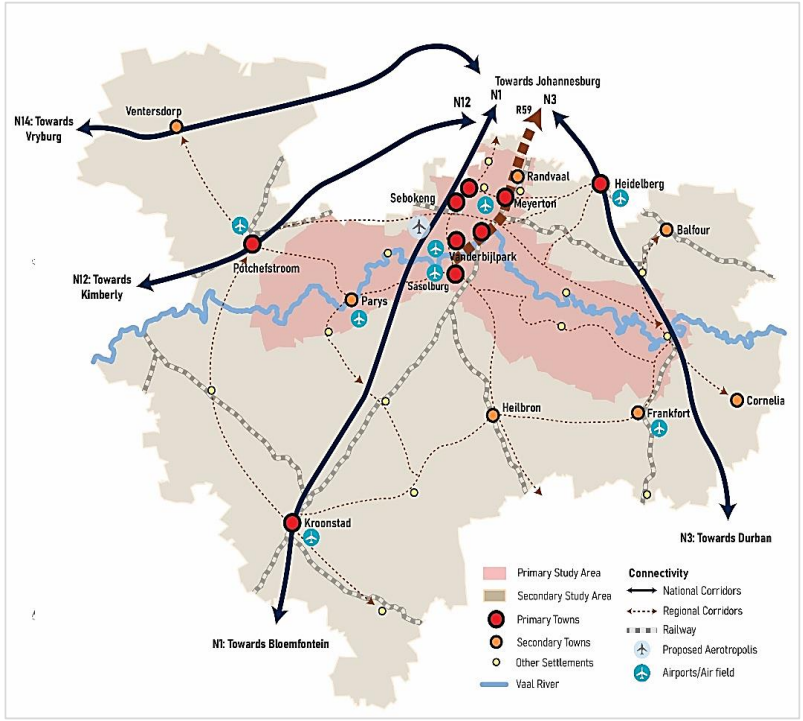


Figure 18: Concept: Connectivity

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5.2.4 Concentration

Economic growth, good connections and viable service rendering are best achieved in areas of concentration. Expansive and low-density areas are difficult and expensive to service. Creating backward and forward linkages to such low-density areas is also difficult, making them less efficient.

Concentration goes way beyond the notion of residential densification; concentration extends to creating economic clusters, tourism hubs, agriculture zones, mining areas, etc. It is about grouping and clustering to attain focused service delivery, growth, and connections. Concentration is further about servicing the right land, providing housing in the right areas, and integrating the marginalised into urban society. It is also about reinventing decaying CBDs, protecting rural areas, and conserving prime resources. Finally, concentration is about abiding by defined settlement hierarchies to avoid urban spillage, transgression of urban development boundaries and expanding urban areas beyond what is financially feasible for the municipality or Region.

Concentration facilitates public transport, social service delivery, and efficient engineering services as it achieves the critical mass needed.

Concentration is also relevant to rural areas where concentrated tourism facilities can be achieved, which could create a clear tourism route. The concentration of agri-projects can further lead to the creation of viable agri-processing sites, whereas the concentration of overnight accommodation can lead to focused eco-conference facilities and venues. With concentration comes mass, which encourages a higher level of development while protecting the larger area from unwanted intrusion. (However, at some point, some intrusion is necessary to achieve the desired outcome of concentration.)

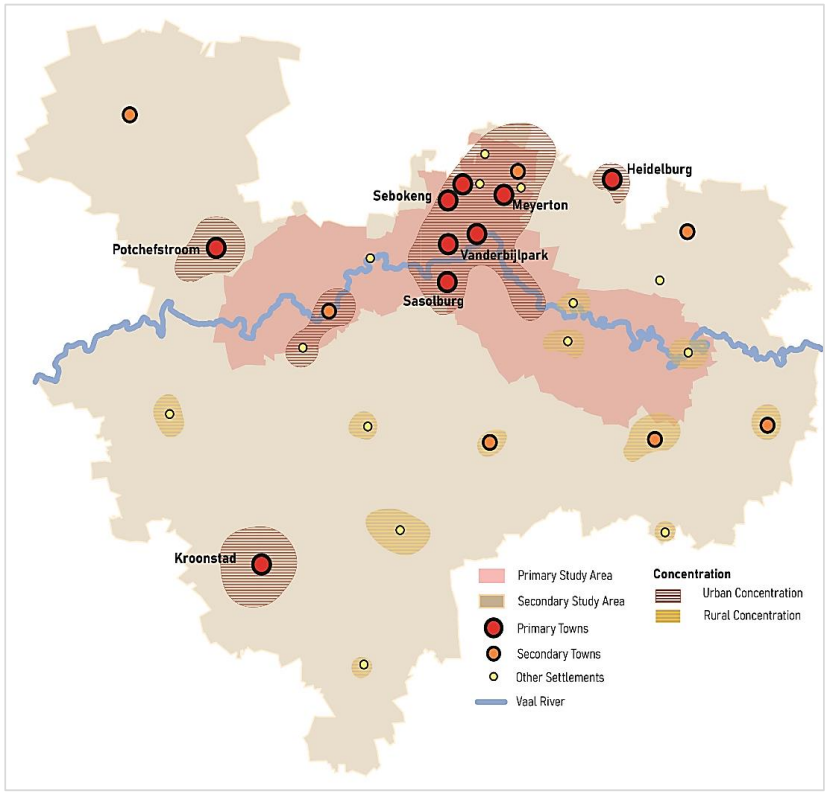


Figure 19: Concept: Concentration

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5.2.5 Conservation

Conservation should be a primary responsibility for all municipalities in this Region. The Vaal River is a national priority, the Vaal Dam is a national life-sustaining resource, and the Vredefort Dome is a recognised World Heritage site. These resources and all associated matters should be protected because of their incredible and irreplaceable value.

Moreover, their preservation has direct economic growth benefits for the entire project area, particularly the two rural subregions. Conservation will also force desirable concentration, in particular in the Vaal Urban Core.

Conservation, however, extends beyond tourism and natural or ecological resources, it extends to conserving and expanding viable agriculture in the face of ever-growing food insecurity, to conserving the urban economy that presently exists, to protecting that which is unique to the area, such as Sasol's refinery and the dwindling steel industry. Conservation stretches across sectors and is multi-faceted. Therefore, conservation is relevant to all three subregions and should thus be actively driven.

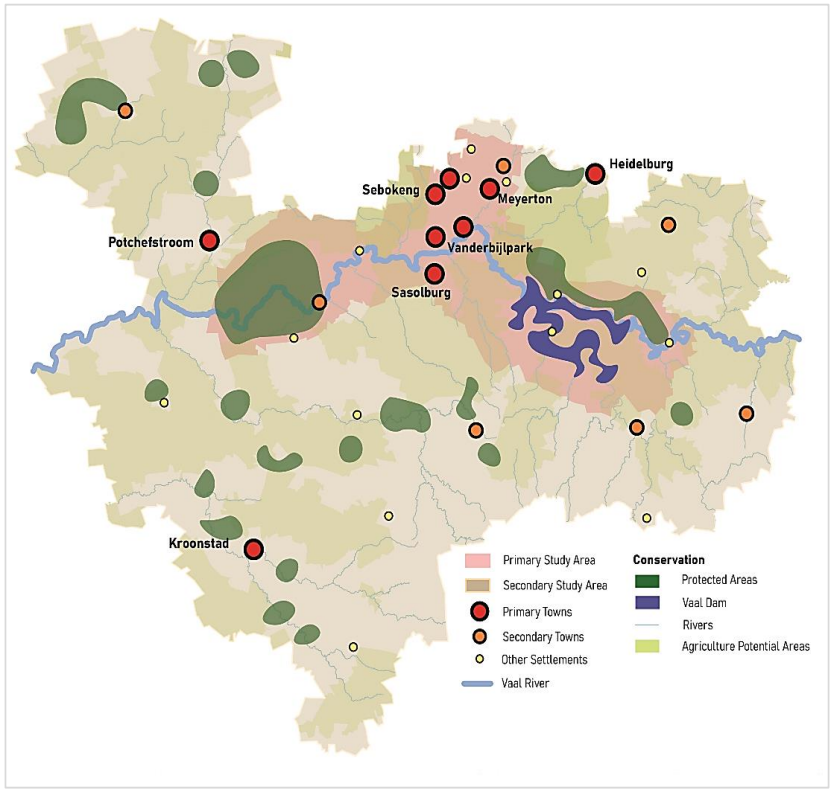


Figure 20: Concept: Conservation

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5.2.6 *Compliance with SPLUMA Principles*

The SPLUMA principles contained in Chapter 7 of the act are summarised below:

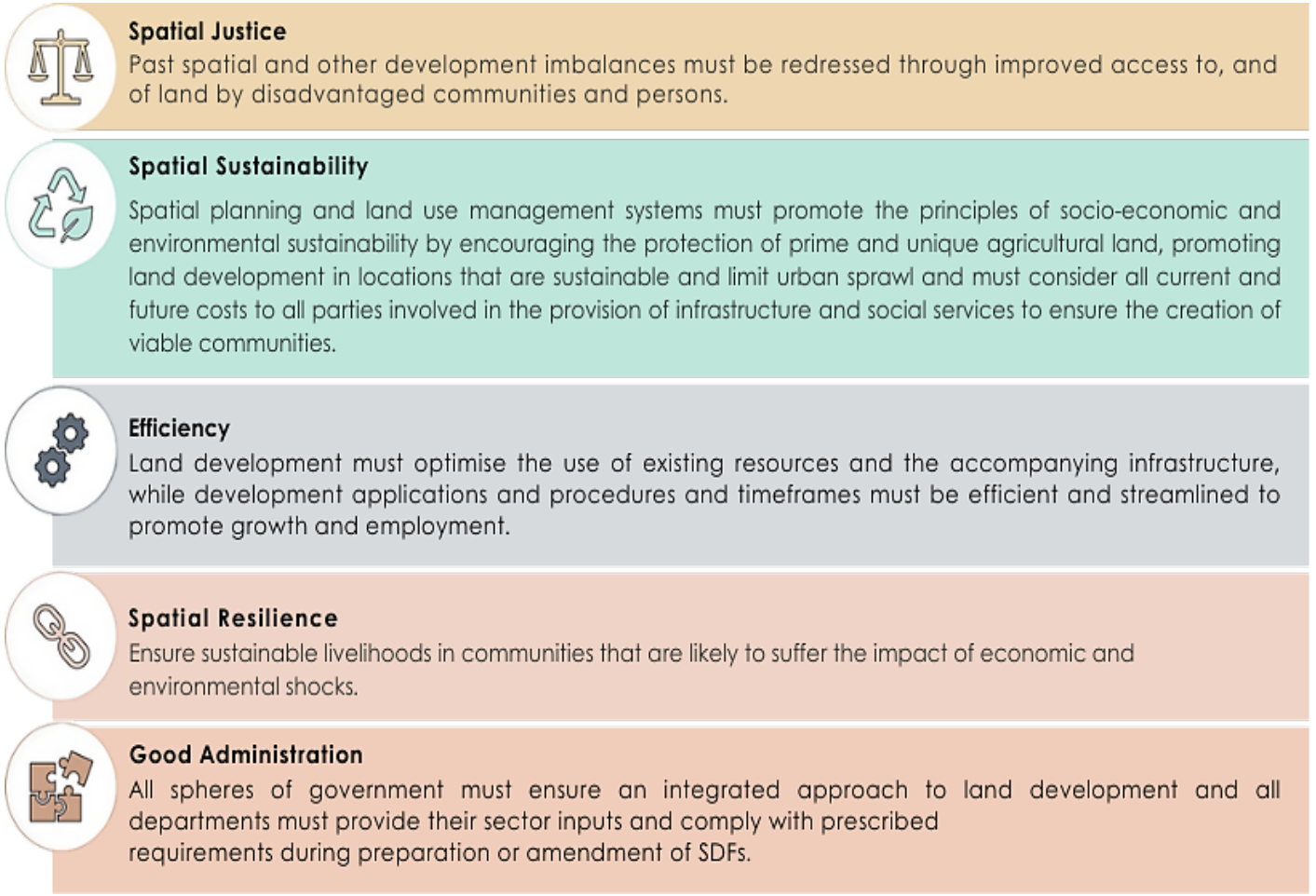


Figure 21: Summary of SPLUMA Principles

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Table 6 is a simple matrix that illustrates that the VRRSDF's spatial planning principles align with the five SPLUMA principles and will achieve the desired outcome of good spatial planning.

Table 6: Alignment with SPLUMA principles

SPLUMA PRINCIPLES / APPROACH LEVERS	SPATIAL JUSTICE	SPATIAL SUSTAINABILITY	EFFICIENCY	SPATIAL RESILIENCE	GOOD ADMINISTRATION
Institutional Management					●
Growth focus	●	●	●	●	
Connectivity	●	●	●	●	
Concentration		●	●		
Conservation	●	●	●		

5.3 Spatial Development Concept

The spatial development concept for the Vaal River RSDF has been derived by:

- incorporating the regional context of the Vaal River Region;
- incorporating the spatial planning principles (growth focus, connectivity, concentration and conservation); and
- linking to the broader themes and the spatial context of the NSDF.

Within the context of the abovementioned inputs, the spatial development concept establishes the following key building blocks:

- Strong and functioning nodes in urban concentrations that are well connected with corridors and linkage systems at a regional level, offering a wide range of high-order services, goods and opportunities combined with integrated residential areas supported by various housing typologies.
- Inner-urban connectivity that remains critical along all urban corridors/roads to ensure the free movement of people, goods and services, to safeguard that the subregions can remain economically competitive with the Gauteng City Region.

- In regions with a rural character, the spatial context is built around a single urban node that offers a meaningful range of high-order services, goods and opportunities combined with integrated residential areas supported by various housing typologies. These nodes provide rural support for the farmlands that surround them. There are several nodes for each rural subregion, however each node has a catchment area it supports. These nodes are functionally integrated with the rest of the Region through corridors and linkage systems.
- A diverse combination and concentration of strategic national-, regional- and local-focused economic activities that create, strengthen and maintain well-being, inclusive economic growth and the regional economy.
- The spatial concept establishes a network of distinct (and historically often administratively and politically independent) towns and nodes with strong, complex and unique interrelations linked to a resource base that is well connected and supported through infrastructure.
- Often associated with each town, especially in the rural areas, are supportive tourism facilities or opportunities. By achieving rural connectivity, these rural tourism hubs also become connected, supporting tourism development and the creation of tourism routes/meanders.

The Vaal River RSDF spatial development concept emphasises the need for a functional and logical spatial structure based on incorporating:

- functional regions within the context of the primary and secondary study area;
- a hierarchy of towns with a primary, secondary and other settlement ranking within the functional regions as per the NSDF;
- the common physical attributes in the Vaal Dam and the Vaal River System;
- a high level of connectivity with national and regional corridors supported by rail;
- a concentration of urban and industrial development, eco-tourism and agri-processing activities;
- functional urban concentrations and functional rural concentrations; and
- a pristine and unique natural resource base.

The spatial development concept delivers a balanced approach to focus development that is supported by managed growth and intensification at strategic locations, which is determined by the principle of proximity. The greater the proximity of a location to major employment nodes or functional linkages, the greater the need for concentration and agglomeration, which is linked to densification and intensification. Densification and intensification are direct functions of proximity to and accessibility of employment and functional linkage opportunities.

Areas not close to major centres or functional linkage opportunities are then developed at lower intensities, not disregarding any local opportunity to the benefit of the local population. This allows for greater diversity in terms of development typologies across the regional context. These principles, moreover, align with the planning parameters put forward by the NSDF and NDP.

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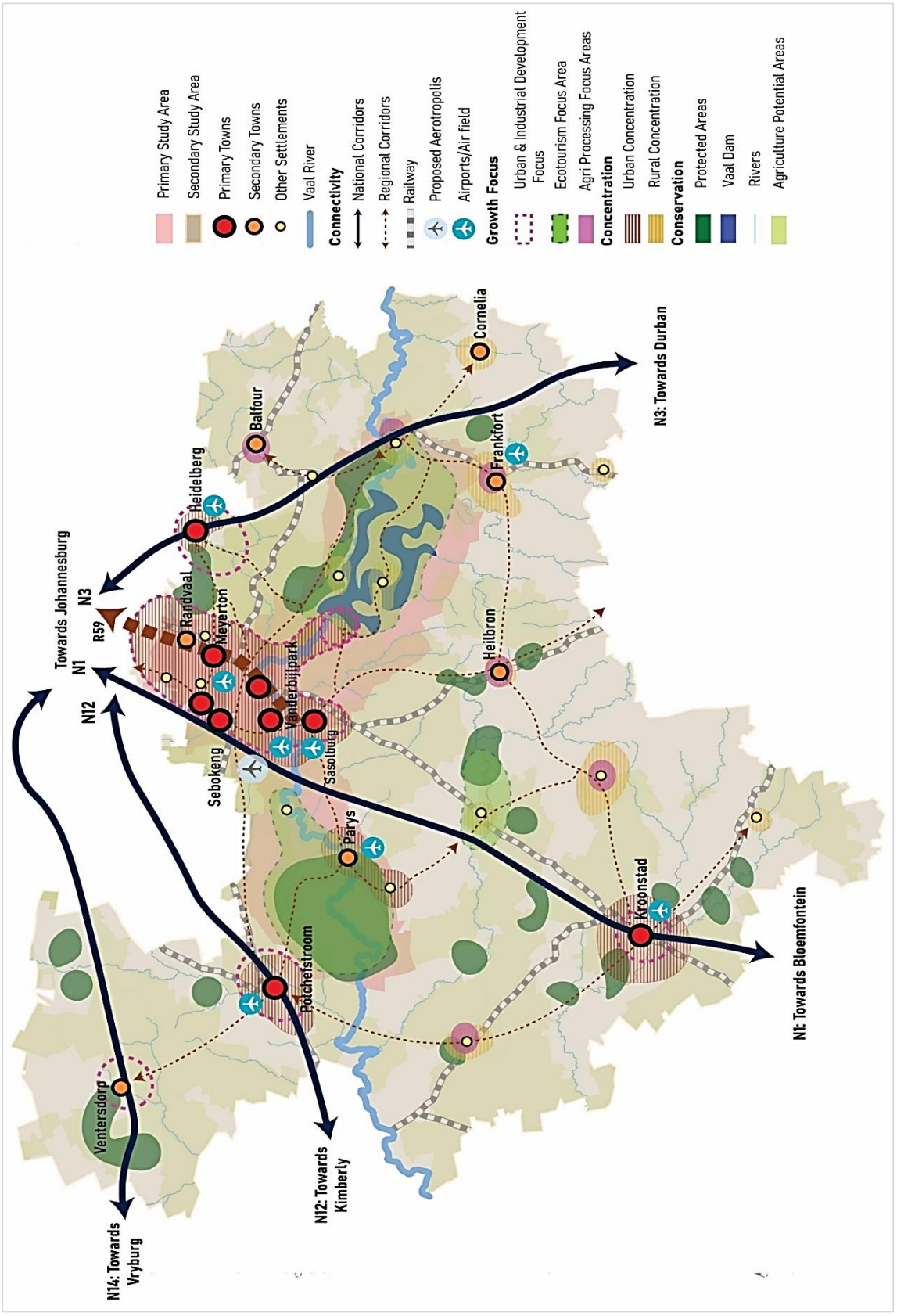


Figure 22: Spatial Development Concept

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5.4 Linkages with Theory of Change

The Theory of Change (ToC) is an approach to planning and evaluating activities that aim to deliver identified long-term changes or outcomes, leading to a specific development change (vision). The ToC identifies the cause of problems that hinder progress and guides decisions as to which approach should be taken to attain the desired change. A ToC approach also involves the underlying assumptions, opportunities, and threats that are critical to achieving the desired planning change, which are identified and revisited throughout the planning process to ensure the desired planning outcomes (vision) can be achieved. Importantly the ToC approach considers the respective comparative advantages across economic sectors, spatial regions, municipalities, and districts, natural resources, and social infrastructure, the feasibility of certain outcomes and the potential uncertainties that may arise as part of the spatial planning change process.



The ToC process involves three stages:

- Identify desired long-term outcomes and articulate the assumptions associated with these outcomes
- Identify the necessary intermediate outcomes to deliver the required spatial change by using a 'backwards mapping' technique to understand the pathway to spatial change.
- Identify the interventions or activities required to deliver the identified outcomes.

The ToC process generates a visual map of the relationships between the vision, objectives, outcomes, and actions and articulates all assumptions about how interventions will generate the desired outcomes. Articulating these assumptions means that they can be tested, and where no causal relationship can be evidenced, more appropriate interventions or pathways to change are considered. In this way, the ToC provides a framework for evaluating spatial development impact by making explicit the relationships between activities and desired outcomes and by describing the 'chain of events' that relates one outcome to another.

The ToC for the VRRSDF largely focuses on taking advantage of the Region's natural, spatial, social, economic, and institutional endowments and resources while acknowledging the challenges that must be overcome. The overall goal is to transition towards achieving spatial transformation through robust, sustainable, innovative, and inclusive spatial development interventions. The developmental approach and ToC for the Region is premised on four main levers:The first lever aims to CONSERVE the Region's endowments (for example, fertile land, rivers, wetlands, fauna and flora, agriculture, and people) by identifying and unlocking the region's socio-economic development potential. In doing so, identifying key assets and natural resources that form the region's competitive advantage through which economic development and spatial transformation can be catalysed. This encourages investment to be focused and directed towards spatial locations and key interventions that are more likely to yield a return on investment and longer-term benefits for the economy and people of the Region.

- Once the endowments are identified and leveraged, the second and third levers should focus on CONNECTIVITY and CONCENTRATION. Through the process of connectivity and concentration, the potential of the Region's resources is converted to tangible outputs and outcomes. The veins that connect people, places, and profits are supported through clustering to expand focused service delivery, economic growth and multi-purpose networks. Critical to the connectivity and concentration levers is the investment in the region's human capital, which should allow for a strong skilled and semi-skilled labour force to participate actively in the region's economy. These levers include investment in road networks and other transport links such as rail, air, public transport and infrastructure such as information technology (ICT) platforms, telecommunications, and finance.
- The fourth lever recognises that the Region should then progress into a GROWTH trajectory where established economic sectors and industries attract further investment, create more job opportunities, and generate meaningful urban-rural integration and development.
- The fifth lever recognises that all spatial development interventions should be underpinned by GOOD GOVERNANCE, ensuring transparency, efficiency, and ethical decision-making.

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6. SPATIAL DEVELOPMENT FRAMEWORK

The Vaal River Region Spatial Development Framework (VRRSDF) provides spatial development directives to specifically guide the spatial development of the Region. The proposals are prepared at a regional level and do not address site-specific or cadastral issues. Accordingly, these proposals should be read together with the municipal SDFs and any local SDFs that may exist.

The VRRSDF abides by all national plans and policies and, therefore, should carry weight in directing development on the ground. It is not the intention that the VRRSDF overrides or conflicts with the municipal SDFs, but if there is conflict between the VRRSDF and a municipal SDF, the proposed development should be assessed and reasoned based on the spatial planning principles that form the building blocks of the SDF.

Development is an absolute necessity for the Region, and all municipalities should make every effort to accommodate development and job creation. This means municipalities should find ways to accommodate and approve applications and accept innovation, provided the long-term sustainability of their area is secured. Here municipalities may have to divert from their normal development standards to approve applications that are off-the-grid in respect of electricity, water and sanitation if it is sustainable and if that is what it takes to secure development and job creation. This will most probably require amendments to their by-laws and land use management schemes, which should be developed in their SDF review processes.



The VRRSDF comprises a composite plan that draws everything planned and envisioned for the Region together. However, it is discussed in the four functional subregions and in accordance with the spatial development principles discussed in detail in the previous section. This is done to ensure that the VRRSDF adheres to the planning approaches and principles that have been followed from the planning process.

6.1 Dome-Parys Subregion



DOME-PARYS SUBREGION

The key spatial components of the subregion are:

- The Vredefort Dome Zone
- Conservation and Tourism Zone
- Agriculture and Tourism Zone
- Growth Containment Zone

The Dome-Parys Subregion is dominated by its rural landscape, which mainly comprises protected natural areas and agricultural land. The protected natural areas are generally associated with the Vredefort Dome World Heritage Site and its buffer zone. Agriculture is widely practised, mostly commercial, and centred around crop and livestock production. The two primary towns of this subregion are Parys and Vredefort, which are both located along the R59. The subregion is bisected by the Vaal River, an invaluable resource of the area. Parys and Vaal Oewer are located next to the Vaal River and have numerous tourism and accommodation establishments. Pollution of the Vaal River profoundly threatens this subregion's tourism, recreation and agricultural activities, all of which are essential economic resources for the subregion.

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DOME-PARYS SUBREGION at a glance

Affected Municipalities

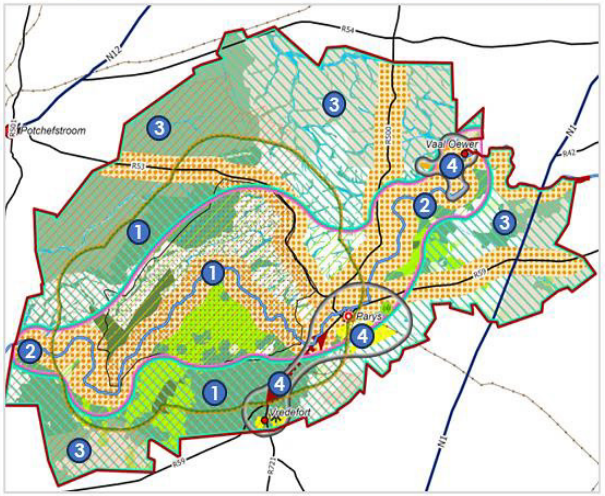
Moqhaka, Ngwathe (Free State), JB Marks (North West), Emfuleni (Gauteng)

1 902 sq km Area	2030: 55 192 2050: 48 946 Estimated Population	Agriculture, Tourism, Government Services Key Economic Sectors

Development Opportunities/Prosects

- Nature based tourism
- Adventure & water sports
- Renewable energy development
- Agriculture & processing
- Rural & agric. business
- Higher edu., innovation, & research
- Regional connectivity
- Human capital & skills development
- Country estate/leisure housing

Spatial Components



1. Vredefort Dome
2. Conservation and Tourism Zone
3. Agriculture and Tourism Zone
4. Growth Containment Zone

Development Challenges

- Lack of economic diversification
- ICT coverage gaps
- Lack of public transport
- Water pollution
- Stressed water resources
- Housing and service gaps
- Poor infrastructure maintenance
- Unemployment & population decline
- Climate change & disaster threats

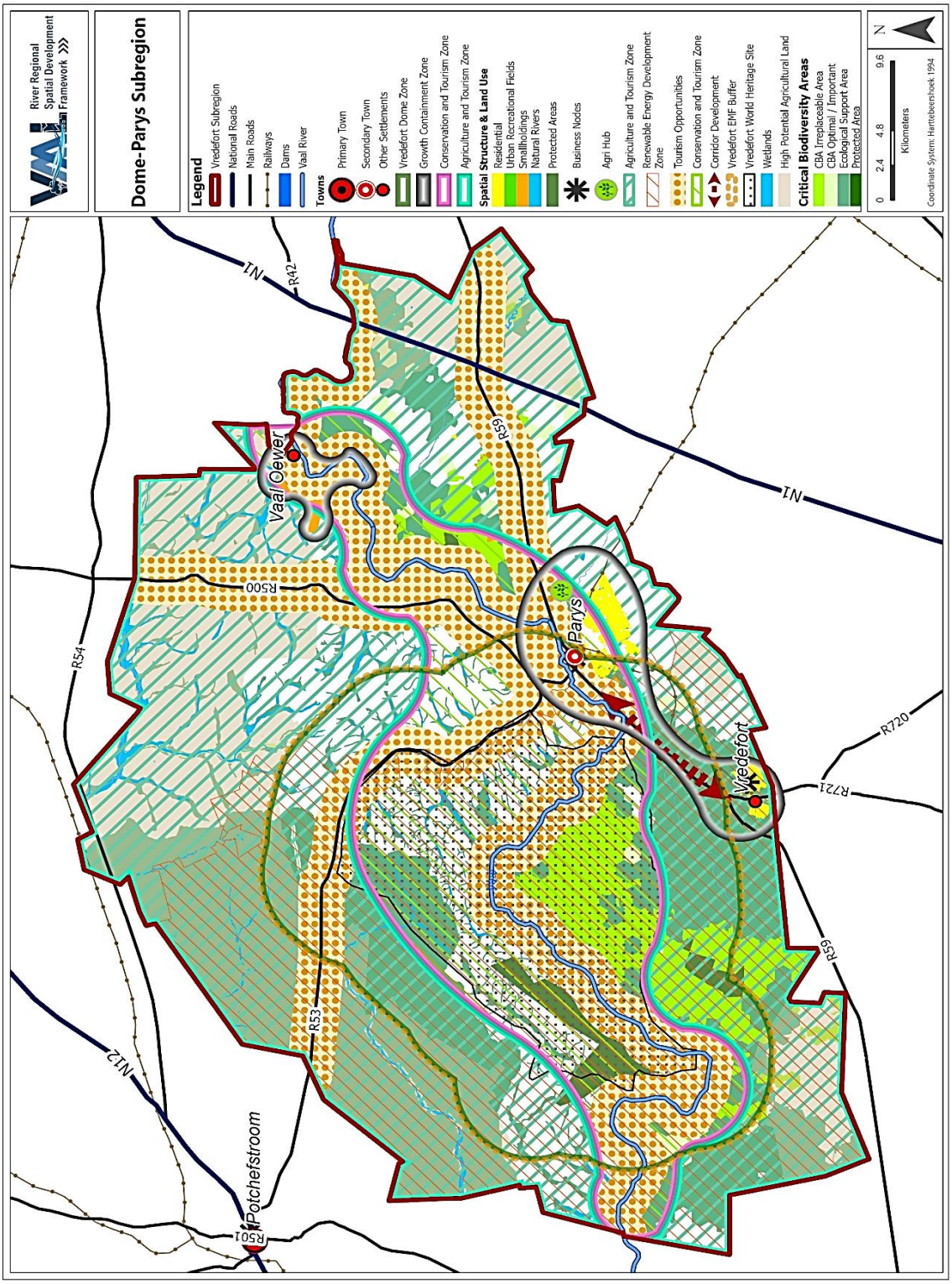


Figure 23: Spatial Development Framework for Dome-Parys Subregion

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6.1.1 The Vredefort Dome

The Vredefort Dome World Heritage Site and its environmental management framework (EMF) buffer zone are both included in this zone. Agriculture and tourism are the two most important economic activities that take place in this area. While it is recommended that such activities be promoted in this zone, it is imperative that the utmost care be taken to ensure that they will not disrupt the natural and heritage value of the area. It is strongly suggested that this area be managed in a manner that is in accordance with the strategic goals of the EMF for the Vredefort Dome World Heritage Site. Table 7 summarises the zone's key spatial development guidelines.



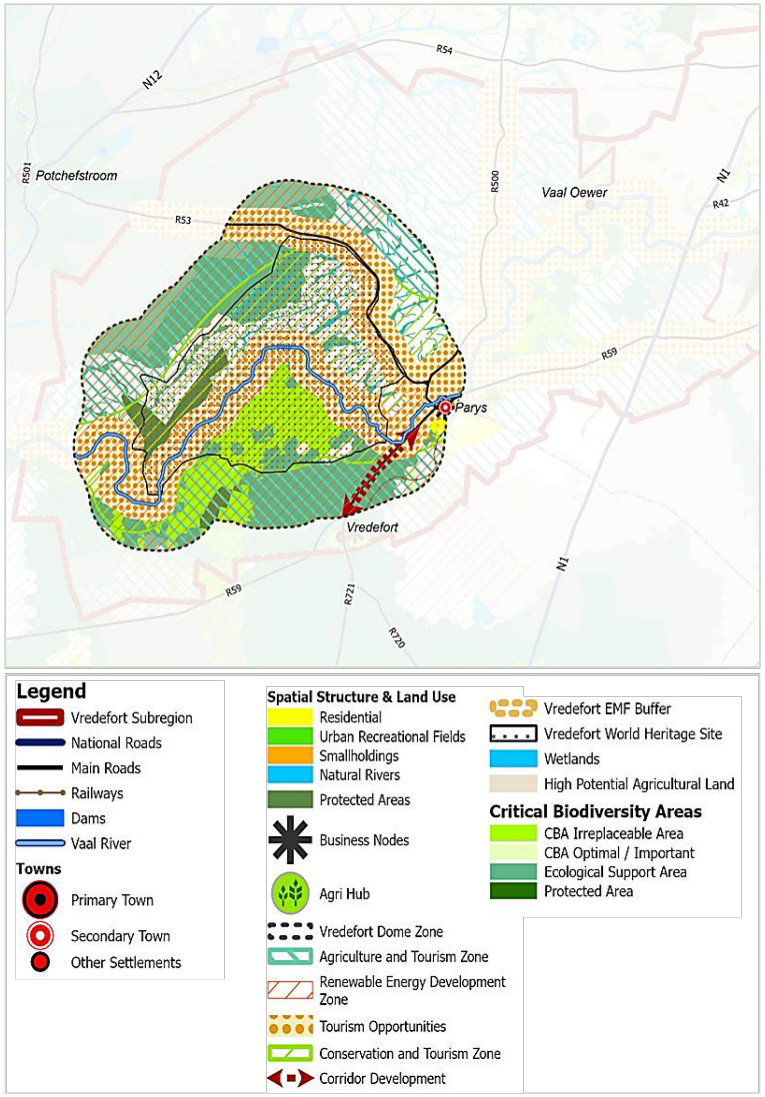


Figure 24: The Vredefort Dome (Dome-Parys Subregion)

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Table 7: Spatial development guidelines for the Dome Area (Dome-Parys Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Make the Dome accessible by permitting tourism developments. Once people know and experience the area, they could become invested. → Facilitate tourism development. Tourism development must be managed and be in harmony with the environment. → Ensure that agricultural activities prevail in the zone, specifically in the buffer area. These activities must be protected so that agriculture as a prime economic sector may continue. → Do not allow urban residential estates. However, if the Vredefort Dome World Heritage Site EMF recommendations are followed, low-density country or rural estates with high design standards and low spatial impact could be considered.
Connectivity	→ Repair and maintain all regional linkages that allow access to the Dome and its buffer zone. → Repair and maintain all gravel roads that provide access to the Dome and all associated tourism and recreational facilities. → Promote cellular and ICT connectivity throughout the area as tourists need to stay in touch with their businesses.
Concentration	→ Develop a tourism development strategy for the Dome that will package development requirements, localities, design and new engineering standards, etc., for tourism establishments to ensure the area is sustainably and aesthetically developed. → Concentrate development, including tourism and recreation developments, in defined areas to promote clustering of similar uses. Clustering can occur around the Vaal River and in certain areas of the Dome. Grouped development will assist with road management. → Try developing a Dome meander whereby establishments are clustered along the foot of the mountains and the more prevalent gravel roads. → Accept that establishments may vary vastly in their services and facilities.
Conservation	→ Protect and conserve the essentially rural and natural scenic quality and integrity of the visual landscape-scale vista required to appreciate the immensity of the meteorite-impact ring structure. → Protect and conserve the unique geology and identified geological points of interest in the Vredefort Dome World Heritage Site (VDWHS). → Conserve and manage terrestrial and aquatic biodiversity, CBAs, ESAs, and protected areas. → Manage the surface and groundwater resources in the VDWHS to benefit all recognised water users and natural services. → Prohibit and discourage new mining activities. → Consider the delineation of the VDWHS given spatial development trends and provide strategies to balance facilitating economic development and protecting this valuable heritage resource. → Acknowledge that agriculture has an equally important role within the VDWHS and should also be protected.

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6.1.2 *Conservation and Tourism Zone*

The Conservation and Tourism Zone's main goal is to promote tourism and recreational activities while protecting and conserving agricultural and natural resources and natural landscapes. The zone runs along the Vaal River and overlaps with the Vredefort Dome and its EMF buffer zone. It also includes Venterskroon Private Nature Reserve, Nooitgedacht Private Nature Reserve, and the Savannah Game Ranch. The Conservation and Tourism Zone is linked to the rest of the subregion via provincial roads, R53, R500, and R59. This zone contains a portion of the VDWHS buffer zone, which must be managed in accordance with the provisions of the VDWHS EMF. The Klerksdorp Renewable Energy Development Zone (REDZ) encompasses the western portion of this zone. Large-scale solar plant development is not recommended in this zone because it may disrupt the natural landscape. Table 8 summarises the key spatial development guidelines for this zone.



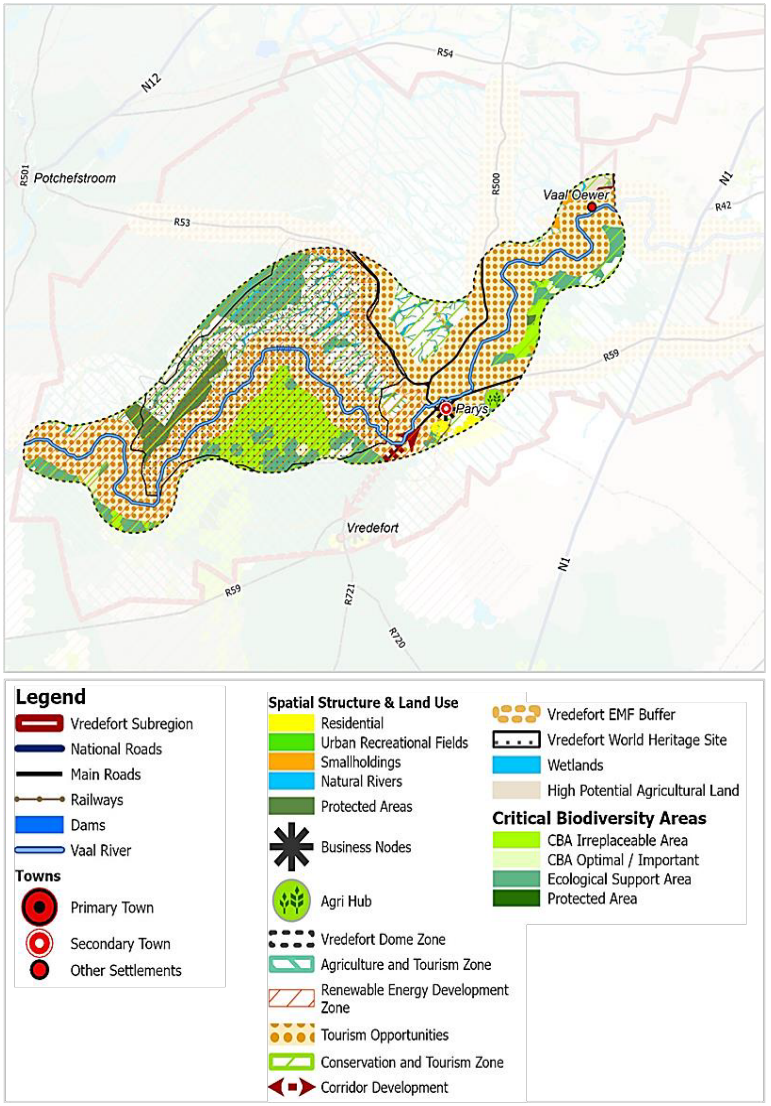


Figure 25: Conservation and Tourism Zone (Dome-Parys Subregion)

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Table 8: Spatial Development Guidelines for the Conservation and Tourism Zone (Dome-Parys Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Promote and facilitate tourism and commercial recreation throughout the zone, specifically along the Vaal River. → Allow for tourism to occur on commercial farms where accommodation is provided for tourists; this will allow for favourable mixed-use. → Develop a tourism development strategy for the subregion that will package development requirements, localities, design and new engineering standards, etc., for tourism and recreational establishments to ensure the area is sustainably and aesthetically developed. → Allow farming in the existing agricultural areas. → Explore renewable energy development opportunities within the delineated REDZ.
Connectivity	→ Repair and maintain all regional linkages that afford access to the subregion and its tourism and recreational facilities. → Repair and maintain gravel roads that provide access to these facilities, which, because of their very nature, have remote locations. → Promote cellular and ICT connectivity throughout the area.
Concentration	→ Allow for the concentration of tourism and recreational facilities along the main roads and gravel roads, the Vaal River, Parys, Vredefort, and Vaal Oewer. → Allow low-impact tourism activities within the VDWHS and its buffer area. → Accept that tourism and recreation development will be diverse because of the diverse opportunities that prevail in this subregion.
Conservation	→ Clean and protect the Vaal River and its aquatic impact buffer zone but allow low-impact tourism development. This will give people access to the river while retaining the environment. Without development, the conservation of privately owned land becomes exceedingly difficult. → Protect the natural landscapes, nature reserves, CBAs, ESAs, the Vaal River, wetlands, agricultural areas, and heritage resources. → Protect the Dome and its buffer zone in accordance with the strategic objectives of the VDWHS EMF. → Adapt to mitigate climate change effects.

6.1.3 *Agriculture and Tourism Zone*

The Agriculture and Tourism Zone comprises the peripheral areas of the subregion. This zone is primarily agricultural in nature but has ample tourism potential to be explored. This zone contains a portion of the VDWHS buffer zone, which must be managed in accordance with the provisions of the VDWHS EMF. For the remaining part, agricultural activities and tourism facilities must be promoted. The development of solar energy plants should be explored as this zone partly falls within the Klerksdorp REDZ. The general spatial development guidelines for this zone are described in Table 9.

Table 9: Spatial Development Guidelines for the Agriculture and Tourism Zone (Dome-Parys Subregion)

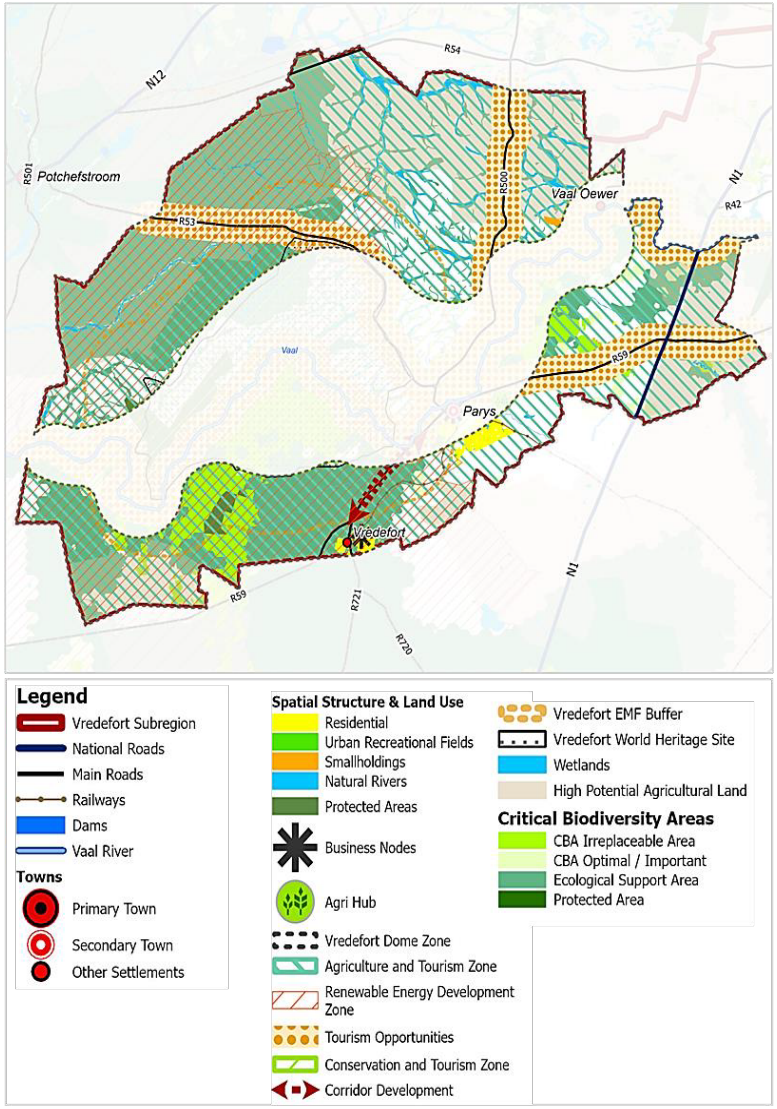
PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Promote agriculture (commercial and small-scale). → The growth focus should be to retain the status quo on the one hand and on the other to expand farming in alternative production processes. → Promote alternative production such as tunnels, hydroponics, intensive production units, etc. → Provide financial support to assist vetted agricultural entrepreneurs since start-up farming is exceedingly expensive. → Acknowledge that commercial farming is fundamental to the economic well-being of the subregion. → Carefully investigate and plan agri-processing to ensure it meets market demand, especially for commercial farming, because the latter will see to the long-term feasibility of an agri-processing plant. Small-scale farming alone has limited scope to ensure the feasibility and economic sustainability of an agri-processing facility. → Promote agrivoltaics and explore renewable energy development opportunities within the delineated REDZ. → Allow tourism to occur on commercial farms where accommodation is provided for tourists, as this will allow for favourable mixed-use.
Connectivity	→ Repair and maintain all order of roads, tarred or gravel as a matter of urgency as it impacts access to markets and support services. → Acknowledge that connectivity is essential in accessing any agro-processing facility and product off-set markets.

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PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Concentration	→ Allow for agri-processing or an agri-village to be near Parys to strengthen Parys as an agricultural support centre. → Allow agriculture to occur throughout the subregion. → Ensure a balance between the conservation of the Dome landscape and agricultural production and that these activities occur in an interrelated manner. → Resolve water pollution of the Vaal River urgently to afford access to the water.
Conservation	→ Protect the agriculture sector (commercial farming and small-scale production). → Ensure that commercial production remains the priority because the area is endowed with high-potential agricultural land. Small-scale farming assists in providing for individual livelihoods but does not contribute to South Africa's production basket, and the mandate is to retain South Africa's agricultural production status. → Keep the Vaal River pollution-free to safeguard human and livestock health. → Safeguard commercial farming/high-potential agricultural land in the context of alternative energy production, such as solar or wind farms, which also require large land areas. Find synergy between these sectors. → Adapt to mitigate climate change effects.

