



NC PSDF | STATUS QUO AND SPATIAL ANALYSIS REPORT / DRAFT VISION



Province of the
Northern Cape
REPUBLIC OF SOUTH AFRICA

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AUTHOR(S)	MASWANA GROUP OF COMPANIES Casper Badenhorst Casper@msjv.co.za		
APPROVED BY:	PROJECT BENEFICIARY: Northern Cape Office of the Premier Dr Gerrit Botha gbothaotp1@gmail.com	SIGNATURE:	
APPROVED BY:	PROJECT SPONSOR: Department of Agriculture, Land Reform and Rural Development Gerhard de Bruin Gerhardus.DeBruin@dalrrd.gov.za	SIGNATURE:	

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NORTHERN CAPE PROVINCE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK

SPATIAL PROPOSALS

November 2023

PREPARED FOR:



Province of the
Northern Cape
REPUBLIC OF SOUTH AFRICA

PREPARED BY:



GLOSSARY OF TERMS

- **Agriculture** - Agriculture in terms of this document refers to land used for, or a building designed or used for arable land, grazing ground, pig farming, horticulture, poultry farming, dairy farming, breeding, and keeping of livestock, bee keeping, forestry, mushroom, and vegetable farming, floriculture, orchards, and any other activities normally regarded as incidental to farming activities or associated therewith, including farm stalls.
- **Agro-Processing** – refers to a subset of the manufacturing sector that processes raw materials and intermediate products derived from the agricultural sector. The aim is to develop and advance new processing technologies from lab to pilot and commercial-scale implementation, using tools to demonstrate product and process capability at various scales.
- **Biodiversity** - The variability among living organisms from all sources, including, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part. It also includes diversity within species, between species, and of ecosystems.
- **Built Environment** - The manmade surroundings that provide the setting for human activity, on a district level, ranging from bulk infrastructure (i.e., energy, water, waste) to transport infrastructure, human settlements, and heritage resources.
- **Critical Biodiversity Areas (CBAs)** - These are natural areas of critical importance for ecological sustainability and should be kept in their natural, or at least semi-natural state. The management objective of CBAs is for identified areas to be maintained in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity, and sensitive land uses are appropriate.
- **Climate Change Mitigation** - The use of new technologies and renewable energies with the aim of (1) making older equipment more energy-efficient, and/or (2) changing management practices or consumer behaviour to reduce the emission of greenhouse gasses.
- **Conservation** - The management of the use of natural and human resources to ensure that these are preserved and protected against undesirable development. It also relates to the protection, maintenance, and rehabilitation of resources.
- **Corridors** - Corridors are links between nodes, along which an increased intensity of development may be encouraged. Corridors provide efficient access to a higher level of economic opportunities than would generally be the case in less structured spaces. They typically include public transport routes.
- **Densification** - Densification is the increased use of space both horizontally and vertically within existing areas/ properties and new developments, accompanied by an increased number of units and/or population threshold.
- **Development Corridor** - An integrated linear network of dense infrastructure, economic activity and residential development built on and along a major road and/or railway line that (1) bind(s) it together and (2) act(s) as (a) form-giving and structuring spine(s). Development corridors typically fulfil a variety of multiple, complex and interrelated functions, such as: (1) the movement of people and freight; (2) retail and trade; (3) the flow of information; (4) the provision of basic services, such as water and gas; and (5) tourism. Supportive functions may also be located in corridors, e.g. logistics. Development corridors generally include both a human settlement and economic component, i.e. (1) higher-density, transit-oriented mixed-use residential development, and (2) industrial, retail, entertainment and office development adjacent to, or along, the main transport routes.
- **Economic Sectors** - description of (1) the type/kind of economic activities in a region, or (2) the kinds/types of activities in which the

population of a Province are active/employed. The following five categories/ sectors of economic activity are generally used in such descriptions: (1) the 'primary sector', which includes agriculture, mining and other natural resource-based industries; (2) the 'secondary sector', which entails manufacturing, engineering and construction; (3) the 'tertiary sector', meaning service industries; (4) the 'quaternary sector', which refers to intellectual activities involving education and research; and (5) the 'quinary sector', which refers to high-level decision-making in government and industry. In some instances, including this PSDF, the last two sectors are included in the definition of the tertiary sector.

- **Ecological Support Areas (ESAs)** - Natural, near-natural, degraded, or heavily modified areas must be kept in ecologically functional condition in order to support Critical Biodiversity Areas and/or Protected Areas. ESAs protect the ecological processes that support Critical Biodiversity Areas and Protected Areas.
- **Infill Development** - Development of vacant or underutilised land within existing settlements to optimise the use of infrastructure, increase urban densities, and promote integration.
- **Integrated Development Plan** - the IDP is a five-year plan which local government is required to compile to determine the development needs of the municipality. The projects within the IDP are also linked to the municipality's budget.
- **Infrastructure** - The basic equipment, utilities, productive enterprises, installations, and services essential for the development, operation, growth, sustenance and continued viability of human settlements and economic activities. Infrastructure includes items such as (1) roads, railway lines and stations, airports, and harbours; (2) utility lines and related structures for the provision of water, sanitation, electricity and drainage services; and (3) information and communications technology grids/networks. A distinction is often made between (1) 'engineering infrastructure', such as roads, electricity, sewerage and water services;

and (2) 'social infrastructure', which includes facilities at which social services, such as health, education, community, welfare support, citizen registration, and cultural facilities are offered/provided.

- **Land Reform** - The process of correcting the historical imbalances in the ownership of, and access to land. It entails three types of intervention by the State: (1) "land restitution", meaning the redress of wrongs committed during the Colonial and Apartheid Eras; (2) "land redistribution", meaning the provision of land for residential and economic purposes to those who do not have the means to access land; and (3) "tenure reform", meaning the provision of security of tenure to those who do not have it due to historical or other reasons.
- **Land Use Management** - Establishing or implementing any measure to regulate the use or a change in the form or function of land and includes land development.
- **Mixed Land Use** - Mixed land use refers to a combination of land uses such as a mix of commercial/industrial/residential / retail/entertainment / institutional uses. It also refers to a mix of uses within a specific use. The advantage of mixed uses is that access and convenience are increased as transportation distances are decreased. The combination depends on the specific area. A mixed-use building could refer to retail at street level and residential on the floor(s) above. Mixed land use in an industrial area could include industry, commercial and retail uses.
- **National Protected Areas Expansion Strategy (2016)** - This is a strategy with the goal of achieving cost-effective protected area expansion for improved (1) ecosystem representation, (2) ecological sustainability and (3) resilience to climate change. As such, it (1) sets protected area targets, (2) maps priority areas for protected area expansion, and (3) makes recommendations on mechanisms for achieving these objectives.
- **National Spatial Development Framework** - A national spatial planning instrument with a long-term horizon that (1) is mandated by the Spatial

Planning and Land Use Management Act, 2013 (SPLUMA), (2) has to be aligned with the National Development Plan (NDP), and (3) is adopted by Cabinet as official national spatial development policy for implementation throughout the country. As such, it provides (1) an overarching spatial development framework including a set of principle-driven spatial investment and development directives for all three spheres and sectors of government, meaning 'where, when, what type, and how much to invest and spend throughout the country'; and (2) a set of strategic spatial areas of national importance from an ecological, social, economic and/or ICT or movement infrastructure perspective to be focused on and targeted by government and the private sector in the pursuit of strategic national development objectives and/or the prevention or mitigation of national crises.

- **Node** - Nodes are concentrations/clusters of mixed land-uses. Ideally, such nodes should include high-density residential land-uses and public transport and inter-modal transport facilities. In accordance with national legislation and international protocols, nodal development must also adhere to and advance the principle of 'universal access', which refers to the conscious act of ensuring that all spaces and facilities are accessible to all people at all times, irrespective of their age, gender or disability.
- **Pareto Principle** - The Pareto Principle, or the 80/20 rule, states that for many phenomena 80% of the result comes from 20% of the effort.
- **Polycentric Development** - A Polycentric development model (on a regional level) can be defined as a network of distinct (and historically often administratively and politically independent) towns and nodes with strong, complex, and unique interrelationships linked to a resource base that is well connected and supported through infrastructure.
- **Protected Area** - An area of special natural, ecological, architectural or historical interest that is protected by law. The protected areas referred to in this PSDF are those areas that are officially classified as such in

terms of the National Environmental Management: Protected Areas Act (Act No. 57 of 2003).

- **Rural** - Areas of land located outside of defined urban areas and where much of the land is devoted to agriculture / natural environment.
- **Spatial Development Framework** - an SDF is a framework that seeks to guide the overall spatial distribution of current and desirable land uses within a municipality to give effect to the vision, goals, and objectives of the municipal IDP.
- **SPLUMA** - the Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA) is a national law that was passed by Parliament in 2013. The law gives the DRDLR (now DALRRD) the power to pass regulations in terms of SPLUMA to provide additional detail on how the law should be implemented.
- **Strategic Water Source Areas** - Strategic Water Source Areas (SWSAs) can be described as 'water factories' that support growth and development needs that are often a long distance away from these areas. SWSAs contribute significantly to the overall surface and ground water supply of the country. SWSAs were identified and mapped by the Water Research Commission in 2015. Only 13% of the total extent of SWSAs was formally protected in 2017.
- **Sustainable Development** - development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.
- **Urban Edge** - A demarcated line and interrelated policy that serves to manage, direct, and limit urban expansion.
- **Urban Sprawl** - An undesired situation in which the geographical size of a town keeps expanding to include the development of normally greenfield land located outside the urban edge.

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ABBREVIATIONS

COGHSTA	Department of Cooperative Governance, Human Settlements and Traditional Affairs
CSAA	Coastal Spatial Action Area
DALRRD	Department of Agriculture, Land Reform and Rural Development
DDM	District Development Model
DEDAT	Department of Economic Development and Tourism
DENC	Department of Environmental Affairs and Nature Conservation
DKSAA	Douglas to Kakamas Spatial Action Area
DM	District Municipality
DR & PW	Department Roads and Public Works
DSAC	Department Sports Arts and Culture
DSD	Department of Social Development
DTSL	Department Transport Safety & Liaison
DWS	Department of Water and Sanitation
GIS	Geographic Information System
GSAA	Gamagara Spatial Action Area

IDP	Integrated Development Plan
KHSAA	Kalahari Spatial Action Area
KSAA	Karoo Spatial Action Area
LM	Local Municipality
NCDOE	Northern Cape Department of Education
NCDOH	Northern Cape Department of Health
NCPT	Northern Cape Provincial Treasury
NSDF	National Spatial Development Framework
OTP	Office of the Premier
PSC	Project Steering Committee
PSDF	Provincial Spatial Development Framework
RSAA	Rural Spatial Action Area
RSDF	Regional Spatial Development Framework
SACN	South African Cities Network
SALGA	South African Local Government Association
SALT	Southern African Large Telescope
SARAO	South African Radio Astronomy Observatory
SEZ	Special Economic Zone
SKA	Square Kilometre Array
SPLUMA	Spatial Planning and Land Use Management Act 16 of 2013
VSAA	Vaalharts Spatial Action Area
WTW	Water Treatment Works
WWTW	Waste Water Treatment Works

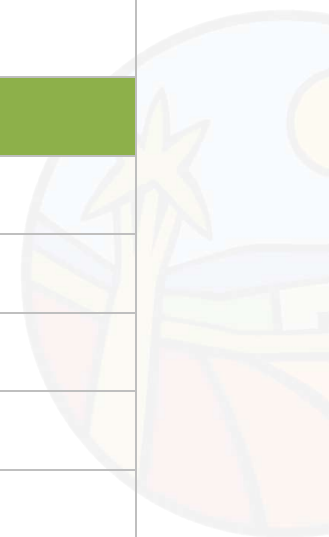
PSDF MAIN STRUCTURE REVIEW

PSDF 2020		PSDF 2023 REVIEW
CHAPTER 1 INTRODUCTION		
BACKGROUND		
1.1	Terms Of Reference	Aligned towards the Terms of Reference for the Review of the PSDF
1.2	Document Status	Aligned the document towards the PSDF Guidelines, as indicated by DALRRD, 2017 Guidelines
USING THE DOCUMENT		
2.1	Report structure	Aligned the document towards the PSDF Guidelines, as indicated by DALRRD, 2017 Guidelines
2.2	Background and Purpose	Aligned towards the Terms of Reference for the Review of the PSDF
THE NORTHERN CAPE PROVINCE		
3.1	Northern Cape Context	Remained the same as in PSDF 2020
3.2	Administrative Overview	Incorporated Demarcation Board Changes
METHODOLOGY		
APPROACH		
5.1	Bio-Regional Planning	Remained the same as in PSDF 2020
5.2	Towards sustainable development	Remained the same as in PSDF 2020
CHAPTER 2 GOVERNANCE		
POLICY ALIGNMENT		

1.1	International	Updated Policies and include Regional Policies
1.2	National	Remained the same as in PSDF 2020
1.3	Provincial	Included new Policies and Strategies
1.4	Municipal Spatial Development Framework Coordination	Included a list to indicate SPLUMA Compliance of all District and Local Municipalities.
SPATIAL GOVERNANCE		
2.1	Integrated development planning	
2.2	Institutionalisation	
CHAPTER 3 SPATIAL CHALLENGES AND OPPORTUNITIES		
INTRODUCTION		Incorporated and reviewed within the Status Quo Analysis
1.1	Human settlements	
1.2	infrastructure development	
1.3	connectivity and mobility	
1.4	Provincial resources	
CHAPTER 4 SPATIAL AGENDA		
INTRODUCTION		Remained the Same
SPATIAL GOALS		Remained the Same

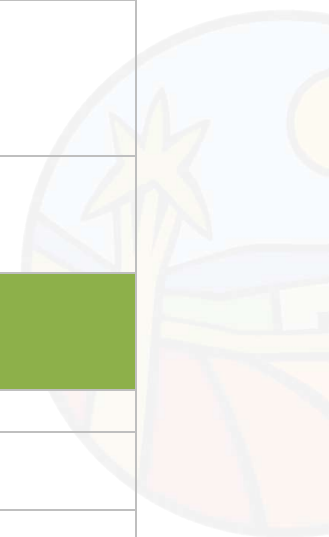
	SPATIAL LOGIC	Aligned the Spatial Logic with the NDP and NSDF
	DEVELOPMENT VISION	Remained the Same
4.1	Spatial Vision	
4.2	Spatial Development Values	
	CHAPTER 5 SPATIAL DEVELOPMENT FRAMEWORK	
	INTRODUCTION	
	SPATIAL STRUCTURING ELEMENTS WITHIN THE NORTHERN CAPE PROVINCE	
2.1	Introduction	
2.2	A system of interactive Growth Centres	
2.3	Development Corridors	
2.4	Development Zones	
	FUNCTIONAL REGIONS	
	DEVELOPMENT SCENARIOS	
4.1	Introduction	

4.2	Scenario 1: Baseline – Business As Usual	
4.3	Scenario 2: Tempered Growth	
4.4	Scenario 3: Optimistic Outlook	
4.5	Scenario 4: Accelerated Growth	
4.6	ACHIEVING VISION 2040	
	COMPOSITE SPATIAL MAP	
	STRATEGY DEVELOPMENT	
6.1	Introduction	
6.2	Development Strategies	
	CHAPTER 6 LAND USE MANAGEMENT	
	LAND USE CLASSIFICATION	
1.1	Spatial planning Categories (SPC's)	
1.2	Concept	
	NATURAL ENVIRONMENT	
2.1	background	
2.2	Policy alignment	



2.3	Spatial Development Category A: Core Areas	
2.4	Spatial Development Category B: Buffer Areas	
2.5	Spatial Plan for SPC A and SPC B: Core and Buffer Nature Areas	
	AGRICULTURAL DEVELOPMENT	
3.1	Background	
3.2	Policy alignment	
3.3	Spatial Development Category C: Agricultural Areas	
3.4	Spatial Plan for SPC C: Agricultural Areas	
	URBAN AND RURAL DEVELOPMENT	
4.1	Background	
4.2	Policy alignment	
4.3	Spatial Development Category D: Urban and Rural Areas	
4.4	Spatial Plan for SPC D: Urban and Rural Related Areas	

	INDUSTRIAL DEVELOPMENT	
5.1	Background	
5.2	Policy alignment	
5.3	Spatial Development Category E: Industrial Areas	
5.4	Spatial Plan for SPC E: Industrial Areas	
	INFRASTRUCTURE	
6.1	Background	
6.2	Policy alignment	
6.3	Spatial Development Category F: Surface Infrastructure and Buildings	
6.4	Spatial Plan for SPC F: Surface Infrastructure	
	CHAPTER 7 IMPLEMENTATION OF THE PSDF	
	SPATIAL TARGETING	
1.1	High impact projects	
	CAPITAL INVESTMENT FRAMEWORK	



2.1	Approach	
2.2	Towards Realising the Spatial Vision	
2.3	Intervention Programs	
	MONITORING AND EVALUATION	
3.1	Spatial Performance Management	
3.2	SPLUMA Implementation and Monitoring	
3.3	Reorganization at The National Level	
3.4	Provincial Responsibilities	
	DOCUMENT REVIEW	
	CONCLUSION	
	DEFINITIONS	
	REFERENCES	
	DATA SOURCES	
	ANNEXURES	
5.1	ANNEXURE A PGDP DRIVER ALIGNMENT	
5.2	ANNEXURE B STATUS QUO ANALYSIS	See Annexure A PSDF Status Review
5.3	ANNEXURE C SOCIO-ECONOMIC POTENTIAL OF TOWNS STUDY REVIEW	

5.4	ANNEXURE D STRATEGIC SPATIAL DEVELOPMENT TOOLKITS	
5.5	ANNEXURE E STAKEHOLDER ENGAGEMENT REPORT	
5.6	ANNEXURE F PSDF MAP BOOKLET	
5.7	ANNEXURE G GAZETTE NOTICE	



1 INTRODUCTION

Chapter 1 of this document outlines the purpose and role of the PSDF by linking it to the legal and policy directives that inform the Provincial Spatial Development Framework. These directives give guidance towards the province's spatial development vision. This chapter also outlines the planning approach adopted in preparing this PSDF and its translation to strategic planning and land use management. This Chapter further provides Visionary directives and what is expected from the PSDF as a Strategic Document.

1.1 BACKGROUND AND PURPOSE

The review of the Northern Cape Spatial Development Framework was commissioned by the Office of the Premier, Northern Cape Province. The review is necessitated by both the promulgation of the Spatial and Land Use Management Act 2013 and the need to provide a spatial representation of the Provincial Growth and Development Plan. The plan further necessitates alignment with new updated national, provincial, regional and municipal spatial plans, policies and strategies.

1.2 DOCUMENT STATUS

The PSDF review is required to be aligned with Section 12(1) of the Spatial and Land Use Management Act, Act 16 of 2013, SPLUMA, and the SDF guidelines¹ published by the Department of Rural Development and Reform in 2014/2017.

The Constitution assigns provincial and regional planning as exclusive responsibilities of the provincial government. In terms of Section 15 of SPLUMA 2013. The Premier is required to compile and publish a spatial development framework (SDF) for the province. This PSDF must coordinate, integrate and align to:

KEY REQUIREMENTS OF THE PSDF REVIEW INCLUDED:

- The PSDF must be consistent with the PGDP, NDP and NSDF (representation of key national and provincial strategies, policies and plans).
- Application of the SPLUMA principles.
- Review and update of the Northern Cape Socio Economic Potential of Towns Study completed in 2011 and reviewed in 2020.
- Promotion of Sectoral involvement in the development of the reviewed PSDF.
- Update and review of the Implementation Framework, as proposed in the 2020 PSDF.
- Evaluation of the current PSDF, looking at core challenges and recommendations.
- Co-ordination of Municipal Spatial Development Frameworks.
- Update, review and improve current data (spatial and non-spatial) used for the 2020 PSDF.
- Verify or update desired and undesired land use patterns.
- Assess and update current strategy(ies) of the 2020 PSDF.
- Identify and/or update issues deemed to be of provincial, regional and national interest together with strategic interventions, and
- Addressing the issue of spatial governance.
- Provincial plans and development strategies with policies of national government.
- Plans, policies and development strategies of provincial departments, and
- Plans, policies and development strategies of municipalities.

Section 15(1) and 15(5) of the Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA) outlines the requirements for provinces to develop and review provincial Spatial Development Frameworks (PSDFs) once every five years.

¹ DALRRD SDF Guidelines, 2017



The Provincial Spatial Development Framework (PSDF) is a strategic document that sets out provincial development objectives and strategies, reflecting the desired spatial landscape of the province to create an enabling environment for sustainable development, as prescribed by Section 16 (a-f) of SPLUMA.

IN TERMS OF SECTIONS 15 AND 16 OF SPLUMA A PSDF MUST COVER THE FOLLOWING ASPECTS:

- A description of the process followed preparing the PSDF.
- An assessment of a province's spatial development status and the key spatial challenges it faces.
- Provincial spatial implications of applicable national development strategies.
- A provincial spatial vision that articulates desired land use patterns.
- Provincial land development objectives, principles, strategies, policies and priorities (specifically addressing sustainable development and considering climate change).
- A coordinated and integrated spatial reflection of the plans of provincial departments; and
- A coordinated framework for Regional and Municipal SDFs.

Whilst the Constitution assigns shared and exclusive spatial responsibilities to each sphere of government, it is evident that the Provincial Government's PSDF mandate requires coordination, integration and alignment between all spheres of government.

1.2.1 IMPLEMENTATION CHALLENGE

Whilst the PSDF has jurisdiction over provincial departments, it is also mandated to coordinate, align, and integrate the spatial plans of national and municipal government – institutions over which it has no direct jurisdiction. Herein lies its major challenge. To address this challenge, it needs to present the logic of coherent spatial development, demonstrate the value to be added by applying sound planning principles, and use inter-governmental forums as platforms for the perusal of the cooperative spatial

governance agenda. In this regard, the PSDF cannot dictate to other government spheres, but it has considerable scope to influence spatial investment decisions.

2 NORTHERN CAPE PSDF

2.1 BACKGROUND

The Northern Cape PSDF will act as an enabling mechanism that responds and complies with, in particular, the National Spatial Development Framework (NSDF). The latter encourages lower-sphere spatial development plans and frameworks (such as the PSDF) to create an environment that enables a developmental state. The PSDF aims to give effect to the commitment above and address the current situation in the Northern Cape which is described in the Provincial Growth and Development Plan – Vision 2040. The PSDF builds on the notion that such a scenario requires innovative economic intervention, which can only result from a dynamic and effective developmental state and effective governance.

The PSDF is to function as an innovative strategy that will apply sustainability principles to all spheres of land use management throughout the Northern Cape and which is to facilitate practical results, as it relates to the eradication of poverty and inequality and the protection of the integrity of the environment. In short, the PSDF is to serve as a mechanism towards enhancing the future of the Northern Cape and its people by ensuring that:

- All land uses enable people to have sustainable livelihoods and enhance the integrity of the environment, through effective resource management.
- Innovative management skills and technologies are employed to bring human demands for resources into balance with the carrying capacity of the environment. In this regard the PSDF is premised on the principle that shared resources can only be sustainable if the ethic of



environmental care applies at all the applicable levels, ranging from the international to the local, and

- To capitalise on the comparative and competitive advantages, in a sustainable manner, which the Northern Cape holds over its bordering provinces and the neighbouring countries abutting the Northern Cape.

The PSDF is a policy framework that will be applied in terms of the conformity principle. It does not bestow or remove land use rights. However, upgrading or amendment of existing rights will have to conform to the PSDF. This means that organs of state and officials must take account of and apply relevant provisions of the PSDF when making decisions that affect the use of land within the province. However, the PSDF is mainly a guideline, which must not be applied rigidly, but rather consider the merits and particular circumstances of each case in a site-specific manner as is required in terms of the bioregional planning approach and the Spatial Planning and Land Use Management Act, 16 of 2013.



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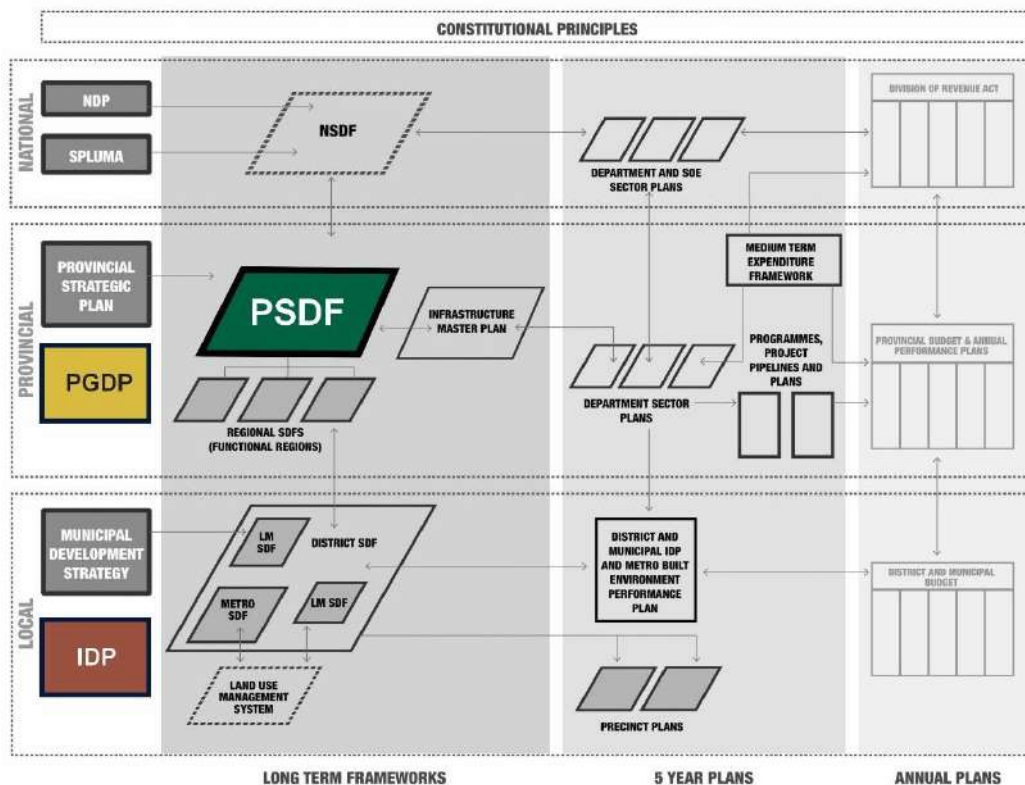
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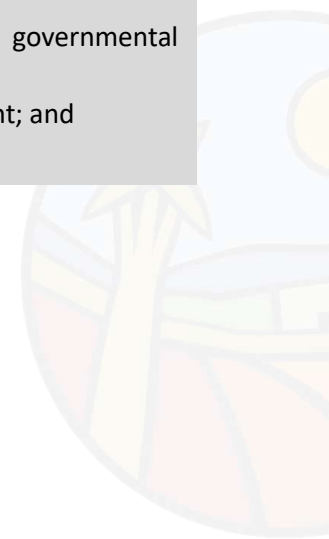
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THE PURPOSE OF THE PSDF IS TO: (as informed by Chapter 4, Section 26 of the Northern Cape SPLUMB)

- Provide spatial land-use directive which aims to promote environmental, economic, and social sustainability through sustainable development.
- To give effect to the Principles of SPLUMA.
- To elaborate on any national or international initiatives which may impact development in the Northern Cape Province.
- To set development standards towards public and private sector investment.
- A guide towards reducing business risk (by providing clarity and certainty on where public infrastructure investment will be targeted) thereby opening-up new economic opportunities in these areas.
- Guide towards the location and form of public investment in the Northern Cape's urban and rural areas.
- Basis for prioritising, aligning and integrating governmental programmes and projects.
- Premise for governmental performance management; and
- Manual for integrated land-use planning.

Figure 1: The relationship between spatial frameworks and implementation plans at the various scales of planning.



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2.2 REASON FOR THE REVIEW

The main motive for the review of the PSDF is to give effect to the standards and principles set out in the Spatial Planning and Land Use Management Act, 16 of 2013. The Department of Rural Development and Land Reform: Spatial Planning and Land use management services branch, in collaboration with the Department of Cooperative Governance, Human Settlements and Traditional Affairs (COGHSTA), Municipal Infrastructure Supporting Agency (MISA) and South African Local Government Agency (SALGA), assessed the 2020 PSDF and highlighted the following shortcomings of the 2020 PSDF document:

- Limited alignment with policy and legislation is needed due to the limited linkage between the PSDF and NDP. Along with SPLUMA the new policy and legislation needs to be incorporated such as the Final National Spatial Development Framework, 2022, Karoo Regional Spatial Development Framework, Green Hydrogen Strategy among others.
- Limited alignment with departmental sector plans as well as the clear definition of roles and functions of departments.
- Outdated statistical data (2011 Census data) was utilised to inform the proposals made within the document.
- Monitoring and evaluation tools and mechanisms are required in order to assess the level of implementation of the PSDF strategies.

2.2.1 SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (SPLUMA)

Whilst the Constitution assigns shared and exclusive spatial responsibilities to each sphere of government, it is evident that the provincial government's PSDF mandate requires coordination, integration and alignment between all spheres of government. According to Section 16 of SPLUMA, a provincial SDF provides "a spatial representation of the land development policies, strategies and objectives of the province" and indicates the desired/intended land-use development, including areas

where development would not be appropriate. It also provides a framework for coordinating SDFs of adjacent municipalities. All provincial development plans, projects and programmes must be consistent with the provincial SDF. Where a provincial SDF is inconsistent with a municipal SDF, the Premier must, in accordance with the Intergovernmental Relations Framework Act, 2005 take the necessary steps to ensure consistency between the two SDFs. In response to the quest to reverse the spatial effects of apartheid and infuse a new South African spatial perspective, SPLUMA was gazetted on the 5th of August 2013, with the following aims:

- This act, consequently, ultimately paves the way for municipalities to become the primary regulators of land use.
- The implementation of this act will assist the transformation agenda and progressively engineer South Africa's spatial planning and land use management systems in a way that promotes social and economic inclusion, and
- Furthermore, it provides for the sustainable and efficient use of land resources and the redress of spatial inequalities.

The Spatial Planning and Land Use Management Act (SPLUMA) was signed into law by the President on 02 August 2013, and formally came into effect on the 1st of July 2015. This Act provides a framework for all spatial planning and land use management legislation and processes in South Africa. It seeks to promote consistency and uniformity in procedures and decision-making regarding spatial planning across the country. SPLUMA embodies the constitutional imperatives relating to the protection of the environment and property rights, the right of access to housing and the right to sufficient food and water. The preamble to SPLUMA specifically refers to sustainable development, which requires the integration of social, economic and environmental considerations in future planning and ongoing land use management. The legislature intends that municipalities must participate in national and provincial development programmes.



2.2.2 NORTHERN CAPE SPATIAL PLANNING AND LAND USE MANAGEMENT BILL, 2017

The Northern Cape SPLUMB defines the Provincial PSDF as follows:

“Northern Cape Provincial Spatial Development Framework” means a framework prepared and adopted in terms of this Act for the Province or a framework prepared and adopted in terms of an Act repealed by this Act.

The following principles, norms and standards apply to Spatial Planning and land development in the province²:

- To promote sustainable development according to international standards.
- Give effect to the principles enshrined in the Constitution of South Africa.
- Adhere to the principles of bioregional planning.
- To promote efficient and integrated sustainable development; and
- To incorporate the principles of spatial justice, efficiency, and good administration.

2.3 PREPARATION OF A PSDF

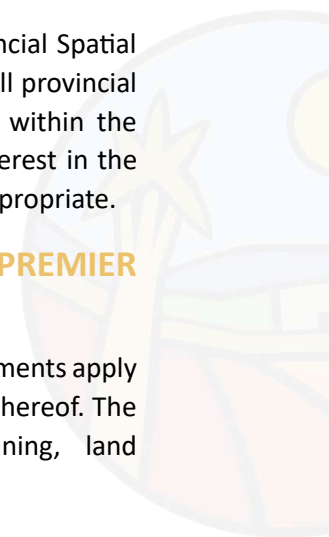
- The following sections of the NC SPLUMB gives direction towards the preparation of a PSDF:
- Section 10 (1), A long terms Provincial Spatial Development Framework spanning thirty years must be prepared for the Province as prescribed, and adopted or amended, as the case may be, by the Executive Council of the Province.

² Summary of key principles, norms and standards as proposed under Chapter 2 of the Northern Cape SPLUMB. The detail of each of the principles, norms and standards are outlined in this Chapter.

- Section 10 (2), A Provincial Spatial Development Framework may be amended from time to time and must be reviewed at least every five years.
- Section 10 (3), A Provincial Spatial and Development Framework or any amendments thereto will come into effect after it has been adopted by the Executive Council and published.
- Section 10 (4), Any additional measures pertaining to the form, content, compilation, public participation and finalisation of a Provincial Spatial Development Framework must be as prescribed.
- Section 10 (5), Any Provincial Spatial Development Framework prepared or adopted by the Province in terms of the Northern Cape Planning and Development Act No. 7 of 1998 (NCPDA) prior to the commencement of SPLUMA or the Act shall be deemed to have been drafted and formulated and published in term of the Act and shall remain as such until such time as it is amended or replaced by a Provincial Spatial Development Framework adopted or amended, as the case may be, in terms of the Act.
- Section 10 (6), The preparation or amendment of a Provincial Spatial Development Framework shall include consultation with all provincial departments of the province; all municipalities situated within the province; all other organs of state who might have an interest in the process; and any other persons or bodies which may be appropriate.

2.3.1 ROLE AND RESPONSIBILITIES OF THE PREMIER ACCORDING TO SPLUMA

The Office of the Premier must ensure that all provincial departments apply the development principles and monitor the implementation thereof. The following development principles apply to spatial planning, land development and land use management:



- Spatial justice.
- Spatial sustainability.
- Efficiency.
- Spatial resilience; and
- Good administration.

Chapter 4 enables the Premier to publish a Provincial Spatial Development Framework (PSDF) that guides the spatial distribution of current and desired land uses within the provincial sphere in order to give effect to the development vision, goals and objectives. Ultimately, the Office of the Premier is obligated to ensure alignment of all provincial strategic plans, Annual Performance Plans (APPs) and sector plans to the Provincial Spatial Development Framework and monitor the implementation thereof.

“Living-in-place means following the necessities and pleasures of life as they are uniquely presented by a particular site, and evolving ways to ensure long-term occupancy of that site. A society which practices living-in-place keeps a balance with its region of support through links between human lives, other living things, and the processes of the planet — seasons, weather, water cycles — as revealed by the place itself. It is the opposite of a society which makes a living through short-term destructive exploitation of land and life” - *(Berg and Dasmann, 1997:399-401)*.

3 APPROACH

3.1 BIO-REGIONAL PLANNING

As with the 2020 PSDF, the reviewed PSDF was prepared (reviewed) in accordance with the principles of bioregional planning adapted to suit the requirements of the Northern Cape. The objective is to provide a coherent and place-specific methodology for the planning and management of the Northern Cape as a distinct and unique place and to facilitate its management in accordance with local and global best practices. The implementation of bioregional planning principles as promoted by the PSDF does not require any major adjustments from institutions or stakeholders - in essence, it merely requires a paradigm shift towards a more sustainable and integrated approach to all aspects of governance, economic growth facilitation and land use.

The bioregional principles as applied in the PSDF comply with the national and provincial legislation and policy that direct spatial planning in South Africa, including the Spatial Planning and Land-Use Management Act (Act 16 of 2013), the National Spatial Development Framework (NSDF), and the National Strategy for Sustainable Development (NSSD).

Bioregional planning recognises that no region or area should be planned and managed as an ‘island’ in isolation from its surroundings. Each unit is an important part of the broader environment within which it is located, and the mutual relationships and linkages between adjacent units must be understood and applied when planning and managing any particular unit (NC PSDF, 2020). It is also referred to as an organised process that enables people to work together, think carefully about the potential and challenges of their region, set goals and objectives, define activities, implement projects, take actions agreed upon by the communities, evaluate progress and refine their approach. The bioregional framework supports the goal of accelerating change toward improved well-being for nature and society for several reasons, (NC PSDF, 2020):



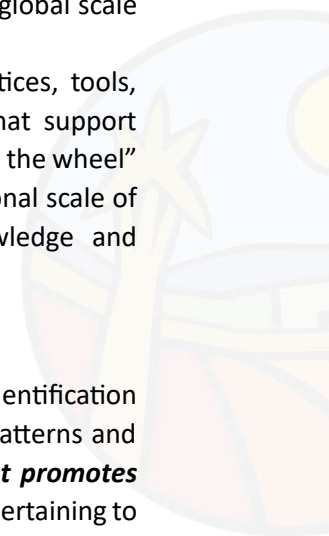
- Bioregionalism identifies areas similar in transport-trade, communication networks, natural resource reliance, cultures, recreational desires, natural ecosystems, governance, and societal issues of concern.
- It makes little sense to discuss the topic of sustainability at the global scale if insufficient thought is given to the local places and scales where human life occurs. Societal actions that are sustainable for humans, other life-forms, and earthly systems can best be achieved by means of a spatial framework in which people live as rooted, active, participating members of a reasonably scaled, naturally bounded, ecologically defined “place.”
- Considering problems and solutions from a bioregional perspective offers an opportunity to engage in comprehensive, adaptively managed change improving society’s overall opportunity to achieve sustainability at a scale not possible within a single community effort. One can discern patterns that diminish the quality of life, sense of place, and sustainability, as well as patterns that enhance these features, by adopting community convergence activities or a bioregional view.
- National and international communities of people will have to undergo significant adaptive change to deal with a transition brought on by global warming. However large-scale social change will only happen where people share common concerns, goals, and core values. Acknowledging that community-by-community change is too slow, the bioregion offers an example of where communities with common ecology, culture, and economy can converge for the greater good. Likewise, challenges to social change are certainly more easily overcome in a converging of local communities at the bioregion than by trying to encourage action at the national level.
- Bioregions are governed by nature, not politics. So, once we understand the inherent physical, biological, and ecologic relationships of a bioregion, we can count on actions judged to be sound according to the theory of the three-legged stool or three-overlapping circles to be much more predictable, enduring, and supportive, as well as less

costly, to society than the unending quest to find technological fixes for all our problems that governing bodies can promote their next election on.

- Because of the many common threads that weave through the landscape tapestry of a bioregion, which we can personalize by calling home, the concentric circles of environment, society, and economy relationships become much easier to traverse, allowing us to leave home a little better off than we might have found it.
- Bioregional-based planning and action can help society narrow problems and solutions and help participants to acknowledge the limitations of a place and its resources so that they will not continue to overestimate the carrying capacity of the regions they inhabit and live more sustainably.
- This convergent, bioregional approach, can influence the larger world mainstream by its regeneration of local cultures, ecosystems, and resources into the indefinite future, contributing to the more global needs of life on Earth, more effectively than a national or global scale initiative ever could.
- For every bioregion, there may be a unique set of practices, tools, models, and successes within individual organizations that support planning, design, and management. Instead of “reinventing the wheel” with each new initiative, project, or campaign the bioregional scale of sustainability work will enhance the transfer of knowledge and technology for the betterment of the entire region.

3.1.1 SPATIAL DIMENSION

The spatial dimension of bioregional planning constitutes the identification and mapping of logical form determinants (including spatial patterns and resources). This generally suggests ***a logical spatial form that promotes sustainability***. Bio-cultural regional patterns provide solutions pertaining to where to develop and where not to develop. This can help policy-makers to set goals that are within the capacities of the natural systems, and at the same time, are more likely to meet social values for an area.



3.1.2 PRINCIPLES APPLICABLE TO THE NORTHERN CAPE

There is a perception that globalization may create economic insecurity and increase the gap between rich and poor in a primarily rural economy such as that of the Northern Cape. It is furthermore suspected that globalization may undermine cultural diversity and may turn complex ecosystems into streams of standardized commodities. In contrast to this, a bioregional economy has the following characteristics:

- It reflects the capacities and limitations of ecosystems, honours the diversity and history of local cultures, and meets human needs as locally as possible.
- It is diverse, resilient, and decentralized.
- It minimizes dependence on imports while focusing on high-value-added exports. Paradoxically, this gives a bioregional economy an important competitive advantage in a global economy, allowing it to trade on favourable terms without sacrificing its economic sovereignty in the process.
- It recognizes the need for fair trade, refraining from importing or exporting goods produced unfairly or in an ecologically-destructive manner.
- It makes a transition to true cost pricing, building actual social and environmental costs into market prices. To provide independent certification of product attributes (e.g. sustainably harvested, fair trade, organic, shade grown, green energy, etc.), a bioregional economy promotes product labelling (i.e. product labelling sends a clear message to the customer about the broader life-cycle impacts of a product).
- It does not deplete its own society, nature, or capital. It exports only its sustainable surplus, most often taking the form of intellectual property or high-value products and services rather than bulk commodities. Its sense of place becomes the key component of brand identity.

- It is spatially orientated by a network of connected natural areas, the availability of productive rural areas, and the distribution of settlements and towns. This allows the bioregional economy to substitute ecosystem services for more expensive imported alternatives.

3.2 TOWARDS SUSTAINABLE DEVELOPMENT

The PSDF needs to respond and give practical effect to the overarching objective stipulated in both the National Spatial Development Framework (NSDF) as well as the respective provincial development plans to ensure the integration of development processes and to facilitate sustainable development throughout the province.

To achieve sustainable development, it is imperative that all parties (public sector, private sector, and end-users) involved in the development, have an agreed common vision and strategy for the Spatial Structure of the Region.

To this end there must be a common Vision, Objectives and understanding of the preferred Spatial Structure of Humanity's 21st-century challenge is to meet the needs of all within the means of the planet. In other words, to ensure that no one falls short on life's essentials (from food and housing to healthcare and political voice) while ensuring that collectively we do not overshoot our pressure on Earth's life-supporting systems, on which we fundamentally depend – such as a stable climate, fertile soils, and clean water.

The Doughnut (Raworth, 2017)³ of social and planetary boundaries is a playfully serious approach to framing that challenge, and it acts as a compass for human progress this century. This requires agreement on "Structuring Elements".

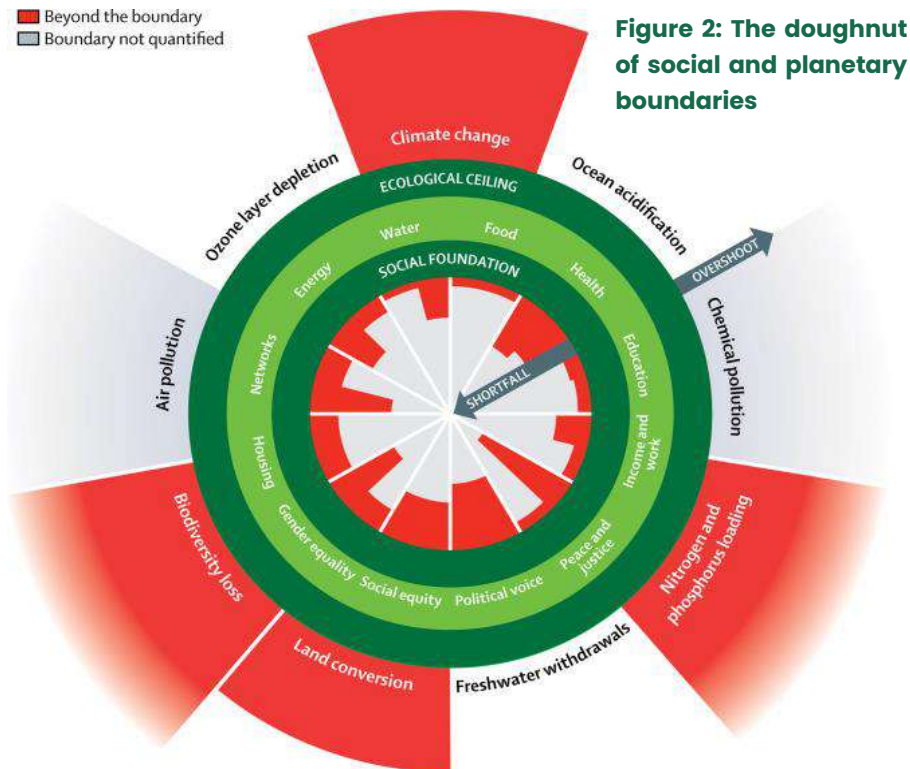
The outer ring presents a set of nine Earth-system processes (like freshwater use, climate regulation, and the nitrogen cycle) that are critical for keeping this planet in the stable state which has been so beneficial to

³ Raworth, K, A safe and just space for humanity, 2017



humankind over the past 10,000 years (it gave us agriculture and all that has followed). Putting excessive stress on these critical processes could lead to tipping points of abrupt and irreversible environmental change, so (Rockström, 2009) proposed a set of boundaries for avoiding those danger zones. Together, the nine boundaries constitute an environmental ceiling – what their authors call a safe operating space for humanity.

The ecological ceiling consists of nine planetary boundaries, as set out by Rockstrom et al, beyond which lie unacceptable environmental



⁴ PESTLE or also called PEST, is a concept in marketing principles. Moreover, this concept is used as a tool by to track the environment they're operating in or are planning to launch a new project/product/service etc. PESTLE is a mnemonic which in its expanded form denotes P for Political, E for Economic, S for Social, T for Technological, L for Legal and E for Environmental. It gives a

degradation and potential tipping points in Earth systems. The twelve dimensions of the social foundation are derived from internationally agreed minimum social standards, as identified by the world's governments in the Sustainable Development Goals in 2015.



Visit the link to obtain more information on the Doughnut of social and planetary boundaries.

3.3 GOVERNANCE STRUCTURE

A Pestle Analysis⁴ based on the key issues, challenges and opportunities was followed to provide an overview of provincial diagnostic reports submitted to the Northern Cape Office of the Premier (OtP).

P	POLITICAL: These factors determine the extent to which a government may influence the economy or a certain industry.
E	ECONOMIC: These factors are determinants of an economy's performance that directly impacts a company and have resonating long term effects.
S	SOCIAL: These factors scrutinize the social environment of the market, and gauge determinants like cultural trends, demographics, population analytics etc
T	TECHNOLOGICAL: These factors pertain to innovations in technology that may affect the operations of the industry and the market favourably or unfavourably

bird's eye view of the whole environment from many different angles that one wants to check and keep a track of while contemplating on a certain idea/plan. It is very critical for one to understand the complete depth of each of the letters of the PESTLE.



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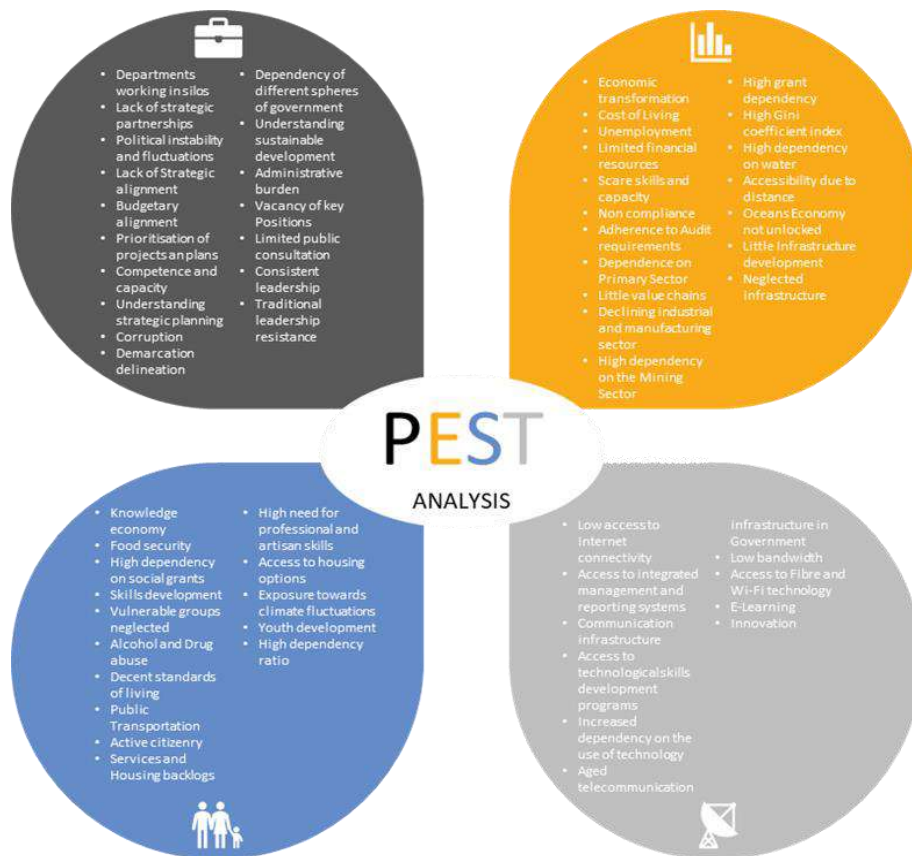


Figure 3: Overview of the key provincial challenges and issues identified using the Pestle Analysis

3.3.1 OFFICE OF THE PREMIER GOVERNANCE STRUCTURE AND OPERATION

The governance structure, as depicted in Figure 4 is divided into three programmes, namely 1) Administration, which is largely a support structure for the premier and the director general, 2) Intuition development, which is responsible for the inner management of the department, and 3) Policy and governance, which is responsible for the management and monitoring of the provincial departments. The development planning unit is responsible for the development, management and monitoring of the PGDP and PSDF.

The Policy and Governance Programme is responsible for support and monitoring of the respective provincial sector departments, especially regarding critical issues, such as spatial and land use planning, and ensuring that the provincial sector departments interact and function in a coordinated manner.

The Northern Cape governance structure also functions on the three spheres model, namely, provincial, district municipalities and local municipalities. The provincial sphere mainly consists of national and provincial sector departments, overseen by the Office of the Premier. OtP, national and provincial sector departments mainly function within the macro and mezzo levels, with an overview role on local municipalities, while district municipalities function both at meso and micro levels. An overview of the governance structure and the level at which each entity functions, is depicted by Figure 4 below.

At a provincial level, the governing entities are responsible for giving expression to international and national strategies, such as the Sustainable Development Goals (SDG's) and the National Development Plan (NDP). These strategies are typically distributed throughout the various mandates of the national and provincial sector departments. Figure 4 provides an overview of the governance hierarchy within the Northern Cape, where the office of the premier and the Provincial Legislature are the highest



authorities within the Northern Cape, where national and provincial sector departments are second tier, while district and local municipalities are located on the third tier.

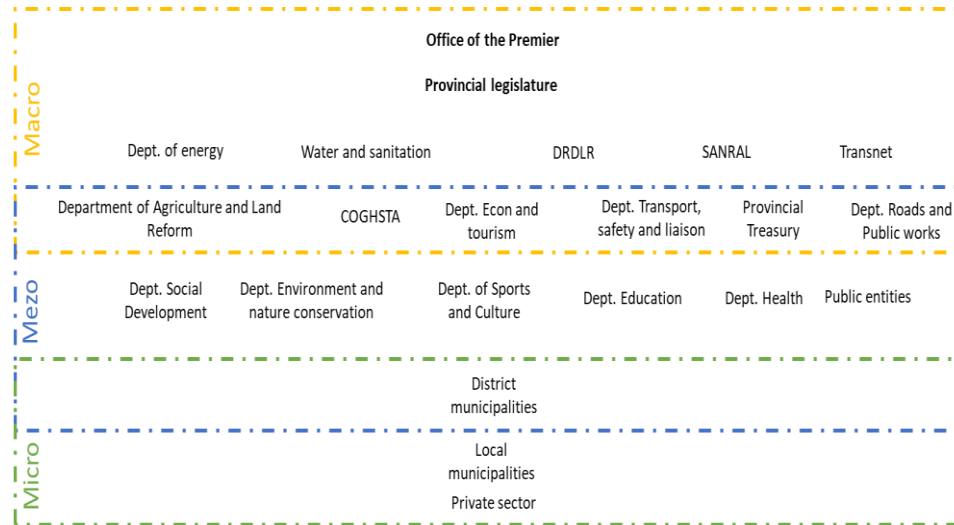


Figure 4: Governance hierarchy per activity level



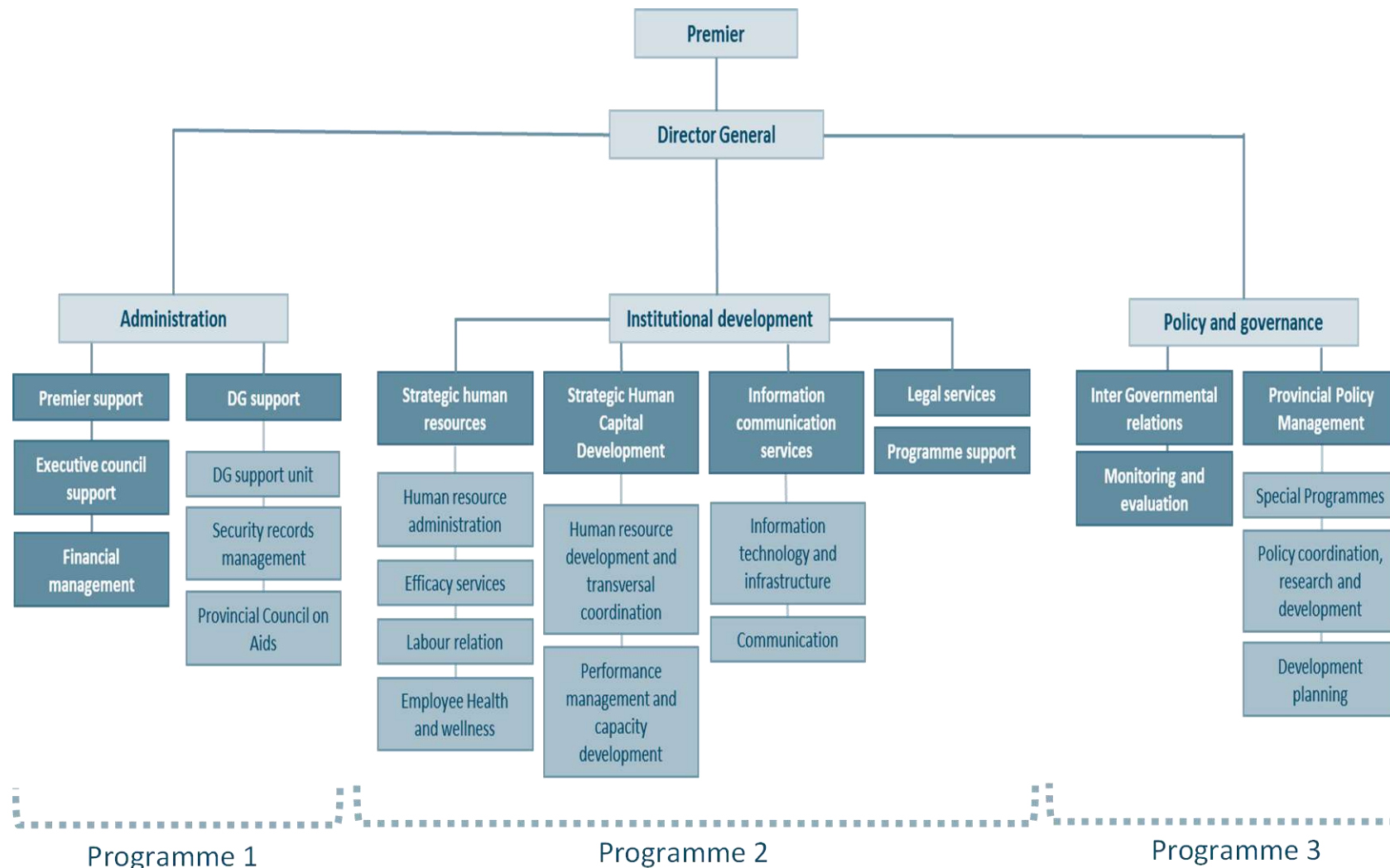


Figure 5: Office of the Premier Organogram



3.4 RELATIONSHIP BETWEEN THE PSDF AND PGDP

Figure 6 illustrates where and how the PGDP and PSDF link with National, Provincial and Local sphere frameworks and plans. The PGDP and PSDF are long-term (i.e. > 5 years) strategic frameworks from which various plans will be implemented. It is to be informed by the NDP and related spatial policies and take its strategic direction from the Northern Cape Growth and Development Plan. It conveys the Northern Cape's spatial agenda to National and Provincial departments, as well as state-owned enterprises (SOEs) so that their sector plans and programmes are grounded in sound and common spatial logic, informed by accurate and up-to-date data.

The PSDF also conveys the Northern Cape's spatial agenda to municipalities, so that their IDPs, SDFs and Land Use Management Systems (LUMS) are consistent with and take the provincial spatial agenda forward. Figure 6 also illustrates the linkages between spatial planning within the different spheres of government and budgeting processes. The PSDF serves to strengthen these linkages so that the return on public investment is optimised, as well as provide greater certainty to communities and the private sector on the direction of spatial growth. As the PSDF serves to guide the location and form of public investment in the Northern Cape's urban and rural areas, the public sector is a key user of the PSDF - mainly provincial government departments, but also national and municipal government as well as SOEs. The provincial government cannot dictate where other institutions must invest, but the PSDF can influence these investment decisions by establishing a coherent and logical spatial investment framework. As the private sector is also a user of the PSDF, the PSDF aims to provide an enabling environment for investment. Whilst the PSDF has limited influence on private sector investment patterns, it has an important contribution to make in reducing business risk (by providing clarity and certainty on where public infrastructure investment will be

targeted) thereby opening up new economic opportunities in these areas. Similarly, the transparency of the PSDF regarding where socio-economic investment will be targeted facilitates proactive and reactive responses by community-based organisations. (CBOs) and non-governmental organisations.

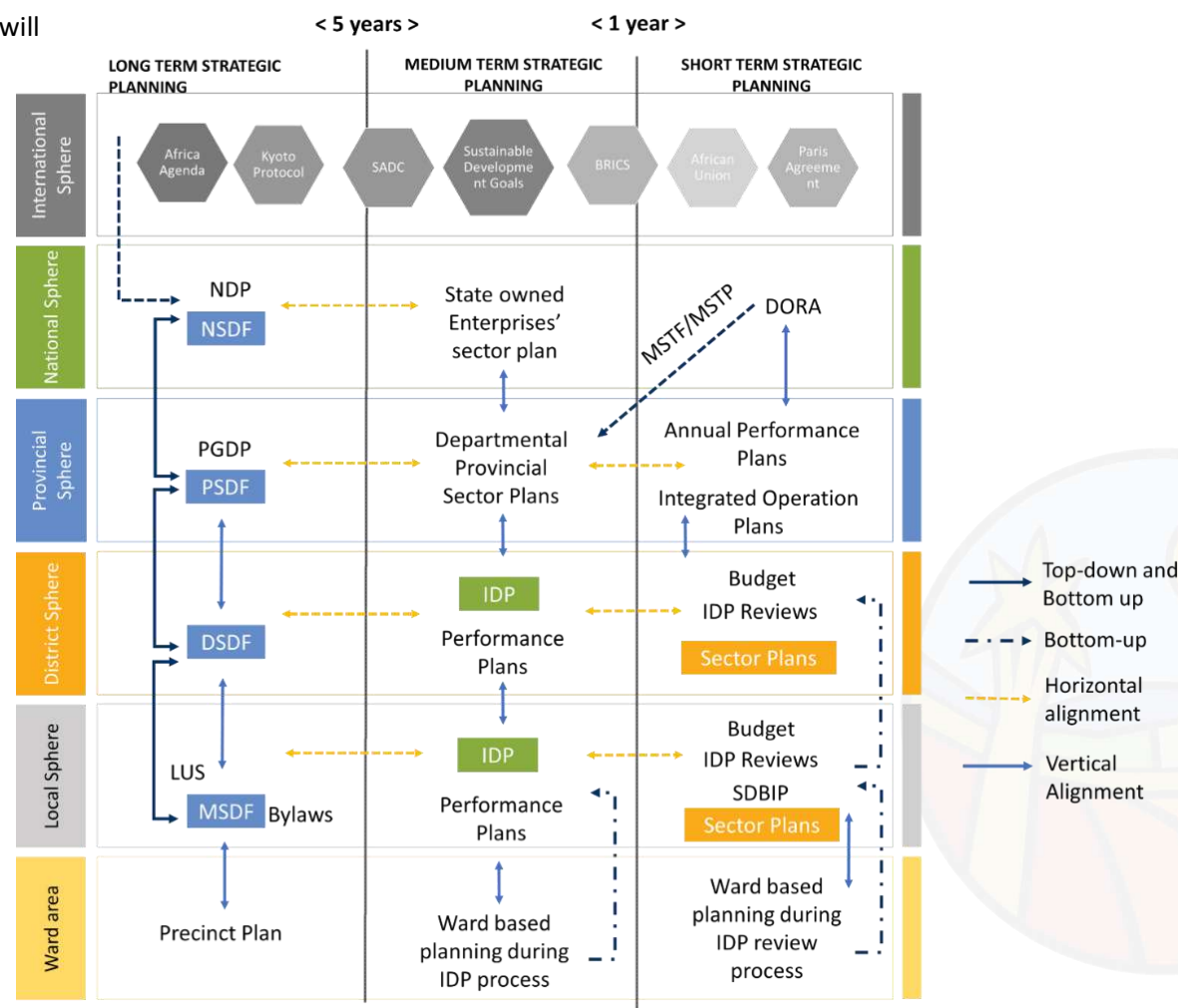


Figure 6: The context and role of the PGDP and PSDF in relation to other frameworks and plans

PGDP

- Aligns with the vision of the NDP.
- Provide the strategic framework, sectoral strategies and projects that will place the province and its people on a trajectory of growth and prosperity.
- Based on 4 drivers of change and development
- Integrates and consolidates all relevant provincial plans and strategies.
- PGDP offers strategic planning that will give precedence to the first structural deficiencies in the local socio-economic milieu.
- It intends to guide sectoral strategies and programmes aimed at a rapid improvement in the quality of life for the poorest people.
- Emphasizes the need to create economic opportunities for the marginalised in the Northern Cape society, the rural, the poor, women, and the youth.

LINK

PSDF responds to legislated NSDF.

Transforms the vision into a legislated framework.

Translates a vision (PGDP) into an implementable plan.

Assist to prioritise and manage.

Elaborate on initiatives that can assist development in NC.

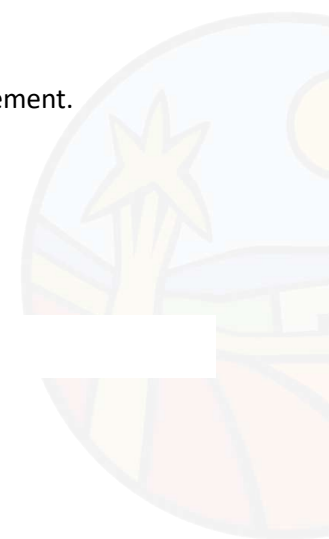
Sets development standards.

Allows for monitoring of implementation.

PSDF

- Responds and complies with, the National Spatial Development Framework (NSDF).
- Spatially prioritise, manage, and implement PGDP strategies.
- Provide spatial land-use directive aiming to promote environmental, economic, and social sustainability through sustainable development.
- To give effect to the Principles of SPLUMA.
- To elaborate on any national or international initiatives
- To set development standards towards investment.
- A guide towards reducing business risk thereby opening-up new economic opportunities in these areas.
- Basis for prioritising, aligning, and integrating governmental programmes and projects.
- Premise for governmental performance management.
- Manual for integrated land-use planning.

Figure 7: Relationship between the PGDP & PSDF



3.5 MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK COORDINATION

A brief assessment of Local Spatial Development Frameworks was made to guide the horizontal linkages required in terms of the formulation of the Provincial Spatial Development Framework. The table to follow provides an overview of the assessment outcomes based on SPLUMA compliance and SPC alignment.

Table 1: Coordination of District and Municipal Spatial Development Frameworks

MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK – COORDINATION AND ALIGNMENT						
MUNICIPALITY	SPLUMA COMPLIANT	NATURAL AREAS	AGRICULTURAL AREAS	URBAN RELATED AREAS	INDUSTRIAL AREAS	SURFACE INFRASTRUCTURE
	Yes, No (and date)	Key protected areas, biospheres, nature reserves, tourism development	Key areas to consider (nodes, corridors, zones), Agri-processing	Nodes, corridors, urban renewal, public transport, space economy, mega human settlements projects	Mining projects, corridors, industrial zones, nodes and corridors	Connectivity, accessibility, public transport, corridors and links
Frances Baard District Municipality	Yes 2021	Protection of Orange and Vaal Rivers (FEPA's);	Vaal Harts Scheme	PHSHDA	Mining	Transportation Corridors
John Taolo Gaetsewe District Municipality	Yes 2023	Protected Areas	Subsistence Farming	- PHSHDA - Distressed Mining Towns	Mining	Transportation Corridors
Namakwa District Municipality	Yes 2023	- Protection of Orange River (FEPA's); - Protected Areas, World Heritage Site	- Intensive Agriculture Practices - Oceans economy	- Tourism Development - Distressed Mining Towns	- Green Hydrogen - Mining	- Renewable Energy - Solar Special Economic Zone
Pixley Ka Seme District Municipality	Yes 2023	- Protection of Orange and Vaal Rivers (FEPA's); - Nature Reserves	Intensive Agriculture Practices	- Tourism-related activities - SKA Restrictions	Prieska Power Reserve	- Renewable Energy - Transportation Corridors
ZF Mgcau District Municipality	Yes 2023	- Protection of Orange River (FEPA's); - Protected Areas	Intensive Agriculture Practices	PHSHDA		Renewable Energy
!Kheis Local Municipality	Yes 2016	Protection of Orange River (FEPA's);	- Protection of Intensive Agricultural Land - Agricultural Industries	Housing Policy (All developments within urban edge)	Light Industrial Development in Groblershoop	Renewable Energy



MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK – COORDINATION AND ALIGNMENT						
MUNICIPALITY	SPLUMA COMPLIANT	NATURAL AREAS	AGRICULTURAL AREAS	URBAN RELATED AREAS	INDUSTRIAL AREAS	SURFACE INFRASTRUCTURE
	Yes, No (and date)	Key protected areas, biospheres, nature reserves, tourism development	Key areas to consider (nodes, corridors, zones), Agri-processing	Nodes, corridors, urban renewal, public transport, space economy, mega human settlements projects	Mining projects, corridors, industrial zones, nodes and corridors	Connectivity, accessibility, public transport, corridors and links
Dawid Kruiper Local Municipality	Yes 2023	Protection of Orange River (FEPA's);	Agricultural Industries	- Special Economic Zone - Tourism/Hospitality Corridor & Strategy - Haksteenspan Resort Development	- Rietfontein Mining Strategy - Industrial Development Zone – Cargo Hub	Solar Special Economic Zone
Dikgatlong Local Municipality	Yes 2022	Protection of Orange River (FEPA's);	- Expansion of water schemes - Venison Value Chain	Housing Policy (All developments within urban edge)	- Mining Projects & Rehabilitation - Steel Smelter	Enhancing local linkages
Emthanjeni Local Municipality	In Process 2024 Completion Date	Bio Regions - Nama Karoo & Kalahari Thornveld	- Promotion of Game Industry. - Read meat and wool production. - Branding of Local produce	-	-	N 1, 10 & 12 Corridor Development (Support Upington cargo hub)
Gamagara Local Municipality	Yes 2020	Protection of Kathu Forest	-	- Detailed Geological Report to improve housing development. - Detailed Socio-Economic Survey - Smart Metering	- Industrial Park, - Brick Making - Coffin Making - Toilet Paper Manufacturing - Sustainability and Live span of existing mines strategy	- Water Management Plan, - Traffic Management Plan - N 14 Mining Corridor - Renewable Energy Strategy
Ga-Segonyana Local Municipality	Yes 2021	-	- Agri park development Kuruman - Abattoir and Boiler - Ostrich Abattoir - Racehorse breeding - Feedlot	- Housing Policy (All developments within urban edge) - LED Strategy - Wonderwerk Caves Tourism development & Kuruman Eye	- Industrial Park Development - Sand Depot, - Tannery - Small Scale mining strategy - Metal Cluster (Smelter)	- Water Management Plan, - Transport Management Plan
Hantam Local Municipality	Yes 2020	Succulent Karoo Ecosystem Programme (SKEP)	- Rooibos Tea Expansion - Calvinia Wool Production	Tourism Strategy all incorporating Reserves.	- Salt Mining Node - Brandvlei & Loeriesfontein - Charcoal Production	Transportation Corridor Strategy



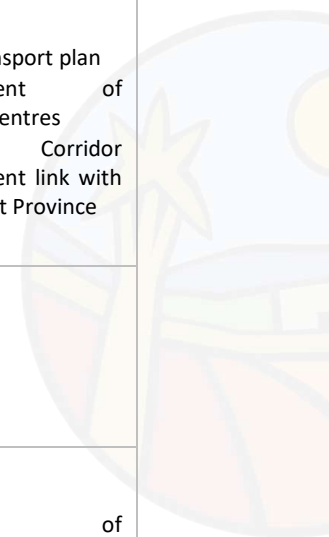
MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK – COORDINATION AND ALIGNMENT						
MUNICIPALITY	SPLUMA COMPLIANT	NATURAL AREAS	AGRICULTURAL AREAS	URBAN RELATED AREAS	INDUSTRIAL AREAS	SURFACE INFRASTRUCTURE
	Yes, No (and date)	Key protected areas, biospheres, nature reserves, tourism development	Key areas to consider (nodes, corridors, zones), Agri-processing	Nodes, corridors, urban renewal, public transport, space economy, mega human settlements projects	Mining projects, corridors, industrial zones, nodes and corridors	Connectivity, accessibility, public transport, corridors and links
		Protected Areas: Richtersveld Springs, Kamiesberg Wetland, Bokkeveld		Satellite Unisa Campus – Calvinia, Nieuwoudtville	- SARAO, - South African Large Telescope (S.A.L.T)	
Joe Morolong Local Municipality	In Process 2024 Completion Date	Asbestos contamination strategy	- Agro-processing - Game & Cattle farming	- Business nodal development in smaller settlements - Development of Human Development Hubs - Tribal management Plan	Mining Expansion Strategy	Railway Development Plan
Kai !Garib Local Municipality	Yes 2023	- Augrabies Falls National Park - Orange river Management Plan - Protection of riverbanks by 1:50 year flood line restricting development	- Expand agricultural development. - Protect high potential land from Non-agricultural development.	- Detailed Urban Edge Policy, - Nodal Policy - Precinct plans policy	Industrial Precinct plans	-
Kamiesberg Local Municipality	Yes 2023	- Namakwa National Park Expansion - Roodeberg Kloof Conservation Farm - Environmental Management Strategy	Mari-culture Hondeklip Bay	- Municipal Capacity Survey - Tourism Development Strategy - West Coast Development Framework	- Gas & Oil Refinery - Mining Exploration Strategy - Desalination Plant – Hondeklip Bay	- Water Management Plan - Wind Energy Strategy - Orange River water supply feasibility - N7 Corridor - Road maintenance plan - Bitterfonttein/Garies to Hondeklip Bay Rail linkage - Koiingnaas airfield upgrade
Kareeberg Local Municipality	Yes 2019	Protection of the Kareeboschkolk-Zwartkop-Van Wyksvlei environmental conservation zone	- Cattle farming expansion. - goat farming expansion. - sheep farming expansion.	- Astro Tourism development - Carnarvon Tourism Node	SARAO, MeerKat	R63 – R384 Transport Corridor



MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK – COORDINATION AND ALIGNMENT						
MUNICIPALITY	SPLUMA COMPLIANT	NATURAL AREAS	AGRICULTURAL AREAS	URBAN RELATED AREAS	INDUSTRIAL AREAS	SURFACE INFRASTRUCTURE
	Yes, No (and date)	Key protected areas, biospheres, nature reserves, tourism development	Key areas to consider (nodes, corridors, zones), Agri-processing	Nodes, corridors, urban renewal, public transport, space economy, mega human settlements projects	Mining projects, corridors, industrial zones, nodes and corridors	Connectivity, accessibility, public transport, corridors and links
			- soya bean as potentials. - pistachios; and - game Farming.			
Karoo Hoogland Local Municipality	Yes 2019	- Protection of existing conservation areas and linking them with Tankwa National Park - Mountainous Areas biodiversity: Williston and the Meerkat/SARAO Site, continuing into Kareeberg Local Municipality.	- Processing indigenous rye grass. - Organic farming - Karoo Lamb production	- Astro Tourism development - Strengthen mobility & economic links between Sutherland, Fraserburg and Williston - Development of cross border Tourism Corridors - Activity Nodes Sutherland, Williston, Fraserburg	- SARAO, Meerkat - Support sustainable mining exploration. - Mining feasibility for uranium, gypsum and gas/oil - Mining opportunities in: Copper, Silver, Calcite, Aggregate & Building material - Gas exploration feasibility	- Promote renewable energy generation. - Transport Corridor Calvinia-Williston-Carnarvon & Sutherland-Matjiesfontein - Wind farm development
Kgatelopele Local Municipality	Yes 2019	- Environmental Management plan - Dolomite Risks assessment plan - Open space policy	- Supporting meat and game farming - Supporting agricultural industries	- Housing Sector Planning - LED's - Danielskuil as nodal point - Eco tourism	Mining Rehabilitation strategy	Water Management plan
Khai-Ma Local Municipality	Yes 2019	Protection of Orange River (FEPA's);	- Supporting irrigation development in Pella Onseepkaans, - Optimal usage of commonage by emerging farmers - Eradication of invasive plants and establishment of secondary industries	- Development of Khai-Ma tourism corridor - Create motor vehicle testing hub at Pofadder - Nodal policy	Supporting Gamsberg Mining (with special caution required to the extension of the housing component).	- Establishing of a railway link - Renewable energy strategy - N14 Corridor development
Magareng Local Municipality	Yes 2020	Protection of Vaal River (FEPA's);	- Agri-Park Development - Meat Production - Game Farming - Agro Processing - Agricultural Industries (Pecannut Oil)	Tourism Development Strategy (Vaal-Harts Dam, Class 19D Train, Nazareth House Mission Station, Warrenton	- Mining Strategy – social responsibility of mines or the towns. - Potential in precious stones - Rehabilitation	Transport Management Plan



MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK – COORDINATION AND ALIGNMENT						
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	Yes, No (and date)	Key protected areas, biospheres, nature reserves, tourism development	Key areas to consider (nodes, corridors, zones), Agri-processing	Nodes, corridors, urban renewal, public transport, space economy, mega human settlements projects	Mining projects, corridors, industrial zones, nodes and corridors	Connectivity, accessibility, public transport, corridors and links
			Hydroponics	Cultural Resort, Spitskop Dam) - N12 Treasure Route - Cultural Resorts		
Nama Khoi Local Municipality	Yes 2022	Protection of Orange River (FEPA's) & Coastal Zone	- Mari-cultural - Supporting irrigation development along Orange River	- Tourism Corridor - Nodal Policy/strategy 1st Order Springbok, 2nd Order Kleinzee & Steinkopf, 3rd Order Vioolsdrift	West Coast Mining Corridor	- Transport Corridor along N7 & N14 - Railway line linking Kakamas with Port Nolloth - Solar corridor development and wind energy - Vioolsdrift Dam Feasibility
Phokwane Local Municipality	In Process 2024 Completion Date	-	- Expansion of the Vaalharts Irrigation Scheme Expansion Plan. - Soil Management Plan - Agricultural Masterplan - Pecannut Development	- Agricultural linked research facilities/training/FET - Precinct plan for nodal areas - Tourism development study - Eco residential development	- Agricultural Related industries - Transport Hub – Warrenton	- Public Transport plan - Development of Research centres - N18 Corridor Development link with North West Province
Renosterberg Local Municipality	In Process 2024 Completion Date	- Protection of Orange River (FEPA's); - UNESCO MaB Programme - Bio Regions - Orange River, Nama Karoo	- Promotion of Game Industry. - Branding of Local produce - Mariculture	- Orange River Tourism development - Tourism Node Vanderkloof	-	-
Richtersveld Local Municipality	Yes 2019	- Protection of Orange River (FEPA's); - Transfrontier National Park expansion and cross border linkage - Richtersveld National Park - Orange River Mouth	- Cattle farming expansion. - goat farming expansion. - sheep farming expansion. - Agricultural Master Plan	West Coast Tourism potential, N 7 Linkage & Orange River	- Mining on and offshore - Rehabilitation strategy - Mining related manufacturing - Port Nolloth Harbour potential	Upgrading of Alexanders Bay Airfield - tourism potential



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		Rooiberg Conservancy	- Mari-cultural - Ostrich Farming			
Siyancuma Local Municipality	In Process 2024 Completion Date	- Protection of Orange River (FEPA's); - UNESCO MaB Programme - Bio Regions - Orange River, Nama Karoo & Kalahari Thornveld	- Promotion of Game Industry - Branding of Local produce	- Orange/Vaal River Tourism development - Douglas Tourism Node	-	N8 Corridor Development
Siyathemba Local Municipality	Yes 2019	- Protection of Orange River (FEPA's); - UNESCO MaB Programme - Bio Regions - Orange River, Nama Karoo & Kalahari Thornveld	- Promotion of Game Industry - Branding of Local produce	Orange River Tourism development	-	N10 Corridor Development
Sol Plaatje Local Municipality	Yes 2020	Protection of Vaal & Riet River (FEPA's);	- Expansion of Agri-Processing - Branding of Local produce	- Economic Policy, Land Use Policy, Municipal Incentive for Tourism Development - Development of Economic Stimulation and Promotion Zones, Economic protection and enhancement zones & economic revitalisation zones - Heritage Policy	Upgrading of infrastructure to enhance agricultural development.	Proposed Western By-pass around Kimberley
Thembelihle Local Municipality	In Process 2024 Completion Date	- Protection of Orange River (FEPA's); - UNESCO MaB Programme; - Bio Regions - Orange River & Kalahari Thornveld	- Promotion of Game Industry - Branding of Local produce	- Orange River Tourism development - Mining Tourism - Smart Government Systems	-	N12 Corridor Development Strategy



MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK – COORDINATION AND ALIGNMENT						
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Tsantsabane Local Municipality	Yes 2015	-	Protection of Agricultural land	- Nodal Development Strategy - Housing Sector Plan	- Sustainability and Live span of existing mines strategy - Linkage with Gamagara Corridor	Important Movement Corridors: N14, Sishen Saldanha Railway, R385 R325
Ubuntu Municipality Local	In Process 2024 Completion Date	Bio Regions - Orange River, Nama Karoo	-	-	-	N1 Corridor Development Strategy
Umsobomvu Municipality Local	In Process 2024 Completion Date	Bio Regions - Orange River, Nama Karoo & Kalahari Thornveld	- Promotion of Game Industry - Branding of Local produce	-	-	N1 & N10 Corridor Development Strategy



4 POLICY CONTEXT

The Northern Cape PSDF is prepared in relation to the current spatial planning policy context, which translates legislation and principles into a spatial direction, approach, and proposals for the province. The national, regional, provincial, and local policies and strategies that set the spatial planning agenda for the province area of jurisdiction are outlined in this Section. This section also summarises the informants to the spatial vision for the PSDF. These are derived from current policies and strategic agendas, parallel planning processes, stakeholder inputs and the policies and strategies of other spheres of government.

4.1 SPATIAL PLANNING AND LAND USE MANAGEMENT ACT 16 OF 2013 (SPLUMA)

The Spatial Planning and Land Use Management Act, act 16 of 2013 (SPLUMA) provide the legislative foundation for all spatial planning and land use management activities in South Africa (including the Spatial Development Framework noted above). It seeks to promote consistency and uniformity in procedures and decision-making relating to land use and development. The Act clearly states that a Provincial SDF should be in line with the policies of the national government and should be aligned with the plans, policies, and development strategies of local and adjoining municipalities.

4.1.1 SPLUMA FOUNDING PRINCIPLES

The Founding Principles must guide the preparation, adoption and implementation of the Spatial Development Framework, and policy formulation concerning spatial planning and development or use of land. These objectives include the redress of spatial injustices and the integration of social economic and environmental considerations and land use management. SPLUMA reinforces and unifies the National Development Plan's vision and policies by using spatial planning mechanisms to eliminate poverty and equality while creating conditions for inclusive growth by

seeking to foster a high employment economy that delivers on social and spatial cohesion.

The 5 Founding Principles set out in SPLUMA apply to the PSDF:

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



4.2 INTERNATIONAL CONTEXT

Policy alignment plays a key role in spatial governance, as a holistic approach needs to be followed to ensure all stakeholders play their roles, in order to create a conducive developmental state. As it is the goal to achieve a developmental state, all spheres of government must coordinate and function effectively. South Africa and the Northern Cape, have regional economies that extend across borders. International as well as national and provincial policies need to align to a certain extent, as indicated by the figure below, to effectively contribute to international, national and local development goals.



Figure 8: Vertical and Horizontal Policy alignment

The following international agreements, protocols and conventions play a key role in the developmental transformation of the Northern Cape.

4.2.1 UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

The United Nations Sustainable Development Goals (SDGs) is a global agenda adopted by countries in 2015 that requires the mobilisation of efforts to end all forms of poverty through sustainable economic growth,

⁵ United Nations: The Millennium Development Goals (MDGs) 2015. Millennium Summit and the United Nations Millennium Declaration. 2000.

fight inequality in a range of social needs including education, health, social protection and employment opportunities and tackle climate change and ensure environmental protection.

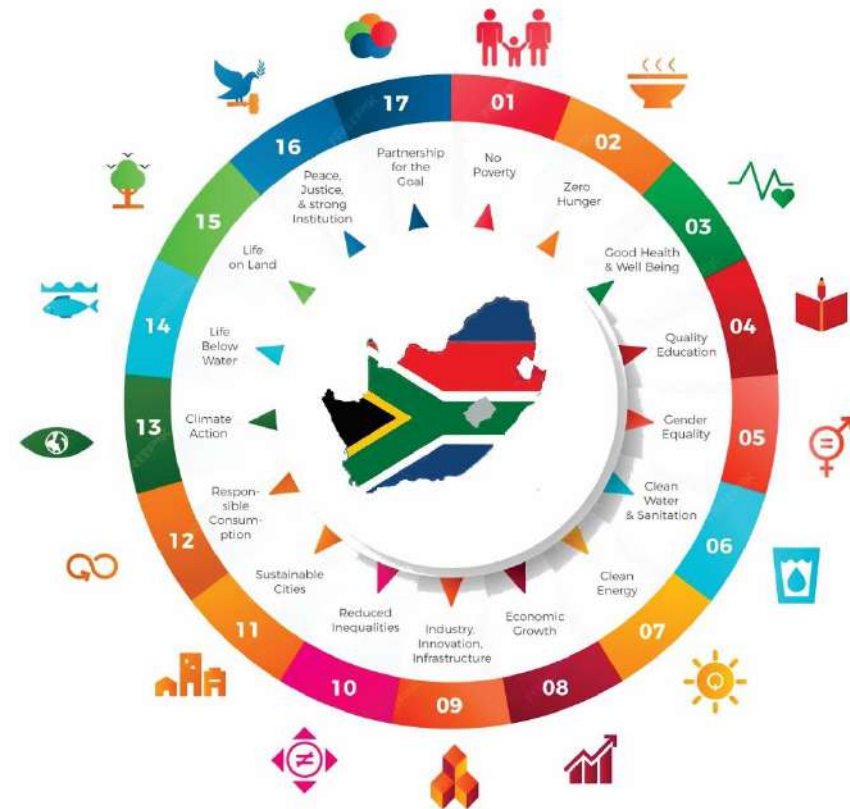


Figure 9: Sustainable Development Goals (SDG's)

The SDGs give further impetus to the Millennium Development Goals (MDGs)⁵ with the aim to end all forms of poverty. The SDGs recognise that ending poverty must coincide with strategies that:



- Provide economic growth.
- Address a range of social needs including education, health, social protection and employment opportunities.
- Tackle climate change and environmental protection⁶.

These goals build upon the Millennium Development Goals 2015, International agreements, protocols and conventions between the South African Government and the international community both globally, continentally and regionally are binding on all spheres of government and will support integrated development on a global and regional scale.

4.2.2 AGENDA 2063 – THE AFRICA WANT

The framework focuses on a social, economic and political renaissance that links the past, present and future. Overall, Agenda 2063 seeks to strengthen industrialisation, linked with agriculture and food security and aims to build on the continent's comparative advantages, such as its human development potential, natural resources and geographic location.

To become an integrated, prosperous and peaceful Africa, driven by its citizens and representing a dynamic force in the international arena, Agenda 2063 provides a strategic framework based on the following 7 aspirations:

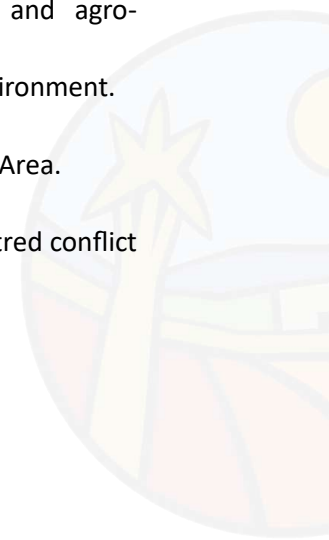
- A prosperous Africa based on inclusive growth and sustainable development.
- An integrated continent, politically united and based on the ideals of Pan-Africanism and the vision of Africa's Renaissance.
- An Africa of good governance, democracy, respect for human rights, justice and the rule of law.
- A peaceful and secure Africa.
- An Africa with a strong cultural identity, common heritage, shared values and ethics.

- An Africa whose development is people-driven, relying on the potential of African people, especially its women and youth, and caring for children.
- Africa as a strong, united, resilient and influential global player and partner.

Agenda 2063 sets the following actions:

- Eradicate poverty in the coming decades.
- Provide opportunities for all Africans to have decent and affordable housing in clean, secure and well-planned environments.
- Catalyse education and skills revolution and actively promote science, technology, research and innovation, to build knowledge, human capital, capabilities and skills to drive innovations and for the African century.
- Transform, grow and industrialise our economies through beneficiation and value addition of natural resources.
- Consolidate the modernisation of African agriculture and agribusinesses.
- Act with a sense of urgency on climate change and the environment.
- Connect Africa through world-class Infrastructure.
- Fast-track the establishment of the Continental Free Trade Area.
- Support young people as drivers of Africa's renaissance.
- Silence the guns by 2020, through enhanced dialogue-centred conflict prevention and resolution.
- Achieve gender parity in public and private institutions.
- Introduce an African Passport by 2018.
- Consolidate a democratic and people-centered Africa.
- Enhance Africa's united voice in global negotiations.
- Strengthen domestic resource mobilization, and

⁶ United Nations: Paris Agreement on climate change 2016



- Set up an implementation, monitoring, and evaluation system, underpinned by accountability and transparency, to ensure the attainment of the Agenda 2063 Aspirations.

4.2.3 THE NEW URBAN AGENDA⁷

The New Urban Agenda promotes human settlements to:

- Fulfil their social function, including the social and ecological function of land, to progressively achieve the full realisation of the right to adequate housing as a component of the right to an adequate standard of living, without discrimination, universal access to safe and affordable drinking water and sanitation, as well as equal access for all to public goods and quality services in areas such as food security and nutrition, health, education, infrastructure, mobility and transportation, energy, air quality and livelihoods.
- Be participatory, promote civic engagement, engender a sense of belonging and ownership among all their inhabitants, prioritise safe, inclusive, accessible, green and quality public spaces that are friendly for families, enhance social and intergenerational interactions, cultural expressions and political participation, as appropriate, and foster social cohesion, inclusion and safety in peaceful and pluralistic societies, where the needs of all inhabitants are met, recognising the specific needs of those in vulnerable situations.
- Achieve gender equality and empower all women and girls by ensuring women's full and effective participation and equal rights in all fields and leadership at all levels of decision-making, by ensuring decent work and equal pay for equal work, or work of equal value, for all women and by preventing and eliminating all forms of discrimination, violence and harassment against women and girls in private and public spaces.
- Meet the challenges and opportunities of present and future sustained, inclusive, and sustainable economic growth, leveraging

urbanisation for structural transformation, high productivity, value-added activities and resource efficiency, harnessing local economies and taking note of the contribution of the informal economy while supporting a sustainable transition to the formal economy.

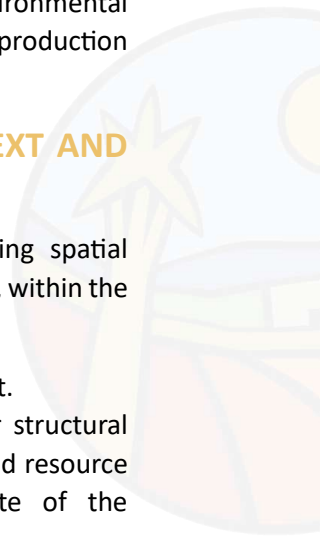
- Fulfil their territorial functions across administrative boundaries and act as hubs and drivers for balanced, sustainable and integrated urban and territorial development at all levels.
- Promote age- and gender-responsive planning and investment for sustainable, safe and accessible urban mobility for all and resource-efficient transport systems for passengers and freight, effectively linking people, places, goods, services and economic opportunities.
- Adopt and implement disaster risk reduction and management, reduce vulnerability, build resilience and responsiveness to natural and human-made hazards and foster mitigation of and adaptation to climate change.
- Protect, conserve, restore and promote their ecosystems, water, natural habitats, and biodiversity, minimize their environmental impact, and change to sustainable consumption and production patterns.

4.2.4 IMPLICATIONS OF INTERNATIONAL CONTEXT AND AGREEMENTS

International policies and agreements will have the following spatial development implications supporting the eradication of poverty, within the Northern Cape Province:

- Sustainable and integrated regional and urban development.
- Sustainable economic growth, leveraging urbanisation for structural transformation, high productivity, value-added activities and resource efficiency, harnessing local economies and taking note of the

⁷ United Nations. Habitat III United Nations Conference on Housing and Sustainable Urban Development, Quito, Ecuador. 17 – 20 October 2016



contribution of the informal economy while supporting a sustainable transition to the formal economy.

- Climate change and ecosystems, water, natural habitats and biodiversity protection, conservation, restoration and promotion, minimizing their environmental impact.
- Spatially and economically integrating the policies and plans of the Northern Cape into the global context.

4.2.5 OTHER INTERNATIONAL POLICY CONSIDERATIONS

Table 2: International Policy Considerations

INTERNATIONAL POLICY CONSIDERATIONS	
POLICY/STRATEGY	SUMMARY
Agenda 21	→ The objectives of Agenda 21 are the alleviation of poverty, hunger, sickness and illiteracy worldwide while halting the deterioration of ecosystems, which sustain life. The forum provides a platform for considering issues relating to the three core elements of sustainable development (namely economic, social and environmental). → Agenda 21 focuses on partnerships involving the public and all relevant stakeholders to resolve developmental problems and to plan strategically for the future. It also tries to address the practicalities of applying sustainable development principles in human activity and development.
UNESCO's Man and Biosphere Programme (MaB).	→ The MaB programme provides for an internationally recognized biosphere reserve network. Both the Richtersveld Cultural and Botanical Landscape and the !Khomani Cultural Landscape are identified as World Heritage Sites. Biosphere reserves consist of three components, namely: ○ Core areas: are securely protected areas for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research and other low-impact uses (education) e.g. National Parks,

	Nature Reserves, World Heritage Sites and Ramsar Sites. ○ Buffer zone: usually surrounds or adjoins the core areas, and is used for co-operative activities compatible with sound ecological practices, including environmental education, recreation, ecotourism and applied basic research, and ○ Transitional area: contains a variety of agricultural activities, settlements and other uses in which local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the area's resources.
UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage	→ The Richtersveld Cultural and Botanical Landscape is identified as a World Heritage Site. This site sustains the semi-nomadic pastoral livelihood of the Nama people, reflecting seasonal patterns that may have persisted for as much as two millennia in southern Africa. It is the only area where the Nama still construct portable rush-mat houses (<i>haru om</i>) and includes seasonal migrations and grazing grounds, together with stock posts. The pastoralists collect medicinal and other plants and have a strong oral tradition associated with different places and attributes of the landscape (UNESCO, 2007). → The !Khomani Cultural Landscape is located at the border with Botswana and Namibia coinciding with the Kalahari Gemsbok National Park (KGNP). The large expanse of sand contains evidence of human occupation from the Stone Age to the present and is associated with the culture of the formerly nomadic !Khomani San people and the strategies that allowed them to adapt to harsh desert conditions (UNESCO, 2017).
	→ The Sustainable Development Goals (SDGs), Sendai Framework and Paris Agreement are three key outputs of the UNFCCC.



United Nations Framework Convention on Climate Change (UNFCCC).	➔ The SDGs are 17 Global Goals required in order to achieve sustainable development on a global scale. Each goal is well-defined and accompanied by a subset of objectives, strategies and indicators. ➔ Both the Sendai Framework and the Paris Agreement's objective is to combat climate change. The Paris Agreement places focus on obtaining carbon neutrality whereas the Sendai Framework promotes resilience, by ensuring disaster risk reduction, and climate change adaptation strategies are included in national and provincial planning and considerations.
The UN Convention on Wetlands of International Importance - the Ramsar Convention	➔ The Orange River Mouth (2000ha) is identified as a Trans-boundary area of extensive saltmarshes, freshwater lagoons and marshes, sand banks, and reed beds shared by South Africa and Namibia. Which is Important for resident birds and for staging local migrant water birds. ➔ The upper Orange River serves as a domestic water source and is experiencing increasing demand. This could severely restrict the amount of water reaching the site (UN Ramsar, 2013).
United Nations Convention to Combat Desertification (UNCCD)	➔ The aim of the Convention's 196 parties collaborates to improve the living conditions for people in drylands, to maintain and restore land and soil productivity, and to mitigate the effects of drought (UNCCD, 2017). As the Northern Cape is a water-stricken area, it is crucial to combat further desertification where possible. The UNCCD is particularly committed to a bottom-up approach, encouraging the participation of local people in combating desertification and land degradation. The main themes emphasized within the strategy for Africa are as follows: ○ Integrated water management. ○ Agro-forestry. ○ Soil conservation. ○ Rangeland management. ○ Ecological monitoring and early warning systems.

	○ New and renewable energy sources and technologies. ○ Sustainable agricultural farming systems.
New Partnership for Africa's Development (NEPAD).	➔ The NEPAD Planning and Coordinating Agency (NEPAD Agency) was established in 2010 as an outcome of the integration of NEPAD into African Union structures and processes (NEPAD, 2010). The NEPAD Agency is the implementing agency of the African Union that advocates for NEPAD, facilitates and coordinates the development of NEPAD continent-wide programmes and projects, mobilises resources and engages the global community, regional economic communities and member states in the implementation of these programmes and projects. The four main investment programmes are as follows: ○ Human Capital Development (Skills, Youth, Employment and Women Empowerment). ○ Industrialisation, Science, Technology and Innovation ○ Regional Integration, Infrastructure (Energy, Water, ICT, Transport) and Trade ○ Natural Resources Governance and Food Security.
United Nations Conference on Housing and Sustainable Urban Development (Habitat III)	➔ A new model of urban development that envisions an urbanising world that integrates all facets of sustainable development, to promote equity, welfare and shared prosperity (UNHABITAT, 2017). Sustainable development should be achieved through strengthening national, regional and local development planning, including the provision of affordable housing, transport, safe and accessible public spaces, and safeguarding cultural and natural heritage, with a special focus on slums' upgrading.



4.3 REGIONAL CONTEXT

4.3.1 SOUTH AFRICAN DEVELOPMENT COMMUNITY (SADC)

The SADC Treaty was adopted in August 1992, redefining the basis of cooperation among the Member States from a loose association into a legally binding arrangement. Presently all 15 countries located in southern Africa are members of SADC. The main objectives of SADC are to achieve economic development, peace, security, and growth, alleviate poverty, enhance the standard and quality of life of the people of Southern Africa, and support the socially disadvantaged. These objectives are to be achieved through increased regional integration built on democratic principles and equitable and sustainable development.

4.3.1.1 SADC Vision 2050

The SADC Vision 2050 represents a high-level vision for the SADC region attending to cross-cutting issues including Gender, Youth, Environment and Climate Change, and Disaster Risk Management. It does not make any locational or country-specific mentions. The vision is expressed in three pillars based on a firm foundation of Peace, Security and Good Governance, and premised on three interrelated pillars, namely:

- Industrial Development and Market Integration
- Infrastructure Development in support of Regional Integration
- Social and Human Capital Development.



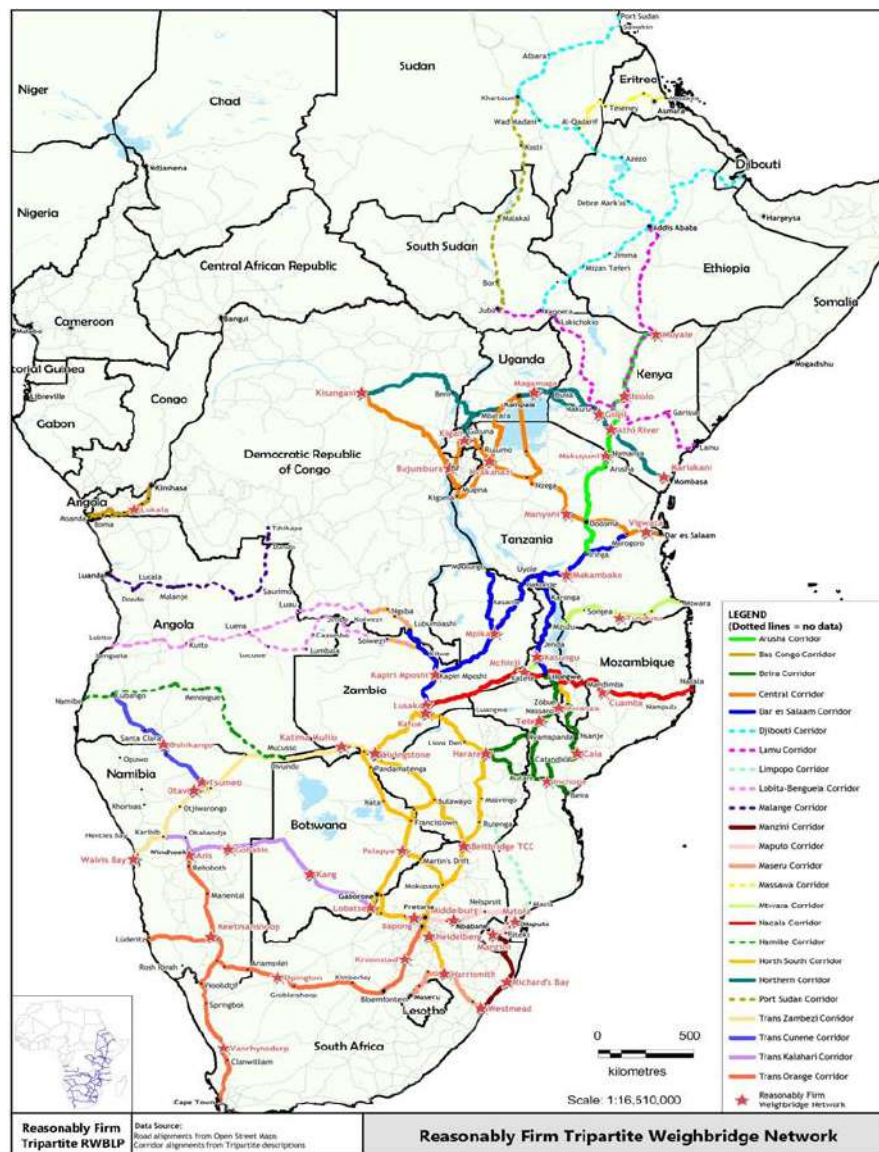


Figure 10: SADC Transport Routes

4.3.1.2 SADC – Regional Indicative Strategic Development Plan (RISDP)

The Regional Indicative Strategic Development Plan (RISDP) 2020-2030 is a regional integration development framework, operationalising the SADC Vision 2050, setting the priorities, policies and strategies for achieving the long-term goals of the Southern African Development Community. The objectives of the RISDP are to:

- ➔ Review the main cooperation and integration areas.
- ➔ Define the priority integration areas for the next fifteen years.
- ➔ Set up a logical implementation program of the main activities necessary for the achievement of the region's broader goals.
- ➔ Ensure effective sectoral linkages and enhance synergy amongst sectors.
- ➔ Provide member states, SADC Secretariat and other Institutions, regional and international stakeholders with a coherent and comprehensive long-term implementation agenda.

4.3.1.3 SADC Strategies and Policies

The regional strategies and policies promote increased regional integration built on democratic principles and equitable and sustainable development supported by objectives to achieve economic development, peace, security, growth, alleviate poverty, enhance the standard and quality of life of the peoples of Southern Africa, and support the socially disadvantaged. Some of the initiatives that could be relevant to the Northern Cape province and its planning are reflected below.

4.3.1.3.1 SADC Regional Water Policy 2005

Being part of the Orange-Senqu Basin defined by the SADC Water Policy, the Northern Cape area and its surrounds provide water resources that play a vital role in providing sustainable economic and social development of the region. These resources sustain a rich diversity of natural ecosystems and are critical for meeting the basic needs related to water supplies for

domestic and industrial requirements, and for sanitation and waste management for the region's population.

The SADC Water Policy consists of the following nine thematic areas that address the water resources management issues and challenges or are aimed at optimising the development opportunities:

- Regional Cooperation in Water Resources Management including:
 - Policy provisions on water for regional integration and socio-economic development.
 - Cooperation in water resources management of shared watercourses.
 - Inter-sectoral and international cooperation.
 - The harmonisation of national policies and legislation.
- Water for Development and Poverty Reduction contains:
 - Policy provisions on water for basic human needs and industrial development.
 - Water for food.
 - Energy security.
- Water for Environmental Sustainability contains:
 - Policy provisions on water and the environment.
 - Water quality management.
 - Control of alien invasive species in watercourses.
- Security from Water-related Disasters including:
 - Policy provisions cover people's protection from water-related disasters.
 - Disaster prediction.
 - Management and mitigation.
- Water Resources Information and Management covering:
 - Data and information acquisition and management.
 - Information sharing.
- Water Resources Development and Management including:

- Policy provisions on a river basin approach.
- Integrated planning.
- Dams and dam management; water demand management.
- Alternative sources of water.
- Regional Water Resources Institutional Framework including policy provisions covering institutional arrangements:
 - At regional and national levels.
 - For Shared Watercourse Institutions (SWCIs).
- Stakeholder Participation and Capacity Building including provisions focusing on:
 - Participation and awareness creation.
 - Capacity building and training.
 - Gender mainstreaming.
 - Research, technology development and transfer.
 - Financing integrated water resources management in the region.

4.3.1.3.2 SADC Regional Agricultural Policy ⁹

The overall objective of the Policy is to contribute to sustainable agricultural growth and socio-economic development. The Policy specific objectives are to:

- Enhance sustainable agricultural production, productivity and competitiveness.
- Improve regional and international trade and access to markets of agricultural products.
- Improve private and public sector engagement and investment in the agricultural value chains.
- Reduce social and economic vulnerability of the region's population in the context of food and nutrition security and the changing economic and climatic environment.

⁹ SADC Regional Agricultural Policy. Directorate SADC Secretariat Food, Agriculture and Natural Resources (FANR) Gaborone, Botswana. 7 June 2013



4.3.1.3.3 SADC Industrialisation Strategy, 2015-2063

The primary orientation of the strategy is the necessity for the structural transformation of the SADC region by way of industrialization, modernization, upgrading and closer regional integration with the strategic thrust that must shift from reliance on resources and low-cost labour to increased investment and enhanced productivity of both labour and capital. The Strategy:

- Is premised on the conviction that regional integration will promote industrialization.
- Recognizes that industrial policy and implementation will be largely undertaken at the national level and that its success depends on forging a compact for industry consisting of the government, the private sector, civil society, labour and the development partners.
- Seeks to engender a major economic and technological transformation at the national and regional levels within the context of deeper regional integration.
- Aims at accelerating the growth momentum and enhancing the comparative and competitive advantage of the economies of the region.
- Designed as a modernization scheme and is predicated on maximum exploitation of comparative advantage and creating enduring conditions for competitive advantage at an enterprise level.

4.3.1.3.4 SADC Climate Change Strategy¹⁰

To provide a climate-resilient and low-carbon regional economy the goal of the SADC Climate Change Strategy is to provide a regional framework for collective action and enhanced cooperation in addressing climate change issues to improve local livelihoods, achieve sustainable economic growth and contribute fairly towards preserving a global good.

The Climate Change Strategy shall guide the implementation of the Climate Change Programme over a Fifteen-year period (2015 - 2030). The Strategy

provides a short-, medium- to long-term framework for implementing elaborate and concrete climate change adaptation and mitigation programmes and projects.

The SADC Climate Change Strategy and Action Plan aims to:

- Provide a broad outline for harmonised and coordinated Regional and National actions to address and respond to the impacts of climate change in line with global and continental objectives.
- Take cognizance of the need for enhanced adaptation to the impacts of climate change bearing in mind the diverse and gender differentiated levels of vulnerabilities that are more pressing for the region.
- Aims to trigger and support nationally and regionally appropriate mitigation actions given mitigations' potential opportunities for sustainable development.

The following strategic objectives are adopted:

- To reduce vulnerability and manage risks related to climate change and climate-induced extreme events through the effective implementation of adaptation programmes.
- To promote the reduction of greenhouse gas emissions at below business as usual levels taking into consideration the respective capabilities of Member States
- To enhance the region's ability and capacity to mobilise resources, access technology and build capacity to facilitate adaptation and mitigation actions.

4.3.1.4 Transfrontier Conservation Areas

A second invaluable output of SADC's work is the creation of Transfrontier Conservation Areas (TFCAs). These are defined by SADC as a component of a large ecological region that straddles the boundaries of two or more countries encompassing one or more protected areas as well as multiple resource-use areas. Their purpose is to collaboratively manage shared

¹⁰ SADC Climate Change Strategy and Action Plan. GIZ. Version 24 July 2015



natural and cultural resources across international boundaries for improved biodiversity conservation and socio-economic development.

4.3.1.5 Spatial Development Initiative

A final output of the sub-continental agreement is the Spatial Development Initiative (SDI) programme, which is a short-term investment strategy that aims to unlock inherent economic potential in specific spatial locations in southern Africa. The programme uses public resources to promote private-sector investment in regions with a high potential for economic growth. There are ten SDIs in southern Africa of which one is located in the Northern Cape Province.

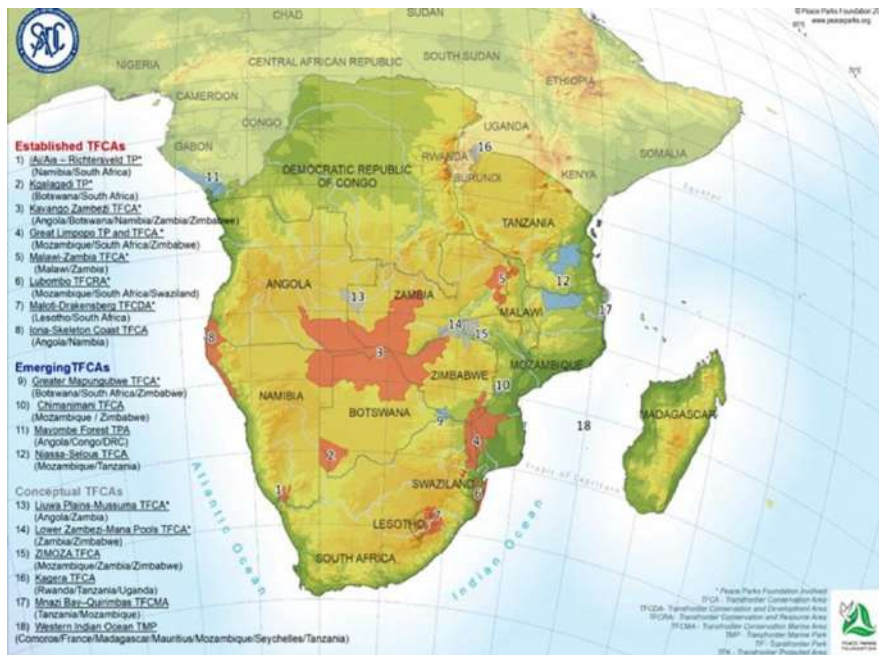


Figure 11: Transfrontier Conservation Areas (SADC Initiative)

4.3.2 IMPLICATIONS OF REGIONAL DEVELOPMENT INITIATIVES

The implications of the Regional Development Initiatives for the Northern Cape Province include the following:

- ➔ Two integrated strategic plans namely the SADC Regional Indicative Strategic Development Plan (RISDP 2020-2030) and SADC Vision 2050 promote regional integration development in Southern Africa ensuring and holistic approach to integration of policies to support the development of the broader region including the Northern Cape Province.
- ➔ Other regional policies that need to be taken into account in the Northern Cape Province include:
 - **SADC Regional Water Policy 2005:**
 - Providing a critical water resource to the province needs to integrate the following into policies:
 - Regional Cooperation in Water Resources Management
 - Water for Environmental Sustainability
 - Security from Water-related Disasters
 - Water Resources Information and Management
 - Water Resources Development and Management
 - Stakeholder Participation and Capacity Building
 - Financing integrated water resources management in the region.

○ SADC Regional Agricultural Policy

The development of agriculture within the province requires the implementation of the following objectives:

- Enhanced sustainable agricultural production, productivity and competitiveness.
- Improved regional and international trade and access to markets of agricultural products.
- Improved private and public sector engagement and investment in the agricultural value-chains.



+27 53 838 2600



info@ncpg.gov.za



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- Reduced social and economic vulnerability of the region's population in the context of food and nutrition security and the changing economic and climatic environment.

- **SADC Industrialisation Strategy, 2015-2063**

The integration of industrialisation in the province will be promoted by:

- Regional integration
- A compact for industry consisting of the government, the private sector, civil society, labour and development partners.
- Major economic and technological transformation at national and regional levels.
- Accelerating growth momentum and enhancing the comparative and competitive advantage of the economies of the region.
- Modernisation is predicated on maximum exploitation of comparative advantage and creating enduring conditions for competitive advantage at an enterprise level.

- **SADC Climate Change Strategy**

Reducing the risks of climate change within the Northern Cape Province will require policies that will promote:

- The effective implementation of adaptation programmes to reduce vulnerability and manage risks related to climate change and climate-induced extreme events.
- The reduction of greenhouse gas emissions
- Facilitating adaptation and mitigation actions.



4.4 NATIONAL CONTEXT

The following section provides a brief overview of the national policy context, which applies to the province.

POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
National Development Outcomes 	In alignment with South Africa's international commitments to the Sustainable Development Goals, as well as the NDP 2030 and other policy priorities, government has adopted the 14 National Priority Outcomes via the Department of Monitoring and Evaluation (DPME): → Outcome 1: Quality basic education. → Outcome 2: A Long and healthy life for all South Africans. → Outcome 3: All people in South Africa are and feel safe. → Outcome 4: Decent employment through inclusive growth. → Outcome 5: Skilled and capable workforce to support an inclusive growth path. → Outcome 6: An efficient, competitive and responsive economic infrastructure network. → Outcome 7: Comprehensive Rural Development. → Outcome 8: Sustainable Human Settlements and Improved Quality of Household Live. → Outcome 9: Responsive, accountable, effective and efficient developmental local government system. → Outcome 10: Protect and enhance our environmental assets and natural resources. → Outcome 11: Creating a better South Africa and contributing to a better and safer Africa in a better world. → Outcome 12: An efficient, effective and development-oriented public service. → Outcome 13: An inclusive and responsive social protection system. → Outcome 14: Transforming society and uniting the country.
National Strategy for Sustainable Development (NSSD)¹¹	The National Strategy for Sustainable Development (NSSD) promotes the development of effective tools, processes and frameworks to manage the integration between social demands, natural resource protection, sustainable use and economic development. The objectives of the NSSD include the following: → Protect the natural resource base as a priority to achieve a sustainable supply of environmental goods and services. → Ensure sustainable livelihoods and food security. → Align policy and legislation that integrates and gives effect to sustainable development at the levels/spheres where it matters most.
National Development Plan (NDP, 2011)	The National Development Plan (NDP) sets out to describe the envisioned scenario for South Africa in which its goals and objectives will be achieved. These requirements include:

¹¹ The National Department of Environmental Affairs (2011). The National Strategy for Sustainable Development and Action Plan 2011-2014 (NSSD1), November 2011.



POLICY



RELEVANT PRINCIPLES/ DIRECTIVES

- An increased Gross Domestic Product (GDP) at an annual growth rate of 5.4 % and a national saving increase to 25% of the GDP.
- The rise of fixed investment to 30% of the GDP.
- Numerous actions are required to bolster trade. These actions include, inter alia:
 - Trade penetration and diplomatic presence focused on fast-growing markets (Asia, Brazil and Africa).
 - The focus of implementation on Regional Integration Strategies.
 - The involvement of almost every government department in its implementation, not only at national but also at provincial and municipal levels.

The National Development Plan Vision for 2030 promotes a shift from a state providing a range of social services and security, to a state, in partnership with communities, must build on the platform of social services and social security and contribute to a more balanced approach by developing the capabilities of people. The development of and upgrading of capabilities to enable sustainable and inclusive development requires:

- **An economy that will create more jobs:**
 - The national development plan proposes to create 11 million jobs by 2030 by:
 - Realising an environment for sustainable employment and inclusive economic growth.
 - Promoting employment in labour-intensive industries.
 - Raising exports and competitiveness.
 - Strengthening governments' capacity to give leadership to economic development.
 - Mobilising all sectors of society around a national vision.
- **Improving Infrastructure**

The NDP recommends the increase in capital investment spending in economic infrastructure to crowd in private investment rather than consumption. These include capital investment in roads, rail, ports, electricity, water sanitation, public transport and housing. The upgrading of informal settlements, public transport infrastructure and systems, water schemes and renewable energy are some of the prioritised investments.
- **Transition to low carbon economy.**
- **An inclusive and integrated rural economy.**
- **Reversing the spatial effects of apartheid.**
- **Rural restructuring zones**
- These rural areas have large populations that are experiencing change. Such areas need management, institutional development, land and tenure reform, infrastructure provision and economic stimuli. These include the more densely populated parts of the previous homelands, where there are population dynamics and enough people to provide the basis for viable markets. There may also be areas with agricultural, tourism or mining potential.
- **Resource critical regions**



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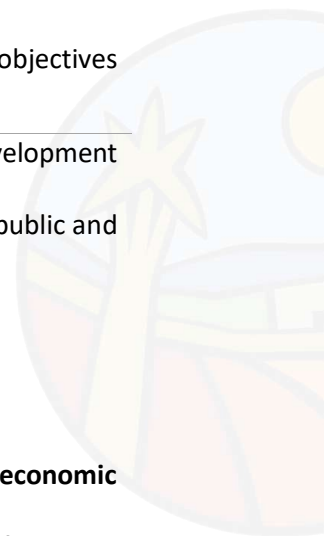


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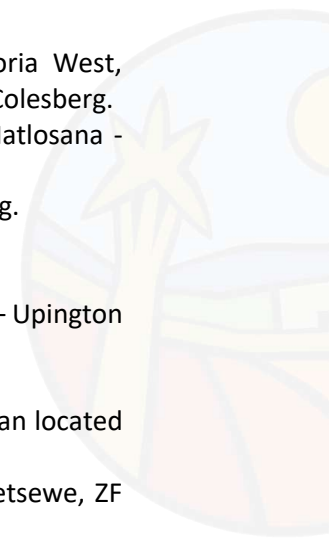


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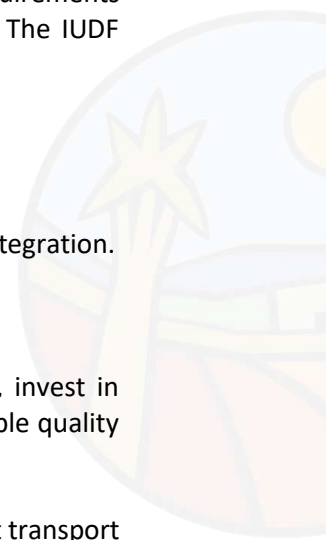
POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	These regions have highly valued natural resources that provide ecosystem lifelines to the country and may require specific policies to ensure their sustainability. They may include areas of highly valued mineral resources; areas of great importance for biodiversity; and critical water production areas. → Transnational development corridors These corridors are critical to creating an integrated southern African economy, which requires specific interventions around economic stimulus and trade and transport networks. The North Western Transformation Corridor between Namibia, Northern Cape, Botswana and the North West Province is recognised as a primary transnational development corridor within the NSDF. → Special intervention areas ○ Job Intervention zones - Areas that have lost more than 20 percent of their jobs over the past decade, with significant losses to the national economy. The state may seek to stimulate the growth of new sectors, develop new skills or, in extreme cases, promote out-migration. ○ Growth management zones - areas of rapid anticipated growth that may require special planning and management. ○ Green economy zones - These are zones with proven potential to create “green jobs”, where short-term state intervention could leverage significant private development. Significance to the PSDF Region: The NDP indicates that SDFs are a mechanism for binding municipalities and sector departments to implement the IDP objectives and projects, as the SDF has the legal backing to do so through SPLUMA.
National Spatial Development Framework (NSDF,2022) 	→ The NSDF introduces five National Spatial Development Frames that set out the desired future National Spatial Development Pattern for South Africa in 2050. → These frames spatially direct the targeted and collective use of the plans, budgets, and actions of a wide range of public and private sector actors to, over time: → Capitalise on key national spatial assets, locational potentials, and agglomeration opportunities; and → Bring about decisive, rapid, sustainable, and inclusive national development and transformation at scale. → The five Frames are: → Frame One: Urban Regions, Clusters and Development Corridors as the engines of national transformation and economic growth: → To focus and sustain national economic growth, drive inclusive economic development, and derive maximum transformative benefit from urbanisation and urban living. → Frame Two: Productive Rural Regions and Regional Development Anchors as the foundation of national transformation:



POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	→ To ensure national food security, rural transformation rural enterprise development and quality of life in rural South Africa through a set of strong urban-rural development anchors in functional regional-rural economies. → Frame Three: National Ecological Infrastructure System as an enabler for a shared and sustainable resource foundation: → To protect and enable sustainable and just access to water and other national resources for quality livelihoods of current and future generations. → Frame Four: National Connectivity and Economic Infrastructure Networks as an enabler for a shared, sustainable, and inclusive economy: → To develop, expand and maintain a transport, trade, and communication network in support of national, regional and local economic development. → Frame Five: National Social Service and Settlement Infrastructure Network in support of national well-being: → To ensure effective access to the benefits of high-quality basic, social, and economic services in a well-located system of vibrant rural service towns, acting as urban-rural anchors and rural-rural connectors. → Significance to the PSDF Region: → The province falls within the Northwestern Transformation Corridor and Arid Innovation Region. → Sol Plaatje is classified as a National Urban Node in the Province. → Regional Development Anchors include Calvinia, Springbok, Upington, Kuruman and De Aar. → Key Rural Service Centres include Port Nolloth, Steinkopf, Kakamas, Groblershoop, Prieska, Britstown, Victoria West, Carnarvon, Kathu, Olifantshoek, Danielskuil, Campbell, Douglas, Griekwastad, Hopetown, Ritchie, Richmond and Colesberg. → Inter-Regional Rail Corridor (Windhoek – Upington – De Aar, Beaufort West – De Aar – Kimberley – City of Matlosana - Gauteng). → Key Railroads between Kathu, Aggeneys and Saldanha, Cape Town, Beaufort West, De Aar, Kimberley and Gauteng. → Inter-Regional Road Corridor – N7 from Cape Town via Namibia to Angola. → Key National Roads include the N1, N7, N14. → Key Regional Roads include the N8 (Maseru - Bloemfontein to Kimberley - Groblershoop and N10 (Groblershoop – Upington to Namibia). → National Protected Areas and Transfrontier Parks (Richtersveld and Kgalagadi Transfrontier Parks). → There are three (3) Import and Export Nodes within the province along the Namibia border and the Atlantic Ocean located at Boegoebaai, Nakop (N10 – Namibia Border) and Vioolsdrif (N7 – Namibia Border). → Mining Activities within the northern and western parts of the Province around Frances Baard, John Taolo Gaetsewe, ZF Mgcawu and Namakwa Districts. → National Eco-Resource Production Region around Hartswater. → Special Economic Zone (Aggeneys). → Proposed IDZ at Boegoebaai. → Upington is identified as an International Cargo Airport.



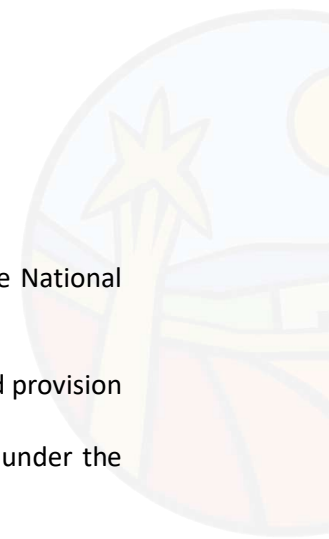
POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
Integrated Urban Development Framework (IUDF,2016) 	Urbanisation will result that by 2030, almost three-quarters (71.3%) of the South African population will reside in urban areas. The Integrated Urban Development Framework (IUDF) is the government's policy position to guide the future growth and management of urban areas. The IUDF replies and builds on: → Goal 11 of the Sustainable Development Goals (SDGs): → "Making cities and human settlements inclusive, safe, resilient and sustainable." → Chapter 8 of the National Development Plan (NDP): "Transforming human settlements and the national space economy' and its vision for urban South Africa." By 2030 South Africa should observe meaningful and measurable progress in reviving rural areas and in creating more functionally integrated, balanced and vibrant urban settlements. Spatial transformation is the overall outcome of the IUDF, providing a New Deal for South African cities and towns, by: → Steering urban growth towards a sustainable growth model of compact, connected and coordinated cities and towns. → Guiding the development of inclusive, resilient, and livable urban settlements. → Addressing the unique conditions and challenges facing South Africa's cities and towns directly. In pursuing this vision for South Africa's urban the different types of cities and towns, each with different roles and requirements require the interpretation and pursuance of this transformative vision in differentiated and locally relevant ways. The IUDF introduces four overall strategic goals in support of spatial transformation: → Spatial integration: To forge new spatial forms in settlement, transport, social and economic areas. → Inclusion and access: To ensure people have access to social and economic services, opportunities and choices. → Growth: To harness urban dynamism for inclusive, sustainable economic growth and development. → Governance: To enhance the capacity of the state and its citizens to work together to achieve spatial and social integration. These strategic goals inform the priority objectives of the nine policy levers: → Integrated urban planning and management. Cities and towns that are well-planned and efficient, and so capture the benefits of productivity and growth, invest in integrated social and economic development, and reduce pollution and carbon emissions, resulting in a sustainable quality of life for all citizens. → Integrated transport and mobility. Cities and towns where goods and services are transported efficiently, and people can walk, cycle and use different transport modes to access economic opportunities, education institutions, health facilities and places of recreation. → Integrated sustainable human settlements. Cities and towns that are liveable, integrated and multi-functional, in which all settlements are well connected to essential and social services, as well as to areas of work opportunities.



POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	→ Integrated urban infrastructure. Cities and towns have transitioned from traditional approaches to resource-efficient infrastructure systems, which provide for both universal access and more inclusive economic growth. → Efficient land governance and management. Cities and towns grow through investments in land and property, providing income for municipalities, which allows further investments in infrastructure and services, resulting in inclusive, multi-functional urban spaces. → Inclusive economic development. Cities and towns that are dynamic and efficient, foster entrepreneurialism and innovation, sustain livelihoods, enable inclusive economic growth, and generate the tax base needed to sustain and expand public services and amenities. → Empowered active communities. Cities and towns that are stable, safe, just and tolerant, and respect and embrace diversity, equality of opportunity and participation of all people, including disadvantaged and vulnerable groups and persons. → Effective urban governance. Cities and towns that have the necessary institutional, fiscal and planning capabilities to manage multiple urban stakeholders and intergovernmental relations, in order to build inclusive, resilient and liveable urban spaces. → Sustainable finances. Cities and towns are supported by a fiscal framework that acknowledges the developmental potential and pressures of urban spaces, manages their finances effectively and efficiently, and can access the necessary resources and partnerships for inclusive urban growth.
National Infrastructure Plan (NIP), 2022 	The NIP provides background on the cabinet's decision to establish a body to integrate and coordinate the long-term infrastructure build known as the Presidential Infrastructure Coordinating Council (PICC). The PICC presents the spatial mapping of infrastructure gaps which analyses future population growth, projected economic growth and areas of the country which are not served with water, electricity, roads, sanitation, and communication. Based on this work, Strategic Integrated Projects (SIPs) have been developed and approved to support economic development and address service delivery in the poorest provinces. Each SIP comprises many specific infrastructure components and programmes. The following SIPs are partially or fully relevant to the province: → SIP 5: Saldanha-Northern Cape development corridor, including integrated rail and port expansion and back-of-port industrial capacity. → SIP 6: Integrated municipal infrastructure projects. ○ Develop national capacity to assist the least resourced districts to address all the maintenance backlogs and upgrades required in water, electricity and sanitation bulk infrastructure. ○ The road maintenance programme will enhance service delivery capacity thereby impacting positively on the population. → SIP 8: Green energy in support of the South African economy.



POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	○ Support sustainable green energy initiatives on a national scale through a diverse range of clean energy options. Support bio-fuel production facilities. → SIP 9: Electricity generation to support socio-economic development. ○ Accelerate the construction of new electricity generation capacity to meet the needs of the economy and address historical imbalances. → SIP 10 Electricity transmission and distribution for all. ○ Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. ○ Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity. → SIP 11: Agri-logistics and rural infrastructure. ○ Improve investment in agricultural and rural infrastructure that supports expansion of production and employment, small-scale farming and rural development, including: • Facilities for storage (silos, fresh-produce facilities, packing houses). • Transport links to main networks (rural roads, branch train-line, ports). • Fencing of farms. • Irrigation schemes to poor areas. • Improved R&D on rural issues (including expansion of agricultural colleges). • Processing facilities (abattoirs, dairy infrastructure). • Aquaculture incubation schemes. • Rural tourism infrastructure. • SIP 12: Revitalisation of public hospitals and other health facilities. • Build and refurbish hospitals, and other public health facilities and revamp nursing colleges. • Extensive capital expenditure to prepare the public healthcare system to meet the requirements of the National Health Insurance (NHI) system. → SIP 13: National school build programme. ○ A national school build programme driven by uniformity in planning, procurement, contract management and provision of basic services. ○ Replace inappropriate school structures and address basic service backlog and provision of basic services under the Accelerated School Infrastructure Delivery Initiative (ASIDI). ○ Address national backlogs in classrooms, libraries, computer labs and admin buildings. → SIP 14: Higher education infrastructure. ○ Infrastructure development for higher education, focusing on lecture rooms, student accommodation, libraries and laboratories, as well as ICT connectivity. ○ Development of university towns with a combination of facilities from residence, and retail to recreation and transport.

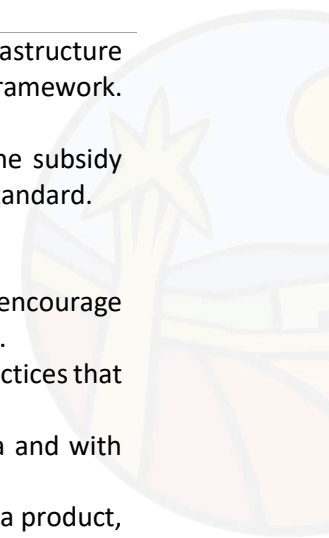


POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	○ Potential to ensure shared infrastructure such as libraries by universities, FETs and other educational institutions. → SIP 15: Expanding access to communication technology. ○ Provide broadband coverage to all households by: • establishing core Points of Presence (POPs) in district municipalities. • extend new Infraco fibre networks across provinces linking districts. • establish POPs and fibre connectivity at a local level. • further penetrate the network into deep rural areas. → SIP 16: Square Kilometre Array (SKA) and MeerKAT → SIP 17: Regional integration for African cooperation and development ○ Participate in mutually beneficial infrastructure projects to unlock long-term socio-economic benefits by partnering with fast-growing African economies with projected growth ranging between 3% and 10%. ○ The projects involving transport, water and energy also provide competitively priced, diversified, short and medium to long-term options for the South African economy. For example, electricity transmission in Mozambique (Cesul) could assist in providing cheap, clean power in the short-term whilst Grand Inga in the Democratic Republic of Congo (DRC) is long-term. ○ All these projects complement the Free Trade Area (FTA) discussions to create a market of 600 million people in South, Central and East Africa. → SIP 19: Water Infrastructure ○ Vaal-Gamagara scheme to improve water security for mines in the Northern Cape. ○ Rehabilitation of the Vaalharts-Taung Irrigation Scheme – Northern Cape and Northwest. → SIP 21: Road Upgrading ○ Road upgrading or maintenance of the N1, N2 and N3 in the Free State, Limpopo, and KwaZulu-Natal. ○ Small Harbours development – national. ○ Boegoebaai Port and Rail Infrastructure Project – Northern Cape.
Comprehensive Rural Development Plan (CRDP), 2009¹². 	Essentially, the CRDP aims to be an effective response to poverty alleviation and food insecurity by maximising the use and management of natural resources to create “vibrant, equitable and sustainable rural communities”. The vision of the CRDP is to be achieved through a three-pronged strategy based on: → Co-ordinated and integrated broad-based Agrarian Transformation. → Strategically increased rural development through infrastructure investment. → An improved land reform programme. The CRDP contextualises the Government’s aim of comprehensive, integrated, and sustainable rural development by addressing the deep poverty and destitution in many of the country’s rural areas, notably the former Bantustans, and creating sustainable

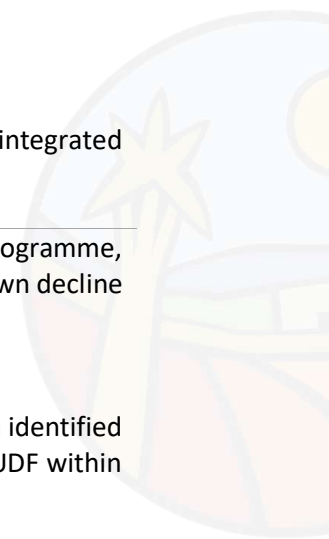
¹² Department Rural Development and Land Reform (2009). The Comprehensive Rural Development Programme (CRDP) August 2009



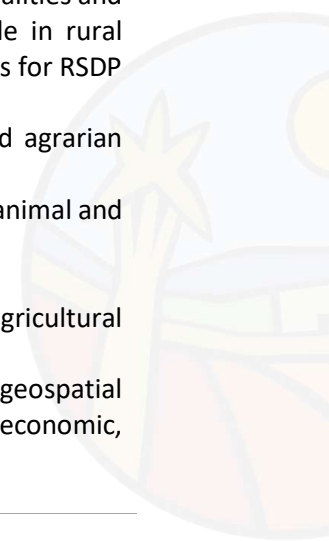
POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	rural communities throughout the country. In addition to this, it provides the Government's wish to achieve social cohesion and development in rural communities through (1) coordinated and integrated broad-based agrarian transformation; (2) an improved land reform programme; and (3) strategic investments in economic and social infrastructure in rural areas. Significance to the Region: Most of the Northern Cape Province are predominately rural and the CRDP provides a concept within which the rural economy and livelihoods could be advanced. The whole PSDF region falls within the CRDP Concept.
Human Settlements Framework for Spatial Transformation and Consolidation 2019 	The Human Settlements Framework for Spatial Transformation and Consolidation 2019 was developed having realised that the spatial location of human settlements investments did not necessarily achieve integration and that far more aggressive and accelerated intervention is required to reverse the spatial distortions. The framework is set to achieve the optimum results of spatial transformation and was developed in alignment with the NDP, NSDF, IUDF and SPLUMA. It aims to direct investment in, and development spending on, national space, to enable inclusive growth and sustainable livelihoods by outlining a package of interventions towards asset poverty alleviation and housing delivery in well-located areas with secure tenure. Through this framework, Priority Human Settlements and Housing Development Areas (PHSHDAs) were declared on 15 May 2020. Six of these PHSHDAs are within the Northern Cape Province. The framework identifies innovative mechanisms to implement measures to fast-track human settlement development in these priority areas.
National Transport Master Plan (NATMAP) 2016	→ The National Transport Master Plan (NATMAP) 2016 consolidated all current and proposed transport infrastructure development on a national scale in order to deliver a dynamic, long-term, and sustainable transportation systems framework. → The following NATMAP 2050 objectives are aimed at facilitating the vision: ○ A much-improved sustainable public transport system that is appropriately funded, with a reduction in the subsidy burden, with better and safer access, more frequent and better-quality services, and facilities to an agreed standard. ○ Greater mobility options, particularly for those who do not have cars. ○ Non-motorised transport network development. ○ A transport system that promotes better integration between land use planning and transport planning to encourage densification and sustainable development in supporting high volumes of travel required for public transport. ○ Better infrastructure, better maintained road, and rail networks, with proper management and operations practices that link and provide interchange opportunities for different modes of transport. ○ A transport system that is consistent with the real needs of people living in different parts of South Africa and with differing abilities to afford travel. ○ A transport system that charges the traveller a fair reflection of the costs of making a journey or transporting a product, financially, socially and environmentally. ○ A transport system that supports focused funding of transport priorities. ○ A transport system that has sufficient human capital to drive the vision of transport, and ○ A transport system that enables and supports rural development.