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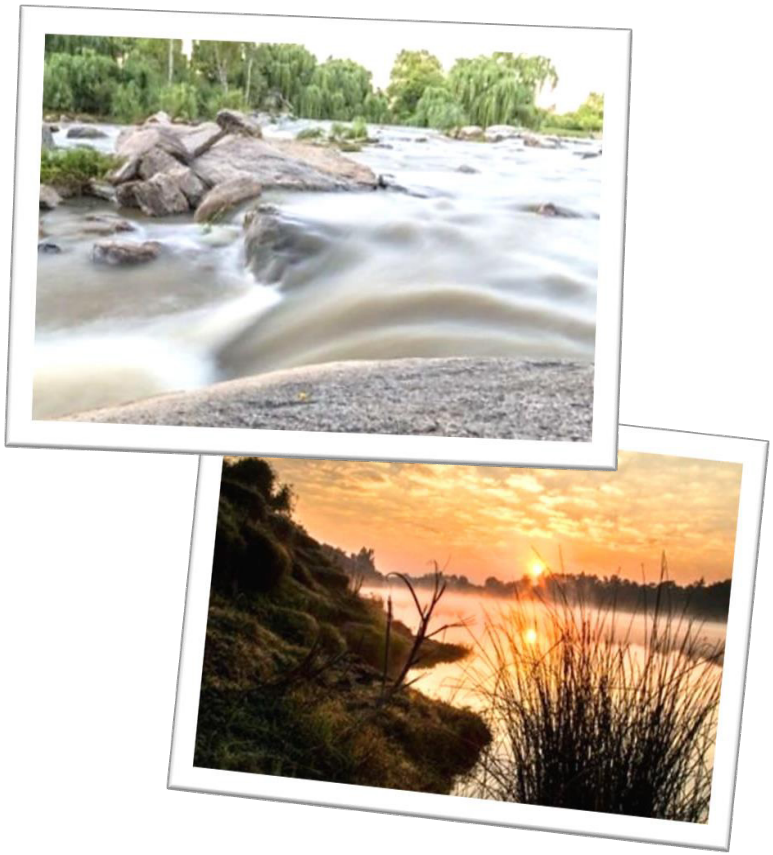


Figure 26: Agriculture and Tourism Zone (Dome-Parys Subregion)

6.1.4 *Growth Containment Zone*

This zone contains the subregion's three major settlements: Parys, Vredefort, and Vaal Oewer. These settlements house the majority of the subregion's population. Parys and Vredefort support agricultural activities and provide socio-economic facilities for rural surroundings. Vaal Oewer, on the other hand, is primarily a smallholding type of settlement nestled on the banks of the Vaal River. These settlements have a variety of recreational and tourist accommodations. Because the subregion's future population growth is expected to be negative, no or limited geographic expansion of these settlements is anticipated. Nonetheless, the expansion of the settlements, if any, must be managed to avoid a negative impact on the surrounding natural and agricultural areas. While each settlement must be evaluated on its own merits in terms of current use and future output, some commonalities should guide the zone's future development as a whole. Table 10 summarises the zone's key spatial development guidelines.

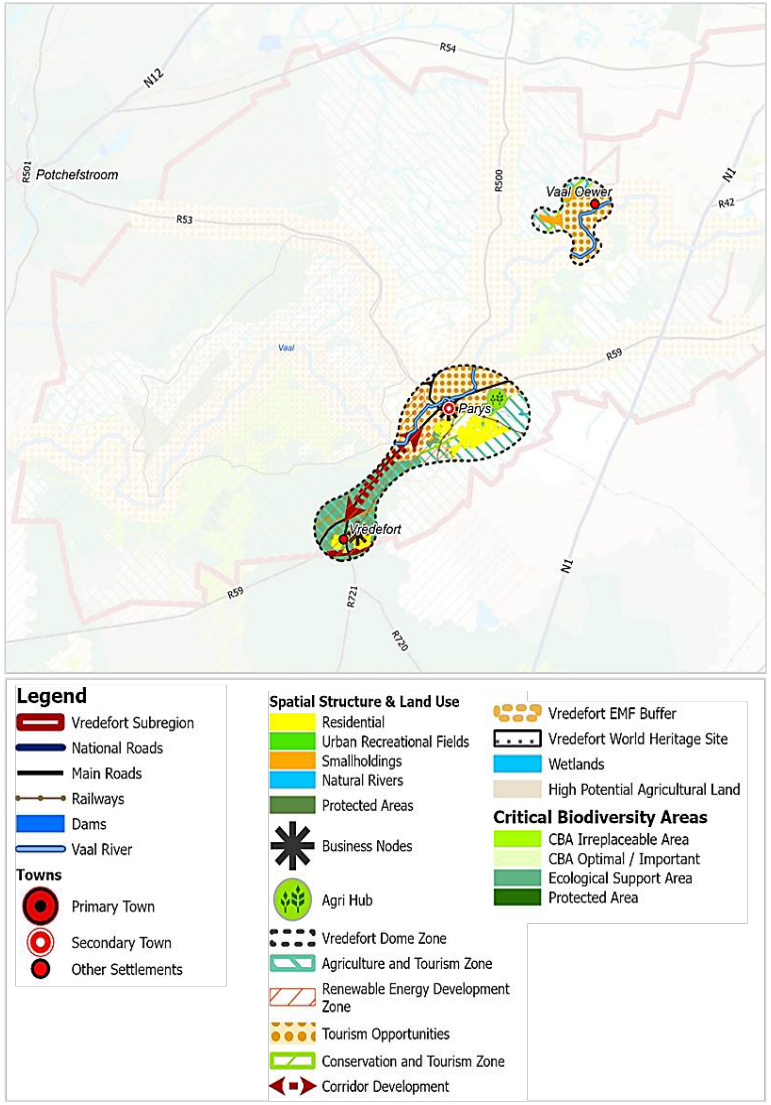


Figure 27: Growth Containment Zone (Dome-Parys Subregion)

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Table 10: Spatial Development Guidelines for the Growth Containment Zone (Dome-Parys Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Promote multi-sectoral growth: business (all), residential (all), commercial (Parys and Vredefort), small-scale industrial (Parys), rural and agricultural support services (Parys and Vredefort), tourism and recreation (all). → Consider high-income residential growth or estates as they add value to the municipality and promote tourism and country living on the edge of Gauteng and North West. → Consider estates and country living along the Vaal River. → Repair and maintain the infrastructure of all services as a matter of urgency since poor service delivery cripples all existing economic sectors and untapped economic opportunities. → Protect small businesses, as much of the towns' sustainability hinges on small businesses. A major intervention would be simply re-establishing standard service provision (water, access, electricity and sanitation). → Support and manage informal and township economy.
Connectivity	→ Repair and maintain the main routes in the subregion, namely, Potchefstroom-Parys (R53 and R59) and Sasolburg-Parys-Vredefort-Kroonstad (R59, R720 and R721), for the transport and delivery of people, goods, and services. → Retain and strengthen connectivity between Parys and Vredefort, there may be a potential for a corridor development to link these towns. → Investigate the future regional linkage between Kwa-Zulu Natal and North West province, as this will greatly impact Parys. Ensure the through route benefits Parys and facilitates its development. → Ensure good cellular connectivity, as this enables country-estate living and all towns are regarded as satellite towns of Johannesburg.
Concentration	→ Allow urban development to occur within the urban areas and their delineated urban development boundaries. → Plan for a corridor development between Parys and Vredefort, which is already trending that way. While infill development over the 15 km stretch of road (R59) will take time, it is certain to happen eventually. To accommodate this development, the delineation of the VDWHS, which extends over the R59, must be resolved as it restricts spatial integration. → Support densification through subdivisions and sectional title schemes within existing urban areas.

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
	→ Strengthen the Parys and Vredefort CBDs. → Support tourism development and commercial recreation in all urban centres. → Allow business development in Vaal Oewer if desirable. → Adapt transit-oriented development principles and promote walkability in the towns.
Conservation	→ Clean the Vaal River, as its pungent odour and debris profoundly impact tourism, commercial recreation, and residential development. → Make every effort to conserve all heritage value in the towns, i.e., old houses, buildings, factories or mills, etc. → Protect estates, country living and tourism in all centres since they are municipal assets. → Identify all existing open spaces and promote a connectivity network.



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6.2 Vaal Urban Core Subregion



The Vaal Urban Core Subregion is centrally located between the Dome-Parys Subregion and the Vaal Dam Subregion. Most of this area forms part of the Gauteng City Region. The Vaal River Region is the most urbanised area that draws into it the activities of the other subregions as it is so well connected and has become the Region's economic heartland. It is home to many central business districts, industrial areas, a vast range of residential neighbourhoods, retail centres and development nodes. These are intercepted by natural areas, protected areas, mining activities and some limited agricultural activities.

While this subregion is not a demarcated entity and falls within two provinces and straddles three municipalities, it has accumulated economic strength and value-add and is moving towards a much-needed economic diversification — although this could be stronger and faster. In support of economic strengthening, five Vaal Special Economic Zone (SEZ) sites have been earmarked for the Vaal River Region, and three of these sites are found in the Vaal Urban Core.

This subregion is nudging the one million population mark, and as a composite area, it is growing into a meaningful and to-be-noted urban agglomeration.

Because this subregion straddles three municipalities and two provinces, development generally appears to be fragmented and unconsolidated. The VRRSDF, therefore, strongly proposes that a Vaal Urban Core spatial development framework be prepared specifically for the Vaal Urban Core Subregion — not only to consolidate all local proposals and plans into one plan, but to devise a local level strategy and development plan for integrated development, appropriate urban infill, what to do with the various agricultural holding complexes, where to focus social development projects and where to confine or encourage development.

In lieu thereof, the following are the key spatial components of the subregion:

- Commercial Development Zone
- Infill and Future Growth Zone
- R59 Industrial Development Corridor
- Urban Transition Zone
- Agriculture Zone

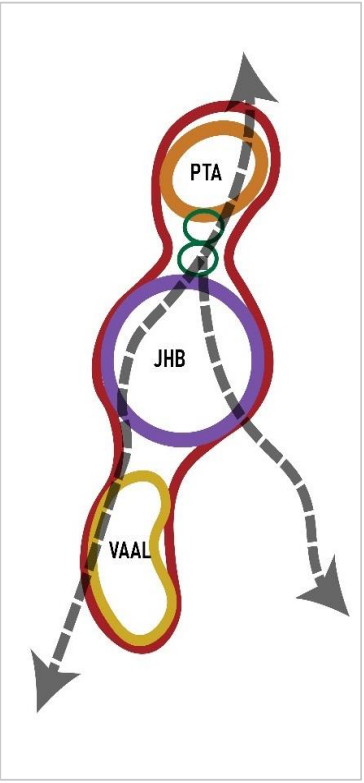


Figure 28: Gauteng Regions

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VAAL URBAN CORE SUBREGION at a glance

Affected Municipalities

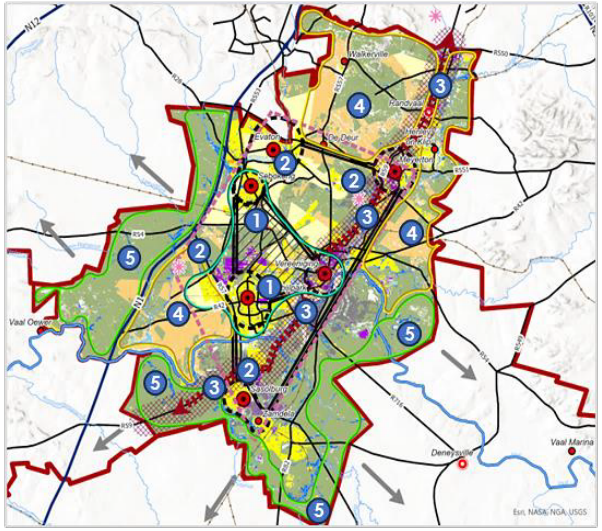
Emfuleni, Midvaal (Gauteng), Metsimaholo (Free State)

1 777 sq km Area	2030: 1 024 478 2050: 1 109 735 Estimated Population	Manufacturing, Real Estate, Education, Finance and Business Services Key Economic Sectors

Development Opportunities/Prosects

- SEZ & manufacturing
- Green energy research & development
- Real estate development
- Commercial development
- Higher edu., innovation, & research
- Regional connectivity
- Aertropolis & logistics
- Mining & mineral beneficiation
- Agriculture & processing

Spatial Components



1. Commercial Development Zone
2. Infill and Future Growth Zone
3. R59 Industrial Development Corridor
4. Urban Transition Zone
5. Agriculture Zone

Development Challenges

- Declining manufacturing base
- Mine closures
- Urban sprawl & informal growth
- Water pollution
- Stressed water resources
- Housing & service gaps
- Poor infrastructure maintenance
- Unemployment
- Climate change & disaster threats

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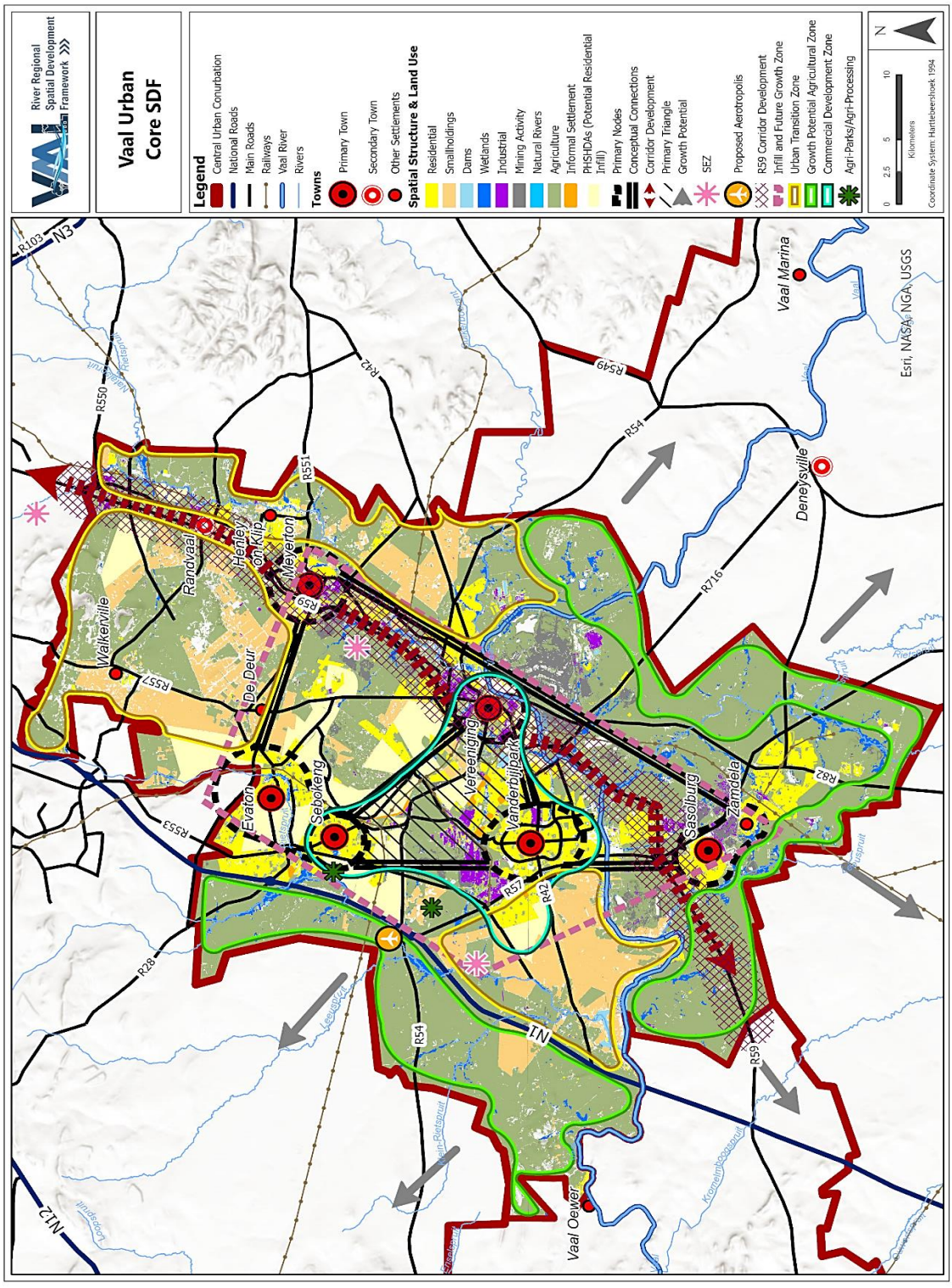


Figure 29: Spatial Development Framework for the Vaal Urban Core Subregion

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6.2.1 Commercial Development Zone

The CBDs of Sebokeng (emerging), Vereeniging, and Vanderbijlpark are at the heart of the Vaal Urban Core. These CBDs fall in the Emfuleni LM. The triangle created by these towns is the development core and illustrates the area suitable for crucial commercial (retail, business and industrial) development, densification and intensification. Within this area, land is available for all types of land use, which can be supported by a higher density of residential infill than is currently being implemented.

The urban core accommodates many schools and educational institutions; among them are the campuses of the Vaal University of Technology (VUT) and North West University, which are located on the eastern side of Vanderbijlpark. An opportunity to build on this strength exists as there is a need for more technical tertiary education and training centres. Should another tertiary college, in addition to the existing two institutions, be developed, it is possible that Vanderbijlpark could diversify to include a college precinct which would incorporate student accommodation and all sorts of development associated with student life. While this opportunity may need time to mature, it certainly exists, and should be promoted.

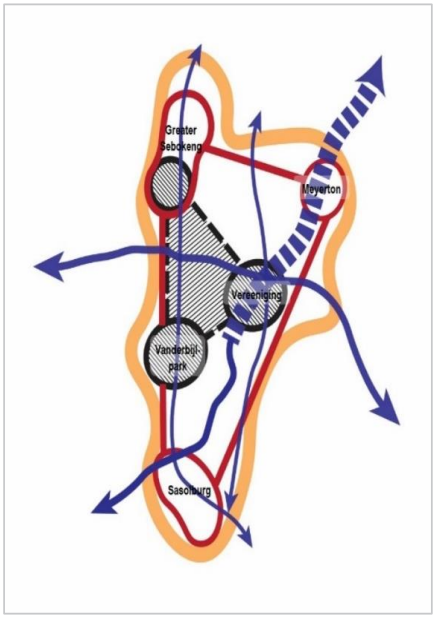


Figure 30: Emerging Vaal "Metro"/Triangle

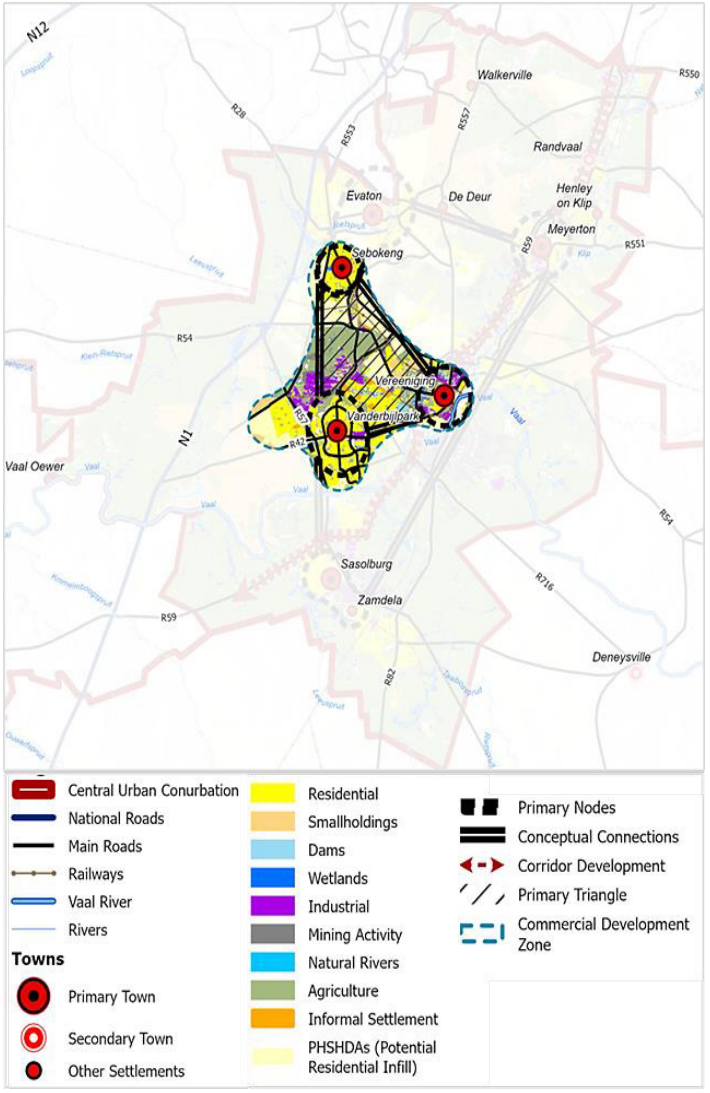


Figure 31: Commercial Development Zone (Vaal Urban Core)

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Table 11: Spatial Development Guidelines for the Commercial Development Zone (Vaal Urban Core)

Z	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Stimulate economic growth, diversification and job creation. → Allow industrial and commercial development to take place in appropriately designated areas so that industrial land can be infilled and existing areas strengthened. These areas should be well-located, serviced, and accessible via road and rail to facilitate development. → Facilitate the SEZ development east of the N1. Explore opportunities to establish the region as a green energy development and research hub. → Be pro-development by expediting land use applications and by encouraging development and job creation. Proactive development and expedited land use applications can be largely achieved through the incorporation of the Gauteng Provincial Environment Management Framework (GPEMF) Standard, which delineates zones 1 and 5 of the GPEMF as zoned with gazetted exclusions from having to undergo the full Environmental Impact Assessment (EIA) processes, thereby fast-tracking development. → Revitalise Vereeniging CBD by formulating a precinct plan and economic strategy. Develop higher density residential apartment blocks that could transform and give new life to the CBD. → Ensure a hierarchy of nodes to rank and order all land use allocations and service provision. Nodes must be planned to ensure service rendering. → Continue with subsidised housing programmes on land identified for that use. Land availability within the primary zone exists and will achieve infill. Striving for higher densities is important. → Encourage densification, infill, brownfield development, subdivision and sectional title schemes in the right areas which can and should accommodate densification. → Attract economic development into the towns and townships and increase job density. → Support and manage informal and township economy. → Repair and upgrade all urban infrastructure, especially sanitation, water, roads and electricity to enable development and densification.
Connectivity	→ Repair and maintain all roads. Fixing roads will encourage private-sector investment. → Continually promote the R59 Corridor development, which plays a critical role for all urban centres in the urban core and in facilitating the development of the Zwartkoppies SEZ. → Retain the commuter rail from Vereeniging via Sebokeng to Johannesburg. → Retain the freight rail from Vereeniging along the R59 to Johannesburg and beyond. → Strengthen the R54, which presently serves as the NW-KZN corridor. → Ensure good connectivity along the R82 from Johannesburg to Sasolburg and upgrade and expand the road.

Z	SPATIAL DEVELOPMENT GUIDELINES
Concentration	→ Encourage industrial development in existing and established industrial and commercial townships as far as it is viable within the newly demarcated Kookfontein Vaal SEZ site and along the R59. → Ensure that retail and nodal development occurs in a structured and hierarchical manner, where development expansion has created demand. → Promote social development in and around established nodes and in residential areas where such social services adhere to the residential character and are required in residential areas (such as crèches, schools, etc.). → Encourage any tertiary facilities to be located towards the east of Vanderbijlpark to strengthen a college precinct. → Encourage and engage in brownfield development in the CBDs by transforming land uses and derelict land; and by densification in appropriate locations. → Create Sebokeng's CBD based on the high-density mixed-use precinct plan. → Adapt transit-oriented development principles and promote walkability in the towns. → Establish an educational institution that specialises in upskilling people in agriculture, renewable energy, manufacturing, and tourism and heritage services in the Vaal River Region to support job creation initiatives in this region.
Conservation	→ Protect the existing economic strengths. → Retain existing industrial and commercial nodes. → Protect the CBDs of Vereeniging and Vanderbijlpark from decay, decentralisation and abandonment. → Prepare CBD precinct plans for the retention and upgrading of the CBDs. → Manage service delivery in the CBDs, upgrade and maintain roads, and implement firm refuse removal plans. Clean and upgrade the CBDs. → Promote environmentally sustainable development activities that include applying the ecosystem-based adaptation principles in the Vaal Urban Core. → Identify all existing open spaces and promote a connectivity network.

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6.2.2 *Infill and Future Growth Zone*

Beyond the primary development zone is a large area that forms a secondary urban subregion. This area includes Greater Sasolburg, Greater Meyerton and Greater Sebokeng and has been earmarked as the subregion's infill and future growth zone where economic, social, retail and residential development could be promoted to constitute an urban agglomeration area. This area is home to five established CBDs, which should be consolidated to promote growth and diversification as together these CBDs will be stronger than each fending for itself.

In addition to the two SEZ sites in this area, there is enough available land to accommodate other industrial and commercial developments, residential expansion and densification, and the protection of natural areas and features, and corridor development.

To ensure that this area's development is focused, a subregional development boundary should be delineated to limit sprawl and nudge growth in the right direction. In this context the N1 should be identified as the barrier preventing expansion to the west as the land beyond the N1 is spatially removed from the core of the infill and future growth zone which would make development here counterproductive.

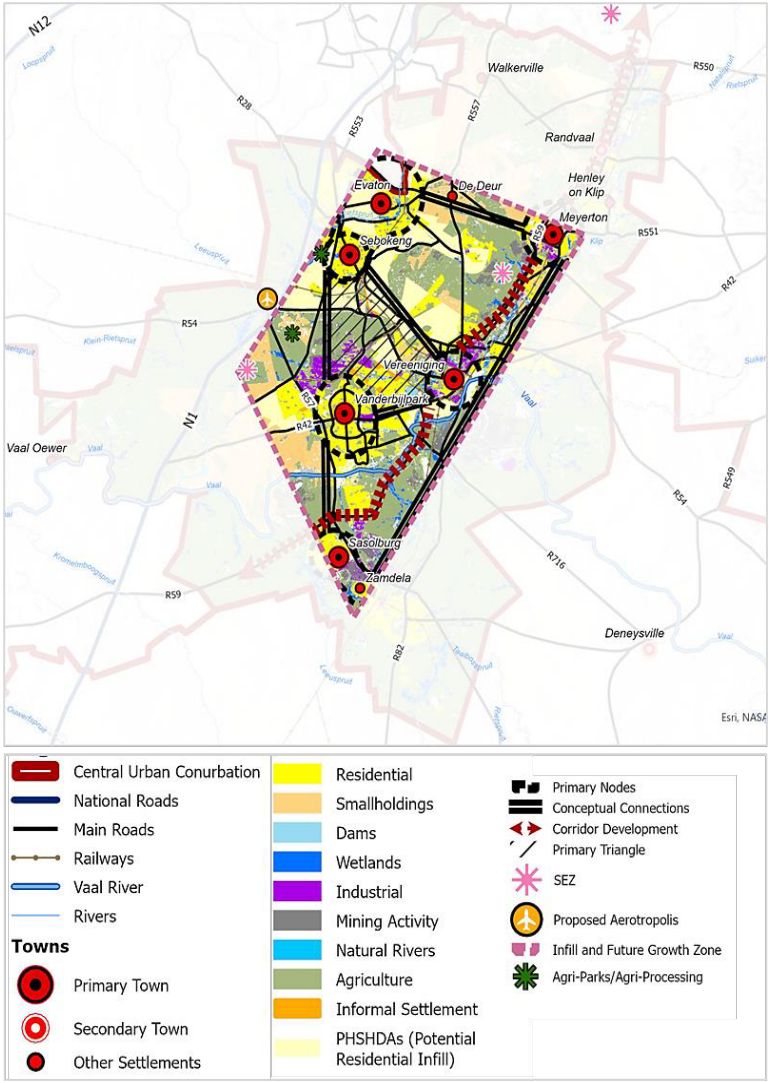


Figure 32: Infill and Future Growth Zone (Vaal Urban Core)

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Table 12: Spatial Development Guidelines for the Infill and Future Growth Zone (Vaal Urban Core)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Stimulate economic growth, diversification and job creation. → Facilitate the SEZs and encourage land use in these designated areas. Encourage new technologies, clean industry, and manufacturing. → Encourage industrial and commercial development in designated areas since they are well-located and serviced, which should facilitate development. → Support and manage informal and township economy. → Promote the development of the R59 corridor. → Be pro-development by expediting land use applications and encouraging all development and all job creation. → Ensure a hierarchy of nodes to rank and order all land use allocations and service provision. Nodes must be planned so that service rendering can be assured. → Continue with subsidised housing programmes on land already identified for that use. Encourage brownfield and infill development with improved densities and composition. → Facilitate the River City Development. → Let growth occur within the urban development boundary/ies and contain western expansion by the N1, which is a firm and hard edge. → Encourage densification, infill, brownfield development, subdivision and sectional title schemes in the right areas where densification can and should be accommodated. → Repair and upgrade all urban infrastructure, especially sanitation, water, roads and electricity, so that all delayed development applications can be implemented.
Connectivity	→ Repair and maintain all regional, metropolitan, local and neighbourhood roads, as this will encourage private sector investment. → Continually promote the R59-corridor development. → Strengthen connectivity to Heidelberg along the R42 and R551, as Heidelberg will experience a pull factor once the logistics hub at the Heidelberg SEZ has been built. → Retain the commuter rail from Vereeniging via Sebokeng to Johannesburg.

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
	→ Retain the freight rail from Vereeniging along the R59 to Johannesburg and beyond. → Strengthen the R54, which presently serves as the NW-KZN corridor. → Ensure good connectivity along the R82 from Johannesburg to Sasolburg. Upgrade and expand the road.
Concentration	→ Focus development and growth on the secondary area, i.e., the spatial area created between Greater Sebokeng, Greater Sasolburg and Greater Meyerton. → Prime the area for concentrated human settlement development as this land is available and is well located. Densification must be encouraged and attained through sufficient bulk service capacity. → Keep development confined to the urban development boundary/ies. → Adapt transit-oriented development principles and promote walkability in the towns. → Focus industrial development on existing and established industrial and commercial townships as far as it is feasible within the newly demarcated SEZ sites (Rietspruit and Kookfontein) and along the R59. → Encourage the development of agri-processing (agri-hub) and agrivoltaics technology industries in Rietspruit. → Encourage retail and nodal development in a structured and hierarchical manner to occur where development expansion has created demand. → Ensure social development occurs in and around established nodes and in residential areas where social services adhere to the residential character and are required in residential areas (such as crèches, schools, etc.). → Approve tourism and recreational activities where appropriate.
Conservation	→ Protect the existing urban areas from degradation. → Manage service delivery and road maintenance as a means to conserve the urban agglomeration. → Achieve compact urban form. → Protect features, places and spaces with heritage value scattered around the Vaal Urban Core. → Promote environmentally sustainable development activities, including the application of ecosystem-based adaptation. → Identify all existing open spaces and promote a connectivity network.

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6.2.3 R59 Industrial Development Corridor

The R59 connecting Alberton to Vredefort via Meyerton, Vereeniging, Vanderbijlpark and Sasolburg is gradually developing into an industrial development corridor. Its core area, with the most development impetus, stretches from the northern boundary of Midvaal LM to include Meyerton, Vereeniging and Vanderbijlpark. Midvaal LM fully supports its development and actively drives and facilitates industrial and commercial development along the corridor. The corridor boasts better prices for land than the City of Ekurhuleni, provides facilitated land use development applications, has already serviced areas, provides excellent regional access, has road and rail connectivity, and offers valuable visibility. The corridor also offers hope for economic growth and much-needed employment creation. The R59 industrial development corridor will support the growing residential hinterland, where residential densification and human settlement development will take place in earnest in the short- to long-term future as per the spatial development guidelines of the Infill and Future Growth Zone.

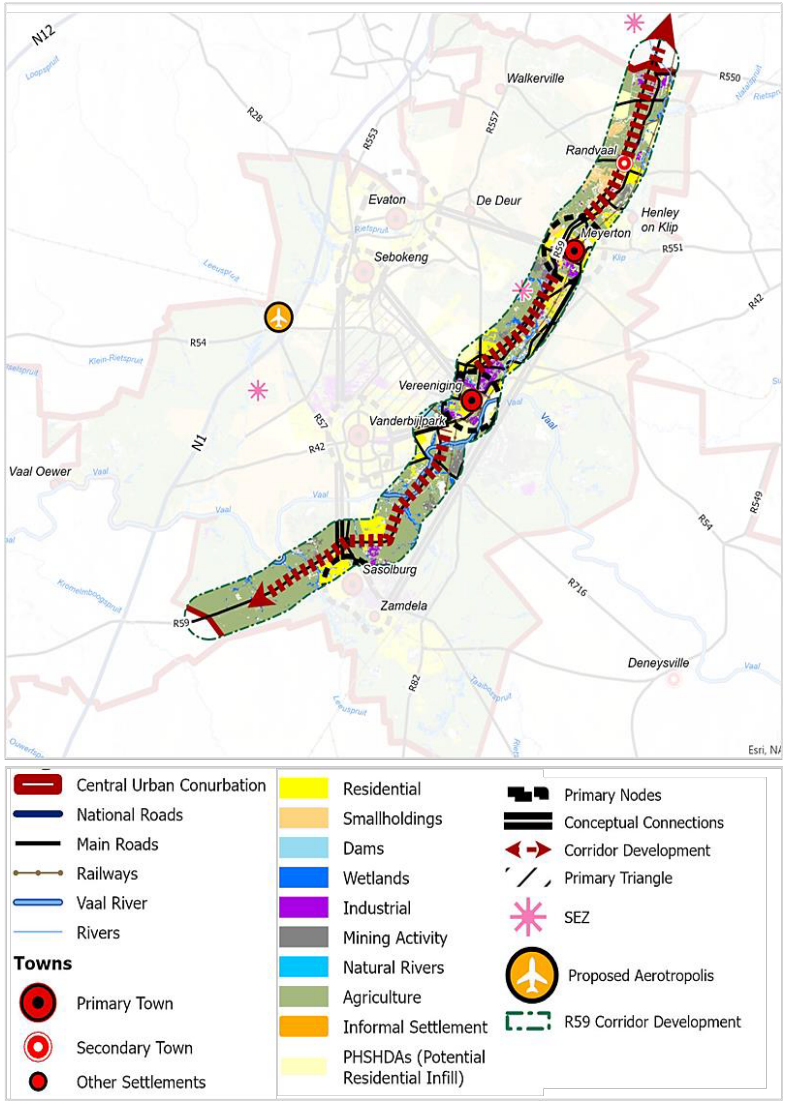


Figure 33: R59 Industrial Development Corridor (Vaal Urban Core)

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Table 13: Spatial Development Guidelines for the R59 Industrial Development Corridor (Vaal Urban Core)

PRINCIPLE	SPATIAL DEVELOPMENT PROPOSALS
Growth focus	→ Stimulate economic growth, diversification, and job creation. → Promote commercial and industrial development along the R59. This corridor should also promote the development of economic clusters and the intensification of economic activities. → Facilitate the development of SEZs and explore the opportunities of expanding them. → Be pro-development through expedited land use applications and by encouraging all development and all job creation. → Protect and make the natural areas and the Vaal River accessible. Explore the plans for a river city where the Vaal River can be made accessible without compromising its well-being. For this proposal to be of any value, the River's poor aesthetic and health state must be improved. → Repair and upgrade all urban infrastructure, especially sanitation, water, roads and electricity.
Connectivity	→ Ensure the continued maintenance of the R59. → Plan for the expansion of the R59. → Unlock the R59 by constructing class 3 feeder roads east and west of the corridor. → Encourage PRASA to reinstate its rail services, which run parallel to the R59 and will facilitate commuter access. → Encourage freight rail services along the R59. → Strengthen connectivity to Heidelberg along the R42 and R551, which will experience a pull factor once the logistics hub at the Heidelberg SEZ has been built. → Ensure good connectivity along the R82 from Johannesburg to Sasolburg. Upgrade and expand the road.
Concentration	→ Encourage industrial development to be focused on the newly demarcated Vaal SEZ sites (Kookfontein and Zwartkopjies)and along the corridor. → Encourage the grouping of similar-category manufacturing, commercial, and industrial uses (including SEZs) in the same nodes and along the corridor.

PRINCIPLE	SPATIAL DEVELOPMENT PROPOSALS
	→ Ensure appropriate densities even for commercial townships to achieve the best and most effective land uses, while ensuring efficiency.
Conservation	→ Ensure the creation of clean industrial environments. → Ensure there is no water pollution. → Ensure water and sanitation capacity so that new developments do not overburden the failing system. → Do not allow hazardous and noxious industrial uses in the corridor. → Plan and manage service delivery.



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6.2.4 *Urban Transition Zone*

The Vaal Urban Core has numerous agricultural holdings that can be described as unique residential areas. These holdings were meant to bridge the gap between urban living and agricultural farmlands; however, during the past 30 years, they have informally transformed from semi-agricultural holdings to various use areas. Currently, most of these holdings are in transition in some or other way, which is why these areas are referred to as the Urban Transition Zone. Many of the holdings are under pressure to be developed, albeit, in different ways. Proposed developments vary from subdivisions to country living estates, to land use diversification allowing home industries, workshops, or commercial and light industrial activities, to the development of township establishments and residential densification. Some agricultural holdings must deal with illegal land uses, whereas others are used for agricultural purposes.

While each area should be evaluated on its own merit to determine its current use and future output, some commonalities should inform the future development of these 'in-between' areas.

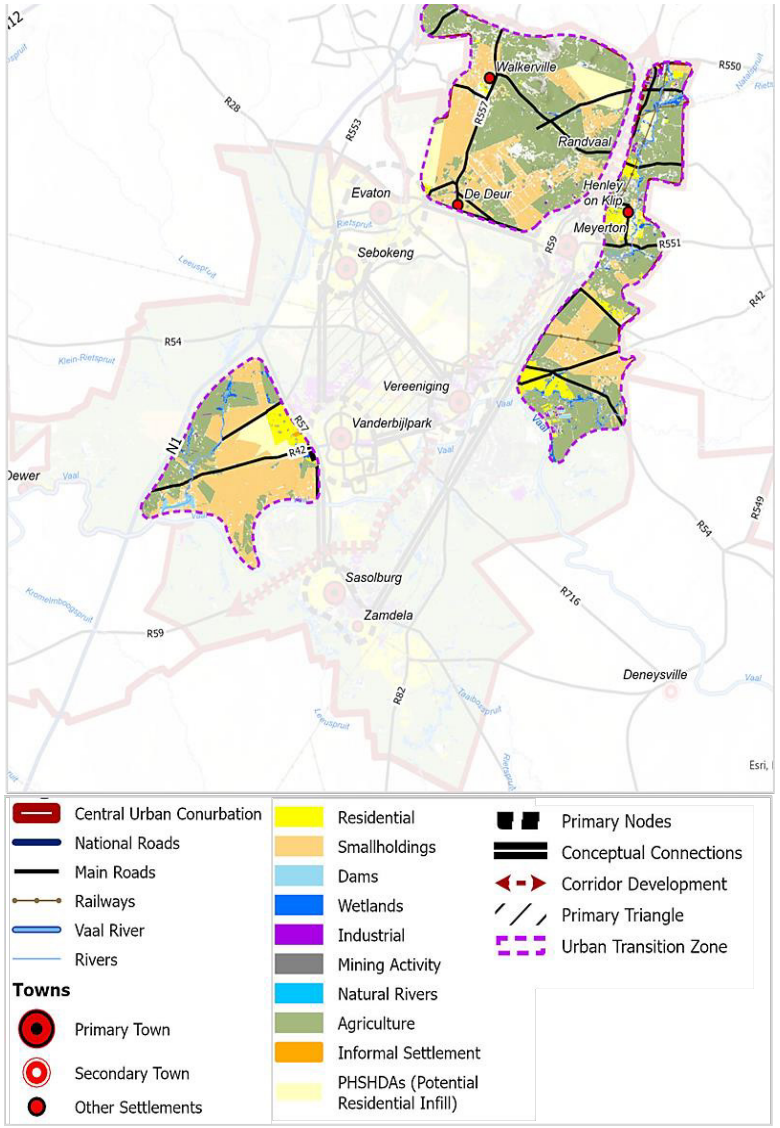


Figure 34: Urban Transition Zone (Vaal Urban Core)

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Table 14: Spatial Development Guidelines for the Urban Transition Zone (Vaal Urban Core)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Determine a development theme that considers each area's unique context, character, and growth focus, then encourage and facilitate development that conforms to the plan. → Retain low-density living. → Encourage tourism activities and facilities. → Allow agri-processing and agricultural production as a transition between the urban and rural landscapes. → Encourage development that will achieve some form of job creation. → Protect and make accessible all natural areas (tributaries, water bodies, ridges, the River, etc.).
Connectivity	→ Repair and maintain all roads, including rural access and gravel roads.
Concentration	→ Allow country living to continue. → Allow each area to develop according to its own theme, which may be more biased toward country living, agri-industry, home industry, tourism, etc. → Create an enabling environment for these areas to contribute to the economy. → Encourage and concentrate tourism and recreation activities along the Vaal River and other natural or heritage areas where the natural or heritage value contributes to the proposed development and where this value should be protected. Providing access to natural or heritage areas allows people to experience them, which could encourage the protection and conservation of such spaces and/or places.
Conservation	→ Keep the Vaal River, all its tributaries, water bodies, riparian zones, and natural areas free from pollution. → Protect the Vaal River, its tributaries, dams and associated areas for future generations. Keep these areas clean and allow some development to fund their retention. Enforce development controls. → Allow development along the Vaal River, water bodies, its tributaries and natural zones, but only if such development does not threaten the health of the water. → Allow developments in these areas to use alternative energy and services systems to lessen pressure on the municipality. → Protect features, places and spaces with heritage value that are scattered around the Vaal Urban Core. → Promote environmentally sustainable development activities, including the application of ecosystem-based adaptation principles in the Vaal Urban Core. → Identify all existing open spaces and promote a connectivity network.

6.2.5 *Agriculture Zone*

The agriculture zone comprises the peripheral areas of the core subregion. It is generally agricultural in nature and is mostly farmed productively. Given its rural composition, this zone offers various tourism opportunities, especially near quality natural features. Though generally located beyond the urban transition zone, the agriculture zone is exposed to urban encroachment, which is currently managed by the urban development boundary. The agriculture zone relates to the areas beyond the core zone where agriculture is a primary land use.

One exception in this agriculture zone is the proposed Vaal Aerotropolis, which is located west of the N1, north of the R54 and south of the Klerksdorp-Vereeniging railway line (as shown in Figure 35). The Vaal Aerotropolis is a logistics and commercial node planned to grow around a future airport. The project forms part of the Vaal SEZ and related initiatives. Given the project's current status the VRRSDF denotes it as a proposed aerotropolis development.

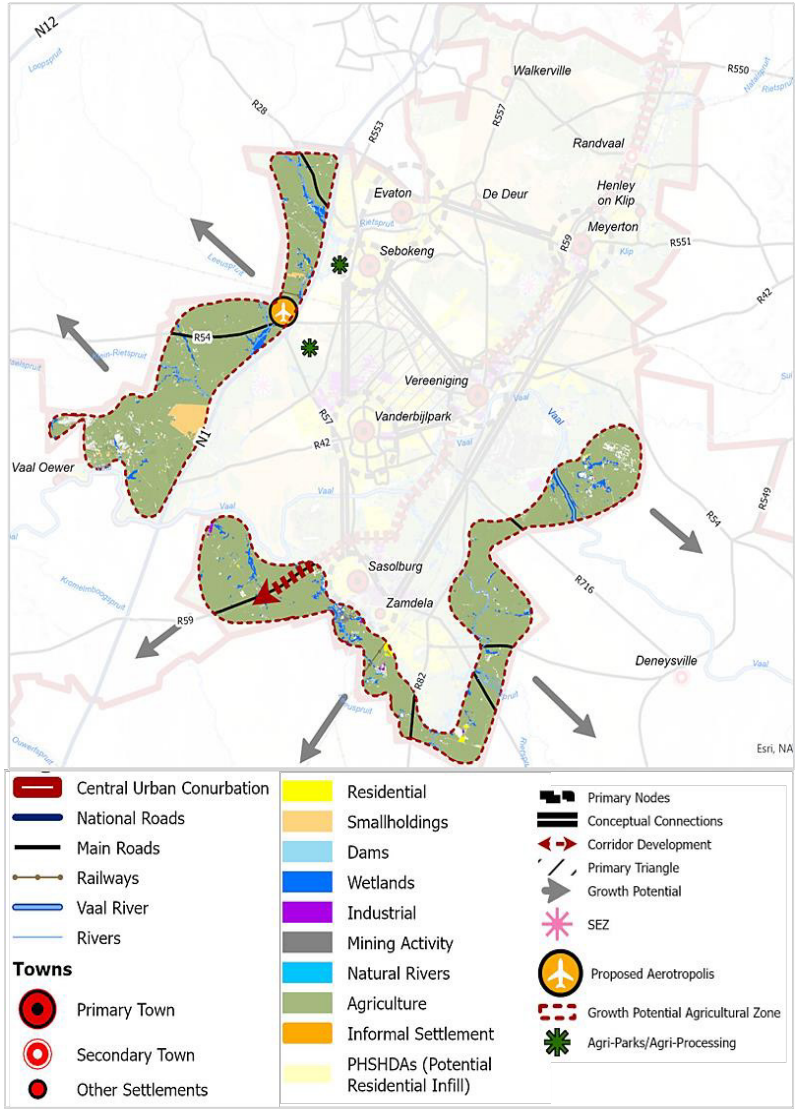


Figure 35: Agriculture Zone (Vaal Urban Core)

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Table 15: Spatial Development Guidelines for the Agriculture Zone (Vaal Urban Core)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Encourage commercial agricultural production and small-scale agricultural farming. → Encourage tourism developments. → Consider the development of estates and country living along the Vaal River and in unique areas.
Connectivity	→ Retain connectivity with the core area to facilitate product and tourism access. → Retain connectivity to markets.
Concentration	→ Support tourism development. → Support water recreation along the Vaal River. → Develop commercial development, agri-processing and export facilities in the proposed Vaal Aerotropolis.
Conservation	→ Clean the Vaal River to reinstate tourism, commercial recreation and residential development along the River. → Protect high-potential agricultural land. → Protect commercial farming activities. → Protect the areas from urban encroachment. Delineate the urban development boundary so that actively farmed areas are not subject to urban development.