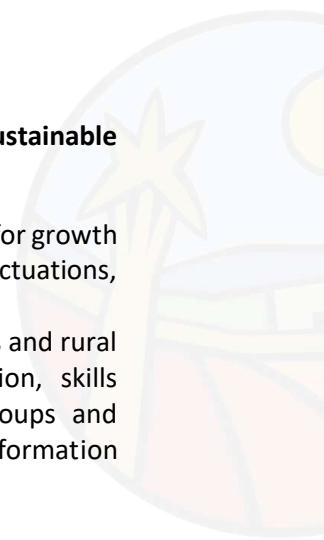
POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
DDM Model	The District Development Model is a practical Intergovernmental Relations (IGR) mechanism for all three spheres of government to work jointly and to plan and act in unison. The model consists of a process by which joint and collaborative planning is undertaken at the district and metropolitan level together by all three spheres of government resulting in a single strategically focussed Joined-Up plan (One Plan) for each of the 44 district and eight metropolitan geographic spaces in the country. The District Municipality has already seized the opportunity to support the statement made by the President of the Republic by starting the implementation of the District Development Model (DDM). The DDM has the following six pillars or working streams which must be complied with to have “ONE PLAN” Namely: → Demographic and District Profile (which we have already submitted to province and national). → Governance and Financial Management. → Integrated Services Provisioning. → Infrastructure Engineering. → Spatial Restructuring. → Economic Positioning. Key objectives of the District Development Model (DDM) include: → Managing rural-urban migration and promoting sustainable urban and rural growth and development. → Determining and/or supporting local economic drivers. → Determining and managing spatial form, land release, and land development. → Determining infrastructure investment requirements and ensuring long-term infrastructure adequacy to support integrated human settlements, economic activity, and provision of basic services, community, and social services. → Institutionalize long-term planning whilst addressing ‘burning’ short-term issues
Small Town Regeneration Strategy, 2021	The STR process involves alignment with the IUDF, DDM, CSP and ICM programmes, formulation of a vision for the programme, understanding reasons for the mixed success in the implementation of the strategy thus far, identifying reasons for town decline and within the regional context identifying strategies for town growth and development. The purpose of the STR initiative is as follows: → STR as an implementation tool of the IUDF: The IUDF has several programmes (CSP, ICM and STR) which have been identified as tools for its implementation. The approach of the STR should therefore enhance the implementation of the IUDF within small towns at the same time taking into consideration its existing programmes. → Alignment with the DDM: The DDM places a strong emphasis on all three spheres of government collaborating to formulate a plan for each district and metropolitan area. The STR, specifically at an institutional level, needs to align with the initiatives of capacitating and transforming the Inter-Governmental Relations (IGR) space found in the DDM for its successful implementation.



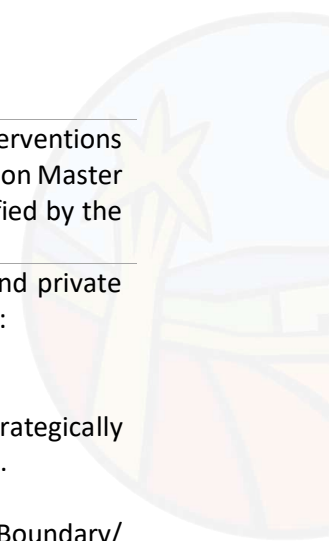
POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	→ Alignment with the Cities Support Programme and Intermediate City Municipalities Programme: The CSP and ICM spearheaded by DCoG and National Treasury –are capacity-building programmes aimed at building resilient and inclusive cities as well as institutions. The STR needs to align with the broader goal of these implementation tools and define its support of these programmes. The STR Objectives: → A spatially enabling environment. → Broad-based approach to local social development. → Equitable economic growth. → Co-operative, coherent, and responsible governance. → Strengthened institutional mechanisms for M&E and data management.
Northern Cape Rural Development Sector Plans	The main objective of the Rural Development Sector Plans was to formulate a comprehensive plan of action for enhancing rural development in each of the District Municipalities in South Africa. The strategic intent was that these Rural Development Plans would enhance the impact of intensified government investments through a review of current developmental realities and potential in these areas and coming up with interventions that would bring change in the livelihoods of people in rural communities in line with the directives in this regard as noted in the National Development Plan. The key programmes for RSDP include: → Food Security, Land Reform, and Restitution- Acquires and redistributes land, and promotes food security and agrarian reform programmes. → Agricultural Production, Biosecurity, and Resources Management - Oversees livestock production, game farming, animal and plant health, natural resources, and disaster management. → Rural Development - Facilitates rural development strategies for socio-economic growth. → Economic Development, Trade, and Marketing - Promotes economic development, trade, and market access for agricultural products and fosters international relations for the sector. → Land Administration - Provides and maintains an inclusive, effective, and comprehensive system of planning, geospatial information, cadastral surveys, and legally secure tenure, and conducts land administration that promotes social, economic, and environmental sustainability.
Green Hydrogen Strategy,2021	The Northern Cape Green Hydrogen Strategy was developed in 2021 and has identified the following key objectives: → Establish the Northern Cape as a future leader in the production and export of green hydrogen.



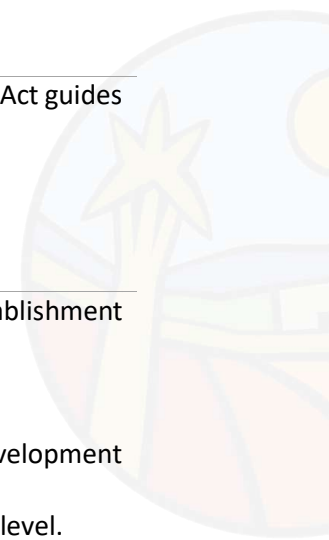
POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	➔ To realise the province's green hydrogen potential, catalytic infrastructure in the form of the planned Boegoebaai Port and Rail development, as well as the adjacent Green Hydrogen Special Economic Zone (SEZ), storage infrastructure, transmission grids, and pipelines, will be developed. ➔ To maximise green hydrogen's potential for job creation, skill development, youth employment, and investment attraction. This will be accomplished through strategic localisation and reindustrialisation of manufacturing aimed at green hydrogen and renewable energy components and products, such as attracting tier-1 solar PV panel and wind turbine manufacturers to the Northern Cape by 2025. ➔ To have 5 GW of electrolysis capacity supported by 10 GW of renewable energy generation under construction in the Northern Cape by 2025 – 2026. ➔ Use the Northern Cape's green hydrogen generation capacity to support the South African economy's accelerated decarbonisation, particularly the large, carbon-intensive industrial base, and to attract heavy industry wishing to 'go green' to relocate to South Africa. ➔ Use green hydrogen and concessional development finance to support South Africa's Just Energy Transition.
Provincial Growth and Development Plan (PGDP,2019)	The PGDP of the Northern Cape is based on four drivers, aimed at creating an enabling environment, which aims to create a developmental-orientated state. The drivers are identified as: ➔ Economic Growth, Development, and Prosperity. ➔ Social Equity & Human Welfare. ➔ Environmental Sustainability and Resilience. ➔ Accountable & Effective Governance. The PGDP, with its long-term vision, aims to place the Northern Cape Province on a new development trajectory of sustainable development. The PGDP outlines that the Northern Cape Province's economy is highly dependent on the primary and tertiary sectors for growth and employment. This concentration implies economic vulnerability on several fronts such as external economic fluctuations, climate change, international commodity price changes and national government policy priorities. Spatial transformation in the Northern Cape Province implies inclusive and sustainable economic growth. Small towns and rural communities must become Economic Transformation, Growth and Development drivers through diversification, skills development, infrastructure development, optimised resource utilisation, the empowerment of vulnerable groups and investment attraction. In line with the SPLUMA Act 16 of 2013, critical factors in achieving spatial and economic transformation in the province include: ➔ Equitable access to economic and employment opportunities. ➔ Equitable access to transport, energy, water, bulk and communications infrastructure. ➔ Equitable access to land and food security. ➔ Equitable access to social services and public amenities. ➔ Equitable access to a healthy natural environment.



POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	→ Equitable access to housing and municipal infrastructure. → Equitable access to natural resources.
Economic Reconstruction and Recovery Plan, 2023	The Plan is aimed at stimulating equitable and inclusive growth. The South African Economic Reconstruction and Recovery Plan has three phases: → Engage and Preserve - which includes a comprehensive health response to save lives and curb the spread of the pandemic. → Recovery and Reform - which includes interventions to restore the economy while controlling the health risks; and → Reconstruct and Transform - which entails building a sustainable, resilient and inclusive economy. In terms of the Plan, the following priority interventions will be made: → Aggressive infrastructure investment. → Employment orientated strategic localization, reindustrialisation and export promotion. → Energy security. → Support for tourism recovery and growth. → Gender equality and economic inclusion of women and youth. → Green economy interventions. → Mass public employment interventions. → Strengthening food security, and → Macro-economic interventions.
Draft Northern Cape Water & Sanitation Master Plan, 2023-2024	The National Water Services Master Plan (NWSMP) consists of three (3) Volumes with Volume 3 providing actions/interventions that need to be implemented on national, provincial and local levels. The development of Provincial Water and Sanitation Master Plans (Provincial) and 5-Year Reliable Implementation Plans (Local) are two of the key programmes that were identified by the NW&SMP to facilitate progress towards a water secure future for South Africa.
Draft Northern Cape Human Settlements Master Plan 2023/2024	One of the fundamental principles of developing a Sustainable Human Settlement Master Plan is that all public and private housing projects in cities, towns and villages in the Northern Cape should comply with the following spatial objectives: → Promote the availability of residential and employment opportunities in close proximity to each other. → Contribute towards the correction of historically distorted spatial patterns of settlement in towns by filling the strategically located vacant strips of land between segregated communities, and providing for economic and social integration. → Optimise the use of existing resources including bulk infrastructure, roads, transportation and social facilities, and → Contain the phenomenon of urban sprawl in urban areas through the introduction of an Urban Development Boundary/ Urban Edge which will contribute towards the development of more compact towns through processes of infill development and densification – especially around economic activity nodes and along public transport corridors. The Purpose of developing a Human Settlements Master Plan is as follows:



POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
	→ Practical allocation of constrained resources to development opportunities. → To provide an approach to help prioritise projects while securing political consensus for the arrangement of their implementation. → Creating more unified development by integrating all the individual cross-sectional role players' interventions. → Ensuring that Municipal IDP's have a distinct housing focus. → Linking the unified development plan with the feasible reality of delivering housing projects; and → Providing secure housing budgeting and funds at district municipality as well as provincial levels.
The Marine Spatial Planning Act (Act No. 16 of 2018)	The National Framework for Marine Spatial Planning (MSP) in South Africa, gazetted in 2017, provides high-level direction for undertaking MSP in the context of South African legislation and policies as well as existing planning regimes. South Africa, MSP offers a practical way to address specific challenges and to select appropriate management strategies to maintain a good status of ecosystem health that will, in turn, facilitate the advancement of socio-economic development. By embracing MSP, South Africa seeks to achieve the following desired outcomes: → Unlocking the ocean economy. → Engaging with the ocean. → Ensuring healthy marine ecosystems, and → Contributing to good ocean governance.
Special Economic Zones Act (Act 16 of 2014)	To provide for the designation, promotion, development, operation and management of Special Economic Zones. The Act guides in terms of the following: → Source of Funds of the Special Economic Zones. → Support Measures for Business within the Zone. → Administration and Management. → Type and sort of Business that may be located within the Zones.
Traditional Leadership and Governance Framework Act (Act 41 of 2003)	This Act gives effect to Chapter 12 of the Constitution (Sections 211 and 212) (Traditional Leaders) and ensures the establishment of traditional councils, which, among other things, should perform the following functions: → Administering the affairs of the traditional community in accordance with customs and tradition. → Assisting municipalities in identifying community needs. → Facilitating the participation of the traditional community in the development or amendment of an integrated development plan of a municipality in whose area that community resides. → Participating in municipal development programs as well as the development of policy and legislation at the local level. → Promoting the ideals of cooperative governance, integrated development planning, sustainable development, and service delivery, and → Promoting indigenous knowledge systems for disaster management and sustainable development.



POLICY	RELEVANT PRINCIPLES/ DIRECTIVES
Northern Cape Nature Conservation Act, 09 of 2009.	The Northern Cape Nature Conservation Act, 09 Of 2009 aims: → To provide for the sustainable utilisation of wild animals, aquatic biota and plants. → To provide for the implementation of the Convention on International Trade in endangered species of wild fauna and flora. → To provide for offences and penalties for contravention of the Act. → To provide for the appointment of nature conservators to implement the provisions of the Act. → To provide for the issuing of permits and other authorisations.
Draft Preservation and Development Agriculture Land Bill	The Draft Preservation and Development Agriculture Land Bill aims to protect and preserve agricultural land for the development of South Africa's agricultural sector. The Bill seeks to provide for the following: → agricultural land evaluation and classification. → the preparation, purpose and content of provincial agricultural sector plans. → the declaration of protected agricultural areas. → agro-ecosystem identification, authorisation and management. → principles for the management of agricultural land. → establishment and management of a related national agro-eco information system, and → for 'competent authorities' to list and delist activities or areas within authorised agro-ecosystems.



4.4.1 NATIONAL SPATIAL DEVELOPMENT FRAMEWORK

4.4.1.1 Spatial Development Vision and Mission

The Spatial Development Vision and Mission build on the overarching goal of equity, unity, and connectedness, and reads as follows:

Vision Statement:

“All Our People Living in Shared and Transformed Places in an Integrated, Sustainable and Competitive National Space Economy”

Mission Statement:

“Making our Common Desired Spatial Future Together Through Better Planning, Investment, Delivery and Monitoring”.

4.4.1.2 NATIONAL SPATIAL DEVELOPMENT FRAMES

The NSDF introduces five National Spatial Development Frames that set out the desired future National Spatial Development Pattern for South Africa in 2050.

These frames spatially direct the targeted and collective use of the plans, budgets, and actions of a wide range of public and private sector actors to, over time:

- Capitalise on key national spatial assets, locational potentials, and agglomeration opportunities; and
- Bring about decisive, rapid, sustainable, and inclusive national development and transformation at scale.

The six Frames are:

- **Frame One: Urban Regions, Clusters and Development Corridors as the engines of national transformation and economic growth:**

To focus and sustain national economic growth, drive inclusive economic development, and derive maximum transformative benefit from urbanisation and urban living.

- **Frame Two: National Development Corridors as Incubators and Drivers of New Economies and Quality Human Settlements**

To focus and support densely populated settlements and economic activities located along corridors and railways. The development in these regions should be strengthened and supported through targeted strategic interventions.

- **Frame Three: Productive Rural Regions and Regional Development Anchors as the foundation of national transformation:**

To ensure national food security, rural transformation rural enterprise development and quality of life in rural South Africa through a set of strong urban-rural development anchors in functional regional-rural economies

- **Frame Four: National Ecological Infrastructure System as an enabler for a shared and sustainable resource foundation:**

To protect and enable sustainable and just access to water and other national resources for quality livelihoods of current and future generations.

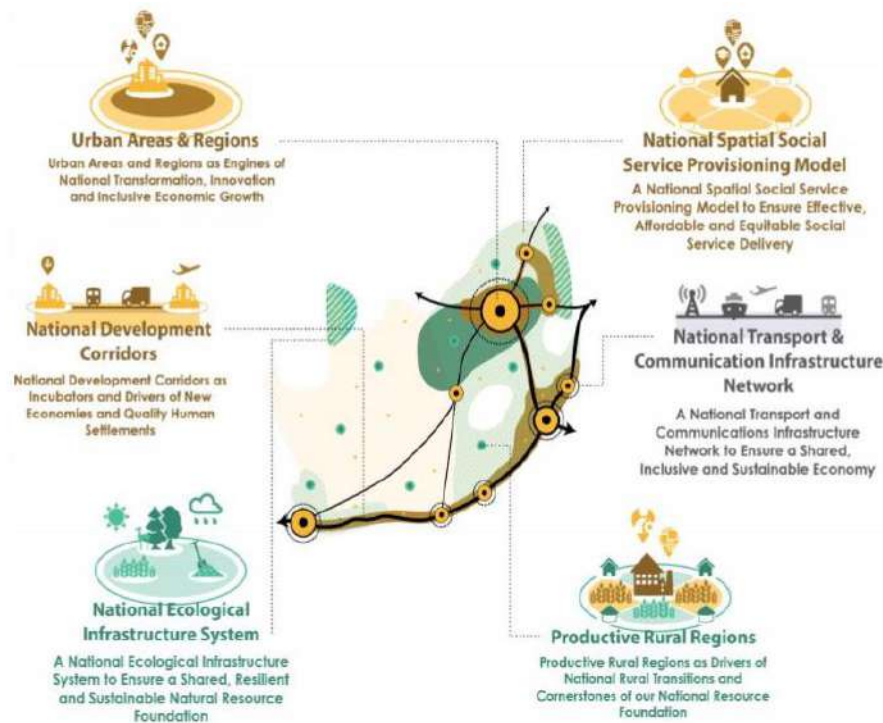
- **Frame Five: National Connectivity and Economic Infrastructure Networks as an enabler for a shared, sustainable, and inclusive economy:**

To develop, expand and maintain a transport, trade, and communication network in support of national, regional and local economic development and

- **Frame Six: National Social Service and Settlement Infrastructure Network in support of national well-being:**

To ensure effective access to the benefits of high-quality basic, social, and economic services in a well-located system of vibrant rural service towns, acting as urban-rural anchors and rural-rural connectors.





4.4.1.3 National Spatial Development Levers

Specific reference to Productive Rural Regions as Drivers of National Rural Transitions and Cornerstones of our National Resource Foundation is made as the lever specifically aligns with the Northern Cape province and settlement hierarchy.

- Takes a systemic view of rural areas and proposes the 'soft delineation' of 'polycentric functional rural regions' that have the following characteristics:

- At least one well-connected regional development anchor, both within the region and on the national transportation network, to 'anchor' the region.
- Social, cultural, historical, economic, and cultural characteristics and attributes that would allow for the development of a 'functional rural region'.
- The potential for intra-regional rural-rural and rural-urban trade.
- Requires wise natural resource use, management, and protection.
- Makes use of the Social Service Provisioning Model to deliver social services in villages, towns, and regional development areas.
- Envisages the use of 'rural edges' to bolster the 'regional systems' from the intrusion of non-compatible and potentially destructive land uses.

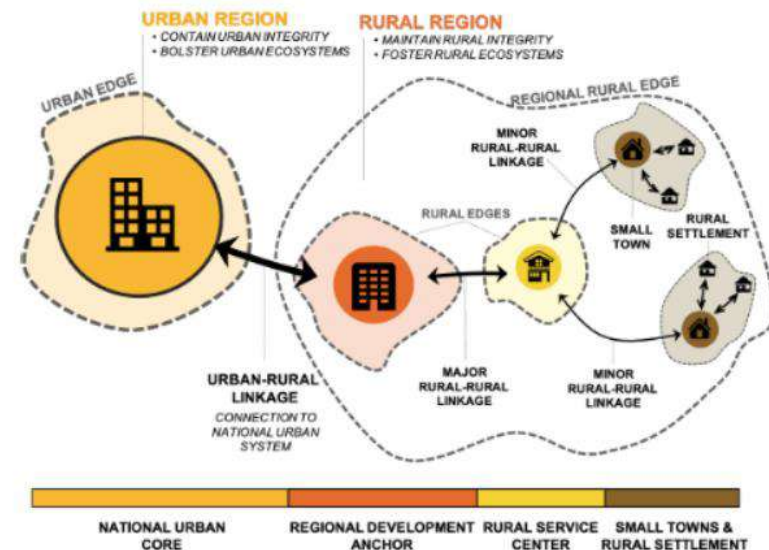


Figure 13: Schematic Presentation of the Regional-Rural Development



4.4.1.4 National Spatial Development Outcomes

National Spatial Outcome Four - Productive rural regions, supported by sustainable resource economies and strong and resilient regional development anchors that provide access to people living in rural areas to the national and global economy:

- Differentiated rural development entailing small, medium, and large-scale agriculture, agro-processing, agro-eco enterprises, tourism, and natural resource management and protection, play a key role in creating economic opportunities and addressing unemployment, poverty, and inequality in these regions.
- Rural regions that are well-functioning, well-connected, and productive strengthen and improve rural development and the well-being of rural communities, as well as ensure the wise use, management, and protection of nationally significant natural resources.
- Large and strategically located towns in rural areas with significant rural-regional reach in terms of social service provision, tourism, personal services, and administrative functions, are identified and developed and/or strengthened as 'regional development anchors' that act as conduits for:
 - Mutually beneficial urban-rural and rural-rural linkages.
 - Strengthen the development of functional regional-rural systems.
 - Enhance national food security, rural transformation, and rural enterprise development.
 - Quality of life in rural South Africa, and
 - Support urban consolidation, innovation and growth, and the provision of affordable access to housing and municipal services.

4.4.1.5 National Spatial Transformation and Economic Transition Regions

4.4.1.5.1 NSAA ONE: NATIONAL SPATIAL TRANSFORMATION AND ECONOMIC TRANSITION REGIONS

NATIONAL TRANSFORMATION CORRIDORS

While these three corridors have their unique contexts and challenges, they share many similarities: They all have (1) large, youthful populations, (2)

shared histories of deep deprivation and neglect as former Apartheid Bantustans, (3) high levels of poverty and unemployment, and (4) dense and sprawling rural settlement forms.

Guided by the Ideal National Spatial Development Patterns and the NSDF Sub-Frames, the following national priorities require strategic spatial action to (1) bring about transformation in the national spatial pattern, (2) enable national and regional-scale climate and developmental adaptation, and (3) achieve developmental impact at scale:

Key Actions and Interventions Include:

- Extend and improve transportation networks, maintain, and upgrade existing infrastructure, particularly roads, increase investment in high-speed ICT infrastructure, and improve urban-rural and rural-rural connectivity.
- Create a network of strong and vibrant existing and emerging cities and large towns to serve as full-fledged national urban nodes, viable regional development anchors, and well-equipped rural service centres.
- Ensure effective city and town management to prevent sprawl, ensure innovative settlement planning and urban land reform, well-managed land use, and enable infrastructure investment.
- Introduce rural design, urban/rural edges, land administration, and urban land reform in order to consolidate place-specific urbanisation in dense rural settlements within a strategically located network of rural service centres and towns.
- Provide catalytic, innovative and contextually suitable sustainable infrastructure, and social and basic services to support enterprise development, well-being and inclusive growth with both an ecological and human-focussed approach.
- Prioritise the development of human capital and people-centred enterprises, such as arts and culture, tourism, knowledge creation, education, and innovation.
- Optimise agricultural opportunities in the region and support the establishment of small-scale farming activities, agri-enterprises, and agri-led industrialisation in order to foster productive rural regions,

improve national food security, strengthen national water security; and so on.

- Develop the region's tourism and creative industries, with a focus on small and medium-sized farming operations and agri-eco production.
- Protect and manage ecological infrastructure, national resources, and protected areas, including SWSA's and high-value agricultural land, and
- Establish strong regional growth and development compacts that include all role-players, such as the three spheres of government, traditional leaders, communities (particularly youth), the private sector, CBOs, NGOs, and organized labour, and ensure collaborative spatial development planning and governance across provincial and municipal boundaries.

NORTHWESTERN NATIONAL SPATIAL TRANSFORMATION AND ECONOMIC TRANSITION REGION



Figure 14: NSAA One: National Spatial Transformation and Economic Transition Regions, NSDF 2022



+27 53 838 2600



info@ncpg.gov.za



<http://www.northern-cape.gov.za>



T&I Building, 69 Memorial Road, Monuments Heights, Kimberley

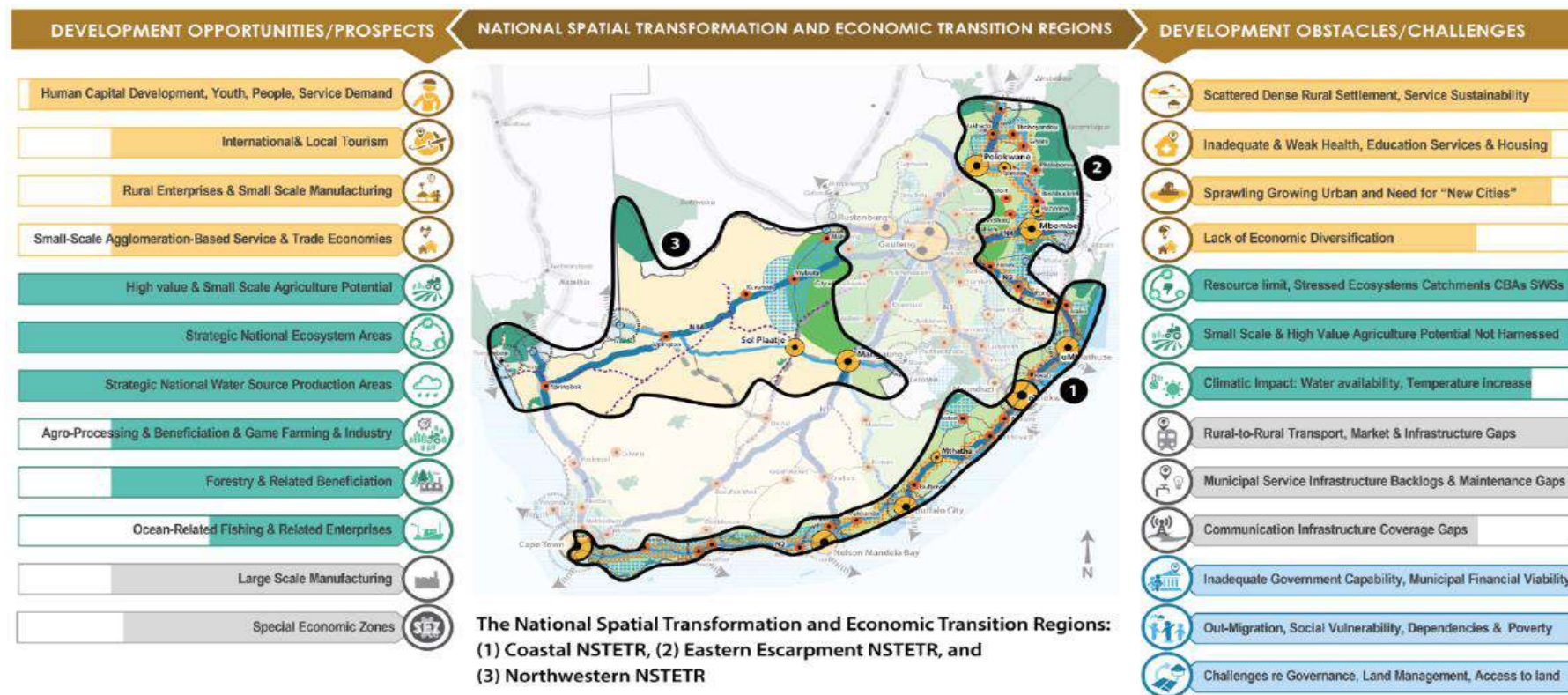
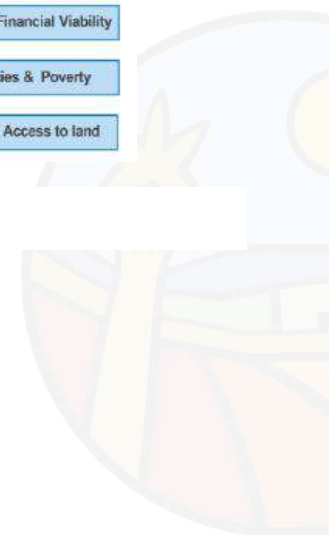


Figure 15: National Transformation Corridors Overview, NSDF 2022



4.4.1.5.2 NSAA Five: The Arid-Innovation Region

- Pursue regional adaptation, economic diversification and Agri innovation at scale to ensure greater resilience of livelihoods in the region.
- Carefully consider expansion and development of new settlements in very arid areas, and instead pursue and support compact settlement development around social service nodes and public transport facilities and along taxi routes in existing regional development anchors, rural service centres and/or villages/hamlets.
- Enhance regional, cross-provincial, and cross-municipal boundary collaborative spatial development planning and governance.
- Establish strong regional growth and development compacts, including all role-players, i.e., the three spheres of government, traditional leaders/authorities, communities (notably youth), the private sector, CBOs, NGOs, and organised labour.
- Encourage and support the inhabitants of isolated small towns and villages/hamlets in the region to become self-sufficient and 'go off the grid' with regard to water, electricity, sanitation services, and food production; and
- Enhance ICT linkages to support distance learning and provide access to other social services and economic opportunities.



Figure 16: NSAA Five: The Arid-Innovation Region, NSDF 2022



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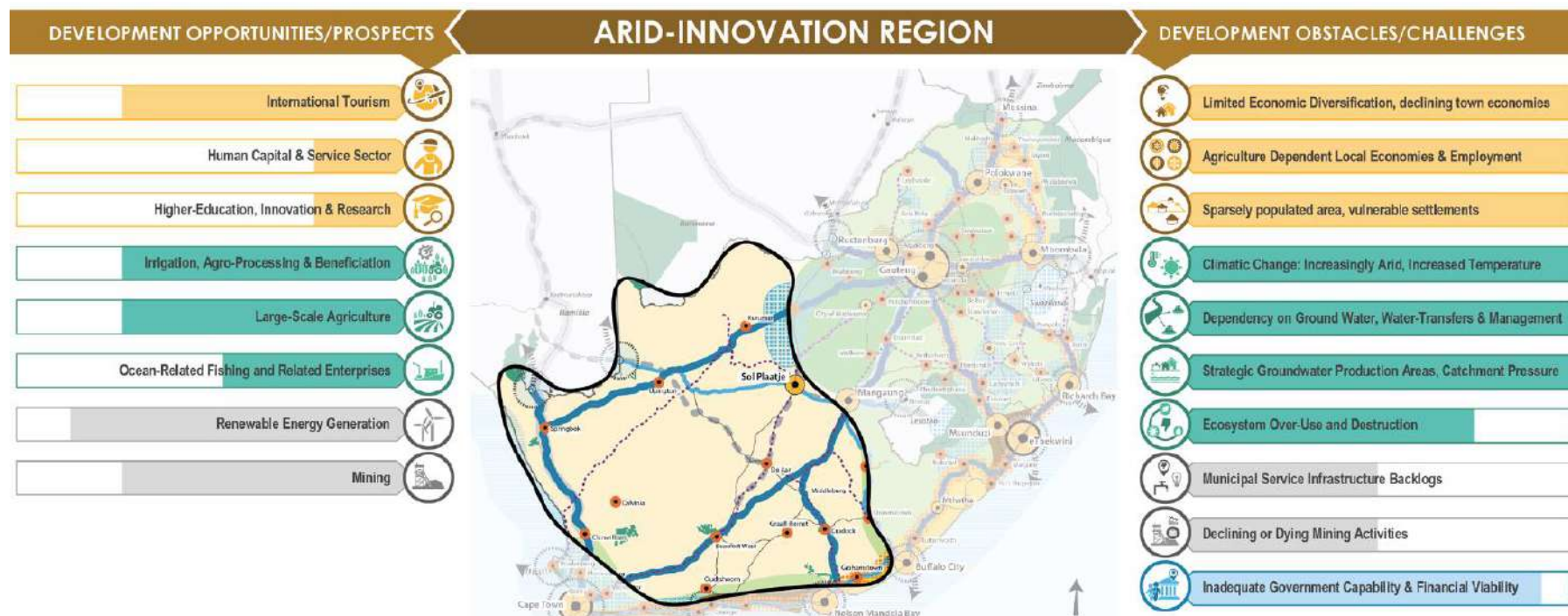


Figure 17: Arid Innovation Region Overview, NSDF 2022

4.4.2 KAROO REGIONAL SPATIAL DEVELOPMENT FRAMEWORK¹³

The Karoo Region is recognised as a national priority and as such forms part of the strategic implementation focus area of the NSDF i.e., the “Arid Innovation Region” NSAA.

For the KRSDF, the following concepts are important:

- The importance of small rural towns, as well as larger rural towns/development anchors, not only as service nodes for local communities, but also as points of connection, distribution, and value addition in the rural economy.

- More exploration is required of the economic/developmental role of different rural settlements. Settlement development and social service provision should be linked to functional rural regions/rural production regions.
- Access to land and land reform requires more focus than it has received in the existing planning documents.

4.4.2.1 Key Economic Sectors for Further Exploration

- Agriculture: Niche export products, irrigation, large-scale farming, agro-industrial and agro-processing.

¹³ Karoo Regional Spatial Development Framework, 2022



- Energy: Renewable energy (solar, wind, hydro), biofuels (e.g., bioethanol), carbon credits.
- Tourism: International and local, niche eco-tourism, cultural/archaeological/historical tourism, and adventure tourism.
- Mining and beneficiation of mineral products.
- Higher education and research.
- Ocean economy: Fishing and related enterprises.

Supportive infrastructure considerations:

- Expansion of ICT network and access to communication technology.
- Water resource planning and alternative water sources.
- Alternative energy generation.
- Supportive economic infrastructure including roads and rail.

Important issues to address in considering the development and growth of the regional economy of the Karoo include:

- Issues of scale.
- Matching of supply and demand-side.
- Ensuring access to information.
- Strengthening inter-governmental coordination and capability
- Aligning economic policies.
- Strengthening developmental compact with social partners
- Prioritising sectoral interventions and objectives in the Karoo Region.

4.4.2.2 Regional Issues and Interdependencies

The following are specific issues emerging within the Northern Cape Province

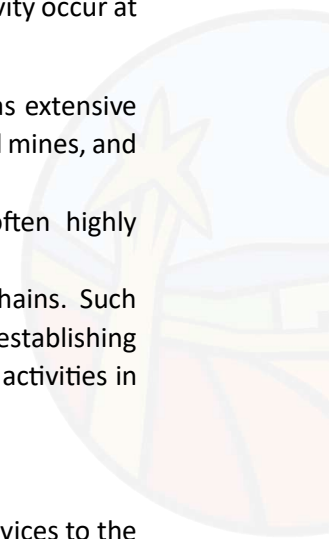
- The Orange River system and its dependent economies play an important role.
- The suitability of the NC for solar energy.
- The identification of functional regions. It also considers big infrastructure build programmes, SEZs, IDZs and SIPs.

- Skills shortages in government (provincial and municipal) are seen as a key issue.
- Building of dams and expansion of water pipelines to support interregional water transfer.
- Impact of SKA advantage area, need to protect and manage SKA/SAROA areas.
- Mining issues: Declines in mining should trigger diversification, mining towns are not to be expanded; future mining, radioactive waste.
- Protect/manage biodiversity, water, and agriculture resources.
- Economic development connectivity in the form of the proposed Boegoebaai Harbour and a proposed rail link between Upington and Boegoebaai.

4.4.2.3 Regional Spatial Development Approach and Concept

A regional development approach for the Karoo Region has to deal with a very specific spatial context: an expansive, arid, and sparsely populated region. In this context, economic development and human activity occur at two very different scales:

- Spatially expansive, low-intensity economic activity such as extensive dry-land farming, sustainable energy installations, scattered mines, and the SKA telescope area, constitute the 'macro' landscape.
- Small communities are living in small, scattered and often highly isolated towns and settlements.
- Strengthening and sustaining regional economic value chains. Such localisation of economic benefit will be achieved by establishing downstream economic activities related to the large-scale activities in the Anchors. These include:
 - Agricultural processing and beneficiation.
 - Agricultural markets.
 - Mineral beneficiation and the provision of support services to the mining sector agricultural markets.



- In addition to tourists travelling to the Karoo as a destination, becoming part of the tourist experience for 'en-route tourists' who travel through the Karoo to larger destinations, and
- Other business and technical services in support of large-scale activities, e.g., manufacturing, maintenance and repair facilities and services for solar and wind energy generators and related infrastructure, personal, legal, and financial services, trade, and retail, etc.

4.4.2.4 Regional Economic Infrastructure

Key economic infrastructure to support large-scale regional activity and ensure national, regional, and global connectivity of the Rural Development Anchors include the following aspects:

- ➔ National and International Connectors
- ➔ Regional Connectors
- ➔ Regional Economic Support Infrastructure

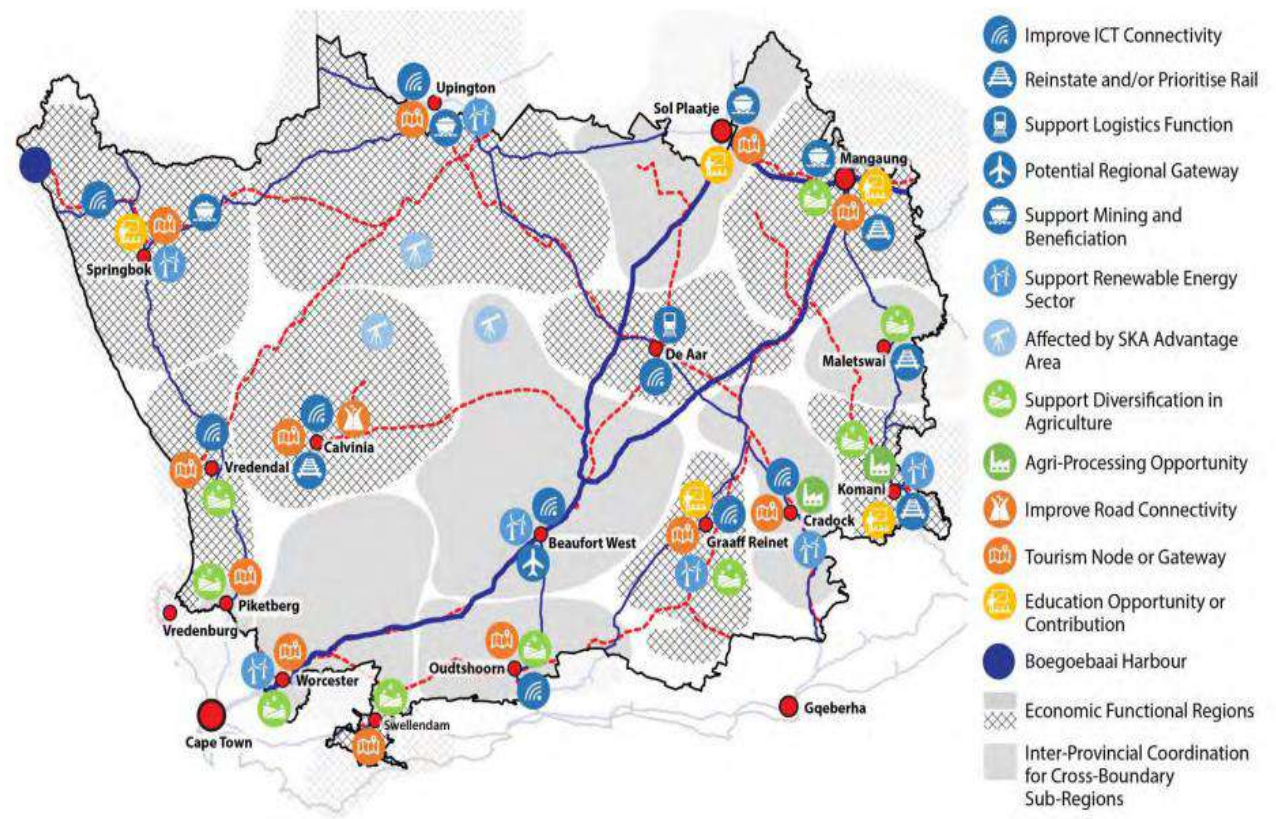


Figure 18: Schematic Presentation of the Regional Focus Areas within the KRSDF



4.4.2.4.1 Viable and Inclusive Regional Space Economy

Innovation opportunities that could be explored include:

- Strengthening innovation in the agricultural sector.
- Sustainable energy (electricity) generation at different scales, including contribution to the national grid and localised/off-grid provision for communities.
- Off-grid basic service provision methods and technologies and alternative service provision technologies, e.g., salt-water desalination.
- Human settlement-focused innovation such as climate-mitigating low-cost construction.
- Building on the potential of the bio-diversity economy for innovation and job creation. This could include:
 - Ecosystem-based innovation, e.g., biomedicine, traditional medicine and other related research and development.
 - Conservation and restoration of biodiversity approaches for arid regions.
 - Sustainable fisheries/aquaculture.
 - Sustainable wildlife ranching combined with biodiversity-based tourism.
- Exploration of hi-tech industries that require specific arid climatic conditions in addition to existing space observation, for example, manufacturing of electronic components (e.g., Intel).

4.4.2.4.2 Functional Regions

The functional economic regions identified are based on the spatial and development characteristics, large-scale nationally significant initiatives, and diversification and innovation opportunities of each area. Key to the good functioning of the Regional-Rural Development Model is the connecting infrastructure that facilitates the movement of people, goods, and services, as well as the flow of information between the points in the network.

Karoo RSDF: Economic Functional Regions

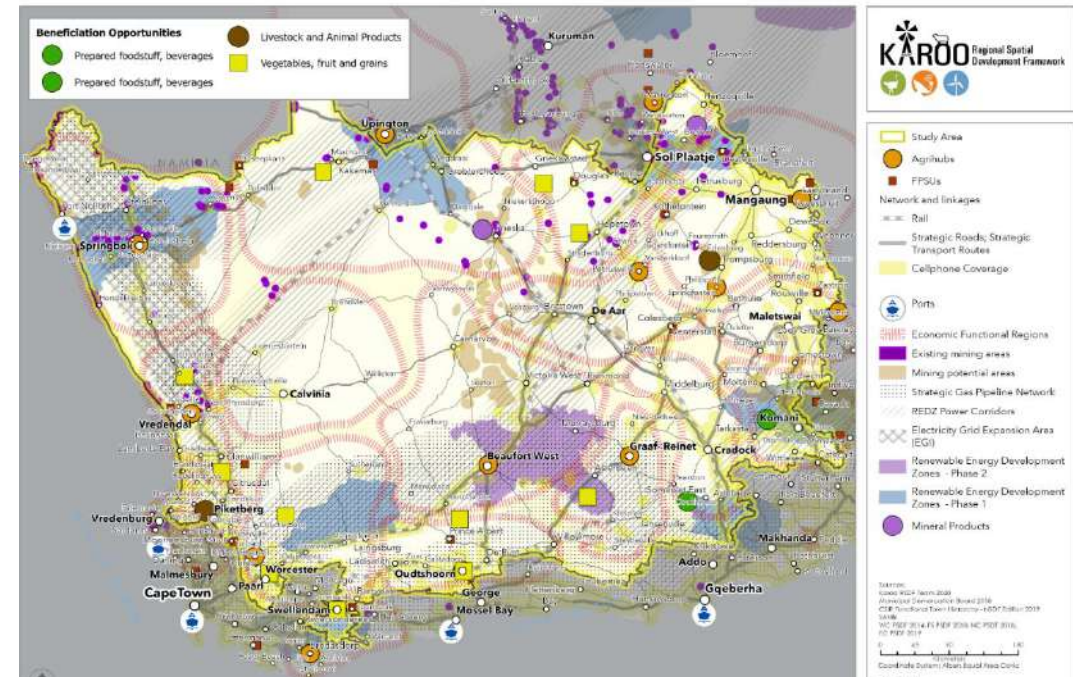


Figure 19: Karoo RSDF reference to Functional Regions

4.4.2.4.3 Tourism Sector Development

Tourism is a sector with a strong spatial focus. The spatial dimension of tourism includes (making use of high-level adaptation from Leiper's tourism system model):

- Tourist/Traveller-generating regions.
- Tourist destination regions, containing tourism gateways, attractions, and connections.
- Tourist transit regions, with an emphasis on connections and gateways



4.4.2.4.4 Agriculture Sector

Agriculture is a significant and character-defining element of the Karoo Region's economy. In order for this sector to thrive, certain regionally significant elements should be protected, managed, and maintained.

The base of agriculture in the Karoo is the region's unique climate and vegetation. Geographical areas that need to be managed and protected to ensure the future of agriculture in the Karoo are:

- The unique vegetation areas required to support the sheep farming industry and the Place of Origin product Karoo Lamb.
- The high-intensity crop farming area on the southwestern boundary of the Karoo Region includes a substantial Rooibos farming area which also enjoys international Place of Origin recognition.
- The irrigation agriculture regions make a significant contribution to the regional agriculture market.



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Karoo RSDF: Agriculture Network

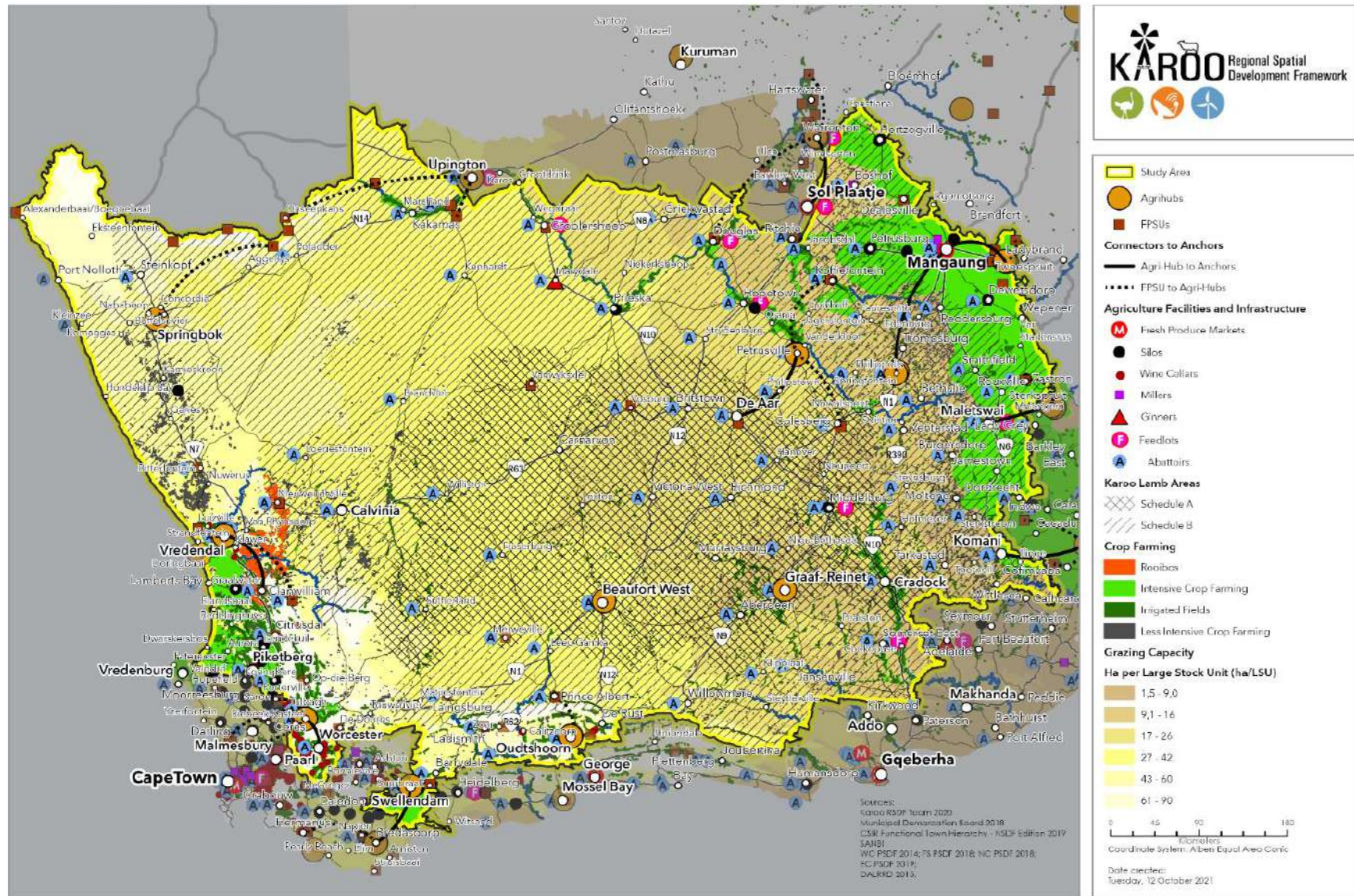


Figure 20: Karoo RSDF reference to Agriculture Development



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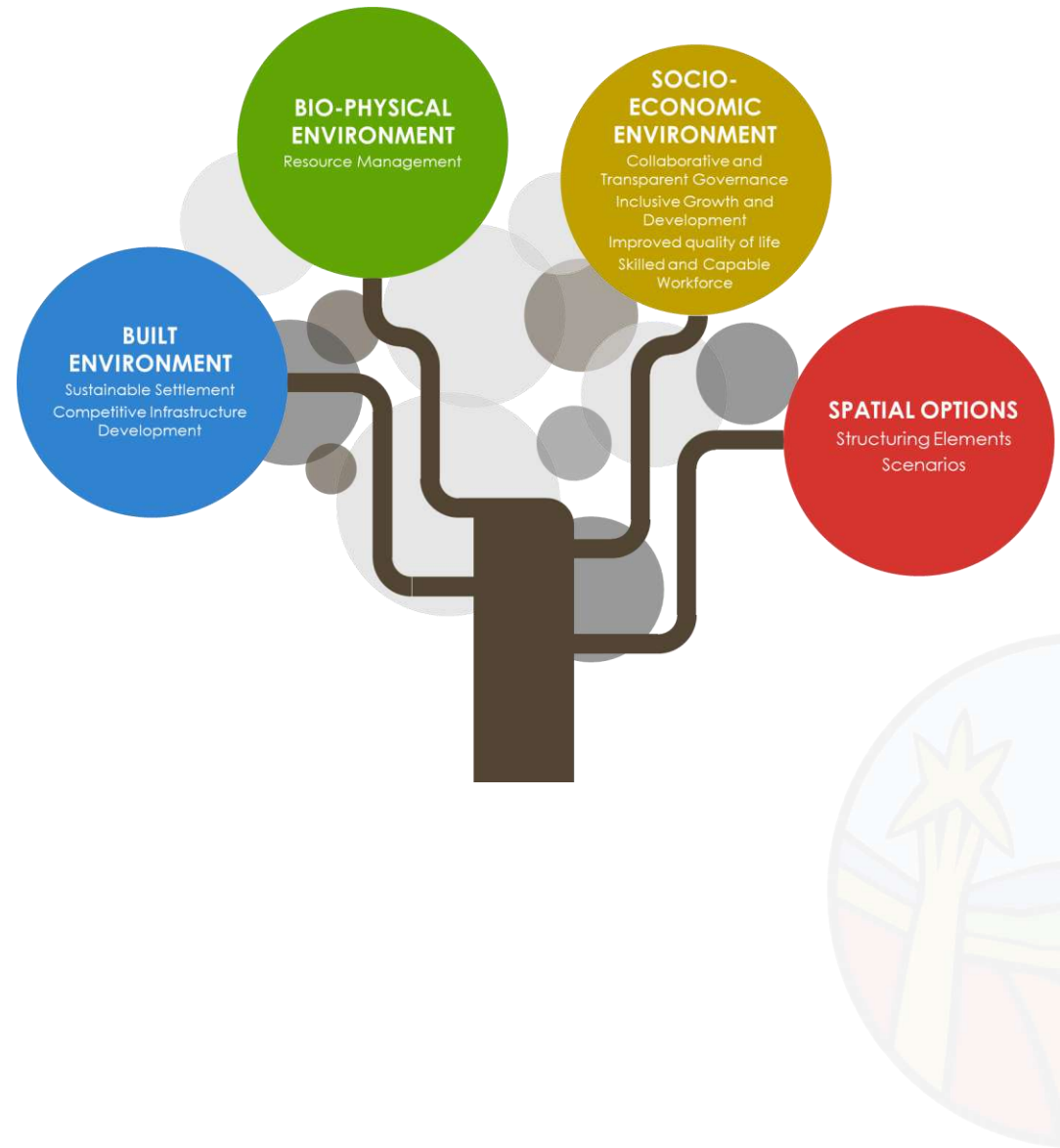
5 STATUS QUO

SYNOPSIS:

The purpose of the Spatial Analysis Chapter is to determine the standard and quality of resources within the province, to determine the current baseline and quality of the resources. By doing so, the challenges hindering growth and development can be identified, as well as potential opportunities encapsulated within the province's resource base.

To effectively analyse the region's resource base, the resources have been placed into categories namely the Biophysical Environment, Socio-Economic Environment, the Built Environment and Spatial Options. The figure (to the right) provides a breakdown of each element of discussion per category and sub-theme.

A Spatial Analysis of the structuring elements issues have also been included to strengthen the concluding analysis. To improve the conveyance of the key findings, and limit the inclusion of redundant content, the key findings of the analyses, have been streamlined into the spatial challenges and opportunities section.



5.1 BIOPHYSICAL ANALYSIS

The Biophysical analysis aims to provide a comprehensive overview of Northern Cape's natural resource base and identifies key challenges and opportunities that will inform the main themes of the PSDF.

The Biophysical environment pertains to the natural resources located within the provincial boundaries. The analysis of the natural resources allows for a greater understanding of the status of the resources, and current trends regarding the exploitation of these resources, and identifies possible opportunities and interventions to improve the efficacy and sustainability of the use and exploitation of the natural resource base.

5.1.1 NATURAL RESOURCES

5.1.1.1 Biodiversity

5.1.1.1.1 Land Biodiversity

As per Critical Biodiversity Areas of the Northern Cape: Technical Report (Dr Stephen Holness, Nelson Mandela Metropolitan University and Enrico Oosthuysen Northern Cape Department of Environment and Nature Conservation, 2016), the Northern Cape CBA Map identifies biodiversity priority areas, called:

- Critical Biodiversity Areas (CBAs) and
- Ecological Support Areas (ESAs).

Together with protected areas, they are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole. The Northern Cape CBA Map is also in line with existing provincial spatial plans e.g. Provincial Spatial Development Framework and Environmental Frameworks to avoid possible conflicts. Provincial Sector Departments were given extended opportunities for input. Presentations were made on the following platforms with the hope of reaching as many stakeholders as possible:

- National Biodiversity Planning Forum.
- Provincial Coastal Committee.
- DENC/Leslie Hill Succulent Karoo Trust Steering Committee.
- Wilderness Foundation Steering Committee, and
- Kimberley Biodiversity Research Symposium.

The Northern Cape Critical Biodiversity Area (CBA) Map updates, revises and replaces all older systematic biodiversity plans and associated products for the province. These include the:

- Namakwa District Biodiversity Sector Plan.
- Cape Fine-Scale Plan (only the extent of the areas in the Northern Cape i.e. Bokkeveld and Nieuwoudtville), and
- Richtersveld Municipality Biodiversity Assessment.

According to the Technical Report, the identification of Critical Biodiversity Areas for the Northern Cape was undertaken using a Systematic Conservation Planning approach (Margules & Pressey, 2000; Ardron et al., 2010). Available data on biodiversity features (incorporating both pattern and process, and covering terrestrial and inland aquatic realms), their condition, current Protected Areas and Conservation Areas, and opportunities and constraints for effective conservation were collated. Priorities from existing plans such as the Namakwa District Biodiversity Plan (Desmet and Marsh, 2008), the Succulent Karoo Ecosystem Plan (Driver et al., 2003), national estuary priorities (Turpie et al., 2012), and the National Freshwater Ecosystem Priority Areas (Nel et al., 2011) were incorporated. Targets for terrestrial ecosystems were based on established national targets (Driver et al., 2012), while targets used for other features were aligned with those used in other provincial planning processes. Marxan analysis (Game & Grantham, 2008) was used to ensure that the required representation of biodiversity features was achieved in a spatially efficient manner which avoided incompatible land uses and activities where possible.

The assessment approach and map categories are designed to be compatible with the Guideline Regarding the Determination of Bioregions



and the Preparation and Publication of Bioregional Plans (DEAT, 2009). Where possible, all targets are met in the identified set of CBAs. Evident from the provincial CBA map is the large extent of CBA2 areas relative to the CBA1 extent. The latter is not surprising considering the low levels of degradation as concluded from the land cover data. The latter implies that there should be ample options available for satisfying biodiversity features targets which in turn explains the large extent of CBA2 areas. The CBA map therefore indicates that numerous options are available for spatial planning purposes and that such an exercise will do well to consider the critical biodiversity areas per the CBA map to timeously avoid conflicting land uses.

5.1.1.1.2 Coastal and Marine Biodiversity

Ecologically or Biologically Significant Marine Areas (EBSAs) are areas that provide important services to one or more species/populations of an ecosystem or the ecosystem as a whole, compared to other surrounding areas or areas of similar ecological characteristics, or otherwise meet at least one of the following seven EBSA criteria:

- **UNIQUENESS OR RARITY:** Area contains either (i) unique, rare or endemic species, populations or communities; and/or (ii) unique rare or distinct habitats or ecosystems; and/ or (iii) unique or unusual geomorphological or oceanographic features.
- **SPECIAL IMPORTANCE OF LIFE HISTORY STAGES OF SPECIES:** Areas that are required for a population to survive and thrive.
- **IMPORTANCE FOR THREATENED, ENDANGERED OR DECLINING SPECIES AND/OR HABITATS:** Area containing habitat for the survival and recovery of endangered, threatened, declining species, or area with significant assemblages of such species.
- **VULNERABILITY, FRAGILITY, SENSITIVITY OR SLOW RECOVERY:** Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.
- **BIOLOGICAL PRODUCTIVITY:** Area containing species, populations or communities with comparatively higher natural biological productivity.

- **BIOLOGICAL DIVERSITY:** The area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity, and
- **NATURALNESS:** Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.

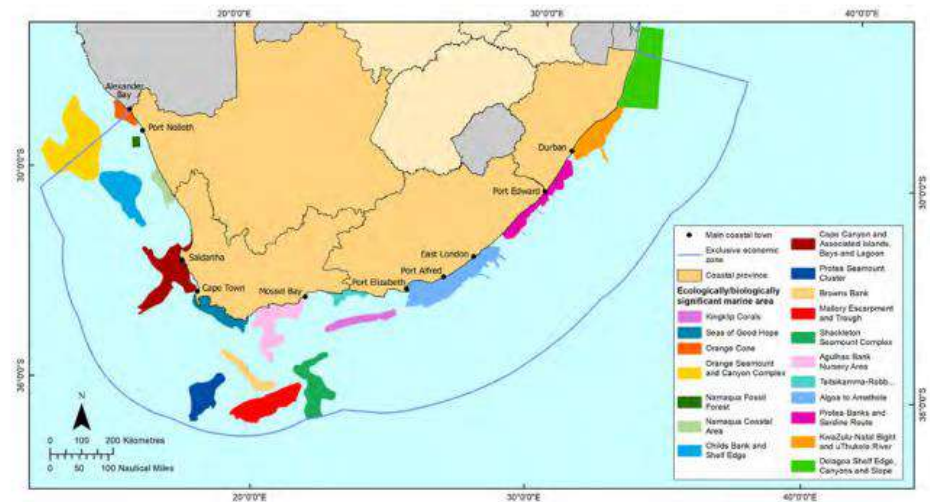
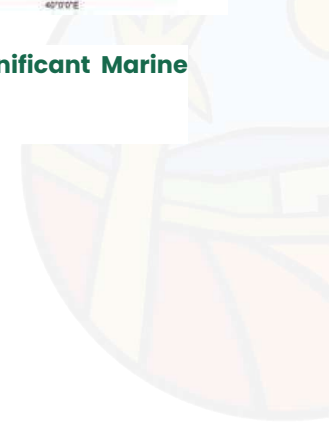


Figure 21: South African Ecologically or Biologically Significant Marine Areas



EBSA	SIZE (KM²)	UNIQUENESS OR RARITY	IMPORTANCE FOR LIFE HISTORY STAGES	IMPORTANCE FOR THREATENED SPECIES AND/OR HABITATS	VULNERABILITY, SENSITIVITY, SLOW RECOVERY	BIOLOGICAL PRODUCTIVITY	BIOLOGICAL DIVERSITY	NATURALNESS
# Orange Seamount and Canyon Complex	29396.9	L	M	H	M	M	H	H
# Orange Cone	3134.2	H	H	H	M	M	M	M
Namaqua Fossil Forest	831.6	H	DD	DD	H	M	DD	DD
Childs Bank and Shelf Edge	13586.7	H	L	M	H	L	M	H
Namaqua Coastal Area	3507.2	L	M	H	M	H	L	H
Cape Canyon and Associated Islands, Bays and Lagoon	16593.6	M	H	H	H	H	M	M
* Seas of Good Hope	6745.5	M	H	H	M	M	M	L
* Protea Seamount Cluster	9019.5	M	M	H	H	M	M	H
Browns Bank	5657.7	H	H	H	M	M	L	M
Agulhas Bank Nursery Area	13619.9	H	H	H	M	M	M	M
Shackleton Seamount Complex	11981.1	M	H	M	H	H	H	H
Mallory Escarpment and Trough	13073.0	H	H	M	H	H	H	H
Kingklip Corals	5442.5	H	H	L	H	H	M	M
* Tsitsikamma-Robberg	2643.6	M	H	H	H	M	H	M
Algoa to Amathole	19656.4	H	H	H	M	H	H	M
Protea Banks and Sardine Route	9344.9	H	H	M	M	M	M	L
KwaZulu-Natal Bight and uThukela River	10579.6	M	H	H	M	H	M	M
# Delagoa Shelf Edge, Canyons and Slope	24891.1	M	H	H	M	M	H	H

CRITERIA RANK:

Red = High (H)

Orange = Medium (M)

Yellow = Low (L)

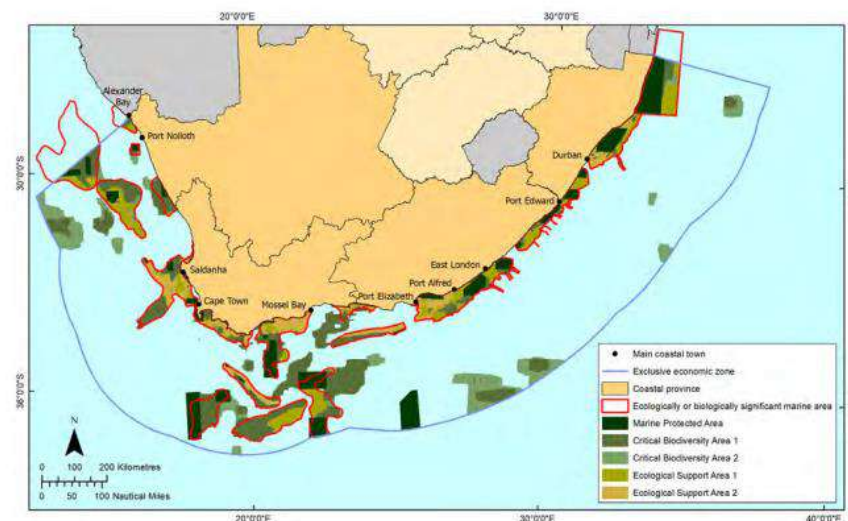


Figure 22: Coastal and Marine Critical Biodiversity Map

LOOKING TO THE FUTURE

Key focus areas for high levels of cumulative pressure include:

- Coastal ecosystems especially in proximity to the major metropolitan areas with associated ports and harbours.
- Bays have a range of pressures acting at high intensities, with Saldanha Bay having the highest cumulative impact score in South Africa.
- Inshore areas such as the KwaZulu-Natal Bight are a focus for high-impact activities such as crustacean trawling, and
- River-influenced ecosystems (e.g., those adjacent to the Orange, Breede and uThukela Estuaries) have been highly impacted by freshwater flow reduction.



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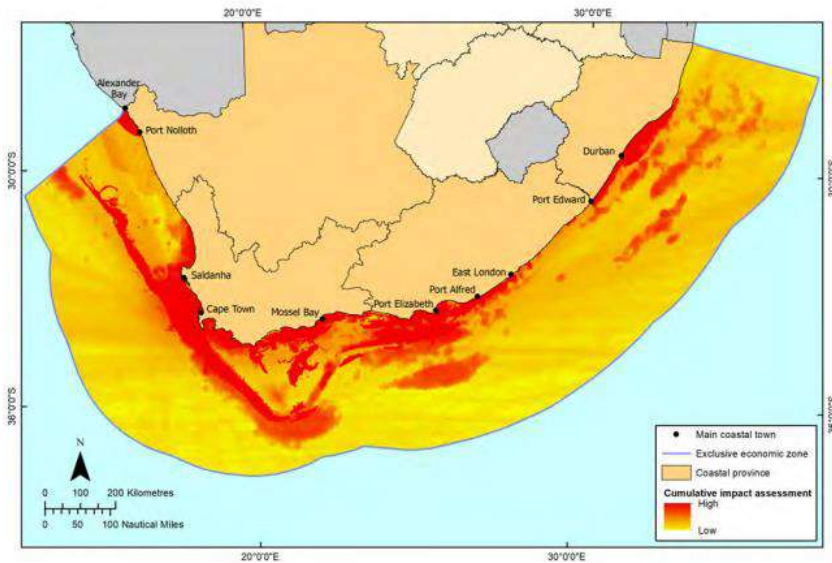


Figure 23: Cumulative Impact of 31 pressures on Marine Ecosystems

Coastal development, mining, trawling and marine aquaculture have the highest impact scores among the 31 pressures included in the NBA 2018 marine assessment and led to higher cumulative impacts in some areas. Fishing is the greatest cause of ecological degradation in the offshore environment, whereas coastal development and fishing are the greatest pressures on inshore ecosystems. Fishing pressures are either in terms of physical damage to ecosystems or in terms of harvesting pressures and/or associated bycatch. Freshwater flow modification is also a key pressure impacting the marine environment, as well as pollution (especially in retentive areas such as bays) and alien invasive species. Ports and harbours are also salient pressures; despite having localised impacts, the access they bring to the adjacent ocean resources drives cumulative degradation to surrounding marine areas, as well as burgeoning urban development with associated impacts on coastal ecosystem types. Brief overviews of some of the key pressures on the marine environment are as follows; see Majiedt et al. (2019)⁴⁸ and Harris et al. (2019)¹⁹ for more details.

MINING: Most marine mining is concentrated on the West Coast where diamond mining is the dominant pressure.

PORTS AND HARBOURS: Ports and harbours are hubs of activity and points of access to the ocean, thus there is a myriad of pressures associated with them. These include sites of accumulating pollution (in numerous forms), high-risk entry points and refugia for alien and invasive species either from ship hulls or ballast water (which is where most introduced marine species (62 taxa) have been recorded), local habitat modification and degradation from anchorage, maintenance dredging and dredge dumping. Furthermore, ports and harbours provide points of access to ocean resources, which can lead to declines in the ecological condition of marine ecosystem types in the surrounding area, as well as burgeoning industrial and residential infrastructure development on the landward side.

SMALL SCALE FISHERIES: Small-scale fishing, here subsistence fishing, includes various fishing methods targeting more than 30 species from a range of habitats. The dominant activity on the east coast is the harvesting of intertidal and subtidal invertebrates including mussels, oysters, redbait and limpets, crabs, and octopus as well as fish. On the west coast, boat-based harvesting of near-shore subtidal species such as fish and lobsters is the dominant activity.

LINEFISHING: The South African commercial line fishery is a multispecies fishery which stretches from Port Nolloth on the west coast to Cape Vidal on the east coast. Line fishing is particularly an issue in the south and east coasts where reef fish are targeted, leading to serial overfishing and a rising number of over-exploited and collapsed species. Prawn Trawling: This localized industry is largely focused on the KwaZulu-Natal Bight. The industry targets a range of prawn species, but the main biodiversity issues are physical disturbance of a range of benthic habitats, a diverse and substantial bycatch, high rates of discarding, impacts on nursery habitats and juvenile fish, concerns about impacts on sharks, rays and overexploited line fish, and incidental mortality of turtles.

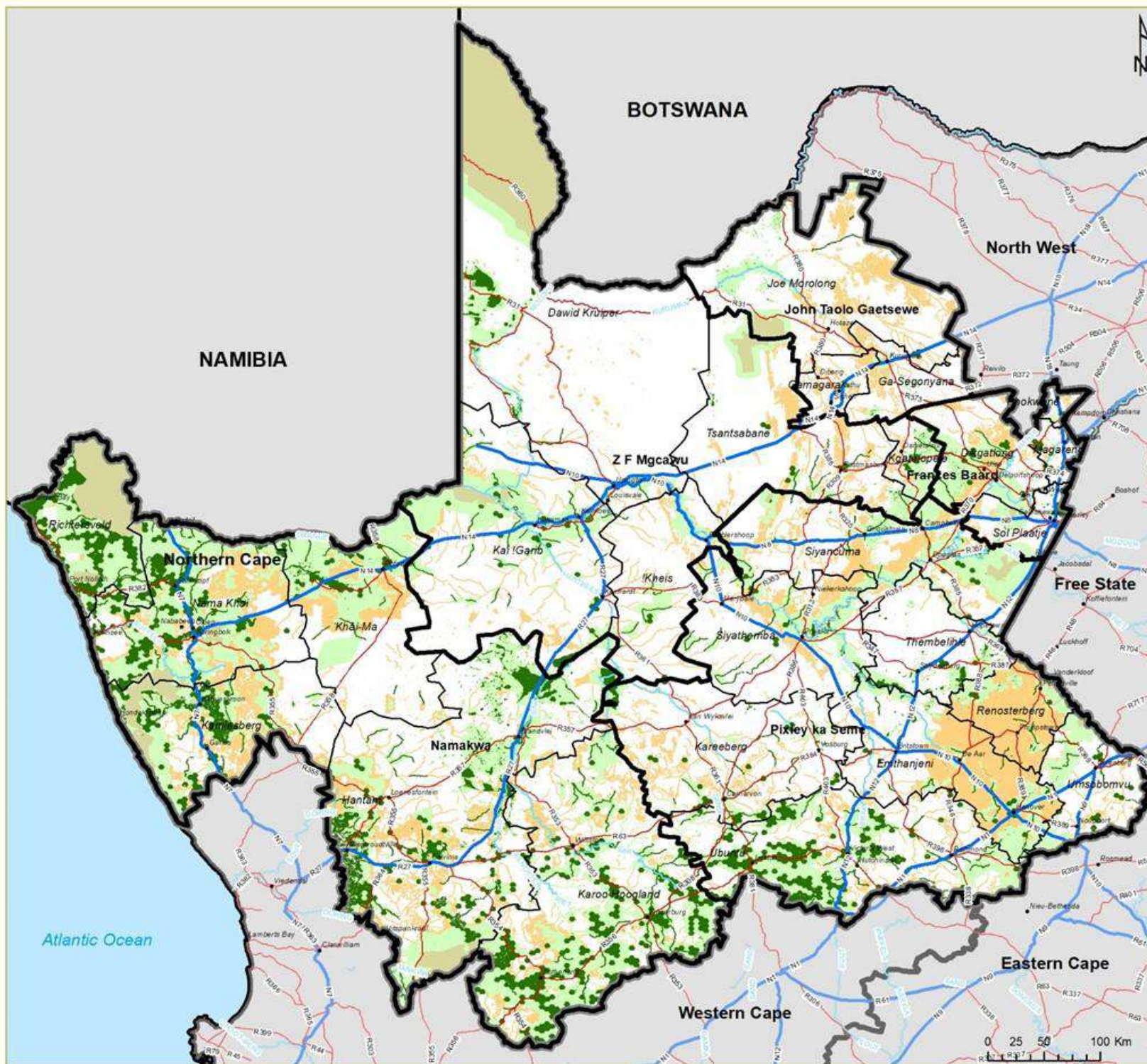


DEMERSAL TRAWL: OFFSHORE: The industry targets the shelf edge from approximately 300 m depth off Hondeklipbaai on the west coast southwards to the southern tip of the Agulhas Bank. Effort diminishes closer to the Namibian border reflecting increasing fuel costs associated with increasing distance from port. On the south coast, offshore trawlers concentrate fishing effort on the offshore edge of the Agulhas Bank with the highest effort offshore of Port Elizabeth, which yields high catches of kingklip. The offshore trawl fishery primarily targets deep-water hake paradoxus, with valuable bycatch species of the offshore demersal trawl fishery including monk (*Lophius vomerinus*), kingklip (*Genypterus capensis*), angelfish (*Brama brama*), snoek (*Thyrsites atun*) and horse mackerel (*Trachurus trachurus capensis*). Impacts on benthic habitats are also poorly understood with particular concern for hard ground habitats including deep reefs, submarine mounds canyons and hard areas of the shelf edge. The incidental mortality of threatened and other seabirds is a concern.

SHIPPING: The main biodiversity impacts associated with shipping stem from oil spills, as a result of underwater noise, dumping of waste materials, shipping accidents, invasive alien species introduced through ballast water discharge and hull fouling, and through ship strikes i.e. collisions between vessels and large marine animals such as whales and basking sharks.

PETROLEUM ACTIVITIES: The impacts of petroleum activities on coastal and offshore marine biodiversity span the impacts from exploration to production, including seismic surveys, the direct impact of infrastructure installation and drilling, and indirect effects such as light pollution. While numerous impacts to biodiversity are noted, the most important is due to potential oil spillage: small accidental oil spills arising during routine operations, large spills arising after incidents such as the grounding of an oil tanker or collisions with other vessels, and offshore production accidents such as 'blowouts' of wells and pipeline ruptures.





BIODIVERSITY

Legend

- Town/Settlement
- Main Roads
- National Roads
- Main Rivers
- Local Municipality
- District Municipality

Biodiversity

- Critical Biodiversity Area One
- Critical Biodiversity Area Two
- Ecological Support Area
- Protected Area

Map 1: Northern Cape Biodiversity

Source: Department of Forestry, Fisheries & the Environment

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.1.1.2 Protected Areas

The analysis included protected areas, protected area buffers, conservation areas, and protected area expansion priorities. Other identified focus areas (including species and previous plan priorities) include:

- Important Bird Areas (IBA).
- SKEP expert identified areas.
- Threatened species (Plant, butterfly, key coastal species & colonies, riverine rabbits and reptile locations).
- Kathu Forest.
- Areas to support ecological processes (including climate change adaptation); and
- Areas supporting climate change resilience.

Protected areas in the Northern Cape are managed by all three spheres of government. At the national level, South African National Parks is responsible for the management of all National Parks (including those with a Transfrontier component) in the province.

Table 3: Northern Cape Protected Areas (Protected Area Expansion Strategy 2017 – 2021)

NORTHERN CAPE PROTECTED AREAS	
Nature Reserves - Managed by DENC	
Doornkloof Nature Reserve	9 779 ha
Goegap Nature Reserve	23 911 ha
Nababiep Nature Reserve	10 874 ha
Oorlogskloof Nature Reserve	5 754 ha
Orange River Mouth Nature Reserve	2 616 ha
Rolfontein Nature Reserve	6 337 ha

Witsand Nature Reserve	3 169 ha
Total	62 440 ha
National Parks - Managed by SANParks	
Augrabies Falls National Park	53 581 ha
Kalahari Gemsbok National Park	957 105 ha
Mokala National Park	32 500 ha
Namaqua National Park	149 528 ha
Richtersveld National Park	161 447 ha
Richtersveld National Park (Klein Duin - Oograbies Wes)	18 845 ha
Tankwa-Karoo National Park	95 434 ha (Portion in NC)
Vaalbos National Park (Graspan)	4 589 ha
Total	1 473 029 ha
Nature Reserves - Privately Managed	
Blomfontein Nature Reserve	2 318 ha
Bredenkamp Nature Reserve	2 578 ha
Brooks Nature Reserve	2 134 ha
Glen Lyon Nature Reserve	63 412 ha
Karoo Gariep Nature Reserve	4 298 ha
Melkrivier Nature Reserve	1 576 ha
Rockwood Nature Reserve	9 184 ha



Sandhoog Nature Reserve	856 ha
Tswalu Nature Reserve	96 247 ha
Wit Clay Gat Nature Reserve	591 ha
Total	183 194 ha
Municipal Nature Reserves	
Akkerendam Nature Reserve	2 327 ha
Ganspan Waterfowl Nature Reserve	173 ha
Nieuwoudtville Wild Flower Reserve	68 ha
Billy Duvenhage Nature Reserve	2 006 ha
De Aar Nature Reserve	333 ha
Die Bos Nature Reserve	50 ha
Dr Appie van Heerden Nature Reserve	1 570 ha
Klaarwater Nature Reserve	801 ha
Prieskakoppie Nature Reserve	9 ha
Strydenburg Aalwynprag Nature Reserve	2 ha
Tierberg Nature Reserve	78 ha
Victoria West Nature Reserve	144 ha
Total	7 561 ha
World Heritage Site	
The Richtersveld Cultural & Botanical Landscape	142 114 ha
Botanical Garden - Managed by SANBI	

Hantam National Botanical Garden	6 039 ha
Overall Total	1 874 377 ha

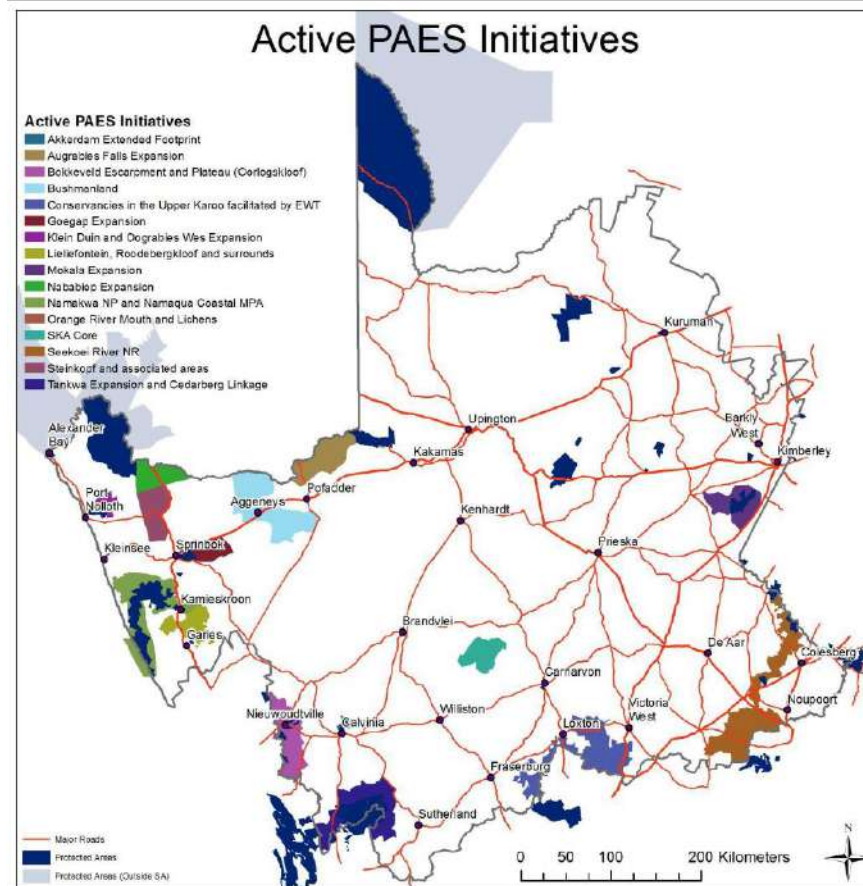


Figure 24: Existing protected area expansion initiatives in the Northern Cape.

Primary Focus Areas: These are the priority areas identified in the NCPAES analysis that are broadly within areas where there are active protected area expansion initiatives or that were identified as potential short-term implementation areas through the various project workshops. The focus areas, however, were not limited to initiative implementation footprints



but also extended to the remaining natural extent of the priority feature. Importantly, these areas are not always more important than secondary focus areas.

Secondary Focus Areas: These are large intact priority areas identified in the NCPAES analysis that are not part of active protected area expansion initiatives. The secondary focus areas were also defined with the assumption that the primary focus areas would be implemented first and that all targets that could be met in these areas would have been met. As a result, the secondary focus areas were limited to features where targets could not be met in the primary focus areas. Although existing initiatives generally focus on high-priority sites (for example, in the Succulent Karoo), secondary areas are not necessarily less important than primary focus areas.

5.1.1.2.1 World Heritage Sites

South Africa is home to ten World Heritage Sites that have been added to the list. The Richtersveld Cultural and Botanical Landscape is one of the sites in the northern cape. The Richtersveld Cultural and Botanical Landscape World Heritage Site is protected as a National Park and Nature Reserve covering slightly more than 50% of its total area.

the Khomani Cultural Landscape is a World Heritage Site that does not currently appear in the protected area dataset. The Khomani Cultural Landscape World Heritage Site encompasses the entire Kalahari Gemsbok National Park and is also part of the Kgalagadi Transfrontier Park, which is bounded to the east by Botswana and to the west by Namibia.

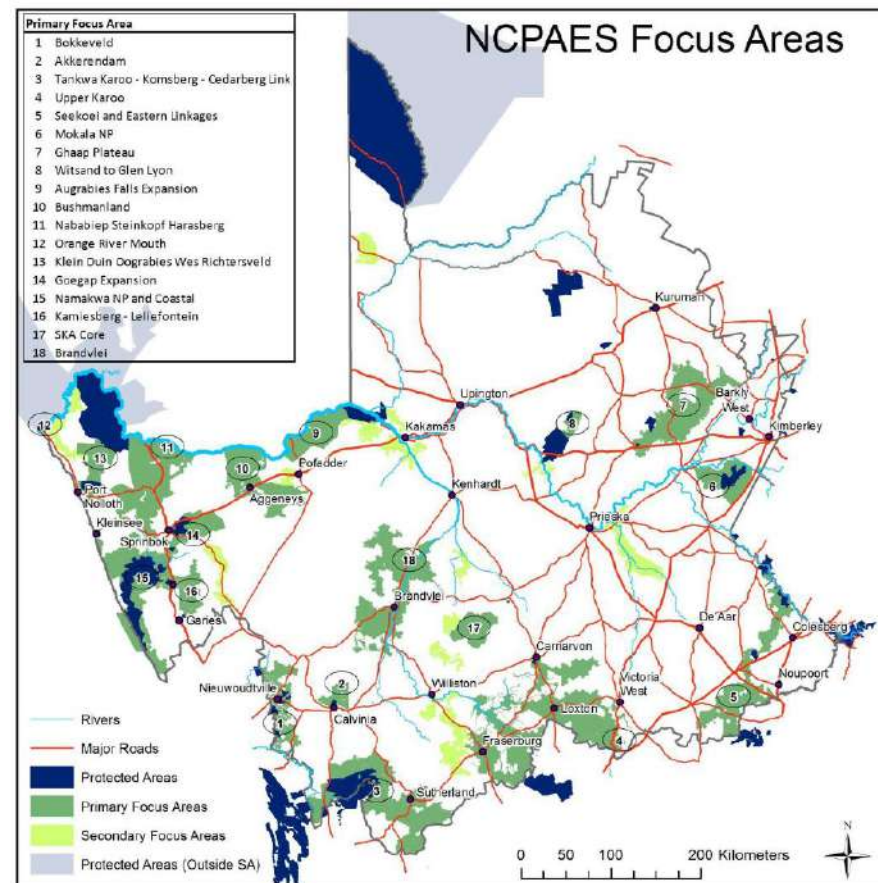


Figure 25: Focus areas for protected area expansion in the Northern Cape

5.1.1.2.2 Size and Composition of the Land-based Protected Area Estate

National parks cover 3.5% of the mainland and account for 37.4% of the protected area estate. National Parks comprise the majority of the protected area estate in only two provinces, Mpumalanga and Northern Cape, but contribute the most proportionally to the protection of four biomes, namely Desert, Nama-Karoo, Savanna, and Succulent Karoo.

From 2015 to 2020, the land-based protected area estate increased more in this 5-year accounting period than it did in the last 15 years combined. It

increased by nearly 1,2 million ha. This represents an 11,7% net increase in the protected area estate and brought the closing stock of protected area at the end of 2020 to 11 280 684 ha, or 9,2% of the South African mainland. The increase in protected areas in this accounting period is attributable to a large net increase in Protected Environment.

The marine protected area estate accounts for 5.4% of South Africa's mainland marine territory, with the addition of 20 new offshore Marine Protected Areas in 2019 increasing the estate's size from 4 748 km² to 57 943 km².

Nature Reserves, National Parks, and Forest Nature Reserves were also expanded. The following large Nature Reserves were established during this period: Baobab Private Nature Reserve (8 287 ha), Mun-ya-wana Conservancy (20 311 ha), Glen Lyon (55 213 ha), Greater Makalali (22 825 ha), Lapalala (27 545 ha), Letaba Ranch (24 902 ha), and Tswalu (111 229 ha). Meerkat National Park (134 956 ha) was established in 2020 around the Square Kilometre Array (SKA) radio astronomy facility in the Northern Cape.

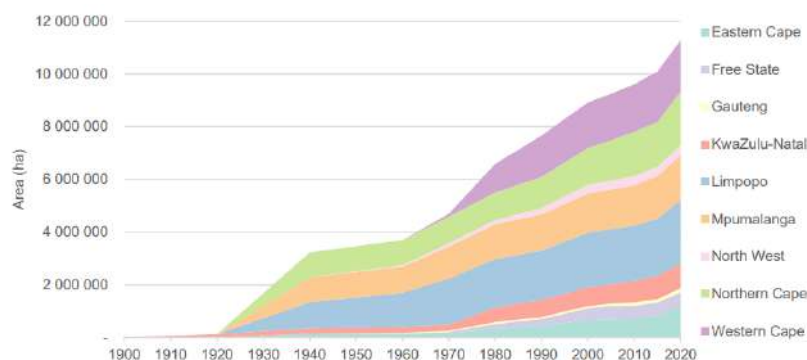


Figure 26: Cumulative extent of the protected area estate by province, reflecting the 11 accounting periods from 1900 to 2020

5.1.1.2.3 KEY FINDINGS

The Northern Cape comprises 30.6% of the South African mainland, with 2 043 328 ha protected by the end of 2020. This was the province with the second-largest protected area extent (Limpopo had the largest), and while protected areas in the Northern Cape contributed 18.1% of the country's total protected area estate, they accounted for only 5.5% of the province.

The protected area estate in the Northern Cape province increased from 3.7% in 2000. Over the 20 years since 2000, the Northern Cape protected area estate has grown by approximately 10%. During this time, significant additions to the protected area estate included the establishment of Meerkat National Park (134 956 ha), Tswalu Kalahari Nature Reserve (111 229 ha), Glen Lyon Nature Reserve (55 213 ha), and Marietjie van Niekerk Nature Reserve (20 486 ha).

At the end of 2020, the Northern Cape protected area estate consisted of 77.8% National Park, 15.2% Nature Reserve, and 7.0% portions of World Heritage Sites that were not in other protected areas.

Northern Cape National Parks account for 77.8% of the province's protected area estate, the highest proportion of any province. The Kalahari Gemsbok, Augrabies, Richtersveld, Tankwa-Karoo, Namaqua, and Mokala National Parks are among them, as is the recently established Meerkat National Park. Northern Cape has two World Heritage Sites. The Richtersveld Cultural and Botanical World Heritage Site has a 56.0% overlap with other protected areas. The Komani Cultural Landscape World Heritage Site encompasses the entire Kalahari Gemsbok National Park as well as the Kgalagadi Transfrontier Park (RSA, 2020). According to the declaration dates.

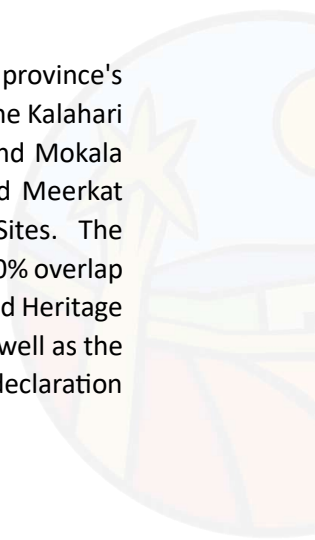
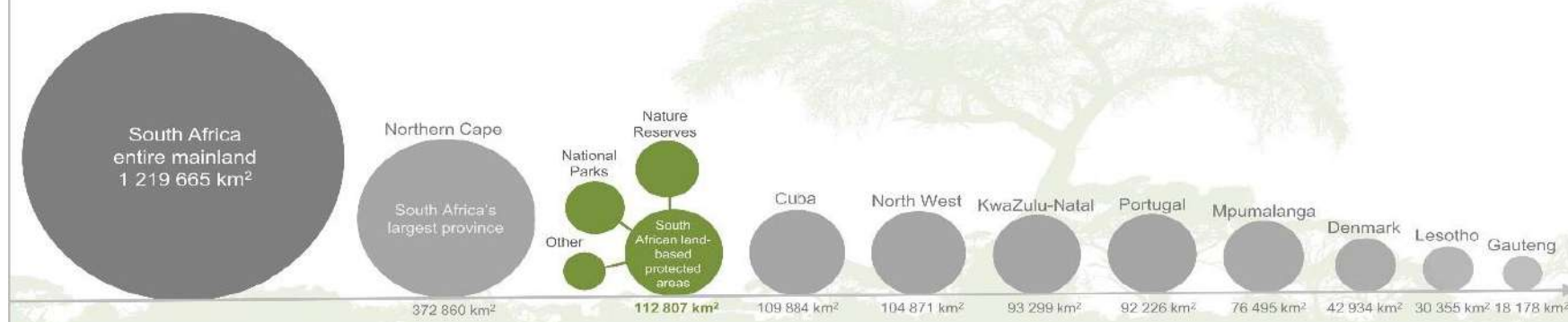


Table 4: World Heritage Sites and their spatial overlap with other types of protected areas in 2020, in hectares and as a proportion of the World Heritage Site area, based on the South African Protected Areas Database

World Heritage Site included in the protected area dataset		National Park	Nature Reserve	Protected Environment	Forest Nature Reserve	Forest Wilderness Area	Mountain Catchment Area	World Heritage Site (portion not in other protected area types)	Total World Heritage Site area (ha) in the protected area dataset	Proportion protected as another type of protected area
Barberton Makhonjwa Mountains	ha		5 662					38 960		
	%		12,7%					87,3%	44 622	12,7%
Cape Floral Region Protected Areas	ha	155 061	704 059		54 208	135 253	18 669		1 067 250	100,0%
	%	14,5%	66,0%		5,1%	12,7%	1,7%	0,0%		
Fossil Hominid Sites of SA	ha		9 466					55 891	65 357	14,5%
	%		14,5%					85,5%		
iSimangaliso Wetland Park	ha		220 147		1 515			766	222 428	99,7%
	%		99,0%		0,7%			0,3%		
Maloti-Drakensberg Park	ha		51 021		48 729	118 017		14 659	232 426	93,7%
	%		22,0%		21,0%	50,8%		6,3%		
Mapungubwe Cultural Landscape	ha	26 078	39 296						65 374	100,0%
	%	39,9%	60,1%					0,0%		
Richtersveld Cultural and Botanical Landscape	ha	170 289	10 859					142 460	323 608	56,0%
	%	52,6%	3,4%					44,0%		
Robben Island	ha							467	467	0,0%
	%							100,0%		

The area of protected land in South Africa is larger than some countries
In 2020, **land-based protected areas** covered 112 807 km², or 9,2% of the South African mainland



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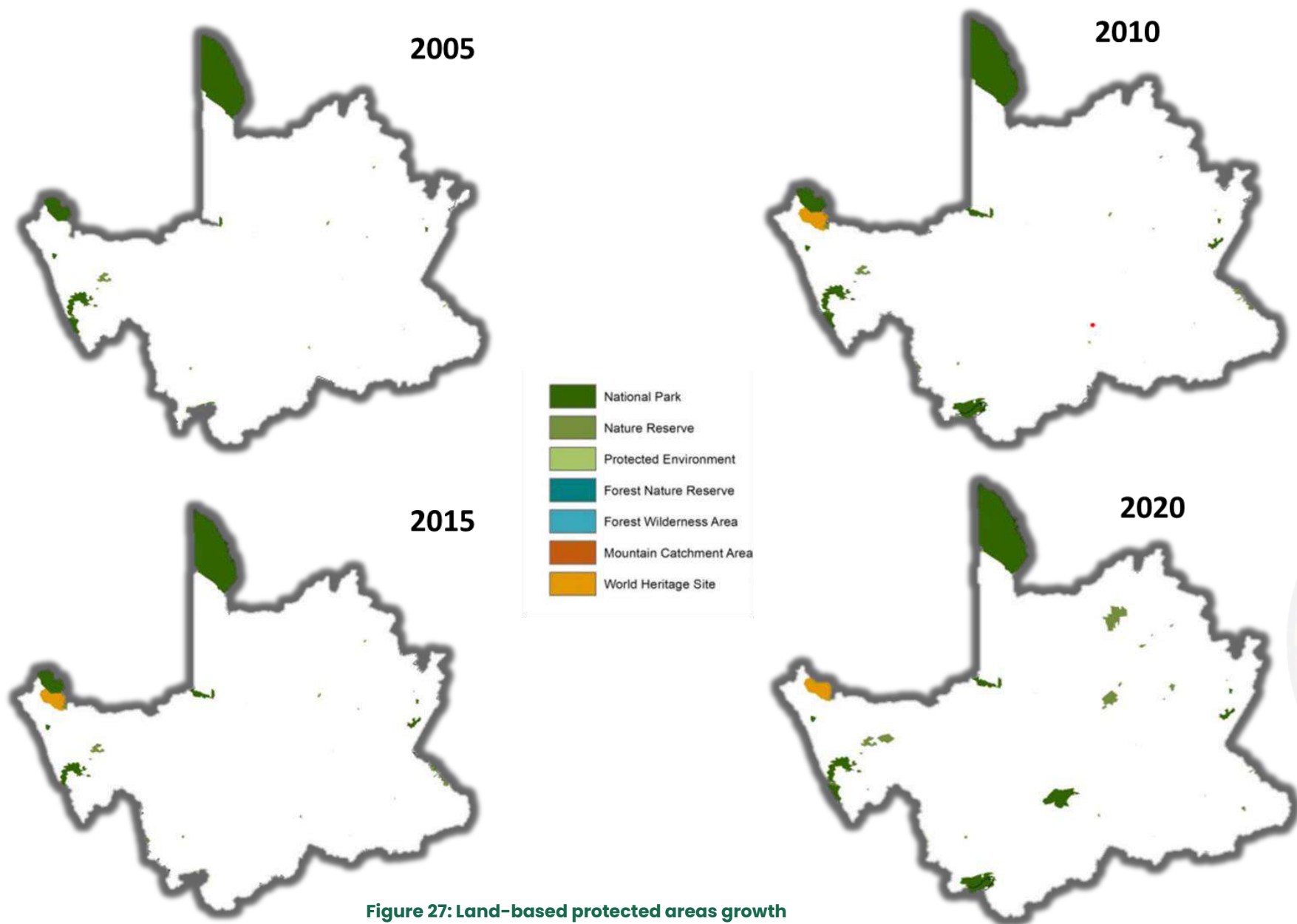
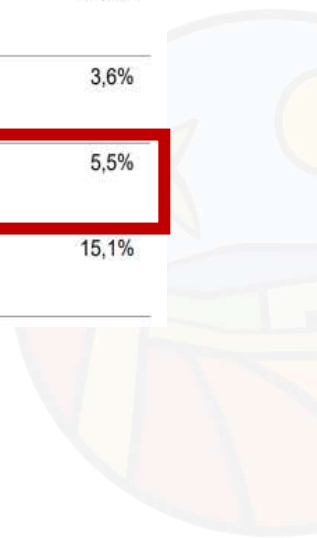


Figure 27: Land-based protected areas growth



Table 5: Extent of the protected area estate by type of protected area and by province in 2020, in hectares and as a proportion of the protected area estate in each province, based on the South African Protected Areas Database.

Province	Units	National Park	Nature Reserve	Protected Environment	Forest Nature Reserve	Forest Wilderness Area	Mountain Catchment Area	World Heritage Site*	Total area of province protected (ha)	Total area of the province	Proportion of province protected (%)
Eastern Cape	Area protected (ha)	248 659	460 338	454 002	8 181	21 747	2 145	-	1 195 072	16 884 228	7,1%
	Proportion of area protected (%)	20,8%	38,5%	38,0%	0,7%	1,8%	0,2%	0,0%			
Free State	Area protected (ha)	34 000	475 823	16 756	-	-	-	113	526 692	12 982 488	4,1%
	Proportion of area protected (%)	6,5%	90,3%	3,2%	0,0%	0,0%	0,0%	0,0%			
Gauteng	Area protected (ha)	30	84 559	15 504	-	-	-	43 186	143 279	1 817 814	7,9%
	Proportion of area protected (%)	0,0%	59,0%	10,8%	0,0%	0,0%	0,0%	30,1%			
KwaZulu-Natal	Area protected (ha)	-	713 825	21 553	55 982	122 825	-	15 310	929 495	9 329 945	10,0%
	Proportion of area protected (%)	0,0%	76,8%	2,3%	6,0%	13,2%	0,0%	1,6%			
Limpopo	Area protected (ha)	1 077 278	1 196 606	127 048	7 096	19 300	-	2 208	2 429 536	12 574 338	19,3%
	Proportion of area protected (%)	44,3%	49,3%	5,2%	0,3%	0,8%	0,0%	0,1%			
Mpumalanga	Area protected (ha)	935 704	577 554	106 519	18 426	-	3 671	38 959	1 680 833	7 649 527	22,0%
	Proportion of area protected (%)	55,7%	34,4%	6,3%	1,1%	0,0%	0,2%	2,3%			
North West	Area protected (ha)	-	332 328	39 429	-	-	-	10 494	382 251	10 487 080	3,6%
	Proportion of area protected (%)	0,0%	86,0%	10,2%	0,0%	0,0%	0,0%	2,7%			
Northern Cape	Area protected (ha)	1 589 198	311 012	-	656	-	-	142 462	2 043 328	37 285 988	5,5%
	Proportion of area protected (%)	77,8%	15,2%	0,0%	0,0%	0,0%	0,0%	7,0%			
Western Cape	Area protected (ha)	334 038	870 866	22 207	55 450	113 562	553 612	463	1 950 198	12 955 045	15,1%
	Proportion of area protected (%)	17,1%	44,7%	1,1%	2,8%	5,8%	28,4%	0,0%			



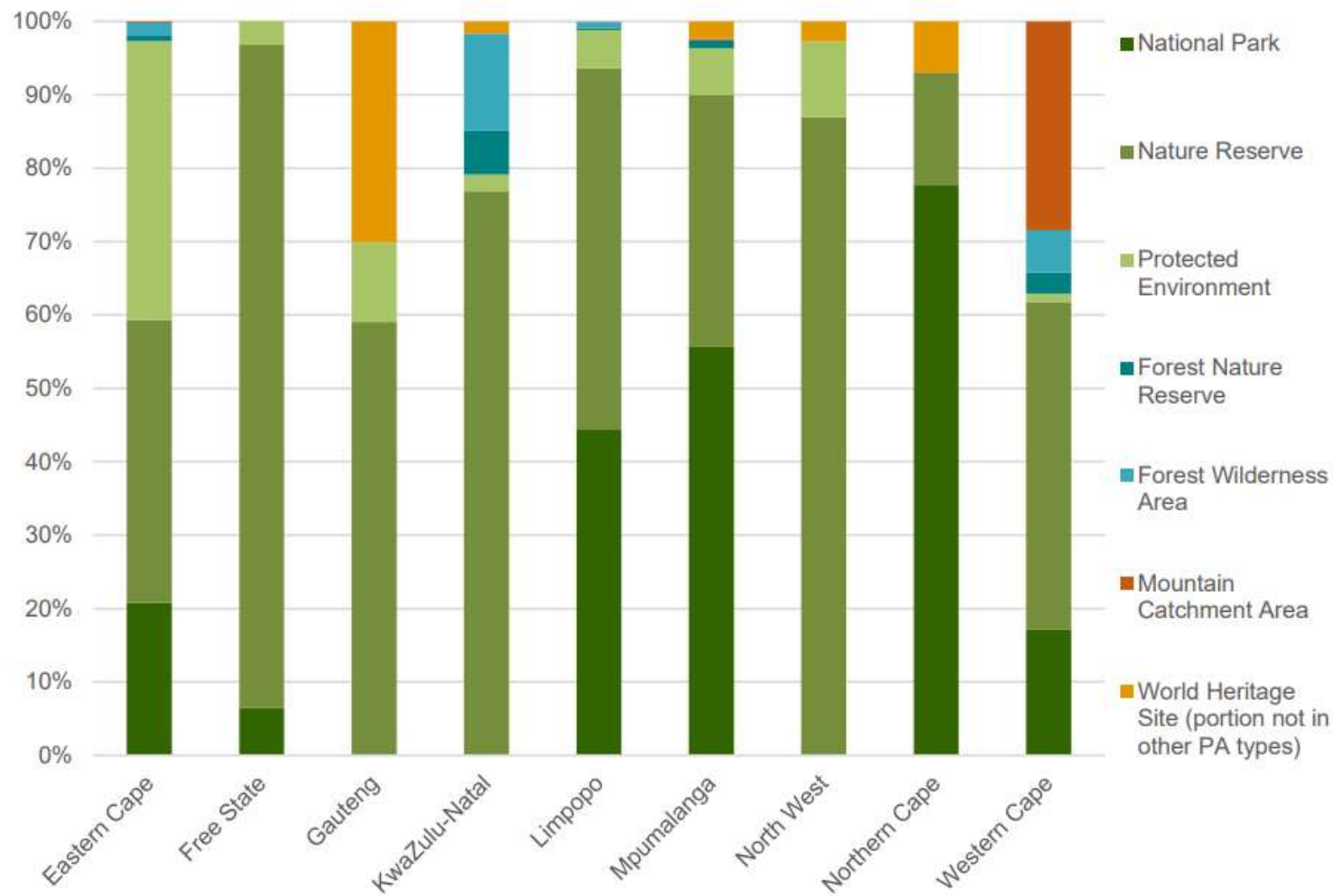


Figure 28: Composition of the protected area estate by protected area type, for each province in 2020, based on the South African Protected Areas Database.



5.1.1.3 Fresh Water Eco Systems

Aquatic features included in the systematic conservation plan include:

- Rivers.
- Wetlands.
- Priority catchments, and
- Strategic water source areas form a critical spatial backbone of the provincial plan.

The above-mentioned features, such as hydrological features play a key role in the overall functioning of landscapes. Further, the approach is necessary as terrestrial habitats are not finely differentiated and a few specific areas host specific threatened species. These include:

- Estuaries.
- FEPA Rivers (1:500 000) – Phase One FEPAs, Larger rivers (1:500 000), FEPA Sub quaternary catchments, FEPA Wetlands, FEPA Wetland Clusters.
- Other natural non-FEPA Wetlands.
- Other wetlands were included as ESA, and
- Intact riparian vegetation.

Wetlands are important for the maintenance of ecology and biodiversity and they can provide useful eco-services to the community. A serious attempt to identify those wetlands with a higher level of functionality that are degraded and in need of restoration. This will enhance ecological functionality, build resilience and provide much-needed work opportunities. There are current wetland rehabilitation projects that receive priority attention (Working for Wetlands (Westlands) an overview of projects and current priorities: Northern Cape – Heidi Nieuwoudt).

The rehabilitation supports important corridors down to the coast and its primary focus is reducing the hydrological impact of drainage channels in abandoned lands it also addresses human-induced erosion and alien invasive. On a Local level (as described in the 2020 PSDF) it is stated that any Open Space that is of value for conservation may also be seen as

Sensitive Areas that require special attention in management. This is a local government matter under Schedules 4b and 5b of the Constitution – where local government is responsible for the provision and maintenance of municipal parks and recreational areas, which are forms of open space.

However, the provision and maintenance of these areas is not a core environmental activity – but is a planning and amenity issue, unless the open space is of value for conservation. Thus, the indicators developed for this area are not considered core environmental indicators apart from those which relate to spaces with conservation value. For areas with conservation value, the greatest issue seems to be ‘infilling’ of such areas by development and so an indicator has been included to assess this.

5.1.1.3.1 River Systems

The Orange and Vaal Rivers with their tributaries are the main sources of surface water in the province. Ground water also fulfils an important function, especially in settlements far removed from the Orange River and the other major rivers. Topographically, the Orange River System, which drains approximately 47% of South Africa’s total surface area and approximately 22% of the country’s mean annual rainfall run-off, is divided into an upper section (origin to Orange-Vaal confluence), a middle section, (Orange-Vaal confluence to Augrabies Falls) and a lower section (Augrabies Falls to Orange River Mouth). Approximately 98% of the runoff of the Orange River System is generated in the upper section. The Orange River System is the most developed transboundary river basin in Southern Africa, with a variety of water transfer schemes to supply water to municipalities, industries and farms inside and outside the basin. It has become highly regulated by virtue of 24 major impoundments (constructed within the catchment between 1884 and 1997), numerous minor impounding structures and 6 inter-basins as well as 5 inter-water transfer schemes. Furthermore, a new dam in the lower Orange River basin will be constructed in the Vioolsdrift area, which will unlock opportunities regarding irrigation farming as well as the potential to assist with the provision of drinking water to the rural municipalities within the Namakwa District. The Northern Cape falls within 4 Water Management Areas,



namely (refer to Map B9): Lower Orange (WMA 06). Upper Orange (WMA 12). Oliphant's/Doorn (WMA 15). Lower Vaal (WMA 20).

5.1.1.3.2 Stream Flow

Below normal streamflow is observed downstream the Vaal-Orange River confluence through to the Augrabies Falls. The flow is lower than normal by between 332- 346 million cubic metres per annum. The below-normal streamflow is likely due to the large dams in the Orange and the Vaal Rivers to facilitate water abstractions and transfers in and out and the highly controlled systems that exist upstream.

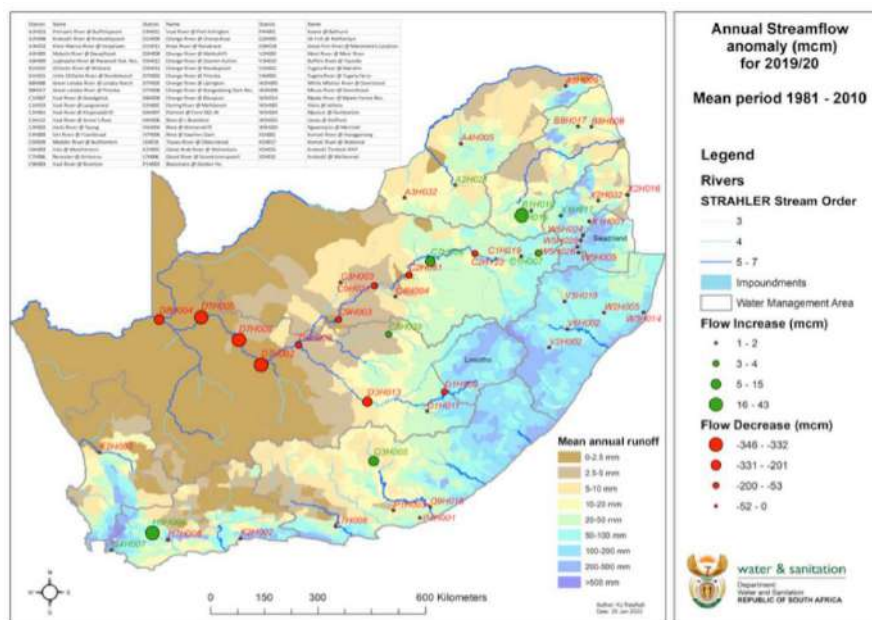


Figure 30: Annual Streamflow for Rivers, National State of Water Report , 2021

5.1.1.3.3 Water Security

In South Africa, water is primarily supplied through water supply systems that include a dam system or standalone (surface water storage). As a result, water availability has been estimated at the scale of a water supply system (WSS).

Based on data from 2019, large systems where water requirements exceed water available are:

➔ Orange in NC, FS, EC(- 147 M m³/year).

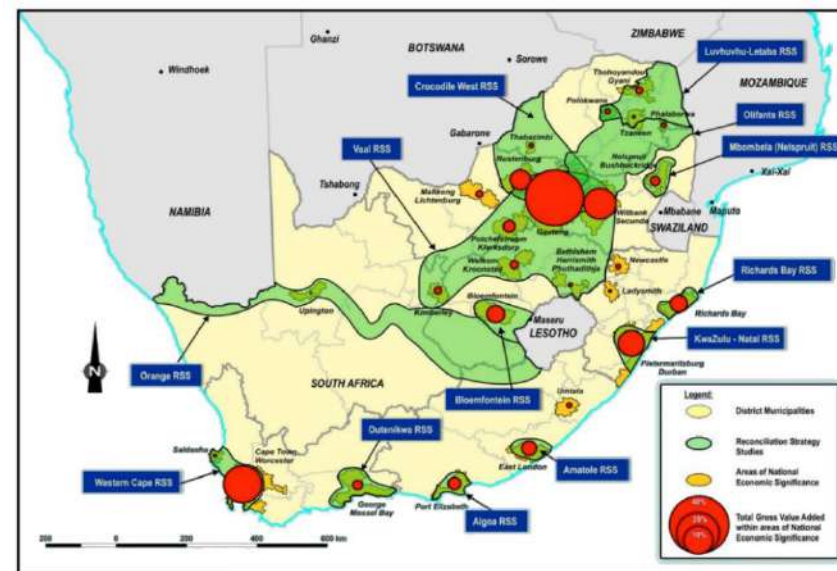


Figure 29: Key Water Resource Systems

Water Resource (WR) System	Current Prioritized Water Resource Development Option and Estimated Date of Water Delivery		
	2020 - 2030	2031 - 2040	2041 - 2050
Integrated Vaal River System	Phase 2 of Lesotho Highlands Water Project by 2025 (R32.6 Billion)	Use of Acid Mine Drainage	Thukela Water Project (Jana & Millietun Dam s)
Orange River System	Gariiep Pipeline by 2024 (R8 Billion). Vrolijkheid Dam in the Lower Orange (R6 Billion)	Dam at Verbeedingskraal in the Upper Orange River	
Crocodile West River System	Mokolo Crocodile (West) Water Augmentation Project (MCWAP) by 2024 (R15 Billion)	Re-Use of Effluent	Re-Use of Effluent
Olifants River System	Olifants Water Resource Development Project (ORWRDP) Phases 2B (R6.8 Billion) , 2D (R1.8 Billion) , 2E (R0.5 Billion) & 2F (R2.3 Billion) Exploitation of the Malmi Dolomitic Groundwater Aquifer	Re-Use of Effluent	Olifants Dam (Possibly Rooipoort Dam)
Mgeni Water Supply System	Phase 1 of uMkhomazi Water Project by 2026 (Dam at Smithfield, transfer tunnel and Associated Works) (R18.5 Billion)	Re-Use of Effluent	Phase 2 of uMkhomazi Dam (Dam at Impendle and Associated Works)
Algoa Water Supply System	Lower Coeney Balancing Dam Ground Water Development Scheme	Re-Use of Effluent	Kouga Dam Augmentation Scheme
Western Cape Water Supply System	Berg River - Voelvlei Augmentation Scheme (BRVAS) by 2021 (R0.9 Billion) Table Mountain Group Aquifer Scheme	Breedse-Berg River Augmentation Scheme (Mitchell's Pass Diversion & Raising of Voelvlei Dam)	Raising of Lower Steenbras Dam Desalination of Sea Water

Figure 31: Prioritised Water Resource Development



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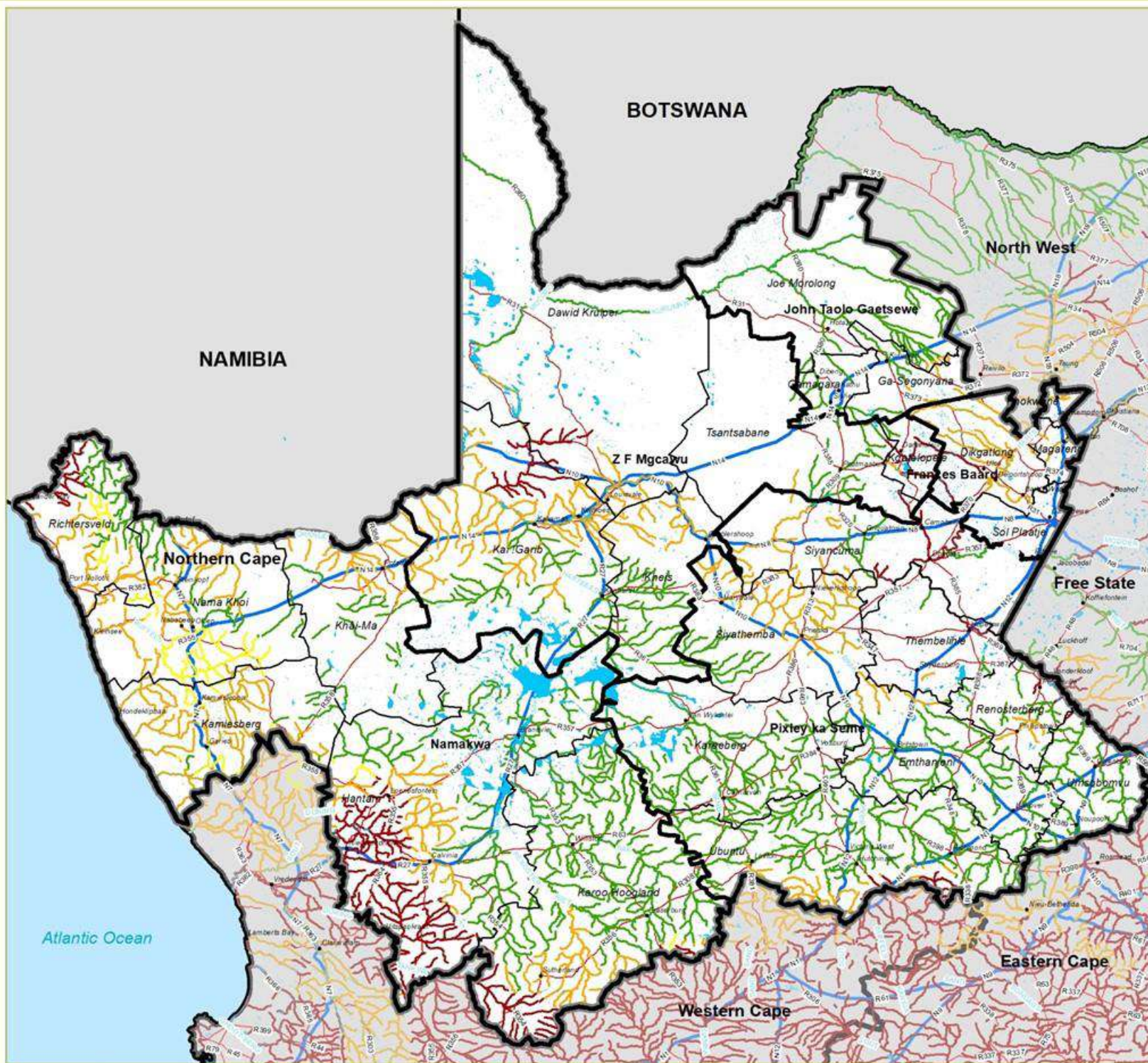
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FRESHWATER ECOSYSTEM

Legend

- Town/Settlement
 - Main Roads
 - National Roads
 - Local Municipality
 - District Municipality
 - Wetlands
- River Status**
- Critically Endangered
 - Endangered
 - Vulnerable
 - Not threatened

Map 3: Northern Cape Freshwater Ecosystem

Source: Department of Forestry, Fisheries & the Environment

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.1.1.4 Coastal Zone

The coastal region in the Northern Cape Province extends over 3 municipalities within the Namakwa District Municipality, namely Kamiesberg; Nama Khoi; and Richtersveld, and stretches over 313 kilometres of coastline. The two regional fishing nodes in the Northern Cape are the towns of Port Nolloth and Hondeklipbaai.

5.1.1.4.1 COASTAL AND MARINE (MARINE SPATIAL PLANNING)

In South Africa, the most visible driving force is Operation Phakisa: Ocean Economy and the national push for economic growth. All maritime sectors are politically desired to expand, and direct and indirect job creation in the blue sectors is a stated policy goal in South Africa's blue growth agenda. Almost all maritime sectors are increasing their contribution to the country's economy. According to the report, fisheries, marine aquaculture, marine and coastal tourism, mining (oil and gas, diamonds), and maritime transport (shipping and ports) will continue to be the most important maritime sectors in terms of direct interest in the marine environment and potential for generating socioeconomic impact in the near future.

An important consideration is that South Africa's maritime sectors use the marine environment in a variety of ways. Some use marine resources directly (for example, extraction), others indirectly (for example, tourism), and still others use the sea surface as a medium for their activity (for example, transportation). Aside from activities that directly use marine resources and/or space, others serve important supporting roles, such as wastewater discharge and water abstraction.

MSP entails long-term ocean development planning. It is a marine planning approach that more coherently organizes space use to guide single-sector decision-making and provide comprehensive, integrated, and complementary planning and management.

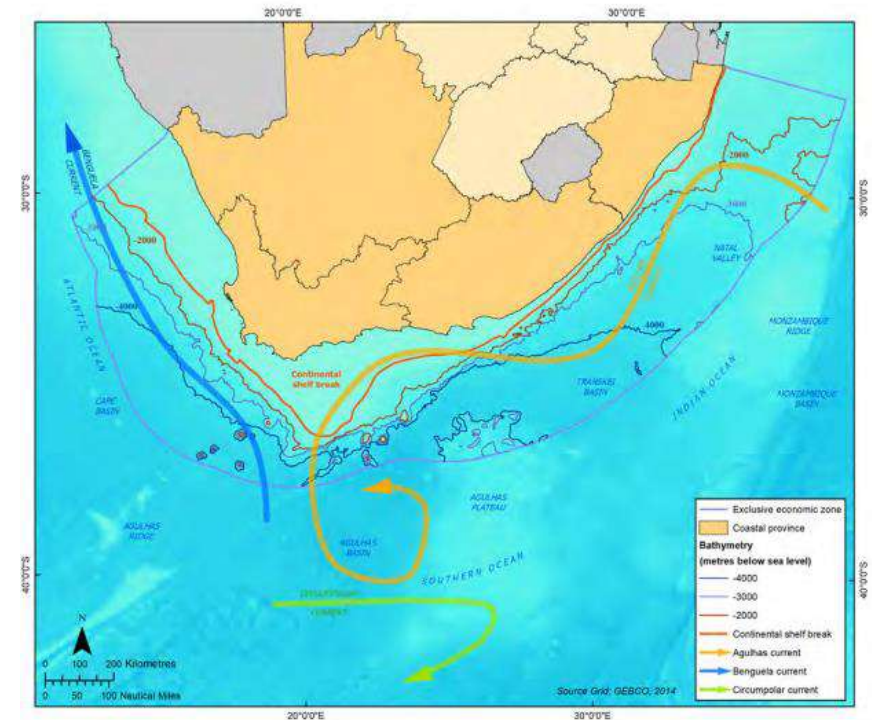


Figure 32: Oceanography of South Africa's Economic Zone with ocean currents

5.1.1.4.1.1 Offshore Environment

Upwelling occurs where the wind is strongest, and the continental shelf is narrowest and deepest. The Benguela Current is one of the world's most productive regions, supporting many commercial fisheries. The cool ocean conditions also contribute to aridity along the west coast, with fewer estuaries and land-based sources of nutrients and sediment flowing into the sea; however, the Orange River is an exception.

Because the water in the Agulhas Current is so nutrient-depleted, delivery of land-derived nutrients to the sea by these estuaries is critical, especially



The Southern Benguela ecoregion stretches from Namibia to Cape Point in South Africa and is divided into two subregions: the northern Namaqua subregion and the southern Cape subregion. The ecoregion consists of cool temperate ecosystem types with communities that are less diverse in general but more productive and have higher biomass than those on the east coast. Kelp forests, cold-water corals, canyons, and a variety of ecosystem types with diverse benthic substrates are among these ecosystem types. The west coast continental shelf is influenced heavily by fluvial inputs from the Orange River and is much wider than the east coast shelf.

South Africa's west coast is cold and dry, forming the cool temperate Southern Benguela ecoregion. However, only some of the inshore broad ecosystem groups were divided into two subregions, such as rocky and mixed shores but not sandy shores⁹. Due to the limited rainfall and delivery of terrigenous sediment from only a few estuaries, dunes along this coast are much smaller. The Orange River in the country's northwestern corner is a notable exception: it is a massive system with significant fluvial inputs to the marine environment. The west coast of the country has the country's longest dissipative beaches.



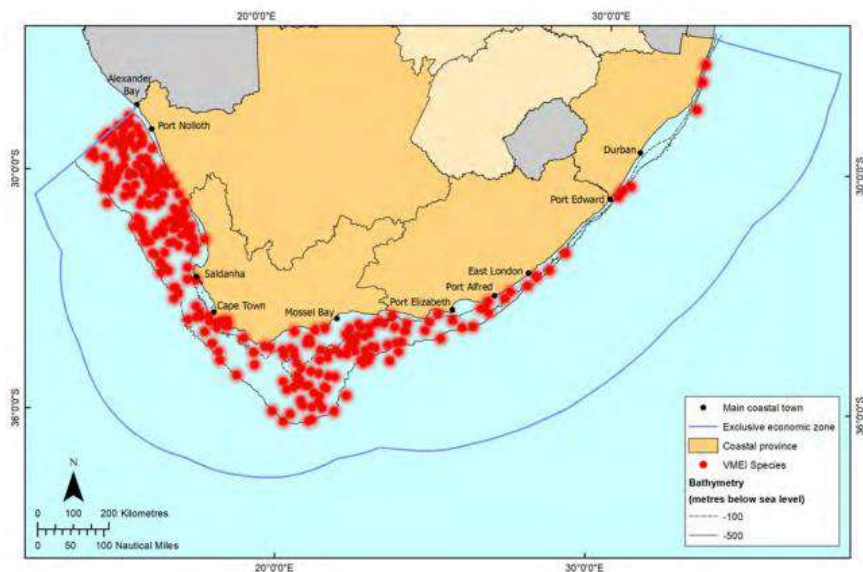


Figure 34: Vulnerable Marine Ecosystem

Ecological conditions:

- **Natural / Near-Natural:** These are areas in good ecological condition with little or no evidence of human impact. These sites are expected to have both biodiversity patterns and processes largely intact and hence can be considered to be in a largely intact state. These areas are concentrated in deep water (i.e., beyond the shelf edge) and the west coast shelf (north of St Helena Bay), offshore of the Wild Coast and offshore of St Lucia in the Delagoa ecoregion. Coastal areas in this condition class are mostly in the Wild Coast and the Delagoa ecoregion.
- **Moderately Modified:** These areas are in fair ecological condition and are often found on the inner shelf and shelf edge. These areas tend to have single important pressures or a range of pressures at moderate intensities driving some degradation of natural habitat. Although these areas are not considered to be pristine, they are likely to be in a largely functional state and have some level of degradation.

→ **Severely / Critically Modified:** These areas are in poor and very poor ecological condition. Many coastal areas in close proximity to metropolitan areas, sections of the shelf edge and areas offshore of the southern Cape coast are in this category. The most severely impacted areas (often associated with trawl grounds) include the shelf edge from Cape Town to the Agulhas Bank, the shelf edge offshore of Port Elizabeth and sections of the KwaZulu-Natal Bight. Often these areas have single very high-intensity pressures or several important pressures that drive severe degradation of natural habitat. These sites have been severely degraded from their natural state, causing significant loss of biodiversity patterns, and disrupted ecological processes and there is often likely to be major physical disruption of habitat.

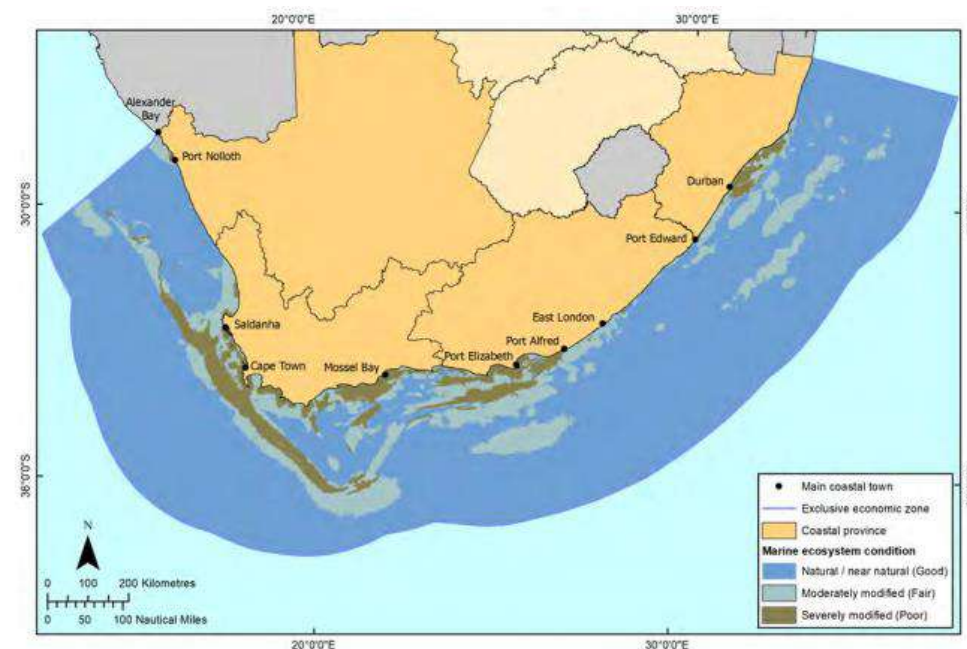


Figure 35: Marine Ecosystem Conditions



5.1.1.5 Terrestrial Ecosystems

This section presents key findings from the accounts for protected areas by biome, which use the same 11 accounting periods and seven types of protected areas as the national and provincial protected area extent accounts. The growth of the protected area estate by biome over the period 1900 to 2020 is shown in figure 28.

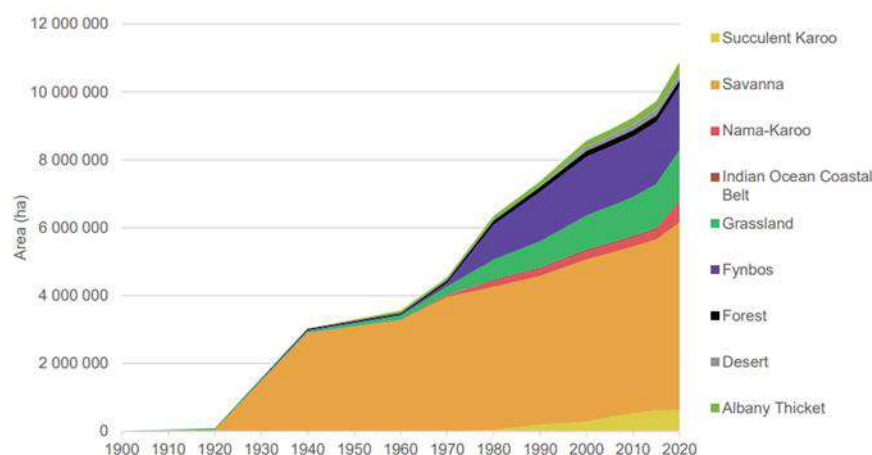


Figure 36: Cumulative extent of the protected area estate by biome, reflecting the 11 accounting periods from 1900 to 2020 and based on declaration dates.

5.1.1.5.1 Ecology

The Northern Cape is an environmental focal area, as is demonstrated by inter alia the designation of the Square Kilometre Array (SKA) project and UNESCO's registration of the Richtersveld Botanical and Landscape World Heritage Site (Department of Cooperative Governance, Human Settlements and Traditional Affairs, 2012).

The biomes of the Northern Cape Province are the physical expression of the biotic responses (vegetation) to the abiotic drivers of the ecology of the region. The different biomes are mostly a result of varying climate patterns.

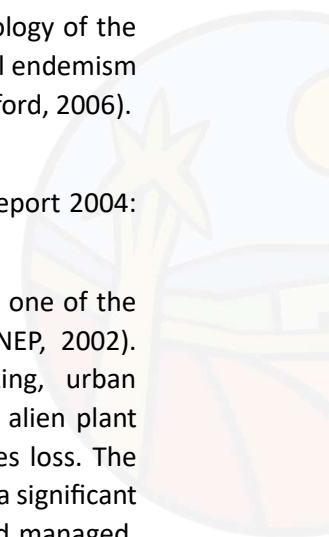
These operate at a high hierarchical level in the landscape of which their influences are modified at a more local scale. It is the latter that results in the establishment of the vegetation types of the different biomes. The ecology of the region is not only affected by the amount of absence of rain, sunshine, etc. but also by the reliability of these variables, as well as the composition and condition of the soil. Organisms associated with wetlands have specific life cycles and physiological adaptations that enable them to survive in such a specialised environment (Mucina and Rutherford, 2006).

The same applies to the vegetation where many of the species have specific physical and biological characteristics that enable them to prosper in harsh conditions, unsuitable for most. The latter is evident from the many unique species that are associated with the Succulent Karoo Biome of the region which is recognised as a centre of endemism (Mucina and Rutherford, 2006). It is a unique environment where the predominant winter rainfall is supplemented by fog and dew, which has the uncharacteristic feature of maximum winter temperature exceeding those of the summer (Mucina and Rutherford, 2006). In contrast to the Succulent Karoo, the ecology of the Nama Karoo is not as diverse and the overall diversity and local endemism of this biome is considered to be very low (Mucina and Rutherford, 2006).

5.1.1.5.1.1 Threats

As taken from the Northern Cape State of the Environment Report 2004: Biodiversity Specialist Report (Neal, 2005):

The loss, transformation and degradation of natural habitat is one of the most important causal mechanisms of biodiversity loss (UNEP, 2002). Conversion of natural habitat types by cultivation, grazing, urban developments, afforestation, mining, dams, and industry and alien plant invasions results in the degradation of ecosystems and species loss. The development of renewable energy (solar and hydropower) has a significant impact on the surroundings and requires to be monitored and managed. The impact on biodiversity has been substantial, and significant proportions of South Africa's flora and fauna are threatened (Wynberg, 2002).