6.3 Vaal Dam Subregion



VAAL DAM SUBREGION

The Vaal Dam Subregion is most notably known by the Vaal Dam, which covers a formidable 320 km^2. The Dam is surrounded by natural areas and high-potential agricultural land. Several towns in this subregion (Vaal Marina, Deneysville, Oranjeville, and Villiers) provide country living and vacation homes. These towns are important to the subregion, but their growth potential is limited as they are mostly centred on tourism, recreation, and agricultural support services.

Lately, country living has become more attractive to people who are increasingly willing to commute daily from the towns in the Vaal Dam subregion to the CBDs of Vereeniging, Vanderbijlpark, Meyerton, and Sasolburg. This means that residential development could become a valuable asset in this subregion. However, due to infrastructure cost implications, this option must first be investigated.

As mentioned, tourism is a prime economic sector mostly centred around the Vaal Dam, the Vaal River, and the many tributaries that feed both. Cultural heritage is also increasingly being included in the tourism scope.

The Vaal Dam, Vaal River, and its tributaries also offer excellent opportunities for water sports of all kinds, and they are associated with tourism opportunities for accommodation, lodges, restaurants, etc.

Agriculture is as important as tourism, with commercial agriculture in crop and livestock production being the most dominant. As with the Dome-Parys Subregion, most of this area is being farmed, leaving little scope for growth in agricultural production. However, much emphasis is placed on protecting and conserving agriculture at a national level.

Mining has started to creep into the area south of Sasolburg with increasing exploration of existing coal reserves.

The key spatial components of the subregion are:

- Conservation and Tourism Zone
- Agriculture and Tourism Zone
- Growth Containment Zone

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VAAL DAM SUBREGION at a glance

Affected Municipalities

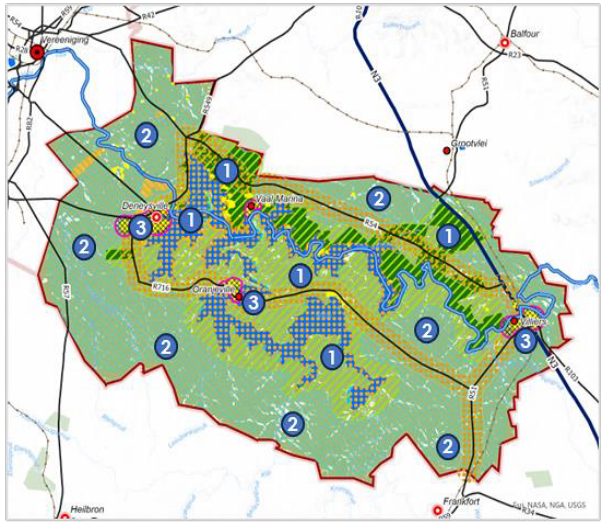
Midvaal (Gauteng), Metsimaholo, Ngwathe, Mafube (Free State), Dipaleseng (Mpumalanga)

2 722 sq km Area	2030: 32 594 2050: 41 237 Estimated Population	Agriculture, Tourism Key Economic Sectors

Development Opportunities/Prosects

- Adventure & water sports
- Leisure tourism
- Crop & livestock production
- Rural & agric. business
- Small-scale industries
- Regional connectivity
- Human capital & skills development
- Country estate/leisure housing

Spatial Components



1. Conservation and Tourism Zone
2. Agriculture and Tourism Zone
3. Growth Containment Zone

Development Challenges

- Lack of economic diversification
- ICT coverage gaps
- Lack of public transport
- Water pollution
- Stressed water resources
- Housing & service gaps
- Poor infrastructure maintenance
- Unemployment
- Climate change & disaster threats

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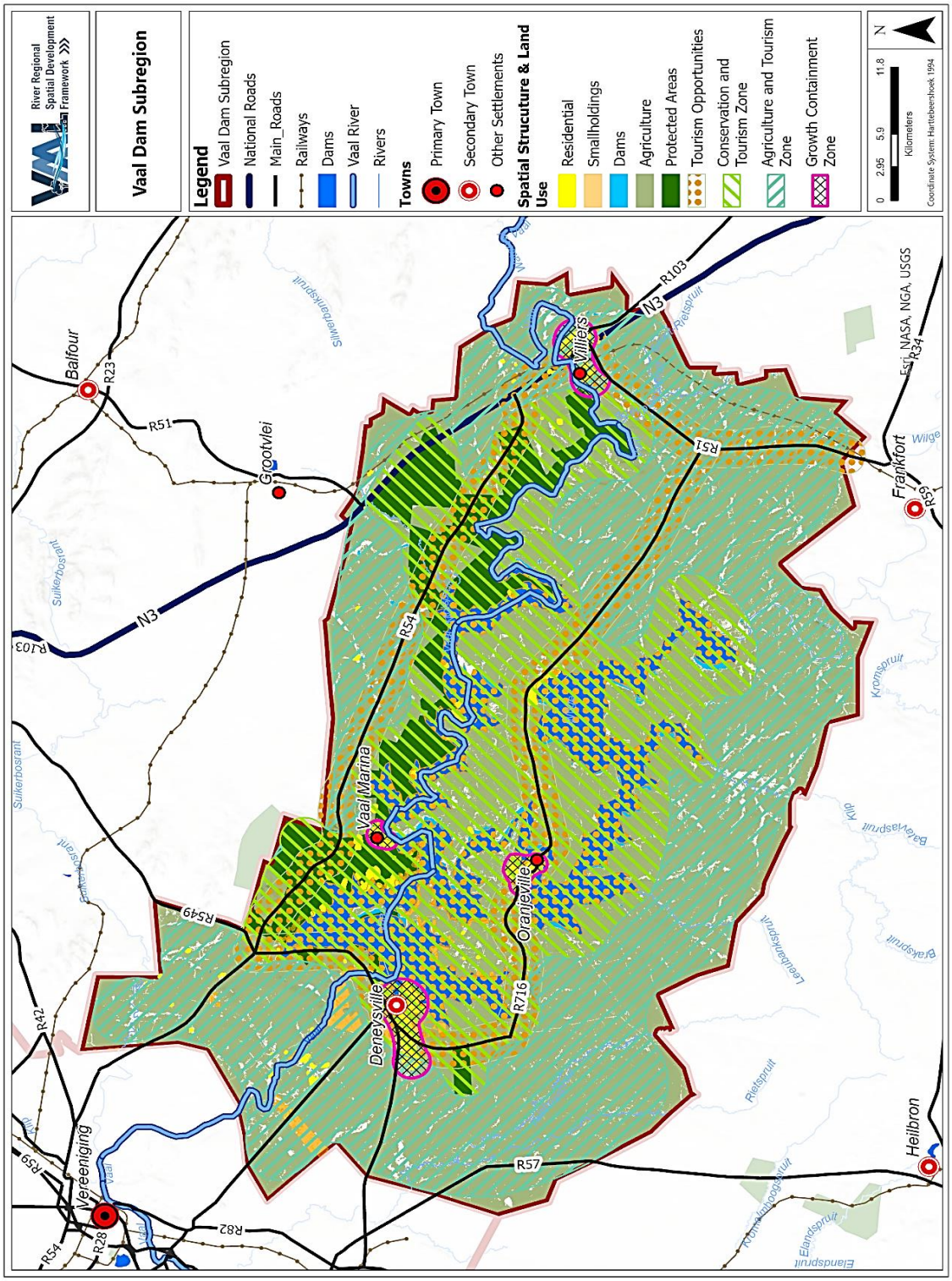
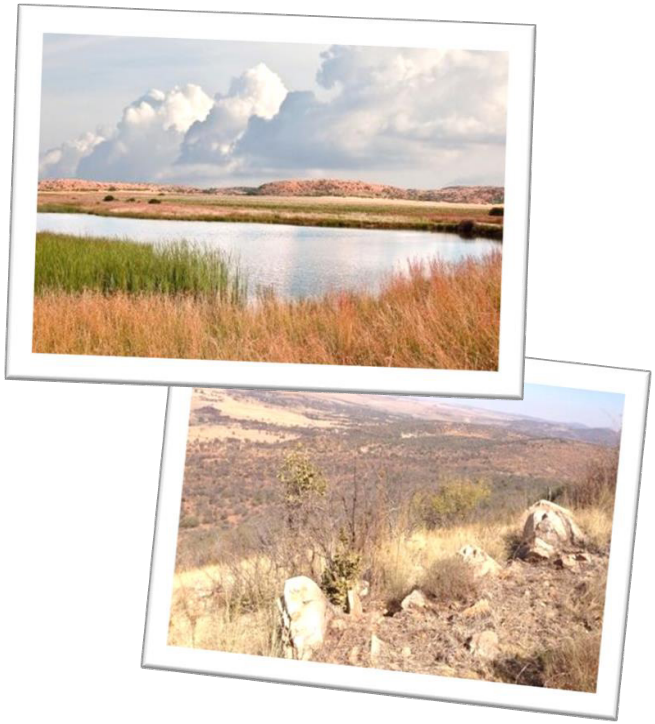


Figure 36: Spatial Development Framework for the Vaal Dam Subregion

6.3.1 Conservation and Tourism Zone

The key objective of the Conservation and Tourism Zone is to promote tourism and recreational activities while protecting and conserving agricultural, water and natural resources. The conservation and tourism zone includes the Vaal Dam, the protected areas in the zone, and the agricultural areas situated immediately along the Vaal Dam and the Vaal River. This zone is linked to the rest of the subregion via provincial roads R54, R51 and R716. The zone further contains the settlements and towns located along the banks of the Vaal Dam — the spatial development guidelines for these settlements are later discussed in this document under 'Growth Containment Zone'. A summary of the key spatial development guidelines for the Vaal Dam Subregion is presented in Table 16 below.



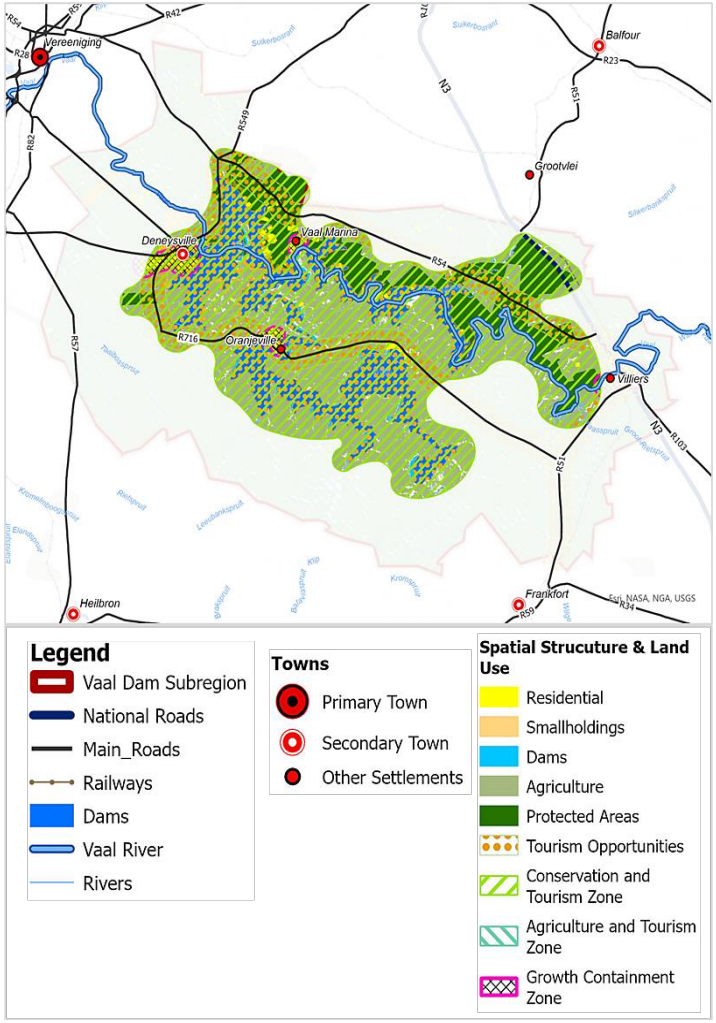


Figure 37: Conservation and Tourism Zone (Vaal Dam Subregion)

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Table 16: Spatial Development Guidelines for the Conservation and Tourism Zone (Vaal Dam Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Promote and facilitate tourism and commercial recreation throughout the zone, specifically along the Vaal River and Vaal Dam. → Promote sustainable water sports and recreational activities in the Vaal Dam. → Allow tourism on commercial farms where tourists are provided accommodation as this will allow for favourable mixed-use. → Develop a tourism development strategy for the subregion that will package development requirements, localities, design and new engineering standards, etc., for tourism and recreation establishments to ensure the area is sustainably and aesthetically developed. → Allow farming in the existing agricultural areas.
Connectivity	→ Repair and maintain all regional linkages (R54 and R716) that afford access to the subregion and its tourism and recreation facilities. → Repair and maintain gravel roads, as they provide access to tourism and recreation facilities that are remote because of their location. → Promote cellular and ICT connectivity throughout the area
Concentration	→ Allow for the concentration of tourism and recreational facilities along main and gravel roads. → Only allow low-impact tourism activities along the Vaal River and Vaal Dam. → Acknowledge that tourism and recreation development will be diverse because of the diverse opportunities that prevail in this subregion.
Conservation	→ Clean and protect the Vaal River and Dam and their aquatic impact buffer zone but allow low-impact tourism development as it is the means to give people access to and retain the environment. Without development, the conservation of privately owned land is exceedingly difficult. → Protect the natural landscapes, nature reserves, CBAs, ESAs, the Vaal River, wetlands, agricultural areas and heritage resources. → Protect the nature reserves and integrate them with municipal planning instruments. → Adapt to and mitigate climate change effects.

6.3.2 *Agriculture and Tourism Zone*

The agriculture and tourism zone includes the subregion's outlying areas. This zone is primarily agricultural in nature, but it has significant tourism potential that can still be realised. Several rural settlements can be found in this zone, particularly in the northwestern corner. Several rivers run through the area before joining the Vaal River or Dam. The area is furthermore dotted with many water bodies. Table 17 describes the general spatial development guidelines for this zone.

Table 17: Spatial Development Guidelines for the Agriculture and Tourism Zone (Vaal Dam Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Acknowledge that commercial farming is fundamental to the economic well-being of the subregion. → Promote commercial and small-scale agriculture. → Retain the status quo while expanding farming in alternative production processes. → Promote alternative production such as tunnels, hydroponics, intensive production units, etc. → Source financial support to assist vetted agricultural entrepreneurs since start-up farming is exceedingly expensive. → Carefully investigate and plan agri-processing to ensure it meets market demand, especially for commercial farming, because the latter will see to the long-term feasibility of an agri-processing plant. Small-scale farming alone has limited scope to ensure the feasibility and economic sustainability of an agri-processing facility. → Allow tourism on commercial farms where tourism accommodation is provided, as this will allow for favourable mixed-use.
Connectivity	→ Repair and maintain all order of roads (tarred and gravel) as a matter of urgency as it impacts access to markets and support services. → Ensure connectivity as it is essential in accessing any agro-processing facility and product off-set markets.
Concentration	→ Develop agri-processing and/or an agri-village close to Villiers and Frankfort. Strengthen Frankfort as an agricultural support centre. Even though Frankfort is located outside of the Vaal Dam Subregion, the town can cater to the subregion's agri-processing needs. → Allow agriculture and agrivoltaics to occur throughout the subregion. → Maintain an interrelated balance between conservation of water resources and agricultural production. → Afford access to the Vaal River.

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PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
	→ Urgently resolve water pollution of the Vaal River and Dam.
Conservation	→ Protect the agriculture sector (commercial farming and small-scale production). → Allow for commercial production to remain the priority because the area is endowed with high-potential agricultural land. Although small-scale farming assists in providing for individual livelihoods, it does not contribute to South Africa's production basket, and the mandate is to retain South Africa's agricultural production status. → Keep the rivers, water bodies, and Vaal Dam pollution-free to safeguard human and livestock health.





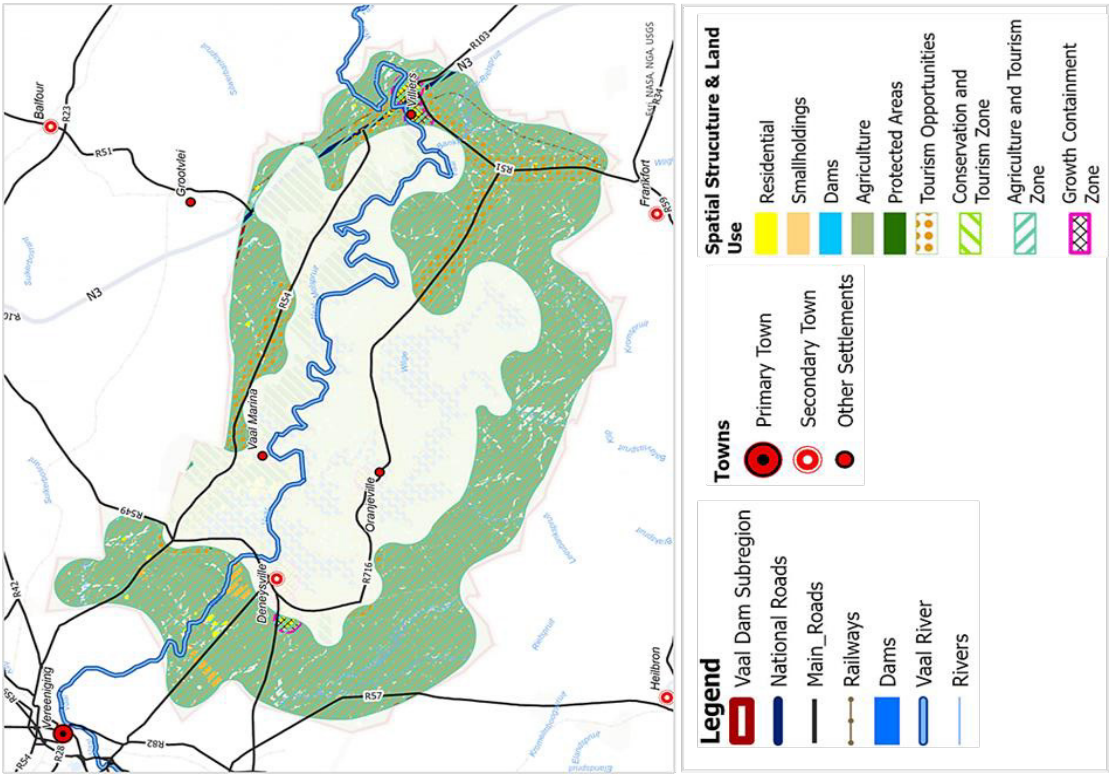


Figure 38: Agriculture and Tourism Zone (Vaal Dam Subregion)

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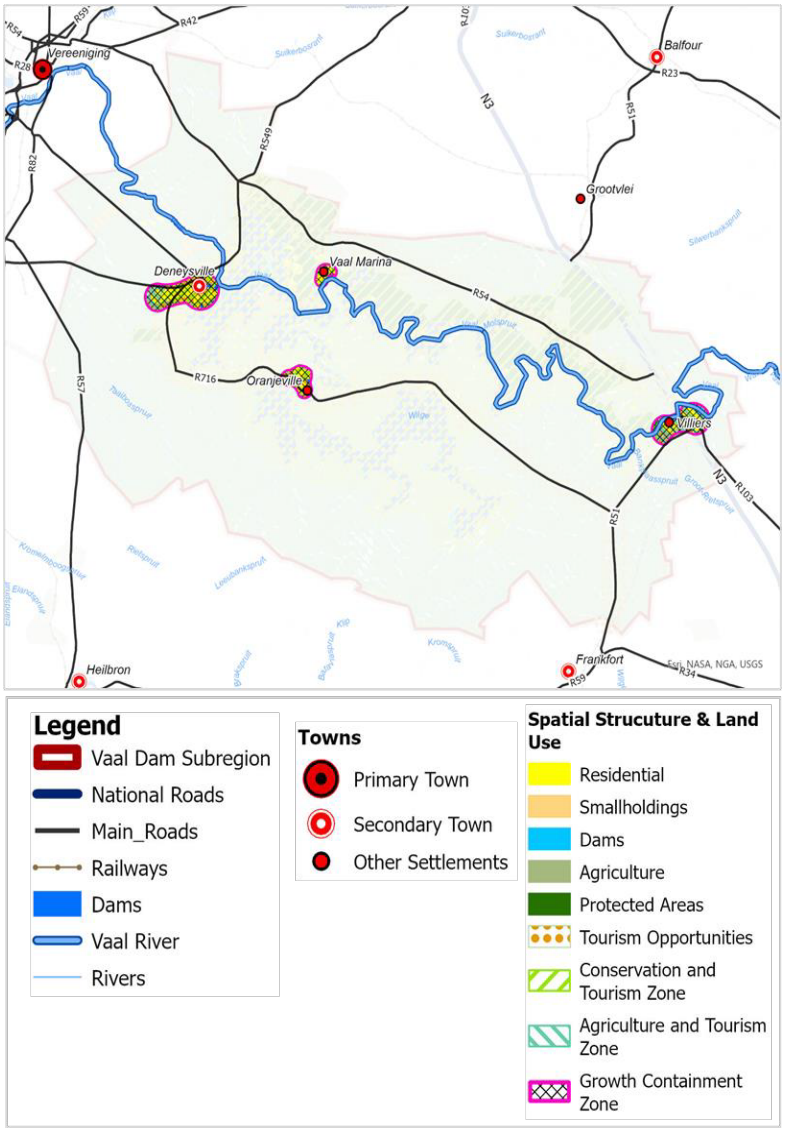


Figure 39: Growth Containment Zone (Vaal Dam Subregion)

6.3.3 *Growth Containment Zone*

This zone contains the four major settlements of the subregion, namely Oranjeville, Deneysville, Vaal Marina, and Villiers. Situated on the banks of the Vaal Dam, Oranjeville, Deneysville, and Vaal Marina provide tourism and recreational opportunities. These towns are ideal for high-income residential estates because of their proximity to the Vaal Dam. Villiers promotes agricultural activities and provides socio-economic services to the rural community. Because of its location on the N3, this town has excellent regional connectivity and should be promoted for agricultural processing, small-scale industrial development and logistics opportunities.

The majority of the subregion's population lives in these settlements. The subregion is expected to experience population growth, particularly within these settlements, which makes it critical to manage to avoid the expected population growth to negatively impact the agricultural areas and the Vaal Dam. While each settlement must be assessed on its own merits in terms of current use and future output, there are some commonalities that should guide the zone's overall development. Table 18 summarizes the key spatial development guidelines for the zone.

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Table 18: Spatial Development Guidelines for the Growth Containment Zone (Vaal Dam Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth Focus	→ Promote for multi-sectoral growth: business (all), residential (all), commercial (all), small-scale industrial (Villiers), rural and agricultural support services (Villiers), tourism and recreation (all). → Allow high-income residential growth or estates that add municipal value and further tourism and country living along the Vaal Dam in Oranjeville, Deneysville, and Vaal Marina. → Repair and maintain the infrastructure of all services as a matter of urgency since the state of the services is crippling all existing economic sectors and untapped economic opportunities. → Protect small businesses, as the sustainability of these towns mostly hinges on small businesses. A major intervention would be to re-establish standard service provision (water, access, electricity, and sanitation). → Support and manage informal and township economy.
Connectivity	→ Repair and maintain the R54 and R716 main routes for use of people, goods and services. → Retain and strengthen the connectivity of the zone with the N3 and the Vaal Urban Core Subregion. → Ensure good cellular and ICT connectivity as this enables country-estate living and all towns being regarded as satellite towns of Johannesburg.
Concentration	→ Only allow urban development to occur within the urban areas and within their delineated urban development boundaries (Villers, Vaal Marina, Oranjeville & Deneysville). → Support densification through subdivisions and sectional title schemes within existing urban areas. → Strengthen Villiers' CBD. → Support tourism development and commercial recreation in all urban centres. → Adapt transit-oriented development principles and promote walkability in the towns.
Conservation	→ Clean the rivers, water bodies, and Vaal Dam, as its pungent odour and debris profoundly impact tourism, commercial recreation, and residential development. → Protect estates, country living and tourism in all centres since they are municipal assets. → Identify all existing open spaces and promote a connectivity network.

6.4 Hinterland Subregion



HINTERLAND SUBREGION

The Hinterland constitutes the secondary study area. These large areas are removed from the primary study area and have less of a relationship with and less impact on the focus of this project, namely the Vaal River. Nevertheless, even though these towns, areas, and places are less relevant to this study, they are still acknowledged in the Spatial Development Framework, which incorporates proposals pertaining to the entire Hinterland. It should thus be noted that the MSDFs, which have been prepared with care and due diligence for the towns falling in the Hinterland Subregion, contain the most relevant spatial planning proposals compared to the VRRSDF proposals, which are meant to supplement the MSDF proposals and not override or replace the MSDFs content.

The Hinterland covers an area of approximately 26 300 km^2. It stretches from Kroonstad in the south to Ventersdorp in the north and from Heidelberg in the east to Potchefstroom in the west. It includes a magnificent rural region of South Africa, which for the most part, falls in the Free State and is known for its high agricultural production and vast commercial farms. This region is invaluable for South Africa's agricultural status and must thus be protected. To the east and west, the area partially wraps around Gauteng.

The key spatial components of the subregion are:

- Agricultural Areas
- Tourism Potential Areas
- Towns: Kroonstad, Potchefstroom, Ventersdorp, Heidelberg, Viljoenskroon, Koppies, Edenville, Heilbron, Frankfort, etc.

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HINTERLAND SUBREGION at a glance

Affected Municipalities

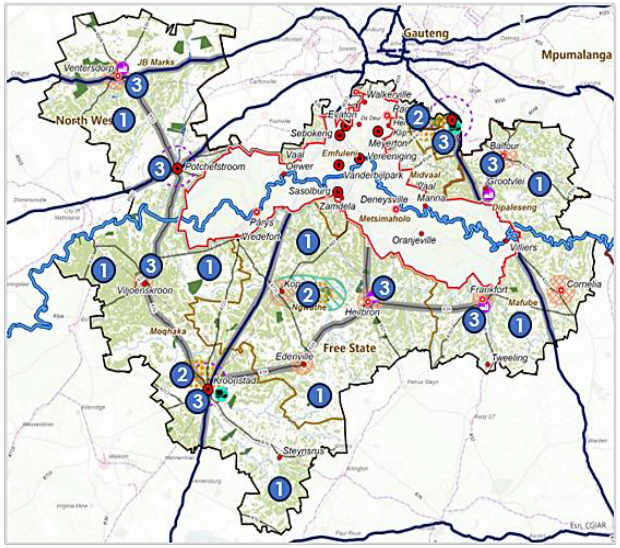
Emfuleni, Midvaal, Lesedi (Gauteng), Metsimaholo, Ngwathe, Mafube, Moqhaka (Free State), JB Marks (North West), Dipaleseng (Mpumalanga)

32 489 sq km Area	2030: 754 246 2050: 856 127 Estimated Population	Agriculture, Tourism, Manufacturing, Education, Business, and Finance Key Economic Sectors

Development Opportunities/Prosects

- Nature, leisure, & cultural tourism
- Agrivoltaics & renewable energy
- Crop & livestock production
- Rural & agric. business
- Manufacturing & industries
- Commercial & retail development
- Regional connectivity
- Mining & mineral beneficiation
- Country estate/ leisure housing

Spatial Components



1. Agricultural Areas
2. Tourism Potential Areas
3. Towns (Potchefstroom, Kroonstad, Heidelberg, Frankfort, Balfour, Helibron, Villiers, Ventersdorp, Viljoenskroon etc.)

Development Challenges

- Scattered rural settlements
- ICT coverage gaps
- Lack of public transport
- Stressed water resources
- Housing & service gaps
- Poor infrastructure maintenance
- Lack of tertiary institutions
- Unemployment & poverty
- Climate change & disaster threats

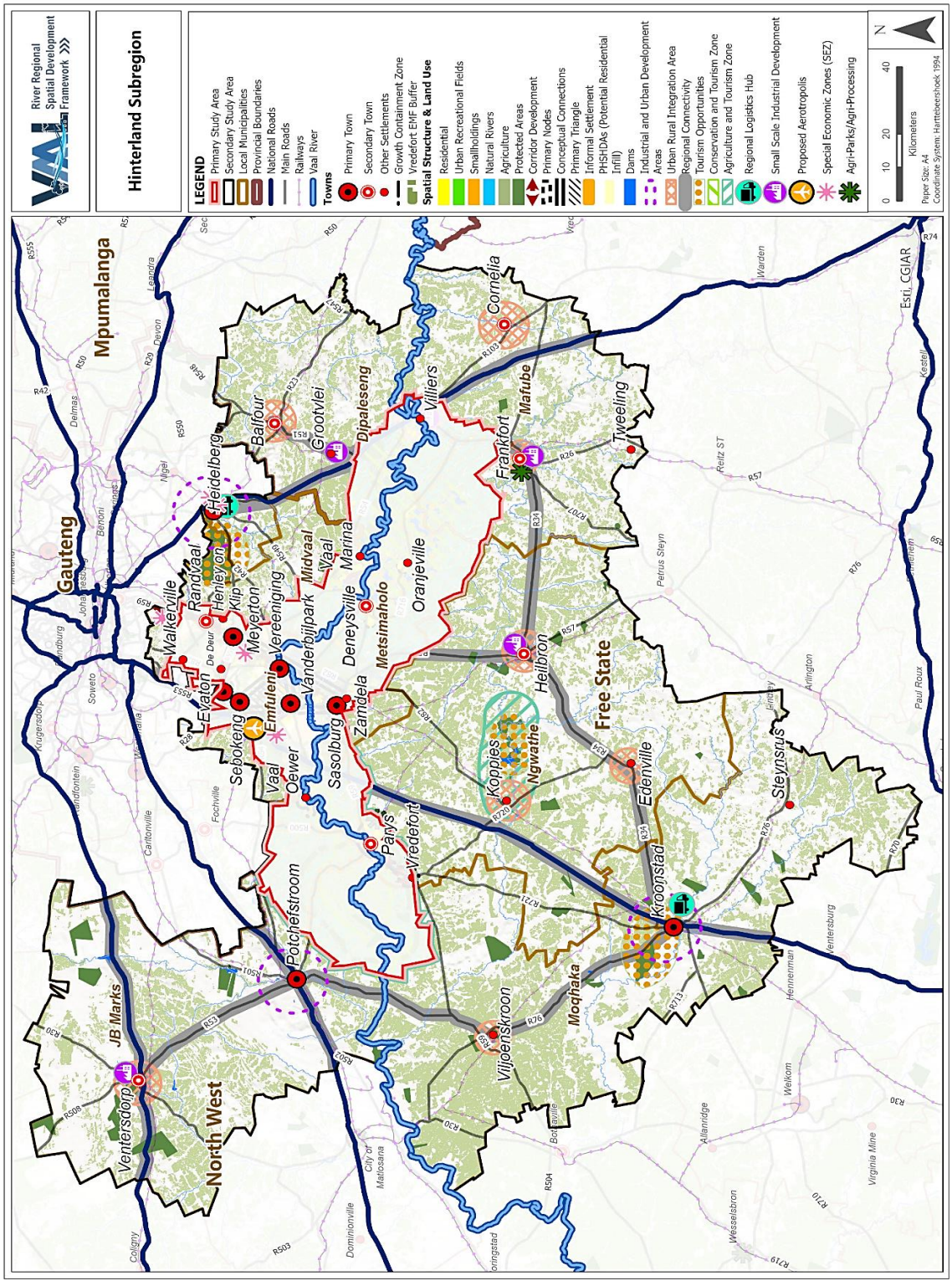


Figure 40: Spatial Development Framework for the Hinterland Subregion

6.4.1 *Agricultural Areas*

The Hinterland Subregion is primarily agricultural due to its high-quality agricultural land, the majority of which is productively farmed. These agricultural areas should thus mostly be used for agricultural and supporting activities, although small-scale tourism opportunities exist due to the rural composition of agricultural areas, particularly near quality natural features. The agricultural areas are dotted with several well-established agricultural settlements and towns that play critical roles in the processing and marketing of agricultural products and providing socio-economic facilities to rural communities.

The municipalities of this subregion are well known for their production of grain and/or maize, sheep, and cattle and for contributing to national food security. Much of the subregion is located within the NSDF's national resource production heartland, emphasising the area's importance in resource production.

Table 19: Spatial Development Guidelines for the Agricultural Areas (Hinterland Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Promote commercial and small-scale agriculture. → Establish the southern part of the region (Fezile Dabi District) as a beef production belt. → Ensure that the growth focus is on maintaining the status quo while expanding farming into alternative production processes. → Promote green energy generation and agrivoltaics. → Promote alternative production techniques such as tunnels, hydroponics, intensive production units, etc. → Provide financial support to assist vetted agricultural entrepreneurs since start-up farming is exceedingly expensive. → Acknowledge that commercial farming is fundamental to the economic well-being of the subregion and South Africa. → Support mining in existing mining areas, as it is an important economic sector and employment provider. Ensure that any expansion of mining activities is subject to strict pollution control and rehabilitation measures.
Connectivity	→ Urgently consider repairing and maintaining all tarred and gravel roads, as they impact access to markets and support services.

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PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
	→ Ensure connectivity (rural-rural and rural-urban), which is essential for accessing any agri-processing facility and product offset markets.
Concentration	→ Allow agriculture to occur throughout the subregion. → Maintain a balance between natural environment conservation, tourism, recreation, and agricultural production. → Promote Frankfort as the main agri-processing hub in the southern part of the subregion.
Conservation	→ Protect high-value agricultural land and utilise it for good use. → Manage competing land uses and limit urban sprawl and other activities to restrict development in agricultural areas. → Ensure that commercial production remains the priority because the area has high-quality agricultural land. Small-scale farming assists in providing for individual livelihoods, but it does not contribute to South Africa's production basket, and the mandate is to retain South Africa's agricultural production status. → Conserve vital water resources (Strategic Water Resource Areas in Moqhaka and JB Marks Municipalities), water bodies, dams, and rivers. → Delineate urban and rural settlement edges and limit settlement sprawl on agricultural lands. → Mitigate the effects of climate change on the agriculture sector. → Enforce strict pollution controls and rehabilitation parameters for mining activities to preserve the environment as best possible, especially where water pollution of any water system is concerned.

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6.4.2 *Tourism Potential Areas*

The Hinterland Subregion offers a variety of tourism opportunities, including nature tourism, heritage tourism and fly fishing. The prominent tourist attractions are Koppies Dam, Suikerbosrand Nature Reserve, and Kroonstad. Apart from these, many nature and game reserves in the subregion offer excellent tourism opportunities. Each tourist attraction point must be evaluated on its merits, and a regional tourism strategy must be drafted. The public sector should invest in and support tourism and recreational activities to protect the natural areas, grow the economy, and create jobs. The general spatial development guidelines for the tourism areas are presented in Table 20.

Table 20: Spatial Development Guidelines for the Tourism Areas (Hinterland Subregion)

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth focus	→ Clean all water bodies from pollution. → Promote and facilitate tourism and commercial recreation where opportunities exist. → Allow for tourism to occur on commercial farms where accommodation is provided for tourists as this will allow for favourable mixed-use. → Promote and protect areas of well-established tourism industries surrounding Koppies Dam and Suikerbosrand Nature Reserve. → Utilise and promote tourism activities in several historical and heritage buildings and sites in Kroonstad and Potchefstroom. → Promote tourism and recreational activities in the nature reserves and game reserves that dot the subregion.
Connectivity	→ Repair and maintain all regional linkages that afford access to the subregion and its tourism and recreation facilities. → Repair and maintain all gravel roads, providing access to tourism and recreation facilities that are often in remote locations. → Promote cellular and ICT connectivity throughout the area, as tourists must stay in touch with their businesses.

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Concentration	→ Promote tourism in Koppies Dam, Suikerbosrand Nature Reserve, Kroonstad, and along the R82 (Battlefield Route) → Acknowledge that tourism and recreation development will be diverse because of the diverse opportunities that prevail in this subregion.
Conservation	→ Clean and protect the water sources and waterways, but allow development, as it provides access to people and retains the environment. Without development, it is exceedingly difficult to conserve privately owned land. → Limit developments within critical biodiverse areas and nature reserves to developments that add value to the public realm and local economy while preserving the vital ecosystem services these areas provide. → Protect the natural landscapes and conservation areas.



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6.4.3 The Towns

The towns in the subregion are Kroonstad (Maokeng), Potchefstroom, Ventersdorp, Heidelberg, Viljoenskroon, Koppies, Edenville, Heilbron, Villiers, Frankfort, Cornelia, Balfour, and Grootvlei. They vary considerably in size, composition, and regional functionality. The various functions of the towns support the polycentric notion of developing the national spatial development framework (NSDF). Kroonstad and Potchefstroom are major and expanding urban centres that fulfil important regional roles while also acting as support centres for their hinterlands. Kroonstad, being a major rail and road junction, could potentially become a regional logistics centre. Heidelberg is emerging as an industrial centre and logistics hub with two SEZ sites, one of which is set to become a major logistics hub on the N3. Table 21 describes the spatial development principles for these towns.

Table 21: Spatial Development Guidelines for the Towns of the Hinterland Subregion

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
Growth Focus	→ Promote polycentric and multi-sectoral growth. → Repair and maintain the infrastructure of all services since the state of services is crippling existing economic sectors and untapped economic opportunities. → Ensure that good connectivity is maintained to all major urban centres which support agriculture and tourism across the secondary region. → Strengthen the urban centres in their rural support function. → Allow urban growth but with a framework of hierarchical development. → Only allow urban residential expansion around the towns within their urban development boundaries or urban edges. → Promote Potchefstroom, Kroonstad, and Heidelberg as regional industrial and urban development centres. → Promote small-scale industrial development in Ventersdorp, Heilbron, Frankfort, and Grootvlei. → Promote and support new industrialisation initiatives such as Vaal SEZ sites and agrivoltaics industries. → Promote Kroonstad and Heidelberg as regional logistics centres or hubs. → Support and manage informal and township economies. → Strengthen the functions of all rural towns that assist farmers (agricultural silos and processing and marketing of agricultural produce) and provide socio-economic services to rural dwellers. Rural towns, such as Balfour, Villiers,

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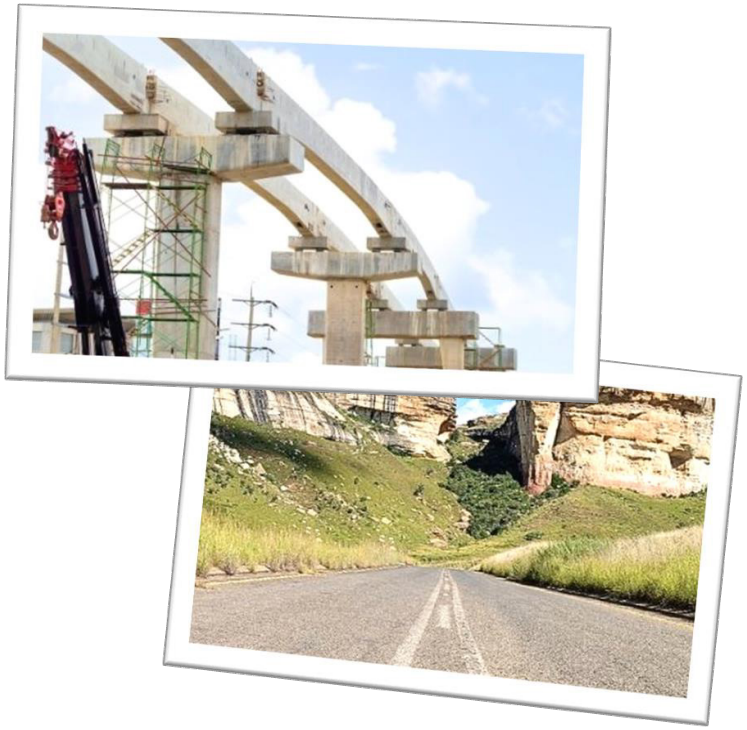
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PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
	Frankfort, Heilbron, Edenville, Cornelia, Koppies, Viljoenskroon, and Ventersdorp, can be classified as urban-rural integration areas. Frankfort can potentially host an agri-hub that caters to the needs of agricultural activities. → Continue mining in defined areas, as mining is an important economic sector and employment provider. It sustains secondary industries that provide jobs and contribute to the economic well-being of the Region.
Connectivity	→ Retain, repair and maintain all main road and rail routes for good connectivity for people, goods and services. → Retain and strengthen connectivity between major and minor centres and connectivity to rural areas. → Strengthen public transport facilities to ease the movement between the towns and rural settlements. → Ensure good cellular and ICT connectivity as it enables country-estate living and promotes local businesses. → Promote connectedness by investigating the feasibility and opportunities of the regional town airports, including facilitating business travel to facilitate potential investment activities.
Concentration	→ Ensure urban development occurs within urban areas and within their delineated urban development boundaries (or boundaries to be delineated). → Support densification in the form of subdivisions and sectional title schemes within existing urban areas. This is valuable in smaller towns and saves on expanding engineering infrastructure to new townships. → Strengthen the urban centres but ensure that an appropriate settlement hierarchy is retained per the NSDF. → Concentrate commercial and industrial development in the areas around the main centres identified under the "growth focus" principle. → Support tourism development and commercial recreation in all urban centres and in the vicinity of water sources and waterways. → Encourage heritage tourism associated with the Anglo-Boer war. → Adapt transit-oriented development principles and promote walkability in the towns.
Conservation	→ Protect the agriculture sector and commercial food production around the towns. → Establish protected natural areas to conserve birds and wildlife. → Make every effort to conserve the towns' heritage values, such as old houses, buildings, factories, and mills.

PRINCIPLE	SPATIAL DEVELOPMENT GUIDELINES
	→ Protect the tourism industry. → Protect existing businesses and industries. → Protect small businesses, as the sustainability of many of the towns hinges on small businesses. A major intervention would be to simply re-establish standard service provision (water, access, electricity and sanitation). → Delineate the urban edge for each town and contain development within the delineated edges. → Enforce strict pollution control and rehabilitation parameters for mining activities to preserve the environment as best possible, especially where water pollution of any water system is concerned. → Identify all existing open spaces and promote a connectivity network.

6.5 Composite Spatial Development Framework

Figure 41 displays the study area's composite spatial development framework. The composite framework must be read in conjunction with the previously described subregional spatial development framework and spatial development guidelines.



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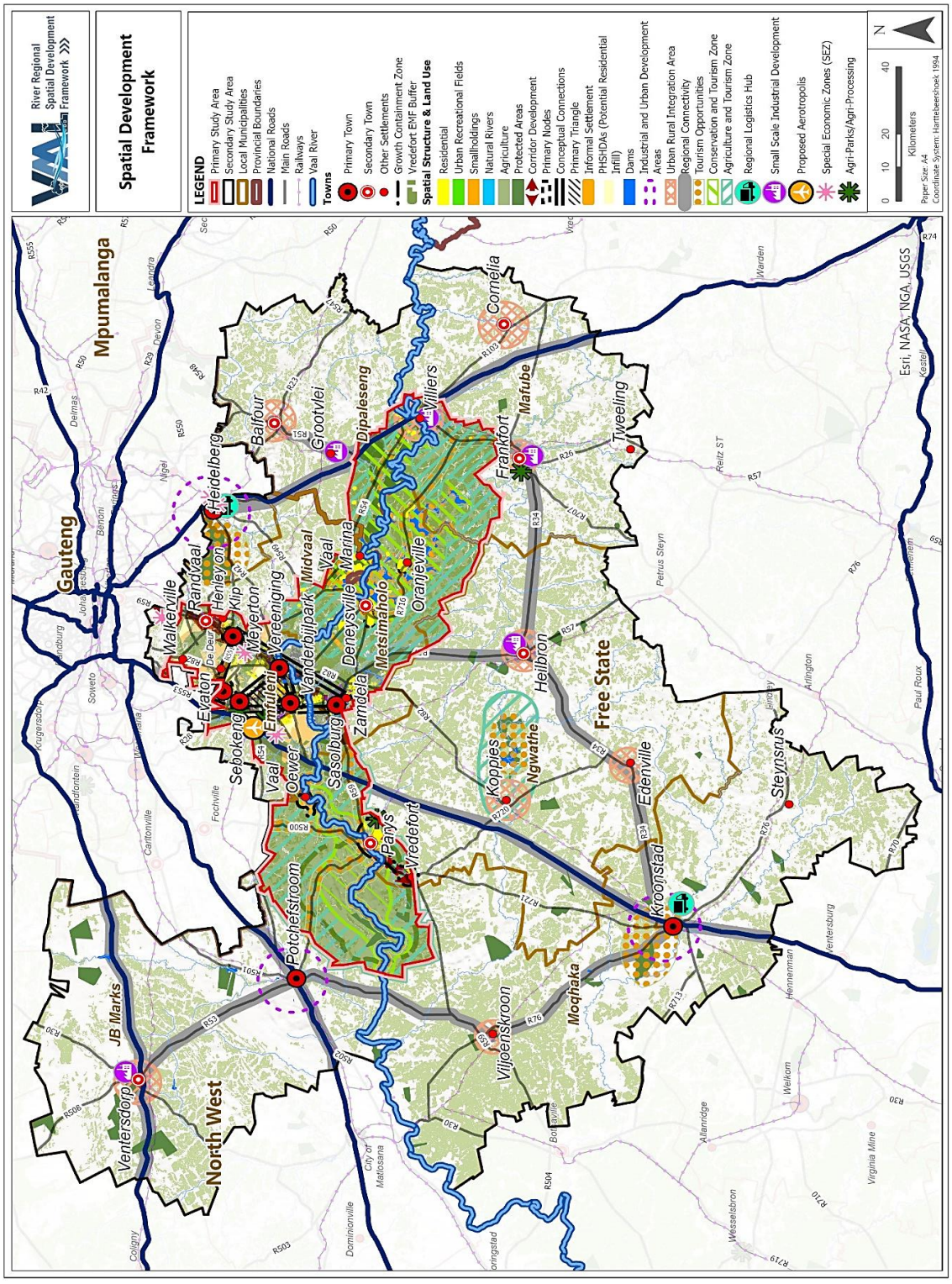


Figure 41: Composite Spatial Development Framework

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7. DEVELOPMENT STRATEGIES AND IMPLEMENTATION PROPOSALS

Based on the development vision and objectives supported by the VRRSDF, development strategies and implementation proposals have been formulated for each of the VRRSDF's development objectives. This section comprises five subsections, one for each development objective, which is further elaborated on to define its content and intended output.



7.1 Objective 1: INFRASTRUCTURE: To Repair, Maintain and Expand Infrastructure



Objective 1: INFRASTRUCTURE

Improved economic growth, welfare, quality of life, human productivity, and economic opportunities all depend on the availability of well-planned and well-maintained infrastructure services such as, housing, electricity, water, sanitation, roads, and railways. The availability of these basic services also form the cornerstone of a better quality of life and basic human dignity.