It is estimated that about 16.5% of South Africa's land cover is transformed, and a further 10% is degraded (Wynberg, 2002). Sensitive arid habitats such as the Succulent Karoo Biome of the Northern Cape Province are particularly prone to degradation as a result of over-grazing, alien invasive species and mining (CEPF, 2003). In addition, the aridity of the climate precludes rapid recovery of degraded areas. When examining veld degradation in terms of severity and rate of degradation, the Northern Cape emerged as the third most degraded province in South Africa, after the Limpopo Province and KwaZulu-Natal (Hoffman and Ashwell, 2001).

The approach used to assess ecosystem protection is to look at the proportion of the national target that has been met. This is known as a gap analysis. Nationally, protected areas conserve 6% of South Africa's land area. This figure falls to just under 5% in the Northern Cape Province. As a result, biodiversity is generally underrepresented in the region's protected area network, and there is considerable room for protected area development in order to meet national conservation targets.

5.1.1.5.1.2 Opportunities

Restoration of degraded ecological features that provide eco-services and goods to humanity may create valuable job opportunities, boost resilience, and contribute to overall sustainability and resilience goals. The restoration of ecological corridor linkages in a fragmented landscape will contribute to the enhancement of ecological systems because they are interconnected, and movement is free.

The fauna and flora of the Northern Cape Province are influenced by the region's climate, among other factors. Aside from being a low rainfall region, the seasonal variability of rainfall in the summer and winter seasons influences the viability and suitability of species within the various biomes.

5.1.1.5.2 Biomes

The province's topography, as informed by geology, has an impact on the vegetation as well. South Africa has several plant endemism hotspots. These are not distributed randomly and are closely associated with the Great Escarpment, which extends across the western regions of South

Africa (Cowling, Richardson, & Pierce, 1997). This area is known as the Succulent Karoo centre of endemism in the Northern Cape Province, and it accounts for approximately 14% of the province. The Nama Karoo (50%) and Savanna (30%) biomes dominate the rest of the province. The Northern Cape's other biomes are the Grasslands, Fynbos, and Desert Biomes, which account for approximately 1% of the surface area.

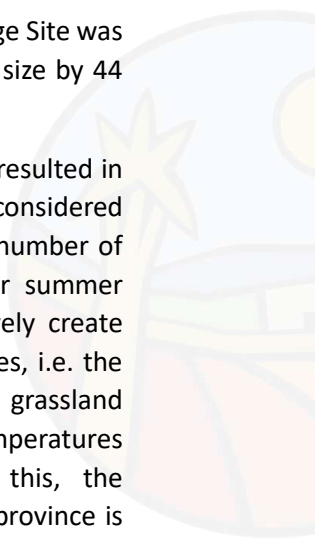
5.1.1.5.2.1 Desert Biome

The Desert biome covers 0.6% of South Africa's land area, and by the end of 2020, 160 246 ha would have been protected. The percentage of the Desert biome that is protected has increased from 16.0% at the end of 2000 to 22.4% at the end of 2020. The Desert biome, along with the Fynbos biome, has the second highest proportion of the biome protected.

The Desert biome was not protected until the end of the 2000 accounting period when 104 635 ha of land was designated as Richtersveld National Park, part of the |Ais-|Ai-Richtersveld Transfrontier Park.

The Richtersveld Cultural and Botanical Landscape World Heritage Site was added to the protected area at the end of 2010, increasing its size by 44 814 ha.

Increased rainfall towards the eastern part of the province has resulted in the establishment of the Savanna Biome. The latter is generally considered to be a relatively species-poor region; when expressed as the number of species per area (Mucina and Rutherford, 2006). The higher summer rainfall, relatively high evaporation and lack of frost collectively create favourable conditions for the establishment of grasses and trees, i.e. the vegetation of the Savanna biome. The latter differs from the grassland biome by Savana being characterised by higher minimum temperatures and lower number of soil moisture days. Having said this, the Savanna/Grassland boundary in the north-eastern part of the province is not considered to be not necessarily a climate-driven division but may be the result of other factors (Mucina and Rutherford, 2006) expressed as the number of species per area (Mucina & Rutherford, 2006).



The higher summer rainfall, relatively high evaporation and lack of frost collectively create favourable conditions for the establishment of grasses and trees, i.e. the vegetation of the Savanna biome. The latter differs from the grassland biome by Savanna being characterised by higher minimum temperatures and lower number of soil moisture days. Having said this, the Savanna/Grassland boundary in the northeastern part of the province is not considered to be a climate-driven division but may be the result of other factors (Mucina & Rutherford, 2006).

5.1.1.5.2.2 Fynbos Biome

The Fynbos biome is unique to the Cape Floral Region biodiversity hotspot, accounting for 6.8% of the South African mainland. By the end of 2020, 8 321 604 ha of land would have been protected. The percentage of the Fynbos biome that is protected has increased from 20.9% at the end of 2000 to 22.4% by the end of 2020. It shares the second highest proportion of protected land with the Desert biome.

Net change as a proportion of opening stock over the four accounting periods since 2000 shows a fairly consistent net increase, with a slightly higher net increase in the decade 2010 to 2020.

Nature Reserves were the most responsible for this increase, followed by Protected Environments.

5.1.1.5.2.3 Grassland Biome

The Grassland biome is South Africa's second-largest, covering 26.9% of the country. By the end of 2020, 32 780 417 ha of land would have been protected. The percentage of the Grassland biome that is protected has increased from 3.0% at the end of 2000 to 4.6% at the end of 2020. Despite having the second largest absolute increase in a protected area, with 503 103 ha protected since 2000, the biome had the second lowest proportion of biome protected at the end of 2020 (second only to the Nama-Karoo biome).

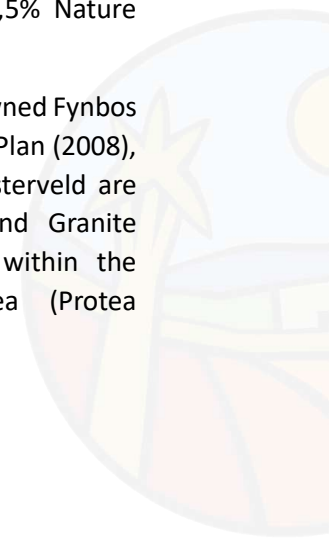
Small parts in the southern-eastern region of the Northern Cape fall under the Grassland Biome. Grasslands are dominated by a single layer of grasses. The amount of cover depends on rainfall and the degree of grazing.

5.1.1.5.2.4 Nama-Karoo Biome

The Nama-Karoo biome covers 20% of South Africa, and 555 443 ha will be protected by the end of 2020. The percentage of the Nama-Karoo biome that is protected has more than doubled, from 0.9% at the end of 2000 to 2.2% at the end of 2020. Despite this, the Nama-Karoo biome had the least amount of protected land by the end of 2020.

Net change as a proportion of opening stock over the four accounting periods since 2000 indicates a relatively high net increase in the accounting periods since 2010. This was the result of large increases in Protected Environments, National Park and Nature Reserves. Large, protected areas involved include Meerkat National Park and Marietjie van Niekerk Nature Reserve. By the end of 2020, the Nama-Karoo biome was protected by 50,9% National Park, 26,6% Protected Environment and 22,5% Nature Reserve.

Small portions of the Northern Cape fall within the world-renowned Fynbos Biome. According to the Namakwa District Biodiversity Sector Plan (2008), Bokkeveld Sandstone Fynbos and Niewoudtville Shale Renosterveld are found within the Hantam Local Municipality. Namaqualand Granite Renosterveld and Kamiesberg Granite Fynbos are found within the Kamiesberg Local Municipality. The Kamiesberg Protea (Protea namaquana) is endemic to the Kamiesberg area.



5.1.1.5.2.5 Savanna Biome

The Savanna biome is the largest in South Africa, accounting for 32.1% of the total area. The Savanna biome had the highest absolute area protected of any biome, with 5 541 30 ha protected at the end of 2020, and the highest absolute increase in protected area between 2000 and 2020, with 754 281 ha protected added during that period. By the end of 2020, 14.2% of the biome had been protected.

Over the four accounting periods since 2000, net change as a proportion of opening stock shows that the accounting period with the greatest net increase was from 2015 to 2020 when 504 788 ha were added to the size of the protected area in this biome.

The northern part of the province is covered by the Savanna Biome. The Camel Thorn (*Acacia erioloba*) and the Camphor Bush (*Tarchonanthus camphorates*) are the most distinctive trees in the Northern Cape and the Kalahari. The Portly Baobab (*Adansonia digitata*) and the Candelabra tree (*Euphorbia ingens*) are two other notable trees. Much of the area is used for game farming, so it can be considered effectively preserved as long as sustainable stocking levels are maintained.

5.1.1.5.2.6 Succulent Karoo Biome

The Succulent Karoo Biome has been designated as a global biodiversity hotspot. It is found along the western edges of the Northern Cape Province, including the Namaqualand and Richtersveld regions.

The Succulent Karoo biome covers 6.9% of Namibia and is part of a global biodiversity hotspot that extends into southern Namibia. By the end of 2020, 620 489 ha of land would have been protected. The percentage of the Succulent Karoo biome that is protected has more than doubled, from 3.4% at the end of 2000 to 7.4% at the end of 2020.

By the end of 2020, the Succulent Karoo biome will be protected by National Parks (48.7%), Nature Reserves (35.6%), portions of World Heritage Sites not already protected (15.2%), and Mountain Catchment Area (0.6%).

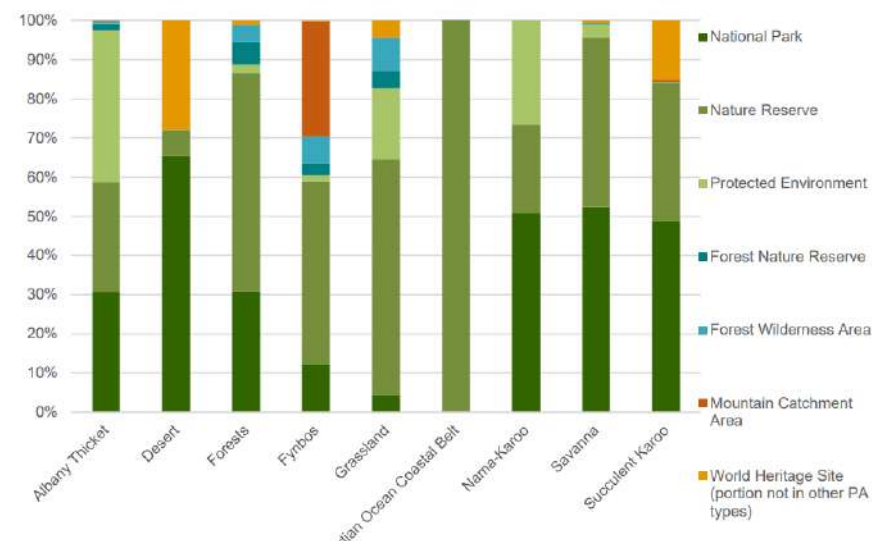
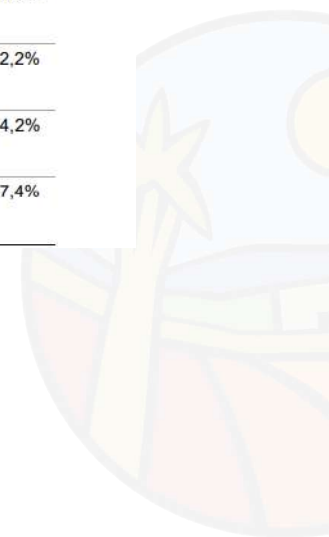


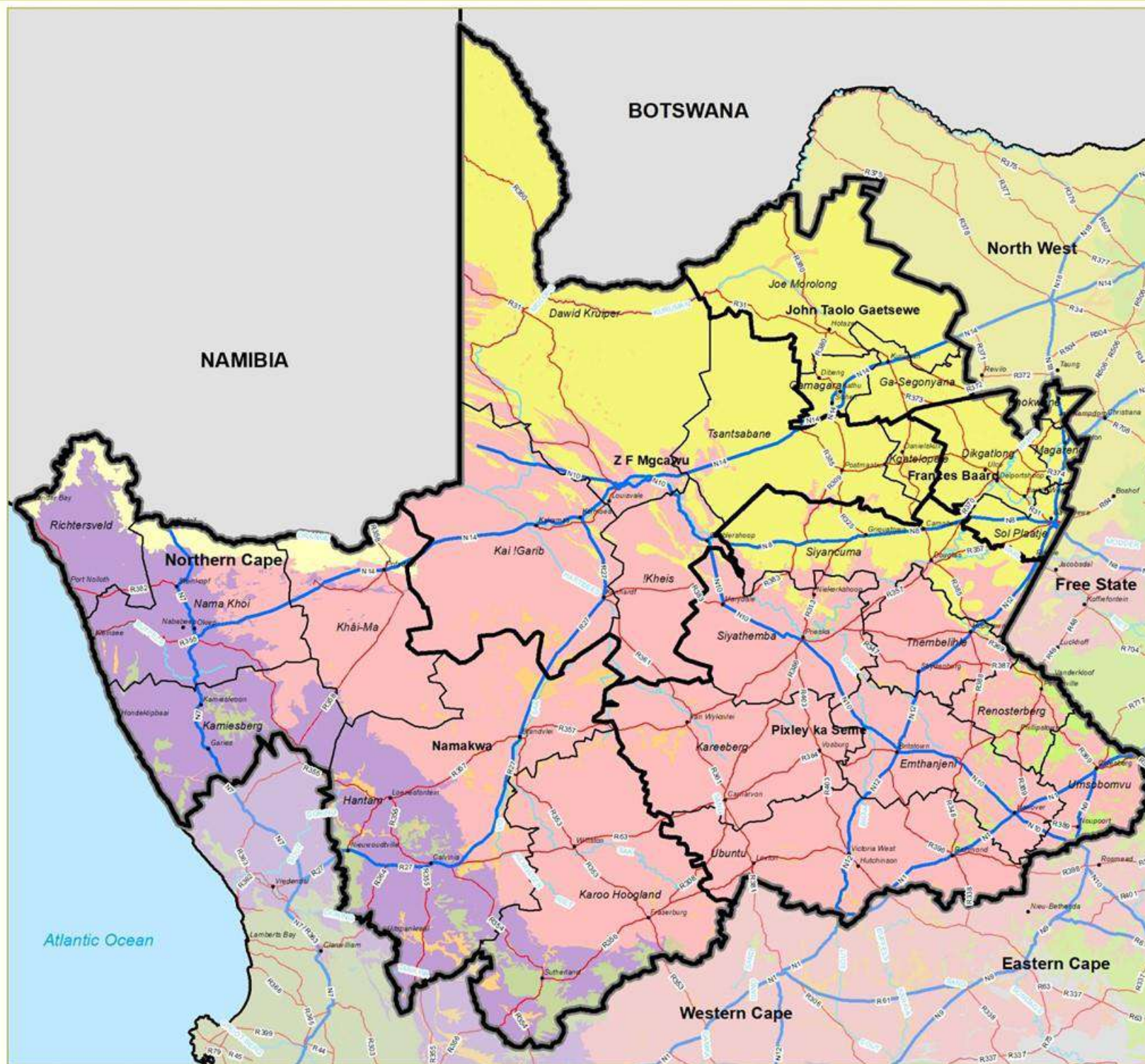
Figure 37: Composition of the protected area estate by protected area type, for each biome in 2020, based on the South African



Table 6: Extent of the land-based protected area estate by type of protected area and by biome in 2020, in hectares and as a proportion of the protected area estate in each biome, based on the South African

Biomes	Units	National Park	Nature Reserve	Protected Environment	Forest Nature Reserve	Forest Wilderness Area	Mountain Catchment Area	World Heritage Site*	Total area of biome protected (ha)	Total area of biome	Proportion of biome protected (%)
Albany Thicket	Area protected (ha)	116 146	105 213	145 896	6 357	2 763	707	0	377 082	2 912 590	12,9%
	Proportion of area protected (%)	30,8%	27,9%	38,7%	1,7%	0,7%	0,2%	0,0%			
Desert	Area protected (ha)	104 634	10 798	0	0	0	0	44 814	160 246	716 966	22,4%
	Proportion of area protected (%)	65,3%	6,7%	0,0%	0,0%	0,0%	0,0%	28,0%			
Forests	Area protected (ha)	60 574	108 866	4 391	11 054	8 740	283	1 912	195 820	488 385	40,1%
	Proportion of area protected (%)	30,9%	55,6%	2,2%	5,6%	4,5%	0,1%	1,0%			
Fynbos	Area protected (ha)	223 700	876 400	27 666	55 077	129 269	549 513	3 909	1 865 534	8 321 604	22,4%
	Proportion of area protected (%)	12,0%	47,0%	1,5%	3,0%	6,9%	29,5%	0,2%			
Grassland	Area protected (ha)	64 522	900 812	272 150	67 789	123 445	3 320	64 443	1 496 481	32 780 417	4,6%
	Proportion of area protected (%)	4,3%	60,2%	18,2%	4,5%	8,2%	0,2%	4,3%			
Indian Ocean Coastal Belt	Area protected (ha)	0	72 139	0	7	0	0	0	72 146	1 143 546	6,3%
	Proportion of area protected (%)	0,0%	100,0%	0,0%	0,0%	0,0%	0,0%	0,0%			
Nama-Karoo	Area protected (ha)	282 880	124 697	147 866	0	0	0	0	555 443	24 828 214	2,2%
	Proportion of area protected (%)	50,9%	22,5%	26,6%	0,0%	0,0%	0,0%	0,0%			
Savanna	Area protected (ha)	2 905 326	2 394 965	181 004	4 484	11 392	313	43 821	5 541 305	39 132 802	14,2%
	Proportion of area protected (%)	52,4%	43,2%	3,3%	0,1%	0,2%	0,0%	0,8%			
Succulent Karoo	Area protected (ha)	301 943	220 748	0	0	162	3 613	94 023	620 489	8 366 177	7,4%
	Proportion of area protected (%)	48,7%	35,6%	0,0%	0,0%	0,0%	0,6%	15,2%			





TERRESTRIAL ECOSYSTEM

Legend

- Town/Settlement
- Main Roads
- National Roads
- Main Rivers
- Local Municipality
- District Municipality
- Vegetation Biome**
 - Azonal Vegetation
 - Desert
 - Fynbos
 - Grassland
 - Nama-Karoo
 - Savanna
 - Succulent Karoo

**Map 4: Northern Cape
Terrestrial Ecosystem**

Source: Department of Forestry, Fisheries & the Environment

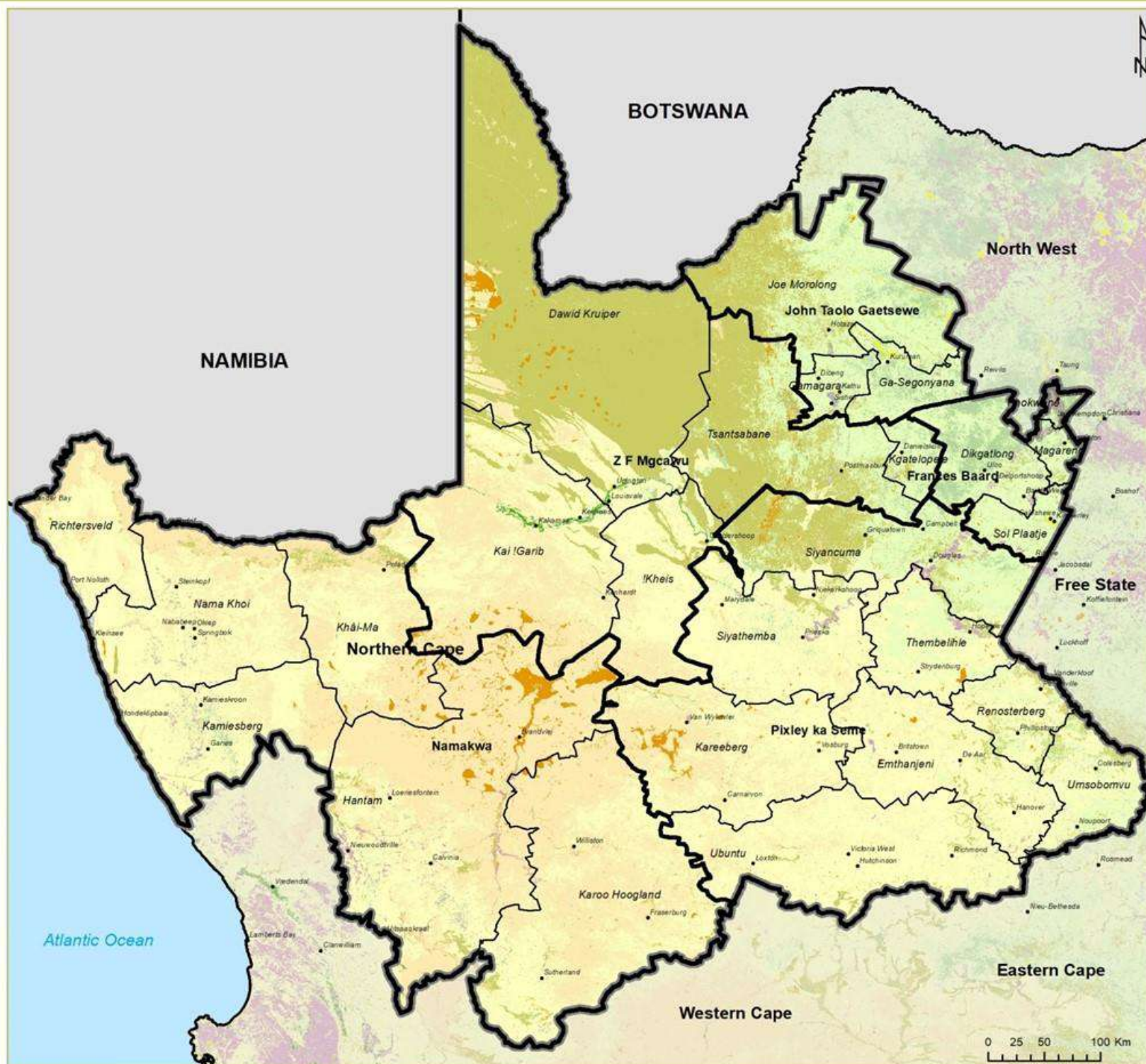
**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.1.1.6 Land

Any natural resource management requires knowledge of what is where. Land cover is particularly useful for spatial planning because it positions features in relation to one another. The 2020 national land cover dataset is the most recent and comprehensive land cover map for the Northern Cape Province. The Northern Cape Province contains all seventy-two land cover classes from the national dataset. In terms of land cover, the province can be considered relatively uniform, with only two land cover classes covering 86% of the surface area: 'Low shrubland' (61%) and 'Bare none vegetated' (25%). Given the associated climate, the dominance of these two land cover classes is not surprising.





LAND COVER

Legend

- Town/Settlement
- Local Municipality
- District Municipality
- Land Cover 2020**
 - Consolidated
 - Extraction Sites
 - Fallow Lands & Old Fields
 - Herbaceous Wetlands
 - Karoo & Fynbos Shrubland
 - Natural Grassland
 - Natural Wooded Land
 - Permanent Crops
 - Residential
 - Shrubs
 - Temporary Crops
 - Unconsolidated
 - Waste & Resource Dumps

Map 5: Northern Cape Land Cover

Source: Department of Forestry, Fisheries & the Environment

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



5.1.1.7 Topography

The Northern Cape province is bounded to the north by Namibia and Botswana; to the east by the provinces of North West, Free State, and Eastern Cape; to the south and southwest by the province of Western Cape; and to the west by the Atlantic Ocean. Northern Cape was formed administratively in 1994 by combining the northern and central Cape of Good Hope provinces. The provincial capital is Kimberley. The Highveld, an arid plateau that gradually rises to the Great Escarpment (more than 1 900m in elevation) along the province's southern border, forms the eastern half and southwest of the Northern Cape. The desert to the northwest includes the dunes of Kgalagadi Transfrontier Park, a conservation area shared by South Africa and Botswana. The Orange River runs through the province from north to south.

The Orange River System, which drains approximately 47% of South Africa's total surface area and 22% of the country's mean annual rainfall-runoff, is divided into three sections: the upper (origin to Orange Vaal confluence), the middle (Orange Vaal confluence to Augrabies Falls), and the lower (Augrabies Falls to Orange River Mouth). The upper section of the Orange River System generates approximately 98% of the runoff. The Orange River System is the region's most developed transboundary river basin, with numerous water transfer schemes supplying water to municipalities, industries, and farms both inside and outside the basin. It has become highly regulated as a result of 24 major impoundments (built within the catchment between 1884 and 1997), numerous minor impounding structures, and numerous minor impounding structures.

5.1.1.7.1 Pixley Ka Seme District

Pixley ka Seme district's topography is one of its main assets, with vast open spaces and unspoiled panoramic visual vistas stretching for long distances. This asset makes for excellent scenic drives throughout the region, from the flat plains to crossing South Africa's main rivers. The topography is linked to geology and relief, with elevations ranging from 1000m to 1800m above sea level. Approximately 80% of the region is covered by land reforms

associated with plains, hills, and lowlands. Plains have slopes of less than 5 degrees (8%), resulting in a gradual climate change. Ridges have slopes greater than 5 degrees and thus more variable climatic conditions.

5.1.1.7.2 Frances Baard District

The ridges and escarpment have significant aesthetic and visual potential, as well as habitat for rare and endangered plants and animals. These features are mostly found in the region's north and along its borders. The region's drainage pattern is generally from southeast to north and northwest. The Orange and Vaal Rivers are the main drainage channels in the area, with many other streams and rivers connecting to them. The dominant features of the Frances Baard DM service area are as follows.

5.1.1.7.2.1 The Ghaap Plateau

The Ghaap escarpment creates a dramatic barrier between the area's western and eastern sections. His plateau was formed by a higher-lying Pre-Karoo surface, with the main element being the surface dolomite that gives the plateau its shape.

5.1.1.7.2.2 The Western Plateau

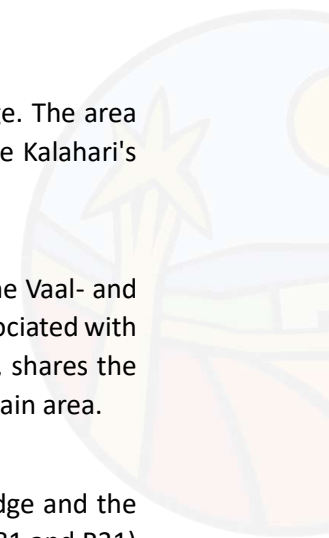
The western area is located west of the Ghaap mountain range. The area rises to the west to form part of an escarpment that forms the Kalahari's eastern rim.

5.1.1.7.2.3 The Eastern Plains

This region is located east of the Ghaap mountain ridge and the Vaal- and Harts River systems. This eastern section is morphologically associated with the Free State Plains. This eastern section, on the other hand, shares the Kimberley thorn veld before transitioning into the Free State plain area.

5.1.1.7.2.4 Visual Amenity

The FBDM area is visually enhanced by the Ghaap Plateau/Ridge and the Vaal River. The Ghaap Plateau forms passes for major roads (N81 and R31) as well as minor roads. These factors contribute to scenic drives and expansive views. The Vaal- and other Rivers cut through the landscape to the east, forming dramatic gorges and water elements. These cliffs and



water features offer tourism potential that has yet to be fully realized. Finally, it should be noted that the district is divided into three distinct morphological regions, each with its own tourism and agricultural potential.

5.1.1.7.3 John Taolo Gaetsewe District Municipality

The district's landscape is primarily level, with a ridge system bisecting the greater municipality along a north-south axis. The Kuruman hills are the only significant variation in the municipality's otherwise flat landscape. The district area is set in typical Kalahari terrain. In the plains, the topography alternates between elevated areas with poorly developed soils and very deeply developed soil types with poor differentiation between soil horizons. The biota in the area is intricately linked to the parent rock, soil, and land use, and it is extremely sensitive to unnatural disturbances. The district is entirely contained within the Orange River Basin. The main river systems in the district are the Kuruman and Gamagara rivers. The drainage pattern is also determined by the Kuruman hills.

5.1.1.7.4 Namakwa District

The region is divided into three topographic zones: the coastal Sandveld, which stretches up to 50 kilometres inland and rises to about 300 meters; the broken mountainous 'Hardeveld,' which is about 60 kilometres wide and lies at about 900 meters; and an inland zone, Little Bushmanland, which is about the same elevation but level in nature, with a very ill-defined drainage system, primarily north to the Orange River. The rest of the drainage is primarily to the Atlantic, with numerous watercourses rising in the broken range of mountains that run through the district's centre. This range is part of the rampart that runs the length of South Africa, separating the coastal strip from the inland plateau. The range has some fairly high points, including the Kamiesberg (1531m), which is 72 kilometres south of Springbok, and another peak.

5.1.1.7.5 Zf Mgcawu District

The district falls within four topographical regions namely:

5.1.1.7.5.1 The Kalahari

The Kalahari basin extends northward from the Orange River into Botswana and Namibia. It is a flat, sand-covered semi-desert area that ranges in elevation from 900 to 1200 meters above sea level. It is distinguished by several large pans to the north of Upington, dry riverbeds (including the Kuruman, Nossob, and Molopo Rivers), and dunes that run northwest to southeast. The region is underlain by Karoo rocks and tertiary Kalahari Group rocks. Outcrops are uncommon.

5.1.1.7.5.2 Bushmanland

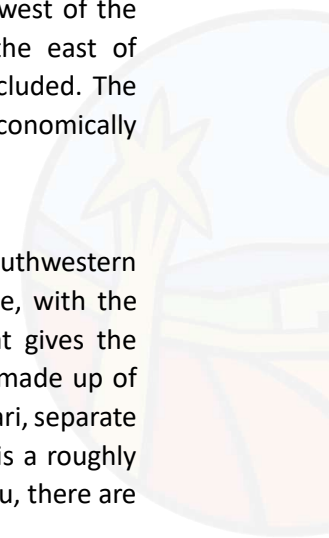
Bushmanland is an arid, flat sub-region of Cape Middleveld located east of the Namaqua Highlands. It is underlain by granitic Precambrian rocks on the western and northern sides, and Karoo rocks on the southern and eastern sides. It is distinguished by numerous large pans and "vloers" and is located between 900m and 1200m above sea level on average.

5.1.1.7.5.3 The Griqua Fold Belt

The Griqua Fold Belt is a highveld sub-region located to the west of the Ghaap Plateau, to the south of the Kalahari Basin, and the east of Bushmanland. The scenic Langberg/Korana Mountains are included. The low Gamagara ridge between Postmasburg and Sishen is economically significant due to its rich iron and manganese deposits.

5.1.1.7.5.4 Ghaap Plateau

The district contains a small portion of the Ghaap plateau's southwestern corner. The Ghaap plateau is a higher-lying pre-Karoo surface, with the main physiographic element being the dolomite surface that gives the plateau its shape. The Langeberg-Koranna ranges, which are made up of Matsap quartzites and form the western boundary of the Kalahari, separate the plateau from the Postmasburg plain. The Ghaap plateau is a roughly triangular area of limestone. On the western side of the plateau, there are strong limestone springs that appear as "eyes" in places.



5.1.2 TOURISM RESOURCES

The Northern Cape Provincial Government Growth and Development Strategy targets tourism as one of the key sectors with the capacity to “grow, transform and diversify the provincial economy”. The sector’s direct contribution to provincial gross domestic product (PGDP) is about 6%. In addition to events, attention is also being given to the potential of niche tourism, a sector that is growing fast. Assets unique to the Northern Cape include a large number of arid areas (for lovers of deserts and desert life) and very clear night skies (for sky-gazers, a niche that already exists but has tremendous potential to expand).

Tourism is undeniably important to the national economy. The South African tourism economy is one of the best-performing economic sectors in South Africa, according to the most recent National Tourism Sector strategy (NDT 2017:7). In the short, medium, and long term, it has the potential to increase job creation and foreign exchange earnings. This contributes to the National Development Plan (NDP) goals of creating 11 million jobs by 2030, providing economic opportunities for young people and rural areas, and developing a strong Small, Medium, and Micro Enterprise (SMME) base in the economy. Tourism is outperforming many traditional South African industries.

Tourism, according to the Northern Cape White Paper on Development and Tourism (2005), is a significant economic growth opportunity because it creates jobs, can provide immediate employment, involves all skill levels, and creates many business opportunities (accommodation, tour guiding, transportation, marketing, and crafts). Tourism promotes rural development by facilitating cross-cultural interaction, keeping money in the local economy, and having a strong multiplier effect. As a result, tourism providers can trigger a variety of virtuous economic cycles that affect a variety of economic sectors.

Frances Baard District:

Frances Baard is the administrative hub of the province with major business and financial institutions located in the district. The city of Kimberley is renowned for the majestic Big Hole Mine Museum which attracts both local and foreign tourists annually. The international convention centre is well positioned to promote the province as a mega business and events destination. Cultural and natural heritage is in abundance and offers the tourist a wonderful journey into the history of diamonds and rock art paintings.

Pixley Ka Seme District:

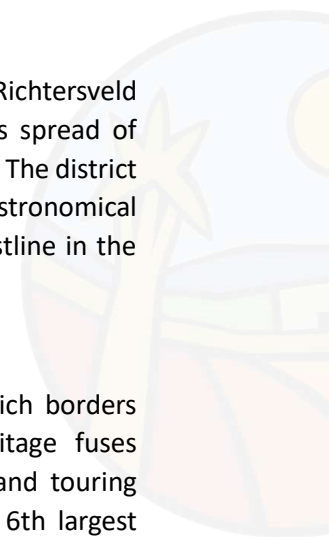
The district is home to the central Karoo which is characterised by desolate valleys between flat tops hills. The district contains three of South Africa’s major dams and is also the largest producer of wool in the country. It offers hunting, hiking, game watching and as well as water sports. Recreational activities and the Khoisan rock art engraving are worth exploring and experiencing.

Namakwa District:

The district is proud to have a World Heritage Site status in the Richtersveld Transfrontier National Park. The district is well known for its spread of wildflowers including many rare and unique endangered plants. The district offers a diverse range of tourism offerings including the Astronomical Observatory, parks and nature reserves, the only strip of coastline in the province and as well as numerous cultural festivals.

ZF Mgcawu District:

The district boasts with the Kgalagadi Transfrontier Park which borders Botswana and Namibia. The San community cultural heritage fuses exceptionally well with the park to offer a wonderful stay and touring experience in the Kgalagadi area. The Augrabies Falls is the 6th largest waterfall in the world and offers excellent farming opportunities. Upington offers wildlife, luxury lodges, adventure activities (walking trails, water sports etc) and houses the second largest airport in the province.



John Taolo Gaetsewe District:

The district has largely an undeveloped tourism industry. The district is blessed with an array of tourism assets which includes The Eye, the biggest natural fountain in the Southern Hemisphere. Professional hunting, birding, and cultural and heritage experiences are fortified by the booming mining industry in the Kathu area. Tswalu private nature reserve is a sought-after unique tourism product and offers exceptional service to a niche market. The department is currently involved with key stakeholders to unblock and enhance the tourism potential in the district and to develop tourism routes. The routes will be able to tap into and grow the domestic experience, increase tourist spend and stay in the district.

5.1.2.1 Heritage

According to the Northern Cape Tourism White Paper (2005), there are numerous cultural and heritage resources, including museums, historical sites, and monuments. The MacGregor Museum in Kimberley promotes cultural conservation throughout the province. There are archaeological and rock art sites, arts and cultural festivals, and notable historical figures (such as Cecil John Rhodes, Olive Schreiner, Sol Plaatje, Robert Sobukwe, and Robert and Mary Moffat). There are also indigenous cultures that are distinct, such as the San communities, the Korana, the Griquas, and the Nama.

5.1.2.2 Tourism Infrastructure

The national highway system, which traverses this vast region in several directions, is the Karoo's single most important infrastructure asset.

Infrastructure in towns and on farms is generally fair to good. This encourages tourism investment and increases business confidence. However, municipalities do not always keep it up to date, and towns increasingly differ in their "political capacity," or the private sector's confidence and skill in negotiating with municipalities. As a result, some towns are more appealing as investment destinations than others.

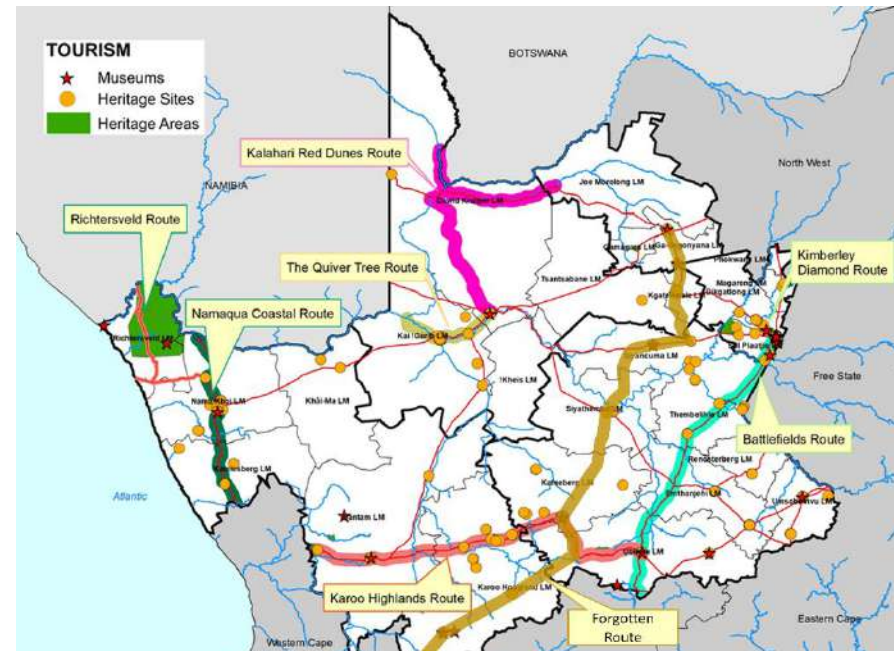


Figure 38: Tourism Routes and Heritage Sites of the Northern Cape Province

However, tourism in the Northern Cape is constrained. Air transport is limited to Kimberley (which only has connections to Cape Town and Johannesburg), Sishen, and Upington (which only has connections to Johannesburg). Tickets to flights are prohibitively expensive. Many other attractions (such as Namaqualand) have no air access. With upscale tourists becoming increasingly money-rich and time-poor, the province's lack of fast and efficient air transport to and between its major attractions is likely the single most significant impediment to tourism growth. There is a demand for air charter services to Springbok, Calvinia, Carnarvon, Sutherland, Colesberg, and De Aar.

Key tourism infrastructure includes:

- ➔ Road maintenance (tarred and untarred roads).



+27 53 838 2600



info@ncpg.gov.za



<http://www.northern-cape.gov.za>



T&I Building, 69 Memorial Road, Monuments Heights, Kimberley

- Tarring important connector routes to unlock district-level economic Potential.
- Reliable electricity and water supply.
- Urban street maintenance.
- Central Business District refurbishment in the towns (including offering incentives and guidance to the private sector, with appropriate municipal regulations).
- Well-managed attractions, such as museums, picnic sites, walks, and camping sites.
- Municipal services, e.g. cleaning road verges, cemeteries and waste disposal sites.
- Safe parking facilities, and
- To promote the northern cape identity, a shared system of tourism road signage for sites, attractions, routes, icons, and gateways should be developed for the Karoo.

5.1.2.3 Existing Tourism Routes¹⁴

Kalahari Red Dune Route:

Winding through the Kalahari, from just north of Upington into the Kgalagadi Transfrontier Park, the Red Dune Route drifts from Guest House to Game Farm across a pleasurable combination of unlimited hospitality and arresting scenery. The locals say that once you've felt the red sand of the Kalahari between your toes, your heart will always return to this desert wonderland. The Kalahari Red Dune Route showcases the Kalahari through a wide range of activities including dune boarding, camel riding and 4x4 trailing for the adventurous, and game drives, guided walks, birding expeditions and other eco-inclined activities for nature lovers. For visitors attuned to culture and history, the Kalahari Red Dune Route offers the opportunity to experience regional customs and folklore, sample traditional cuisine, and meet the warm and welcoming people of the

Kalahari (a glossary of common local words and terms can be found below to assist you during your visit). Accommodation options are as diverse as the landscape and vary from camping to homely bed and breakfasts to luxury lodges. All in all, the Kalahari Red Dune Route offers something for everyone.

Karoo Highlands Route:

The Karoo Highland Route is situated in the southern part of the Northern Cape in South Africa. The route covers the small Karoo towns of Niewoudtville, Calvinia, Williston, Sutherland, Fraserburg, Carnarvon, Loxton and Victoria West and forms the heart of the Great Karoo. The Karoo is the home of peace and tranquillity where you can recharge your batteries while exploring the wide-open plains dotted with koppies (hills). This is a place where a huge telescope allows you to look back to the beginnings of our Universe 13 billion years, ago and where pre-dinosaurs roamed the earth and the first people gazed up to the heavens. People have lived on this massive plateau, the largest of its kind outside Asia, for about 500 000 years. The Khoi and San people who left their legacy as art on the rocks gave the Karoo its name. The place's name comes from Karusa, a Khoi word which means dry, barren, thirsty land. This aptly describes this region where water is scarce. It is an ancient, fossil-rich land, with some important archaeological sites, as well as the largest variety of succulents found anywhere on earth, there are over 9000 plant species in the Great Karoo. The Route offers plenty of interesting attractions such as Sutherland's astronomical observatory, Carnarvon's Karoo Array radio telescope, Karoo architecture and corbelled houses, Anglo-Boer War sites, rock art, ancient Palaeo Surfaces, farm stays and medicinal plants.

Kimberley Diamond Route:

The motive for the route's design is to rehabilitate and conserve six hectares of land for every hectare the company mines, as a way to redress

¹⁴ Weg Magazine, 2016. Cape of many routes.
<http://experiencenortherncape.com/visitor/routes>



the balance between the use of natural resources and sustaining the ecosystem. Combined the route makes up 250 000 hectares across South Africa and Botswana. These properties give people a chance to commune with the diversity of nature – from cultivated gardens to mopani woodlands and riverine forests to savannah grassland and the sandscapes of the Kalahari.

Namakwa Coastal Route:

The Namakwa Coastal route is a rugged nature experience along the unexplored north-west coast of South Africa's Northern Cape. These shores have remained virtually unknown to the public at large as it is within the restricted and previously forbidden diamond mining areas. The route runs along the coast from "Groenrivier" mouth until Port Nolloth and is ideal if you are looking for peace, tranquillity, and adventure. However, many of the roads on the route are not accessible to ordinary saloon cars and are more suitable for 4x4s. If coming from the south (Cape Town) the route starts in Namaqua National Park. Basic accommodation and/or campsites are available all through the route. Breath-taking scenes of the Atlantic Ocean on the one side with occasional sightings of dolphins and whales and the endemic wildlife of the enraptured veld on the other side. North of the Namaqua National Park you will enter the previously restricted Namaqualand Mines area. The valuable mineral treasures hidden within its sands have made these restrictions necessary, but diamonds are not the only treasures. This Sandveld has been jealously guarded and while still largely unspoilt and crime-free is home to many indigenous plants, animals and insects. The coastline, with its flowing dunes and mysterious shipwrecks, has been opened to the fortunate few who come in a 4x4 or can participate in organised guided tours.

The Quiver Tree Route:

The Quiver Tree Route is a land of contrasts between stark fawn arid land and verdant green vineyards. The Great Gariep, known more commonly as the Orange River, winds through the landscape and brings life to the surrounding parched earth. This river was once called 'God's gift to the

Southern African thirst land'. The greenbelt along the river's banks contrasts sharply with the rising rocky cliffs. Irrigation schemes have stretched the greenbelt into the desert, making acres of vineyards and other agriculture possible. Ten percent of South Africa's vineyards are found in the Orange River valley and southern Kalahari. The route includes the towns and settlements of much of the Green Kalahari and includes Keimoes, Kanoneiland, Kenhardt, Augrabies, Upington and Marchand. The Quiver Tree Route has something for everyone. In addition to visiting the popular Augrabies Falls visitors can relax in hot springs, river raft, go on 4x4 trips, hike, bird watch, sample local delicacies and wines, touch the unique Quiver tree (Kokerboom) and even take a leisurely donkey cart ride through town. The Quiver tree is a botanical symbol of this part of the world. Along the route, one can experience dry, rugged mountains, desert-adapted animal and plant life, red Kalahari dunes, stifling summer temperatures during the day, and freezing desert temperatures at night.

The Richtersveld Route:

The Richtersveld is a vast and unforgiving environment, stark and dramatic yet strikingly beautiful. This route is for the self-sufficient 4x4er only and it is highly recommended that you travel in a convoy as you traverse this largely uninhabited part of the Northern Cape. It is a mountainous desert situated in the north-west corner of South Africa. To its west is the cold and rough Atlantic Ocean while the remarkable Orange River, the largest river in South Africa, winds along its northern border. The Richtersveld has the highest diversity of succulent plants in the world (4 849 species, of which 1 940 are endemic), as well as eerie coastal mists, alluvial diamonds, and truly indigenous cultures.

While many people already know about the Richtersveld National Park, few realise there is an equally large, protected area to the south, previously called the Richtersveld Community Conservancy. This area is the last refuge of Nama people living what is known as the transhumance lifestyle - to migrate seasonally with their livestock from the mountains to the river and so make sustainable use of the fragile succulent ecosystem. In recognition



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of this vanishing lifestyle and the rare botanical diversity it helps protect, the Conservancy has been declared the core of a new World Heritage Site - one of only eight in South Africa. Each small village in the Richtersveld has distinctive features and characteristics. The traditional culture of the inhabitants should be explored and enjoyed. Visiting these hospitable and friendly people is an essential part of any trip to the area. The Ai Ais-Richtersveld National Park is unique in that it is a contractual park – jointly managed by the local community and South African National Parks. Stock farmers may continue to graze their livestock in the park, thereby maintaining a centuries-old tradition.

The Cape Namibia Route:

The route meanders away from the N7 and includes small towns, each with its local flavour and a story to tell. The N7 highway stretches from Cape Town through the Northern Cape before heading into Namibia. Crossing from the Western Cape into the Northern Cape, visitors will encounter towns which capture the Nama heritage of the province. Slow down and appreciate the unique stories of the people of Garies, Kamieskroon, Springbok, Okiep, Nababeep, Carolusberg, Steinkopf and Vioolsdrift. During springtime, this route takes visitors into the core of the floral kaleidoscope which is the Namaqua flower season.

N12 Treasure Route:

The N12 Treasure Route is an exciting tourism development starting in the Northwest Province and running through the Northern Cape and the Frances Baard District. This route is created to open a wide range of wildlife, cultural, scenic, industrial and eco attractions to the visitor as well as numerous tourism investment opportunities along the route. The idea is to have a diverse choice of types of accommodation available along the Treasure Route there is the opportunity to develop the N12 route linked to Anglo-Boer War Sites. The notion of the treasure route is not to compete with the N1 but rather seek to be a specialist route that focuses on destinations and overnight traffic offering a more pleasant and varied experience than the N1. The district played a major part in the Anglo-Boer

War, These unexploited war sites could be viewed through an existing route that could be packaged for guided tours and include the other heritage and historic sites that are part of the N12 in the district. The route could be promoted as a tourism service route similar to Route 62 (R62) in the Southern Cape which is modelled on the legendary Route 66 in the United States.

Forgotten Route:

The Forgotten Highway Route connects Tulbagh in the south to Kuruman in the north, passing through several Karoo regions including the Ceres Karoo, Roggeveld, Nuweveld, Bo-Karoo, Griqualand West, the Ghaap, and the Kalahari.

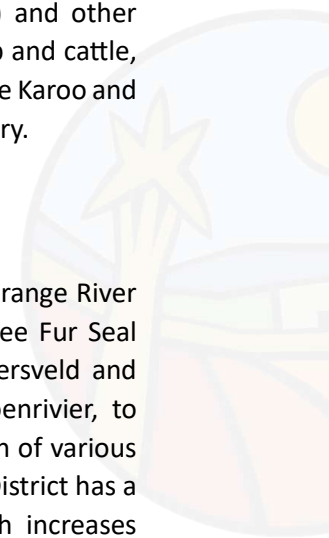
This 1000-kilometer route is the path that the !Xam, Khoekhoe, Tswana, missionaries, and explorers took. Travelers would then head into central Africa.

Parts of the Route were built on paths used by !Xam (San) and other hunter-gatherer groups, later by Khoekhoe herders with sheep and cattle, Tswana farmers at the northern end, and Xhosa who entered the Karoo and settled along the Gariep beginning in the late eighteenth century.

5.1.2.3.1 Other Proposed Routes

Diamond Coast Route:

The Diamond Coast is rich in tourist attractions, such as the Orange River Mouth (a proclaimed RAMSAR site) and wetlands, the Kleinsee Fur Seal Colony (which is home to over one million seals), the Richtersveld and Namakwa National Parks, Buffels River Mouth and the Groenrivier, to mention but a few, which provide an anchor for the promotion of various experiences offered along the Diamond Coast. The Namakwa District has a good road system leading to the main coastal towns which increases accessibility, however, accessibility by air and sea is very limited and tourists must drive for hundreds of kilometres before reaching the Diamond Coast. There are varied potential cross-boundary linkages and



marketing with Open Africa, including the Namaqua Coastal Route, the Kalahari Red Dune Route and the Richtersveld Route, which need to be integrated into the Diamond Coast Route to achieve a strengthened tourist system. The need for a coordinated and single Diamond Coast Route stems from the loose-standing existing and potential routes that are evident in the Namakwa District Municipality and the challenges associated with management, marketing, operationalisation etc. This has potentially occurred because of accessibility challenges.

5.1.2.4 Tourism Markets

Nature-Based Tourism and Eco-Tourism Nature-based tourism Definition: Tourism that takes place mainly in natural environments, with the specific purpose of viewing and experiencing the natural features of a destination.¹⁵

5.1.2.4.1 Avi-Tourism

Birding is one of the fastest-growing nature-based tourism activities in the world, and it is gaining popularity and interest in South Africa as well. It has also been acknowledged that avi-tourism is an important component of the global expansion of nature-based tourism. Birding is one of the fastest-growing nature-based tourism activities in the world, and it is gaining popularity and interest in South Africa as well. It has also been acknowledged that avi-tourism is an important component of the global expansion of nature-based tourism. South Africa is a premier avi-tourism destination due to its large diversity of birds and endemic species, as well as a full complement of Africa's major bird habitats.

Key findings from a study conducted by the Department of Trade and Industry on Avi-tourism include:

- An estimated three million trips are undertaken internationally each year, specifically for birding purposes.

- South Africa has attractive core birding assets compared to competitor destinations – particularly concerning species diversity, endemism and rarity.
- The total size of South Africa's current avi-tourism market is between 21 000 and 40 000 avi-tourists annually, of which domestic avi-tourists number between 13 000 and 24 000 per annum.
- Avi-tourists' total spend was estimated to be between R927 million to R1,725 billion per year, of which domestic avi-tourists' spend was between R482 million and R890 million annually.
- Though domestic avi-tourism represents a major untapped market, foreign avi-tourists also represent an important area for future growth.
- The size of the international avi-tourism market is between 8 000 and 16 000 avi-tourists per annum, with an estimated spend of between R309 million and R618 million annually.
- Avi-tourism's potential contribution to GDP is in the range of R1,205 billion to R2,243 billion annually.
- Avi-tourists spend more per visitor than those in other niche market segments.
- Avi-tourists have higher than average income levels, longer trip lengths, and a greater tendency to visit multiple provinces than mainstream tourism market segments. They also spend a higher total number of days per year travelling for birding purposes.
- Domestic and international avi-tourist profiles correlate with priority market segments targeted by South African Tourism.
- Avi-tourism generally has positive environmental and conservation impacts.

5.1.2.4.1.1 Birding Hotspots

Domestic and international birders have different preferences in terms of where they like to go birding, at a regional and sub-regional level. International avi-tourists, either on self-drive or organised birding tours, tend to try to maximise the number of African or Southern African endemic

¹⁵ Keyser (2009); The Nature Conservancy, 2009, www.nature.org



species seen in a trip. Their itinerary is also influenced by other factors, such as other wildlife attractions and accessibility by road. Domestic and regional avi-tourists, on the other hand, are influenced by proximity and additional factors, such as wanting to see new places. In other words, different types of avi-tourists focus, to a different extent, on 'hotspots'. Key national birding hotspots in the Northern Cape Karoo include¹⁶:

- Tanqua Karoo.
- Bushmanland: Brandvlei, Pofadder, and
- Kalahari: Kgalagadi Transfrontier Park.

5.1.2.4.2 Botanical Tourism

South Africa's botanical riches are appreciated by wildflower enthusiasts all over the world. Many astute farmers earn a good income by offering tours and accommodation to these ecotourists¹⁷.

Because South Africa has the world's richest and most diverse flora, thousands of foreign visitors come specifically to see our wildflowers each year. The annual pilgrimage to see the spectacular spring flowers in the Western Cape and Namaqualand is a multimillion-rand industry that benefits many sectors of the economy, including transportation, hospitality, travel agencies, and tour guides, as well as local landowners. The Namaqualand region is one of the best places to experience this floral kaleidoscope. During the flower season, sections of the Namaqua National Park are transformed into luxurious camping grounds, with tents set up among the flowers. The views are nothing short of breathtaking.

Springbok, Okiep, Nababeep, Concordia, and Kamieskroon are all great places to see the famous blooms, and the Namaqua National Park near Kamieskroon is also a must-see during every flowering season. Because of its habitat, the town of Nieuwoudtville provides one-of-a-kind flower-viewing opportunities. The town is known as the "bulb capital of the world"

¹⁶ The Department of Trade and Industry, 2010. *Niche Tourism Markets, Avi-tourism in South Africa*

due to its abundance of indigenous bulbous plants, and further exploration can be done at the Hantam National Botanical Garden.

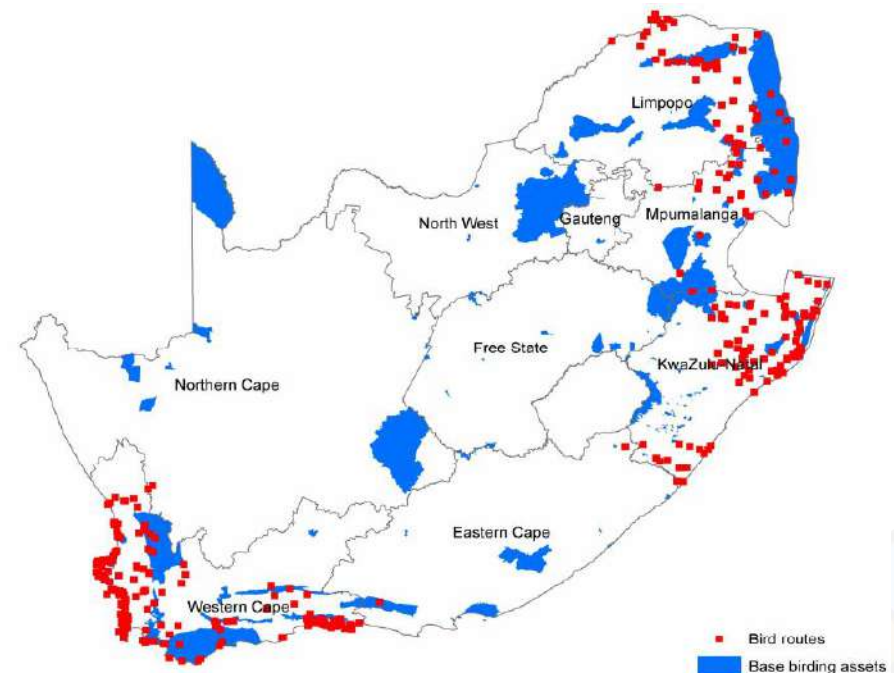


Figure 39: Geographical Distribution of Base Birding Assets

5.1.2.4.3 Eco-Tourism

Key Eco-Tourism destinations in the province include:

- The Kgalagadi Transfrontier Park lies in a large sand-filled basin in the west of the southern African subcontinent, known as the Kalahari Desert. It straddles both South Africa and Botswana to create an enormous conservation area of over 3,6 million hectares and one of

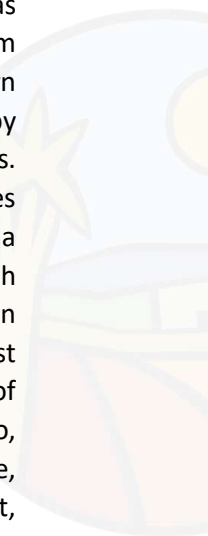
¹⁷ *Farmers Weekly*, 2007. *Botanical tourism, wildflower conservation*. <http://www.botanicalsociety.org.za/>



the very few of this magnitude in the world. The Kgalagadi Transfrontier Park is an amalgamation of the former Kalahari Gemsbok National Park of South Africa, which was proclaimed in 1931 mainly to protect migratory game such as Gemsbok, and the adjacent Gemsbok National Park in Botswana. Kgalagadi Transfrontier Park is characterised by vast arid landscapes with red dunes, sparse vegetation and camel thorn trees. Animals tend to gather in the dry river beds and waterholes. Herds of Gemsbok, Springbok, Eland and Blue Wildebeest follow the seasons, closely watched by a pride of Black-Mane Lion. Other predators include Leopards, Cheetahs, Brown and Spotted hyenas and birds of prey.

- The Tankwa Karoo National Park especially in flower season is a visual delight, but that is not all you'll discover. Surreal desert moonscapes and scenic landmarks define this Northern Cape nature reserve in South Africa. The soulful Karoo has long been a place in which to find peace and tranquillity. Tankwa Karoo National Park is also known for its spectacular birdlife. It's a regular stopover for bird watchers in search of at least 18 Karoo endemics, and a must-do for birders visiting Southern Africa. This nature park hosts an abundance of reptile and invertebrate species and more recently antelope species have been introduced.
- Augrabies Falls National Park. Although this park is known mainly for its scenic attractions, viz, the Augrabies Falls, you will get the chance to see some game. The birding, particularly along the river, is excellent and there is a good chance of seeing Springbok, Gemsbok and Black rhino. The local blue-headed lizard is fascinating and can often be spotted sunning itself on the rocks. The park's vegetation is fascinating, with a huge array of succulent plants, including the interesting, tree aloe (*Aloe dichotoma*) which goes by the common name of quiver tree, or kokerboom.
- Tswalu Kalahari is South Africa's largest private game reserve and home to rare game such as Desert Black Rhino, Kalahari Lion, Cheetah and Roan Antelope. This 100 000ha malaria-free Northern Cape game reserve is home to 230 species of birds and 70 species of mammals.

- Goegap Nature Reserve lies about 15 kilometres east of Springbok. The best time to visit the reserve to fully enjoy its splendour is from late July or August through to October if you want to see the spring flowers. (Depending on the rains the flowers may be earlier or later and this varies from year to year).
- Witsand Nature Reserve. The larger portion of the reserve was purchased in 1993 and the area gained nature reserve status on proclamation in April 1994. The nature reserve is approximately 3500ha in size, most of which comprises the unique dune system. Although, by comparison, Witsand is a relatively small reserve, it nevertheless has already gained popularity through its extraordinary splendour. Witsand has, since its earliest times, been the hub of human activity because it was one of the few reliable sources of permanent water in the region. Archaeologists have found several Stone Age sites reflecting the changing lifestyles throughout many thousands of years.
- Mokala National Park. This is South Africa's newest Park, proclaimed as recently as June 2007, and is conveniently situated only 80km southwest of Kimberley. Mokala is a Setswana name for a Camelthorn tree (*Kameeldoring*) (*Acacia erioloba*), and this Park is dominated by magnificent specimens of these picturesque gnarled and twisted trees. They vary from a small spiny shrub barely 2m high, to 16m high trees with wide, spreading crowns. Mokala National Park's 27 500ha landscape varies between koppieveld (hills) and large open plains with the isolated dolerite hills giving the place a feeling of calm seclusion that contrasts with the large open sandy plains in the north and west of the park. Mokala is an important area for the regeneration of valuable species and is home to, amongst other species, Black Rhino, White Rhino, Buffalo, Tsessebe, Roan Antelope, Sable Antelope, Mountain Reedbuck, Giraffe, Gemsbok, Eland, Zebra, Red Hartebeest, Blue Wildebeest, Black Wildebeest, Kudu, Ostrich, Steenbok, Duiker and Springbok. Situated in the transition zone between the Karoo and Kalahari biome, Mokala's thornveld savanna, dolerite outcrops and riverine vegetation attract a prolific number of bird species. Some of



these include; the black-chested prinia, blacksmith lapwing, melodious lark, cinnamon-breasted bunting, freckled nightjar, short-toed rock thrush, pygmy falcon and northern black korhaan.

- Namaqua National Park (NNP). The park was proclaimed on 29 June 2002 to conserve the rich diversity of succulent plants. NNP is in the process of development, having grown to its current size of 141,000ha (including the coastal contract area between the Groen and Spoeg rivers) in nine years, thus expanding the park to include more succulent habitats and an important coastal section.
- The Ai-Ais Richtersveld – Transfrontier Park spans some of the most spectacular scenery of the arid and desert environments in Southern Africa. Bisected by the Orange River, which forms the border between South Africa and Namibia, it comprises the Ai-Ais Hot Springs Park in Namibia and the Richtersveld National Park in South Africa. Rugged kloofs (ravines), high mountains, dramatic landscapes and sandy planes form South Africa's largest mountain desert park, covering 160 000 ha. The harsh Richtersveld nurtures 30% of all South Africa's succulent species among which the famous "half man plant" and three quiver tree species. With less than 50mm of rain annually, the park is home to leopards, lizards, Hartmann's Mountain zebra, gemsbok, springbok, klipspringer, ground squirrel and suricate. It's the land for adventurers and the indigenous Richtersveld people. Some of the distinctive features on the Namibian side include the Ai-Ais Hot Springs and the 2nd largest canyon in the world, the Fish River Canyon. Ai-Ais, which means, "burning water" in one of the local languages, refers to the sulphurous hot springs which are found in this area. The awe-inspiring Fish River Canyon measures 160 km in length, and up to 27 km in width and reaches a depth of 550 m. Although the Park is not known as a game park, springbok, gemsbok, red hartebeest, Hartman's zebra, kudu, klipspringer and ostrich survive in this harsh land.

5.1.2.4.4 Adventure and Outdoor Activities

Adventure tourism is generally seen as a combination of physical activity, cultural exchange, or interaction and engagement with nature. Moreover,

this niche tourism market is defined as recreational travel undertaken to remote or exotic destinations for the purpose of exploration or engagement in a variety of roughed activities. Adventure tourism is commonly categorised under nature-based tourism, with some elements of cultural-, sport-, or entertainment-related tourism.

South Africa is full of magnificent hotspots for adrenaline junkies to explore, and the Northern Cape province is no exception. It is one of the most popular destinations for adventure sports. Augrabies Falls, the entire Namaqualand region, and the magnificent Orange River are some of the natural resources that provide real highlights for visitors. These areas offer every kind of adrenaline-pumping adventure imaginable.

A variety of water-based activities are based in the Northern Cape due to the Augrabies and the Orange River. These include kayaking, canoeing, and river rafting. Fishing may not be considered an extreme sport, but it certainly appeals to many people who enjoy the outdoors. There are plenty of fish in the Northern Cape's rivers and dams for dedicated anglers to enjoy. These include large barbel, as well as mudfish, carp, and bream.

The dunes near Pofadder are ideal for thrilling four-wheel-drive trails. It's also a fantastic destination for adventure motorcycling and quad-biking. The sandy terrain provides for thrilling twists, turns, ascents, and descents. Among the most popular routes are the Aman Dune Trails, De Postjes Trail, Diamond Coast Shipwreck Trail, and Kalahari Dunes. Walking safaris and game drives are the best ways to experience the natural environment. Horseback rides through the Kalahari are extremely popular, allowing all visitors to experience the countryside from a different perspective. Throughout the province, there are numerous lodges and private game reserves that cater to and provide horseback riding experiences for visitors.

Gliding over the extraordinary landscapes of the Northern Cape Province is both thrilling and eerily peaceful. Thermals rise from the scorching earth to the cool cobalt skies, providing ideal lift for paragliders. Many world records have been broken in De Aar and Kuruman, where flights of up to 350 kilometres have been recorded. Many visitors to the Northern Cape have



a passion for the outdoors and enjoy spending time in the province because of its rich abundance of fauna and flora.

5.1.2.4.5 Vehicle Testing Facilities

The northern Cape Province is deceptive. On the surface, it appears to be a dry and desolate landscape with only a few towns of economic significance separated by vast distances. Despite the dust of the Kalahari and arid environment, the Province provides ideal conditions for high-speed testing. Because of the excellent roads (long straight distances and smooth) and pleasant weather, many of the world's automotive manufacturers frequently use the Province as a practical testbed for providing new models and technology.

The Bloodhound project is a specialised project for high-speed testing and setting land speed records. The Hakskeen Pan racetrack is set in the breathtaking Kalahari environment. There are private test circuits outside of Upington, as well as a section of the N14 near Pofadder where areas are designated for vehicle testing at speeds of up to 250km/h. Several off-road testing roads for SUVs and bakkies frequently do their testing on the province's dirt roads such as Goeraspan, which is similar to the conditions manufacturers encounter in South America, which include lots of sand, loose gravel, and harp ups and downs all at high speed. See the figure below for a spatial location.

5.1.2.4.6 Agri Tourism

5.1.2.4.6.1 Vaalharts Valley

This beautiful yet little-known valley is only one hour's drive north of Kimberley. The surroundings are like a breath of fresh air with the lush green farmlands highlighted from the usual yellows and browns of the nearby countryside. Two mighty rivers, the Vaal and the Harts, feed an intricate irrigation scheme that supports more than 1 250 high-production agricultural farms.

The development of an Agri-Tourism Route is currently taking place, which will allow the tourist to experience all the activities surrounding the harvesting and production of popular local farming products, such as olives, pecan nuts, peanuts, citrus, wine cotton and stone fruit. Wheat, mealies and lucerne are also grown. Although agriculture is the mainstay of the valley there is plenty more to do and see.

You can cool off in our canals (or even ride down them); explore the region on a 4x4 trip or join the quad biking club for a different kind of fun on four wheels; enjoy a breath-taking view of the valley in a microlight; take a peaceful morning horse riding; watching the water birds on a shallow lake during late afternoon or reminisce about the one that got away on the banks of the Harts River. Hartswater and Jan Kempdorp are the two main centres in the irrigation area and have golf clubs, bowling greens, restaurants and accommodation to suit most tastes.

5.1.2.5 Coastal Tourism

The development of Marine and Coastal Tourism is identified as a key economic development opportunity in the Northern Cape. The aim is to develop the coastal area of the Northern Cape to ensure a sustainable socio-economic environment for the long term as mining in these areas and the rest of the country starts to determine. The Northern Cape coastal zone is commonly referred to as the Diamond Coast due to the abundance of alluvial diamond deposits, and other mineral deposits, found in this region¹⁸.

The tourism performance of the coastal area is relatively low with domestic trips fluctuating in the past nine months of 2015, thus the development of

¹⁸ Northern Cape: Department of Economic Development and Tourism. *The Development of the Northern Cape Coastal and Marine Tourism Strategy, 2016*



tourism is a necessity, not only for economic growth but also to build tourism recognition within the country and African regions. There is a great gap in the age group of travellers, thus the development of tourism needs to cater for a diversity of travellers mainly to encourage the younger generation to grow interested in travel domestically, especially the whole of Northern Cape.

Coastal and marine tourism has the potential to become a major source of economic growth and job creation, thus it is important for stakeholders to coordinate in terms of the development of coastal tourism. A destination with a long coastline and marine is considered more valuable because it has more space for coastal tourism development that will eventually contribute to the social and economic growth local and regional levels of the destination.

5.1.2.6 MARINE HERITAGE

South Africa's Ocean space is filled with a rich and diverse maritime and underwater cultural heritage that includes shipwrecks, submerged pre-historic landscapes of palaeontological and archaeological significance, pre-colonial stonewalled and woven intertidal fish traps, and sacred sites to which oral traditions are attached.

The popularity and dangers of the maritime trading route are reflected in the approximately 2,800 historical shipwrecks of different nationalities that are scattered around South Africa's coast. In addition to these wrecks, our maritime heritage includes many other associated sites such as the country's maritime infrastructure like lighthouses, historical harbours, and dockyards.

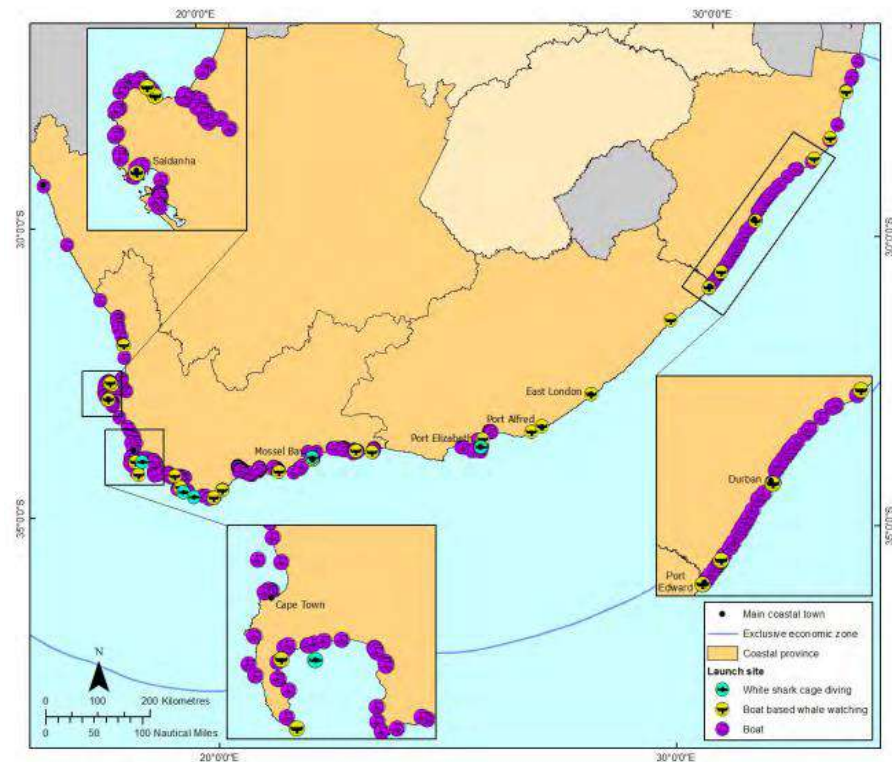


Figure 40: Marine Tourism Sites



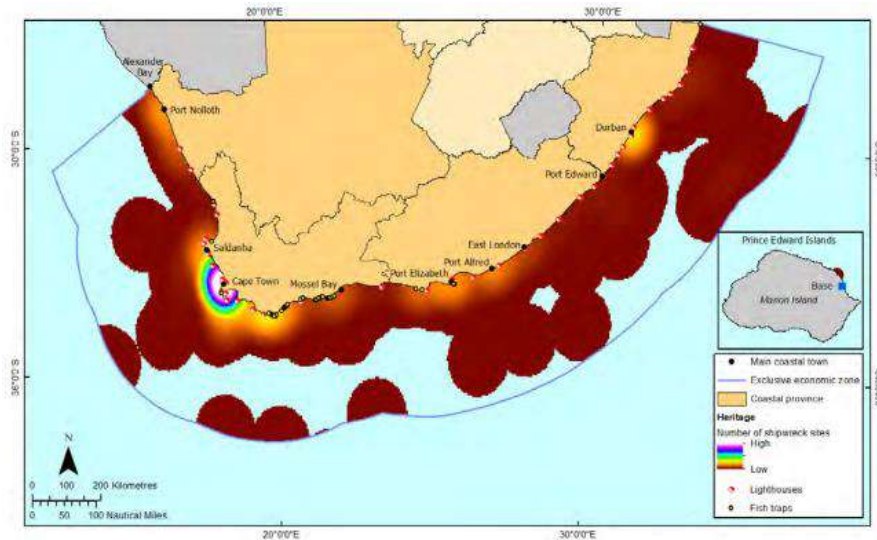


Figure 41: Map indicating Shipwreck sites

It is the government's objective to ensure the adequate conservation and accessibility of South Africa's maritime and underwater cultural heritage resources for the benefit of current and future generations through:

- Heritage promotion and advocacy (including awareness-raising and education, signage projects, social media engagement, youth programmes, field schools, university courses, and publication of promotional material).
- Enhancing public access to, and enjoyment of, maritime and underwater cultural heritage sites and objects through targeted projects.
- Identification of, and research into, maritime and underwater cultural heritage resources.
- Protection and conservation of maritime and underwater cultural heritage resources through the permitting and development application processes.
- Adequate monitoring and inspection of maritime and underwater cultural heritage resources.

- Initiatives that seek to build capacity (human and financial) in the field of maritime and underwater cultural heritage, and
- Demonstrating the role of maritime and underwater cultural heritage resources management in driving inclusive socio-economic development through exploring synergies with the tourism and culture sectors.



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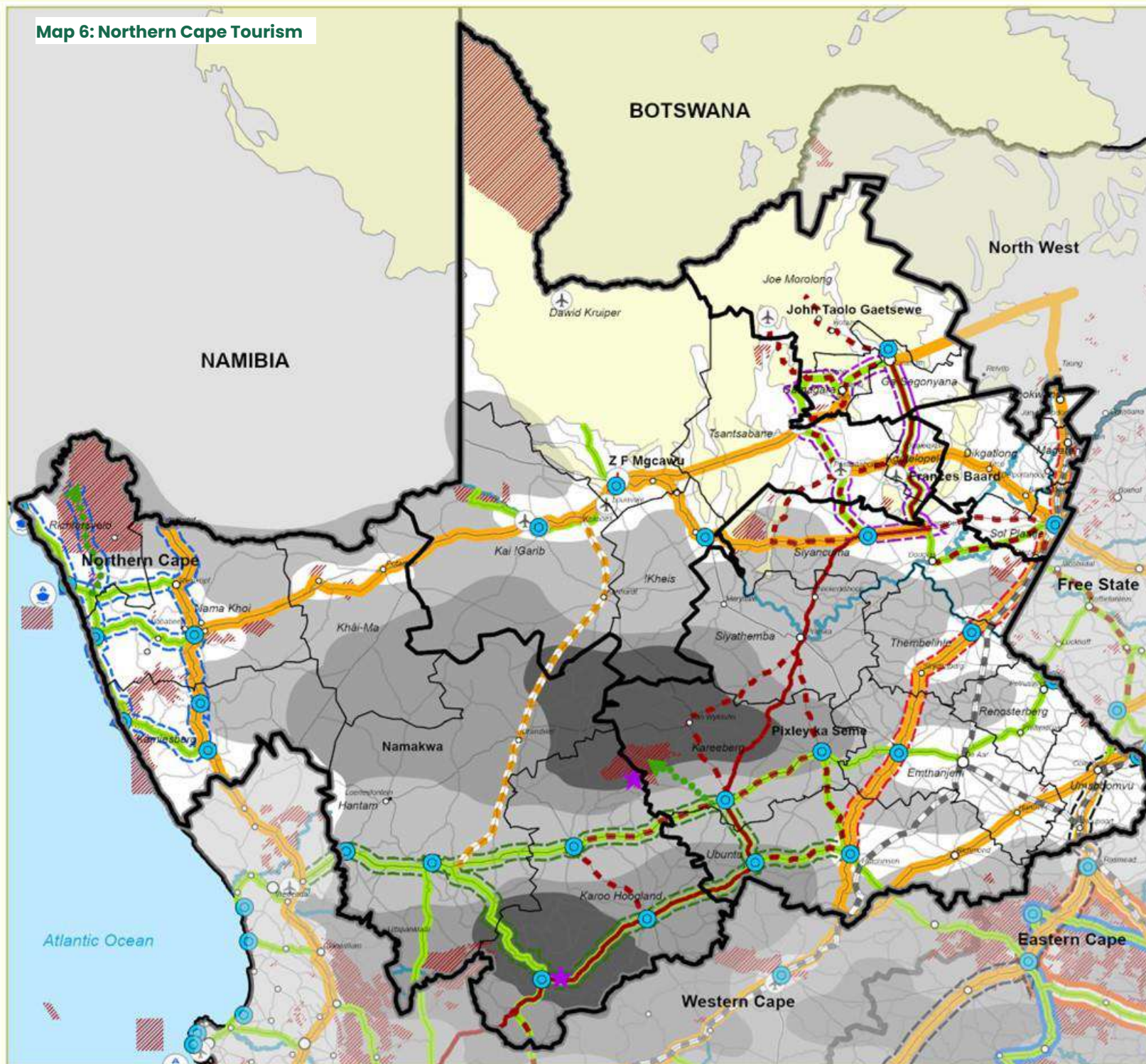


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Map 6: Northern Cape Tourism



TOURISM

Legend

- Town/Settlement
- Tourism Node
- ★ SKA and SALT
- ✈ Major Airports
- ✈ Smaller Airports
- Functional Town Hierarchy
 - National Urban Nodes
 - National Urban Regions
 - Other Towns
 - Regional Development Anchor
 - Rural Service Centres
- Roads
 - Primary
 - Secondary
 - Tertiary
- Tourism Routes
 - Local Tourism Roads
 - Regional Tourism Roads
 - Inter-Regional Tourism Roads
 - Passenger and Tourism Rail
 - Nature Reserve Access Routes
 - The Forgotten Highway
 - The Forgotten Highway Side Route
 - Go Ghaap Route
 - Karoo Davis Route
 - Namakwa Coastal / Richtersveld Route
 - Karoo Highlands / Loxton Succulent Garden
 - Route 62
 - Camdeboo Route
 - Mohair Route / Karoo Kaleidoscope
 - Karoo Heartland Route
- Protected Areas
 - Protected Areas
 - Major rivers
- Harbour
 - Harbour
- Kalahari Basin
 - Clear night skies
 - Highest
 - Medium-High
 - Medium

Source: Karoo RSDf, NSDF

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



5.1.3 MINERAL RESOURCES

5.1.3.1 Geology and Soils

Geology is the science that studies the history of the earth's crust from prehistoric times to the beginning of the historical period. Geology is concerned with the composition, arrangement, and origins of the earth's crust's rocks, as well as the processes involved in the evolution of its current structure. Dolomite accounts for 1.76 percent of the province, Mudstone 34%, Sand 17%, Sedimentary 10%, Shale 15%, and Dolerite 3.3%.

5.1.3.1.1 Dolerite

5.1.3.1.1.1 Engineering Qualities

Clay soils are expansive and can cause foundation damage. Dolerite is an excellent building material, and the slightly weathered varieties found in the country's west are used as road stones. Unweathered rock is commonly used as concrete aggregate, as well as in road and dam construction. Rapid weathering types should be avoided because they can degrade quickly (days/months).

5.1.3.1.1.2 Unique Qualities

These intrusions' general resistance to weathering has resulted in distinct positive linear topographic features in the Karoo's horizontal sedimentary rock strata. It is also widely regarded as a good aquifer in dry areas. Because of the widespread use of dolerite as a building material, quarries can be found along roads, near towns, and dams.

1.1.1.1.1 Tillite

1.1.1.1.1.1 Engineering Qualities

In exposed slopes and cuttings, slope instability can cause problems. It is a good building material, but it can deteriorate. Soils can be expansive at times and dispersive at others.

1.1.1.1.2 Sand

5.1.3.1.1.3 Engineering Qualities

Sand is sometimes too loose for standard foundations, and settlements may occur. It is typically used for fine concrete aggregate. Wind movement of these sands is a major issue in arid areas.

5.1.3.1.2 Andesite

5.1.3.1.2.1 Engineering Qualities

The residual soils are very porous. Only in the early and late stages of weathering are soils non-expansive. Over short distances, the depth and stage of weathering vary significantly, which can cause foundation problems. Large, unweathered core stones in the soil profile impede pile installation and cause differential settlement. The use of reinforced masonry work, flexible couplings in pipes, and good site drainage with piled foundations or raft foundations in larger structures can help to limit damage to houses.

5.1.3.1.3 Quartzite

5.1.3.1.3.1 Engineering Qualities

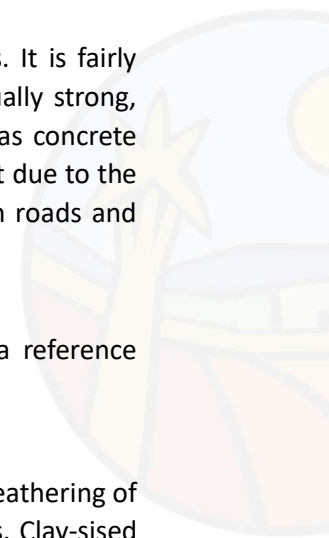
Quartzite is a very strong rock forming excellent foundations. It is fairly difficult to excavate in these rocks. The residual soils are usually strong, non-compressible and non-heaving. The rock is widely used as concrete and road building materials, although the high sulphur content due to the presence of pyrite causes some problems with salt blisters in roads and stains in concrete in the Witwatersrand.

5.1.3.1.3.2 Unique Qualities

Quartzite is such an excellent aggregate that it is used as a reference aggregate.

5.1.3.1.4 Mudstone

Sedimentary rocks are composed of particles formed by the weathering of other rocks and deposited in one or more depositional basins. Clay-sized particles (mud) are suspended in water and eventually settle in deep seas or freshwater lakes. It is known as mudstone after compaction and cementing. Clay is made up of particles smaller than 0.02mm in size and



can include the minerals illite, quartz, feldspar, and a mixed layer of montmorillonite-illite and, in some cases, kaolinite. Mudstone is found in a succession of coarse-grained sandstone and fine-grained mudstone. The Karoo strata, which cover 75% of the central subcontinent, are the most common.

5.1.3.1.4.1 Soil Profile

Mudstone weathers to clay soil, which may have expansive characteristics depending on the original mineralogy of the soils from which the rock formed. In some areas, mudstone is weathered to great depths. The soils are usually highly erodible and dispersive.

5.1.3.1.4.2 Engineering Qualities

The unweathered rock has the properties of over-consolidated clay and is soft to very soft. The rock mass is impermeable, and the rock may be of the rapid weathering (slaking) variety, which breaks up when exposed to air. Slopes are usually unstable when the rock mass dips at an angle, and movement may occur along bedding planes. If the original clay was expansive, the rock and residual soils would be expansive and may cause structural damage. Mudstone, both weathered and unweathered, is used to make bricks.

5.1.3.1.4.3 Unique Qualities

The soils are highly dispersive and result in deep dongas forming on many slopes in the Karoo.

5.1.3.1.5 Shale

Shale is a sedimentary rock consisting of silt and clay-sized particles and with visible layering (fissile) as opposed to a massive mudstone. Shale always occurs within a succession of coarse-grained sandstone alternating with fine-grained shale (mudstone). The most widespread occurrence is in the Karoo strata which covers 75% of the central subcontinent. Soil profile: Shale weathers to clayey soil, which may have expansive characteristics depending on the original mineralogy of the soils from which the shale formed. In some areas, the shales are weathered to great depths. The soils are usually highly erodible.

5.1.3.1.5.1 Engineering Qualities

The unweathered rock is soft to very soft, with properties resembling over-consolidated clay. The rock mass is impermeable, and the rock may be of the rapid weathering (slaking) variety, which breaks up when exposed to air. Slopes are usually unstable when the rock mass dips at an angle, and movement may occur along bedding planes. If the original clay was expansive, the rock and residual soils would be expansive and may cause structural damage. The primary source of brick-making material is weathered and unweathered shale.

5.1.3.1.5.2 Unique Qualities

The soils are highly erodible, resulting in deep dongas forming on many Karoo slopes. Aesthetic and scenic value: The shale layers form the shallower slopes in the Karoo, where sandstone beds or dolerite sills protect the softer shale below, resulting in the typical table mountains.

5.1.3.2 Geo Hazards

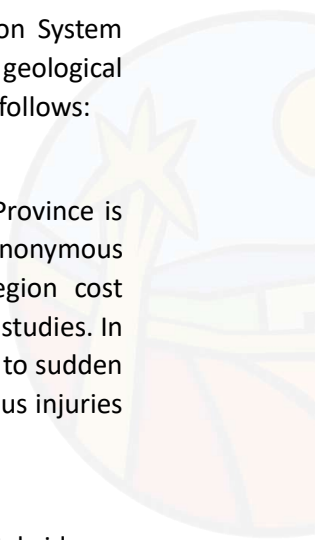
According to the South African Geological Hazards Observation System (SAGHOS), Atlas, compiled by the Council of Geoscience, the geological hazards prominent in the Northern Cape can be summarised as follows:

5.1.3.2.1 Sinkholes

A significant area of the northern part of the Northern Cape Province is underlain by Dolomite. Kuruman and the surrounding area are synonymous with dolomite formations. Housing developments in the region cost considerably more due to the requirement of dolomite stability studies. In certain areas of the Northern Cape, the ground surface is prone to sudden and catastrophic collapse due to sinkholes. This has led to serious injuries and death in the past.

5.1.3.2.2 Subsidence

Subsidence has been recorded sparingly in the Northern Cape. Subsidence is defined as an enclosed depression formed by the compression at depth of low-density dolomite residuum (SAGHOS, 2015). Surface saturation-type



subsidence and dewatering-type subsidence are the two most common types.

Contributing factors:

- Topography.
- Drainage.
- Leaking services.
- Engineering properties of soils.
- Origin of transported soils.
- Nature and topography of the underlying strata.
- The depth of expected fluctuations of the water table, and
- The presence of dykes, faults or fractures.

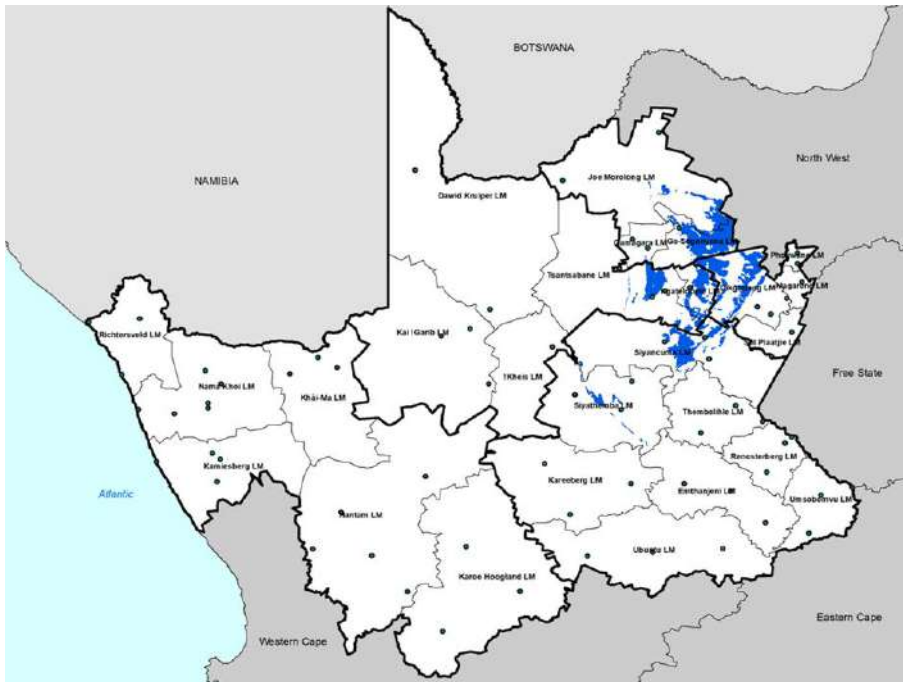


Figure 42: Dolomite areas in the Northern Cape

5.1.3.2.3 Gully Erosion

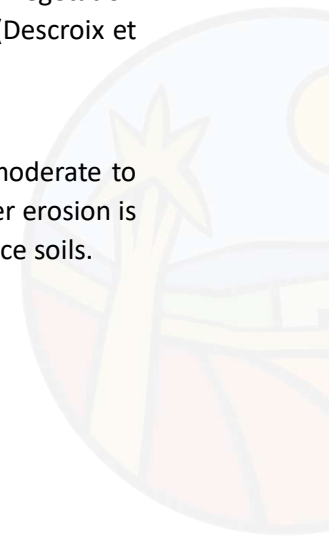
According to the SAGHOS Atlas, 160 885 hectares have been affected by gully erosion in the Northern Cape Province. Gully erosion is a process where surface (or subsurface) water concentrates in narrow flow paths and removes the soil, resulting in channels that are too large to be destroyed by normal tillage operations (Kirby and Bracken, 2009).

5.1.3.2.3.1 Contributing Factors

- Rainfall: High rainfall typically initiates the formation of gullies (Rydgren, 1996).
- Lithology and pedological factors: The inherent erodibility of the parent material is the most dominant erosion risk factor (Laker, 2004).
- Topography: Gullies are commonly found on valley floors and foot slopes. The topography will play a role in the direction, speed and magnitude of flow. Where overgrazing takes place, the formation of gullies typically follows (Descroix et al., 2008), and
- Land use and vegetation cover: Reductions in land cover and vegetation are identified as the main driving factors of gully erosion (Descroix et al., 2008).

5.1.3.2.4 Water Erosion

According to the SAGHOS Atlas, 5 407 138 hectares have a moderate to high risk of water erosion in the Northern Cape Province. Water erosion is the soil loss due to the surface flow of water transporting surface soils.



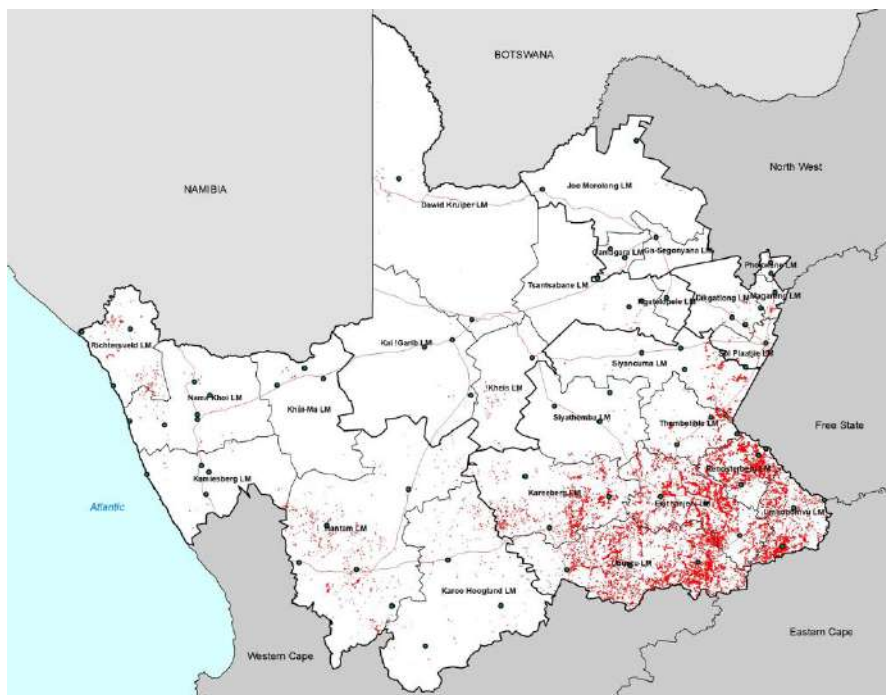


Figure 43: Gully erosion occurrence in the Northern Cape province

5.1.3.2.4.1 Contributing Factors

- Rainfall: Higher rainfall will lead to increased water erosion.
- Climate erosivity.
- Soil erodibility: Silty sands are more likely to erode than gravel or clay.
- Topography: Erosion on valley floors or lower-lying areas is more prevalent.
- Land cover and vegetation cover: Where land cover or vegetation exists, more resistance to water erosion is offered.

5.1.3.2.5 Problem Soils

Expansive clays, collapsible sands, soft clays, and dispersive soils are the four types of problem soils. The Northern Cape has a large amount of transported sand that is prone to collapse and shifting. Clays are abundant

in the areas around Kimberly, Britstown, Colesberg, De Aar, and the southernmost parts of the Northern Cape Province.

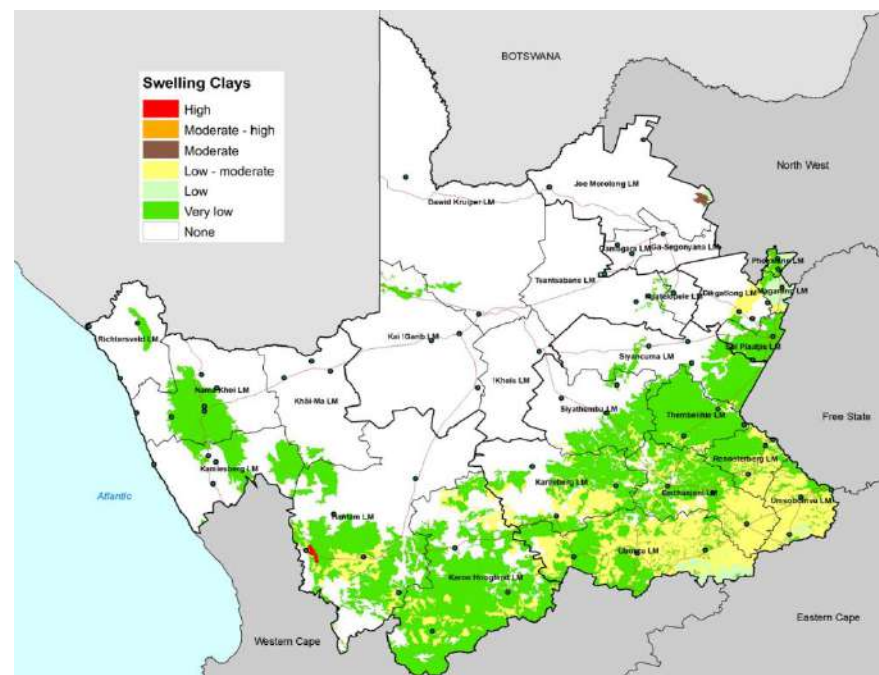


Figure 44: Swelling clay occurrence in the Northern Cape Province



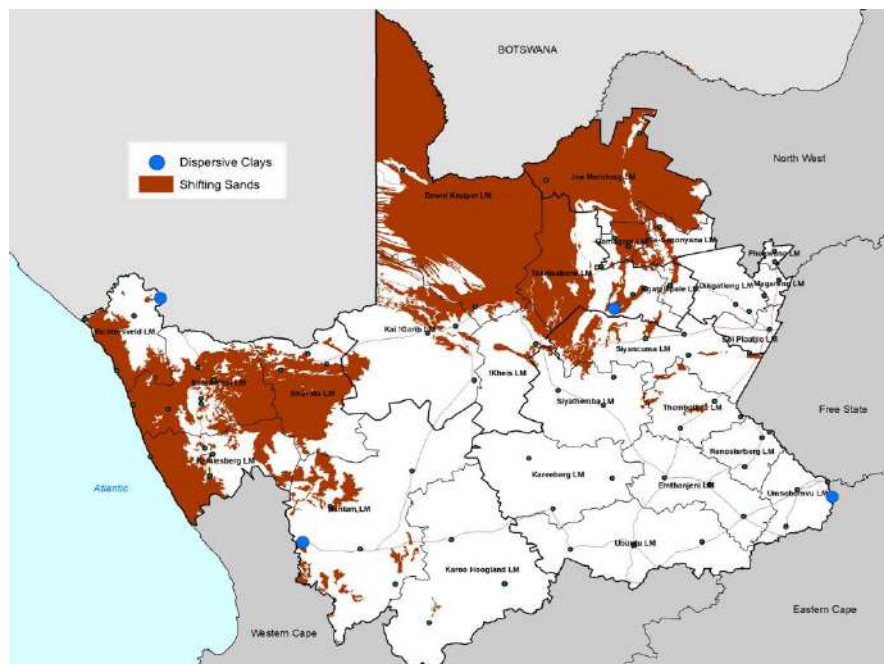


Figure 45: Dispersive clay occurrence in the Northern Cape province

5.1.3.3 Minerals

The Northern Cape is mineral-rich, with the Kimberley district hosting the country's major diamond pipes. Alluvial diamonds are found on the province's opposite, western, side, where the Orange River washes them westward into the Atlantic Ocean, where they are extracted from the beaches and sea between Alexander Bay and Port Nolloth. The province is responsible for approximately 7% of global diamond exports, 13% of total zinc and lead exports, and more than 25% of global manganese exports. The Northern Cape is home to mining behemoths such as Mittal Steel, Samancor, Gold Fields, PPC Lime, Alpha, and Assmang.

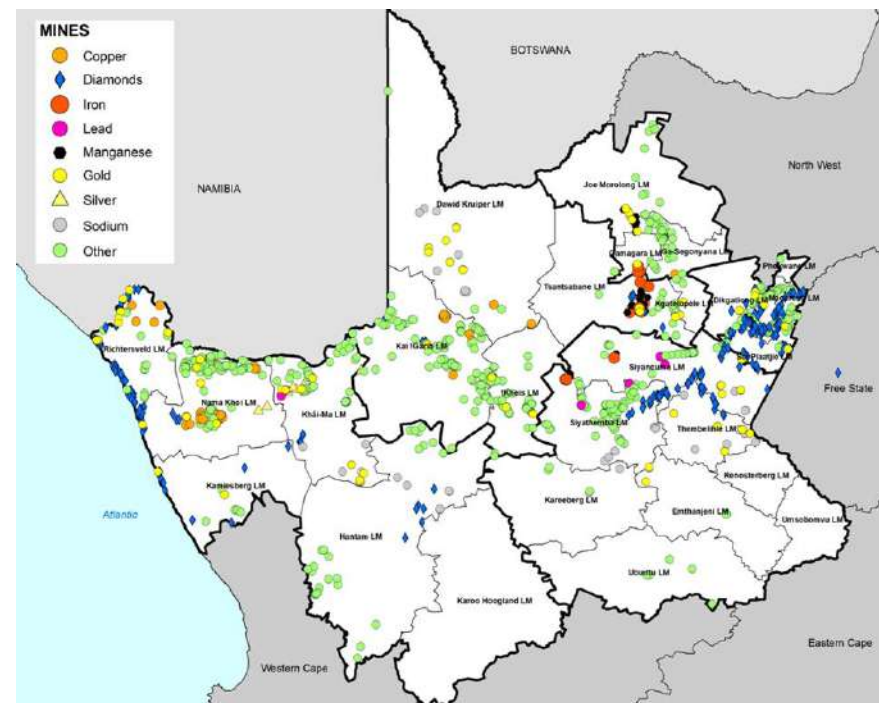


Figure 46: Mineral Deposits and Mines in the Northern Cape Province

The Northern Cape Province is the largest of the nine provinces, with most of its mineral deposits concentrated along its northern region. Mining is one of the most prominent economic drives of the Northern Cape Province with several mines and abandoned mines located in the province. Kimberley is an internationally known city, synonymous with diamonds, with Sishen and Postmansburg known for iron ore. The Northern Cape Province is rich in minerals, particularly diamonds, copper, iron and other base metals, limestone and manganese. The iron ore industry is globally competitive, with South Africa being seen as a major role player. The iron ore industry has the potential to grow significantly with the improvement of logistics (rail and port), water resources, energy resources, a viable market and investment capital. The steel manufacturing industry proves to be limited. More than 85% of South Africa's steel is consumed in industry sectors with a very low export quantity. Due to the high cost of logistics and

the economy of scale, it is hard to compete with the international steel trade.

In addition, the region provides the majority of the country's iron ore production. Copper, limestone, gypsum, rose quartz, tiger's eye, mica, verdite, and semi-precious stones are also important metals and minerals. Because these metals and minerals are mostly processed outside of the province, there are opportunities for investors to set up value-added beneficiation plants within the Northern Cape. South Africa is a lucky country. We are located on a stable tectonic plate and have mineral wealth that few countries can match. For more than a century, mining has been the driving force behind the South African economy, and it has had an impact on all aspects of our economy, environment, and psychology. Mining has frequently been the focus of labour disputes, pollution, and economic concerns.

5.1.3.4 Marine Geology

The geomorphology of the South African mainland seabed includes a myriad of interesting and complex features that result from an interplay of the underlying geology overlying ocean currents and land-sea connections through rivers and estuaries. The continental shelf remains comparatively wide on the west coast.

The Orange River on the west coast provides substantial fluvial inputs to the marine environments, driving portions of a relatively wider continental shelf in their areas of influence.

5.1.3.4.1 Mineral and Petroleum

The western coast of the Northern Cape's coastal and marine regions is littered with mining operations and marine exploration sites. Mining activities are primarily driven by diamond deposits transported to the coast by river run-off. Because of the Orange River basin, which has deposited nutrient-rich sediments and alluvial over thousands of years, numerous oil and gas fields are located off-shore. Because of the presence of oil and gas fields, various permits for exploration of these areas have been registered.

The Petroleum Agency of South Africa (PASA) has proposed a pipeline to transport oil or gas from Port Nolloth to Cape Town due to the potential of the Orange River basin gas and oil fields.

South Africa has abundant mineral and hydrocarbon reserves, both on land and at sea. Mineral exploration involves the discovery and mapping of mineral concentrations that would merit commercial exploitation through physical extraction.

Given the industry's experience and knowledge, as well as the potential of the sea's geological resource base, the offshore sector has significant growth potential.

Diamonds, potassium, phosphate, glauconite, heavy metals, manganese, oil, and gas are known mineral resources and hydrocarbons in South African ocean space.

5.1.3.4.1.1 Diamonds

South Africa has a long history of diamond mining in both the terrestrial and marine environments. Diamonds from inland kimberlite pipes were transported to the coast by rivers and deposited on gravel beaches along the southern African west coast during the Cretaceous Period (144 to 65 million years ago). These diamonds are now found offshore at depths ranging from the shoreline to about 150m below Mean Sea Level (BMSL).

5.1.3.4.1.2 Potassium, Phosphate and Glauconite

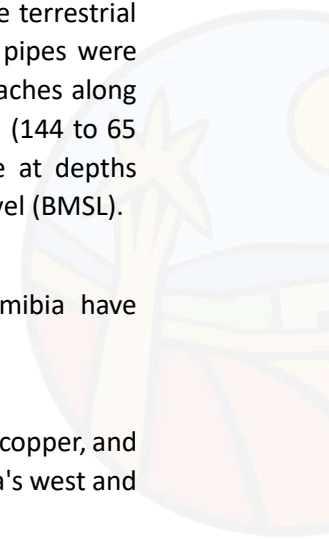
The southern and western coasts of South Africa and Namibia have extensive deposits of potassium and phosphorous.

5.1.3.4.1.3 Manganese:

Manganese nodules enriched in valuable metals such as nickel, copper, and cobalt are found in depths of over 3,000 meters off South Africa's west and south coasts.

5.1.3.4.1.4 Oil and Gas:

The South African oil and gas sector is in its early stages, and significant investment in exploration is required before the sector's potential can be



realized. This is a high-risk area with enormous economic potential that necessitates significant capital investment.

In the Pletmos Basin, new gas fields and discoveries have been made, while the Orange Basin off the west coast has yielded one oil and several gas discoveries. Sunbird Energy is currently developing one of these discoveries as the Ibhubesi gas field.

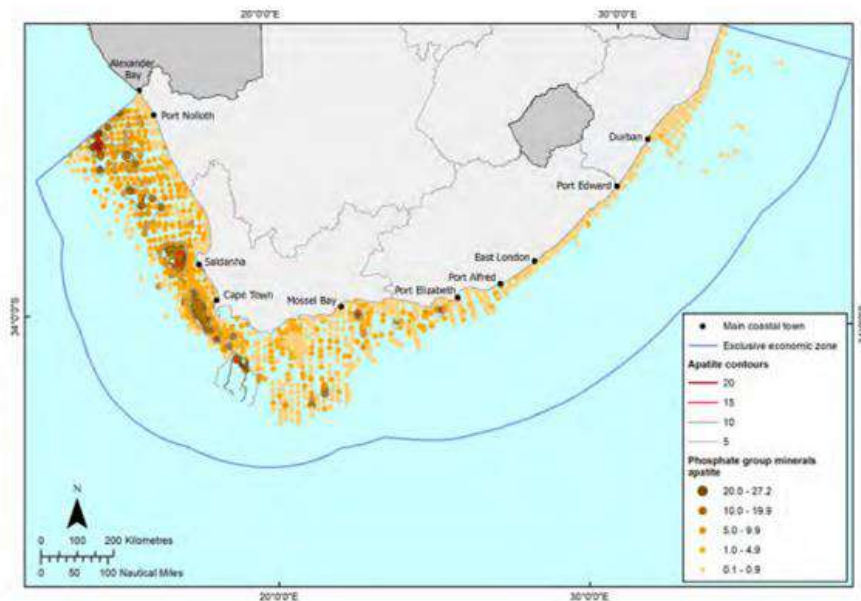


Figure 48: Location of Phosphate Deposits

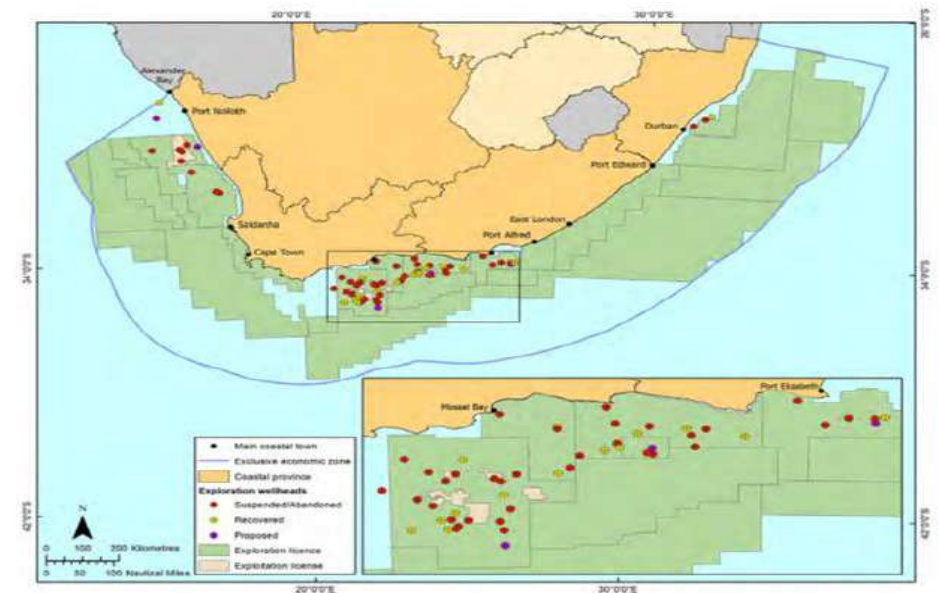


Figure 47: Hydrocarbon exploration licences and wellheads

5.1.3.5 Mining

With the Northern Cape Province considered to be arid to semi-arid, the high-water rations required for mining are a major factor influencing groundwater depth and the contamination of groundwater. This has a profound effect on agriculture and other industries dependent on water.

The availability of water has a significant impact on the establishment of mining in the Northern Cape Province. The Orange River traverses a significant part of the mineral-rich area with infrastructure being developed steadily since the 1950's when the Sishen Iron Ore Mine came into production and was further stimulated by the discovery of substantial base metal ore bodies and the construction of the Sishen-Saldanha rail link.

Many mines in the Northern Cape are operating without water-usage licences and violating the National Water Act as they consume thousands



of litres of water daily without being monitored. Of the 36 mines in the country that are operating without water-usage licences, the Northern Cape has the highest number with 17 such mines, followed by KwaZulu-Natal with 14. The non-compliant mines pose a danger of contaminating water sources and domestic drinking water as the government cannot keep tabs on them.

Mining and quarrying make the largest contribution of about 81% to the total GVA of the provincial primary sector. Mining and quarrying also contribute the largest part of the total primary sector in all Northern Cape districts, except for Pixley ka Seme where agriculture makes the largest contribution to the district's primary sector GVA. This industry contributes almost 97% of all primary sector activities in the John Taolo Gaetsewe district, and 85% of primary sector activities in the Namakwa district. In the Frances Baard and ZF Mgcawu districts, the mining and quarrying industries each contribute approximately 73% and 63% to the respective district's primary sector.

The figure below provides an overview of the current mineral rights status in the province. There is a high concentration of applications within proximity of the major river systems which can cause further environmental degradation in the province.

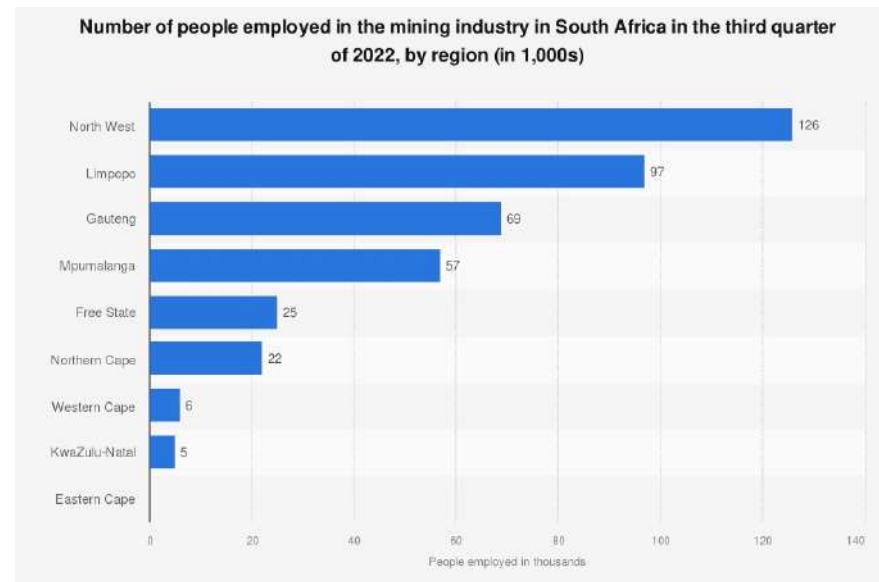
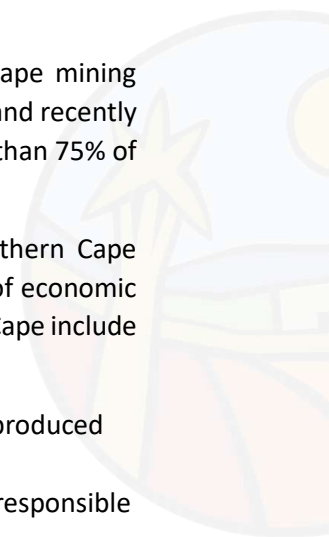


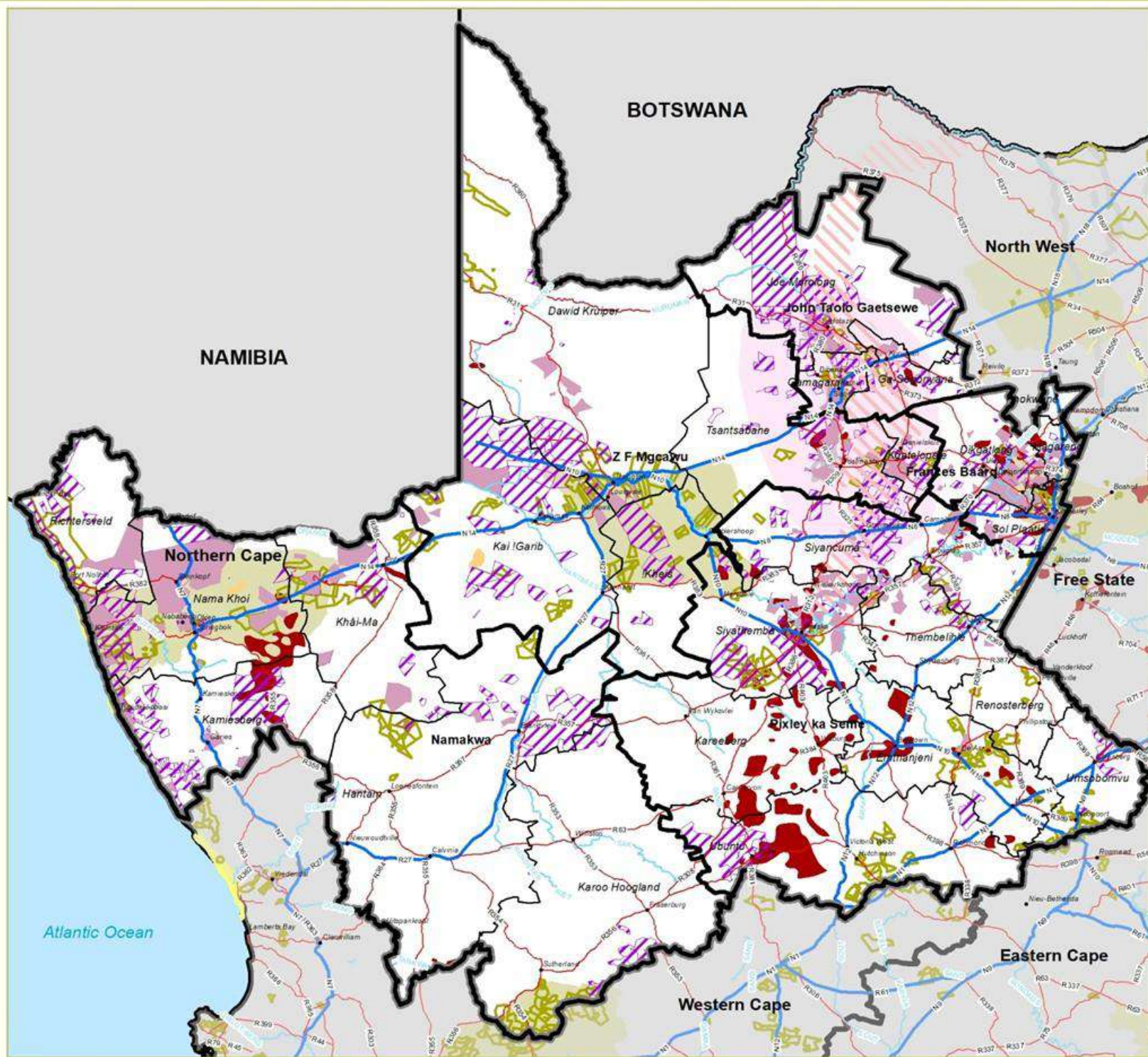
Table 7: Number of People employed in the mining Sector, Statista, 2022

According to the Mineral Council Fast Facts, the Northern Cape mining operations focus primarily on manganese, iron ore, diamonds and recently the mining of zinc and copper. The Northern Cape hosts more than 75% of the world's manganese deposits.

A snapshot of Mining and Mineral Beneficiation in the Northern Cape indicates that the mining sector has been an important pillar of economic growth for more than a century. Mining assets in the Northern Cape include the following:

- Produces more than 84% of South Africa's mining output, produced 95% of South Africa's diamond output,
- 97.6% of alluvial diamond mining is in the Northern Cape, responsible for 13.4% of world lead exports,
- 80% of the world's manganese resource is situated in the Northern Cape,





SPACE ECONOMY: MINING AND ENERGY

Legend

- Town/Settlement
- Main Roads
- National Roads
- Main Rivers
- Local Municipality
- District Municipality
- ▨ Asbestos Band
- ▨ Granted Mining Application
- ▨ Renewable Energy Projects
- ▨ Renewable Energy Development Zone
- ▨ Active Mines
- ▨ Gamagara Mining Corridor

Mining Commodities

Commodity

- ▨ Copper
- ▨ Diamond in kimberlite
- ▨ Diamonds Alluvial
- ▨ Gold
- ▨ Iron

Map 7: Northern Cape Mining and Energy

Source: Department of Minerals

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.1.4 AGRICULTURAL RESOURCES

The Northern Cape produces some of South Africa's highest-quality agricultural products. Grapes, lucerne, cotton, wheat, corn, carrots, potatoes, ground nuts, and soya beans are among the products available. The province is quickly becoming a major exporter of table grapes, raisins, and meat. Fruit and vegetable processing operations would increase the value of the province's agricultural products. Dates, olives, rooibos tea, and citrus products are among the products that can be produced and processed. Growth in agriculture-related industries would open up a market for businesses like fiber sacks and cardboard carton manufacturing. The Northern Cape also produces a lot of sheep and goats, and speciality products like ostrich meat are becoming more popular.

Port Nolloth is the fishing industry's hub on this stretch of the west coast. Because most of the fish caught in Northern Cape waters were landed and processed outside the province until recently, development of the fishing industry has been slow. This is about to change, thanks to increased quotas for landing and processing fish in the Northern Cape. Because of stricter quota enforcement beginning in 1998, at least 65% of the catch (primarily hake) is landed in the Northern Cape. This opens the door for more fish processing plants to be built around the expanded Port Nolloth harbour. A thriving mariculture industry, with abalone being farmed among other things.

5.1.4.1 District Municipalities

5.1.4.1.1 Namakwa District¹⁹

The Namakwa District Municipality (NDM) has an ocean and land-based economy, both with huge potential for growth and sustainable job creation in the district. Apart from this the District also has a large number of small-

scale and emerging farmers and fisher folk dependant on the land and the ocean for a living.

Commodities in the NDM were selected in two categories, namely:

- Dates; and
- Sheep (mutton)

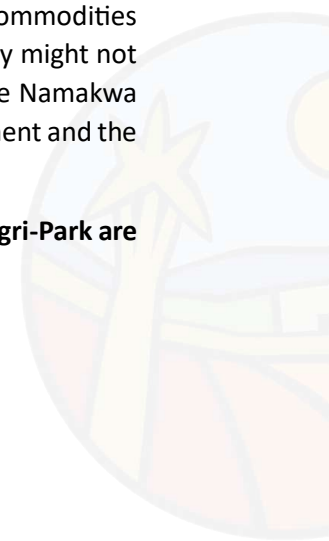
These commodities have excellent investment, value-adding, growth, export, wealth creation and job creation potential.

Small and emerging farmers produce a myriad of commodities in the district, without much support normally available to commercial farmers such as access to finance, production inputs, packing/processing facilities and marketing channels. This keeps them anchored in the cycle of dependence and poverty without the means to break out. The Agri-Park of the Namakwa District can change all that for the positive by way of much-needed support where most needed through the Agri-Hub and Farmer Production Support Units. For this to be achieved the commodities produced by the small and emerging farmers, even though they might not be main commodities, must be included in the Agri-Park of the Namakwa DM with support services to achieve the aims of rural development and the Agri-Parks.

These support commodities for inclusion into the Namakwa Agri-Park are indicated below:

- Crayfish.
- Fish.
- Red meat (mutton, goats, beef, pork).
- Lucerne.
- Vegetables (various).
- Rooibos Tea, and

¹⁹ Department of Agriculture, 2016. Draft Provincial Diagnostic Report for the Office of the Premier



→ Essential oils and traditional herbs and medicines.

5.1.4.1.2 John Taolo Gaetsewe (JTG) District²⁰

The John Taolo Gaetsewe District Municipality is characterized by extensive tracts of land well suited to extensive, livestock-based agriculture. The rural land in the Municipality is used extensively for cattle, sheep, goat and game farming with limited intensive farming along some seasonal rivers. The area is also well known for its good commercial hunting in the winter.

No dryland crop farming is detected in the area. Secondary data sources note that the agro-ecological conditions in the area are not suitable for dryland crop production at all and that the area is considered to be completely non-arable. Consultations with local officials confirm that the area is best suited to extensive livestock production and that all activities in the area are currently aligned with these enterprises. Dryland crop farming is considered to be agro-ecologically infeasible. It is important to note that maize and grain are produced in very limited quantities. Due to the general lack of significant and lasting water sources in the district, the development of irrigated agriculture is limited. The only significant area indicated as being under irrigation in the district is the farm Manyeding, 30km East of Kuruman. The area of roughly 125ha is reportedly being under centre pivot irrigation with water from a nearby fountain and a range of vegetables are cultivated. The particular property forms part of several government and private sector initiatives.

The district's dominant commodity is Beef Cattle. Beef cattle are cattle raised for meat production (excluding dairy cattle used for milk production). Common beef cattle breeds in South Africa include – Bonsmara, Afrikaner, Brahman, Boran and Nguni. This section analysis is solely based on the beef cattle sub-sector and JTG Agri-Park. The chapter outlines the beef cattle subsector and industry forces, meat consumption

and production, industry structure and links with the Agri-Park, and value chain players.

5.1.4.1.3 Frances Baard District Municipality²¹

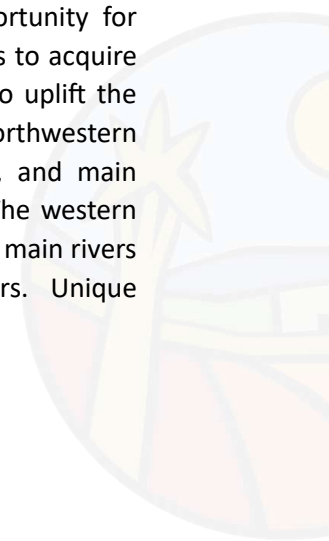
Due to the existing ground conditions present in the district ± 70% of the agricultural land within the district is used for Cattle, Goat or Sheep farming, mostly in the central and western areas. The highest potential agricultural land falls within the Phokwane Local Municipal area, between the towns of Hartswater, Jan Kempdorp and Ganspan to the north of the district. The area is known as the Vaalharts Irrigation Scheme and is the largest irrigation scheme in South Africa.

High-potential agricultural land is also present along the banks of the Vaal River between Riverton & Barkley West. Scattered smaller pockets of irrigated land are present within the eastern side of the Dikgatlong Local Municipal area as well as to the south of the Sol Plaatje Local Municipal area, surrounding Ritchie. Most of the cultivated land falls within the Agri-Parks prescribed radius of 60km, which provides the opportunity for investment within the district to enable the rural communities to acquire land through the Rural Development Programme initiatives to uplift the quality of life of rural communities. Agriculture towards the northwestern part largely makes use of groundwater through boreholes, and main activities in the region include livestock and game farming. The western part of Frances Baard does have good access ability to the two main rivers running through the District, the Vaal, and the Modder Rivers. Unique products within the district include the following:

- Game farming – Dikgatlong & Sol Plaatje.
- Vegetables – Dikgatlong, and
- Pecan Nuts, Ground Nuts, Maize, vegetables – Phokwane.

²⁰ DRDLR, 2016. Agri-Park Master Business Plan John Taolo Gaetsewe District Municipality Northern Cape Province

²¹ DALLRD, 2023. Frances Baard Rural Development Sector Plan



The areas within the Vaalharts Irrigation Scheme (Hartswater, Jan Kempdorp & Ganspan) are categorized as high-potential cultivated commercial pivots, with other isolated areas along the Vaal River, surrounding Warrenton, Barkley West, Delportshoop, and along the Modder River, surrounding Ritchie. The rest of the district can be categorised into two areas, areas with low shrubland and areas with grassland. Isolated areas are present in the Central District categorized as cultivated commercial fields.

The Frances Baard DM contributes largely to the production of the Northern Cape's fruit and vegetables. But as mentioned in the case of potatoes there are very few value-adding processes taking place in the area. This results in the opportunity for the development of fruit and vegetable processing within the Frances Baard DM, such as:

- Potatoes (Chips)
- Carrots (Carrot Juice)
- Olives (Olive Oil, soap)
- Grapes (mainly wine grapes, and raisins)
- Tomato (Tomato paste, dried tomatoes)
- Citrus, Sub Tropical and Deciduous Fruits
- Mushrooms
- Sweet Potatoes

The District contributes to the majority of the Field Crops produced in the Northern Cape. However very little is being done to add value to these field crops. Thus there is a further opportunity for the processing of these field crops, such as:

- Maize
- Wheat
- Sunflower seeds
- Dry beans
- Lucerne

→ Ground nuts

There is an opportunity to expand the field crop production of the District with the production of pecan nuts. The District contributes greatly to the livestock of the Northern Cape, but as stated there is very little being done with regards to value adding to the livestock. The industry is thus concentrated in the primary sector. There is however opportunity for meat processing within the area, such as:

- Beef Cattle
- Pigs
- Chicken
- Ostriches

The following four vegetable agro-processing opportunities present exciting opportunities for the Frances Baard District:

- Frozen vegetable processing (business plan already developed).
- Canned/bottled vegetable processing.
- Vegetable juice (carrot in particular as it is in high demand) processing.
- Dried vegetable processing

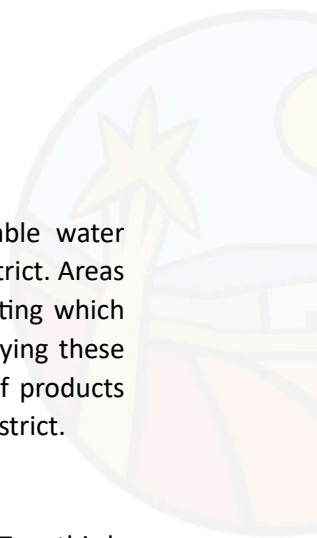
5.1.4.1.4 Pixley Ka Seme (PKS) District²²

The arid nature of the district and the availability of suitable water resources limit agricultural potential in large portions of the district. Areas under irrigation can be utilised for double-density maize planting which maximises the productivity and fertility of the land. By employing these methods local farmers increase the yield (tons per hectare) of products which in turn stimulates and lifts the economic income of the district.

Key insights include:

- The PKS District is divided into two main agricultural types. Two-thirds of the area, the southern section of the district is characterised by wool

²² DALRRD, 2023. Pixley Ka Seme Rural Development Sector Plan



sheep. The area towards the north is characterised by predominantly sheep, for red meat.

- Isolated irrigation land is present, limited to the three main rivers, the Orange, the Vaal and the Riet Rivers.
- The Vanderkloof dam within the Orange River provides an abundance of cultivated (irrigated Pivot) land for farmers to produce crops on rich fertile land both in the PKS District as well as across the border towards the Free State.
- Agricultural activities towards the north and south of the three rivers are largely dependent on groundwater through boreholes. Distances from the rivers and high electrical costs limit the construction of water pipelines. Degraded land, scattered over areas, is also present in the areas towards the south.
- The areas with limited water resources are mainly focused on Sheep farming, (for wool and meat), and game farming, sheep farming produces mutton and wool.
- Crop production is limited to the Orange and Vaal Rivers due to the availability of water throughout the rest of the district. Extremely small, isolated areas of low cultivation are scattered throughout the district, this is however linked to small Lucerne or crop production on private farms used for livestock feed.
- Grazing capacity is highest towards the Northern parts of the Siyancuma and Thembelihle Local Municipal areas with a capacity of 4-6 hectares needed per Livestock unit. Similar areas with the same capacity are also situated towards the eastern side of the district. The capacity towards the western side of the district starts at a capacity of 7-9 hectares needed per livestock unit within the central western areas and with a capacity of 13-15 hectares needed per livestock unit towards the far west.

The district is suitable for a wide variety of produce namely:

- Red meat.
- Vegetables,
- Grain,

- Maize and
- Poultry

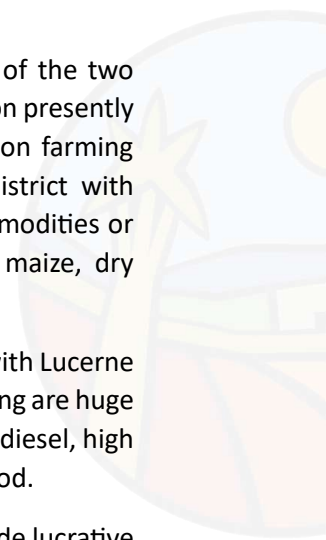
There are several abattoirs in the district with the largest located in the Emthanjeni Municipal Area with a capacity of 2000 sheep slaughtered per day. The huge potential for the region lies in adding value to the products within the area. At present products are leaving the areas in unprocessed form. The district also produces large quantities of wool that are processed in the Eastern Cape. The district is the largest wool-producing region in South Africa and provides the potential to expand and complete the value chain within the district to ensure all within the district benefit economically.

An abundance of high-quality goats and sheep exist within the district and expanding the goat and sheep farming could become important due to the high demand for meat and once beneficiation processes in terms of value addition begins (dairy products, leather goods, wool etc.) within the district.

Irrigation farming is confined to the immediate surroundings of the two major rivers that flow through the district. Most of their Irrigation presently takes place in close vicinity to the rivers and canals. Irrigation farming forms a large part of the agriculture activities within the district with numerous products being cultivated along the rivers. The commodities or products being cultivated include grapes, Lucerne, peanuts, maize, dry beans, olives, soya beans, potatoes, pistachios, and cotton.

Soya bean farming is an excellent product for rotation farming with Lucerne and maize. The value addition opportunities with soybean farming are huge with very little wastage and these include, amongst others, bio-diesel, high protein health foods, multi-vitamin supplements and animal food.

The weather conditions and availability of land and water provide lucrative opportunities for pistachio farming in the district. The global demand for pistachios is very high and the market price is 82 high compared to other



nuts. The value addition opportunities are in the chocolate and sweet market and this luxury goods market is steadily growing globally.

The region has a long history of game farming. The game farming industry provides possibilities for a reasonable income. There are also additional opportunities such as biltong manufacturing, guest houses and taxidermy. The game farming industry opens the opportunity to attract visitors and investors to the district.

5.1.4.1.5 ZF Mgcawu (ZFM) District Municipality²³

The district is the largest producer of agricultural commodities amongst all district municipalities in the Northern Cape - contributing 47% to the Northern Cape's total agricultural output - it has an excellent opportunity to focus on increased beneficiation of agricultural produce. Interestingly 33% of the districts' imports consist of agricultural commodities. This number could be significantly reduced if more agricultural commodities were processed locally, helping to contribute not only to increased agriculture-based value addition but also to job creation and environmental sustainability (lower carbon emissions from reduced transportation). Thus, the District could benefit to a large extent from an agro-processing hub, housing processors of various agricultural commodities to ensure that fewer commodities leave the district in their cheapest (raw and unprocessed) form.

The main breed of sheep being farmed in the region is the Dorper. The Dorper is a highly successful South African-bred mutton breed developed especially for the more arid areas of South Africa. The Dorper's excellent carcass qualities in terms of conformation and fat distribution, generally qualify it for top classification. The biggest issue for emerging sheep farmers is resources, with specific reference to water, land and livestock. Areas such as Mier have limited surface water and the sheep farmers in the area are predominantly reliant on groundwater and boreholes.

The quality of groundwater in many parts of ZFM DM, but especially in Mier, is brackish. The Department of Water Affairs is currently constructing a water pipeline between, the Orange River accounts for 33% (4 501 ha) of the total area (13 462 ha) planted to table grapes in South Africa. Some of the main producers in the region include Karsten Group, fruits du Sud, Red Sun Raisins, Rekopane Estates, Die Mas, Carpe Diem Estate, and many others. The Orange River Producers Alliance is a table grape industry that is renowned as a supplier of fresh table grapes to Europe with an output of more than 20 million cartons.

More than 90% of Africa's total dried vine fruit production is produced through 1250 sultana grape growers in the Northern Cape who produced more than 50,000 tonnes in 2010. The sultanas produced here comprise more than 80% of that which is exported primarily to Europe and other eastern countries.

Table and dry grapes are some of the most important deciduous fruits grown in South Africa, taking into consideration their foreign exchange earnings, employment creation and linkage with support institutions. Table grapes sold in the export markets generate a greater unit price than that achieved on the local market. For this reason, management orientation and understanding of the rules of the export markets are critical factors in the pathway to success in table grape production. Up to 90% of the total production is exported, mostly to Europe and the UK where South Africa enjoys preferential market access through the Trade Development and Cooperation Agreement (TDCA) between South Africa and the EU. Estimated turnover for the sector is estimated at over R1.5 billion per annum. The bulk of sales to the consumer is through contractual agreements via preferred category suppliers to the supermarket chains. Furthermore, various export companies or agents conduct work based on consignment sales on behalf of the growers or packers. The industry

²³ DALRRD, 2023. ZF Mgcawu Rural Development Sector Plan



operates in a deregulated environment where prices are determined by the market forces of demand and supply.