Thus, not only is access to essential services, such as electricity, potable water, housing and sanitation, necessary for one's well-being — creating that access through infrastructure is also necessary for the efficiency of a region's economy. In this way, good infrastructure contributes to both economic activity growth and improving living standards for those who partake in the economic system.

This section outlines the infrastructure strategies that should be followed to address the Vaal River Region's infrastructure challenges. The following development strategies were identified:

7.1.1 Sub-objective 1: Strengthen Connectivity and Movement Systems

The Region's movement system comprises roads, railways, and air transport. Road transport is mostly used in the Region for commuting, followed by rail transport, which has limited access and is mainly used for freight. The airfields in the Region are also mostly used for freight. The Region's road network comprises national, provincial, and local roads, which provide essential links between various towns, including the country's major urban centres such as Johannesburg, eThekwini, and Mangaung.

As the regional economy, amongst other things, relies mostly on roads and railway infrastructure for connectivity and movement of goods and people, it is important that such a high-order movement network must always be in good working order to facilitate the movement of people, goods, and services. Transportation infrastructure should thus enhance regional connectivity and ensure accessibility and mobility within the Region.

In the next section, the strategies and proposals for the strengthening of a connectivity and transport network are discussed. For this network, it is essential that the Green Transport Strategy, as prepared by the Department of Transport (2018), are followed to implement the proposals.

7.1.1.1 ROADS AND CORRIDORS

ROAD NETWORKS



The area is well connected with a system of radial linkages emanating from the Gauteng urban concentration. The major road networks in the region are shown in Figure 42: Transport Network in the Region and are also listed below:

- Primary network: National and certain provincial roads (N1, N3, N12, N14, R59, R42/Parts of K174 and K184, R551, R553/K45) provide inter-regional connectivity and link the major urban centres.
- Secondary network: Certain provincial roads connecting the smaller urban centres with larger ones (R501/part of K140, R76, R54/K178, R549/Part of K83 & K135, R82/K57, R57, R34, R720, R721, R26, R716, R26, R76, R550, R53).
- Tertiary network: All other roads providing local connectivity.

Provincial roads (PWVs) 18, 20, and 22 will improve east-west connectivity in the future, while PWVs 1, 5, and 13 will improve north-south connectivity. Because the exact date of construction of these roads cannot be determined at this time, the VRRSDF proposals are based on existing road networks.

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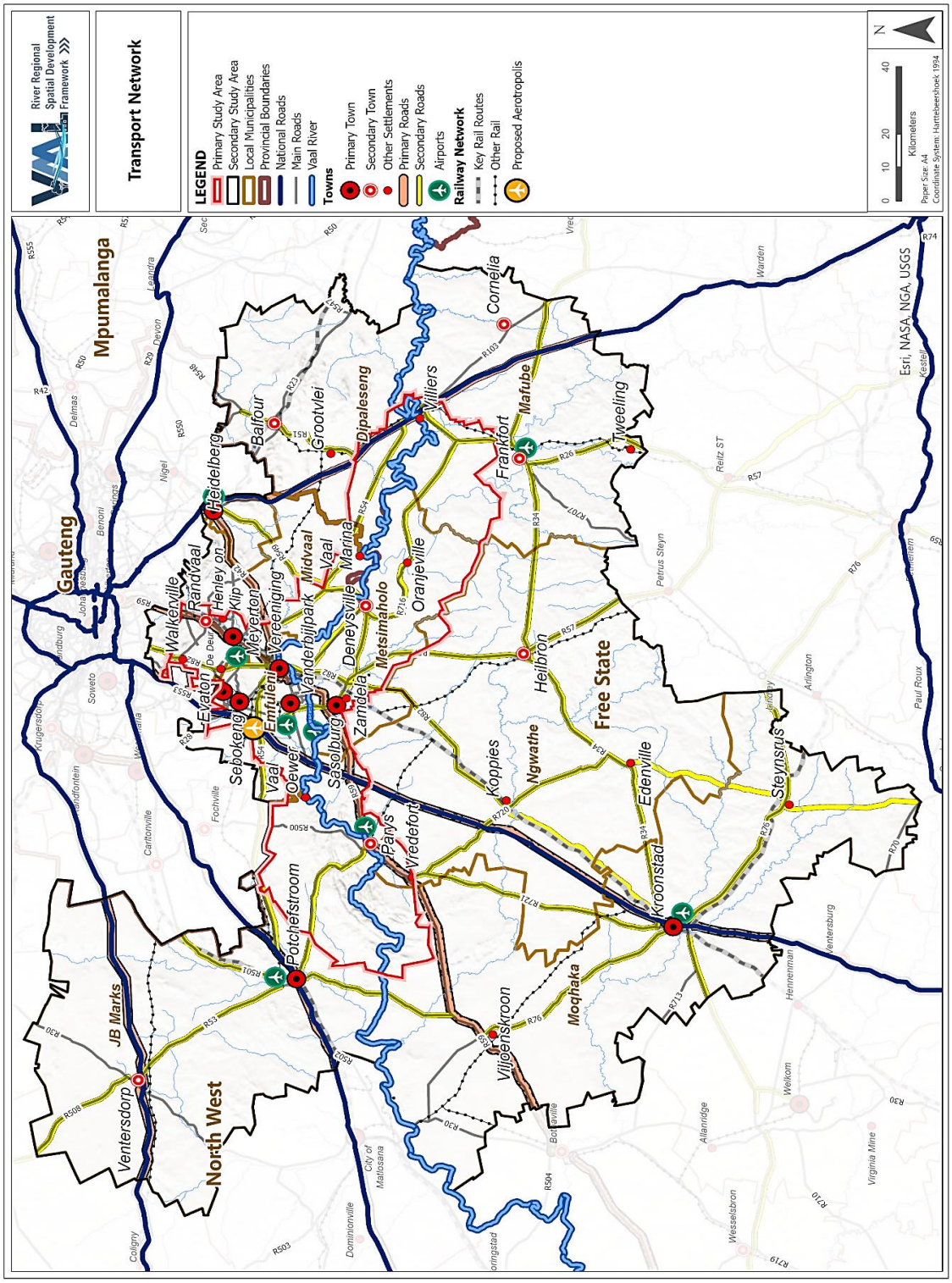


Figure 42: Transport Network in the Region

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DEVELOPMENT CORRIDORS (DC)

Development corridors are envisioned as transportation routes connecting major economic nodes. They provide vital links between economic nodes or hubs and an opportunity to connect those economic development nodes with their hinterlands and rural areas, integrating smaller and rural economies with larger urban economies and developing the area through which they pass. Land use and transportation integration are important components of development corridors.

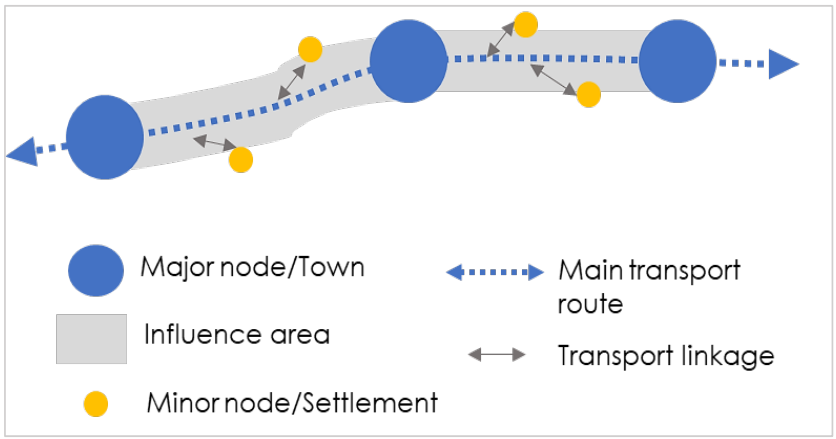


Figure 43: Corridor Development Concept

Development corridors can serve several purposes, including promoting efficient movement of people and goods (Mobility Corridor), industrial and economic development along the main transportation network (Economic Development Corridor), faster movement of agricultural products and rural services (Rural Development Corridor), and tourism by connecting tourism nodes with urban centres (Tourism Corridor). Depending on the nature of the nodes it connects and the characteristics of the area it traverses, a corridor may serve a single or multiple functions.

The following Development Corridors are proposed for the Region:

- **DC1: N3 Mobility and Economic Development Corridor:** This corridor runs through the Region's eastern portion and connects to seaports in Richards Bay and Durban. At present, this corridor primarily works as a mobility corridor. In the NSDF, this corridor is identified as a National Development Corridor capable of stimulating economic activities. This corridor can potentially boost economic development in the Region's east while also providing excellent connectivity to Johannesburg and eThekwini.
- **DC2: N1 Golden Highway Mobility and Rural Development Corridor:** This corridor facilitates the movement of agricultural products, goods, and people and connects the Region to Johannesburg, Bloemfontein, and the seaports of East London, Gqeberha, and Cape Town. It also connects Kroonstad to the Region's major economic centres.
- This corridor also covers the Golden Highway (R553/K45) and the R57 route,, which connects Sasolburg with Johannesburg. It allows Sebokeng residents to commute to economic centres in the Region and Gauteng. A significant portion of this corridor parallels the N1 corridor. This corridor further provides linkages to the Vaal SEZ located in Emfuleni LM.
- **DC3: N12 Mobility Corridor:** This corridor, which passes through Potchefstroom, facilitates the movement of goods and people and connects the Region's western part to Johannesburg and Kimberley.
- **DC4: N14 Mobility Corridor:** This corridor, which runs through Ventersdorp, facilitates the movement of goods and people and connects the Region's northwestern parts with Johannesburg and various towns in the Northern Cape.
- **DC5: R59 Economic Development and Tourism Corridor:** This is an important corridor connecting major regional urban centres and tourism nodes in Parys and Vredefort. The western section of the

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corridor (from the R76 in Viljoenskroon to the R57 in Sasolburg) connects tourism nodes and rural areas near Vredefort, Viljoenskroon, and Parys. The eastern portion of the corridor (from east of the R57 in Sasolburg) passes through some of the Region's major economic hotspots and connects the large urban centres of Sasolburg, Vereeniging, and Meyerton with Johannesburg. This corridor provides linkages to the Vaal SEZ located in Midvaal LM. The development of this corridor is prioritised in the Sedibeng Growth and Development Strategy 3.

- **DC6: R42 Economic Development and Tourism Corridor (parts of K174 and K184):** This corridor provides excellent east-west connectivity in the Region by connecting Heidelberg in the east to the N1 in the west while passing through Vanderbijlpark and Vereeniging's economic centres. The upcoming Vaal River City is located on this corridor. The corridor also connects the Vaal SEZ located in Lesedi LM with the rest of the Region. The Lesedi SDF identifies this road as a major activity spine towards the east of Heidelberg. This corridor also has significant tourism potential as it connects the Suikerbosrand Nature Reserve with Heidelberg and provides linkages with the Vaal Dam. The Sedibeng Growth and Development Strategy 3 has proposed prioritising the development of the R42 corridor.
- **DC7: R82 Tourism and Mobility Corridor (parts of K61 and K57):** This corridor begins in Koppies, a popular tourist destination, then continues through Vereeniging to end in Johannesburg. The R82 corridor will play an important role in providing future mobility as the towns or settlements along it, such as Lakeside, Walkerville, De Deur, and Balmoral Estate, are expected to grow significantly. Like the R59 and R42, the R82 corridor is considered for priority development in the Sedibeng Growth and Development Strategy 3.
- **DC8: R501, R76, R34 Rural Development Corridor:** This corridor provides a critical east-west linkage in the southern part of the Region. It links the small agricultural towns of Frankfort, Heilbron, Edenville, and Viljoenskroon with regional anchors Kroonstad and Potchefstroom and the national network (N1, N3, and N12). This corridor can be important in moving agricultural products and services from rural to urban areas.

CRITICAL LINKAGE CORRIDORS

Critical linkage corridors are roads that connect development corridors to important towns that are not part of the development corridors. Although critical linkage corridors are not as important as development corridors, they are expected to play an important role in strengthening efficient connectivity throughout the Region. The corridors ensuring that there is rural-urban linkage include DC1, DC2, DC5, CL3, CL4, and CL8. The following critical linkage corridors are proposed for the Region:

- **CL1-R51:** This corridor connects Balfour and Grootvlei to the N3 corridor.
- **CL2-R551: (part of K174):** This corridor connects Meyerton to R42, which connects to Heidelberg.
- **CL3-R53:** This corridor connects Ventersdorp and Potchefstroom.
- **CL4-R57:** This route connects Heilbron to Sasolburg and DC7.
- **CL5-R720:** This route connects the DC5 and Vredefort to the DC2, and Edenville.
- **CL6:** This corridor connects the DC8, Frankfort, and Cornelia. Currently, a part of this route is a gravel road.
- **CL7: R76:** This corridor connects the DC2, DC8, and Kroonstad with Steynrus.
- **CL8-R54:** This corridor passes through the Region and connects Potchefstroom in the west to Villiers in the east. It also connects to tourism nodes in Vaal Marina and Deneysville and enables the movement of agricultural products.

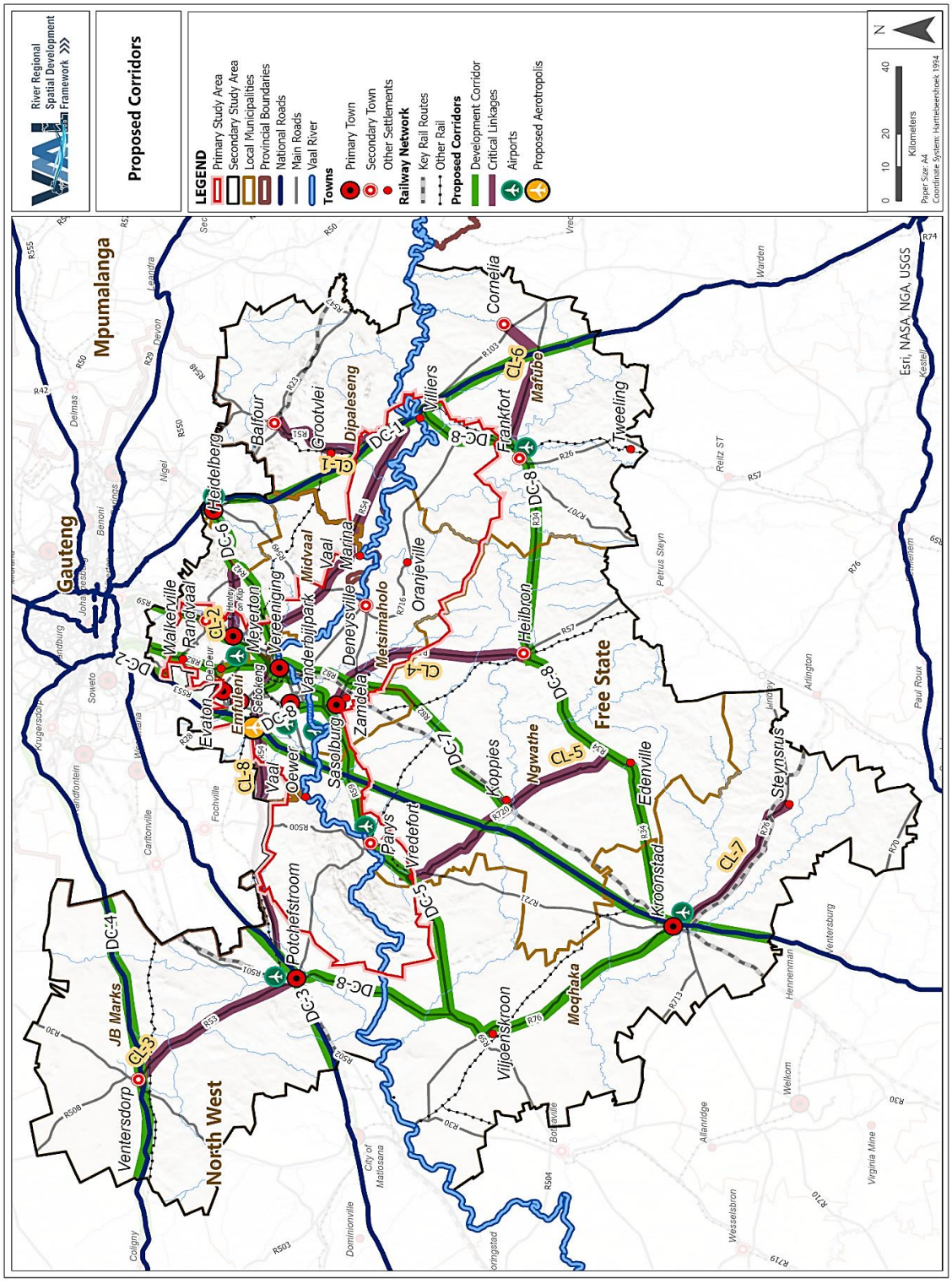


Figure 44: Proposed Development and Critical Linkage Corridors

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IMPROVEMENT OF ROAD CONDITIONS

- Repair and maintain existing roads throughout the Vaal River Region (Viljoenskroon, Kroonstad, Steynsrus, Frankfort, Villiers, Cornelia, Tweeling). Most of these roads have serious potholes and other road hazards, which make travelling dangerous and slow.
- Upgrade and/or strengthen the following key regional corridors and roads: R59, R42, R551, R54, R34, R82, R51, R76, R501, R53 & R549.
- Tar the following gravel roads to improve access and stormwater management:
- Road linking Greater Tweeling with Heilbron (S1430).
- Road linking Sasolburg and Heilbron (as an extension of the R723).
- Road linking Cornelia and Frankfort (between the R34 and the R103).
- Road linking Tweeling and Mafahlaneng (S1410).
- Road linking Oranjeville with Heilbron (S158).
- Road linking Oranjeville with Frankfort (S159) plays a significant role as it links the agricultural hinterland with the urban areas.
- Evaton, Sebokeng, Sharpeville and Boipatong gravel roads.
- R82 phase 3 (between D1073 – Walkerville and K164 – De Deur).
- Install good stormwater management systems, including attenuation, and initiate repair and maintenance of the existing infrastructure.
- Build new roads in new extensions throughout the Region to ensure accessibility. Some of these areas include Frankfort Ext 9, Villiers, Cornelia, Tweeling, Viljoenskroon, Kroonstad and Steynsrus.
- Upgrade road S163 between Heilbron and Koppies and improve access to Koppies Dam Nature Reserve.
- Update the Roads and Transportation Master Plan and ensure that all areas have the recently approved (by local, provincial and national roads authorities) Roads and Transportation Master Plan available.
- Build the following roads:
- Sebe Road in Evaton
- Extension of William Nicol Road up to Barrage Road
- Extension of Piet Retief Boulevard (link with Hendrik van Eck Place Boulevard)
- Access road to the western portions of Kwakwatsi (onto Station Street)
- Road connecting Kwakwatsi to the Koppies urban area
- Road connecting Greenland's Road to the Thambo and Mapetla precincts
- Access roads to Zamdela

7.1.1.2 RAILWAY

FREIGHT RAIL



The freight rail network in the Region is well-developed. The Region has good availability of rail network as it falls into two freight rail infrastructure zones (see Figure 45). The Gauteng Freight Ring and Central Core Zone covers the majority of the Region and connects to Gauteng, North West, Mpumalanga (Maputo Corridor), Limpopo (Northern System), and ports in the Western and Eastern Cape via the Western and Southern Cape System and the Eastern and Central Port System, respectively. The Coal line, NATCOR, and Eastern Port System covers the Region's southern side, connecting to coal-producing areas in Mpumalanga and eastern ports in Durban and Richards Bay. Given the

region's strategic location and the presence of industrial activities, the rail network will play an important role in the region's development.

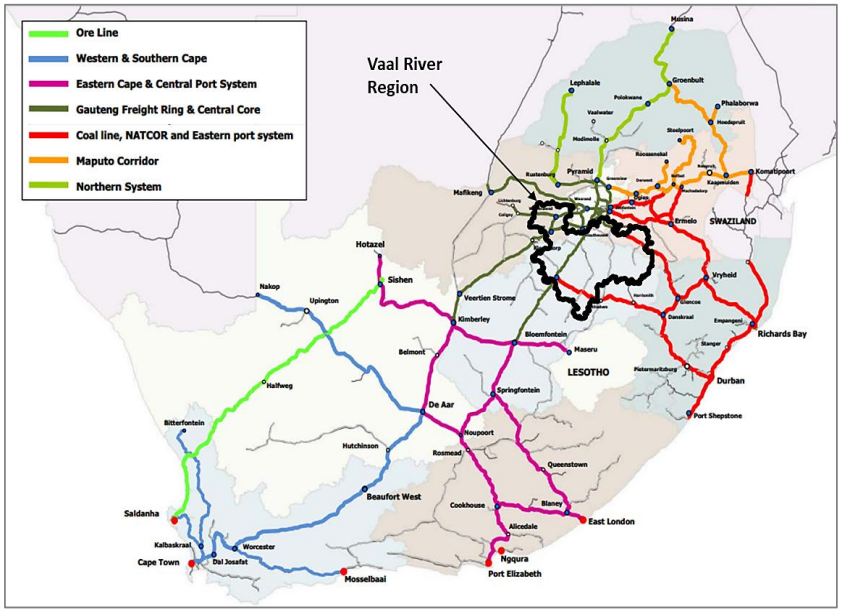


Figure 45: Regional Freight Rail Network

It is worth noting that the country's rail network is underutilised and that many rail lines are in poor condition. For example, the rail network to Parys is non-functional. The future of minor railway lines in the region, such as the one connecting Parys, is uncertain. The usage of these minor railway lines could, however, play an important role in local development, particularly in rural development and agricultural exports. As a result, the Region must take steps to ensure that the rail network's future existence and use contribute to the local economy.

COMMUTER RAIL

The rail system is the region's least used mode of transport, with Gauteng Metrorail being the only commuter rail system connecting Meyerton and Vereeniging with Johannesburg. As this railway line will contribute to the Region's local economic development and facilitate passenger movement between the Region and the rest of Gauteng, its existence and use must be protected. The feasibility of expanding Gauteng Metrorail's services to other towns in the Region must also be investigated. In the meantime, it is suggested that all existing major rail stations' safety and facilities be improved to attract more commuters.

RAPID RAIL AND HIGH-SPEED RAIL

The Region's current population does not support a rapid rail transit system such as Gautrain. However, the development of a new rapid rail transit system or the expansion of the existing Gautrain network to connect the Vaal Urban Core (Sasolburg, Sebokeng, Vanderbijlpark, Vereeniging, and Meyerton) with Gauteng's major urban centres should be investigated.

The 2022 National Rail Policy White Paper proposed that a regional rapid rail transit connecting the country's major urban centres should be developed to facilitate rapid regional passenger movement. According to the White Paper, Gauteng-Bloemfontein has the potential to be a regional rapid transit route, and although the route's alignment has not yet been determined, it is proposed that the route should pass through the Vaal Urban Core and Kroonstad as this would allow for the quick movement of regional passengers. The White Paper also suggests building a high-speed rail network to connect major metropolitan areas. The routes of the high-speed rail network have yet to be identified, but the Region should piggyback on any rail development projects that may pass through its area.

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7.1.1.3 PUBLIC TRANSPORT



The most dominant form of public transport in the Region is taxis or minibuses, followed by buses. Since taxis are mostly used, it is suggested that the following taxi ranks, bus stations, and taxi routes be attended to.

- The taxi routes in the Relebohile area, R42 and R549, Ratanda and Heidelberg should be upgraded.
- Meyerton Station (major modal transfer point), should be maintained, especially with the construction of the pedestrian bridge over the R59 freeway that links Sicelo with the station.
- Informal taxi ranks in Sarafina, Lusaka/Kanana, Ikageng, Mohadin, Namahadi, Frankfort, Tumahole must be formalised to improve taxi services.
- The existing formal taxi ranks such as the Sentra/Zio pick-up point, Checkers Centre, Mokwallo, Matlwangtlwang, Refengkgotso, Qalabotjha, Ntswanatsatsi, Mafahlaneng, Tweeling must be upgraded.
- Taxi ranks should be constructed in Mamello (Extension 23), Phomolong (Extension 8), at the entrance of Zamdela, Sasolburg CBD, Harry Gwala, Parys, Edenville, Frankfort CBD, Vredefort CBD, Vanderbijlpark (Erven 112 and 165), Vereeniging, Bedworthpark, Evaton, Three River, and Boitumelo.
- Bus stations in Rammulotsi, Viljoenskroon, Vanderbijlpark, Vereeniging, Bedworthpark, Evaton, Three River, and Boitumelo should be upgraded.
- Non-motorised transport networks and corridors within the major towns and settlements should be developed and strengthened.

7.1.1.4 AIRPORTS



There are eight airfields in the Region, namely Vanderbijlpark Airport, Aerovaal (Vereeniging), Tedderfield Airfield, Heidelberg Airport, Potchefstroom Airport, Frankfort Airfield, Kroonstad Airfield, Koppies Airfield, Parys Airfield, and Heilbron Airport.

- The potential of Kroonstad airfield to become a national freight hub and dry harbour facility, due to its location close to N1, should be explored.
- Parys Airfield supports tourism and commercial development and has a quick link to the N1 via the R59.
- Heilbron Airfield is a small airport that can serve one aircraft at a time.
- Frankfort Airfield is well-maintained and should be explored for handling freight services due to its proximity to the N3 and Heidelberg's SEZ.
- Emfuleni Local Municipality has proposed an aerotropolis (Vaal Aerotropolis), which will serve as a regional airport with logistics handling facilities.

7.1.2 Sub-objective 2: Improve Municipal Services and Infrastructure

Infrastructure supports various aspects of modern societies, economies, and human well-being. As discussed earlier, the region's population is expected to grow over time, even though the growth in the Region's municipalities and settlements will be uneven. Several towns within the region, such as Sasolburg, Potchefstroom, Meyerton, Heidelberg, and smaller settlements in Lesedi and Midvaal, are expected to experience high to extreme growth pressure. This expectation implies that capital infrastructure investment should mainly focus on these towns to ensure that their infrastructures do not

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become overburdened over time due to increasing demands and possible infrastructure backlogs.

Regular maintenance is of utmost importance to ensure that existing infrastructures can continue delivering services within their appropriate capacities. Furthermore, where a lack of capacity has been identified, urgent upgrading and improvement in those lacking infrastructures will be required to ensure improved service delivery throughout the region.

Even though developing, upgrading, and maintaining the infrastructure of towns expected to expand significantly are important, the same should be done for smaller settlements which may still lack such services. To ensure that municipal services and infrastructure are made available throughout the Region it is proposed that access to water, sanitation, and all stormwater management systems be improved.

7.1.2.1 IMPROVE ACCESS TO WATER



To ensure the health and well-being of humans, they must have access to safe and sufficient potable water. This is a service that is also necessary for any form of economic development (Pérez et al., 2022). According to the Blue Drop Report of the Department of Water and Sanitation (2022), most of the water supply systems within the Region are rated from high risk to critical risk. This finding highlighted the Region's insufficient capacity to be able to supply potable water in terms of current requirements; not to mention future requirements.

The Region is facing many challenges in its efforts to supply water. Challenges include pipes that frequently burst due to ageing infrastructures, asbestos pipes that are still being used for bulk water supply, loss of water due to poor distribution, poor water quality and having to be reliant on water tankers due to non-existent infrastructure. The capacity to treat water is amajor challenge for towns, such as Dipaleseng, Lesedi, and Midvaal. While ageing infrastructures and the use of asbestos pipes are major challenges in the local municipalities of JB Marks, Mafube, Ngwathe, Metsimaholo, Moqhaka, Lesedi, and Midvaal and the municipalities of Moqhaka and Dipaleseng are faced with a shortage of raw water.

It is, therefore, proposed that existing water supply systems be upgraded to meet the Blue Drop status requirement. The Blue Drop was introduced by the Department of Water and Sanitation which is a program to foster ongoing improvement and recognize outstanding performance in managing drinking water services in South Africa. The Blue Drop Scores each water supply system through these categories excellent situation (>95-100%), good performance (>80-<95%), average performance (>50-<80%), very poor performance (>31-<50%), and critical state (0-<31%).[1]

It is further proposed that the capacity of the water supply systems of the towns anticipated to experience high to extreme growth in population be improved and upgraded. To ensure improved and sufficient access to water in the Region the following must be implemented:

- Provide water-supply infrastructure to all areas that currently lack such services. This includes the settlements of Namahadi, Calabutsha, Cornelia, Tweeling, Tedderfield (north), Sonlandpark, Parys, Koppies, Vredefort, Edenville, Heilbron, and Naledi's new extension.
- Establish a regular maintenance and repair programme to ensure the proper functioning of water-supply infrastructures to minimise disruptions and prolong their lifespan. The following are areas that have been identified to be most problematic in terms of water capacity, Sicelo area, Henley-on-Klip, Blignautsrus, Ohenumuri, Kookrus, Homestead Apple Orchards, Walkers Fruit Farms, Daleside, Golf View, Potchefstroom, the eastern parts of Riversdale, urban areas along the R59 and R82, and Steynsrus/Matlwangtlwang.

[1] https://ws.dws.gov.za/IRIS/releases/BDN_2023_Report.pdf

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- Prioritise rainwater harvesting by piloting a programme that ensures all schools have Jojo Tanks for consumption, gardening, and cleaning.
- Reuse wastewater (grey water) for non-potable purposes such as flushing toilets, washing cars, or watering gardens to reduce the demand for new and freshwater supplies.
- Implement policies, such as the Region's Water Services Development Plan, to support the provision of reliable and safe water supply services.

7.1.2.2 IMPROVE ACCESS TO SANITATION



One internationally recognised basic human right is the right to basic sanitation services. This means that sanitation services should be easily accessible to households and sustainably operated by service providers.

According to the Green Drop National Report (2022), most of the wastewater treatment works (WWTWs) within the Region fall into the high to critical risk categories (see Figure 46). This implies that these WWTWs are functioning beyond or will soon exceed their design capacity utilisation. Sanitation challenges that the Region faces, specifically in the municipalities of JB Marks, Mafube, Ngwathe, Metsimaholo, Moqhaka, Lesedi, Emfuleni, and Midvaal, are poor sewer reticulation, the use of asbestos pipes as sewer lines, and ageing sewer lines and pump stations that frequently lead to pipe bursts and sewer spillages. The WWTWs' capacity is a major challenge that all the municipalities in the Region face. Given the anticipated high to extreme growth in population in several of the Region's towns (Sasolburg, Potchefstroom, Meyerton, Heidelberg, and several smaller settlements in Lesedi and Midvaal) and to avoid the systems from becoming over-burdened it is important to improve, upgrade and maintain the capacity of the existing WWTWs to make sure they always function within the Green Drop requirement status.

Providing alternative power backup for the WWTWs is essential to ensure they operate during load shedding.

Proper maintenance of WWTWs will further ensure that all effluent is treated before being discharged into the Vaal River. This must also apply to WWTWs that fall outside of the Vaal Region but flow into the Vaal River, which could potentially pollute the river. Therefore, the existing WWTWs are proposed to be upgraded to meet the Green Drop status requirement.

It is further proposed that the capacity of the sanitation services systems of the towns anticipated to experience high to extreme growth in population (Sasolburg, Potchefstroom, Meyerton, Heidelberg, and several smaller settlements in Lesedi and Midvaal) be improved and upgraded, even though some of them have been indicated as low risk.

o ensure improved and sufficient access to sanitation in the Region the following must be implemented:

- Upgrade and rehabilitate the WWTWs in the Region, including in the towns of Cornelia, Tweeling, Villiers, Frankfort, Rietspruit, Leeuwkuil, Kroonstad, Sebokeng, Meyerton, Ohenimuri, Heidelberg, Eye of Africa, Bantu Bonke, Vaal Marina and Ratanda to prevent breakdowns and ensure optimal performance. Sufficient resources should be allocated to ensure continued maintenance and repair works on all infrastructure.
- Improve the existing sewer pump stations that are in a poor state at Heineken Pump Station, Roshnee/Rust-ter-Vaal, Ewelme Street, Evaton, Molotlegi Street, and Botha and Mooidraai extension.
- Construct bulk sewer pipeline networks to new extensions and other areas that lack such services, including Sonlandpark, Namahadi, Cornelia, Tweeling, Calabutsha, Themba Khubeka extension, and Naledi new extension.
- Establish a management programme and schedule for regular maintenance and the construction of new infrastructure to address and avoid blockages, burst pipes and sewer spillages.

- Promote alternative sanitation solutions in areas where conventional sewer systems are not feasible, such as ventilated pit latrines, composting toilets or decentralised wastewater treatment systems. Engage local communities in the planning and implementation of these solutions. Also, consider developing on-site treatment plants (approved by DFFE) so that sewage spillage can be controlled and managed to keep the Vaal River and its tributaries free from pollution.
- Prioritise the proposed regional wastewater treatment plant at the Sedibeng Regional Sewer Scheme that aims to address sewer problems of the Sedibeng DM and the Midvaal, Emfuleni and Lesedi LMs, even though this project is currently facing various issues.

7.1.2.3 IMPROVE STORMWATER MANAGEMENT

The Vaal Region is a flood-bound area with a flood hazard index that ranges from low to high. Most of this vast Region poses a medium flood hazard index, followed by medium-to-high and high flood hazard index in small pockets around Balfour, Grootvlei, and southern Heilbron. The region's urban areas are susceptible to flooding due to large areas of impermeable surfaces and the poor maintenance of its drainage infrastructure.

Stormwater should thus clearly be managed in the Region. This management would include improving, expanding, and maintaining the existing stormwater drainage infrastructure and ensuring the proper delineation and controlling of the 1:100-year floodlines. In terms of the National Water Act 36 of 1998 (RSA, 1998) settlements and hard construction inside the 1:100-year floodlines must be prohibited. Should residents reside in developments within such 1:100 floodlines, they must be informed of potential flooding threats as per section 144 of the Water Act (RSA, 1998) and urged to relocate to safer areas.

7.1.3 Sub-objective 3: Improve and Expand Electricity Supply

Access and availability to electricity can considerably improve people's quality of life while also promoting regional economic growth.



The Region and its surroundings comprise 33 transmission substations of which most have available capacity compared to a few that have limited or no capacity. The substations that are situated in the Region that have available capacity are Olympus, Rigi, Makalu, Kookfontein and Snowdown, whereas there is only one substation that falls within the region that is rated as having no capacity, namely the Glockner substation, which should thus be upgraded.

- To improve access to electricity in the Region the following must be implemented:
- Upgrade existing substations and construct new substations to accommodate new developments in Meyerton, Sonlandpark, Makou, Balfour, Greylingstad, and the area south of Ikageng/N12, etc.
- Expand electrification in rural areas and areas without electricity, such as Mamello, Sicelo, the new developments along the R59 and R82, and Northleigh Extension in Rammulotsi.
- Address issues of illegal electricity connections to avoid loss of revenue and to enable municipalities to pay ESKOM for electricity provided.
- Focus on providing alternative energy sources to households that do not have access to electricity, such as small photovoltaic systems (50 W-system), gel-fuel stoves, solar cookers, hot bags (for cooking), LP gas, small wind turbines, biogas digesters, and more effective and sustainable wood-fuel use.
- Install solar panels at all planned housing developments to lessen grid pressure.

RENEWABLE ENERGY

Globally, renewable energy is regarded as a significant resource that can be applied to meet the need, whether small or large for fuel, heat, and power in a sustainable manner (Twidell, 2021). The Vaal Region has the

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potential to generate renewable energy even though it is limited. South Africa currently has 11 gazetted Renewable Energy Development Zones (REDZs) where wind and solar power generation can occur in concentrated areas. The western part of the Vaal River Region (Vredefort Dome area) is part of the Klerksdorp (REDZ10), where large-scale solar photovoltaic energy facilities could be established. However, it is essential to note that the REDZ10 overlaps with the Vredefort Dome, a world heritage site and a high-potential agricultural area. Thus, for the Region to benefit from this REDZ while protecting natural and heritage resources, would require a balanced approach.

However, opportunities for the generation of renewable energy in the region are not limited to solar power energy. The Vaal Dam, for example, could, according to a recent assessment, generate bulk hydroelectricity, but only up to six Megawatts, which is too little (Schroeder et al., 2022). In addition, Rand Water recently proposed building a hydropower plant with a capacity of 740 kW to become self-sustainable and to supply ESKOM with any surplus power. Then, there are various Vaal SEZ sites, and the possibility of implementing agrivoltaics can help provide wider energy security for the region. However, before implementing renewable energy projects, energy audits must be performed, and efficiency principles must be applied to determine optimal demand and production.

7.1.4 Sub-objective 4: Improve ICT infrastructure



Digital connectivity is absolutely essential for participating in the economy. To date, South Africa has one of the lowest levels of digital connectivity among the BRICS countries. Although mobile networks cover most of South Africa, optic fibre and broadband connections do not. Most of the ICT infrastructure in South Africa is installed and operated by private companies. Currently, it is even difficult to ascertain the quality and availability of ICT infrastructure in the Region's towns and villages.

The NDP supports the nationwide rollout of broadband to create a more inclusive and equitable information society and knowledge economy. However, it is well known that the availability of high-speed internet infrastructure is negligible in rural and small-town areas, preventing their residents from participating in the digital movement. Municipalities and government agencies should incentivise and encourage companies to expand their ICT networks to small towns and rural areas to ensure equitable growth throughout the region. In this regard, the various Vaal SEZ sites can be used to assist as a catalyst for the delivery of ICT infrastructure in the region.

It is important to note that any infrastructure expansion project must be evaluated in light of current environmental and biophysical conditions, sensitive environments, and places designated for future protection and conservation in order to conserve the environment, natural resources, and ecosystems.

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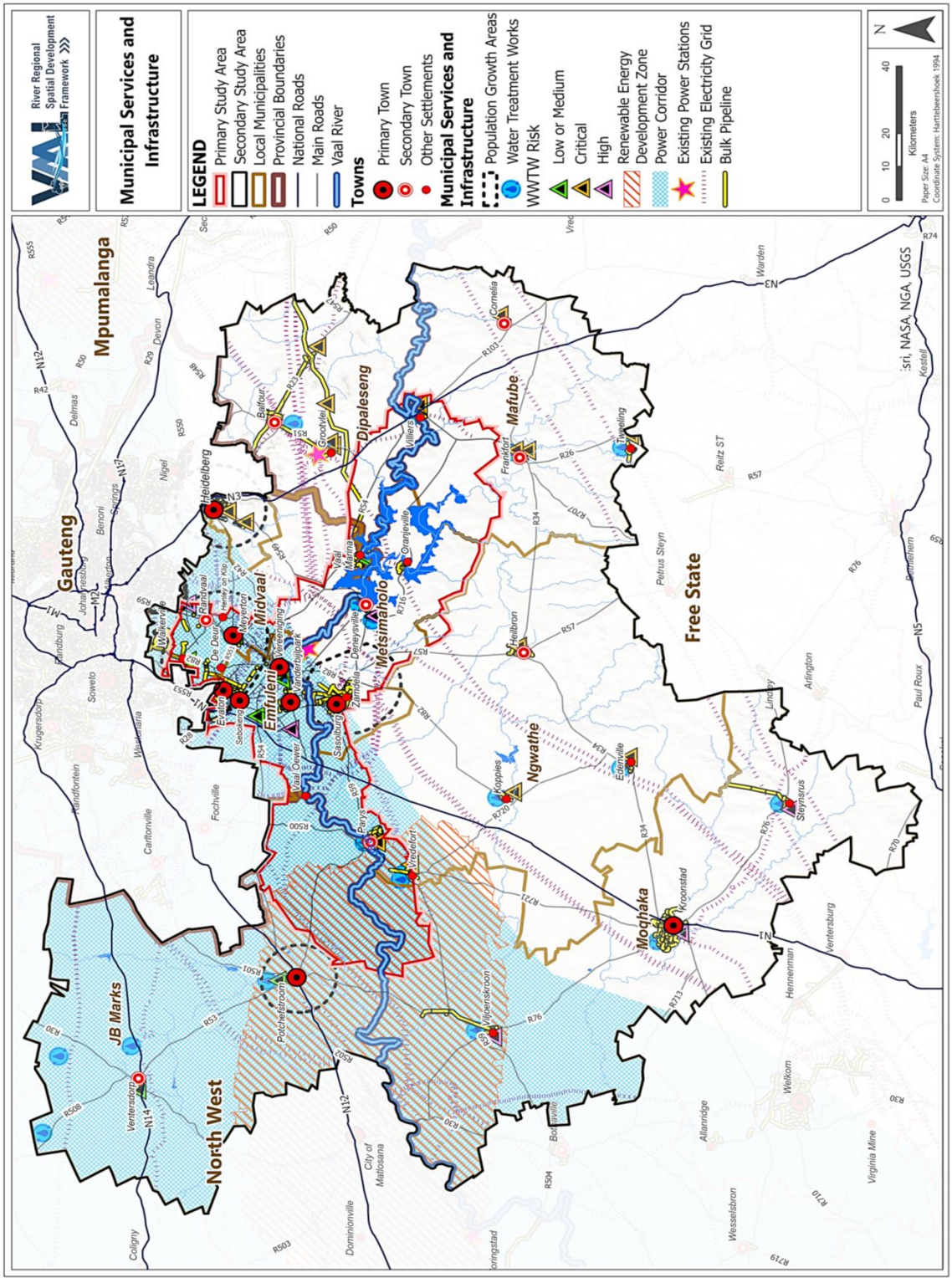


Figure 46: Municipal Services and Infrastructure

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7.1.5 Implementation Action Plan

Table 22: Implementation Action Plan: Infrastructure Development and Maintenance.

PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEF RAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATIO N AGENCY
Sub-objective 1: Strengthen connectivity and movement systems					
Strengthen/upgrade key regional corridors: R59, R42, R551, R54, R34, R82, R51, R76, R501, R53 & R549.	High		2030	Department of Transport (National and Provincial)	Provincial Department of Road and Transport
Develop or review transport sector plans of municipalities with due consideration of development corridor proposals and prepare a comprehensive roads and transport masterplan.	High		2030	Department of Transport (National and Provincial)	Municipalities
Construct and upgrade public transport infrastructure in the Region (taxi ranks, bus stations/stops).	High		2030	Local and District Municipalities	Department of Transport
Undertake a feasibility study to determine the necessity of a multi-modal logistics hub to support the SEZs and other industrial activities.	High		2030	Department of Transport (National and Provincial)	Department of Transport
Construct, improve, upgrade, and maintain the railway infrastructure throughout the Region.	High	Entire Region	2030	PRASA	

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Upgrade airfields in the Region for commercial, tourism and freight services.	Medium	Kroonstad, Parys, Heilbron, and Frankfort	2050	South African Civil Aviation Authority	Department of Transport
Sub-objective 2: Improve municipal services and infrastructure					
Improve access to water by: • **expanding water supply infrastructure to new extensions and areas that do not have these services;** • **establishing a regular (annually) maintenance and repair programme;** • **implementing a monitoring programme; and** • **developing a reporting system.**	High	**Bulk water pipeline network:** Namahadi, Calabutsha, Balfour (Siyathemba), Cornelia, Tweeling, Eikenhof, Tedderfield (north), Sonlandpark, Parys, Koppies, Vredefort, Edenville, Heilbron and Naledi new extension. **Improve WTW capacity:** Balfour (Fortuna), Sicelo area, Henley-on-Klip, Blignautsrus, Ohenumuri, Kookrus, Homestead Apple Orchards, Walkers Fruit Farms, Daleside, Golf View, Potchefstroom, the eastern parts of Riversdale, urban areas and along routes R59 and R82, Steynsrus/ Matlwangtlwang.	2030	Local and District Municipalities, Rand Water	DWS
Improve access to sanitation by: → **upgrading and rehabilitating WWTWs;**	High	**WWTWs:** Cornelia, Tweeling, Villiers, Frankfort, Rietspruit, Leeuwkuil, Kroonstad, Sebokeng, Meyerton, Ohenimuri, Heidelberg,	2030	Local and District Municipalities, ERWAT,	DWS

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
→ **improving and maintaining existing sewer pump stations;** → **constructing bulk sewer pipeline networks to new extensions;** → **promoting alternative sanitation solutions such as pit latrines, composting toilets, or decentralised wastewater treatment systems (in areas where conventional sewer systems are not feasible);** → **establishing a regular (annually) maintenance and repair programme;** → **implementing a monitoring programme; and** → **developing a reporting system.**		Eye of Africa, Bantu Bonke, Vaal Marina, Ratanda **Sewer pump stations:** Heineken Pump Station, Roshnee/Rust-ter-Vaal, Ewelme Street, Evaton, Molotlegi Street, Botha and Mooidraai extension **Sewer pipeline networks:** Sonlandpark, Namahadi, Cornelia, Tweeling, Calabutsha, Themba Khubeka extension, and Naledi new extension.			
Upgrade existing substations and construct new substations to accommodate new developments.	High	Meyerton, Sonlandpark, Makou, Balfour, Greylingstad, the area south of Ikageng/N12, and Glockner substation.	2030	ESKOM	Local Municipalities
Sub-objective 3: Improve and expand electricity supply					
Expand electrification in the Region's rural areas and areas that do not have electricity.	High	Mamello, Sicelo, new developments along the R59 and R82, and Northleigh extension in Rammulotsi.	2030	Local Municipalities	ESKOM
Remove illegal electricity connections.	High	Entire project area.	2025	Local Municipalities	ESKOM

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEF RAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATIO N AGENCY
Provide alternative energy sources (renewable energy) to households without access to electricity in the Region by: • **installing small photovoltaic systems;** • **installing small wind turbines;** • **constructing hydropower plants;** • **exploring used biogas digesters;** • **encouraging effective and sustainable wood-fuel use; and** • **encouraging agrivoltaics.**	Medium	Entire project area.	2030	Local Municipalities	ESKOM, Rand Water
Sub-objective 4: Improve ICT infrastructure					
Rollout high-speed internet connectivity throughout the Region.	Medium	Entire project area.	2025	Fibre network companies	Local Municipalities, Department of Communication s and Digital Technologies
Incentivise and encourage companies to use high-speed internet connectivity in the Region's small towns and rural areas.	Medium	Entire project area.	2025	Local Municipalities	Department of Communication s and Digital Technologies

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7.2 Objective 2: THE RIVER: To Restore and Protect the Vaal River and its Tributaries



Objective 2: THE RIVER

The Vaal River supports approximately 60% of the country's economy and 45% of its population, yet it faces serious challenges despite fulfilling such a critical role. According to a 2021 report by the South African Human Rights Commission, the Vaal River is severely polluted and has the contamination levels of the River reached a critical point.