5.1.4.2 Agricultural Statistics

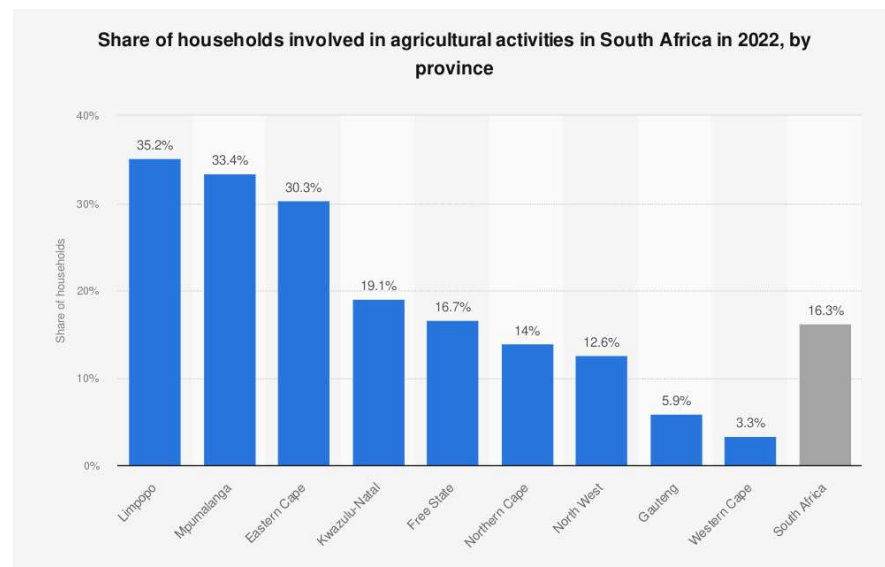


Figure 50: Number of Households Involved in Agricultural Activities, 2022, Statistics South Africa, Statista 2023

5.1.4.3 Agricultural Infrastructure

Agro-industrial development and agro-processing are vital instruments towards achieving economic diversification, value-adding and employment opportunities. It is important to recognize the role played by its linkages and multiplier effects. Agro-processing creates linkages between primary agricultural production and the industrial processing sector thus,

promoting value addition and labour absorption. The figure below provides an overview of the key agro-processing facilities in the province.

5.1.4.3.1 Abattoirs

Approximately 60% of the 14.1 million cattle available in South Africa are owned by commercial farmers and 40% by emerging and communal farmers. The gross value of beef production is dependent on the number of cattle slaughtered and the prices received by producers from abattoirs. The amount of red meat produced depends on the infrastructure such as feedlots and abattoirs, not necessarily on the number of livestock available in those areas.

South Africa has a highly developed transport infrastructure that allows the movement of cattle and calves from one area to another, even from other countries such as Namibia. There are approximately 488 abattoirs in total in South Africa ranging in slaughtering capacity from as little as 2 to 3 units a day to more than 1,500 units a day.

Most of the larger abattoirs are owned by the feedlot industry, thus backwards vertical integration. Abattoirs in South Africa can either be classified as high throughput abattoirs (21 to 100 units/day) or low throughput abattoirs (1 to 20 units/day) where one unit equals 1 cattle, 6 sheep, 5 pigs, 4 ostriches or 2 horses. In the North Cape Province high throughput abattoirs do 5 to 100 units/day, this is not competitive as compared to other high throughput abattoirs²⁴.

The Northern Cape has 14 abattoirs registered for high-volume red meat slaughtering and another 28 registered for low volumes (see the table below). Two abattoirs in Frances Baard are also registered to slaughter for cattle exports and another two abattoirs in Pixley ka Seme are registered to slaughter for sheep exports to SACU and the Middle East.

²⁴ Department of Rural Development and Land Reform, 2016. Agri-Park Master Business Plan, John Taolo Gaetsewe District Municipality, Northern Cape Province



Table 8: Registered abattoirs in the Northern Cape Province

REGISTERED ABATTOIRS IN NORTHERN CAPE								
Region	Red Meat				Poultry			
	High	Low	Rural	AP	BP	CP	DP	EP
Kuruman & Mothibstad	1	7					4	
Springbok	1	2	1					
Upington	2	2	1				3	
De Aar	5	7					1	
Calvinia	3	5	2					
Kimberley	2	5	2				6	
Total	14	28	6	0	0	0	14	0

5.1.4.3.2 Silo's

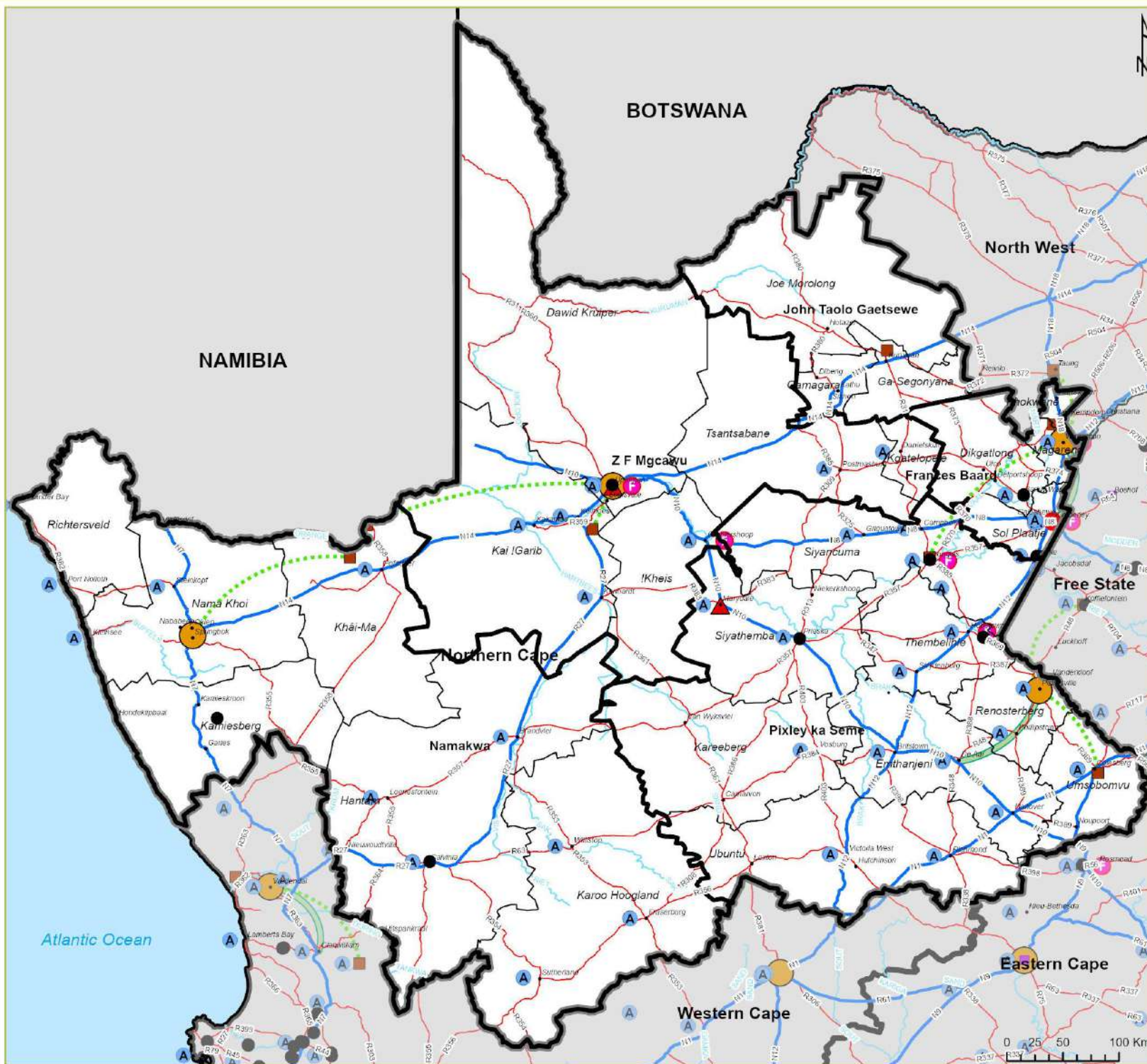
The total maize crop is harvested in a relatively short period, but it is processed and used right throughout the year, which means that the majority of the crop needs to be stored directly after harvest. The producer has one of three options when harvesting, to deliver it directly to the processor/user, store it him/herself or deliver it to commercial off-farm silos. The processors have limited capacity and can only store about 10% of the crop. Because of the large capital outlay to create storage capacity, limited storage capacity exists on farms. New technology is increasing the on-farm storage capacity. More than 70% of the crop is stored in commercial silos. The three leading commercial silo owners, namely Agri, NWK and Senwes, own nearly 75% of the storage capacity in the grain market. Most of the storage capacity is in the Northern grain-producing provinces with some capacity at the main harbours for importing and

exporting. In the Northern Cape, the silo owners with the largest storage capacity are GWK, Senwes and OVK. There are also a few smaller silos and silos that are privately owned. The larger silos are all situated next to railway lines which make rail transport for the bulk of the crop possible. Most of the silos in the Northern Cape are also used for wheat production and the time for storing maize is limited. This puts more pressure on logistical arrangements and negotiating contracts with buyers. Removal of surplus crops more than storage capacity in the harvesting period always poses challenges to traders and road transport is often used.

5.1.4.3.3 Wine Cellars

Wine cellars are predominantly found along the Orange River, Orange River Cellars is the dominant co-op in the province. Orange River Cellars was established on 23 December 1965, with Upington Cellars harvesting wine grapes for the first time in 1968. Since the early seventies, wine production activities have been extended significantly with the addition of cellars at Groblershoop, Grootdrink, Kakamas, and Keimoes. Grape juice production is managed from a separate, specialised facility at Kanoneiland, and is also done at the wineries of Grootdrink and Kakamas. Orange River Cellars is the largest wine cooperative in South Africa and the Southern Hemisphere, as well as the second largest in the world, according to the number of tons harvested. In the early 1900's vineyards were planted in the Lower Orange Valley for raisin production. The intake of the cellars has grown from 5182 tons in 1968 to a record of 184 000 tons in 2004. Not much of the original distilling wine scheme survived. The production of good wine goes hand in hand with marketing and here Orange River Cellars had great success with its products. Originally only three wines were produced, but the product list has grown to over 30 different products. The large number of awards over the last couple of years indicates the quality of these products. To date, we have received national and international awards and recognition for our wines, the latest being 5 medals at the 1999 Veritas. With the growing demand for grape juice concentrate, Orange River Cellars established juice cellars at Kanoneiland and Grootdrink in 1996. The wine cellar at Kakamas is also currently used for the production of grape juice.





AGRICULTURAL INFRASTRUCTURE

Legend

- Town/Settlement
- Millers
- FPSUs
- Silos
- Ⓐ Abattoirs
- ⓕ Feedlots
- Ⓜ Fresh Produce Markets
- ▲ Ginners
- Agrihubs
- Main Roads
- National Roads
- Main Rivers
- Local Municipality
- District Municipality
- Agrihubs-Anchor Connectors
- Connectors to Anchors
- Agri-Hub to Anchors
- FPSU to Agri-Hubs

Map 8: Northern Cape Agricultural Infrastructure

Source: Karoo RSDF

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.1.4.4 Agricultural Commodities

The Northern Cape is experiencing rapid growth in value-added activities such as game farming. Food production and processing for the domestic and export markets is also expanding rapidly. A large part of the Northern Cape's economy, the interior Karoo, is based on sheep farming, and the karakul-pelt industry is one of the most important in the Gordonia district of Upington. The province is rich in agricultural land. Grapes and fruit are grown extensively in the Orange River Valley, particularly in Upington, Kakamas, and Keimoes. The Vaalharts Irrigation Scheme near Warrenton produces wheat, fruit, peanuts, maize, and cotton.

The provincial meat produce, which includes domesticated and wild animals, produces the best beef, mutton, pork, goat, and venison, as certified by several EU and Muslim organisations.

Potential Trade and Investment Opportunities in Northern Cape Produce:

- Extensive fruit, vegetables, and nut production in near organic conditions.
- Livestock production and meat include beef, mutton, pork, venison, goat, and ostrich.
- Wines, dried fruit, dates, olives, nuts, and
- Fishing and aquaculture: Abalone, rock lobster, oyster, kelp, fish i.e. snoek. This also extends into potential aquaculture related to marine and freshwater species and ranching of abalone along the coastline.

5.1.4.5 Agricultural Potential

Agricultural potential is defined as a measure of potential productivity per unit area and unit time achieved with specified management inputs; and for a given crop or veld type and level of management, is largely determined by the interaction of climate, soil and terrain. Productivity is regarded as an indication of the agricultural potential for a given crop under a management level and an identified portion of land as being dependent on precipitation, temperature, soil conditions, terrain and crop characteristics (Schoeman & Scotney, 1987).

Human impact and the harsh climatic conditions have resulted in more than half of South Africa's land surface being under threat of desertification (see figure below). It is estimated that the annual soil loss due to erosion is 2.5 tons, which exceeds the rate of soil formation of 0.31ton ha/year by far (DoA., 2004).

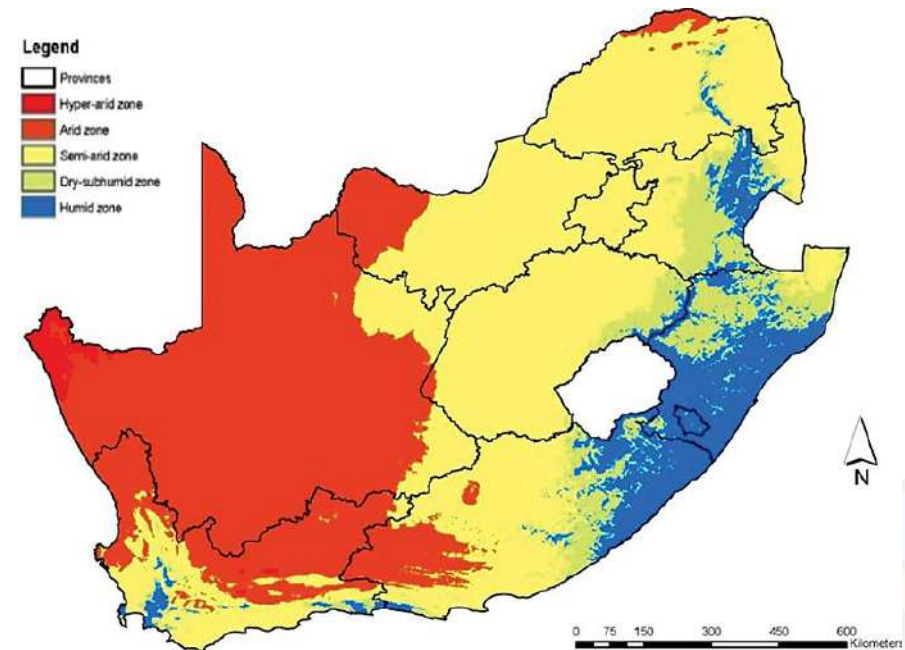


Figure 51: Northern Cape is predominantly defined as an Arid - Semi Arid area

5.1.4.5.1 Land Capability

Land capability is defined as the most intensive long-term use of land for purposes of rainfed farming determined by the interaction of climate, soil and terrain. The FAO (1976) stated that the process of assessment of land performance when used for specified purposes, involves the execution and interpretation of surveys and studies of land forms, soils, vegetation, climate and other aspects of land in order to identify and make a comparison of promising kinds of land use applicable to the objective of



the evaluation. Land evaluation and land use planning evaluation include concepts such as land management, current land use, the characteristics of the land, land use requirements and the improvement thereof. Van Niekerk et al (1981) stated that a land capability map should enable the user to attain the best long-term utilization of the land.

In 2014 the Directorate: Land Use and Soil Management (DLUSM) embarked on a process to refine the 2002 national land capability data set based on an in-depth researched and verified methodology where the Gauteng and Limpopo provinces were initially used as pilot areas before being applied and adapted on a national level. This methodology was based on a spatial evaluation modelling approach wherein the key modelling issues include the delineation of geographic units, the specification of both dependant and explanatory variables, the formulation of the model, the testing of the statistical significance of the model and the interpretation of the results. The result of the process was a newly derived agricultural-driven land capability evaluation model based on a spatial evaluation modelling approach and a raster spatial data layer comprising 15 land capability evaluation values (with the value of 1 being the lowest possible value and 15 the highest possible value), usable on a scale of 1:50 000 – 1: 100 000.

As was the case with the 2002 approach the main contributing factors towards land capability in a “natural or unimproved “rainfed (dryland) scenario, were the soil, climate and terrain capabilities with a weighted reference of²⁵ :

- Soil capability = 30%;
- Climate capability = (40%) and
- Terrain capability = (30%).

As per the figure below, Land Capability in the Northern Cape is overall classified as low-moderate to very low, this is due to the arid climate conditions facing the province. Land Capability is however improving from

west to east. Small moderate areas are evident within the Vaalharts Irrigation scheme area. The Land capability assessment does not consider irrigation schemes. The province is predominantly suitable for moderate grazing at best, with no arable potential (Schoeman et al., 2000). This is due to the combination of unfavourable climate and sandy soils.

Land capability focuses mainly on the capability of natural resources. Agricultural potential includes additional factors, such as level of management, economic factors and crop selection or suitability. Economic factors are nonetheless subject to a specific time and place and are dictated by demand and supply. The same subjectivity applies to management requirements and crop suitability. Land may have a low potential for a specific crop, but be highly suitable for another crop, depending on the capability of the land. Incorrect crop selection or farm management may also result in a limited agricultural potential. However, should the situation be rectified through correct land use planning, management of the resources and correct production practices, a completely different outcome may be achieved. However, the capability of the land remains the same (Collett, 2008).



²⁵ Metadata – Land capability Evaluation 2017, Raster: RSA



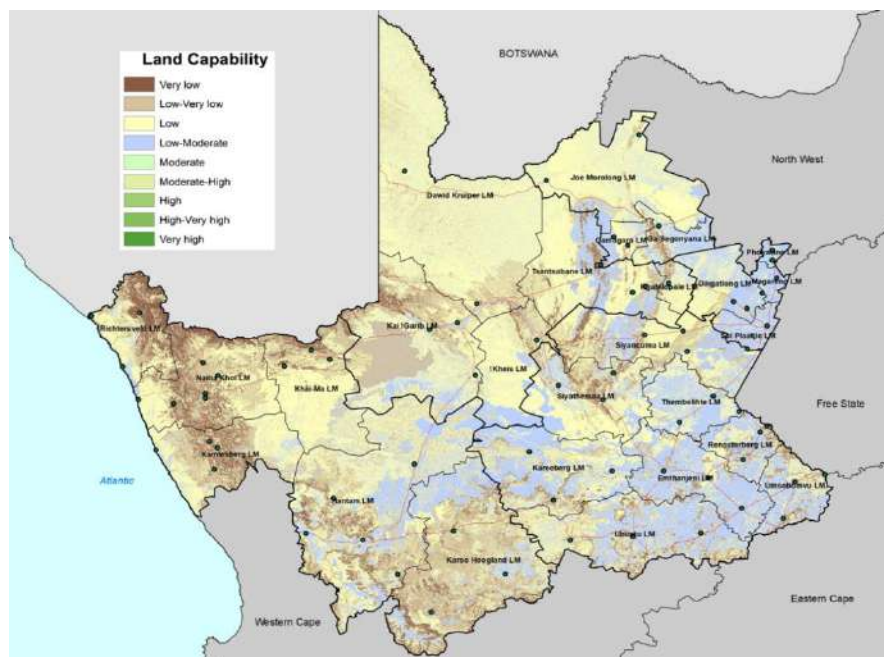


Figure 52: Land Capability Assessment of the Northern Cape Province

5.1.4.5.2 Soil Capability

To date, the outcome of this work has been used as the national norm for land capability demarcation. Results indicated that there are little or no soils in South Africa that are not subjected to limitations. Areas with a very good climate, such as KwaZulu Natal and the former Transkei had to be down-graded due to steep slopes and limited soil depth. It was determined that nowhere in South Africa do good soils and good climate coincide (Schoeman et al. 2002:35).

Agricultural soil suitability is calculated as a function of the potential of the soil to hold and supply moisture to the plant; the sensitivity of the soil affecting productivity and the inherent potential of the soil to be fertile. Soil

capability takes into consideration all aspects pertaining to the characteristics of the soil and their contributions towards plant production.

Three databases were used as part of the soil capability modelling.

- Land type data was modelled and mapped into topographical units. The data were modelled and rasterised from the original land type database and the 90 m SRTM DEM²⁶. All the soil attributes are linked to fixed boundary zones. The soil concerns, issues and data are therefore aimed at an attribute rather than a spatial level.
- The land type soil attribute database (ARC).
- Soil fertility data (DAFF).

Three main modelling concerns formed part of the soil capability modelling:

- Plant available water.
- Soil sensitivity.
- Soil fertility.

The final Soil capability data set is a raster-based data set derived through the spatial modelling exercise as discussed previously. The final data set consists of 9 possible evaluation values with the value of 1 being the lowest possible value and 9 being the highest possible value (as indicated by table 8). Although a description has been added to the soil capability evaluation values, the reference should be the evaluation value and not the description as this is only for illustrative and clarity-seeking purposes. As is the case with the land capability evaluation classes, the relationship of the 9 soil capability evaluation classes is not linear to each other; meaning a value of 4 is not one value more than the value of 3.

²⁶ Shuttle Radar Topographic Mission (SRTM) and Digital Elevation model (DEM). The SRTM digital elevation data, produced by NASA originally, is a major breakthrough in digital mapping of the world, and provides a major

advance in the accessibility of high quality elevation data for large portions of the tropics and other areas of the developing world. <https://lta.cr.usgs.gov/SRTM1Arc>



Table 9: Soil capability ratings

Value	Rating
1	Very Low
2	
3	
4	Very low to Low
5	
6	Low
7	
8	Moderate
9	
10	Moderate to High
11	
12	High
13	
14	High to Very High
15	

As per the figure below the Soil Capability in the Northern Cape is overall classified between moderate and low-very low. The small areas south of Brandvlei, Port Nolloth, Klein Zee, Douglas and north of Van Wykslei have a soil capability of moderate-high. In general, most of the area has red, shallow to very shallow, often calcareous soils on rock.

Aridity (limited climatic moisture availability) is the major factor that limits agricultural potential across the study area. As a result, differences in soil type and soil potential have very little influence on agricultural potential. Agriculture is almost exclusively sheep farming.

About 81% of the South African surface is characterised by shallow soils with about 30% of the surface area regarded as sandy (less than 10% clay) and much less fertile. Almost 60% of the soils have low productivity and are prone to land degradation due to the low organic content. Only 24% of the

country has soils with a favourable top- and subsoil structure that, depending on the climate, is suitable for crop production (ARC-ISCW, 2004).

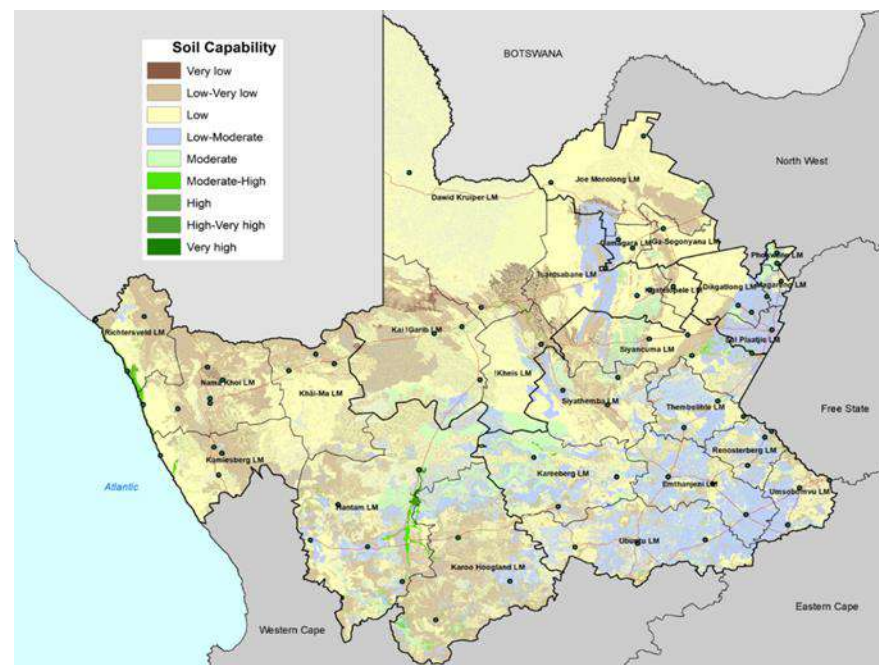


Figure 53: Soil Capability assessment of the Northern Cape Province

5.1.4.5.2.1 Improving Soil Fertility

- ➔ Analyse both soil and crop samples to determine the exact amount and type of fertiliser required and aim to fill nutrient gaps rather than simply increasing the total Nitrate and Phosphor levels.
- ➔ Use precision agriculture to calculate the fertilisation regime based on a realistic estimate of potential yield.
- ➔ Time and target fertiliser application to coincide with maximum plant uptake periods and apply fertiliser in regular smaller doses rather than a few large doses.
- ➔ Store synthetic fertilisers on an impermeable floor. Avoid interim storage in open fields, as this poses a high pollution risk.

- Fertiliser spreading machines should never be washed in rivers, lakes or near drinking water wells and springs.
- Where possible, use organic fertilisers that contain a carbon source (for example compost, manure and plant matter – especially from legumes).
- Use crop rotation and inter-cropping to increase soil organic matter and nutrients. Where possible, rotate between grains and nitrogen-binding legume crops.
- Maintain a permanent soil cover – use either cover crops or mulch.
- Avoid excessive irrigation and ensure good water quality.
- Reduce the use of pesticides and herbicides that cause a decline in soil micro-organisms.

5.1.4.5.2.2 Improving Soil Structure

- Practice crop-appropriate minimum tillage.
- If tillage is required, till at the correct speed and only when the soil has the correct moisture content.
- If possible, avoid crops that require soil disturbance to harvest.
- Prevent soil compaction by limiting heavy machinery, especially in wet conditions. Where traffic is necessary, use radial-ply tyres with low tyre pressures to minimise soil compaction.

5.1.4.6 Grazing Potential

The Long-term grazing capacity (ha/LSU²⁷) of the province varies from 7 to 140ha/LSUE with a mean average of 33.3. Almost 28 000 000ha is available from grazing, consisting of almost 99% of the total area of the province ²⁸. Grazing capacity is more suitable towards the eastern parts of the province, more specifically towards the Frances Baard district and Southern parts of

the John Taolo Gaetsewe District. Concentrations of good grazing potential are also evident in the Kamiesberg area, along both the Vaal and Orange rivers and areas surrounding Niewoudtville.

Grazing capacity has since the early eighties been based on a large stock unit (LSU) or animal unit. It has been defined as an ox which weighs 450kg and grows at 50g per day on a grazing field which is 55% digestible. To reach this goal, the ox theoretically needs 75 megajoules of metabolisable energy per day, which is more or less equal to 9kg of dry feed on the grazing field which is 55% digestible. The intake of dry feed will be somewhat different if the grazing fields' digestibility is less than 55%. The value of the LSU definition is that all classes (young, adult, pregnant, lactating, etc.) within species, which have different energy needs as well as between species, can relatively be expressed. Replacement values can be calculated based on accountable energy needs. When this has been done, grazing capacity can be calculated. However, it should be kept in mind that species differ in their feed preferences. Some prefer grass and other shrubs, some prefer tree leaves, and some prefer to have a mixed diet. The quantitative occurrence of these plants must be calculated on each farm to determine how many of a species can be kept. The grazing capacity standards which have been determined in this way and which are officially enforced by the Department of Agriculture, Forestry and Fisheries (DAFF), are based on grazing field recordings with plant materials which have been physically cut in enclosed areas where animals can't graze. Furthermore, it is supported by photographs that have been taken over time. While this has been very handy, the time has come to re-evaluate these standards because 30 years have passed and grazing fields have changed, as well as techniques. It is also important to take note of the following. Over the years, people made

²⁷ The values indicated on the map are ha/LSU (hectares per Large Stock Unit). This unit indicates the area (in ha) needed to maintain an animal of 450kg for a period of a year without degrading the natural resource. Utilize ±50% of the available biomass with an intake of 10kg DM per day. Average grazing capacity per biome; Grassland biome 4-6 ha/LSU, Savanna biome 10-15 ha/LSU, Nama-karoo biome 25-35 ha/LSU

²⁸ DAFF, 2017. Long Term Grazing Capacity norms for South Africa (Data, mapping and application). Extracted from National Land Cover data set 2013/14



changes to LSU calculations to make it easier, or because they felt an approximate value was sufficient. In sheep areas, LSU values have been changed to small stock units, because the animal masses in the original publications were outdated, as animals became overall heavier. This practice is acceptable in certain cases, as long as people realize that an

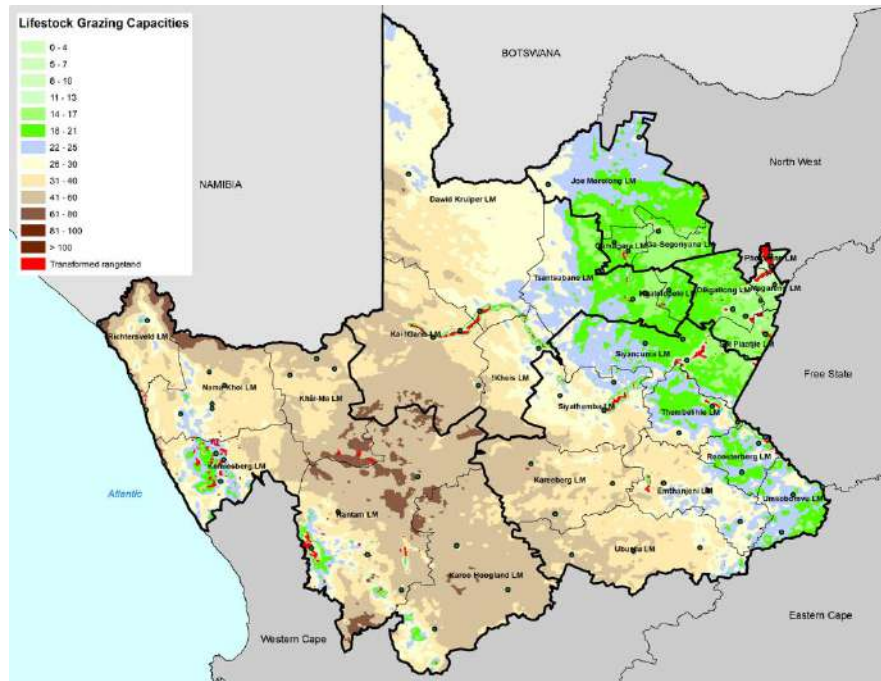


Figure 54: Provincial grazing capacity overview

approximate value may work well in a specific calculation area, but not in another area (Meissner H, 2013).

5.1.4.7 Irrigation Potential

Cultivated land is restricted along both the Orange and Vaal River systems as well as areas along the N7 corridor towards the western parts of the province. Scattered cultivated land is further evident around Niewoudtville and Calvinia.

Key considerations towards future irrigation practice in the Northern Cape Province:

- ➔ South Africa has no surplus water, and all future development will be constrained by this fact. Farmers will have to double their use of water by 2050 if they are to meet growing food demands using current farming practices. To avoid a crisis, water supply needs to be enhanced and water use efficiency increased.
- ➔ Land management on farms has a major impact on water availability and quality. Soil from eroded areas, for example, flows into rivers, changing their flow and reducing the storage capacity of dams. This results in the need for expensive water treatment/filtration systems before water can be used by industrial and domestic users. Poorly applied fertilisers run off into rivers, polluting water sources and causing algal blooms. These blooms deplete the water's dissolved oxygen and produce toxins, killing aquatic life. Pesticides from poorly managed farms are also a major source of water pollution, with devastating effects on the health and well-being of people and the environment. Often less than 0,1% of crop-sprayed pesticide reaches the target pest – the rest enters the environment (Pimental & Levitan, 1986). A 2004 water quality study of the Lourens River in the Western Cape detected high pesticide levels downstream of the farming area (Dabrowski et al., 2002).
- ➔ Invasive alien vegetation has a major impact on water – using more than twice the water of indigenous vegetation in some areas. Invasive alien vegetation is estimated to consume about 3 billion litres of water a year in South Africa. This is the equivalent of 26 large dams or 7% of the total supply (Le Maitre et al., 2000; Dye & Jarman, 2004). Clearing alien vegetation is a cost-effective way of increasing the water supply on the farm. The CSIR measured changes in stream flow in three Western Cape water catchments cleared of alien vegetation. In the dry summer months, stream flows increased by an impressive 9, 10 and 12m³ a day per hectare cleared (Prinsloo & Scott, 1999).



- Natural ecosystems in South Africa's catchments provide essential water services. Wetlands, for example, purify water, moderate water flow, and provide flood protection by capturing and slowing the water flow. They also slowly release the water into the groundwater, providing resilience in times of drought. Restoration and protection of these natural ecosystems are essential to increase water quality and quantity on the farm. The National Water Act (No. 36 of 1998) recognises the essential benefits provided by natural ecosystems and has ascribed equal status to the requirements of aquatic ecosystems and humans.

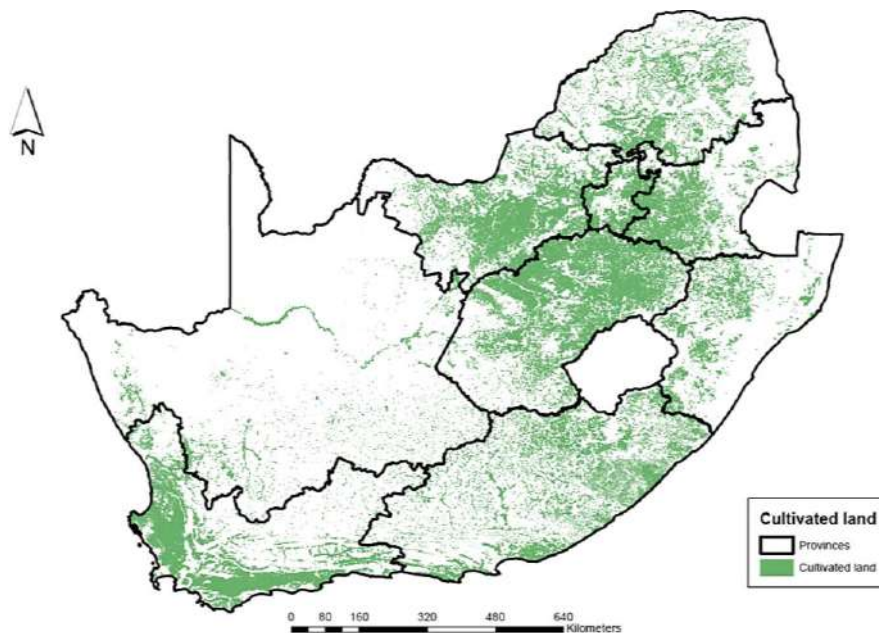


Figure 55: Cultivated land in South Africa showing a limited footprint in the northern Cape Province

5.1.4.8 Available Agricultural Land For Production

The Department of Agriculture, Forestry and Fisheries (DAFF) has, as part of the development of a new policy on the “Preservation and Development of Agricultural Land”, conducted a spatial analysis in 2012 of available agricultural land per the national land capability classification classes, to determine the current status of agricultural land per province and the availability thereof through the exclusion of permanently transformed areas. The analysis indicated that the surface area of arable agricultural land that had been converted to non-agricultural uses through urban and mining developments equals the size of the Kruger National Park.

Any change of land from agriculture to other forms of (unrelated) developments should be limited. Conflicting land uses impact negatively on agricultural production and the protection of the “right to farm” should be taken into consideration during the planning process. This includes limiting the fragmentation of agricultural land through sub-division, resulting in unviable, non-economical and unsustainable farming units. The key factors for the preservation and development of especially high-potential agricultural land should be:

- Protection.
- Avoidance.
- Minimisation.
- Mitigation, and
- Productivity.

5.1.4.9 Overall Potential

As grazing is the overwhelmingly dominant agricultural land use, the most indicative measure of agricultural potential and productivity across the study area is the grazing capacity. The province is known as an area with a relatively low grazing capacity (within a national context) but is an area that is suitable for successful sheep, goat and game farming.

Areas that show potential include:



Southeast Asia, yet demand and the prices of the aforementioned species have long-term potential for strong demand.

5.1.5.1 Abalone

It is assumed that the current growth trend in abalone culture will continue, that the reputation of South African abalone as a premier product is maintained, that the local industry remains cost-competitive, and that demand remains firm in China. This is a conservative projection, as it assumes that South Africa's share of the international market remains constant, and that total abalone production from aquaculture and fisheries remains the same. At present approximately 2 000 tons of poached South African abalone, enter the Chinese market per annum. This level of poaching is unsustainable, and in future, the illegal trade will decline as the resource becomes depleted. If managed correctly, abalone ranching (reseeding of hatchery-reared abalone into the wild) could significantly boost production from the wild. It is thus entirely possible that South Africa could increase its market share. However, to do so, the industry must remain cost-competitive with other producers (DTI, 2007).

5.1.5.2 Catfish and Tilapia

Product acceptance and a lack of distribution networks for fresh catfish and tilapia in the lower-price urban markets currently limit the development of the sector. While more research into these markets is required, it is probably realistic to assume that the production of these species will grow. Primarily this will be due to:

- A demand for fresh fish, particularly from African immigrants who traditionally consume these species.
- Locally produced, whole fresh tilapia could compete with fresh marine line fish in restaurants and retail outlets at a significantly lower price. The European and USA markets have adopted tilapia as a new fish product relatively quickly.
- The potential to distribute and sell live catfish saving processing costs and yielding a higher unit selling price.

- The potential to produce these species at a relatively lower cost than marine line fish - due to the cheaper feed costs and production infrastructure.

5.1.5.3 Shellfish: Oysters, Mussels and Scallops

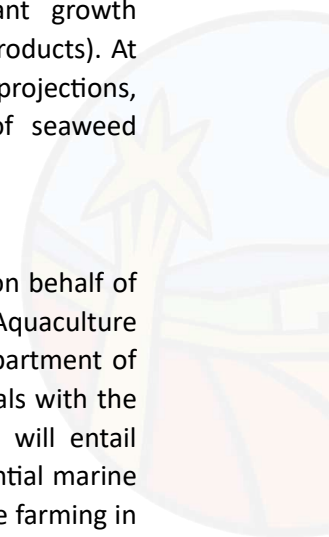
Oyster and mussel production is expected to grow organically, and production will primarily focus on the local market. Promising results have been obtained in the development of the technology for the production of the local scallop (*Pecten sulcicostatus*), and limited commercial production is likely to develop to supply the local market. It is not anticipated that South Africa will become a competitive exporter of these products (DTI, 2007).

5.1.5.4 Seaweed

Production for abalone feed is likely to grow as it has been demonstrated to be a viable option. Seaweeds have the potential to produce various non-food products (health products, alginates, fertilizers, plant growth hormones, anti-bacterial agents and other biotechnological products). At present, production for these products is excluded from the projections, but an R&D initiative could precipitate the emergence of seaweed production in the next decade (DTI, 2007).

5.1.5.5 Aquaculture Development Zones (ADZs)

A strategic environmental assessment (SEA) was undertaken on behalf of the Directorate Sustainable Aquaculture Management: Aquaculture Animal Health and Environmental Interactions within the Department of Agriculture, Forestry and Fisheries- DAFF. The SEA, which deals with the entire South African coast, leads into a larger project that will entail undertaking Environmental Impact Assessments for two potential marine aquaculture development zones (ADZs) specific for fin fish cage farming in the sea off the Eastern Cape Province, the study completed assessments on all potential small harbours, where Port Nolloth was identified as a potential ADZ. Port Nolloth however was not deemed to be suitable due to the upwelling cells experienced in close proximity to the harbour.



Upwelling cells are affected by temperature shocks that will negatively impact the growth rate and health of the cultured stock.

If further studies are conducted to investigate the suitability of fin-fish farming projects the following should be considered based on the potential environmental impacts of sea-based finfish cage culture are briefly discussed and mitigation measures that can be partly addressed at the SEA level are identified. Potential impacts include:

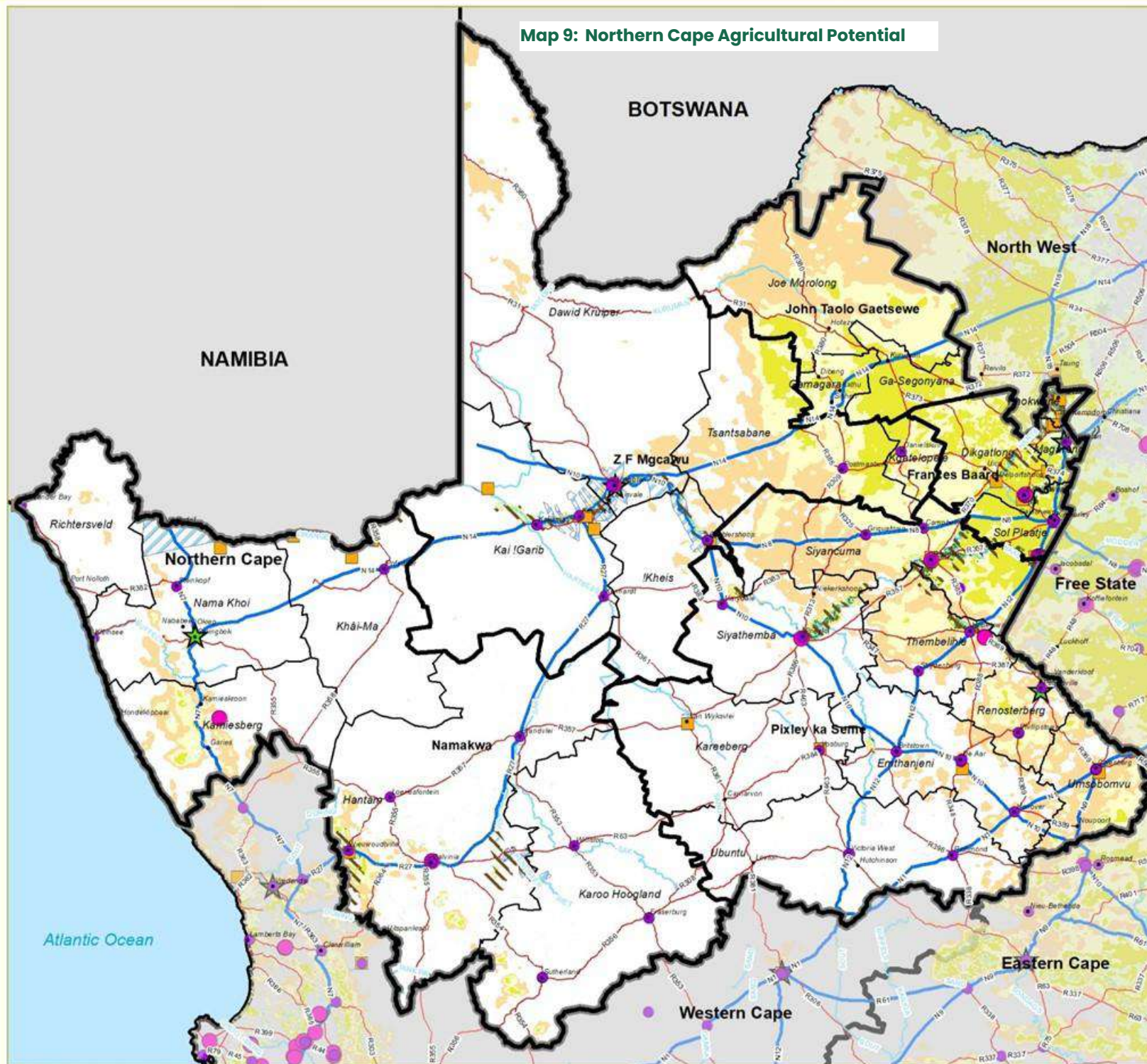
- The incubation and transmission of fish disease and parasites from captive to wild populations.
- Mitigation relies on sound animal health management and biosecurity.
- Pollution of coastal waters due to the discharge of organic wastes. Mitigation includes the use of species and system-specific feeds to maximize food conversion ratios, rotation of cages within a site to allow recovery of benthos, and sensible site selection (sufficient depth, current speeds and suitable sediment type).
- Escape of genetically distinct fish that compete and interbreed with wild stocks that are often already depleted. Mitigation measures include suitable design and maintenance of cages to minimize escapes and use of sufficient brood stock with similar genetic structure to local wild populations.
- Chemical pollution of marine food chains (& potential risk to human health) due to the use of therapeutic chemicals in the treatment of cultured stock and antifouling treatment of infrastructure. Recommended mitigation includes the responsible storage and use of the minimum required quantities of (preferably biodegradable) chemicals.
- Fish cages pose a physical hazard to cetaceans and other marine species that may become entangled in ropes and nets. Mitigation measures include site selection that excludes important migration, feeding or aggregation sites; and the use of correct and durable cage netting that minimizes entanglements.
- Piscivorous marine animals (including mammals, sharks, bony fish and birds) attempt to remove fish from the cages and may become tangled

in nets and damage nets leading to escapes and stress or harm to the cultured stock. Farmers tend to kill problem predators or use acoustic deterrents. Effective mitigation may be achieved through the use of appropriate predator mesh, proper feed storage and feeding and removal of dead fish from cages.

- Localised habitat alteration and impacts (such as changes in wave action and sediment transport). Can only be mitigated through site selection and farm design.
- User conflict due to exclusion from mariculture zones for security reasons or negative impacts on tourism and coastal real estate value due to negative aesthetic impacts of fish farms. This can be partly mitigated by site selection and consultation with other users.



Map 9: Northern Cape Agricultural Potential



SPACE ECONOMY: AGRICULTURE

Legend

- Town/Settlement
- Abattoirs
- Silos
- Farmer Production Support Unit
- ★ AgriHubs
- Main Roads
- National Roads
- Main Rivers
- Local Municipality
- District Municipality
- ▨ High Potential Agricultural Area
- ▨ Irrigation Scheme
- Crop Boundaries**
- ▨ Annual Crop Cultivation / Planted Pastures Rotation
- ▨ Pivot Irrigation
- Grazing Capacity**
- Hectares Per Animal Unit**
- 8 - 10
- 11 - 13
- 14 - 17
- 18 - 21
- 22 - 25

Source: DALRRD

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



5.1.6 ENERGY RESOURCES

5.1.6.1 Power Corridors

The key to a flexible and robust transmission grid is to secure power corridor routes with most of the rights and approvals in place so that new transmission lines can be constructed quickly as required when the actual generation is selected and confirmed for integration. The corridors will be 100 km wide, and the secured approvals will be valid for extended periods to allow the acquisition of line servitudes and substation sites for strategic purposes.

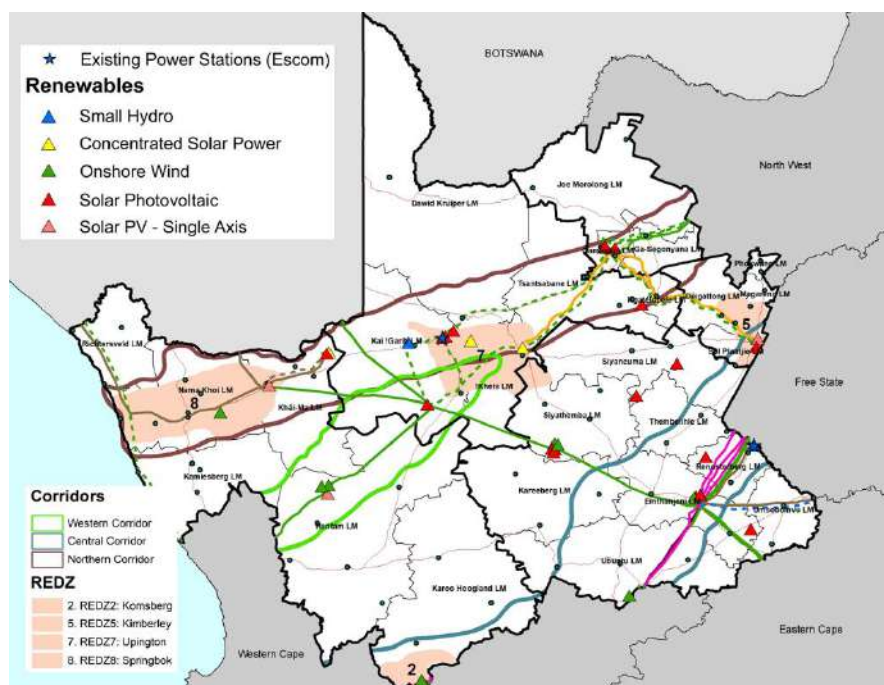


Figure 57: Eskom's Power corridors for the longer term – strategic transmission power corridors

5.1.6.2 Renewable Energy

There is an increasing move to utilise alternative and eco-efficient energy sources around the globe and South Africa isn't too far behind. The Northern Cape is implementing a renewable energy plan, with ongoing development of solar projects in the province. The Northern Cape remains one of the hottest and driest regions in South Africa, making it the perfect location for solar energy projects. The climate in the Northern Cape is classified as semi-desert with annual rainfall across the province ranging from 100mm upwards. Temperatures in the Northern Cape can reach up to 50°C. The move towards a more integrated energy plan beyond just fossil fuels helps ease the reliance on finite resources and is a response to the load-shedding that occurred nationally from 2008 onwards. The Northern Cape is benefiting from clean solar energy and has seen an economic boost from these projects through temporary and long-term job creation. This is valuable as the province faces a high unemployment rate, especially among younger adults. In light of global climate change and environmental awareness, the province is making great strides to ensure that clean energy is an everyday reality for its citizens.

The REIPPP programme is a real asset to the country. Additional electricity has been generated to meet urgent demand, without emitting harmful gases into the atmosphere. Much-needed skills have been transferred and new jobs created, while social projects have benefited the communities who live in the rural areas where these renewable energy power plants have been erected. By 2030 eight coal-fired plants are expected to close and applications for renewable energy projects have flooded into the Department of Environmental Affairs (Department of Environmental Affairs, 2017).

South Africa has committed itself to reduce its emissions below a baseline of 34% by 2020 and 42 percent by 2025. "The approach to mapping out the transition to a low-carbon economy is informed by the need to reach broad



consensus on the challenges and trade-offs involved in implementing South Africa's climate policy" (NDP, Ch5).

The REDZ is generally located near the existing major Eskom transmission grid and can easily connect to it. Off-grid (not national grid) municipal power generation may be used in areas and towns that are not served by this major Eskom grid. Some of these municipalities, such as Kareeberg Local Municipality, Karoo Hoogland Local Municipality, and Siyathemba Local Municipality, rely on solar energy to some extent for lighting.

In addition to wind and solar energy, the Region has hydroelectrical generation capacity, particularly near the Gariep Dam.

5.1.6.2.1 Wind

Loeriesfontein Wind Farm and Khobab Wind Farm have announced the commencement of their 20-year commercial operations. Collectively the wind farms will power circa 240,000 South African households, positively impacting the country's economy and its people, according to a company statement. The two Northern Cape wind farms have achieved this milestone on schedule, on budget and without a single lost-time incident. With a generation capacity of 140MW each, the duo comprises a total of 122 wind turbine generators, spanning 6,653 hectares. Both Loeriesfontein and Khobab were awarded under the Government's Round 3 Renewable Energy Independent Power Producer Procurement Programme (REIPPPP).

5.1.6.2.2 Hydro-Electricity

Eskom plans to build a series of hydroelectric plants along the Orange River, including one at the Augrabies Falls. South African National Parks (SANParks) has voiced its opposition to elements of the project, suggesting that the proposed R1-billion Augrabies scheme would disrupt the local ecology and have a detrimental impact on tourism. The 60m falls, the world's fifth highest, are among South Africa's most spectacular natural features. Also targeted for hydroelectric schemes are the Orange Falls (also

known as the Ritchie Falls) near the towns of Pofadder and Onseepkans, as well as the Neusberg plant near Kakamas, which is already under construction, and the Boegoeberg Dam in Groblershoop. Boegoeberg Hydro Electric Power (Pty) Ltd (Boegoeberg Hydro) initially intends to construct a hydropower facility with an approximate capacity of 10 Megawatt (MW) on the Orange River in the Northern Cape. However, the proposed hydropower facility has a higher potential than initially calculated by the design team, whereby the capacity has been increased to a maximum of 15 MW to realise the facility's full potential. The proposed Hydropower facility is located approximately 26km south east of the town of Groblershoop in the Northern Cape and can be accessed via the N8²⁹.

5.1.6.2.3 Other Energy Projects

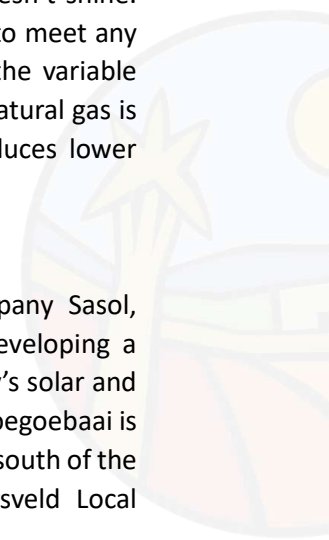
5.1.6.2.3.1 Gas-to-power

South Africa is considering a gas-to-power programme to support a solar and wind fleet to address the variability of wind and solar power, by supplying power when the wind doesn't blow, or the sun doesn't shine. Gas-to-power plants can be ramped up or down very quickly to meet any differences in electricity demand and supply resulting from the variable output of wind and solar power generation plants. Although natural gas is a fossil fuel, it burns without emitting particulates and produces lower levels of harmful gases than the burning of coal.

5.1.6.3 Green Hydrogen

President, Cyril Ramaphosa has spoken about energy company Sasol, together with the Industrial Development Corporation, is developing a project in Boegoebaai in the Northern Cape to use the country's solar and wind resources to export green hydrogen at a massive scale. Boegoebaai is situated approximately 60 km north of Port Nolloth and 20 km south of the border between Namibia and South Africa, in the Richtersveld Local Municipality.

²⁹ Aurecon, 2013. *Proposed hydropower station and Associated infrastructure at Boegoeberg dam on the Orange river, near Groblershoop, Northern cape*



The Boegoebaai project presents an excellent opportunity for South Africa and Germany to cooperate in the fields of green hydrogen development, energy security, job creation, just transition and climate action.

5.1.6.4 Transmission Development

The future generation of IPP customers to be connected providing new types of generation identified in the 2010 IRP, particularly renewable energy, distributed across wide areas of the country required a significant change in the approach to the planning and implementation of the development of the future transmission grid. The future generation will largely be IPP developments, which are connection customers. Development Plans The development plans for the transmission network must therefore be able to:

- Adapt to the uncertainty of future load and generation locations.
- Identify the critical power corridors and constraints on the transmission network; and
- Develop strategies to unlock and create a flexible and robust grid to be able to respond to the changing future needs of the country.

The 2040 Transmission Network Study³⁰ determined the development requirements of the future transmission grid to accommodate the expected load demand needs and the potential impact of future generation scenarios based on the 2010 Integrated Resource Plan (IRP)³¹. The study identified five main power corridors that would need to be developed under all the potential generation scenarios. The study findings were used as input into several studies on the location and integration of renewable energy resources, IPP coal projects and large volumes of natural gas generation. Renewable energy development zones (REDZs) for the efficient

and effective rollout of wind and solar PV energy as part of the government SIP 8 initiative were identified. A total of eight REDZs have been identified.

Eskom's approach aims to strategically prepare the transmission grid for the creation of additional generation connection capacity provides:

- IPP connections and strategic plans for the medium-term period; and
- Securing power corridors for the longer term to enable a faster response to change IPP generation programmes.

The Transmission Development Plan (TDP) in the Northern Cape is mainly influenced by the following aspects:

- The size and consistent sunshine attracted a huge influx of solar and wind IPPs in the province;
- Increased focus on mining operations in the Kimberley area due to the anticipated manganese and iron ore mining and smelter operations associated with these mines.
- The need to primarily increase the reliability of the network restricted by a traditionally weak network consisting of radial lines; and
- The a need to increase capacity on the rail corridors that transport iron ore and manganese to the coastal areas.
- Included in the TDP is the future planned electricity export to Namibia via the 400 kV and 220 kV interconnections.

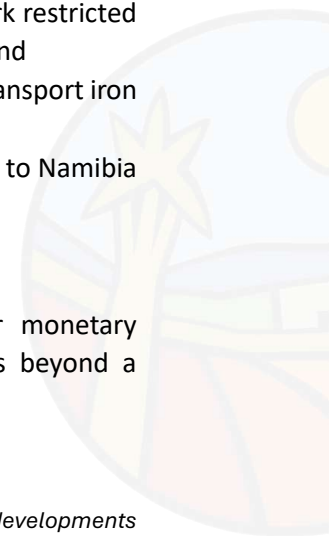
5.1.6.5 Carbon Credits

The concept of carbon credits, which can be traded for monetary compensation with industries that cannot reduce emissions beyond a

³⁰ The 2040 Transmission Network Study was undertaken to determine the development requirements of the future transmission grid to accommodate the expected load demand needs and the potential impact of future generation scenarios using the 2010 Integrated Resource Plan (IRP) as a baseline.

³¹ The Integrated Resource Plan (IRP) 2010-30 was promulgated in March 2011. It was indicated at the time that the IRP should be a "living plan". Since the promulgation of

the Integrated Resource Plan (IRP) 2010-30 there have been a number of developments in the energy sector in South and Southern Africa. In addition, the electricity demand outlook has changed from that expected in 2010. The document is currently under review.



certain point, is one way to ensure some benefit for the province. One carbon credit equals one ton of CO₂e emission reduction per year.

In accordance with the Carbon Tax Act of 2019, the Regulations on Carbon Offsets were finalized in November 2019, with the carbon offset administration system launching in July 2020. The carbon offset against the carbon tax is currently limited to 5% or 10%.

The price of SA carbon credits is determined by the carbon tax rate, and it should be lower than the tax rate to encourage companies to save. As a result, carbon credits in South Africa will be sold for less than the current carbon tax rate of R120/tonne of CO₂ equivalent, which is less than the global price (\$23.65 in 2019). According to HIS Market Global Carbon Index, high returns appear possible, with investors in global carbon potentially earning a total return of 132%.

In comparison to other parts of the world, the concept is still relatively new in South Africa, and its potential may grow in the future as carbon taxes are raised.

5.1.6.6 Northern Cape Scenario- Impact of Doe Generation Scenarios³²

The TDP is based on the baseline generation assumptions however the potential impact of other generation scenarios as specified by the DoE was considered during the end of the TDP horizon in terms of high-level sensitivities. The year of consideration for these scenarios is 2025, as only the full impact was considered, not the phased roll-out of these scenarios. The purpose of this scenario is to determine the impact on the transmission network within the Northern Cape if 2 500 MW of wind generation is moved from the Eastern Cape into the Northern Cape. This includes some substations in the northern part of the Western Cape. The locations for new wind generation for this scenario are as follows:

- Nama: 400 MW.

- Gromis: 400 MW.
- Aggeneis: 400 MW.
- Oranjemund: 400 MW.
- Hydra: 300 MW.
- Kronos: 300 MW; and
- Gamma: 300 MW.

5.1.6.6.1 Impact of the Scenario

There is a significant impact of this generation scenario on the Northern Cape province. The 220kV network in the Namaqualand area, running from Aggeneis-Nama-Gromis-Oranjemund will be overwhelmed with the generation to be collected and distributed out of the area. Accommodating this amount of additional IPP generation will require this network to be overlaid with 400 kV. This will entail the construction of the following as a minimum:

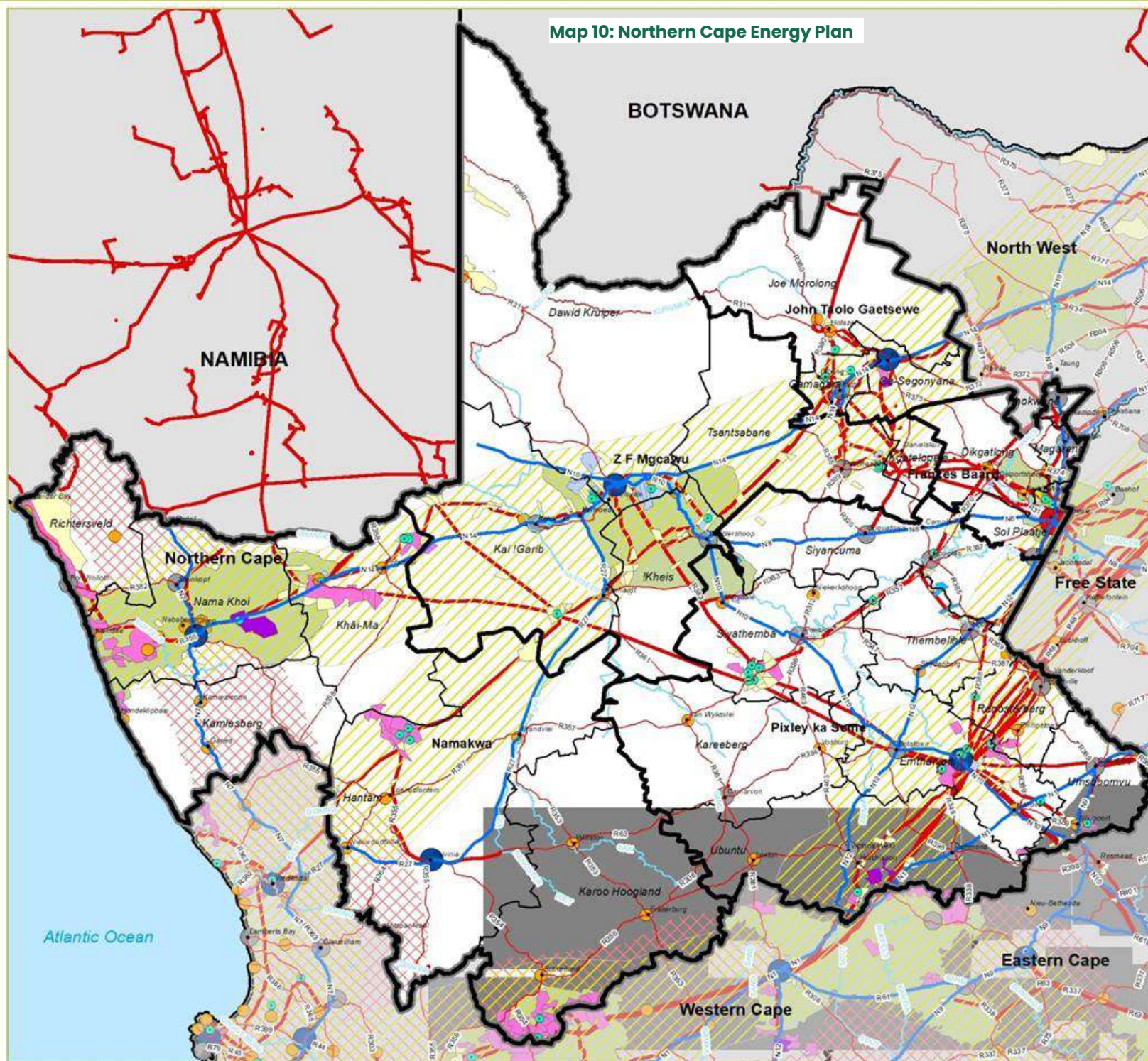
- Energising the new Gromis-Oranjemund 400 kV line.
- A new Oranjemund-Aggeneis 400 kV line (300 km).
- A new Gromis-Nama-Aggeneis 400 kV line (200 km).
- A new Aggeneis-Helios 400 kV line (150 km) or 2nd Aggeneis-Aries 400 kV line (150 km).
- A 2nd Aries-Ferrum 400 kV line.
- At least one new 400/132 kV collector substation in the Nama-Gromis area, plus the 400 kV lines to integrate it; and
- A new Ferrum-Olien-Perseus 400 kV line to reinforce the 275-kV link via Kimberley to provide an additional evacuation path for network security.

The Hydra/Kronos/Gamma generation will require the establishment of 400 kV/132 kV at Gamma, an additional substation in the Hydra area (Hydra B) and the extension of Kronos 400/132 kV. A second Hydra-Kronos-Aries 400 kV line (400 km) may be required. The new Hydra B substation may also require an additional 400 kV lines for integration.

³² Eskom, Transmission development plan 2016-2025



Map 10: Northern Cape Energy Plan



ENERGY PLAN

Legend

- Town/Settlement
- Eskom - Transmission & Distribution Lines
- Power Stations

Functional Town Hierarchy

- National Urban Nodes
- Regional Development Anchor
- Rural Service Centres
- Other Towns

- Main Roads
- National Roads
- Main Rivers
- Local Municipality
- District Municipality
- ▨ Strategic Gas Corridor
- ▨ Strategic Power Corridor (REDZ)
- ▨ Shale Gas Exploration
- ▨ Renewable Energy Development Zones (REDZ)

Projects

- Biomass/Biofuels
- CSP
- Hydro
- PV
- Petroleum
- Solar CSP and Solar PV
- Wave
- Wind
- Wind and Solar PV

Source: Karoo RSDf; Eskom
Department of Forestry, Fisheries & the Environment

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



5.1.7 CLIMATE

The weather in the Northern Cape is typically desert or semi-desert. It is a hot and dry region with fluctuating temperatures and little rainfall. Evaporation levels exceed annual rainfall, which ranges between 50mm and 400mm (the province's average annual rainfall is 202mm). During the winter months (April to September), rainfall falls on Namaqualand, parts of Boesmanland, and small areas of the Green Kalahari in the province's west.