The report further found that the Vaal River's water was unsuitable for human consumption or recreational activities (Mnguni, 2022), a finding recently supported when cholera traces were found in the water. The severe pollution levels seriously impact the environment, aquatic life, human health and economic activities, such as agriculture, fishing, recreation and tourism.

The dire state of the Vaal River calls for concerted efforts from all stakeholders to restore the health of the River and mitigate the pollution problems by implementing stricter regulations, augmenting the capacities of the existing wastewater treatment facilities and developing new wastewater treatment facilities. The Region also faces challenges related to wastewater and stormwater collection and management, i.e., water is 'lost' because of poor management and collection of stormwater, leaking pipes and failing infrastructure.

Within this scenario, it is important to acknowledge that water is a scarce resource and that this scarcity should always be considered when planning for the future. Thus, to ensure the Region's long-term sustainability, all future developments should acknowledge that water is scarce, use water sparingly, promote water conservation, recycle and reuse wastewater, and ensure the quality of discharged water.

7.2.1 Sub-objective 1: Keep the Vaal River Free From Pollution



Pollution is one of the biggest concerns for the Vaal River. The Vaal River and its tributaries ultimately receive untreated or poorly treated wastewater from towns, settlements, and mines. This pollution has been caused by industrial activities (mining), an increase in population that has added pressure to the wastewater infrastructure, causing systems to become dysfunctional (leaking sewer pipes and under-capacity pump stations and wastewater treatment plants), and raw sewage originating from informal settlements.

Structural and non-structural measures are required to keep the Vaal River and its tributaries free from pollution. These structural measures include:

- connecting all settlements to sewer networks;
- developing sufficient wastewater treatment capacities;
- eliminating spillage of sewage;
- separating the stormwater network from the sewage network;
- maintaining the sewer network, pump stations and WWTWs; and
- preventing solid waste from entering water bodies.

These structural measures for the prevention of pollution have been covered under Objective 1: Infrastructure Development.

The non-structural measures that must be taken to keep the Vaal River and its tributaries free from pollution include:

- **Promoting sustainable agriculture practices:** Agriculture is one of the Region's most important economic sectors. Adopting sustainable agricultural practices by promoting the use of responsible fertilisers and pesticides, applying soil control erosion techniques, and promoting conservation tillage methods can reduce the amount of harmful chemicals and nutrients being discharged to the Vaal River System. At the same time, climate-smart agricultural practices that increase resilience and reduce vulnerability to climate change must be promoted. Using drought-tolerant crops, improving water management through efficient irrigation techniques, implementing soil conservation measures, and implementing agroforestry practices are examples of climate-smart farming. Educating farmers about sustainable and climate-resilient agricultural techniques to reduce water consumption, water pollution, and climate change vulnerabilities is further important. The national and provincial departments of agriculture should take the lead in promoting sustainable and climate-resilient agricultural practices, such as DALRRD's LandCare programme, which has similar objectives and promotes sustainable agriculture practices.
- **Raising community awareness:** Raising community awareness about water pollution is an effective way to inform the public about pollution issues, the impact of pollution and the roles they can fulfil by preventing water pollution and monitoring their local water resources. The Department of Water and Sanitation (DWS) annually organises its 'Clear Rivers' campaign to raise community awareness about the impact of pollution of water resources. This campaign could be expanded to various parts of the study area and sustained over a longer period with the help of the Region's municipalities and NGOs



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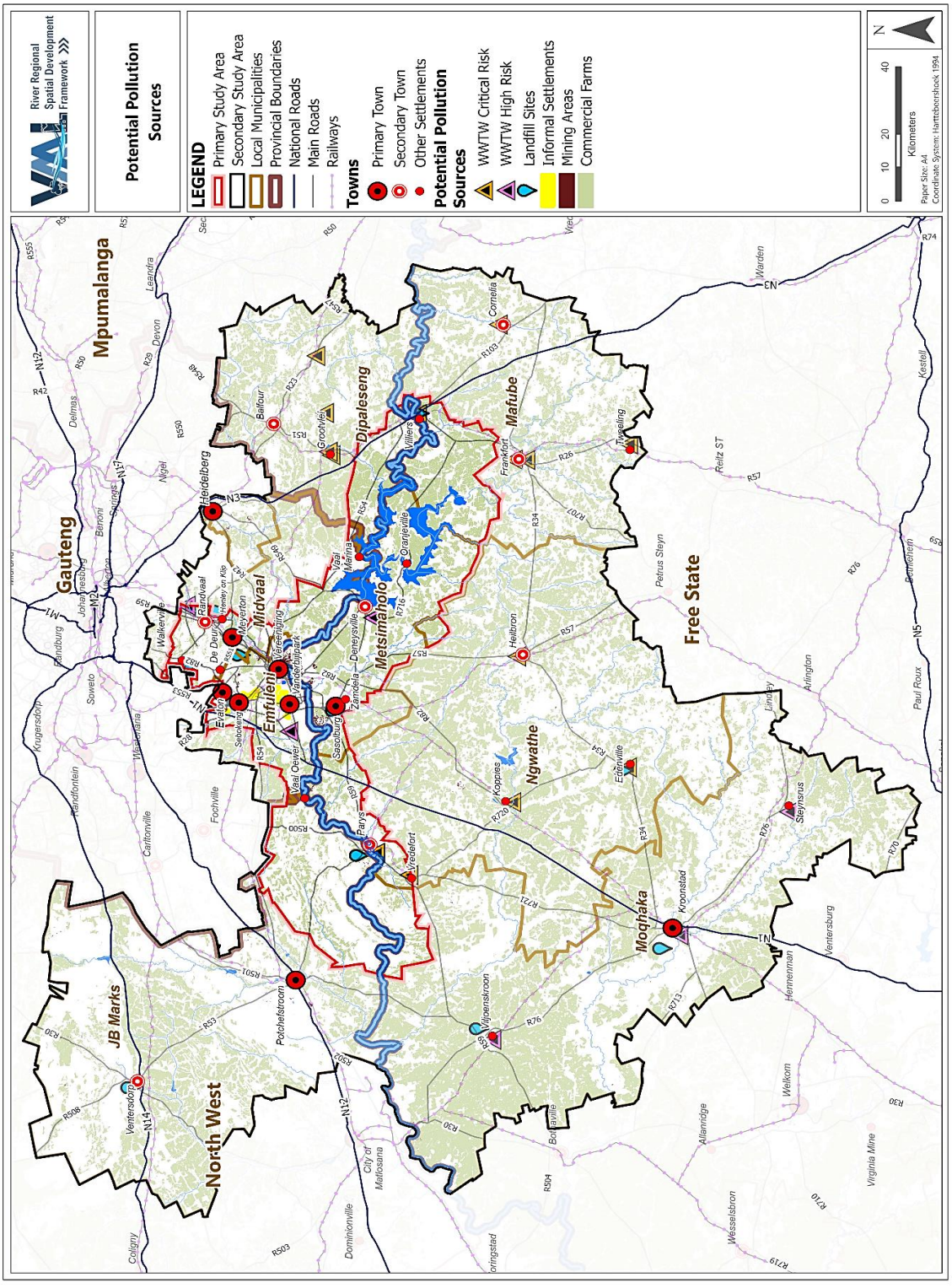


Figure 47: Potential Water Pollution Sources

7.2.2 *Sub-objective 2: Ensure Water Availability in the Vaal River System*



The population and economic activities of the delineated Vaal River Region and areas that draw water from the Vaal River will continue to grow, resulting in an ever-growing demand for water resources. As the water balance in the Vaal River is already disturbed, out of balance, and in distress, the future demand for water needs to be met by reducing demand and finding other water sources. The key interventions required to ensure long-term water supply are provided in the following section.

7.2.2.1 CONSERVE WATER AND MANAGE WATER DEMAND

Due to the large population and economy that the Vaal River Region supports, it is important to maintain a positive water balance in the river system. Innovative water conservation, demand-management measures and strict regulatory mechanisms have the potential to reduce water wastage and improve water availability in the river system.

The importance of implementing water conservation (WC) and water demand-management (WDM) measures has also been highlighted in the draft National Water Resources Strategy 3 (NWRS-3). The NWRS-3 puts forward the following proposals for implementing WC/WDM:

- Obtain and monitor WC/WDM plans from all water management and water and sanitation services institutions.
- Promote appropriate measures to influence the reduction in water wastage and ensure compulsory metering and billing.
- Ensure that water user associations and end users understand the need to modernise their water conveyance systems and irrigation equipment.
- Drive the reduction of physical leakage as part of the WC/WDM programmes through improved regulation and compliance.
- Encourage water management and services institutions to use the latest water release and distribution technology.
- Encourage all water service authorities to submit monthly water balances to monitor the state of non-revenue water.

The DWS (then Department of Water and Forestry) identified several WC/WDM measures in the report titled *Potential Savings through WC/WDM in the Upper and Middle Vaal Water Management Areas* (2007). This report provides measures for the key water-user sectors i.e., industry, power, mining, irrigation and urban(municipal). In 2008, the South African Local Government Association (SALGA) prepared a framework for WC and WDM for municipalities. More recently, the DWS also published WC/WDM implementation guidelines for the mining sector. However, similar WC/WDM guidelines and frameworks have not been published for the industrial, power generation, and agriculture sectors.

It is suggested the DWS prepare WC/WDM measures and update old WC/WDM measures for the Vaal River Region and the water service authorities, water service providers, and major water users such as Rand Water, municipalities, Midvaal Water, Sedibeng Water, ESKOM, industries, mines and agricultural producers to follow the WC/WDM measures. It is worth noting that the City of Tshwane has put forward an ambitious plan to reduce water requirements by using recycled water and that Rand Water has pledged to cap the water requirements at 1600 Ml/d (Project 1600). Stakeholders must take appropriate measures and provide all possible support to ensure the success of these initiatives. Proper implementation of WC/WDM measures and other initiatives, discussed below, would help maintain a positive water balance in the Vaal River System (see Figure 48).

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7.2.2.2 DIVERSIFY WATER MIX

Wastewater Recycling: In the absence of viable alternative water-supply options and considering the ever-growing demand for water, it is suggested that wastewater be recycled to reduce the demand on the Vaal River. Properly treated wastewater could be used for industrial, power generation and other purposes. After being treated, a proportion of this wastewater would also have to be released into the Vaal River to ensure enough water is available for environmental services and to meet the needs of downstream users. Properly treated wastewater would help keep pollution acceptable for downstream agriculture while meeting other downstream needs.

Mine desalination and use of AMD: The presence of many old mine voids in the Region contributes to the generation of acid mine drainage (AMD). AMD carries metals and mineral salts and cannot be used if the water is not treated properly. Treated AMD can be used for industrial purposes or be released into local streams to increase water availability in those rivers and the Vaal River. A detailed study would be required to establish the actual benefits of treating AMD before such an initiative can be started, as it would require high capital and operating expenditures.

Groundwater utilisation: Approximately 27% of recharged groundwater is suitable for human consumption, but the estimated groundwater use in the Vaal WMA is less than 5% of the recharge from rainfall. This indicates that groundwater is available for future development in the Vaal WMA. Despite the availability of groundwater in the region, its extraction may cause sinkholes and property damage in areas with dolomite and weak soils (Muller & Maree, 2019). In addition, groundwater use will reduce base flow by the amount used and reduce the availability of water for ecological services; excessive groundwater use may eventually lead to resource depletion. It is suggested that the DWS and municipalities conduct local investigations to identify potential groundwater sources and periodically monitor groundwater availability from these sources to eliminate overuse.

Rainwater harvesting: Rainwater harvesting is a valuable component of a water management strategy and can contribute to the water security of households (refere. Rainwater harvesting techniques may involve collecting and storing rainwater for immediate or future use from rooftops or other surfaces. Municipalities can play a significant role in encouraging rainwater harvesting and in improving its implementation in numerous ways, such as utilising government subsidies as incentives to promote the installation of rainwater harvesting systems, especially among low-income households, or offering property rate rebates to buildings with rainwater collection systems.

7.2.2.3 INTER-BASIN WATER TRANSFER

The existing water budget in the Vaal River system is almost at balance. This means the system will not be able to meet future demand even if all the aforementioned proposals are implemented. However, there are also proposals and plans to transfer water from the Polihali Dam located in the Lesotho Highlands (LHWP Phase 2 project) to the Vaal River, which, according to the DWS (2020) means that the Vaal River will be able to meet the demand until 2046. Since the LHWP Phase 2 project has been delayed by a few years, it is expected to supply water to the Vaal River by 2025. Thus, to ensure water security for the Vaal River Region and the economic heartland of the country, it is important that this project be prioritised by all stakeholders and that, even after the LHWP2 has been completed, it will be necessary to continue monitoring the Vaal River's water availability and planning the future actions required to maintain water security. To plan for the water demand after 2045, it would become necessary to start sourcing water from the uThukela River as per the proposed uThukela Water Project/TWP (see Figure 48).

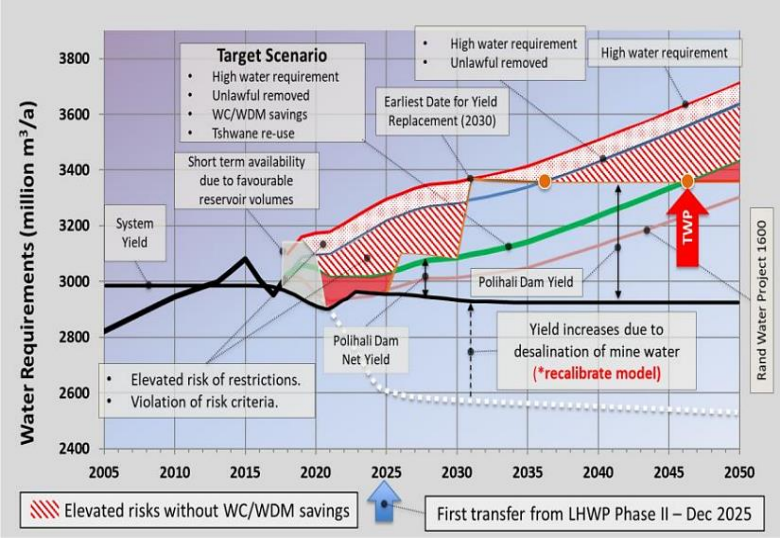


Figure 48: Water Availability Scenarios in the Vaal River System

Source: Department of Water and Sanitation, 2020

7.2.3 Sub-objective 3: Restore the Vaal River and its Tributaries



The Vaal River and its tributaries are in a dire state owing, but not limited to, rapid urbanisation, over-exploitation of water resources and water pollution. The over-exploitation of water resources and pollution of the River have unintended consequences on the river system's health and environmental sustainability. The key proposals for restoring the River's health are discussed below:

7.2.3.1 CHANNEL STABILISATION AND EROSION CONTROL

Rivers must be cleaned of debris, excess sediment, and invasive species to avoid obstructions and manage flow. Flow management may include channel realignment and the construction of dams, weirs, or levees to regulate water levels and velocity. Furthermore, bank stabilisation and vegetation control are essential for preventing excessive erosion or sedimentation. Implementing land use, development, and water use policies and recommendations can help prevent activities that cause river channel instability and erosion, such as deforestation, urbanisation, and mining. Comprehensive research must be conducted to determine the health of the Vaal River and its tributaries and riverbanks so that appropriate corrective actions can be adopted.

7.2.3.2 RESTORE THE HEALTH OF WETLANDS

Wetlands are natural filters that remove pollutants and improve water quality. Restoring wetlands can reduce nutrient load, enhance biodiversity, and improve overall ecosystem health. Most of the wetlands in the project area are either endangered or in a critically endangered condition. Therefore, the wetlands must be restored to their health by developing restoration plans and engaging with relevant communities and stakeholders. The process of restoration of wetlands may also involve controlling invasive species, promoting wildlife, re-establishing natural water flows, controlling nutrient flow and eutrophication, and introducing native plants and wildlife.

7.2.3.3 MAINTAIN AQUATIC IMPACT BUFFER ZONES ALONG RIVERS AND WETLANDS

Aquatic buffer zones can be described as barriers between human activities and sensitive water resources that protect the water resource from adverse negative impacts. Aquatic impact buffer zones typically include a riparian zone of native plants along a water body and a strip of terrestrial vegetation zone separating the riparian zone from human activities. Aquatic impact buffer zones can help maintain basic aquatic processes, reduce impacts on water resources from upstream activities and adjoining land uses, and provide habitat for aquatic, semi-aquatic, and terrestrial species (Macfarlane & Bredin, 2017), and bank stabilisation.

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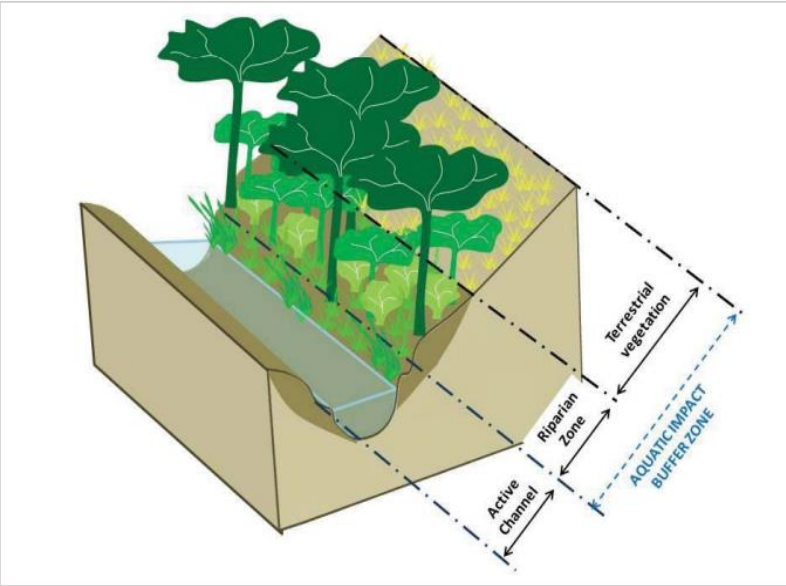


Figure 49: Aquatic Impact Buffer Zone

Source: Macfarlane & Bredin, 2017 (Water Research Commission)

The Vaal River Complex Regional Structure Plan of 1996 recommends maintaining a buffer of 100 m along the Vaal River and its tributaries (Rietspruit, Klip River, Suikerbosrant River, Wilge River, Taaibosspruit, and Leeuwspruit),) and not allowing buildings, structures, and caravan parks within 100 m of the river baseline. However, such a 100 m buffer may not be suitable for all areas. Hence, municipalities, in collaboration with the Department of Forestry, Fisheries, and the Environment (DFFE) and the DWS, should demarcate aquatic buffer zones and define suitable management measures to maintain buffer functions in their environmental protection plans and policies, spatial development frameworks, and/or land use schemes. After reviewing the need to integrate protection requirements with social and development imperatives, these management measures should be developed. The municipalities, DFFE and DWS should further undertake periodic monitoring of buffer zones and ensure that they are implemented and maintained effectively (Macfarlane & Bredin, 2017).



Figure 50: Vaal River with Riparian Vegetation (photo taken at Vaal Oewer)

7.2.3.4 COMMUNITY EDUCATION AND AWARENESS

No river restoration project can succeed without the active support of communities. Thus, municipalities, the DWS, the DFFE, and NGOs must raise awareness among local communities about the importance of the Vaal River System and their role in its restoration. It is also necessary to educate communities about sustainable water use, how to prevent pollution and the benefits of a healthy river ecosystem. Communities should further be encouraged to monitor the ecosystem's health and implement restoration initiatives.

7.2.3.5 MONITORING AND ADAPTIVE MANAGEMENT

Establishing a comprehensive monitoring programme to track the progress of restoration efforts and assess the effectiveness of different interventions is necessary. This means that the DWS, DFFE, and municipalities should regularly review the data collected and adjust the management strategies accordingly. Such an adaptive approach would ensure that restoration efforts are evidence-based and can be modified as needed.

7.2.4 Sub-objective 4: Conservation of Natural Resources



The study area has natural and heritage resources that vary in nature and type. These resources must be conserved and utilised sustainably to be available for future generations. Conservation of natural resources, specifically rivers, wetlands, and natural vegetation, will help increase resilience and adaptability to the effects of climate change. The following section describes the proposals relevant to this theme.

7.2.4.1 CONSERVE SURFACE WATER RESOURCES AND WETLANDS

The major surface water resources in the study area are the Vaal River, its tributaries, dams and wetlands. Several proposals to restore these resources have already been discussed in the previous sections.

7.2.4.2 CONSERVE STRATEGIC WATER SOURCE AREAS

Five strategic water source areas (SWSA) fall partly or fully within the secondary study area (in JB Marks and Moqhaka municipalities). These SWSAs have a high groundwater recharge rate; thus, the groundwater resources are of national importance. Therefore, it is paramount to preserve the quality and quantity of the groundwater in these SWSAs, as degradation of either can have far-reaching consequences. The quantity and quality of groundwater are affected by pollution and surface hardening that prevents infiltration. Thus, it is also important to ensure that these areas are free of any large-scale hard surfaces, such as urban and industrial development, and any development that can impact the aquifers, such as mining and shale gas extraction activities. Because these SWSAs are located in the JB Marks and Moqhaka municipalities, they should strictly consider any development applications within them SWSAs. Any plans for development in these areas must account for the infiltration of rainwater to allow for recharge, such as the promotion of permeable pavements[2].

The DWS, together with the DFFE, the Department of Cooperative Governance (DCoG), and the municipalities, must ensure that guidelines relating to the protection of SWSAs are developed and incorporated into cross-sectoral planning measures, such as all revisions to the NDP, Integrated Development Plans, and SDFs at national, provincial, and local government levels. The DWS should also strengthen and rebuild the water resources monitoring network and monitor groundwater abstractions from boreholes, especially in the SWSAs (Le Maitre et al., 2018).

[2] *It is to be noted that the South African Guidelines for Sustainable Drainage Systems, prepared by the Water Research Commission, provides guidelines for permeable pavements. https://www.wrc.org.za/wp-content/uploads/mdocs/TT%20558.pdf*

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7.2.4.3 CONSERVE NATURE RESERVES AND CRITICAL BIODIVERSITY AREAS

Both the primary and secondary study areas contain 61 nature reserves, including Suikerbosrand Nature Reserve and Vaal Dam Nature Reserve (in the primary study area) and Koppies Dam Nature Reserve, Viljoenskroon Nature Reserve and Schoonspruit Nature Reserve (in the secondary study area). Not all of the 61 nature reserves are formally protected or under the management or ownership of government agencies, yet despite the status of protection and ownership, all nature reserves play vital roles in conserving the biodiversity and ecosystem of those areas. These nature reserves should thus be conserved, and only limited human activities may be allowed in them. Nevertheless, wherever possible, these nature reserves should provide low-intensity and nature-based tourism, recreational activities, and natural products and services to local communities. The tourism opportunities offered by these nature reserves also promote urban-rural integration.

The study area also contains several critical biodiversity areas (CBAs), ecological sensitive areas (ESAs), and ecological corridors, all of which are critical for conserving biodiversity and maintaining ecosystem functioning. The CBAs, ESAs, and ecological corridors are currently managed through provincial environmental plans and frameworks. A regional environment management framework can provide a set of uniform guidelines for managing these areas across the study area.

7.2.4.4 CONSERVE VREDEFORT DOME WORLD HERITAGE SITE

The Vredefort Dome World Heritage Site (VDWHS) is amongst the top three oldest clearly visible meteorite impact sites in the world. It is a prominent topographical feature of international significance that is largely situated in the Region with portions in the Parys and Vredefort regions. The Vredefort Dome World Heritage Site is the Region's prime adventure tourism site with numerous tour operators and accommodation facilities catering for the needs of campers, hikers, rock climbers, canoeists and white-water rafters. Agriculture and tourism are the two most common types of land use in the VDWHS. Various agricultural uses consist of irrigated cultivation, dry land cultivation, orchards, grazing, feedlots, chicken hatcheries and game farming. Tourism-related uses, such as accommodation, wedding venues and team-building facilities, are common in the area. Properties with mixed land uses, where tourism and agricultural activities occur together, are also common.

The rural and natural scenic quality of the VDWHS, as well as the integrity of the visual landscape, should be preserved to appreciate the enormity of the meteorite impact ring structure. Fortunately, the VDWHS is managed through the VDWHS EMF, which has statutory status. The VDWHS has defined a core area that includes "crater event" sites of exceptional heritage value. As an extension of the designated core area, a buffer zone of approximately 5 km has been established.

It is proposed that all relevant stakeholders continue to support the existing proposals and guidelines relating to preserving and conserving the VDWHS while sustainably exploiting its tourism and economic development prospects and urban-rural integration opportunities.

7.2.4.5 CONSERVE AGRICULTURAL RESOURCES

Sustainable economic growth and food security are critically dependent on protecting and appropriately using high-potential agricultural land. However, land with high agricultural potential located near human settlements often becomes the target of non-agricultural development pressure; at the same time, the negative social impacts associated with such settlements could substantially affect the land's production potential. Protecting high-potential agricultural land should be a top priority, and policies must be put in place to foster an environment that allows farming to thrive in the long term.

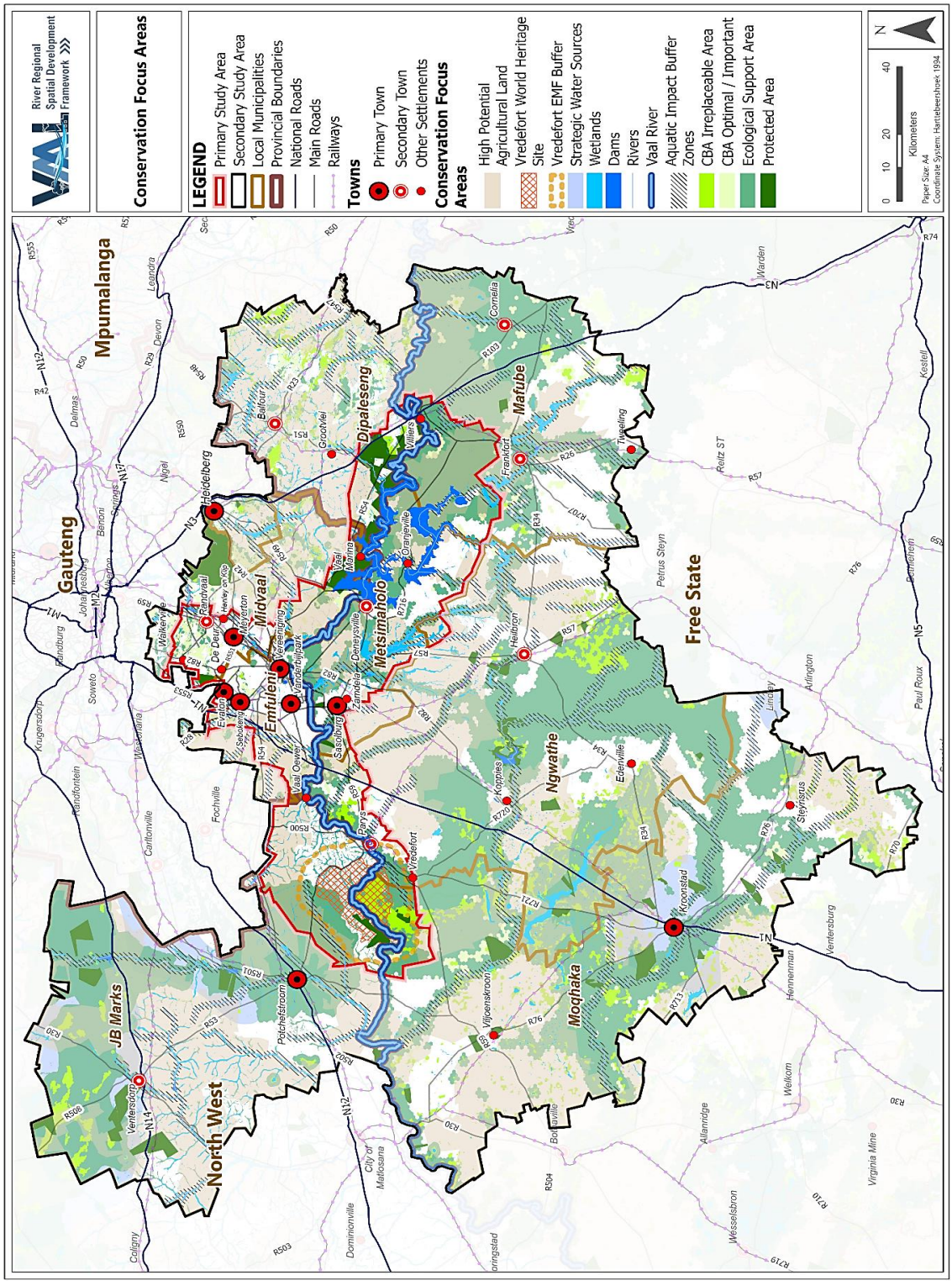


Figure 51: Conservation Focus Areas

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7.2.5 *Sub-objective 5: Promote Sustainable Economic Development Along the Vaal River and Dam*

7.2.5.1 PROMOTE TOURISM AND ECONOMIC ACTIVITIES



Municipalities and government agencies should take advantage of the Vaal River's natural beauty and recreational opportunities by creating and promoting tourism and recreational activities, such as river cruises, houseboat rentals, water sports, fishing, wildlife viewing and adventure activities. Municipal plans and land use schemes should thus support the establishment of hotels, resorts, restaurants and other tourism-related businesses along the Vaal River and Dam. In addition to business and leisure, these areas should also promote residential developments. However, it is important that any development along the Vaal River must comply with the provisions of the Vaal River Complex Regional Structure Plan of 1996, municipal land use schemes, and other relevant guidelines and legislation. Stringent environmental safeguards must be adopted to design and implement any proposed tourism sites.

7.2.5.2 INCREASE ACCESS TO THE VAAL RIVER

It should be considered to improve public access to the Vaal River by establishing publicly accessible recreational areas, such as riverfront developments. Riverfront developments serve as additional buffers as they create recreational spaces between the river and the surrounding urban areas and could restrict flood water from entering urban areas. Riverfront developments also allow residents to enjoy the riverfront and its surroundings by including parks, walkways and areas for festivals, firework displays and concerts. These recreational spaces could be developed along the banks of the Vaal River, specifically in Vanderbijlpark, the proposed Vaal River City, Three Rivers, Duncanville, and along Emfuleni Drive and Mario Milani Drive.





Figure 52: Examples of Riverfront Development

Promoting economic and leisure activities will require the development of additional infrastructure, such as improving transportation networks, developing embankments and marinas, and expanding water and sanitation infrastructure. It is critical to ensure that the development of economic activities and recreational areas along the Vaal River is carried out in a responsible and sustainable manner, taking into account social, economic, financial, and environmental factors, and considering inputs and approval from key stakeholders such as Rand Water, the DFFE and the DWS.

7.2.6 *Sub-objective 6: Climate Change Adaptation and Disaster Management*



Climate change in South Africa will probably lead to variations in rainfall patterns, more intense storms, droughts, extreme flooding, changes in runoff, fluctuating water availability, ecosystem imbalances, and changes in biodiversity. These would all result in making crop production more challenging. The Region, specifically parts of the primary study area, has recently experienced flooding due to severe rainfall. This has illustrated that the magnitude of the threats posed by climate change is uncertain and can significantly alter water's spatial and temporal availability, thereby aggravating water-related stress and negatively impacting developmental needs (Remilekun et al., 2021). As the Vaal River is fast approaching full utilisation of its surface water yields and becoming dependent on water supplied from other river basins, it is anticipated that the intensification of climate variability and increasing water demand will result in water and food insecurities. Considering the threats posed by climate change, the Region must be ready to adapt to climate change challenges and be prepared to mitigate the impacts of any disasters it causes. The following actions are recommended to adapt to climate change and to mitigate the negative impact of natural disasters:

7.2.6.1 ASSESS VULNERABILITY

Do a comprehensive assessment of climate change impacts on the Region to identify the key sectors that are most vulnerable, such as water resources, agriculture, and infrastructure. This assessment will help prioritise the sectors that require adaptation efforts.

Identifying current and potential disaster hotspots and climate change threats is also essential to prioritising intervention locations. Thus, a vulnerability assessment must be conducted to determine the effects of climate change and disasters on the region, especially in disaster-prone areas. Figure 53 depicts the areas of the Region that are prone to natural disasters, such as the eastern and southern portions of the Region (areas surrounding Balfour, Cornelia, and Steynsrus) that are susceptible to drought, the eastern, southern, northwestern, and central portions (portions of the municipalities of Dipaleseng, Mafube, JB Marks, Moqhaka, and Ngwathe) that are susceptible to flooding, and that wildfire can occur in various patches of the project area.

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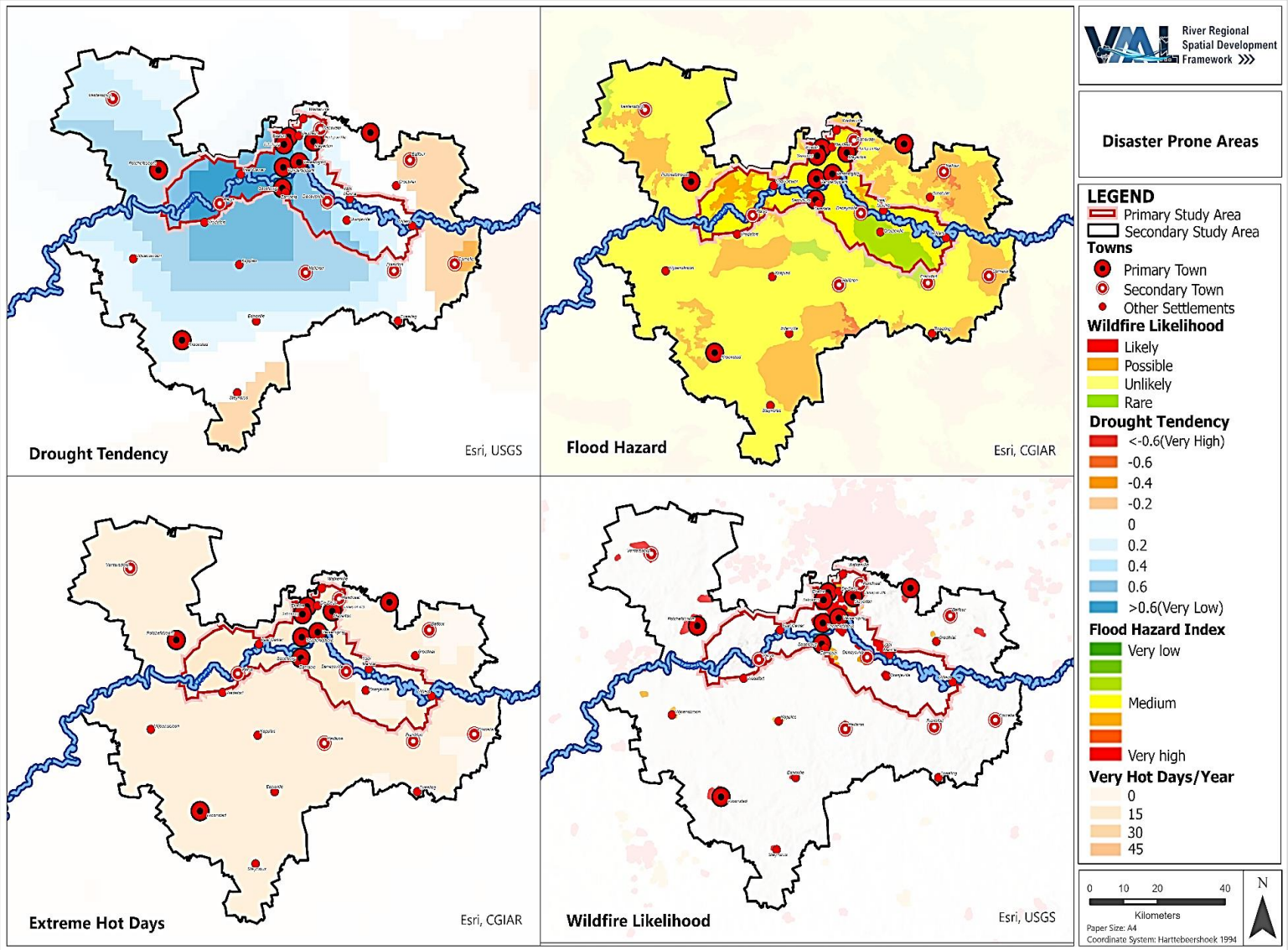


Figure 53: Disaster-prone Areas

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7.2.6.2 MANAGE WATER RESOURCES

Develop water resource management plans that consider changing precipitation patterns, increased variability and the possibility of droughts or floods. Improving water storage and infrastructure, implementing water demand management strategies, promoting water-efficient practices, and exploring alternative water sources may all fall under this category. It is worth noting that the DWS uses the "Integrated Vaal River System (IVRS)" to model and monitor water availability and consumption. The DWS must run this model on a regular basis and inform water users of the results as this will help avoid delays in recognising and responding to emerging drought conditions, as well as other operational issues (Muller & Maree, 2019).

7.2.6.3 DEVELOP RESILIENT AND GREEN INFRASTRUCTURE

Improve the resilience of critical infrastructure, such as roads, bridges, dams, barrages, embankments, and water-supply systems to withstand the effects of climate change. Consider how rainfall patterns, flooding and rising temperatures may change when designing, maintaining, and retrofitting infrastructure. In developing resilient and green infrastructure consider the guidelines of the Sustainable Urban Drainage Systems (SuDs) developed by the Gauteng Department of Agriculture, Rural Development and Environment (GDARDE). The SuDs guidelines provide guidance on how to develop urban drainage infrastructure that can withstand the impacts of climate change such as flooding. These guidelines may need to be modified to be used in areas outside of Gauteng.

7.2.6.4 ADOPT CLIMATE-SMART TECHNOLOGIES

Climate-smart technologies can be described as a set of clean, low greenhouse-gas-emitting technologies that promote adaptation and mitigation to attain resilience to climate change impacts in the short, medium, and long term across all sectors. Thus, to build resilience against climate change impacts and to minimise water and energy consumption and pollution, it is important to adopt climate-smart technologies in all sectors, but especially in agriculture, transportation, industries, and municipal service delivery. Examples of climate-smart technologies include solar-powered drip irrigation systems, agrivoltaics, the use of biofuel and green hydrogen for transportation and industrial purposes, the use of solar power to run WTWs and WWTWs, and the construction of green buildings.

7.2.6.5 ENSURE DISASTER PREPAREDNESS

Create and implement comprehensive and robust disaster preparedness and response plans that take climate change risks into account to ensure timely and effective responses to climate-related disasters. This could be in the form of early warning systems and emergency response protocols and through engaging with communities.

7.2.6.6 DEVELOP POLICY AND REGULATORY FRAMEWORK

Create and enforce policies and regulations that factor climate change into planning and development processes. Climate change adaptation must be incorporated into land-use planning, water management plans, environmental impact assessments and building codes. Municipalities are expected to take the lead in ensuring that their spatial development frameworks and land use plans take into account the impact of climate change.

7.2.6.7 COLLABORATE AND BUILD CAPACITY

Raise awareness about the effects of climate change, train communities and agencies on adaptation strategies, and empower them to participate in decision-making processes. To address climate change challenges, encourage collaboration among government agencies, local communities, businesses, and other stakeholders of the Region. Cooperation should be at regional and international levels to share best practices, knowledge and resources for effective climate change adaptation.

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7.2.6.8 ENSURE DEVELOPMENT OBJECTIVES ALIGN WITH SUSTAINABILITY PRINCIPLES

Ensure the resilience of environmental infrastructures that will support the long-term sustainability of the Region. Future development needs must be implemented sustainably within the carrying capacity limits of the natural environment. All development projects must be considered under different climate change scenarios including mitigation and adaptation principles. An example of an ecosystem-based approach can be sourced through the CSIR's ecosystem-based adaptation (EbA) principles for new developments or projects, as well as international best practice standards.

7.2.7 Sub-objective 7: Conserve Heritage and Cultural Resources

The following national heritage sites can be found in the Region:

- Sharpeville Memorial Garden, Sharpeville Exhibition Centre, Vereeniging
- Sharpeville Massacre victims' grave sites, Phelindaba Cemetery, Vereeniging
- Sharpeville Police Station, Vereeniging
- The grave of Rev. Zaccheus Richard Mahabane, Seeisoville Cemetery, Maokeng, Kroonstad

There are several provincial heritage sites in the Region or sites placed on the heritage register. A few examples of these sites are (a comprehensive list is provided in Annexure A):

- Dutch Reformed Church, HF Verwoerd Street, Heidelberg
- Anglo-Boer War Blockhouse, Randvaal
- Old Magistrate's Office, Murray Street, Kroonstad
- Old Magistrate's Court, Van Reenen Street, Frankfort
- Parys Museum, Parys
- Dutch Reformed Church, Parys
- Old Berlin Mission Station, Potchefstroom
- House of President M W Pretorius, Potchefstroom
- Old Fort and Cemetery, Potchefstroom

In addition to these national and provincial heritage sites, there are sites that municipalities may consider to have heritage value that is worth conserving.

Heritage sites in the Region offer tourism and local economic development opportunities that could be utilised while simultaneously being conserved and protected from inappropriate development. The National Heritage Resources Act 25 of 1999 empowers municipalities to protect heritage areas through their zoning schemes or by-laws. It is suggested that the municipalities in the Region use these instruments to protect the identified heritage areas by defining heritage overlay zones in their land use schemes (Steenkamp, 2021).

The heritage overlay zone should ensure that:

- heritage sites are graded or classified in accordance with the provisions of the National Heritage Resource Act (Act 25 of 1999);
- municipal approval is required for the demolition, renovation, partition, or alteration of any building, as well as the removal or addition of any trees within the overlay zone/on the heritage site; and
- new developments maintain the character and heritage value of the area.

The overlay zone may also include guidelines for urban design, vistas, streetscapes, and landscaping of the intended development within the overlay zone.

7.2.8 *Implementation Action Plan*

Table 23: Implementation Action Plan: Vaal River Restoration

PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Sub-objective 1: Keep the Vaal River free from pollution					
Develop necessary infrastructure to prevent water pollution (discussed under Objective 1)	High		2030	Local and District Municipalities	DWS
Adopt sustainable and climate-resilient agricultural practices	High	Entire project area	2040	DALRRD (LandCare Programme)	DFFE
Raise community awareness about river pollution	Medium	Entire project area	Annually	DWS (Clear Rivers Programme)	DFFE, Local Municipalities, NGOs
Monitor pollution levels in the Vaal River System	High	Entire project area	Annually	DWS, Rand Water	DFFE
Detect pollution sources and take corrective measures	High	Entire project area	On an as-and-when basis	DWS, Local Municipalities, industries and mines in the region	
Sub-objective 2: Ensure water availability in the Vaal River System					
Prepare a regional water sector plan	High		2030	DWS	DFFE
Update WC/WDM plan and framework for municipalities/urban sector	Medium		2030	DWS	SALGA
Develop WC/WDM plan and framework for the agriculture sector	Medium		2030	DWS	DALRRD
Develop WC/WDM plan and framework for the industrial sector	Medium		2030	DWS	DTIC

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Develop WC/WDM plan and framework for the energy sector	Medium		2030	DWS	Dept of Energy, ESKOM
Monitor the implementation of the regional water sector plan and WC/WDM plans			Operational	DWS	SALGA, DALRRD, DTIC, Dept of Energy, Local Municipalities
Eliminate unauthorised and illegal water usage	High	Entire project area	2028	Local Municipalities	DWS, Rand Water, Sedibeng Water
Ensure compulsory metering and billing of water usage	High	Entire project area	2028	Local Municipalities	DWS, Rand Water
Conduct local investigations to identify potential groundwater sources and determine yield	Low	Entire project area	2040	Municipalities, DWS	
Monitor the health of groundwater sources (prevent overutilisation)	High	Entire project area	Periodically	DWS	Local and District Municipalities
Encourage rainwater harvesting	Low	Entire project area	2040	Local and District Municipalities	
Complete the Lesotho Highlands 2 project and source water from this project	High		2025	DWS, National Departments	
Explore possibilities of sourcing water from the uThukela River	High		2050	DWS, National Departments	
Undertake water audits and monitor the availability of water in the Vaal River System	High		Periodically	DWS, Rand Water	
Sub-objective 3: Restore the Vaal River and its tributaries					

PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Development of a Catchment Management Plan for the key rivers	Medium	Entire project area	2035	DFFE	DWS
Restore the health of rivers and wetlands (Develop restoration plans, clean rivers and wetlands from debris and excessive sedimentation, stabilise banks, control invasive species, promote wildlife, manage water flows, and control nutrient flow and eutrophication)	Medium	Entire project area	2035	DFFE, DWS	Local Municipalities
Delineate aquatic impact buffer zones along the rivers and wetlands and define buffer zone development regulations	Medium	Entire project area	2035	DFFE	DWS
Update and implement LUS, municipal SDFs, by-laws, and environmental plans to protect the rivers, wetlands, and aquatic impact buffer zones	High		2035	Local Municipalities	DALRRD, DCOG
Raise community awareness about river and wetland health restoration	Medium	Entire project area	Annually	DWS (Clear Rivers Programme)	DFFE, Local Municipalities, NGOs
Develop a monitoring framework for river and wetland restoration	Medium		2035	DWS	DFFE, Local Municipalities, NGOs
Sub-objective 4: Conservation of natural resources					
Develop guidelines to protect strategic water source areas	Medium			DWS	DFFE
Develop a regional environmental management framework	High	Entire project area	2025	DFFE	Provincial Departments of Environment,

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
					Local Municipalities
Develop a regional bio-diversity sector plan	Medium	Entire project area	2025	DFFE	Provincial Departments of Environment, Local Municipalities
Update and implement LUS, municipal SDFs, by-laws, and environmental plans to protect strategic water source areas	Medium	JB Marks and Moqhaka Municipalities	2035	Municipalities	DALRRD, DCOG
Update and implement LUS, municipal SDFs, by-laws, and environmental plans to protect Vredefort Dome World Heritage Site, CBAs, nature reserves, agricultural land, and natural assets	High	Entire project area	2025	Municipalities	DALRRD, DCOG
Sub-objective 5: Promote sustainable economic development along the Vaal River and Dam					
Develop a tourism master plan to promote river-based tourism	Medium	Entire project area (specifically along the Vaal River, Vaal Dam and Koppies Dam)	2030	Local and District Municipalities	Department of Tourism
Riverfront Development/Revitalisation	Low	Emfuleni, Metsimaholo	2040	Emfuleni, Metsimaholo Municipalities	
Sub-objective 6: Climate change adaptation and disaster management					
Assess climate change impacts and identify the most vulnerable sectors	High	Entire project area	2030	DFFE, DWS, Local and District Municipalities,	SANRAL, Rand Water

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Develop comprehensive and robust disaster preparedness and response plans, including early warning systems, emergency response protocols	High	Entire project area	2030	DFFE, DWS, Local Municipalities, SANRAL, Rand Water	
Update LUS, SDFs, policies and regulations that factor climate change into planning and development processes.	High	Entire project area	2030	Local Municipalities	DFFE, DWS, DCOG, DALRRD
Identify ecosystem risks and carrying capacity limits, ensure that all development (infrastructure, economic, and social) is done sustainably.	Medium	Entire project area (specifically along the Vaal River, Vaal Dam and Koppies Dam)	2035	DFFE	DWS, Local Municipalities
Sub-objective 7: Conserve heritage and cultural resources					
Update LUS, SDFs to conserve heritage sites and integrate them into the surrounding built environment.	Medium	Entire project area	2030	Local Municipalities	SAHRA

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7.3 Objective 3: ECONOMIC DEVELOPMENT: To Drive Innovative Economic Development and Achieve Job Creation



Objective 3: ECONOMIC DEVELOPMENT

In response to the needs of distressed regions requiring urgent attention to bring about national spatial transformation and economic transition, the NSDF identified National Spatial Action Areas (NSAAs) of regional and national interest that required integrated and intergovernmental action (strategies). Although the National Spatial Transformation Corridor that relates to the Central Innovation Belt (NSCIB) extends beyond the boundaries of the Vaal River Region and the purposes of this study, a part of the NSCIB is located in the VRRSDF. Of the five National Resource Risk areas that form part of the NSAAs, the Upper Vaal River catchment area also forms a part of the demarcated Vaal River Region SDF. In support of the NSDF's requirement for intergovernmental cooperation and spatial alignment with the NSDF, as well as in the interest of this Region, the components for spatial transformation and economic transition in the Region include:

- The Vaal River Region Spatial Transformation and Economic Transition Focus Area (VRRETR): This development component aims to ensure spatial transformation and economic transition in the Region by supporting the initiatives of the national government as set out in the NSDF's Central Innovation Belt National Spatial Transformation and Economic Transition Region (NSTETR) and the National Resource Risk Area (RRA) related to the Upper Vaal Catchment area.
- The Economic Transformation Intervention Areas (ET): This development component represents a strategic approach to fostering competitive economic development in the geographically and socio-economically diverse Vaal River Region. It is informed by an integrated multi-disciplinary understanding of economic development that recognises the interconnectedness of socio-spatial and economic dimensions in creating sustainable, equitable, and inclusive economies.

The components for spatial transformation and economic transition in the Vaal River Region include six core sub-objectives:

- Industrialisation and economic diversification
- Urban-rural regeneration
- Agriculture
- Tourism
- Mining
- Commercial activities and services

The Vaal River economic development region constitutes eight key local municipalities, namely, Emfuleni and Midvaal that form part of Gauteng province, Mafube, Metsimaholo, Moqhaka, and Ngwathe that form part of Free State province, Dipaleseng representing Mpumalanga province and JB Marks which historically constitute Ventersdorp and Tlokwane City and that form part of the North West province. The region is characterised by diverse economic activities including agriculture, mining, industry, manufacturing, construction, commercial services and trade, education, and tourism.

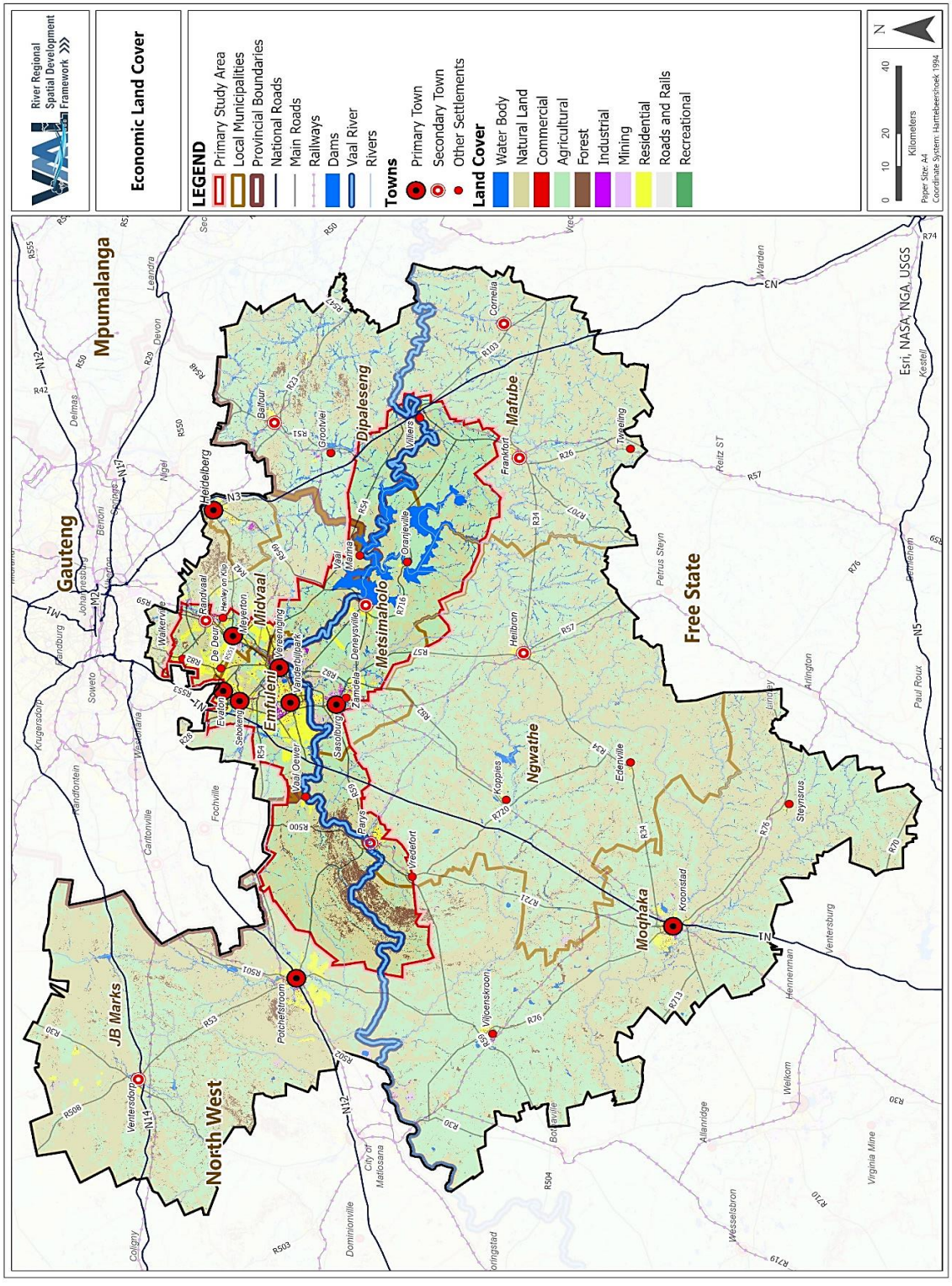


Figure 54: Economic Land Use or Cover for the Region

The combined GVA of the nine local municipalities forming the Vaal River region contributes 3,31% (2022) to the national gross value added (NGVA). The Region is a critical industrial hub in South Africa that also provides extensive commercial agriculture and coal for energy generation (although the mining sector is declining due to many mines in the Region that are approaching end-of-life). The economically dominant municipalities are Emfuleni, Metsimaholo, and JB Marks.

Figure 54 highlights the key spatial land use patterns for the Vaal River Region, including, for the purposes of this section, the industrial areas, agricultural areas, tourism (natural land and water bodies), mining areas, commercial areas and towns.

The Region has valuable environmental and economic assets such as the Vaal Dam, Vredefort Dome, Parys, petrochemical developments in Sasolburg, the iron and steel industry (ArcelorMittal) in Vereeniging (although declining), tourism, agriculture, and agro-processing activities, as well as well-established tertiary institutions such as the Vaal University of Technology and North West University serving as the Region's innovation and technology custodians. These provide important drivers for economic development, namely:

- the Region reflects mixed economic use patterns with agriculture, mining, manufacturing, and the potential to develop tourism;
- the Region has strong regional linkages to major economic cores such as Johannesburg, Ekurhuleni, and the Vereeniging-Vanderbijlpark complex, including routes R59, R82, and the N12;
- the Region comprises established commercial farming, a unique tourism sector, mining (although declining), and manufacturing linked to the petrochemicals sector around Sasolburg;
- smaller settlements and agricultural holdings in the surrounds depend on the urban centres for employment and economic opportunity, highlighting the importance of rural-urban integration; and
- the local population is predominantly unskilled, and unemployment levels are high compared with provincial and national averages, providing a strong push for upskilling and available labour for the expansion of economic activities.

The economic development objective is supported by the following spatial development strategies:

- Providing opportunities for industrialisation and economic diversification.
- Advocating and ensuring urban-rural economic linkages and regeneration.
- Promoting agriculture and associated agri-business and agri-industry.
- Promoting tourism activities in appropriate areas with a competitive advantage in respect of:
- eco-tourism and the accommodation sector;
- agri-tourism;
- the Vaal River and aqua economy; and
- heritage areas or sites (see Annexure A).
- Ensuring mining transition is supported towards productive economic activities.
- Promoting commercial activities and tertiary services in appropriate areas with a competitive advantage.

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7.3.1 Sub-objective 1: Promote Industrialisation and Economic Diversification



The municipalities and government agencies should take advantage of the Vaal River's existing industrial and economic opportunities and recognise the risks associated with declining or concentrated sectors. There remains an opportunity to encourage industrialisation through the development of manufacturing hubs and diversifying away from declining sectors such as mining while growing agriculture, tourism, and commercial services. These industrialisation and economic diversification plans must focus on developing urban-rural linkages and integrating connectivity between these areas. Industrial activities may include logistic hubs, industrial parks, manufacturing hubs, and community-led industrial "hives". Local municipalities can adopt enabling spatial planning practices that underpin growth in the diverse and expanding manufacturing sector, considering that the manufacturing sector of the Vaal River Region contributes 5.4% (2022) to national manufacturing GVA and 10% to the combined provincial manufacturing GVA for the four provinces. The manufacturing sector contributes 37% to the regional GVA.

Trade and manufacturing in the Midvaal LM are linked to the steel and petrochemical sub-sectors. Several national retailers have also committed to ambitious localisation sourcing plans. In addition, the manufacturing sector has the potential to expand into agri-processing activities, including producing biofuels, beer, ales, and salad dressings derived from primary agricultural products. Importantly, the challenge remains to establish effective economies of scale for the different manufacturing sub-sectors in the region. Despite the decline in employment in the manufacturing sector due to the challenging economic climate observed through the COVID-19 pandemic, this sub-sector still holds the potential for significant job creation in the future. It is noted that Gauteng and Mpumalanga have an advantage in manufacturing in the region that remains on par with the national average.

It is important to note that the Gauteng Provincial Government, the Department of Trade, Industry, and Competition, and the Sedibeng District Municipality have established the Vaal SEZ. The Vaal SEZ is expected to drive industrialisation, promote green energy and green hydrogen development, boost job creation, and offer opportunities to emerging and new industrialists. It will partially help achieve this strategy.

7.3.2 Sub-objective 2: Promote Rural-Urban Economic Linkages



The Vaal River Region is structurally separated into urban and rural areas. These rural areas remain disconnected from core economic activities and so only provide limited access to meaningful economic opportunities to its people. A further important aspect of the agriculture, tourism, and commercial services sectors is the role and function of the so-called second (or informal) economy. Informal sector services contribute significantly to the informal economy, and as such, informal trading should be seen as a positive development in the micro-business sector as it contributes to job creation, alleviation of poverty, and SMME development.

7.3.3 Sub-objective 3: Promote Agriculture and Associated Economic Activities



The Vaal River Region includes commercial and small-scale farming activities with commercial activities that are generally positioned on highly fertile and productive land. Food security remains a global priority as many countries face rising food insecurities. While South Africa has an extensive agricultural production base, the country is faced with extreme inequality, causing many of its citizens to face food insecurity on a daily basis. Consequently, this sub-sector remains critical for long-term sustainable economic growth within the country and, more importantly, for the Vaal River economy. Factors that affect the viability of this sub-sector include the

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location of agri-industries and their proximity to agricultural raw materials, low-cost labour, regionally inter-connected transport links and stable power supply. The following are core criteria for the spatial development of agriculture and agri-processing:

- Agri-industries should be located near agricultural products to be processed.
- Agri-industries should be located near unskilled labour markets.
- Agri-industries must have access to major road networks.
- Agri-industries must have access to electrical power infrastructure and capacity and, in selected cases, abundant water sources.
- Agri-industries should be grouped to achieve economies of scale.
- Agri-industries should preferably not be located on high-potential agricultural soils.

Given the region's potential for agriculture and agri-processing, several agricultural activities are already well established, including commercial and, to a lesser extent, small-scale agricultural practices. Local municipalities are, however, limited in their ability to expand agriculture due to them not having productive land available, yet opportunities exist for developing critical linkages between commercial and small-scale farming as well as agri-processing. Within this Region, there are three provinces that have a higher concentration than the national average for agriculture and agri-processing, namely the Free State (with a significant advantage), followed by Mpumalanga and the North West.

The Region also offers opportunities to develop agrivoltaics industries. These industries can be developed in the various SEZ sites and small towns situated in the hinterland subregions.

7.3.4 Sub-objective 4: Promote Tourism and Associated Economic Activities



There is a strong tendency towards nature-based tourism and tourist destinations in South Africa. As a result, areas with natural beauty are popular tourist attractions. Tourism provides a development mechanism to ensure a sustainable mix between local communities, people, cultures, and environments, and its contribution to potential growth may extend beyond local economies. The scenic Vaal River Region holds strategic tourism potential, especially for local and day tourists who visit from other parts of the Region. Apart from the water-based tourism activities associated with the Vaal River and Dam, the Region is also home to multiple cultural, historic, and geological wonders.

The Vaal River Region municipalities and government agencies should capitalise on the Vaal River's natural beauty and recreational opportunities by creating and promoting tourism and recreational activities, such as river cruises, water sports, fishing, wildlife viewing, and adventure activities. Municipal plans and land use schemes should support the establishment of hotels, resorts, restaurants, and other tourism-related businesses along the banks of the Vaal River and Dam. In addition to businesses, leisure residential development should also be promoted in these areas.

Tourism is identified as a priority economic sector in the government's Medium-Term Strategic Framework (MTSF), which identified the following overall priorities:

- Creating decent work and sustainable livelihoods
- Providing education
- Providing health
- Supporting rural development, food security, and land reform
- Fighting crime and corruption and building cohesive and sustainable communities

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Tourism is also one of the six core pillars of growth as identified in the New Growth Path (NGP) published in 2010. It is expected to contribute to the development of rural areas by growing the economy and creating jobs. Although the tourism sector currently forms a relatively small part of the Region's local economy, it has a particularly high employment and income-generating capacity. The sector is also more accessible to unskilled labour and has the potential to offset the declining returns observed in the Region's mining sector.

7.3.5 Sub-objective 5: Promote Mining Transition



The South African government has prioritised attracting investment into the mining and minerals primary sub-sector and is finalising the mining exploration strategy for the country with a core focus on the development of the upstream gas industry due to its potential for job creation and broader economic development. However, the mining and quarrying activities in the Vaal River Region are reaching the end-of-life-of-mine (LOM); this is reflected in the decline in the sub-sector and subsequent job losses. Despite the expectations of investment for exploratory purposes, it is not expected that mining and quarrying will continue to be the long-term drivers of economic growth within the Region. This outlook is further exacerbated by volatility in the sector due to factors such as inconsistencies in the exchange rate and global growth outlook. The long-term coal mining opportunities — on which the mining sector in the Region is based also remain limited, further confirming a restricted growth outlook for mining and quarrying in the Region. The North West province, followed by Mpumalanga, has a competitive advantage in the mining and processing of minerals.

7.3.6 Sub-objective 6: Promote Commercial Services



High-value commercial services are supported through investment, skills development, and regional and national spatial integration. Commercial services are critically important to fuel economic growth, create employment opportunities, and raise living standards. Due to the complexity and characteristics of commercial services, the organisation of commercial activities should provide flexibility depending on the time of the request, the moment of performance and consumer behaviour. Commercial activities, services, and trade also benefit from innovation and often require skilled labour. This sub-sector has the potential to generate long-term employment opportunities within the Vaal River Region's economy.

Mpumalanga has a significant advantage in the electricity, gas, and water sector. The Free State and Gauteng have a small transportation, storage, and communication advantage. Gauteng has an advantage in the financial sector. The North West and Free State reflect a small competitive advantage in personal services.

7.3.7 Spatial Development Proposals

The proposals in this section support the economic transition and strategies set out above.

Figure 55 depicts the following components:

- Industrialisation and Economic Development Precincts (IEDP)
- Urban-Rural Regeneration and Integration Areas (URR)
- Agri-business and Agri-industry Focus Areas (AFA)
- Tourism Nodes and Sites (T)
- Mining Nodes and Sites (M)
- Commercial Economic Precincts (C)
- Vaal Special Economic Zones (SEZ)

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Moreover, industrial, urban, and commercial development activities in Potchefstroom, Kroonstad, and Heidelberg should be encouraged. Small-scale industrial activities should be encouraged in Ventersdorp, Heilbron, Frankfort, Villiers, and Grootvlei. Regional logistics hubs can be established in Heidelberg and Kroonstad.

7.3.7.1 PROVIDING OPPORTUNITIES FOR INDUSTRIALISATION AND ECONOMIC DIVERSIFICATION

For the purposes of agglomeration benefits, most industrial development, especially when it is extensive, should be directed towards the Sedibeng and Fezile Dabi DMs. Emfuleni, Midvaal, and Metsimaholo contribute a combined 8.6% to the provincial GVA (PGVA) for manufacturing, reflecting a 4,5; 1; and 3% contribution, respectively. Moqhaka and JB Marks contribute a further 0,4% each to PGVA.

These industrialisation and economic development precincts (IEDP) aim to create permanent jobs by attracting the Region's private investment and manufacturing and agri-industrial complexes. These complexes will stimulate primary feedstock production and thereby unlock the Region's potential competitive advantage in agriculture-based products, particularly those high in value. There may also be a need for smaller industrial developments and manufacturing throughout the Region. It is thus proposed that industrial development is located in the urban-rural development nodes in the Region.

As the proposed industrial developments are mostly situated in the central area of the Region, they predominantly relate to proposals made by the Sedibeng and Fezile Dabi DMs. The subject areas from Sedibeng include Leeuwkuil, Boipatong, Cyferpan, and Sebokeng CBD. While the subject areas from Fezile Dabi include The Chem City and Naledi Park. Furthermore,

- Vaal SEZ: (sites located at Lesedi, Midvaal, and Emfuleni) These sites are along the R59 corridor. The focus is on industries such as green hydrogen, green energy and agrivoltaics.

Fezile Dabi District Municipality proposed the following economic development strategies:

- Invest in knowledge-intensive manufacturing and expand the petrochemical industry, such as the petrochemicals in Sasolburg.
- Invest in manufacturing sub-sectors but prioritise those that are labour-intensive with niche markets, such as The Chem City industrial

these proposed developments range from light to heavy industries, which provide a good mix and scale of potential developments as outlined below:

Sedibeng District Municipality has the following industrial areas available for economic development:

- Leeuwkuil (light industrial uses): Leeuwkuil is an established industrial area that is still largely undeveloped. It is highly recommended that the largely undeveloped/vacant land be occupied before additional land can be offered for industrial development within the Emfuleni LM.
- Boipatong (vacant): The proposed Boipatong industrial area is situated within the triangle bordered by the K45 (Frikkie Meyer Boulevard), K180 (Houtkop Road), and K178 (Boy Louw Street). By growing this industrial region, the Mittal industrial area will be extended in a northeast direction, resulting in an industrial band that stretches from the P155 (Golden Highway) to the Vereeniging-Johannesburg railway line.
- Cyferpan (Heavy industrial): The Cyferpan proposed industrial area is a small area on the intersection of the K178 (Boy Louw Street) and the K45 (Golden Highway) with access from the K45.
- Sebokeng CBD: (Industrial but largely vacant): The Sebokeng CBD comprises a small industrial area. It is proposed that the vacant industrial stands within this industrial area be developed as hive industries, which can be rented out to the local population of Sebokeng and Evaton.

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development and Naledi Park industrial development in the Sasolburg Industrial Area.

- Develop an industrial park in Metsimaholo LM.
- Rezone public spaces for industrial development in suitable areas (Ngwathe LM).

Opportunities for economic diversification

- **Consider an appropriate incentive framework based on a clear, transparent, and predictable business and investment climate.** Key steps include reviewing trade policies to remove bias against exporting and ensuring effective competition in product markets and in key services such as transportation, energy, and communications.
- **Consider effective policies for reallocating economic resources to new activities.** Labour-market policies and access to finance are of particular importance. These determine the match between workers and jobs and help move economies away from declining sectors and informal economic activity. Success comes by overcoming constraints to mobility, including barriers that limit the entry of women into the workplace.
- Assess the current state of the local/district municipalities to establish whether there is a strong foundation on which to build a smart industrialisation and economic diversification initiative. Gather information about current conditions with respect to the existing engineering infrastructure, the facilities, amenities, and housing available to residents, the ability of the municipality to deliver services, the governance structures and the available financial resources, including available skills and training facilities.
- **Consider the enablers.** The assessment of the pre-conditions will assist in understanding a local/district municipality's challenges or 'pain points'. This will guide the direction to leverage the identified enablers:
- Metsimaholo currently is the largest manufacturing area in the Free State province,
- Manufacturing is a major contributor to the Midvaal local economy,
- Commercial and manufacturing activities are located along the major transport routes earmarked for nodal development.



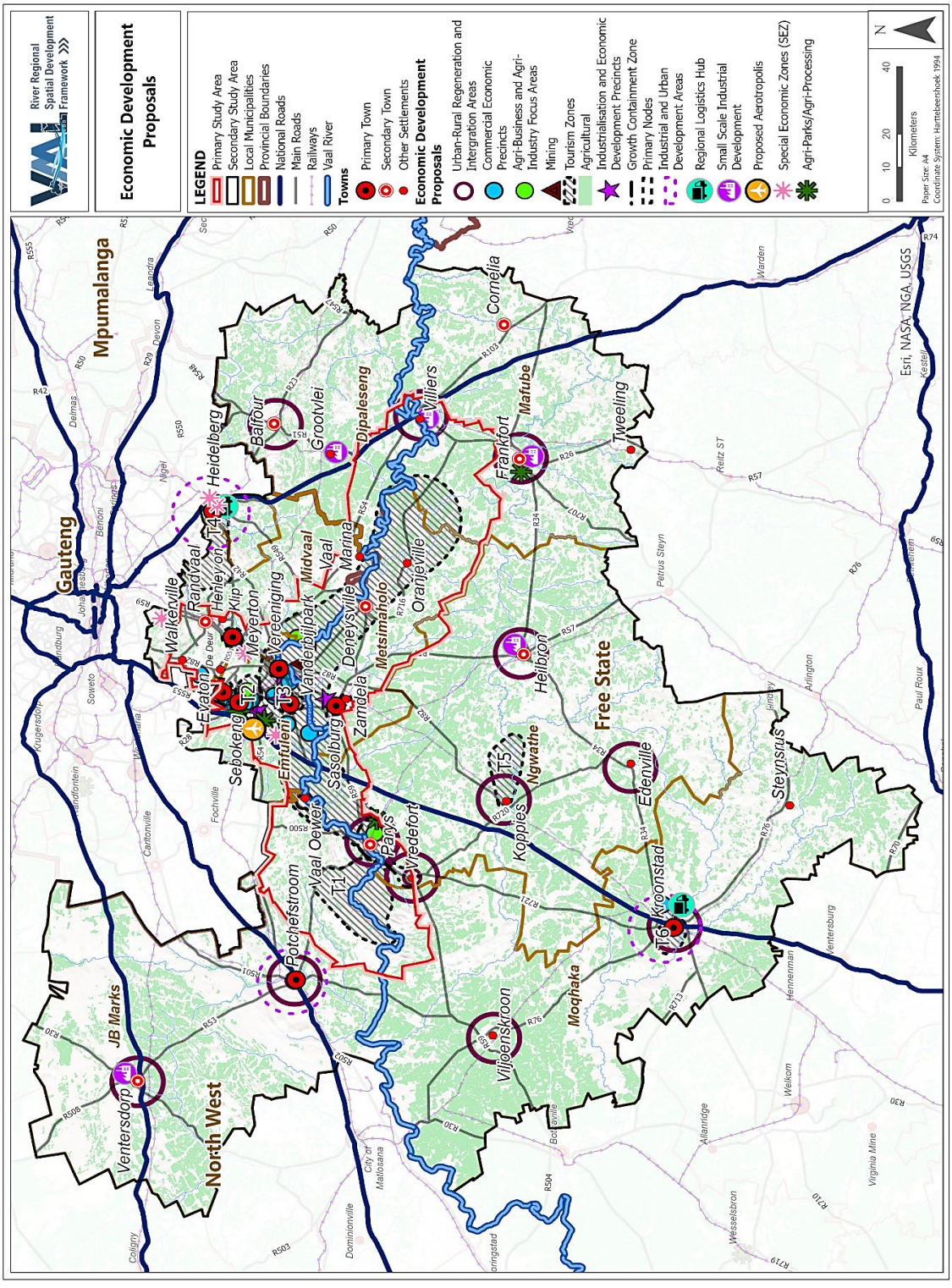


Figure 55: Economic Development Proposals

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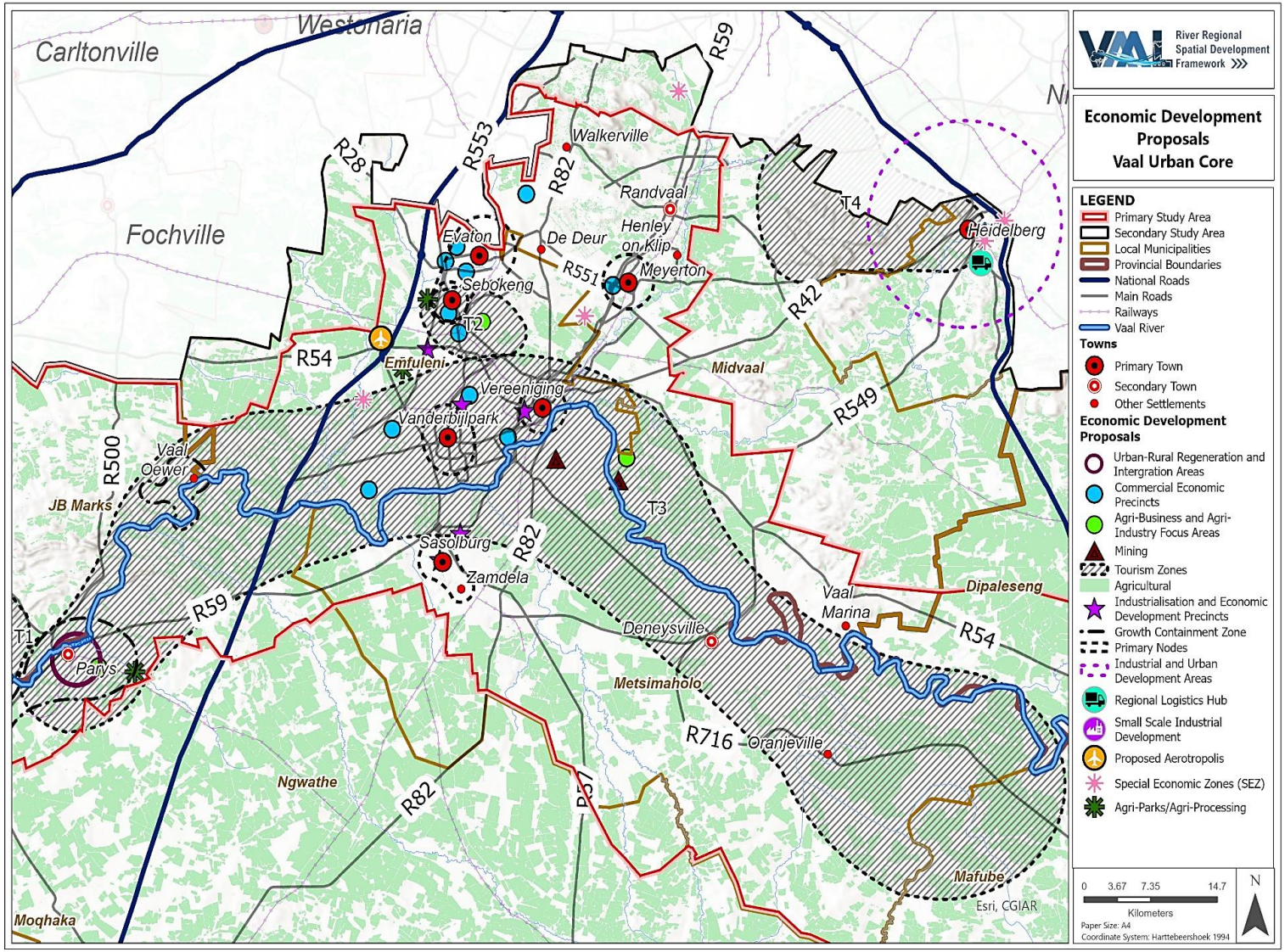


Figure 56: Economic Development Proposals: Vaal Urban Core

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7.3.7.2 ADVOCATING AND ENSURING URBAN-RURAL ECONOMIC LINKAGES AND REGENERATION

Regarding urban-rural regeneration, the overall strategy is to follow a regional approach to address challenges in declining rural areas. This strategy, therefore, aims to revitalise rural areas affected by disinvestment, poor infrastructure and low levels of economic development through alignment and prioritisation that promotes and will result in the spatial transformation and economic development of these areas. To support the overall strategy of urban-rural regeneration, the following towns and settlements have been earmarked as Urban-Rural Regeneration and Intervention Areas, as indicated in Figure 55. The following key urban-rural regeneration linkages have been identified:

- Rural service centres:
- Parys, Balfour, Frankfort: Potential for agricultural growth through the development of supporting agro-processing industries, farmers' markets, and other initiatives that add value to local agricultural products.
- Viljoenskroon, Heilbron: Predominantly rural or small farming towns that would benefit from measures that will grow the agriculture sector, for example, providing agricultural extension services, promoting small-scale farming, or establishing local farmers' markets.
- Ventersdorp, Vredefort, Koppies, Villiers, Edenville: Agriculture and tourism development potential.
- Rural towns and settlements that will benefit from access to small-scale farming activities, agri-processing, and tourism include:
- Steynsrus, Oranjeville, Tweeling, Cornelia, Holly County, and Vierfontein.
- Urban core and regional development anchors:
  - Sasolburg, Vereeniging, Vanderbijlpark, Evaton, Sebokeng, Meyerton, Zamdela, Deneysville, Randvaal, De Deur, Potchefstroom, and Kroonstad.

For the purposes of this strategy, urban-rural regeneration is defined as the development of local economic centres that provide services to the local economy (as opposed to the regional and subregional economy) and address community needs. The guidelines on implementing urban-rural regeneration and development programmes should also provide coordination mechanisms for a concerted stakeholder effort to achieve spatial transformation and economic development.

The drivers through which revitalisation can be achieved in urban-rural regeneration include:

- Establishing partnerships for urban-rural revitalisation.
- Creating smart urban-rural regions.
- Establishing urban-rural regions as economic development centres through enterprise development and support.
- Ensuring urban-rural economic and social infrastructure development.
- Mobilising underutilised public assets and resources for urban-rural regeneration.
- Ensuring urban-rural revitalisation through marketing investment, retention and attraction.
- Making provision for secondary urban-rural growth areas.
- Promoting these secondary urban-rural growth areas as secondary nodes supporting corridor development.
- Promoting compact urban development and combatting urban sprawl.
- Promoting focused investment and managed growth.
- Encouraging the use of a single land use management system (township formalisation).

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- Encouraging social inclusion areas that focus investment in people rather than in places.
- Encourage social inclusion by directing investment toward people rather than places.

Ensuring urban-rural economic linkages also includes regenerating the informal and township economy. The World Economic Forum (WEF) (2024) defines the informal economy as "activities that have market value and would add to tax revenue and GDP if they were recorded", while the WEIGO (2024) defines it as "a diversified set of economic activities, enterprises, jobs and workers that are not regulated or protected by the state". BusinessTech (2023) estimates that the informal and township economy accounts for approximately 17% of South Africa's employment. South Africa's retail sector in the informal economy realises an estimated R150 billion in cash annually, spent predominantly at spaza shops in the informal economy (BusinessTech, 2023). Providing access to finance, business incentives and support, registration and taxation, skills training, defined property rights and extending legal protections can help transition informal and township economy operations into the formal sector over time. Key economic development areas identified in the Gauteng Township Economy Revitalisation Strategy include (Gauteng Provincial Government, 2014):

- Ensuring that there is an appropriate legal and regulatory framework.
- Promoting manufacturing and productive activities.
- Economic infrastructure support and clustered enterprise development.
- Promoting entrepreneurship development.
- Financing and investing in the township economy.
- Promoting access to markets.
- Promoting innovation and indigenous knowledge systems.
- Promoting agriculture value chains and tourism-related services for the Vaal River Region.

The Department of Small Business Development (DoSBD) prioritises the Township and Rural Entrepreneurship Programme (TREP), which focuses on strengthening informal businesses, creating markets for small-, medium- and micro-enterprises (SMMEs) and promoting localisation and industrialisation. The five-year TREP programme will focus on supporting businesses in the automotive industry, such as motor mechanics, panel beaters, auto fitness centres and auto spare shops. The government also focuses on the viable development of businesses in the bakery and confectionary as well as butchery industries.

Municipalities are encouraged to review relevant policies, spatial development frameworks, land use schemes, and bylaws to meet informal businesses' unique needs and characteristics. This will ensure that safety and quality standards are maintained and that informal businesses can operate lawfully and in accordance with basic requirements.

7.3.7.3 PROMOTING AGRICULTURE AND ASSOCIATED AGRI-BUSINESS AND AGRI-INDUSTRY

In the Agricultural Focus Area (AFA) and Urban-Rural Regeneration and Integration Areas (URR), establishing and upgrading agri-businesses and agri-industries must be supported to promote economic transition and unlock the Region's economic development potential. Therefore, proposed agricultural developments are situated in all three subregions of the study area, namely Sedibeng, Fezile Dabi, and Dr Kenneth Kaunda DMs and are depicted in Figure 55.

- The subject areas from the Sedibeng DMs include Rietkuil Agri-Hub, Sebokeng Agri-Park, and Bantu Bonke (potential agri-villages).
- Subject areas from Fezile Dabi DM include the Farm Mooidraai 44.
- Some parts of Dr Kenneth Kaunda DM include high-potential agricultural land.

The following types of businesses and agri-industries are examples of proposals aimed at growing agriculture and associated agri-business and agri-industry outcomes in the Region:

- Field crops, such as maize and milling cooperations.
- Agricultural product beneficiation, processing and packaging.
- Horticulture farming processing cooperations.
- Natural veld grazing and animal products.
- Abattoirs and meat processing and packaging industries.
- Fishing-related industries, including tourism-related industries along the Vaal River and fly fishing inland.

The proposal in this section supports the implementation of the concept of integrated urban-rural agri-hubs and agri-parks throughout the Region and in each district consisting of the following components:

- Rietkuil Agri-Hub
- Parys Agri-Park
- Sebokeng Agri-Park
- Bantu Bonke (potential agri-villages)
- Vaal Aerotropolis agri-hub and agri-processing and export facility
- Zwartkopjes agri-processing facility

The NSDF also provides for the transformation and economic transition of regions that reflect the high potential for agricultural opportunities, recognising that these should be optimised and that the establishment of small-scale farming activities, agri-enterprises and agri-led industrialisation must be supported. These are captured in the Agricultural Focus Area (AFA) discussed above.

7.3.7.4 PROMOTING TOURISM ACTIVITIES IN APPROPRIATE AREAS WITH A COMPETITIVE ADVANTAGE

Tourism zones are prosed throughout the Region and overlap with other macro land use areas such as the Urban-Rural Regeneration and Integration Areas (URR), Agri-business and Agri-industry Focus Areas (AFA), Tourism Nodes and Sites (T), Heritage Nodes and Sites (H), and Commercial Economic Nodes and Sites (C).

Tourism zones are areas where tourism must be actively promoted as they can contribute tremendously to the Region's local economy. Thus, tourism zones merely indicate the areas on which the Region should focus its efforts and resources to attract tourism and contribute to economic activity, job creation, and service provision. For the purposes of the VRRSDF, the tourism zones (T) are geographical areas or zones in the Region that have been designated or possess common or diverse cultural and environmental characteristics that would support and attract tourism to the area through its natural and cultural and/or heritage resources. It includes tourism nodes and sites.

Tourism nodes are functional areas or places that encompass one or more areas of natural beauty, natural resources, or heritage sites that attract tourists, visitors, or holidaymakers and that provide tourists with other facilities such as overnight accommodation, restaurants, and activities.

Proposed tourism developments and proposals are found across the study area, as shown in Figure 55.

The Region's subject areas have been identified as:

- Sedibeng DM: Sharpville Struggle, Three Rivers, River Road, River Front, Walkerville, Sebokeng Struggle, Suikerbosrand, R42 Scenic, R54 Marina, R550 Klip Route; and Vanderbijlpark (Emerald Casino).
- Fezile Dabi DM: Parys, Deneysville and Oranjeville.
- Dr Kenneth Kaunda DM: Vredefort Dome.

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Subsequently, the following tourism zones (T) have been proposed:

- **T1: The Vredefort Buffer Zone** consisting of the Vredefort Dome Heritage Site.
- T2: Heritage Nodes consisting of:
  - Sharpville Struggle
  - Sebokeng Struggle
  - Various other heritage sites in and around Sedibeng (see Annexure A)
- T3: The Vaal River consisting of:
  - Flyfishing nodes at Parys, Deneysville and Oranjeville, where flyfishing activities are allowed.
  - Scenic routes at Three Rivers, River Road, River Front, Walkerville, R42 Scenic, R54 Marina, and R550 Klip Route.
  - Vanderbijlpark's Emerald Casino.
- T4: Suikerbosrand Nature Reserve
- **T5: Koppies** consisting of the town, Koppies Dam and Nature Reserve
- **T6: Kroonstad** consisting of the town, Bloemhoek Dam, the Valsrivier and surrounding game and nature reserves.

The protection and management of ecological infrastructure, national resources and protected areas that are regarded as critical for the transformation and economic transition of the Region are provided in Objective 2 as described in Section 7.3. Tourism of this VRRSDF and is a prominent feature and theme throughout the entire VRRSDF. It is also one of the transformation components of the VRRSDF. The overarching strategy is to develop the tourism sector, which could include creative industries such as film productions. However, it must be noted that all activities proposed for these tourism zones are subject to the provisions of the VRRSDF and any applicable legislation.

7.3.7.5 ENSURING MINING TRANSITION IS SUPPORTED TOWARDS PRODUCTIVE ECONOMIC ACTIVITIES

The South African government has prioritised attracting investment into the mining and minerals primary sub-sector and is finalising the mining exploration strategy for the country with a core focus on the development of the upstream gas industry due to its potential for job creation and broader economic development. However, the mining and quarrying activities in the Vaal River Region are reaching the end-of-life-of-mines (LOM), this is reflected in the decline in the sub-sector and subsequent job losses. Despite the expectations of investment for exploratory purposes, it is not expected that mining and quarrying will continue to be the long-term drivers of economic growth within the Region. This outlook is further exacerbated by volatility in the sector due to factors such as inconsistencies in the exchange rate and global growth outlook. The long-term coal mining opportunities — on which the mining sector in the Region is based, also remain limited, further confirming a restricted growth outlook for mining and quarrying in the Region. The focus of this sub-objective is to maximise growth where possible from the existing mining operations and consider a transition away from mining towards industrial, commercial, agricultural and tourism activities that will ensure long-term sustainable economic growth in the Region. The areas that will be most affected by a transition away from mining are Moqhaka, Metsimaholo, and Emfuleni. Although no new development works or mining proposals have been identified, the possibility of sand mining and gravel quarrying in Mafube should be explored. However, there are still mining activities in the study area, with mines in the central area, including Bantu Bonke (sand quarry along the Vaal River), and New Vaal Colliery (coal mine).

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7.3.7.6 PROMOTING COMMERCIAL ACTIVITIES IN APPROPRIATE AREAS WITH A COMPETITIVE ADVANTAGE

Trade and manufacturing in the **Midvaal LM** are linked to the steel and petrochemical sub-sectors. However, the steel sector is in rapid decline and efforts to move into higher-demand secondary sectors are required to offset the potential job losses related to this decline. Several national retailers have also committed to ambitious localisation sourcing plans. The manufacturing sector also has the potential to expand into agri-processing activities such as producing biofuels, beer, ales, and salad dressings derived from primary agricultural products.

Proposed commercial developments are mostly situated in the central area of **Sedibeng DM**, which includes Savannah City, Sicelo, Mamello, Evaton, Beverley Hills, Palm Springs, Boipatong, Bophalong and Sebokeng.

Further commercial activities have also been identified through the SDF of the **Emfuleni LM**, such as the proposed **Vaal River City concept**. This concept is expected to represent a R1,4 billion investment into a new mega-city project and airport south of Johannesburg that will comprise a mixed-use metropolitan city development, an international airport, logistics, manufacturing, and agricultural hubs, including up to 5 000 residential units. The development is expected to attract skilled labour and potentially deliver up to 7 000 new jobs.

Furthermore, Emfuleni LM has identified a special economic zone (SEZ) for the development of a logistical hub. This is an important flagship project within the Vaal River Region with potential components, including a Transnet container depot, an Industrial Development Zone, an airport, warehouses and storage facilities, and an intelligence information infrastructure.

Kroonstad (Maokeng), as the third largest city in the Free State, has also been earmarked for further commercial and industrial development given its spatial location and support network specifically for commercial agriculture.



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7.3.8 *Implementation Action Plan*

Table 24: Implementation Action Plan: Economic Development

PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Sub-objective 1: Promote industrialisation and economic diversification					
Provide opportunities for industrialisation and economic diversification.	High	Entire project area	2030	Collaboration of local, district, provincial and national governments	DTIC, DALRRD, COGTA
Support large-scale regional economic and employment change in the region through innovation, diversification, adaptation and the repurposing of existing industrial land and associated infrastructure.	Medium	Entire project area	2027	Local Municipalities	DTIC, DALRRD, COGTA
Introduce a special collaborative programme in government (provincial sector department and municipalities), specifically focusing on ensuring innovation and economic diversification.	High	Entire project area	2025	Local Municipalities and Provincial Governments	DTIC, DALRRD
Develop an economic development strategy focusing on diversification, investment attraction and skills development. The strategy should be formulated in a collaborative manner and include key regional stakeholders such as agricultural forums, mining houses, tourism councils, labour organisations, large investors, and environmental action groups.	High	Entire project area	2025	Local Municipalities and Provincial Governments	DTIC, DALRRD, Department of Minerals and Energy (DME), Department of Tourism (DoT), Chamber of Commerce.
Avoid approving applications and proposals for land use that reduce stream flow or affect water quality (e.g., mining operations).	High	Entire project area	2025	DALRRD	Local Municipalities and Provincial Governments

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Promote the diversification of the local economy by creating an enabling environment.	Medium	Entire project area	2027	Local Municipalities and Provincial Governments	All
Promote and facilitate the development of the Vaal SEZ.	Medium	Entire project area	Ongoing	Collaboration of Local and District Municipalities, and Provincial and national Governments	DTIC, DALRRD
Ensure that the ecological infrastructure is maintained because it supports water security, food security and disaster risk reduction.	High	Entire project area	Ongoing	Local Municipalities and Provincial Governments	DFFE
Sub-objective 2: Promote rural-urban economic linkages					
Revitalise rural areas affected by disinvestment, poor infrastructure, skills deficits and low levels of economic development through alignment and prioritisation that promotes and will result in the spatial transformation and economic development of these areas as follows:					
Expedite urban and rural land reform.	Medium	Entire project area	Ongoing	Department of Planning, Monitoring and Evaluation (DPME), DALRRD	Local Municipalities Provincial Government
Strengthen the Regional Development Anchors and Rural Service Centres as focal points.	Medium	Entire project area	Ongoing	DPME, DALRRD, Local Municipalities.	Local Municipalities
Promote local economic development, fight poverty and limit income leakage.	Medium	Entire project area	Ongoing	DALRRD, DPME, Local Municipalities	Provincial Government
Establish a joint public-private action group to manage the threat to the Vaal River Region's water and productive land resources, prioritising the impact on formal and informal urban sprawl.	High	Entire project area	2025	DPME	DFFE
Rural-urban regeneration must be coupled with land reform, of which the following should form the key to rural development:					

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
The government must ensure that tenure reform, restitution and redistribution lead to tenure security, a just economic transformation, and sustainable development.	Medium	Entire project area	Ongoing	DALRRD, DPME, DFFE	Local Municipalities
Create opportunities that ensure sustainable livelihoods in rural and marginalised areas to promote the transformation of communities and the economy in general and attract private investment to marginalised areas.	Medium	Entire project area	2030	DALRRD, DPME	Local Municipalities
Improve the transportation networks and enhance urban-rural and rural-rural connectivity.	Medium	Entire project area	2035	Department of Transport (DoT)	Provincial Government
Encourage communities and traditional leaders to participate in rural development where land rights have been restored, and there is potential for agri-tourism, agriculture, and eco-tourism.	Low	Urban-Rural Regeneration and Integration Areas, agriculture areas, and tourism zones	2035	DALRRD	Local Municipalities, Traditional Leaders
Ensure small-town redevelopment and regeneration to support rural communities.	High	Urban-rural Regeneration and Integration Areas, secondary towns, and other settlements	2030	Local Municipalities	Provincial Government, DALRRD
Ensure the formalisation and growth of the informal and township economy through funding smaller retail developments, investment in skills training, business incentives and support, legal frameworks,	High	Primary towns, secondary towns, and	2030	Department of Trade, Industry and Competition (DTIC), Department of Small	Provincial Economic Development Departments, Local Municipalities

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
social protection, business investment, regulation and taxation, insurance, social protection, and alignment with TREP.		other settlements		Business Development (DoSBD)	
Develop guidelines for urban-rural regeneration and integration.	Medium	Urban-rural regeneration nodes	2025	DPME and DALRRD	Local Municipalities
Sub-objective 3: Promote agriculture and associated economic activities					
Consolidate existing small- and medium-scale agriculture support programmes, protect and optimise high-value agricultural land, and strengthen the focus on job-intensive agro-processing in the area.	Medium	Agriculture areas	2030	DALRRD	Provincial Governments and Local Municipalities
Provide for agri-business and agri-industries in areas such as: • **Rietkuil Agri-Hub** • **Sebokeng Agri-Park** • **Bantu Bonke (potential agri-villages)** • **Vaal Aerotropolis Agri Hub** • **Agri-processing — Emfuleni and Zwartkoppjes** • **Agrivoltaics — Emfuleni and Zwartkoppjes**	High	Agriculture areas Rietkuil Agri-Hub, Sebokeng Agri-Park, and Bantu Bonke (potential agri-villages)	2030	DALRRD	Provincial Governments and Local Municipalities
Establish a joint public-private action group to manage the threat to the Vaal River Region's water and productive land resources, prioritising the maintenance of productive agriculture, especially for small-scale farmers close to urban centres.	High	Entire project area	2025	DALRRD	All stakeholders

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Promote agrarian transformation as set out elsewhere in these strategies.	Medium	Agriculture areas	2030	DALRRD	Provincial Governments and Local Municipalities
Ensure and support the development of agri-processing and agri-hubs.	High	Agriculture areas and identified agri-hubs	2027	DALRRD	Provincial Governments and Local Municipalities
Agrarian transformation in the Region must aim to increase agricultural production through:					
The optimal and sustainable use of natural resources.	High	Entire project area	Ongoing	DFFE, DALRRD	Provincial Governments and Local Municipalities
The use of appropriate technologies to ensure food security.	Low	Entire project area	Ongoing	DALRRD, Department of Science and Innovation (DSI)	Provincial Governments and Local Municipalities
Investment in restoring and maintaining ecological infrastructure in support of water security, food security and disaster risk-reduction strategies, including those related to climate change.	Medium	Entire project area	Ongoing	DFFE, Department of Science and Innovation (DSI)	Provincial Governments and Local Municipalities
Sub-objective 4: Promote tourism and associated economic activities					
Vaal River Region tourism activities: Enhance the rural tourism experience, especially along heritage corridors, such as the Vredefort Dome.	Medium	Heritage corridors, Tourism corridors	2030	Department of Tourism (DoT)	Local Municipalities
Develop "Biodiversity and Blue Economies" within the Region.	High	Entire project area	2030	DFFE	Provincial Governments and Local Municipalities
Promote eco-tourism, agri-tourism and the accommodation sector in appropriate areas and areas with agglomeration benefits.	High	Heritage corridors, Tourism corridors	2030	Department of Tourism (DoT)	Local Municipalities

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Promote tourism through heritage sites and exposure to them through targeted marketing campaigns.	Medium	International, Regional, National, Local	2026	Department of Tourism (DoT)	Local Municipalities
Support the provision of land uses and activities that complement tourism and the tourism zones in general, such as the catering and the accommodation industry, laundry services, food provision, aqua-activities, bird watching, security services, guided walks, boating, water-skiing, and fishing: Local Municipalities must ensure that land use regulations promote and simplify the provision of land uses and activities that complement tourism, such as the catering and accommodation industry.	Medium	Tourism zones	2035	Provincial Governments and District and Local Municipalities	Department of Tourism (DoT), DALRRD
Sub-objective 5: Promote mining transition					
Support existing mining operations while transitioning away from mining and end-of-life mines. Existing mines are situated in the central area and include: • **Bantu Bonke (Sand quarry along the Vaal River) and** • **New Vaal Colliery (coal mine).**	Medium	Mining areas and corridors	Ongoing	DME	Provincial Governments and Local Municipalities
Develop a mining transition strategy that identifies core industrial, tourism, and commercial activities that could be developed to ensure the mining-linked towns remain sustainable and that alternative income is generated to absorb the job losses related to the mining decline.	Medium	Mining areas and corridors	2025	DME	DALRRD, Provincial Governments and Local Municipalities

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Prioritise a mining transition through: • **Expediting mining and rural land reform.** • **Strengthening the Regional Development Anchors and Rural Service Centres as focal points.**	Low	Mining areas and corridors	Ongoing	DALRRD, DME	Provincial Governments and Local Municipalities
Promote local economic development, fight poverty and limit income leakage.	High	Mining areas and corridors	Ongoing	DALRRD, DME, DPME	Provincial Governments and Local Municipalities
Sub-objective 6: Promote commercial services					
Support large-scale regional economic and employment change in the region through innovation, diversification, adaptation, and the repurposing of existing industrial land and associated infrastructure into commercial and services-oriented infrastructure.	High	Across the region	Ongoing	DTIC, Local Municipalities	Provincial Governments and Local Municipalities, Industrial sector bodies
Introduce a special collaborative programme in government (provincial sector department and municipalities) that specifically focuses on ensuring commercial diversification.	Medium	Across the region	2027	Provincial Governments	Local Municipalities
Develop an economic development strategy for commercial activities that focuses on diversification, investment attraction, and skills development. The strategy should be formulated collaboratively and include key regional stakeholders such as agricultural forums, mining houses, tourism councils, labour organisations, large investors, and environmental action groups.	High	Commercial and industrial zones and corridors	2025	DTIC	Provincial Governments and Local Municipalities

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Prioritise the proposed commercial developments in the central area of Sedibeng, which includes Savannah City, Sicelo, Mamello, Evaton, Beverley Hills, Palm Springs, Boipatong, Bophalong and Sebokeng.	Medium	Commercial and industrial zones and corridors	Ongoing	Provincial Government and Local Municipalities	Provincial Government and Local Municipalities, DTIC, DALRRD, DPME
Align spatial planning initiatives in the region to the Vaal River City development and logistics hubs.	Medium	Commercial and industrial zones and corridors, Vaal River City development	Ongoing	Provincial Government and Local Municipalities	DALRRD, DPME
Ensure spatial network alignment between Kroonstad (Maokeng), the Vaal River City, and the SEZs to ensure economic growth within the commercial, industrial, and agriculture sectors, which benefit from appropriate road and rail transport linkages, industrial hubs, and commercial connectivity.	Medium	Commercial and industrial zones and corridors, SEZs	Ongoing	Local Municipalities	Provincial Governments

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7.4 Objective 4: SOCIAL DEVELOPMENT: To Achieve Overall Social Betterment



Objective 4: SOCIAL DEVELOPMENT

This development objective represents a strategic approach to fostering comprehensive social development in the geographically and socio-economically diverse Vaal Region. This framework is informed by a holistic understanding of social development, one that recognises the interconnectedness of socio-spatial and economic dimensions in creating sustainable, equitable and inclusive communities.

At its core, the objective is guided by four fundamental sub-objectives/strategies:

1. **Sustainable settlement patterns:** This sub-objective aims to develop sustainable and integrated human settlements, focusing on optimising land-use efficiency and creating diverse and vibrant settlement patterns adapted to local conditions and population sizes within the Vaal River Region. This strategy, therefore, acknowledges that a 'one-size-fits-all' approach is not viable for such a diverse region. As such, the proposal includes different residential densities and types of settlements, from small local towns to larger development anchors. This holistic approach aims to create well-balanced and resilient communities where local resources are optimally utilised, and social and economic growth opportunities are maximised.
2. **Social infrastructure:** This sub-objective greatly emphasises the importance of accessible, high-quality social infrastructure. It seeks to establish a well-distributed network of social services that cater to varying population sizes and needs. The sub-objective underscores the essential role of robust and accessible social infrastructure in enhancing the quality of life and fostering social development within the Vaal Region.
3. **Training and/or higher skills development:** Recognising that education and skills development are fundamental drivers of social mobility and economic prosperity, this sub-objective advocates for establishing and expanding diverse educational and vocational training opportunities across the Region. This includes strengthening formal education, promoting lifelong learning, and supporting initiatives that provide skills for the emerging digital economy.
4. **College precinct or village:** This sub-objective underscores the transformative potential of higher education institutions as hubs of learning, innovation, and community development. The proposed establishment of a College Precinct in Vereeniging aims to foster a vibrant and inclusive learning environment while also serving as a catalyst for local economic development and integration.

These sub-objectives interweave to form a coherent and integrative social development vision for the future of the Vaal River Region. This vision reflects the realities of the Region, acknowledging the challenges of inequality and uneven development while also seeking to leverage the opportunities that arise from the region's unique socio-cultural and natural assets. As such, these sub-objectives represent a pivotal tool for guiding future growth and development in a socially just, economically robust, and environmentally sustainable way.

7.4.1 Sub-objective 1: Promote Sustainable Settlement Patterns



The Regional-Rural Development Model, put forward by the NSDF as one of its spatial development levers, has been taken as a point of departure for sustainable settlement patterns in the Vaal River Region. This model takes a systemic view and proposes the soft delineation of polycentric functional regions that have:

- at least one well-connected regional development anchor, located both within the region and on the national transport network to 'anchor' the region as a whole in, and connect it to the national space economy; and
- social, cultural, historical, economic and cultural characteristics and attributes that would make the development of a 'functional rural region' possible over time and the potential for intra-regional rural-rural and rural-urban trade between towns and villages in the region.

The underlying principles are guided by elements such as the specific location, the inherent potential, and the optimal balance between the necessity for spatial planning and development to boost growth and transformation. This pertains to natural, environmental, urban and rural areas while aiming to consolidate nodes efficiently, productively and responsibly. These elements of spatial transformation and development are designed to foster unity in the spatial, social and economic spheres in a sustainable and resilient manner.

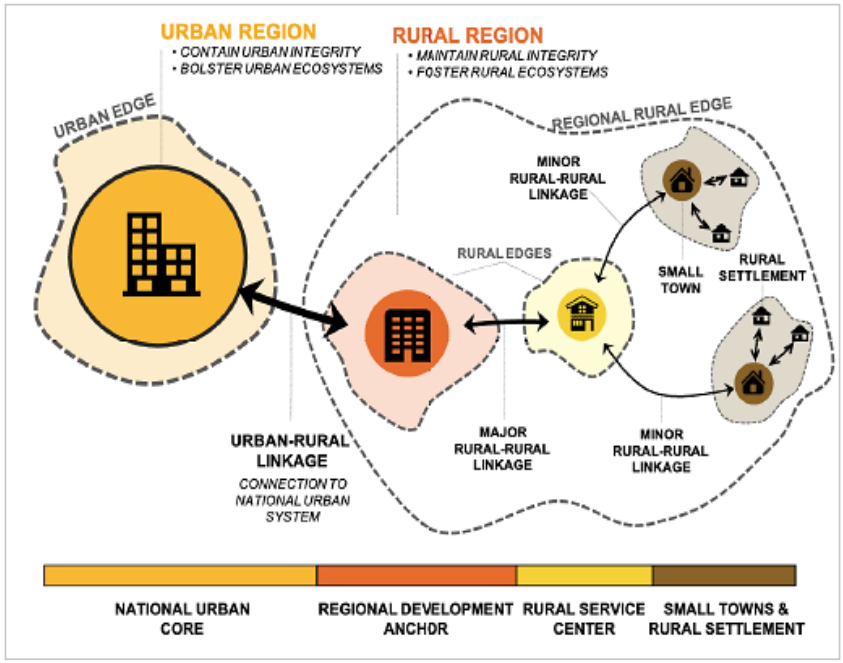


Figure 57: NSDF Regional-Rural Development Model

Source: NSDF, 2022

This will improve service delivery and infrastructure provision across all spatial systems within the Vaal River Region. The transformation aims to address the current disintegration of local spatial systems, optimally reflecting regional growth and spatial and developmental unity without compromising the natural environment. Thus, there is a need for improved and new infrastructure investment in the identified areas for rural and urban-focused spatial systems. The goal is to create a setting that encourages spatial justice, inclusiveness and opportunities for the Region's population. The applicability of the model is contextualised in the ensuing Tables.

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Table 25: The Vaal Urban Core

VAAL URBAN CORE	POPULATION SIZE IN RELATION TO SERVICE LEVEL	DEVELOPMENT GUIDELINES
Sasolburg, Vereeniging, Vanderbijlpark, Evaton, Sebokeng, Meyerton, Sicelo, Heidelberg, Zamdela	Service town for more than 60 000 people	• Refer to Table 36: Services for 60 000+ People • Serves as a crucial hub for its surrounding areas, providing a range of important services and amenities. • Advocate for varied residential densities to meet diverse housing needs. Higher-density developments should ideally be positioned around public transit nodes and commercial hubs to support walkability and reduce reliance on private vehicles.
Deneysville, Randvaal, De Deur, Ratanda	Small Service town for 10 000 to 19 000 people	• Refer to Table 33: Services for 10 000 to 19 999 People • Focus on enhancing economic opportunities while also addressing social, environmental and spatial aspects. • Strive for balanced residential development that optimises the use of land, preserves natural resources and promotes a sense of community. • Incorporate diverse housing types, including affordable options, to accommodate varying household sizes and income levels.

Table 26: Regional Development Anchors

REGIONAL DEVELOPMENT ANCHORS	POPULATION SIZE IN RELATION TO SERVICE LEVEL	DEVELOPMENT GUIDELINES
Potchefstroom and Kroonstad	Service town for more than 60 000 people	• Refer to Table 36: Services for 60 000+ People • Aim for increased residential densities to accommodate a diverse population and workforce in moderate to high-residential densities such as these, where the towns serve as regional hubs. • Ensure that the town has facilities that support agricultural activities, such as agri-processing industries, agricultural extension services, and markets for farmers to sell their produce, as the towns have the potential presence of rural communities in the broader region. • Ensure that the initiatives for land reform in peri-urban areas are associated with agri-hubs or FPSUs.

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Table 27: Rural Service Centres

RURAL SERVICE CENTRES	POPULATION SIZE IN RELATION TO SERVICE LEVEL	DEVELOPMENT GUIDELINES
Parys, Balfour, Frankfort	Service town for 40 000 to 59 999 people	• Refer to Table 35: Services for 40 000 to 59 999 People • Focus on creating a sustainable and vibrant regional hub to meet the diverse needs of a growing population and surrounding areas. • Plan for mixed-density residential development, with medium to higher densities around town centres and transportation hubs transitioning to lower densities in peripheral areas. This can promote walkability and efficient service use. • Facilitate the growth of agriculture industries by supporting agro-processing industries, farmers' markets, and other initiatives that add value to local agricultural products.
Viljoenskroon, Heilbron	Service town for 20 000 to 39 999 People	• Refer to Table 34: Services for 20 000 to 39 999 People • Endeavour to ensure self-sustaining communities that can cater to the basic needs of the populace while offering a foundation for growth and development. • Plan for medium-density residential development to optimise land use and provide affordable housing options. This includes an appropriate mix of housing types and sizes to accommodate varying household needs. • Incorporate measures that support the local agriculture sector for these predominantly rural or farming towns. This could include the provision of agricultural extension services, promotion of small-scale farming, or the establishment of local farmers' markets.
Ventersdorp, Vredefort, Koppies, Villiers, Edenville	Small Service town for 10 000 to 19 999 People	• Refer to Table 33: Services for 10 000 to 19 999 People • Focus on enhancing economic opportunities while also addressing social, environmental, and spatial aspects. • Strive for balanced residential development that optimises the use of land, preserves natural resources, and promotes a sense of community. • Incorporate diverse housing types, including affordable options, to accommodate varying household sizes and income levels.

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Table 28: Other Towns and/or Settlements

REGIONAL DEVELOPMENT ANCHORS	POPULATION SIZE IN RELATION TO SERVICE LEVEL	DEVELOPMENT GUIDELINES
Tweeling, Cornelia	Small local town for 5 000 to 9 999 people.	• Refer to Table 32: Services for 5 000 to 9 999 People • Encourage these towns to serve as critical linkages between rural areas and larger urban centres, providing services and opportunities to their own residents and those in the surrounding countryside. • Strive for medium-density residential areas, reflecting the town's role as a transition between rural and urban lifestyles. These densities should support providing services and amenities without promoting urban sprawl.
Holly County, Vierfontein, Vaal Marina	Local service node for less than 4 999 people.	• Refer to Table 31: Services for 1 000 to 4 999 People • Preserve the area's natural and rural character while ensuring the adequate provision of the necessary infrastructure and services for the residents. • Develop compact and contiguous settlements to preserve agricultural lands and natural habitats and reduce the fragmentation of these valuable lands. • Facilitate access to agricultural training, resources, and land for local residents to engage in small-scale farming activities. This will support rural livelihoods and promote food security.

For informal settlements, the focus should be on the in-situ upgrade of existing informal settlements, prioritising the provision of essential services such as clean water, sanitation, electricity, and waste management to enhance the quality of life for residents. Simultaneously, measures should be established to limit the expansion of new informal settlements by promoting affordable housing projects and creating economic opportunities in designated development areas (See Section 7.4.1.1 below). Informal settlements should also be integrated into the broader urban fabric through improved connectivity and by providing access to social services, education, and healthcare.

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7.4.1.1 HOUSING

Future housing demand is influenced by the current housing supply gap and the amount of housing required to accommodate the population growth. The current housing supply gap in the Region is estimated to be slightly more than 27 500 units.

As illustrated in Figure 6 and Figure 58, population growth in the Region's municipalities and towns will be uneven. It is anticipated that Sasolburg, Potchefstroom, Meyerton, Heidelberg, and several smaller settlements in Lesedi and Midvaal will experience high to extreme levels of population growth. Sebokeng, Vereeniging, Kroonstad, Parys, Vredefort, Frankfort, and numerous smaller communities in Free State will likely experience population declines.

Uneven population growth in towns and municipalities will result in uneven housing demand. Table 29: Additional Housing and Residential Land Requirements (2050) demonstrates the number of additional dwelling units required to accommodate future population growth and lessen the current supply gap. JB Marks LM is anticipated to require the most dwelling units, followed by the local municipalities of Emfuleni, Metsimaholo, Midvaal, and Lesedi.

Future housing is proposed to be constructed at a gross density of 50-100 households or dwelling units per hectare (HH/ha or DU/ha) to limit urban sprawl and improve infrastructure and municipal service delivery. By 2050, the region will require 3 992 ha of new residential land at a gross density of 50 DU/ha and 1 996 ha of land at a gross density of 100 DU/ha.

Table 29: Additional Housing and Residential Land Requirements (2050)

MUNICIPALITY	NEW HOUSEHOLDS (@3.5 HH SIZE): 2022-2050	CURRENT GAP (HH OR DU)	TOTAL DU REQUIRED	RESIDENTIAL LAND REQUIRED (HA): 50 DU/HA	RESIDENTIAL LAND REQUIRED (HA): 100 DU/HA
Metsimaholo	29 371	5 749	35 120	702	351
Mafube	-	2 593	2 593	52	26
Moqhaka	-	3 874	3 874	77	39
Ngwathe	-	3 234	3 234	65	32
JB Marks	52 861	10 414	63 275	1 266	633
Midvaal	37 569	2 495	40 064	801	401
Emfuleni	-	29 419	29 419	588	294
Lesedi	15 547	1 742	17 289	346	173
Dipaleseng	3 237	1 477	4 714	94	47
Total	**138 585**	**60 997**	**199 582**	**3 992**	**1 996**

(Source: Calculations based on CSIR Greenbook and StatsSA Census 2022 Information)

Table 30 depicts the towns and settlements where population growth will necessitate the addition of more than 1 000 dwelling units. The highest number of additional dwelling units will be required in Potchefstroom, followed by Sasolburg, Heidelberg, and Meyerton. As stated previously, many towns and settlements will experience a population decline; therefore, no additional dwelling units will be required in these settlements or towns. However, the existing backlogs in housing provision must be addressed in all towns and settlements.

Table 30: Settlements Requiring 1000+ Additional Dwelling Units

SETTLEMENT	POPULATION GROWTH (2011-50)	ADDITIONAL DWELLING UNITS REQUIRED
Potchefstroom	160 268	45 791
Sasolburg	88 408	25 259
Heidelberg GT	83 366	23 819
Meyerton	82 856	23 673
Lakeside	22 183	6 338
Balmoral Estate	18 195	5 199
Deneysville	11 950	3 414
Ratanda	9 346	2 670
Ventersdorp	8 942	2 555
Walkerville	7 478	2 137
Risiville	7 007	2 002
Brenkondown	5 411	1 546
Balfour	3 789	1 083

(Source: Calculations based on CSIR Greenbook, Quantec, and StatsSA 2011Information)

It is suggested that municipalities use infill development to find suitable spaces within existing urban edges to accommodate additional dwellings. Expanding urban edges may only be required if the existing urban edge cannot accommodate the additional dwelling units and supporting facilities. Municipalities must also assist the Department of Human Settlements (DHS) in improving informal settlements and providing subsidised housing to low-income families. Also note that there are PHSHDAs proposed for Vanderbijlpark, Vereeniging, Sebokeng, Sasolburg, Potchefstroom, and Ventersdorp.

(Important: The Johanna Jacobs Private Nature Reserve appears to be designated as PHSHDA by DHS. It is recommended that DHS investigate the situation with GDARDE and take appropriate steps.)



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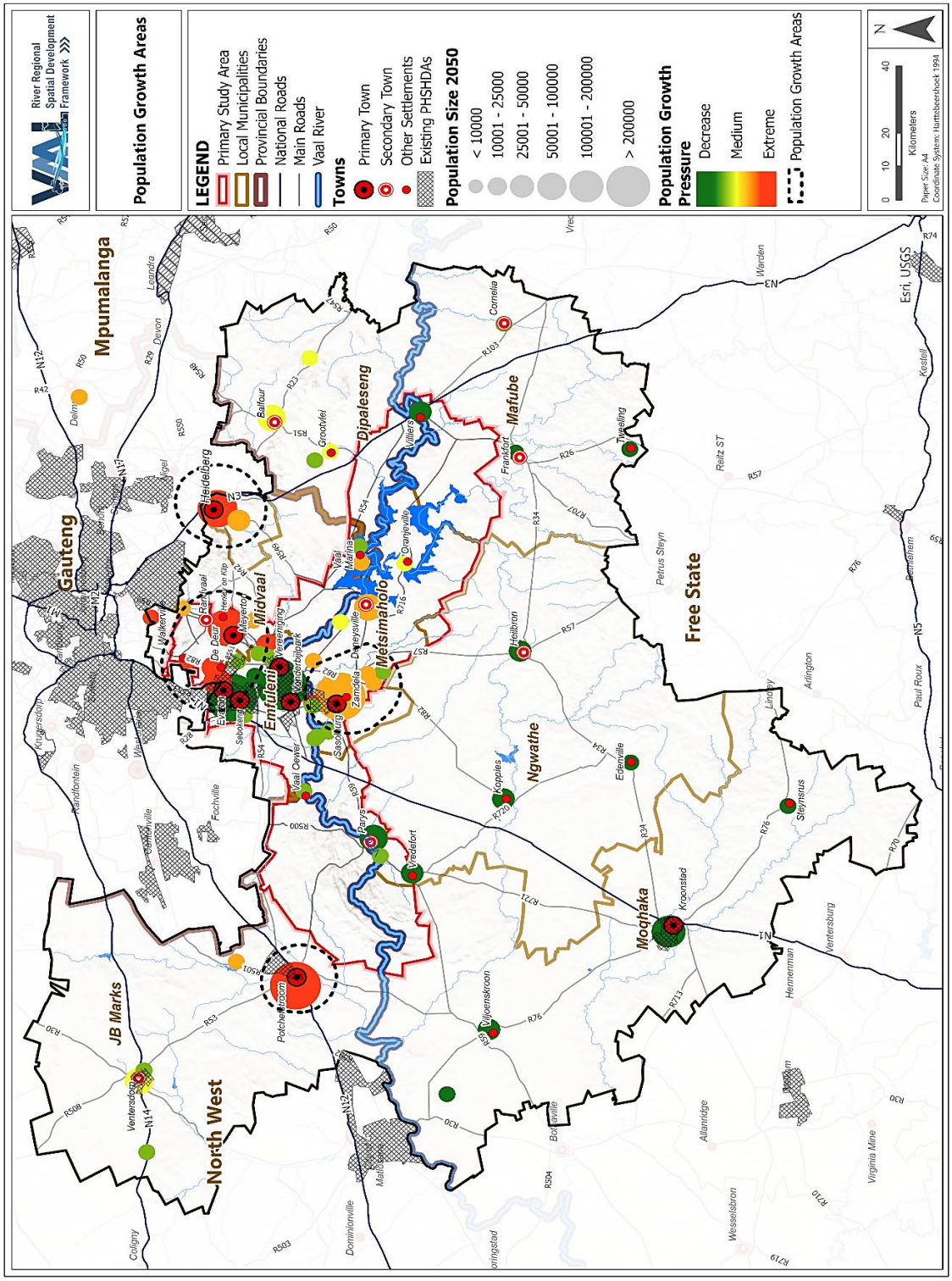
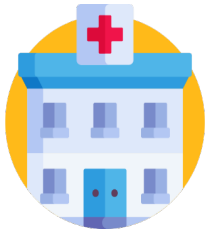


Figure 58: Population Growth Areas and PHSHDAs

7.4.2 *Sub-objective 2: Provide Social Infrastructure*



This sub-objective or strategy provides an intricate blueprint for guidelines that focus on providing social infrastructure in the Vaal River Region. Drawing from the CSIR Guidelines for Differentiated Provision of Social Services and the NSDF Social Services Wheel, the data presented offers vital parameters for designing and developing public facilities and services that cater to communities of various sizes within the Region.

The information segregates the requirements into diverse sectors such as Health, Education, Social Development, Community Halls, Libraries, Sports, Parks, and Cemeteries, along with Middle and Higher Order facilities integral to Government Service Clusters or Thusong Centres. Each sector is further divided into specific facility types, aligned with a distinct population threshold that the particular facility is projected to serve. Including the maximum accessible distance (in kilometres) for each service underscores the importance of ease of access for the populations served, directly impacting the effectiveness of social development interventions.

The implications of this thorough population-centred approach are far-reaching. By tying infrastructure planning and development to the size of the population and its corresponding social service needs, these guidelines foster environments that are sustainable, equitable, and conducive to the flourishing of community life within the Vaal River Region. This alignment holds significant potential to enhance the quality of life, foster inclusivity, and ultimately contribute to developing resilient, thriving communities.



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Table 31: Services for 1 000 to 4 999 People

SECTOR	FACILITIES AND THRESHOLDS
Health	A satellite or mobile clinic should ideally be located within a 5 km radius.
Education	For education, a small primary school should ideally serve a population of 1 000 (with an enrolment of 135 learners) to 2 199 (with an enrolment of 310 learners). The school should be within a 5 km radius. A small secondary school should be available for populations of 2 000 (with an enrolment of 200 learners) to 3 999 (with an enrolment of 400 learners) within a 5 km radius.
Social development	A crèche should serve a population of 2 400 to 3 500 within a 5 km radius. A social grant pay point should be available for every 100 beneficiaries within a 5 km radius.
Government service cluster	A mobile e-Government service (with a minimum of Home Affairs & SASSA services at least once a month) should be accessible to a population of 2 000 to 9 999 within a 25-40 km radius.
Sports	Sports facilities should ideally be available to populations of 3 000 or more within a 5 km radius.
Parks	A community park should ideally be within 5 km for every 2 000 people.
Cemeteries	Cemeteries should ideally provide 0.26 ha per 1 000 people.

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Table 32: Services for 5 000 to 9 999 People

SECTOR	FACILITIES AND THRESHOLDS
Health	A basic clinic should ideally be located within a 5 km radius.
Education	A medium-sized primary school should cater to a population between 2 200 (enrolling 311 students) and 4 399 (enrolling 620 students) within a 5 km radius. A medium-sized secondary school should cater to a population between 4 000 (with 401 enrolled students) and 5 999 (with 600 enrolled students) within a 5 km radius.
Social development	Crèches should ideally be within a 5 km radius for populations of 2 400 to 3 500, and social grant pay points should be within a 5 km radius for every 100 beneficiaries.
Government service cluster	Mobile e-Government services (with a minimum of Home Affairs & SASSA services at least twice a month) should be accessible to a population of 2 000 to 9 999 within a 25-40 km radius.
Libraries	A basic public library should serve a population between 5 000 to 24 999 within a 5 km radius.
Sports	Sports facilities should ideally be available to populations of 3 000 or more within a 5 km radius.
Parks	A community park should ideally be within 5 km for every 2 000 people.
Cemeteries	Cemeteries should ideally provide 0.26 ha per 1 000 people.

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Table 33: Services for 10 000 to 19 999 People

SECTOR	FACILITIES AND THRESHOLDS
Health	A small clinic should be within a 5 km radius.
Education	A medium-sized primary school should serve populations between 2 200 (with an enrolment of 311 students) and 4 399 (with an enrolment of 620 students) within a 5 km radius. A medium-sized secondary school should cater to a population between 4 000 (with 401 enrolled students) and 5 999 (with 600 enrolled students) also within a 5 km radius.
Social development	Crèches should ideally be within a 5 km radius for populations of 2 400 to 3 500, and social grant pay points should be within a 5 km radius for every 100 beneficiaries.
Government service cluster	Multi-Purpose Community Centre (MPCC)/Thusong Satellite Centres (with a minimum of weekly Home Affairs & SASSA points) should be accessible to populations between 10 000 to 19 999 within a 25-40 km radius.
Libraries	A basic public library should serve a population between 5 000 and 24 999 within a 5 km radius.
Sports	Sports facilities should ideally be available to populations of 3 000 or more within a 5 km radius.
Parks	A community park should ideally be within 5 km for every 2 000 people.
Cemeteries	Cemeteries should ideally provide 0.26 ha per 1 000 people.

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Table 34: Services for 20 000 to 39 999 People

SECTOR	FACILITIES AND THRESHOLDS
Health	A standard clinic should be accessible within a 5 km radius.
Education	Medium-sized primary and secondary schools should cater to certain population ranges within a 5 km radius: 2 200 to 4 399 (with an enrolment of 311 to 620 students) for primary schools and 4 000 to 5 999 (with an enrolment of 401 to 600 students) for secondary schools.
Social development	Crèches and social grant pay points should be within a 5 km radius for populations of 2 400 to 3 500 and every 100 beneficiaries, respectively.
Community hall	A D-grade community hall should be within a 10 km radius for populations between 15 000 and 19 999.
Libraries	A basic public library should cater to a population between 5 000 to 24 999 within a 5 km radius.
Sports	Sports facilities should be available to populations of 3 000 or more within a 5 km radius.
Parks	A community park should ideally be within 5 km for every 2 000 people.
Cemeteries	Cemeteries should ideally provide 0.26 ha per 1 000 people.
Middle and higher-order facilities (preferably as part of a government precinct or Thusong Centre and/or Cluster)	
Community halls	A C-grade hall should be within a 15 km radius for populations between 20 000 to 29 999.
Government service cluster	A small Thusong Centre or Government Precinct with Home Affairs, SASSA, SAPS and Labour office should serve populations between 20 000 to 59 999 within a 25-40 km radius.
SASSA	A SASSA office should be accessible within a 40 km radius for populations between 30 000 and 120 000.
Home Affairs	A Home Affairs Office should serve populations between 20 000 to 200 000 within a 25 km radius.
Social development	Both a Children's Home and a Home for the Aged should be within a 25 km radius for populations between 20 000 and 60 000.

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Table 35: Services for 40 000 to 59 999 People

SECTOR	FACILITIES AND THRESHOLDS
Health	A standard clinic should be accessible within a 5 km radius for populations between 20 000 and 39 999, while a large clinic should serve populations between 40 000 and 59 999 within a 10 km radius.
Education	Medium-sized primary and secondary schools should cater to certain population ranges within a 5 km radius: 2 200 to 4 399 (with an enrolment of 311 to 620 students) for primary schools and 4 000 to 5 999 (with an enrolment of 401 to 600 students) for secondary schools.
Social development	Crèches and social grant pay points should be within a 5 km radius for populations of 2 400 to 3 500 and every 100 beneficiaries, respectively.
Community hall	A C-grade hall should be within a 15 km radius for populations between 20 000 and 29 999. For populations between 30 000 and 59 999, a B-grade hall should be within a 15 km radius.
Libraries	A basic public library should cater to a population between 5 000 to 24 999 within a 5 km radius. For populations between 50 000 to 150 000, a branch public library should be within a 10 km radius.
Sports	Sports facilities should be available to populations of 3 000 or more within a 5 km radius.
Parks	A community park should ideally be within 5 km for every 2 000 people.
Cemeteries	Cemeteries should ideally provide 0.26 ha per 1 000 people.
Middle and higher-order facilities (preferably as part of a government precinct or Thusong Centre and/or Cluster)	
Government service cluster	A small Thusong Centre and/or Cluster or MPCC with a range of government services, including SASSA, Home Affairs, and SAPS should serve populations between 20 000 to 59 999 within a 25-40 km radius.
SASSA	A SASSA office should be accessible within a 40 km radius for populations between 30 000 to 120 000.
Home Affairs	A Home Affairs Office should serve populations between 20 000 to 200 000 within a 25 km radius.
Social development	Both a Children's Home and a Home for the Aged should be within a 25 km radius for populations between 20 000 to 60 000.

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Table 36: Services for 60 000+ People

SECTOR	FACILITIES AND THRESHOLDS
Health	A large clinic should serve populations from 40 000 to 59 999 within a 10 km radius. A community health centre should be accessible to populations of 60 000 to 149 999 within a 10 km radius. A general hospital should serve populations of 150 000 to 900 000 within a 30 km radius.
Education	Medium-sized primary and secondary schools should cater to certain population ranges within a 5 km radius: 2 200 to 4 399 (with an enrolment of 311 to 620 students) for primary schools and 4 000 to 5 999 (with an enrolment of 401 to 600 students) for secondary schools.
Social development	Crèches and social grant pay points should be within a 5 km radius for populations of 2 400 to 3 500 and every 100 beneficiaries, respectively.
Community hall	A B-grade hall should be within a 15 km radius for populations between 30 000 and 59 999. For populations between 60 000 and 300 000, an A-grade hall should be within a 15 km radius.
Libraries	A basic public library should cater to a population between 5 000 and 24 999 within a 5 km radius. For populations between 50 000 to 150 000, a branch public library should be within a 10 km radius.
Sports	Sports facilities should be available to populations of 3 000 or more within a 5 km radius.
Parks	A community park should ideally be within 5 km for every 2 000 people.
Cemeteries	Cemeteries should ideally provide 0.26 ha per 1 000 people.
Middle and higher-order facilities (preferably as part of a Government Precinct or Thusong Centre and/or Cluster)	
Government service cluster	A government precinct or large Thusong Centre with permanent Home Affairs, SASSA, SAPS, and labour offices (and possibly incorporating a Clinic and court) should serve populations between 60,000 to 200,000 within a 25-40 km radius.
SASSA	A SASSA office should be accessible within a 40 km radius for populations between 30 000 to 120 000.
Home Affairs	A Home Affairs office should serve populations between 20 000 to 200 000 within a 25 km radius.
Social development	Both a Children's Home and a Home for the Aged should be within a 25 km radius for populations between 20 000 to 60 000.

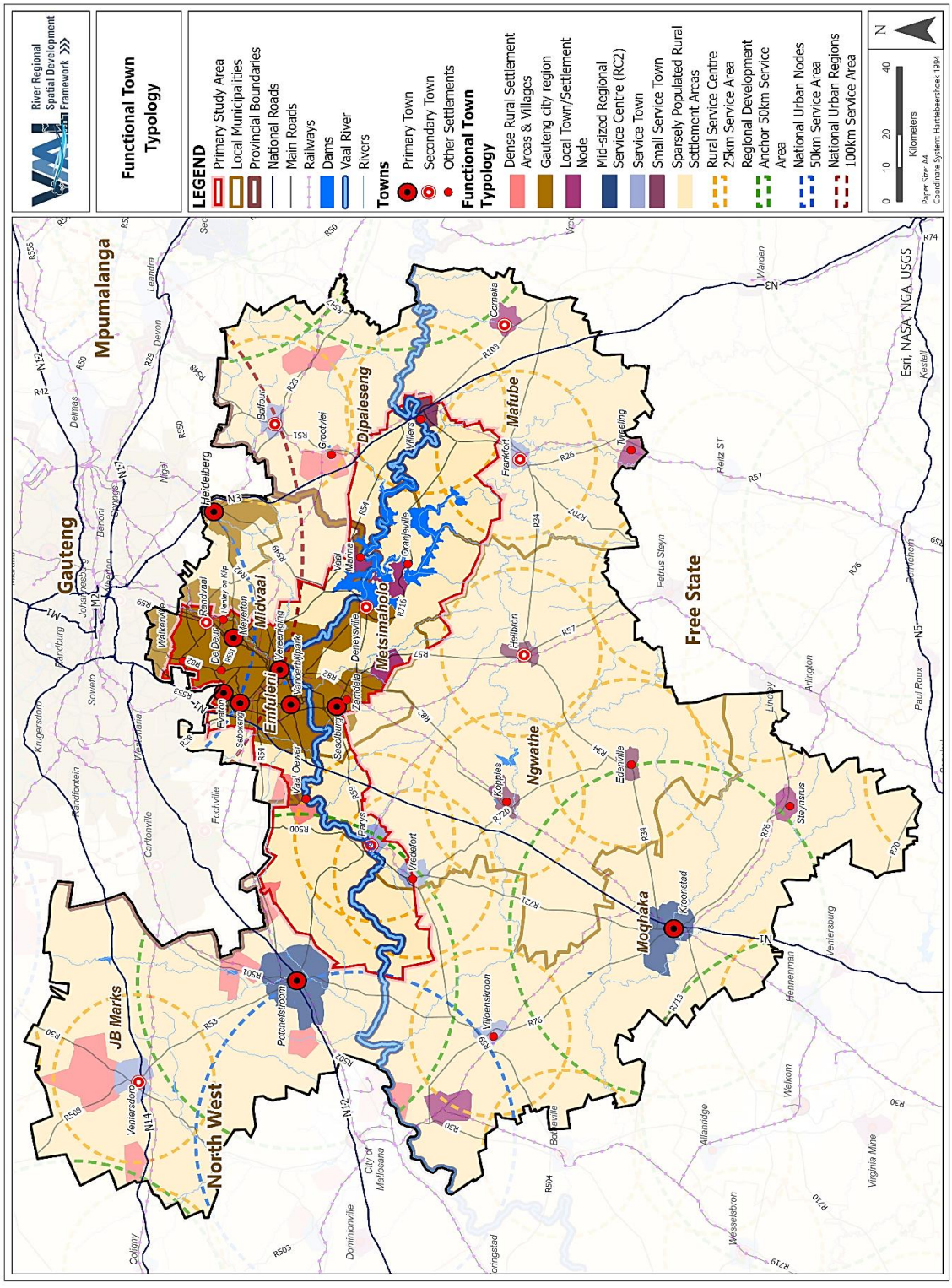
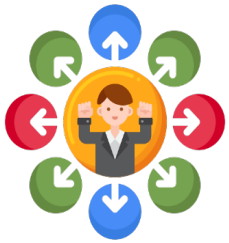


Figure 59: Functional Town Typology for Social Facilities Provision

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7.4.3 *Sub-objective 3: Provide Access to Training/Higher Skills Development*



This sub-objective/strategy focuses on training or higher skills development, guided by the necessity for equitable access to quality education and vocational training across the Vaal River Region. The concept of spatial justice, underpinning the country's NSDF, strongly advocates for a distribution of public goods and services that eradicates spatial biases and favours a more inclusive and equitable landscape.

In line with this, the subsequent strategies have been carefully curated to serve communities of all sizes within the Region. These initiatives are designed to foster a knowledgeable society, competent workforce, and dynamic economy that is conducive to the Vaal River's broader developmental goals and South Africa at large.

Recognising the diverse contexts and unique challenges present across the Region, stakeholders are encouraged to contemplate these proposals and adapt and optimise their implementation to best meet local needs and ensure viability. The following proposals serve as a roadmap towards achieving spatial equity and catalysing socio-economic development, providing a pathway for a better future for the Region.

7.4.3.1 ESTABLISH COMMUNITY-BASED TRAINING CENTRES

Establish local training centres in townships and underprivileged areas to provide vocational and skills development training in line with South Africa's National Skills Development Strategy (NSDS).

7.4.3.2 PROMOTE PARTNERSHIPS WITH HYBRID HIGHER EDUCATION INSTITUTIONS

Promote partnerships with the Region's institutions of learning, such as the North West University and Technical and Vocational Education and Training (TVET) colleges, to offer hybrid learning models that combine online and in-person classes. Locate campuses in areas with reliable public transportation and internet connectivity to facilitate learning.

7.4.3.3 DEVELOP E-LEARNING HUBS WITH SUPPORT SERVICES

Develop e-learning hubs in line with South Africa's e-Education Strategy. Along with digital learning resources, these hubs should provide support for digital literacy, which is critical in bridging the digital divide in the communities of the Vaal River Region.

7.4.3.4 DEVELOP ENTERPRISE AND MENTORSHIP PROGRAMMES

Develop spaces that encourage entrepreneurial activities and provide access to mentorship. This aligns with South Africa's National Small Business Strategy and could involve collaboration with local Small Enterprise Development Agency (SEDA) offices.

7.4.3.5 ENCOURAGE INDUSTRY-ACADEMIA PARTNERSHIPS

Encourage partnerships between local industries and academic institutions by facilitating internships, apprenticeships and work-integrated learning. This could align with Sector Education and Training Authorities' (SETAs) goals.

7.4.3.6 UPGRADE AND TRANSFORM PUBLIC LIBRARIES

Upgrade public libraries into community learning centres. These facilities could offer adult basic education and training (ABET) programmes in addition to various professional development courses.

7.4.3.7 DEVELOP TRANSPORT AND HOUSING SOLUTIONS

Develop affordable housing options and robust public transportation links near training facilities. This aligns with the broader objectives of the NDP — to make education more accessible to all South Africans.

7.4.3.8 ENCOURAGE COMMUNITY ENGAGEMENT

Involve local communities in planning and implementing these facilities. Community participation is a key part of the IDP process, as it ensures that services meet the community's needs and receive their support.

7.4.4 Sub-objective 4: Establish a College Precinct



→ As part of the concerted efforts to further the cause of spatial development within the Vaal River Region, expanding higher education access is a key objective. Vereeniging, a city characterised by its urban vibrancy, industrial strength and demographic potential, has been identified as the ideal location for establishing a college precinct. This strategy affirms Vereeniging as the optimal choice considering its desirable attributes, such as its strategic centrality, robust infrastructure and economic dynamism, as detailed below:

- **Centrality**: Vereeniging is strategically located at the heart of the Vaal River Region or future metropolitan area. This central positioning lends itself to being exceptionally accessible, ensuring that students from diverse areas within the Region can conveniently reach the precinct. Vereeniging's central location aligns with the principle of spatial justice, facilitating equitable access to higher education.
- **Infrastructure**: Vereeniging is well-equipped with a robust network of roads, ensuring seamless connectivity. In addition, it is home to two tertiary learning campuses. Having a strong infrastructural backbone is critical in facilitating student contact.
- **Population demographics**: Vereeniging is one of the most populous cities in the Vaal Triangle and, therefore, presents a significant potential student base. A diverse student community enriches the educational experience and fosters a vibrant campus life.
- **Proximity to Johannesburg**: Vereeniging's proximity to Johannesburg, a premier economic hub in Africa, offers students unparalleled access to internships, job placements, and industry interactions. This proximity could facilitate a strong industry-academia linkage and significantly enhance the value of the educational programmes offered by the proposed college precinct.
- **Existing educational institutions**: The presence of existing educational institutions within Vereeniging testifies to a conducive environment for learning. The proposed college precinct can integrate into and further enrich this established academic ecosystem.

Opting for Vereeniging as the location for a proposed college precinct aligns well with the spatial justice goals embedded in the NSDF and SPLUMA. This proposal is not merely about constructing an educational institution but embracing an opportunity to strategically boost access to quality higher education, stimulate socio-economic growth, and support the comprehensive development vision for the Vaal River Region.

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7.4.5 Implementation Action Plan

Table 37: Implementation Action Plan: Social Development

PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
Sub-objective 1: Promote sustainable settlement patterns					
Implement a hierarchy of activity nodes based on the Regional-Rural Development Model.	Medium	Entire project area	2030	Local Municipalities	DALRRD, Department of Cooperative Governance and Traditional Affairs (CoGTA)
Implement zoning regulations to promote mixed-use development and densification in identified areas of the Region.	Medium	Entire project area	Continual	Local Municipalities	DALRRD, Department of Cooperative Governance and Traditional Affairs (CoGTA)
Develop or improve public transportation networks to facilitate mobility and access to services across the Region.	High	Entire project area	2030	Local Municipalities and Provincial Governments	SANRAL, Department of Transport
Sub-objective 2: Provide social infrastructure					
Carry out a needs assessment to understand the current state of social infrastructure and the specific needs of different communities.	Medium	Entire project area	2025	Department of Planning, Monitoring and Evaluation (DPME)	Local Municipalities, Provincial Departments, Statistics South Africa (Stats SA)
Source funding and partnerships to support the development of social infrastructure.	Medium	Entire project area	2030	National Treasury	Local Municipalities, COGTA, Provincial Departments, DBSA
Sub-objective 3: Provide access to training/higher skills development					
Establish partnerships with higher education institutions, industry partners, government agencies, and NGOs to provide training programmes, resources, and facilities.	Medium	Entire project area	2030	Department of Higher Education and Training (DHET)	Sector Education and Training Authorities (SETAs), National Skills Authority (NSA), Universities and Technical and Vocational

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PROJECT/PROGRAMME	PRIORITY RATING (HIGH-MEDIUM-LOW)	GEOGRAPHIC EXTENT	TIMEFRAME	LEAD IMPLEMENTATION AGENCY	SUPPORT IMPLEMENTATION AGENCY
					Education and Training (TVET) Colleges
Create a development plan for establishing community-based training centres, e-learning hubs, enterprise development programmes, and industry-academia partnerships.	Medium	Entire project area	2030	Department of Higher Education and Training (DHET)	Sector Education and Training Authorities (SETAs), National Skills Authority (NSA), Universities and Technical and Vocational Education and Training (TVET) Colleges
Monitor and evaluate the effectiveness of training programmes and partnerships and their impact on job creation and economic development.	Medium	Entire project area	2030	Department of Higher Education and Training (DHET)	Sector Education and Training Authorities (SETAs), National Skills Authority (NSA), Universities and Technical and Vocational Education and Training (TVET) Colleges
Sub-objective 4: Establish a college precinct					
Conduct a feasibility study to establish a college precinct in Vereeniging, considering various factors.	Medium	Entire project area	2030	Department of Higher Education and Training (DHET)	Local Municipalities, Universities and Technical and Vocational Education and Training (TVET) Colleges, Department of Public Works (DPW)
Engage with stakeholders (government agencies, higher education institutions, and industry partners) to develop a blueprint for the proposed college precinct.	Medium	Entire project area	2030	Department of Higher Education and Training (DHET)	Local Municipalities, Universities and Technical and Vocational Education and Training (TVET) Colleges, Department of Public Works (DPW)
Source funding and partnerships to support the development of the proposed college precinct.	Medium	Entire project area	2030	Department of Higher Education and Training (DHET)	Local Municipalities, Universities and Technical and Vocational Education and Training (TVET) Colleges, Department of Public Works (DPW)

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7.5 Objective 5: INSTITUTIONAL MANAGEMENT: To Achieve Institutional Accountability and Pro-Development Administration



Objective 5: INSTITUTIONAL MANAGEMENT

This institutional objective represents a strategic approach to the developmental context and facilitates development processes to attain a pro-development approach within the constitutional mandates of national, provincial, and local government structures.

This objective entails the following sub-objectives:

- Promote collaboration and intergovernmental coordination through the establishment of a Vaal River RSDF Governance Body.
- Align and coordinate land use management mechanisms.
- Apply integrated management of the Vaal River Region.

7.5.1 Context of the VRRSDF Study Area

The VRRSDF study area comprises a geographical area characterised by distinctive economic, social, and natural features that function and cross various municipal and provincial boundaries.

The quality of management practices is key to improving performance, productivity, service delivery, and a positive attitude towards development within the tiers of the public sectors of the study area.

The Vaal River RSDF consists of:

- areas that are situated in adjacent portions of four provinces, namely Gauteng, Free State, Mpumalanga and North West;
- four district municipalities, namely Sedibeng, Fezile Dabi, Gert Sibande and Dr. Kenneth Kaunda; and
- nine local municipalities, namely Midvaal, Emfuleni, Lesedi, Metsimaholo, Ngwathe, Mafube, Moqhaka, Dipaleseng and JB Marks.

7.5.2 Sub-objective 1: Promote Collaboration and Intergovernmental Coordination through the Establishment of a Vaal River RSDF Governance Body



Regional integration and growth can only be achieved through a dedicated and coordinated approach. Thus, a functional governance body must be established to ensure the VRRSDF Region's integration and development are collaboratively implemented.

'Regional Governance' broadly refers to the rules, procedures and practices used by institutions at the regional level that will form the backbone of the VRRSDF implementation process. Thus, referring to the implementation of the VRRSDF, governance means to:

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- establish structures and processes that are designed to ensure accountability, transparency, responsiveness, the rule of law, stability, equity and inclusiveness, empowerment, and broad-based participation; and
- uphold the norms, values and rules of the game through which public affairs are managed in a manner that is transparent, participatory, inclusive and responsive.

7.5.2.1 SPLUMA AND REGIONAL GOVERNANCE

The legislative context of a region is linked to the term 'regional planning' mentioned in Schedule 4 of the South African Constitution (RSA, 1996), which highlights national and provincial functions and roles regarding various national issues. Some of these functions and roles are further elaborated on in SPLUMA, which, inter alia, provides for inclusive, developmental, equitable and efficient spatial planning in different spheres of government. It also established an integrated spatial planning system in South Africa that has been based on:

- the preparation of spatial development frameworks;
- the principles, norms and standards that apply to spatial planning, land use management and development planning;
- the land use mechanisms through land use schemes; and
- the procedures and processes available to deal with land development.

The effective implementation of the spatial planning system is built and founded on the constitutional and legislative mandates of all authorities and role players in the development context, whether at municipal, district, or provincial levels. However, to ensure collaboration, the national and provincial governments and local municipalities must all participate in the spatial planning and land use management processes that impact each other to ensure (i) coordination, (ii) consistency and (ii) harmony in the proposed plans and approaches. SPLUMA directs such collaboration, whereas the Inter-governmental Relations Framework Act, 2005 (IGRFA) provides mechanisms to establish structures that promote engagement and collaboration at all levels of government.

The success of implementing the VRRSDF vision, objectives and strategies hinges on positive regional governance and embracing functional collaboration and engagements within the context of municipal, district, provincial and national planning and development responsibilities and functions.

- The declaration and delineation of the VRRSDF Region, in terms of SPLUMA, automatically brings into play the responsibilities and legislative mandates of all levels of government and sector departments towards municipal and regional development management by means of municipal spatial development frameworks, land use schemes and development application processes. This means that even though the affected municipalities and national departments have their own political and institutional structures with which to discharge their responsibilities, a new structure or governance body would be required to effectively implement the VRRSDF. It might seem that creating a new structure or governance body to manage and implement the VRRSDF could be counterproductive; however, such a body will fulfil a primary coordinating role that must:
- effectively collaborate and cooperate between governmental, non-governmental, and other institutions functioning in the developmental sector and in the region; and
- focus on aligning government actions and capital investments, partnerships that develop, and any other development initiatives.

Considering the above, the principles that will drive the VRRSDF Governance Body are:

- **Association:** the VRRSDF Governance Body must ensure a common vision and common performance appreciation.
- **Transformation:** the VRRSDF Governance Body must drive the transformation agenda in accordance with SPLUMA principles and the conditions of the NSDF.
- **Ecological sustainability:** the VRRSDF Governance Body must ensure the protection of the Region's natural resource endowment and the maintenance of its ecological sustainability in all the endeavours of the structures to be created, strengthened and joined together.
- **Climate change adaptation**: the VRRSDF Governance Body must develop climate change adaptation policies for all sectors and enforce them through existing tools such as spatial development frameworks, land use schemes, water management plans, agricultural plans, environmental impact assessments and building codes.
- **Participation:** the VRRSDF Governance Body must allow for proactive and constructive participation through existing and proposed planning and development structures.
- **Harmonisation:** the VRRSDF Governance Body must ensure that all human settlements, economic activities, and ecosystems in the Region coexist in a harmonious way.
- **Regional-rural development:** the VRRSDF Governance Body must drive regional development initiatives based on the Regional-Rural Development Model as set out in the NSDF while recognising the economic and social roles that different settlements must play in accordance with the 'Social Services Wheel' as provided in the NSDF.

7.5.2.2 GOVERNANCE BODY STRUCTURE

The proposed VRRSDF Governance Body is expected to be a hierarchical structure led by political leaders and supported by technical organisations.

A VRRSDF Governing Board made up of the Premiers of the affected provinces would oversee the VRRSDF's implementation. The Premiers will meet biannually to review implementation progress and ensure efficient interprovincial collaboration. The Premiers will take on the role of chair of the Governing Board on a rotational basis. In addition to the Governing Board, there will be an annual meeting of key senior political office holders such as members of the Executive Council (MECs), Premiers, and members of mayoral committees (MMCs) to evaluate VRRSDF implementation and ensure effective collaboration and coordination. A Technical Steering Committee will back the Governing Board made up of senior technical officials such as the Director Generals from the key national and provincial departments. This Technical Steering Committee is expected to convene quarterly to monitor VRRSDF implementation, address high-level implementation issues, and ensure collaboration and coordination among government departments. The Technical Steering Committee would be assisted by the Technical Committee, which comprises the workstream leaders, including Chief Directors and Municipal Executive Directors. Each workstream is effectively a programme or collection of thematic projects. The following workstreams are proposed for VRRSDF implementation:

- Spatial Planning and Infrastructure Development
- River and Environmental Management
- Economic Development
- Social Development
- Institutional Management

For each workstream, there will be a set of projects which must be managed by PROJECT MANAGERS. Depending on the nature of the project, project managers may be selected from national departments, provincial departments, state-owned enterprises, or municipalities.

Figure 60 below depicts the governance body structure:

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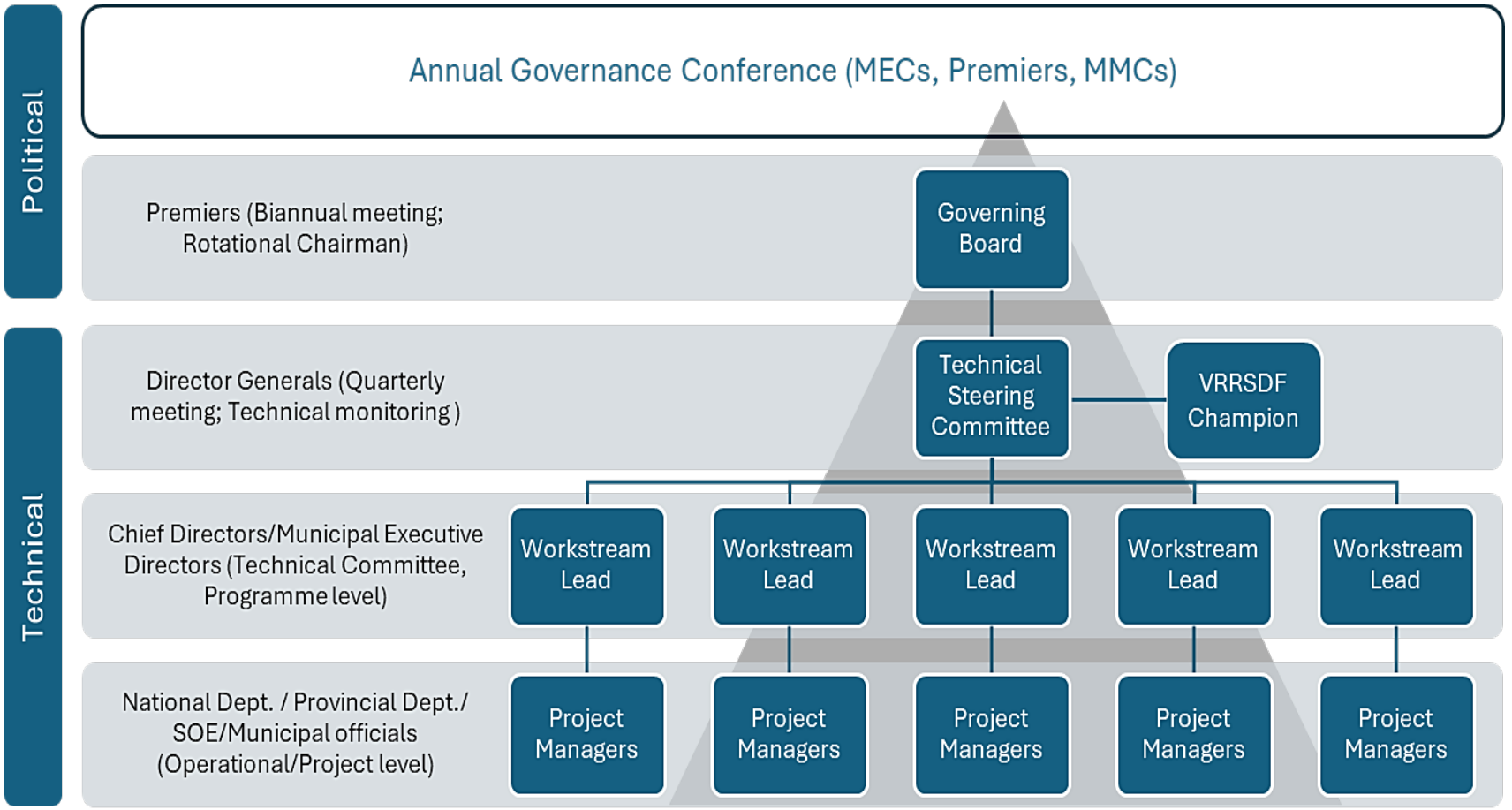


Figure 60: VRRSDF Governance Body Structure

The bottom tiers of the Governance Body, i.e., the Project Implementation Units, will carry out the majority of the VRRSDF implementation. This will involve developing workstream interfaces, appointing project managers to execute projects, and defining a set of tasks for workstream leaders and project managers to complete.

7.5.3 *Sub-objective 2: Provide Guidance to Growth Focus Areas*

7.5.3.1 DEVELOPMENT CONTEXT



Within the spatial transformation agenda context, SPLUMA directs spatial transformation using spatial planning mechanisms to eliminate poverty and inequality while creating conditions for inclusive growth and development at all levels.

The VRRSDF identified four functional regions with specific spatial components linked to development proposals that impact or guide the spatial context of the subregion at a local level. In principle, each subregion with spatial components resembles a potential growth focus area that will require specific alignment and refinement of the municipal planning directives and plans.

As discussed previously, four subregions with spatial components were identified, namely:

- Vaal Urban Core Subregion with the following key spatial components:
  - Commercial Development Zone
  - Infill and Future Growth Zone
  - R59 Industrial Development Corridor
  - Urban Transition Zone
  - Agriculture Zone
- Dome-Parys Subregion with the following key spatial components:
  - The Vredefort Dome Zone
  - Conservation and Tourism Zone
  - Agriculture and Tourism Zone
  - Growth Containment Zone
- Vaal Dam Subregion with the following key spatial components:
  - Conservation and Tourism Zone
  - Agriculture and Tourism Zone
  - Growth Containment Zone
- Hinterland Subregion with the following key spatial components:
  - Agricultural Areas
  - Tourism Areas
  - Functional urban area

7.5.3.2 STRATEGIC GUIDANCE TO DEVELOPMENT

As a strategic planning instrument, an RSDF does not confer the right to use or develop land on any person. Thus, to ensure alignment and facilitate the implementation of development land use, the relevant guidance must be included in a municipal SDF that directly links to land use management at a local scale through that municipality's SDF. These municipal SDFs are then prepared, updated and implemented through the preparation of wall-to-wall land use schemes.

The VRRSDF serves as a starting point from where regional development challenges can be addressed decisively as these challenges are conceptualised in a specific spatial context from which point they can be integrated and aligned with specific development proposals within the context of the spatial vision and objectives which would have a spatial impact or effect on a national, provincial, district and local municipal level.

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It is important to emphasise that spatial proposals for each of the subregions should be regarded as *direction-giving*, meaning they are aimed at:

- guiding, coordinating and prioritisation stakeholder action and investment decisions at a regional scale; and
- providing a cohesive regional context to provincial and local spatial planning.

Thus, these spatial proposals should not be interpreted as detailed land-use planning and/or management, as such actions form part of local municipalities' mandates.

To achieve the VRRSDF development concept and implement the spatial proposals, it should promote and stimulate guiding actions to improve and update spatial plans and land development mechanisms at a municipal and local level, such as:

- identifying key land use and development concepts and approaches;
- identifying the unique elements of the functional region directed by the identified spatial components;
- protecting and promoting the sustainable use of *natural and cultural resources*; and
- strengthening and diversifying *the regional economy* to ensure greater long-term viability and sustainability, including a specific focus on the key spatial network elements of the tourism and niche agriculture sectors.

To attain the desired development content and form, specific land use management controls and processes will be required for each subregion.

Aligning development mechanisms would be ideal; however, in many respects, this may not be practical since each municipality remains the authority of the first instance, thereby deciding its own process or approach to facilitating development.

To enable and guide municipalities to develop their own planning and development guidelines or mechanisms, the following must be considered:

- The principles contained in the planning law and policy directive of the municipality.
- The municipality's planning vision and principles are set out in its SDF and IDP.
- The desired spatial form, including the development of public and private land, infrastructure investment, space utilisation, spatial reconstruction, location and nature of development, urban edge, scenic routes, areas of strategic intervention, and mitigation of development impacts.
- The principles are set out in an approved spatial development framework or a policy plan.
- Environmental and heritage protection and conservation.
- The Municipal Systems Act and the South African Constitution set out the principles of cooperative governance and the duties and objectives of local government.

7.5.3.3 BROAD DIRECTIVES FOR GROWTH FOCUS AREAS

What follows is the context for broad development directives that municipalities could consider to update or align their SDFs and land development mechanisms per subregion of the VRRSDF.

(a) Vaal Urban Core Subregion

- Enable controls to encourage small-scale economic development. This principle accepts that small-scale developments are as important as large-scale developments, but because funds and resources for small-scale businesses are limited, the local municipality should foster ways to assist small-scale developments and developers. While, for example, a barber shop may only employ three or four people, many

barbershops collectively play a role in alleviating unemployment. Smaller developments should be able to apply for land use rights via amended procedures such as consent use rights and alternative service provision systems — typical off-the-grid permissions or alternatives.

- Clean industrial and commercial developments.
- Promote public access to the Vaal River by creating recreational spaces along the riverbank.

Conserve rivers, wetlands, high-potential agricultural land, and cultural and natural assets.

- Ensure the overlay zones achieve alignment with the SDFs.

(b) Dome-Parys Subregion

- Guide tourism development on agricultural land and in environmentally sensitive areas.
- Promote tourism incentive establishments within the context of existing farming infrastructure with limited or no footprint expansion.
- Follow and implement environmental land use management guidelines within the context of the World Heritage site.
- Conserve rivers, wetlands, high-potential agricultural land, and cultural and natural assets.
- Align development controls across borders to ensure consistency and coordination.
- Implement a reduction in application processes subject to positive comments from key sector departments.

(c) Vaal Dam Subregion

- Allow finer-grained tourism development on agricultural land and environmentally sensitive areas with limited or no footprint expansion.
- Conserve rivers, wetlands, high-potential agricultural land, and cultural and natural assets.



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7.5.4 Sub-objective 3: Promote Integrated Management of the Vaal River



Given the importance of the Vaal River in sustaining and supporting a large population and economy, ensuring water security in the Vaal River Region is critical. However, water security is jeopardised by institutional weaknesses caused by, among other things, operational issues, a lack of financial resources, and a lack of coordination and support among stakeholders (Muller & Maree, 2019). The municipalities and Rand Water have faced operational and financial challenges in maintaining water and sanitation infrastructure. Thus, it is important that national and provincial governments support and monitor these entities to ensure the provision and maintenance of water and sanitation services and water security.

Because the performance of the abovementioned government agencies affects the general public and private entities, a collaborative approach involving stakeholders at various levels is required to ensure water security and water health. Residents and community organisations, NGOs, CBOs, business associations, industry associations, farmers' associations, research and academia, SALGA, and government agencies are and must be among the stakeholders. Raising awareness among stakeholders and soliciting their input will aid tremendously in taking a collaborative approach to planning and implementing projects and programmes to ensure water security.

It is worth noting that the Minister of Water and Sanitation established the Vaal Orange Catchment Management Agency (CMA) in accordance with the National Water Act 36 of 1998 in 2022. The Vaal Orange CMA manages the entire Vaal Water Management Area (WMA) and coordinates with other institutions involved in water-related matters. Other responsibilities of this CMA include investigating and advising interested parties on the protection, use, development, conservation, management and control of water resources in its water management area, developing a catchment management strategy, co-ordinating related activities of water users and water management institutions within its water management area, and promoting community participation in the protection, use, development, conservation, management, and control of water resources in its water management area. As a result, the Vaal Orange CMA is expected to play a critical role in ensuring that a coordinated and integrated effort is made to manage the Vaal River and restore its health.



7.5.5 Implementation Action Plan

Table 38: Implementation Action Plan: Institutional Management

STRATEGY	ACTIONS	LEAD INSTITUTION	TIMEFRAME
Promote collaboration and intergovernmental coordination through the establishment of the VRRSDF Governance Body	• Establish the VRRSDF Governance Body. • Include a provision of regional spatial governance or regional intergovernmental structures in review of the Intergovernmental Relations Framework Act.	COGTA DALRRD	Short Term
	• Frame establishment procedures that include: • established Terms of Reference; • determined forum and sub-forums and functionality; • nominated intergovernmental and technical representatives and leads per sub-forum; • nominated representatives per district to align: o local spatial planning; o land use management; o overlay zone development; and o decision-making, collaboration and information sharing.	VRRSDF Governance Body All District Municipalities	Short Term
	• Allow for intensive investment in skills development to capacitate local government officials to better execute the provision of basic services, that serve as the basis for attracting investments.	SALGA, COGTA, DPME, DALRRD	Short term
Provide guidance to growth focus areas	• Ensure that local municipalities align or improve development mechanisms in support of the proposals of the VRRSDF within	Local Municipalities District Municipalities	Short Term

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STRATEGY	ACTIONS	LEAD INSTITUTION	TIMEFRAME
	the context of the four functional subregions and spatial components.	With guiding support and contributions from COGTA and DALRRD.	
Promote integrated management of the Vaal River	• Address institutional weaknesses affecting the operational and financial capacities of Rand Water, local municipalities, and entities responsible for ensuring water security and providing water and sanitation infrastructure. • Promote collaboration among the stakeholders (general public, communities, businesses, industrial and farming associations, SALGA, DWS, Rand Water, municipalities, and other relevant government agencies) and solicit their input in planning and executing projects to ensure regional water security. • Establish and operationalise the Orange Vaal River Catchment Management Agency.	DWS VRRSDF GF District Municipalities Local Municipalities	

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8. VRRSDF IMPLEMENTATION GUIDE

It is imperative to acknowledge that executing capital projects will not guarantee the execution and perpetuity of the VRRSDF. To implement the VRRSDF, several current plans and policies must be redirected, resources must be allocated, and the cooperation of various government branches and areas would be necessary. Furthermore, the establishment of the Governing Board, Technical Steering Committee, and Project Implementation Unit, as well as early political and organisational support, alignment of relevant entities' strategies and plans, and resource sharing for VRRSDF implementation, would be required to ensure the VRRSDF's continuity in the face of technical, structural, and political changes. The main action items for implementing the VRRSDF are highlighted in the following section.

8.1 Implementation Actions

8.1.1 Awareness raising, Political and Organisational Buy-In

The VRRSDF comprises an area governed by several bodies. Many national and provincial departments and other government bodies are thus also active in the region's development, whether directly or indirectly. All of these organisations are mandated with distinct tasks, and implementing the VRRSDF may be considered an additional duty for them. As a result, a formal agreement between all the involved governmental, institutional, and technical organisations is necessary to support the VRRSDF, participate in multistakeholder activities and adequately consider the VRRSDF's recommendations and proposals.



Raising awareness about the project and establishing consensus on the outcome and influence of the VRRSDF on the Region's overall development is a necessary step toward attaining agreement. By raising awareness and fostering consensus, relevant stakeholders will be encouraged to participate in the process from the start, resulting in political and organisational buy-in and ownership and the eventual mainstreaming of the VRRSDF into their own policies, programmes, and action plans.

The implementation of the VRRRSDF further significantly relies on the VRRSDF Governance Body's operational success. This Governance Body, which will include political, institutional, and technical bodies, will be led by political leaders. Such political leadership will help increase public support for the VRRSDF, making it a topic of discussion in political campaigns and policy discussions. The establishment of the VRRSDF Governing Board and the organisation of the annual VRRSDF Governance Conference involving MECCs, Premiers, MMCs, and important political leadership would also help mobilise resources and lobby for and support the implementation of the VRRSDF. Most importantly, the involvement of political leadership will ensure support from the departments they oversee.

8.1.2 Strategic and Budgetary Alignment

As a strategic document, the VRRSDF only guides the development of the Vaal River Region. However, as this Region includes parts of four provinces, it is important to realise that the VRRRSDF does not replace the existing development initiatives, plans, and frameworks prepared by the various development agencies, government entities, and private bodies of those provinces. The VRRSDF rather seeks better alignment and coordination of these initiatives and stakeholders to unlock the region's development potential.

Alignment and coordination among the stakeholders will need to occur at strategic and budgetary levels. Strategic alignment is pivotal in positioning stakeholders' policy initiatives and ensuring governance is responsive and reflective of regional priorities. Strategic alignment between spheres of government will necessitate cooperation, whereby the plans and initiatives of one sphere support those of another.

To achieve strategic alignment, all stakeholders, particularly government agencies, must achieve a common understanding and agreement on the tasks necessary to implement the VRRSDF and put in their coordinated efforts to fulfil those tasks. Each entity must take responsibility for the tasks allocated to it.

Senior political and technical leaders will play key roles in ensuring strategic alignment by providing top-level direction and guidance for the VRRSDF Governance Body, linking key entities (such as municipalities, national, provincial, and sector departments), operational systems and processes to the VRSSDF's vision and objectives, and monitoring the progress of the VRRSDF's implementation.

Strategic alignment must be supported by positioning the budgets of all relevant entities. Budgetary alignment will ensure that government spending is aligned with regional development goals, that regional development priorities are budgeted for during the planning cycle, and that projects are implemented with the assigned funds. The budget alignment process may include comprehensive agreements among appropriate government bodies from every sphere, guided by the VRRSDF Governance Body. Budgetary alignment would not only help to achieve the proposals of the VRRSDF; it will also encourage fiscal discipline and sustainability as well as the integrity and accuracy of budgetary predictions.

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8.1.3 Resource Sharing

Resource sharing between implementation agencies can result in various positive outcomes, including greater organisational efficiency and effectiveness. Complex challenges and issues surrounding the implementation of the VRRSDF can often be addressed by pooling expenses and risks and focusing on a common solution. The VRRSDF agencies should explore ways to share resources. The sharing of resources can be defined at the workstream level, where workstream leaders can identify the resources required to deliver VRRSDF objectives and proposals and the sources of those resources. The categories listed below show where resources can be shared to ensure effective VRRSDF implementation.

- **Human resources**: Sharing people and skills across different workstreams and agencies can help improve efficiency and increase the availability of competent personnel.
- **Project and service delivery**: Following an integrated approach to project and service delivery helps reduce duplication of effort and promote efficiency. Initiatives to streamline or consolidate project and service delivery might result in various opportunities for sharing technology and processes.
- **Professional support**: Implementing the VRRSDF would necessitate professional assistance, particularly in marketing, investment promotion, research, and skills development. Given that many municipalities do not have sufficient capacity, these functions can be pooled and handled at higher levels.
- **Information and knowledge management**: The VRRSDF must be updated in light of new information and circumstances. Agencies must share information and knowledge to improve planning and project implementation. A web-based system can be developed to aid information, knowledge sharing, and management.

8.1.4 Capacity Building

Investing in training and capacity-building programmes for public officials involved in the VRRSDF's implementation is critical in ensuring that applicable and appropriate skills are developed to carry forward the VRRSDF. Due to a lack of resources in local and district municipalities, new staff may need to be recruited; however, the emphasis should be on upskilling current public officials rather than increasing the number of personnel through new recruitment.

Education institutions, non-state actors, and higher government departments may all need to participate in capacity-building initiatives actively. The aim of capacity-building initiatives is to provide public officials and stakeholders with the necessary skills in spatial and regional planning, spatial economics, GIS, climate change mitigation, data analytics, decision-making, public finance management, budgeting, and programme and project management.

8.1.5 Project Implementation Unit

The Project Implementation Unit will lead the VRRSDF's proposed plans and projects into action and inform the VRRSDF Steering Committee and Governance Body of the results. Project planning, resource management, communication management, and project risk management are the additional responsibilities assigned to this unit. This unit will comprise project managers and workstream leaders from municipalities and other government organisations. Staff from public agencies will provide support for this unit. The Project Implementation Unit is cross-functional in nature, where the resources are shared among the workstreams based on the project objectives.

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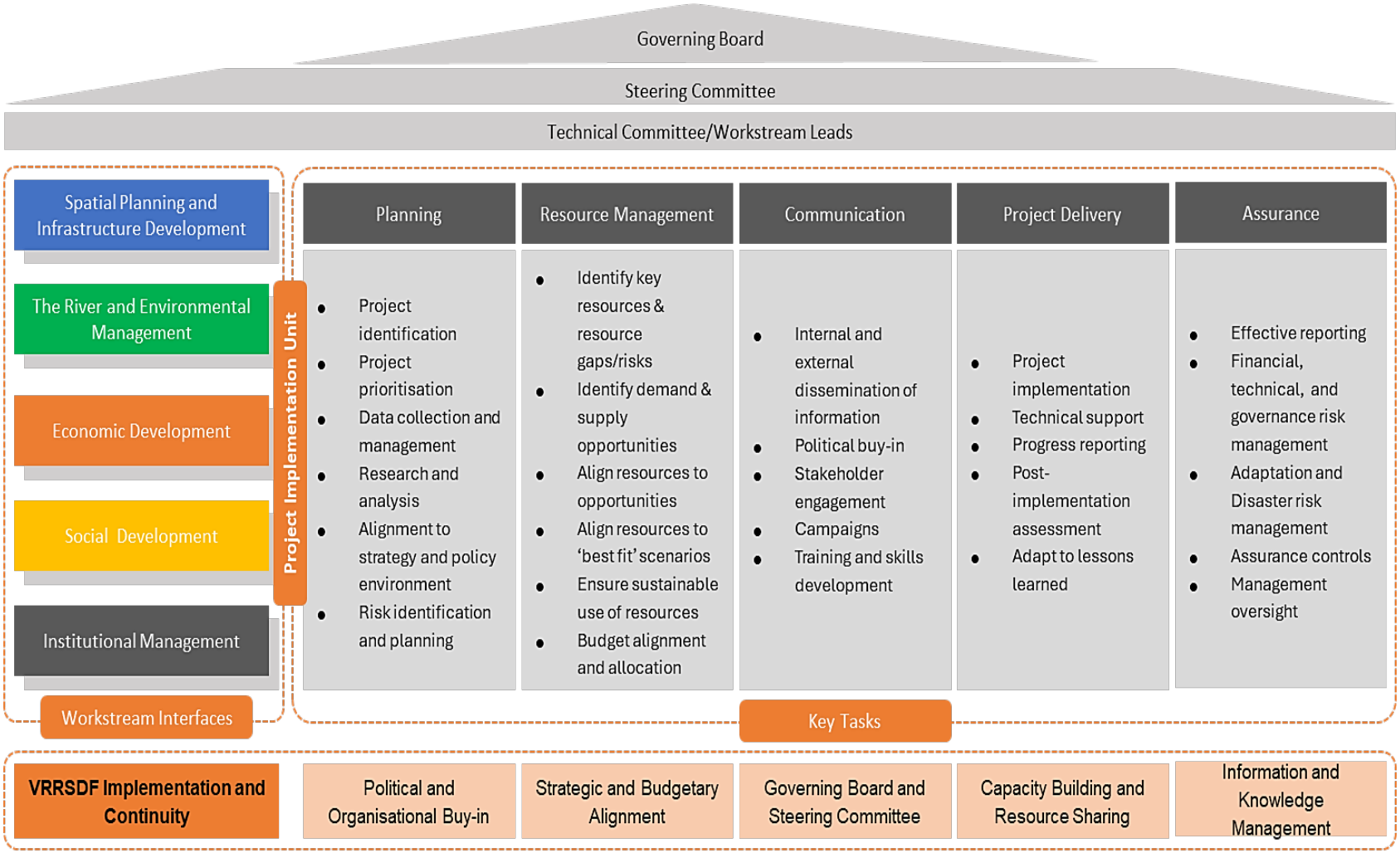


Figure 61: VRRSDF Implementation Operating Model

8.2 Roles and Responsibilities in VRRSDF Implementation

In Table 39 the roles of the key entities involved in implementing the VRRSDF are defined.

Table 39: Roles of Key Entities Involved in the Implementation of the VRRSDF

BODY	ROLE	LINKED TO THE VRRSDF	ALIGNMENT REQUIRED
DALRRD: Spatial Planning and Land Use Services	• Provide spatial planning, land use management and environmental services in liaison with the national office of DALRRD. • Provide spatial planning information services in liaison with the national office of DALRRD. • Provide support to the implementation of SPLUMA. • Provide technical support to rural development. • Provide technical support to land reform.	• Provide support to CoGTA in championing the lead of the VRRSDF through backroom support and strategic guidance. • Provide spatial directives for aligning all spatial frameworks at provincial, district, and local levels to ensure consistency with sections 12 and 25 of SPLUMA.	• Future business plans to support VRRSDF implementation
Department of Cooperative Governance and Traditional Affairs: Gauteng (CoGTA)	• Support municipalities in creating an environment that enables economic growth. • Provide the necessary support and strengthen municipalities regarding section 154 of the South African Constitution. • Support and strengthen the capacity of municipalities to manage their affairs, exercise their powers and perform their functions as per	• Take the lead role in implementing VRRSDF (championing) and monitoring its progress. • Facilitate sessions for the collaboration of the governance structure. • Dedicate broad workstream by unpacking and providing inputs to guide implementation and monitoring at provincial, district and local levels. • Contribute to all aspects where the alignment and improvements (at all	• Future business plans to support VRRSDF implementation

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BODY	ROLE	LINKED TO THE VRRSDF	ALIGNMENT REQUIRED
	Schedule 4A and B of the Constitution, amongst other functions.	levels) of the SDFs are required to enhance the implementation of the VRRSDF. • Identify lessons learnt from the engagements during the SDF working sessions. • Create communication material necessary to 'sell' the plan to sector departments, provincial governments and municipalities. • Inform the public through relevant information-sharing channels. • Communicate regularly with the professionals concerned with the built environment, including the private sector, so that all new developments contribute to furthering the plan's intent. • Provide formal conduits for political and technical intergovernmental collaboration, cooperation, integration, and harmonisation in initiating, strengthening and supporting spatial, social, and economic development in the VRRSDF area.	
District Municipalities	• Provide support and capacity to local municipalities to achieve equitable development and economic growth	• Assist and capacitate local municipalities. • Promote economic development in the district.	• District SDF • DDM One Plan

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BODY	ROLE	LINKED TO THE VRRSDF	ALIGNMENT REQUIRED
		• Facilitate integrated development planning. • Provide support to officials in low-capacity municipalities (that in some cases do not have town planners) by explaining what is required, providing a series of educative documents written in an easily readable way, clarifying that the plan may be developed in partnership with the workstreams	• Sectorial Plans (Housing, Infrastructure etc.)
Local Municipalities	• Ensure the provision of services to communities in a sustainable manner. • Promote social and economic development. • Promote a safe and healthy environment.	• Adapt VRRSDF development principles in planning and decision-making. • Implement VRRSDF proposals and projects. • Collaborate with national and provincial departments in implementing the VRRSDF. • Encourage the involvement of communities and community organisations in planning, conservation, and climate change adaptation.	• Municipal SDF & LUS • Sectorial Plans (Housing, Infrastructure etc.)
DWS	• Mandated in the National Water Act, 1998 and Water Service Act, 1997. • Enforces regulatory measures to ensure the provision of safe water and the effective management of wastewater. Implements the green	• Follows a collective approach to protecting, enhancing and managing the Vaal River System as a national asset.	

BODY	ROLE	LINKED TO THE VRRSDF	ALIGNMENT REQUIRED
	and blue drop certification programmes, which are incentive-based regulatory tools that measure water service institutions' capacity and environmental, financial, technical and quality compliance.	• Enforces compliance with all water and wastewater treatment works at a municipal level. • Implements a reconciliation strategy for the Vaal River System. →	
Rand Water	• Delivers and supplies world-class, affordable, reliable, quality water and related services to all stakeholders through safe, efficient transport and sustainable and innovative business practices. • Provides bulk potable water to more than 11 million people in Gauteng, parts of Mpumalanga, the Free State, and the North-West province. It is the largest bulk water utility in Africa and one of the largest in the world.	• Provides collaborative inputs in SDF proposals. • Comments on all development applications considered by local municipalities.	

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8.3 Monitoring and Evaluation of VRRSDF Implementation

Monitoring and evaluating the implementation of VRRRSDF is vital for assessing its efficacy, identifying areas for improvement, and ensuring accountability. The monitoring and evaluating of the VRRSDF must be carried out at two levels; at a higher level, the Steering Committee and Governance Body must monitor and evaluate the overall progress of the implementation of the VRRSDF, and at the lower level, the Project Implementation Unit must monitor the progress of individual projects.

The higher-level monitoring and evaluation must establish whether the broad VRRSDF suggestions are appropriately being implemented and if the VRRSDF is achieving the expected results. At this level, evaluation results may lead to changes to important strategies, plans, and proposals. The higher-level monitoring and evaluation process is set out in Figure 62 below. It should be noted that the Project Implementation Unit may need to provide relevant information to the Steering Committee and Governance Body for monitoring and evaluation purposes.

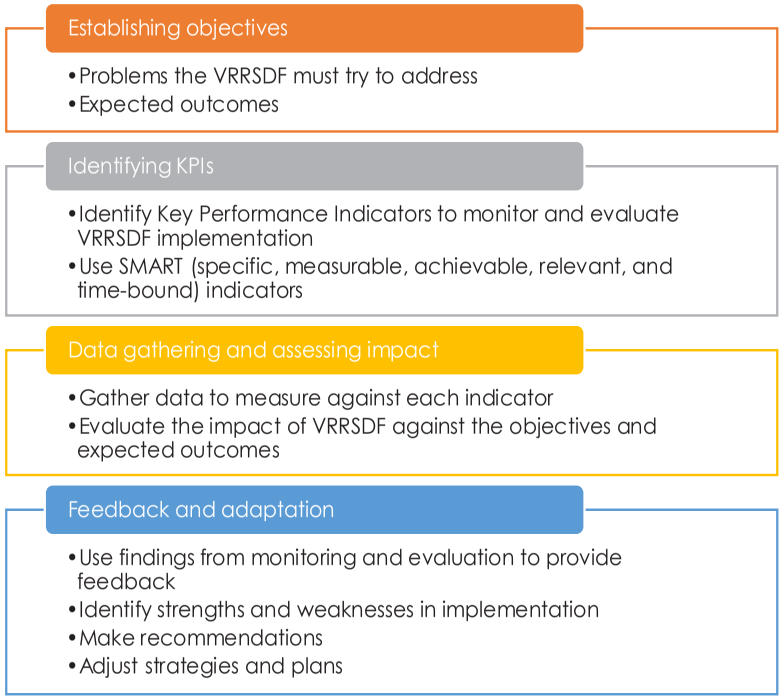


Figure 62: Monitoring and Evaluation of VRRSDF Implementation

The monitoring and evaluating the VRRSDF is a continuous and iterative process throughout the VRRSDF lifespan. As conditions change and new information becomes available, it is critical to continue evaluating the VRRSDF's success and making revisions.

At a lower level, workstream leads and project managers monitor the projects to ensure that they are completed on time, within budget, and according to regulatory guidelines. Figure 63 below depicts a general overview of the project monitoring process.

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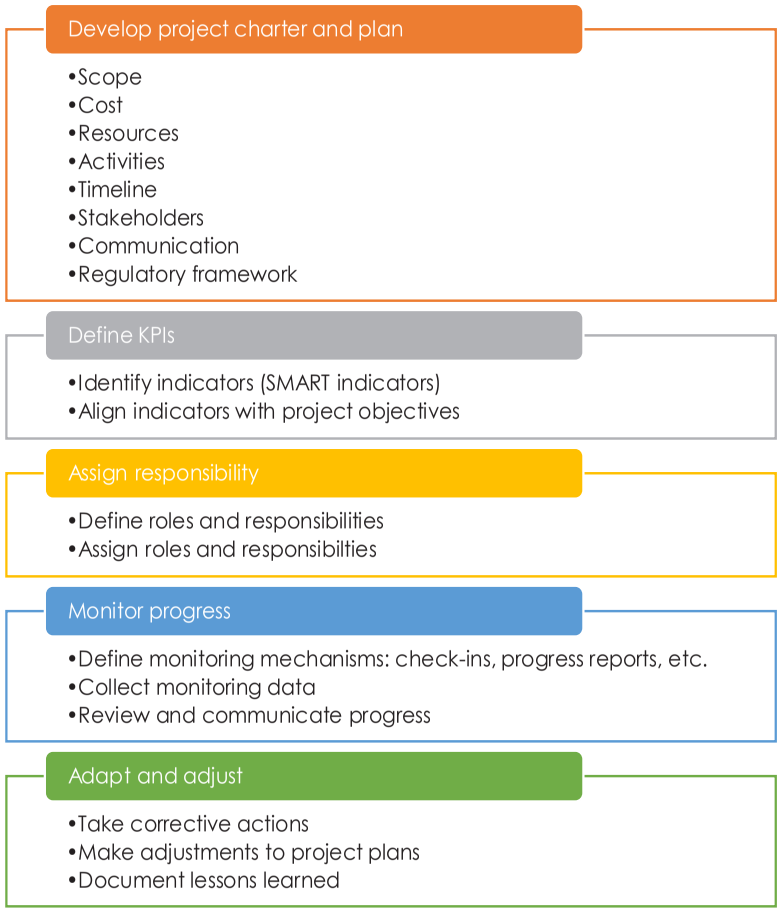


Figure 63: Project Progress Monitoring

8.4 Reviewing the VRRSDF

Section 18(2) of SPLUMA reads that "the Minister must review the regional spatial development framework at least once every five years from the date of its last publication or amendment and may, after consultation with the Premier and the Municipal Council responsible for a geographic area, propose amendments to the regional spatial development framework." In light of this provision, it is recommended that the VRRSDF be evaluated five years after the date of its adoption and that an early review of the VRRSDF will only be allowed under exceptional circumstances, such as significant infrastructure and economic investment, a widespread natural disaster, the collapse of one or more critical economic sectors, and significant institutional and structural changes.

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10. ANNEXURE A: PROVINCIAL HERITAGE SITES AND HERITAGE REGISTER SITES

GAUTENG

Lesedi

- 60 Strydom Street, Heidelberg
- De Rust farmstead, Boschhoek, Heidelberg
- Old Residence, H F Verwoerd Street, Heidelberg
- Dutch Reformed Church, H F Verwoerd Street, Heidelberg
- Boer houses and farmyard, Suikerbosrand Nature Reserve, Diepkloof, Heidelberg
- NZASM station, Voortrekker Street, Heidelberg
- Volk School Primary, Begeman Street, Heidelberg

Emfuleni

- Vereeniging Country Club, Milani Drive, Vereeniging
- Archaeological site, Duncanville, Vereeniging
- Anglo-Boer War Blockhouse, Witkop, Vereeniging
- Klip River Quarry, Archaeological site, Vereeniging
- Dutch Reformed Church, Vereeniging
- Redan rock engraving site, Kookfontein, Vereeniging
- Vuka Cemetery, Dubula Street, Sharpeville, Vereeniging
- Our Lady of Fatima Roman Catholic Church, corner of Hulwana and Malisa Streets, Sharpeville, Vereeniging
- Sharpeville Community Hall, Sharpeville, Vereeniging

FREE STATE

Mafube

- Post Office, Van Reenen Street, Frankfort
- Police Station, Van Reenen Street, Frankfort
- Old Magistrate's Court, Van Reenen Street, Frankfort

Ngwathe

- Weilbach House, Leeuwpoort, Heilbron
- Vegkop Battlefield, Heilbron
- Old Farmhouse, Leeuwpoort, Heilbron District
- Railway Station, Heilbron
- Old Magistrate's Office (Parys Museum), Liebenbergtrek Street, Parys
- Dutch Reformed Mother Church, Hefer Street, Parys
- Dutch Reformed Church, Church Street, Vredefort
- Dutch Reformed Church Hall, Church Street, Vredefort
- 30 Charl Cilliers Street, Vredefort
- Vredefort Road Concentration Camp Cemetery, Prospect, Koppies
- Corrugated iron house, Wessels Street, Edenville,

Moqhaka

- Farmhouse, Congleton, Kroonstad
- Kroonstad North Dutch Reformed Church, Reitz, Symond and Malherbe Streets, Kroonstad

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- Old Market Square Post Office and prison cells, 66 Murray Street, Kroonstad
- Old Market Building, Market and Murray Streets, Kroonstad
- Town Hall and Leaping Fountain, Church Street, Kroonstad
- Old Magistrate's Office, Murray Street, Kroonstad
- Dutch Reformed Mother Church and Sarel Cilliers statue, Church Square, Kroonstad
- Farmhouse and cooler, Thornvale, Viljoenskroon
- Town Hall, corner of Steyn and Van Riebeeck Streets, Steynsrus

Metsimaholo

- Farm School, Taaiboschspruit, Sasolburg
- Muller House, Wonderfontein, Sasolburg

NORTH WEST

JB Marks

- Old Powder Magazine, Wolmarans Street, Potchefstroom
- 74 Dr James Moroka Avenue, Potchefstroom
- 76 Dr James Moroka Avenue, Potchefstroom
- 72 Dr James Moroka Ave, Potchefstroom
- Old Berlin Mission Station, Sol Plaatjie Avenue, Potchefstroom
- House of President M W Pretorius, Thabo Mbeki Avenue, Potchefstroom
- Old Fort and Cemetery, Potchefstroom
- Dutch Reformed Church, Walter Sisulu Avenue, Potchefstroom
- Old Police Station, 25 OR Tambo Street, Potchefstroom
- Old Post Office, O R Tambo Street, Potchefstroom
- Oak Avenue, Peter Mokaba Street, Potchefstroom
- St Mary's Anglican Church, Auto Avenue, Potchefstroom
- Town Hall, Walter Sisulu Avenue, Potchefstroom
- Carnegie Library, Walter Sisulu Avenue, Potchefstroom
- Historic Reformed Church Complex, Molen Street, Potchefstroom
- Administration Building, Potchefstroom Agricultural College, Potchefstroom
- Selborne Hall, Potchefstroom Agricultural College, Potchefstroom
- Old Reformed Church, Maury Avenue, Potchefstroom
- W D Pretorius House, Church Street, Potchefstroom
- Heimat, Potchefstroom University for Christian Higher Education, Potchefstroom
- Old Magistrate's Office, Greyling Street, Potchefstroom
- Goetz-Fleischack House, Gouws Street, Potchefstroom
- Superintendent's Residence, Witrand Care and Rehabilitation Centre, Potchefstroom
- Roets House, 61 Tom Street, Potchefstroom
- The Northern Wing of the Nutrition and Family Ecology Building of the Potchefstroom University
- Rectors Residence, 1 Calderbank Avenue, Potchefstroom
- Main Building, Potchefstroom University, Potchefstroom
- JB Marks Grave Site, Toevlug, Ventersdorp
- Krugerskraal, Tygerfontein,
- Farmstead, Buffelsdoorn, Potchefstroom

(Source: South African Heritage Resource Agency, https://sahris.sahra.org.za/, retrieved on 07 September 2023)

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