The Benguela current has a significant impact on Namaqualand's climate, with onshore winds blowing over the cold, upwelled waters of the Atlantic Ocean, ensuring that summer temperatures rarely exceed 25°C. Summer temperatures along the coast reach 25°C. Winter temperatures range from 5°C to 15°C. Frost occurs in the highlying regions, with snow falling on occasion in the Kamiesberg uplands. The fog that blankets much of Namaqualand is a seasonal phenomenon that occurs when onshore wind speeds are insufficient to produce the turbulence that breaks up the fog. The fog serves an important ecological function by providing an alternative source of moisture for plants and various animal species.

The central, northern and eastern parts of the province receive rain primarily during the summer months (December to February). Summer temperatures often exceed 40°C in most of the province. Temperatures as high as 48°C have been recorded along the Orange River. During winter (especially in June and August), average day temperatures are mild (approximately 22°C). Night temperatures often drop below 0°C. In winter, snow falls in the Kamiesberg, the Hantam and Richtersveld mountains and, in particular, at Sutherland. This town lies at an altitude of 1 500m above sea level and is one of the coldest settlements in Southern Africa with winter temperatures often being as low as -10°C. The portions of the Northern Cape that border the Orange River and Namibia have the highest

³³ The upper limit of wind energy available to be captured in South Africa is estimated at 3 GW. Taking a conservative estimate of 30% conversion efficiency and 25% capacity factor, it is estimated that wind power could

solar radiation intensity in the world (State of the Environment Report (SOER, 2005).

5.1.7.1 Solar Radiation

The high occurrence of sunny days and the regular occurrence of strong winds (especially onshore winds along the coastline), both of which could be sources of energy, are two key environmental phenomena that represent an important potential comparative economic advantage. The wind region, particularly along the coast, is suitable for renewable energy generation³³.

The Northern Cape Province is currently seen as the preferred location for solar projects because it receives the highest radiation levels in South Africa, as shown in the figures below. Northern Cape bordering the Orange River and Namibia has some of the highest solar radiation intensity in the world (State of the Environment Report (SOER), 2005), making it suitable for solar energy projects, which provides a significant comparative economic advantage.

With the expected increase in dry-spell days for the Northern Cape, as stipulated in the climate change strategy³⁴, 2021, radiation levels are expected to rise, potentially increasing the overall capability and feasibility of solar farming within the province. Furthermore, it will make larger areas in the Northern Cape suitable for solar projects.

As the costs of renewable energy, such as solar, fall, so does the Northern Cape Province's potential to become the market leader and main market share holder in South Africa's production and provision of renewable energy.

supply at least 1% of South Africa's projected electricity requirements (19 800 GWh) in 2002. This excludes the offshore wind energy potential which should also be assessed (White Paper of Renewable Energy, 2003).

³⁴ Northern Cape Climate Change Strategy, 2021



The Northern Cape's border with Namibia and the Orange River has the highest solar radiation intensity in Southern Africa (SOER, 2011). The map above depicts the Northern Cape's measured annual direct and diffuse solar radiation in relation to the country as a whole.

5.1.7.1.1 Health Risks Associated with Soalr Radiation

Increased radiation levels will also heighten the health risks associated with excessive sun and radiation exposure. Higher levels of solar radiation are likely to increase the number of skin cancer cases, necessitating more attention from the Health Department in terms of awareness campaigns and other prevention methods.

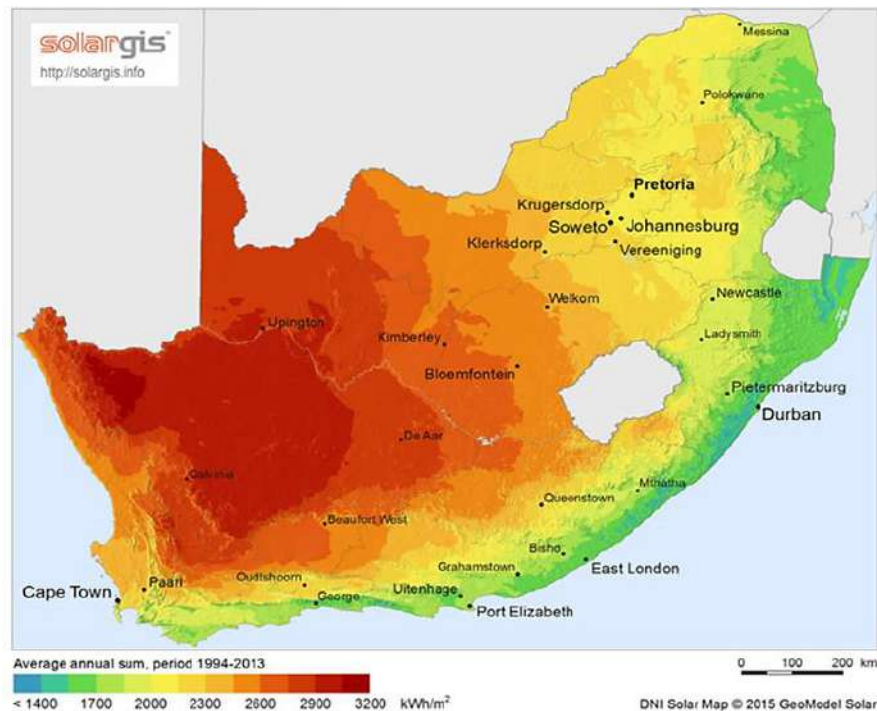


Figure 58: Direct Normal Irradiation (DNI) – South Africa

5.1.7.2 Rainfall

The province is mostly arid to semi-arid, with few areas receiving more than 400mm of rainfall per year, and the province's average annual rainfall is 202mm. Rainfall increases from west to east, ranging from a minimum of 20mm to a maximum of 540mm per year. Winter brings the most rain to the west, while late summer thunderstorms bring the most moisture to the east.

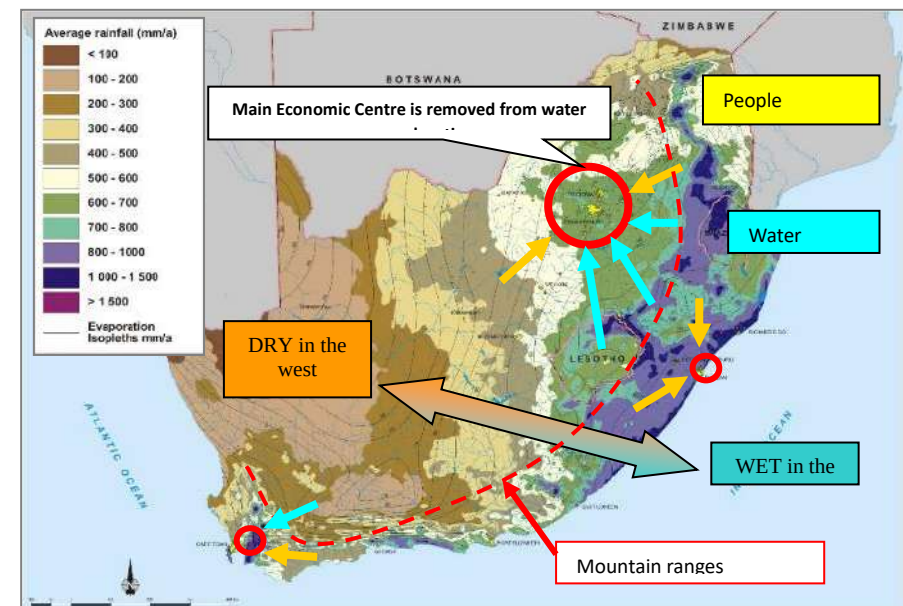


Figure 59: National Context of South African Rainfall Pattern

- General decreases in rainfall are projected for the Northern Cape under both high and low mitigation, by most ensemble members, for the period 2020-2050, relative to the present-day condition. However, most ensemble members project rainfall increases over the northeastern parts of the province.
- Policy makers are advised to plan for the possibilities of both wetter and drier conditions over the eastern parts of the province since



climate model projections are indicative of both these regional features being plausible.

- For the 2020-2050 period relative to the present-day conditions the Northern Cape is projected to experience a decrease in the number of extreme rainfall events. Such decline is projected for both low and high mitigation futures.
- The overall number of dry spell days within the province will increase to 100 to 180 days per, indicating that the overall amount of rainfall will decrease.



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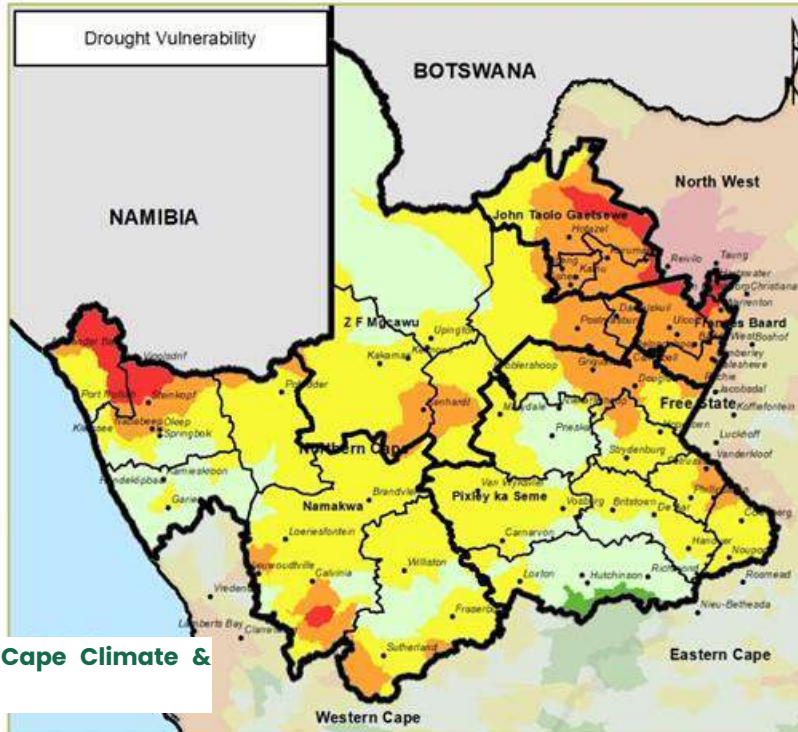
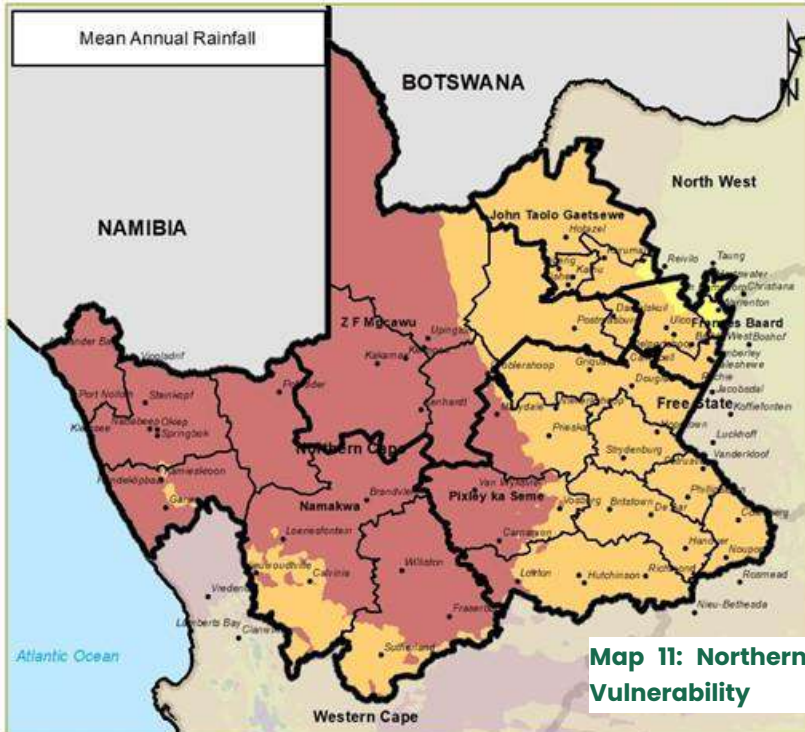
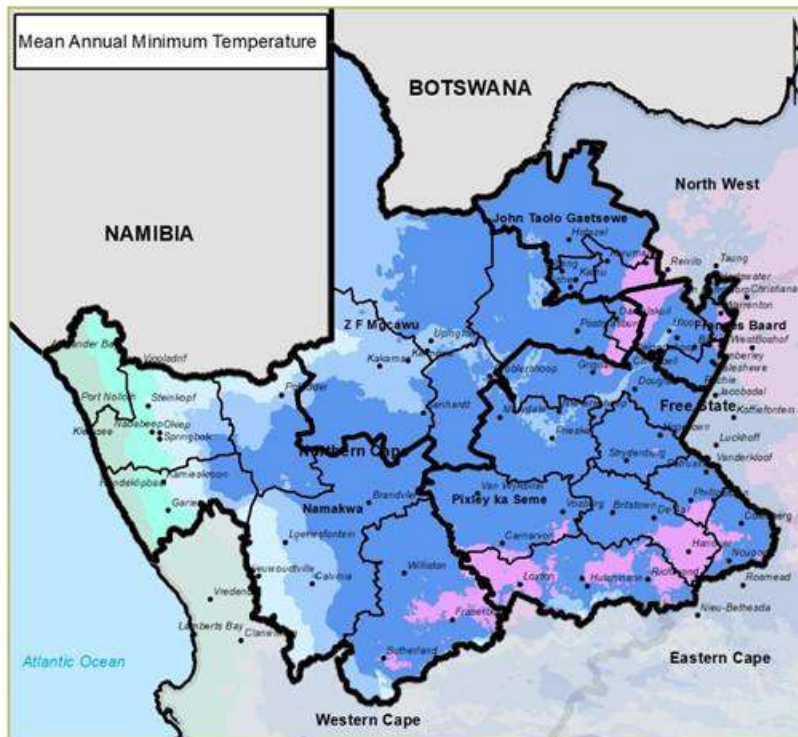
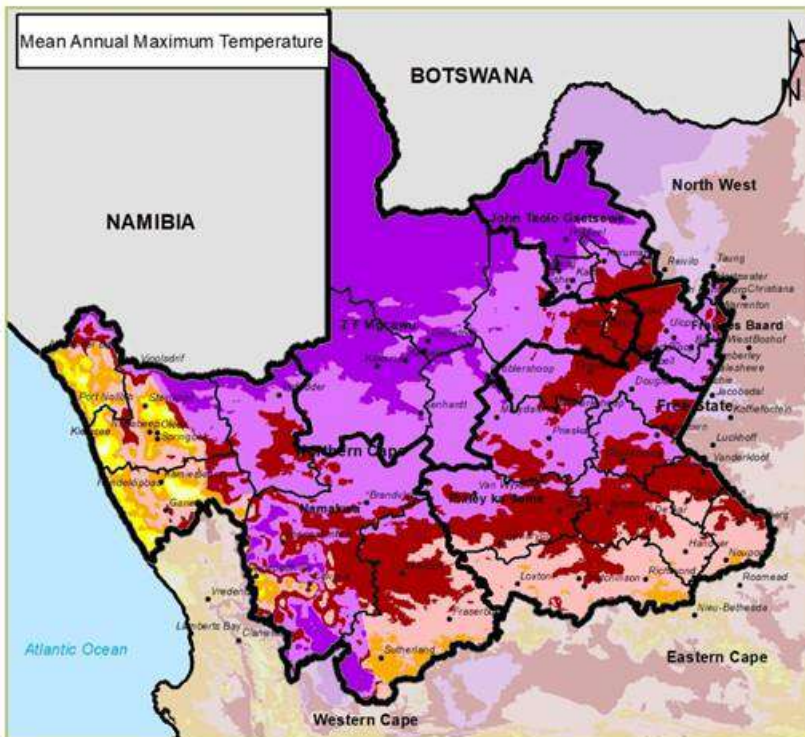
info@ncpg.gov.za



<http://www.northern-cape.gov.za>



T&I Building, 69 Memorial Road, Monuments Heights, Kimberley



CLIMATE AND VULNERABILITY

Legend

- Town/Settlement
- Local Municipality
- District Municipality

Mean Annual Maximum Temperature

- 0 - 25 Degree Celcius
- 25.1 - 27 Degree Celcius
- 27.1 - 29 Degree Celcius
- 29.1 - 31 Degree Celcius
- 31.1 - 33 Degree Celcius
- 33.1 - 35 Degree Celcius
- > 35 Degree Celcius

Mean Annual Minimum Temperature

- 1.9 - 0 Degree Celcius
- 0.1 - 2 Degree Celcius
- 2.1 - 4 Degree Celcius
- 4.1 - 6 Degree Celcius
- 6.1 - 8 Degree Celcius
- > 8 Degree Celcius

Mean Annual Rainfall

- 0 - 200 mm
- 201 - 400 mm
- 401 - 600 mm
- 601 - 800 mm
- 801 - 1 000 mm
- > 1 000 mm

Drought Vulnerability

- Very High
- High
- Medium
- Low
- Very Low

Source: ISWC

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



Map 11: Northern Cape Climate & Vulnerability

5.1.7.3 Climate Change

“It is estimated that a growing number of people in South African cities, towns and regions will be exposed to the impacts of weather-induced natural hazards – such as flooding, heatwaves, droughts, coastal flooding, wildfires and storms – which threaten livelihoods, increase vulnerability and undermine hard-earned development gains”.³⁵

The Green Book project was created to investigate the factors that increase climate change risk, to provide scientific evidence and information that can be used by local governments and other stakeholders to (1) better understand local risks and vulnerabilities, and (2) respond to these challenges through climate change adaptation actions. The Green Book aims to make climate change adaptation easier to incorporate into local government planning instruments and processes, thereby promoting the development of climate-resilient cities and settlements.

The following spatial items are drawn from the risk calculations developed for South Africa. All items are representative of the projected 2050 climate change relative to the present under an RCP 8.5 (50th percentile) scenario. RCP 8.5 represents a “business as usual” scenario, a “high emissions” scenario, or a “worst-case” scenario. The following items are reflected for the Northern Cape Province:

Change in extreme Rainfall days by 2050 (number of days):

- Change in annual rainfall by 2050 (mm).
- Change in very hot days by 2050 (number of days).
- Change in maximum temperature by 2050 (Deg C), and
- Drought tendencies.

The main predicted trends are:

- The central parts of the province will see an increase in extreme rainfall days of two to three days. Extreme rainfall increases the risk of flooding. The most vulnerable areas must consider appropriate adaptation measures.
- Most parts of the central, and northern parts of the province will experience an increase in rainfall. The increase ranges up to 100mm this will however include an increase in extreme rainfall events as well.
- There will be no increase in rainfall along the Northern Cape's western coast.
- Rainfall increases will benefit rain-fed agriculture, as well as sheep and game farming. Areas with higher increased rainfall may also consider crops that were not previously grown due to lower rainfall.
- The increased rainfall may be offset by the increased temperatures predicted for the province, particularly in the northern parts of the province in the ZF Mgcawu and Namakwa Districts along the Namibian and Botswana borders.
- Climate modelling predicts a 50-day increase in extremely hot days for the entire province. The northern parts of the country are expected to be even hotter (days 50-100). This puts additional strain on the province's settlements. Future housing and development projects would need to consider rising temperatures (extremes) and incorporate appropriate adaptation measures, such as in structure design and construction. Agricultural practices along cultivation areas would also necessitate temperature-control measures.
- Fires, extreme weather, and invasive species — it is predicted that risks from forest fires, extreme weather events, and invasive species will be greater at 2 degrees Celsius warming than at 1.5 degrees Celsius warming (BUI, 2019).
- Maximum temperatures are expected to rise across the province by 2050. Increases will be greatest in the province's west Coast. Temperatures are expected to rise by 1.8 to 3.5 degrees. Maximum temperatures in the northern half of the province will rise by 3 degrees

³⁵ CSIR. 2019. Green Book: Adapting South African settlements to climate change.



Celsius or more. Although the area is expected to receive more rainfall, higher maximum temperatures may have an adverse effect. Increased temperatures will also increase water stress, necessitating more water for agriculture to compensate.

- Increased temperatures would also have an impact on biodiversity: at 1.5 degrees Celsius, 6 percent of insects, 8% of plants, and 4% of vertebrates would see their climatically determined geographic range reduced by more than half. These figures will rise as the temperature rises (BUIS, 2019).
- Drought is a major concern for the province, particularly in rural areas. Agriculture is a major industry in the province. For the northernmost part of drought conditions are expected to worsen in the province. This will affect both intensive agriculture and animal husbandry (including game farming). While drought is expected to decrease in the province's southern and western regions. The province must ensure that its development programs (such as establishing emerging farmers) account for the risk of drought (as supportive programs are frequently short-term).
- Droughts would exacerbate the problem of water scarcity. Horticulture and viticulture practices are prevalent in the ZF Mgcawu District along the Orange River, and these predicted temperature changes and increased drought tendencies must be considered.

Because the Northern Cape climate is already classified as semi-arid to arid, it is becoming increasingly vulnerable to climate change, which will increase the risk of severe drought as well as have negative implications for food security, agricultural water availability, and human use.

Under low mitigation, temperature increases of between 1°C and 3°C are projected for the near future (2020-2050). The north-eastern part of the province is expected to warm the most, with temperature increases of up to 3 degrees Celsius possible. In association with a drastic increase in temperatures the number of very hot days in the Northern Cape is also projected to increase drastically;

- Under the low mitigation scenario increases in the number of hot days of between 30-60 days per annum are projected; with the highest increases projected for the northern parts of the province;
- Under high mitigation the number of heat-wave days is projected to increase by about 10 events per year. The largest increases are projected for the northern parts of the province; and
- Under the low mitigation scenario, the number of heat wave days may increase by as many as 20 events per year. Such a drastic increase in the number of heat wave days may have impacts on the health of people and animals in the province, through the increased occurrence of these oppressive temperature events.

5.1.7.3.1 Water

The climate in the Northern Cape is already arid to semi-arid. The Orange and Vaal Rivers are the primary sources of surface water. The Vaal River is home to one of the country's largest irrigation schemes at Vaalharts, which is mostly in the Northern Cape. Climate change is expected to have an impact on both surface and groundwater resources in terms of availability, conservation, quality, and supply and demand. This will have an impact on the province's ability to meet the water demands of all sectors.

The following impacts are the most concerning:



- Increases in average temperature are likely to increase evaporation rates which can reduce water levels in dams, rivers, streams and wetlands.
- Increased temperatures in the Lower Orange water management area are expected to cause already dry areas of this WMA to lose more water,
- Rainfall is likely to remain unchanged or to increase in the Lower Vaal WMA and temperatures are projected to increase but less severely than those expected for the Lower Orange WMA.

According to the Risk and Vulnerability Assessment, this sector is extremely vulnerable to climate change. The following key sensitivity factors have been identified:

- Changes to rainfall patterns decrease surface water availability and groundwater recharge.
- Decreased water supply as temperatures and evaporation rates increase.
- Pollution decreases water quality and there is a lack of reticulation plants to purify grey water.
- Poor management and maintenance of water resources by municipalities.

5.1.7.3.2 Agriculture

The Northern Cape has approximately 30 million hectares of commercial agricultural land, and agriculture, forestry, and fisheries contributed 6.4% of the provincial GDP. Climate change affects agriculture as well as contributes to it.

Drought, for example, is a direct threat to the sector as a result of climate change (Nhemachena et al., 2020). Agriculture also contributes to climate change by emitting GHGs from various activities, with livestock methane being a major contributor (Nhemachena et al. 2020).

The following impacts are the most concerning:

- Increases in average temperatures and rainfall variability may make it more difficult to raise livestock and grow crops as temperature thresholds for crops are breached (Lötter 2019).
- Increases in average temperatures, the number of very hot days, periods of drought, rainfall variability, and evaporation rates will negatively affect farming which depends on rainfall (Lötter 2019).
- Climate change projections for the Northern Cape show that it is expected to become drier (NCDENC 2015).

The Risk and Vulnerability Assessment found that this sector has a high sensitivity to climate change. Key sensitivity factors identified were:

- High temperatures decrease agricultural production.
- Changes to rainfall patterns decrease agricultural production.

5.1.7.3.3 Biodiversity & Ecosystems

The six biomes that cover the Northern Cape and that are exposed to the impacts of climate change are the Nama-Karoo, Savanna, Succulent Karoo, Fynbos, Desert and Grassland Biomes (SANParks 2011a; Mucina and Rutherford 2006). The province contains many of the globally recognised Succulent Karoo biodiversity hotspots and some of the Cape Floristic Region biodiversity hotspots. Climate change impacts ecosystems through changes in mean conditions and in climate variability which can alter species habitats and interactions and transform existing ecosystems, as well as undermine their capacity to withstand or recover from extreme events such as floods or drought (Malhi et al. 2020). At the same time, ecosystems can support the mitigation of and adaptation to, climate change (Malhi et al. 2020).

The following impacts of the most concern are:

- Increases in average temperature may increase the risk of extinction of plants and animals in the province (SANBI 2019).
- Increases in rainfall variability and the frequency and severity of droughts and flood events may exacerbate soil erosion and land degradation.



- caused by the overstocking of livestock, and these impacts are likely to negatively affect biodiversity in the province.

5.1.7.3.4 Oceans & Coast

The Northern Cape coastline is about 250 kilometres long (about 8% of South Africa's coastline). It is home to five of South Africa's 290 estuaries, including the internationally significant Ramsar wetland of the Orange River. Off the Northern Cape, there are four marine protected areas (MPAs) and four ecologically or biologically significant marine areas (EBSAs) (Secretariat of the Convention on Biological Diversity 2021). The Climate Change Risk and Vulnerability Assessment conducted to inform this climate change strategy identified this sector as a high concern in terms of climate change impacts.

The following impacts of the most concern are:

- Sea level rise and increases in the intensity and frequency of coastal storms are likely to increase coastal erosion, which will severely negatively affect coastal ecosystems.
- Sea level rise and increases in the intensity and frequency of coastal storms are likely to lead to the flooding of low-lying coastal areas, may reduce estuarine areas, and may lead to the damage or loss of fish nursery habitats in estuaries, which would negatively affect marine and coastal biodiversity and ecosystems.
- Sea level rise will lead to saltwater intrusion in groundwater, boreholes, and subsurface infrastructure (e.g. sewer lines) near the coast.

5.1.7.3.5 Human Health

The population of the Northern Cape is approximately 1 355 945 people. According to Statistics SA 2022, women have a life expectancy of 64.8 years and men have a life expectancy of 58.6 years. Children under the age of five and the elderly over the age of 60 are more vulnerable to climate-related health stressors. Human health is sensitive to changes in weather patterns and other aspects of climate change, with effects occurring both directly (e.g., temperature changes, floods, and heat wave occurrence) and

indirectly (e.g., altered disease patterns due to ecological disruption) (Woodward et al. 2014).

The following impacts of the most concern are:

- Heat waves are expected to increase, and extreme heat wave days are expected to double in the intermediate future.
- Very hot days and heat waves exacerbate heat-related diseases, particularly for people who spend large amounts of time working outdoors e.g., farm workers.
- Increasing extreme weather events cause displacements, injuries and event-related deaths.
- Climate change-induced rainfall, wind and temperature changes are likely to exacerbate communicable diseases such as cholera, and chronic diarrhoea among others (NCDENC 2017), which are already exacerbated by existing municipal service delivery shortfalls.
- Biodiversity loss from climate change impacts may influence the transmission of zoonotic diseases (Keesing and Ostfeld 2021).

5.1.7.3.6 Built Environment and Human Settlements

There are approximately 115 urban areas of various sizes in the Northern Cape. The vast majority of households in the province (82%), with the remainder living in informal dwellings (13.1%) and traditional housing (3.2%) (DEA 2018a). According to Statistics South Africa's Community Survey 2016, the number of formal houses in the Northern Cape has steadily increased since the 2011 Census (Statistics SA 2018). Formal housing with access to potable water and electricity reduces household exposure to extreme weather and heat waves, including vulnerable members of households. Those living in formal housing, on the other hand, are becoming increasingly vulnerable to extreme weather and heat waves, which are exacerbated by inadequate municipal infrastructure and services, poor maintenance, and low-quality housing. Households and residents in informal settlements are disproportionately vulnerable to extreme weather conditions.

The following impacts of the most concern are:



- Increases in average temperatures and periods of drought will likely increase the risk of wildfires and water shortages in Northern Cape's urban areas, especially informal settlement areas.
- Increases in the frequency and severity of storms and flood events will negatively affect settlements, especially those in low-lying areas and on steep slopes.
- Increases in average temperatures and rainfall variability could negatively affect ecosystem goods and services, which rural settlements rely on heavily.

5.1.7.3.7 Social Vulnerability

The ability of individuals, groups, or communities to cope with and adapt to any external stress placed on their livelihood or well-being is referred to as social vulnerability. Within the field of disaster risk assessment, social vulnerability is regarded as one aspect of vulnerability (NCDENC 2017). Profiling people's and communities' social vulnerability is critical for identifying and understanding the Northern Cape's ability to cope with and respond to the various impacts of climate change (NCDENC 2017). Many social and economic factors influence people's and communities' vulnerability and coping capacity to the various effects of climate change. Economic status, education, social networks, and employment, as well as residence or dwelling type, can all play a role.

The following impacts of the most concern are:

- Households living in informal structures are less resilient and the availability of piped water in particular deepens the social vulnerability of these households (NCDENC 2017).
- Poverty and household income contribute to social vulnerability in the face of climate change. Unemployment, households with incomes below the poverty line, households with a high proportion of economic dependents (children and the elderly) and single-parent and child-headed households are considered socially vulnerable (NCDENC 2017).

5.1.7.3.8 Energy

The Northern Cape is an epicentre of utility-scale renewable energy generation in South Africa with PV and Hydro Electricity. While the Northern Cape is the centre of solar photovoltaic (PV) and concentrating solar power (CSP) for the country it still relies in part on the national electricity grid for its electricity.

The following impacts of the most concern are:

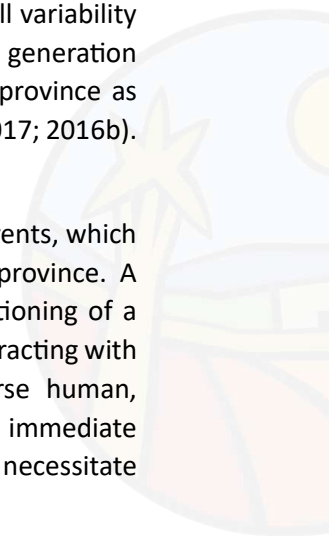
- Increases in average temperatures and the number of very hot days (over 35 °C) will directly impact the energy sector through increased energy demand for cooling during summer such as air conditioning. Increases in average temperatures may also reduce the energy demand for heating in winter.
- Increases in the frequency and severity of extreme weather events such as intense storms flood events and droughts will likely impact infrastructure linked to energy generation and distribution.
- Increases in the frequency and severity of droughts, rainfall variability and the average temperature may decrease the energy generation capacity of the two hydro-electric power stations in the province as they require large volumes of water to operate (NCDENC 2017; 2016b).

5.1.7.3.9 Disaster Management

Climate change is expected to cause more extreme weather events, which will likely lead to an increase in disaster situations in the province. A disaster is defined as "severe disruptions in the normal functioning of a community or society caused by hazardous physical events interacting with vulnerable social conditions, resulting in widespread adverse human, material, economic, or environmental effects that necessitate immediate emergency response to meet critical human needs and may necessitate external support for recovery."

The following impacts of the most concern are:

- The annual average number of high fire danger days will increase throughout the Northern Cape and the projected number of high fire



danger days in the northern parts of the province are the highest in South Africa (CSIR 2019).

- Projected increases in average temperatures and the number of very hot days are projected to increase evaporation rates and the duration and effect of dry spells which will likely increase the likelihood of wildfires and the severity of extreme weather events.
- Increases in rainfall intensity will result in impacts such as stormwater drainage system blockages, soil erosion and water contaminants collecting on the surface of catchments with public health implications and costly damage to infrastructure.



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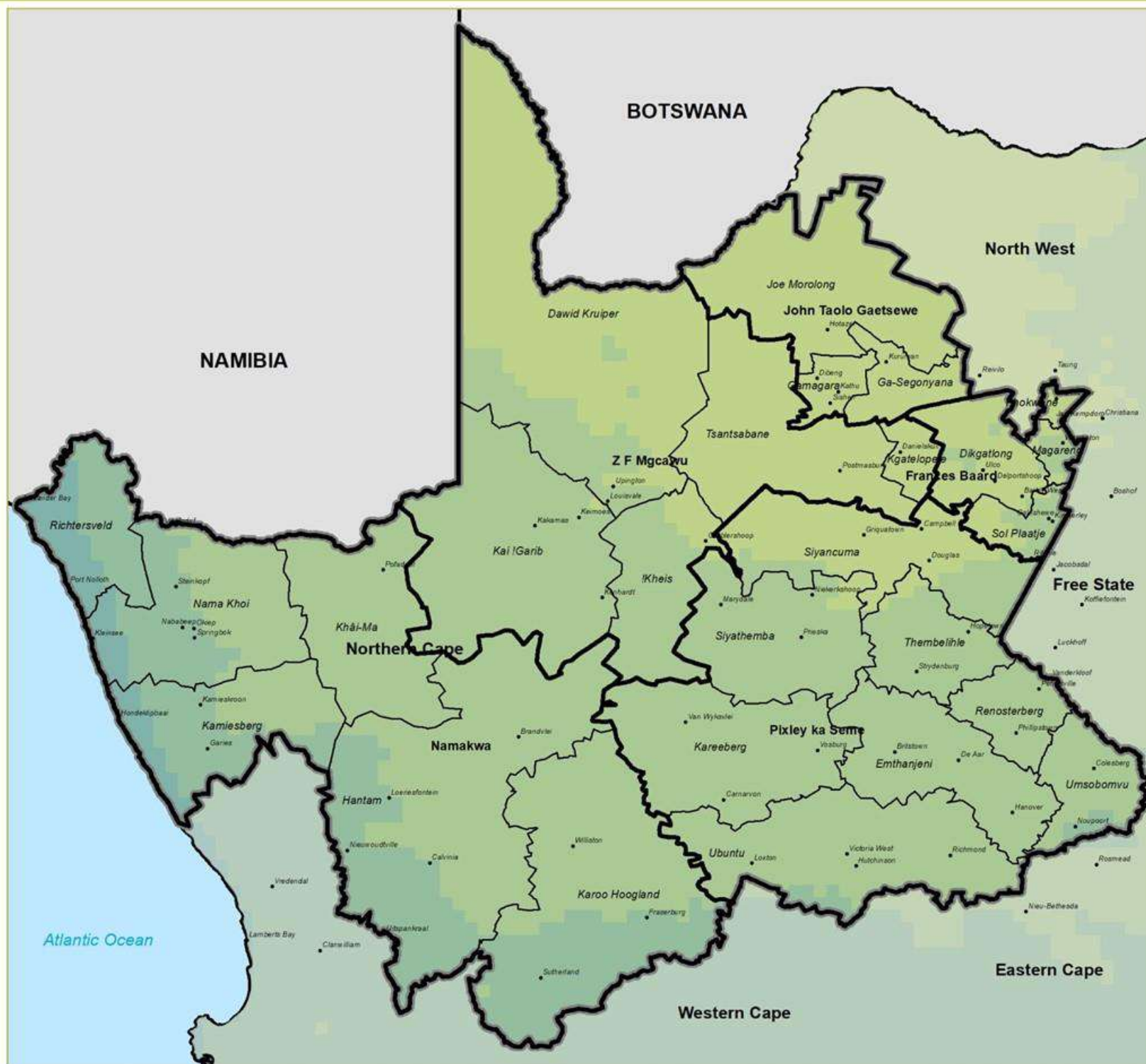
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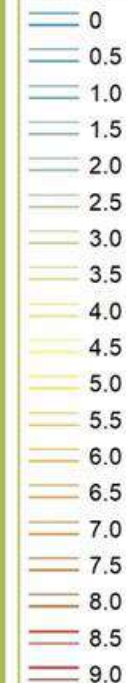


AVERAGE ANNUAL TEMPERATURE CHANGE

Legend

- Town/Settlement
- Local Municipality
- ▬ District Municipality

Changes in Average Annual Temperature

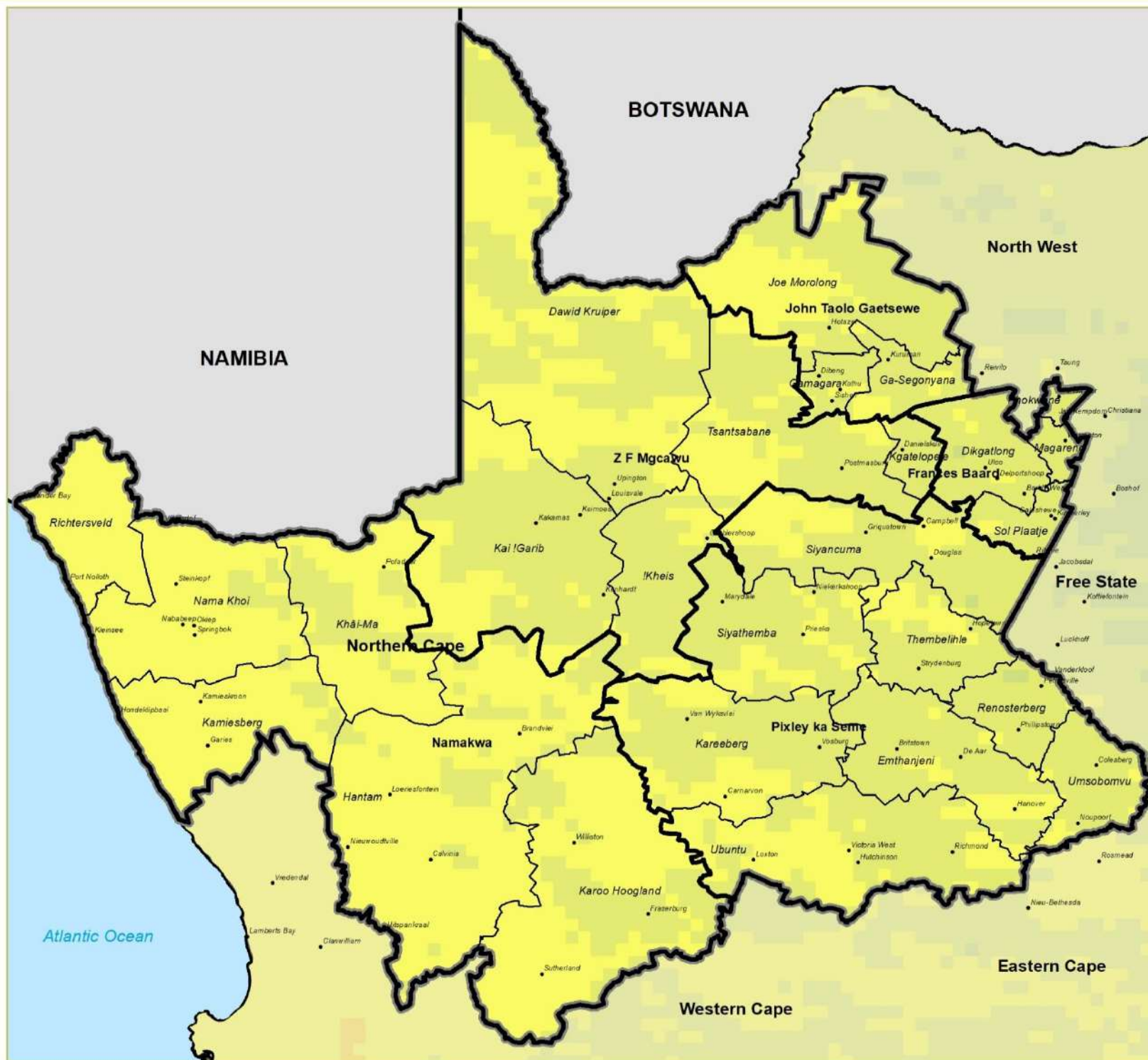


Map 12: Northern Cape Annual Temperature Change

Source: Green Book 2019

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**





CHANGES IN AVERAGE ANNUAL RAINFALL

Legend

- Town/Settlement
- Local Municipality
- District Municipality

2050 Average Rainfall

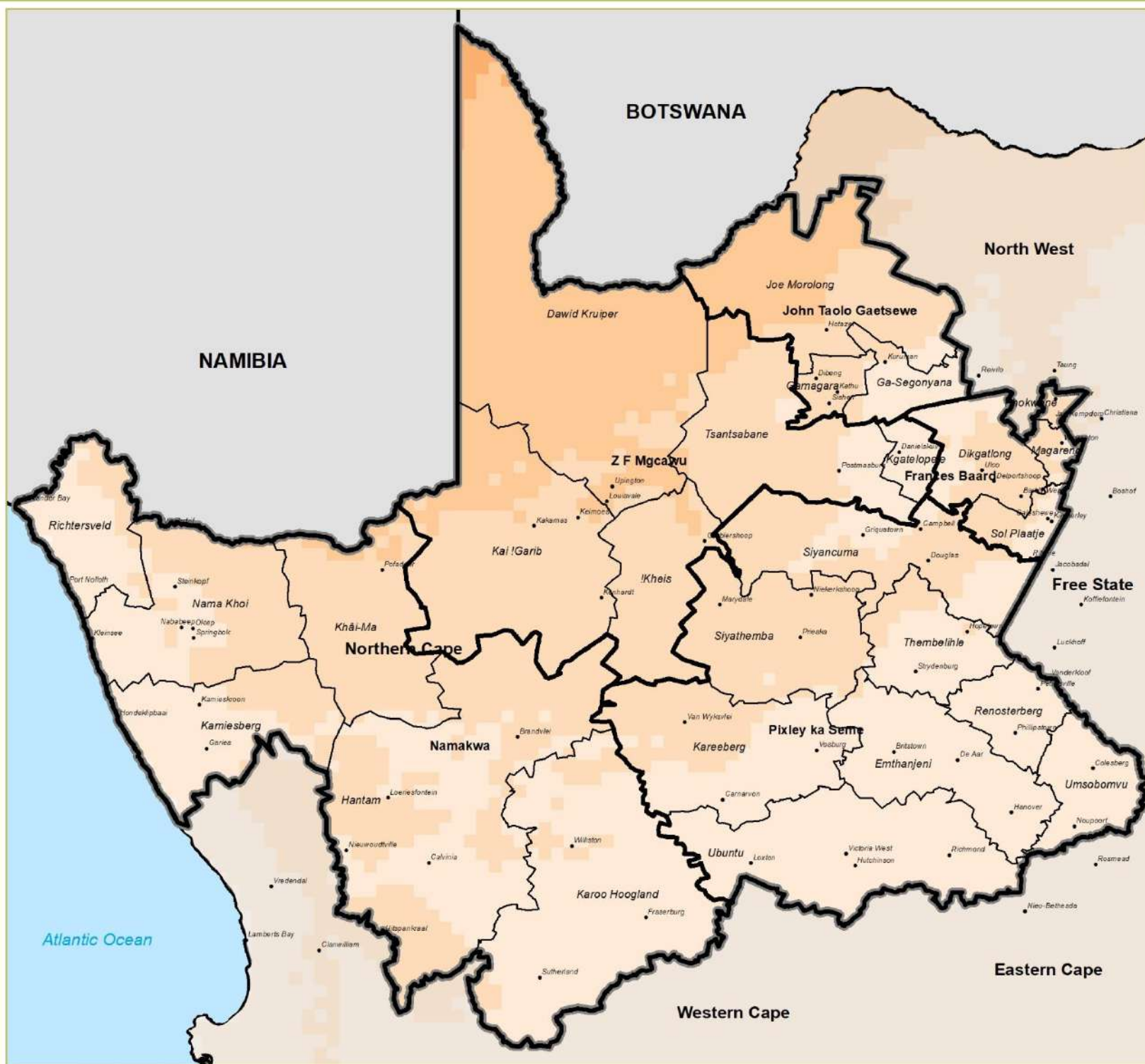
- 800 Decrease
- 700
- 600
- 500
- 400
- 300
- 200
- 100
- 0 No Change
- 100
- 200
- 300
- 400
- 500
- 600
- 700
- 800 Increase

Map 13: Northern Cape Annual Rainfall Change

Source: Green Book 2019

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK





CHANGE IN AVERAGE ANNUAL VERY HOT DAYS

Legend

- Town/Settlement
- Local Municipality
- District Municipality

Changes in Average Annual Very Hot Days

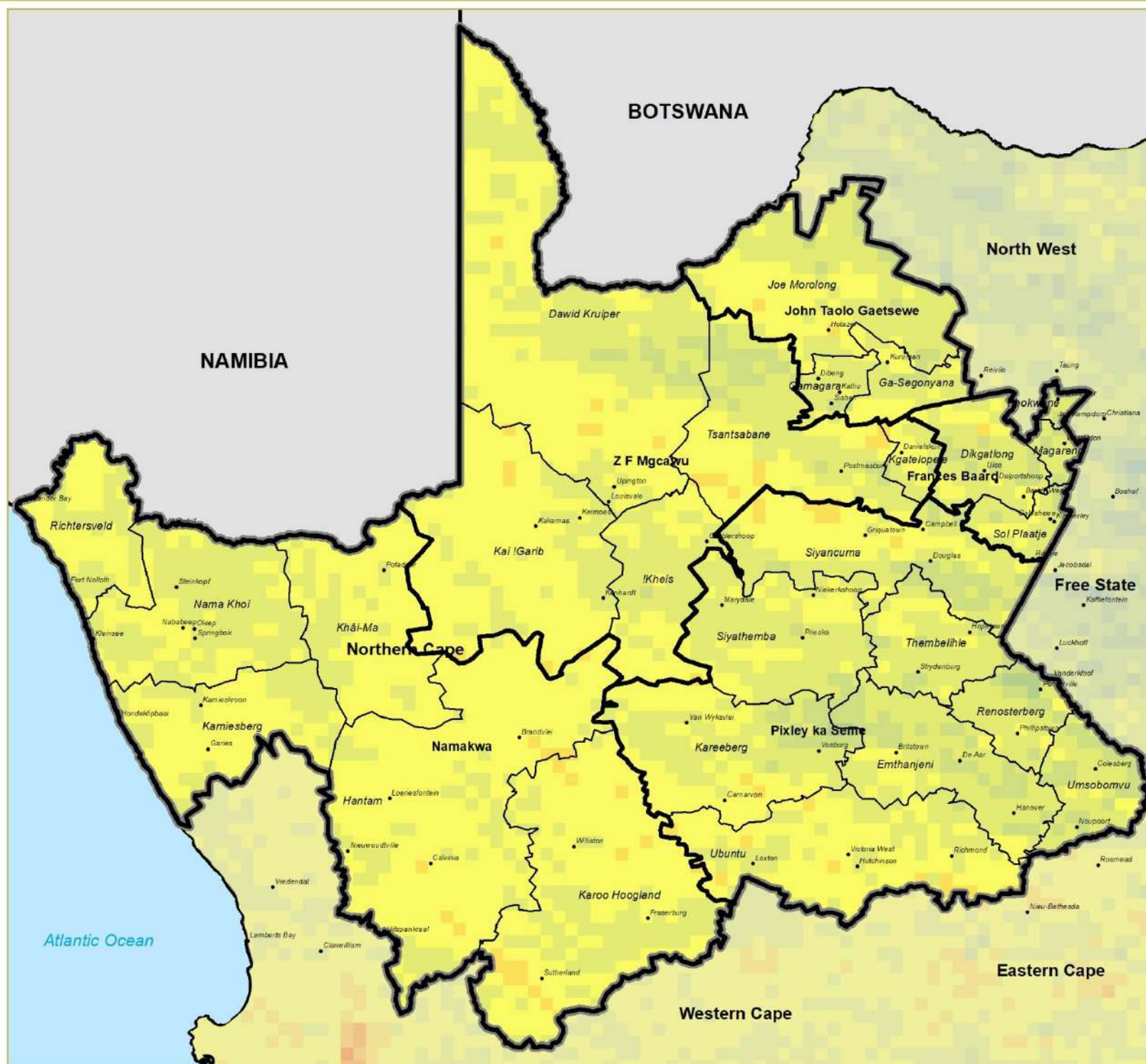
- | |
|-----|
| 0 |
| 25 |
| 50 |
| 75 |
| 100 |
| 125 |
| 150 |
| 175 |
| 200 |
| 225 |
| 250 |
| 275 |

Map 14: Northern Cape Annual Very Hot Days

Source: Green Book 2019

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



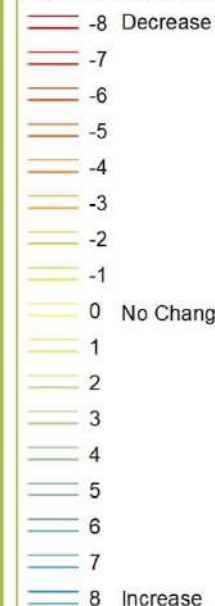


CHANGE IN ANNUAL AVERAGE EXTREME RAINFALL DAYS

Legend

- Town/Settlement
- Local Municipality
- District Municipality

2050 Change in Extreme Rainfall Days
Extreme Rainfall Days



**Map 15: Northern Cape Annual
Extreme Rainfall Days**

Source: Green Book 2019

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.1.7.4 Air Pollution

Current atmospheric conditions within the Northern Cape, are relatively stable due to the sparse distribution of polluting industries. The main anthropogenic sources of ambient particulate matter (PM) in the Northern Cape, are the mining industry and the scheduled processes. The pollution 'hot spots' will therefore be associated with these activities. The industries that negatively impact the air quality levels and pose risks to inhabitants are as follows:

- Unrehabilitated asbestos mines.
- Active underground and surface mines.
- Intensive agriculture (aerosol pesticides used on crops).

Mining, industries, crop spraying, and domestic fuel burning are just a few of the activities in the province that could lead to increased air pollution. Although there are no active asbestos mines in the Northern Cape, and thus no occupational exposure, environmental exposure remains a concern because fibres from unrehabilitated mine dumps can become airborne and be inhaled by humans. Asbestos concentrations in ambient air are unknown because no monitoring is currently being conducted. There is very little information available about the impact of asbestos (prevalence of asbestosis and mesothelioma) in the Northern Cape. Except for occupational exposure, the Provincial Department of Health does not keep statistics on these diseases.

Other pollutants include waste from poorly managed landfill sites, visual pollution from mining and widely distributed solar farms, noise pollution from mining and associated activities, water resource pollution caused by mining activities, and the threat of fracking and its associated consequences.

5.1.7.4.1 Threats

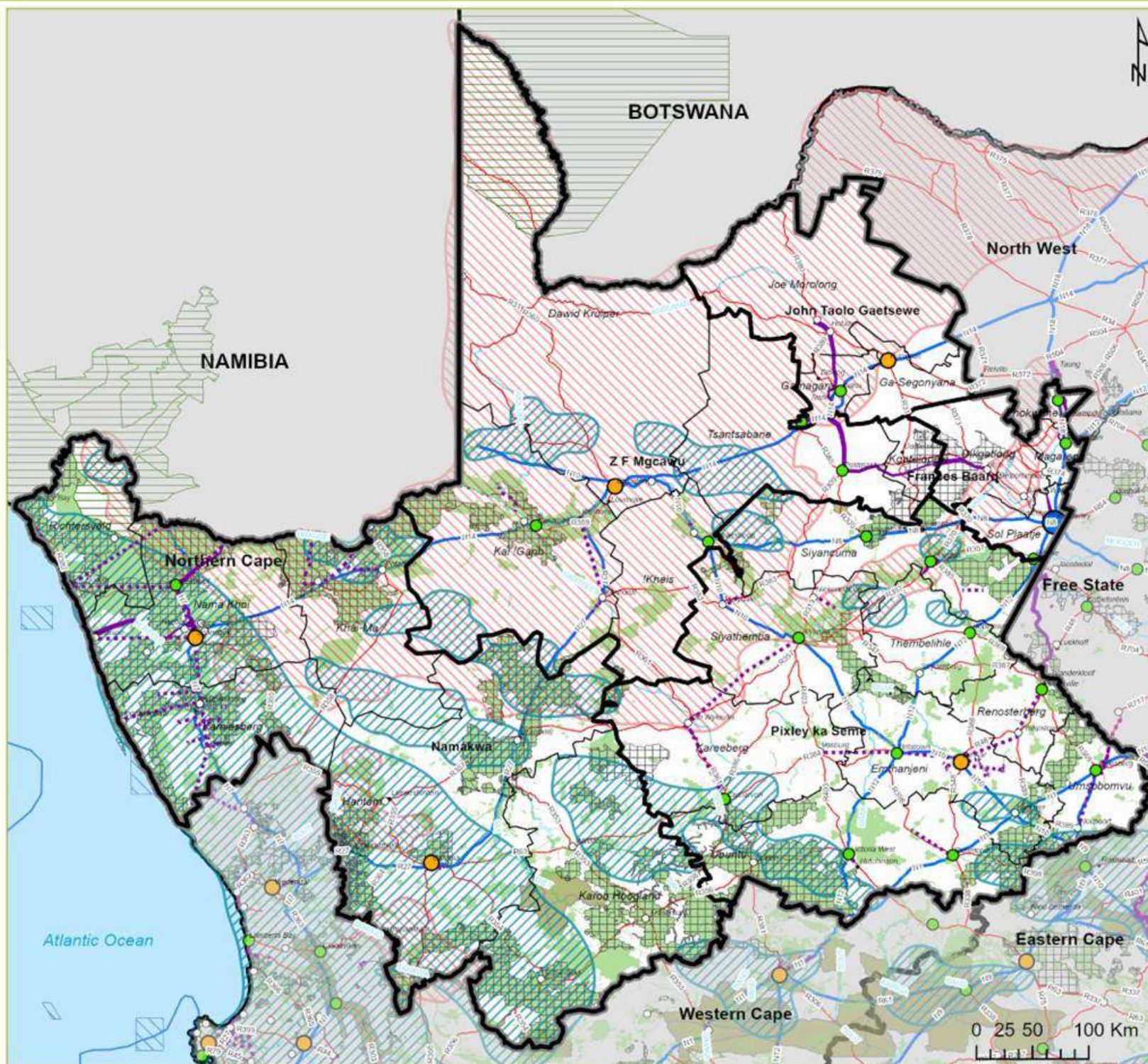
Pollution as a whole is a threat to the environment, biodiversity, sustainability, and human and animal life. This needs to be looked into further and classified according to the risks and likelihood of having a

negative impact on threatened ecosystems, biodiversity, and human health. It is proposed that this need be given priority attention because if it is not, it will have a negative impact on the inherent resilience of the Northern Cape's livelihood.

5.1.7.4.2 Opportunities

Recycling can lead to the creation of new job opportunities. Because of reduced waste production and recycling on existing waste dumps, there will be more available land or a slower rate of land occupancy by waste landfill sites.





NATURAL RESOURCE RISK AND RESTRICTED AREAS

Legend

- Town/Settlement
 - Main Roads
 - National Roads
 - Main Rivers
 - Bulk water pipelines
 - Inter-Basin Water Transfers Lines
 - Local Municipality
 - District Municipality
 - Stressed Catchment
- Protected Areas**
- Protected Areas (SAPAD)
 - NPAES - Potential Expansion Areas
 - Marine Protected Areas
 - Conservation Areas
 - Focus Areas For Marine Protection
- Sensitive Areas**
- Critical Biodiversity Areas
 - Increase in annual very hot days 2021-2050 (30 days and more)
 - Decrease in annual average rainfall 2021-2050 (-10mm and more)
 - Trans-Frontier Parks Treaty Areas
- Functional Town Hierarchy**
- National Urban Regions
 - National Urban Nodes
 - Regional Development Anchor
 - Rural Service Centres
 - Other Towns

Map 16: Northern Cape Natural Resource Risk & Restricted Areas

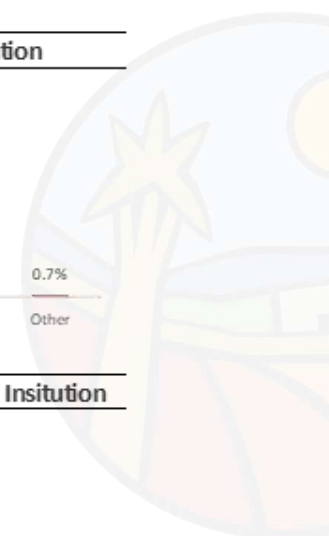
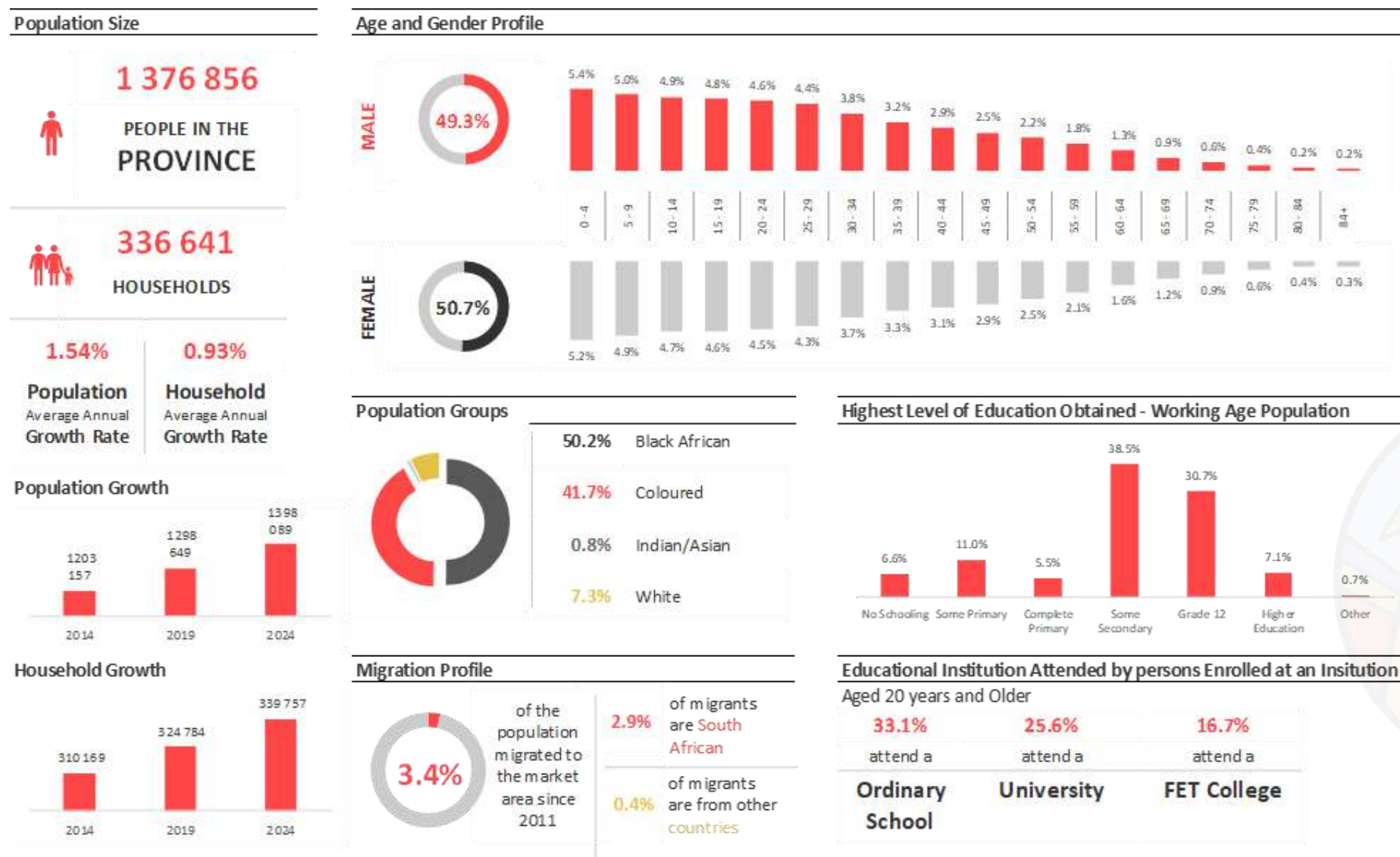
Source: Karoo RSDf

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.2 SOCIO-ECONOMIC ANALYSIS

5.2.1 DEMOGRAPHY



5.2.1.1 Demographic Profile and Generational Consumers

	 ALPHA GENERATION	 GENERATION Z	 MILLENNIALS	 GENERATION X	 BABY BOOMERS	 SILENT GENERATION
Current Age	0-5 years	6-24 years	25-40 years	41-56 years	57-75 years	76+ years
Percentage of Target Market	12.7%	36.0%	24.1%	16.5%	9.0%	1.8%
Characteristics	• Raised in homes with smart speakers & devices • Technology is built into everyday items • Many attend schools virtually – gravitating towards online schooling	• Flexible work environments • Clear directions & transparency • Seek personal growth in reaching performance goals • Value offline relationships and person-to-person interaction • Prioritise authenticity, truth & connectivity in their relationships & expect it from society	• Seek meaningful work • Want to grow and use creative skills • Technology savvy • Yearn to grow professionally • Skills training, mentorship & feedback necessary to stay at company • Self-confident • Not afraid to challenge the status quo/ management	• Laid back • Low-key & independent • Entrepreneurial spirit • Value friendly, flexible workplaces & productivity over hours spent at work • Seeks out efficiency & innovation • Value autonomy to make own choices • Create relationships with mentors • Effectively manage work-life balance	• Hardworking • Ambitious • Seek luxury status symbols in their personal lives • Take risks to pursue goals • Dedicated to their jobs • Attribute self-worth to their occupations • Finding work-life balance is challenging	• Traditional values • Financial prudence • Interpersonal respect • Determination • Resilience • Work ethic • Analog sensibilities • Loyal • Financially conservative
Social Media Channel of Choice	• Instagram, TikTok	• TikTok, SnapChat, YouTube	• Instagram, Facebook, Pinterest	• Facebook, LinkedIn	• Facebook	
Most responsive to	• Video, Influencers	• Video, Influencers	• Reviews, Blogs	• Word-of-mouth, E-mail, Marketing	• Traditional Advertising	• Traditional Advertising
Device of Choice	• Smartphones/ tablets & voice-demand devices	• Smartphones	• Multi-Device	• Desktop and Laptop	• Prefer in-person interactions	• Prefer in-person interactions
Shaping Events	• Global pandemic, social justice movement, Brexit	• Smartphones, social media, seeing financial struggles of parents	• The Great Recession, Technological Explosion of the	• End of the Cold War, Rise of personal computing, feeling lost between the two huge generations	• Post-WWII, Cold War, Hippie Movement	• World War II



	 ALPHA GENERATION	 GENERATION Z	 MILLENNIALS	 GENERATION X	 BABY BOOMERS	 SILENT GENERATION
Finances	Digital natives that will expect fully integrated, personalised consumer experiences. It is expected that they will be one of the most educated and wealthy generations.	Like GenX (their parents) in financial attitudes but wanting to avoid debt after seeing Millennials' struggles	Massive student debts delay major life purchases	Carrying the highest debt load while still raising children and saving for retirement	Managing retirement with life expectancies on the rise	- Retired & financially vulnerable - Lack of financial stability - Think of finances in terms of the rest of their lives
Shopping Characteristics	- Value- & service-driven consumers - Prefer one-day delivery, lightning-fast payments, value-added loyalty schemes & content creation - Wants to use technology to make a difference - Prefers brands that have a positive impact on the world - Environment & Sustainability largest looming issues - Interest in products from sustainable sources that weren't made from or packaged in plastic - Desire to be engaged with on issues that matter to them	- Have never known life without the internet - Distrusting of branding and advertising - Prefers testimonials/ influencer content - Prefers to see real people in real situations - Prefers brands that contribute to social & economic causes - Most likely to pre-shop on smartphones - Does not like Facebook/ Twitter - Dislikes ads that make life look perfect	- Largest group in the workforce - Does not like traditional ads - Prefers user-generated content, social selling, and word-of-mouth - Suspicious of being sold or lied to by brands - Prefers companies that support a cause - Very price conscious/ seeks the best value - Motivated by brand engagement, especially through social media	- Prefers honest and clear product and marketing messages - Require clear paths to purchase - Most likely to conduct online research at home and shop in purchase - Most influenced by email marketing - Prefers unique, high-quality products - Customer service is the most important driver of loyalty - Incentivised by discounts/ freebies/ coupons - Does not care for brand engagement	- Holds customer service above all other factors - Most likely to abandon purchase based on customer service interaction - Unlike to test new products - Maintain brand loyalty - Unlike to use friend/ family referrals in decision making - Prefer in-store shopping - Prefers loyalty programmes that are straight forward - Prefers simplicity and easy to understand content - Will use social media as entry point into brand or product research	- Attracted to loyalty and rewards programmes and places that offer discount to pensioners - Focused on value for money and product quality - Prioritises products that are reliable, fairly-priced & budget-friendly - Purchases necessities & only small luxuries - Prefers brand names - Prefers to shop in-store - Prefers products that are practical and solve a problem that they have



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RURAL-URBAN MIGRATION PROFILE



Agriculture Households*			Non-Agriculture Households		
2011	2022	% Change	2011	2022	% Change
55 151	33 650	-39.0%	246 249	299 904	21.8%

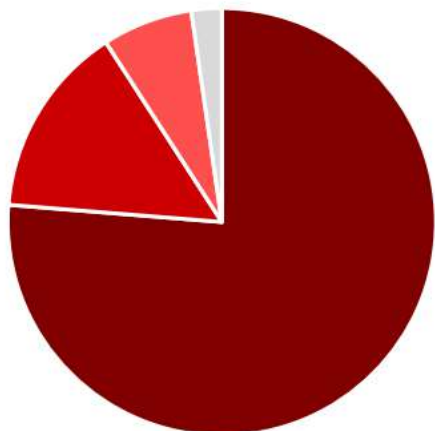
*Includes any household that participates in any form of agricultural activity.

- In 2011 approximately **18.3%** of total households were classified as agricultural households.
- The 2022 census indicates that approximately **10.1%** of the total households are classified as agricultural households.

Type of Agricultural Household

Backyard	76.3%
Farmland	14.6%
Communal land	6.8%
Other	2.3%

It should be noted that the largest segment of agriculture households are backyard farmers.



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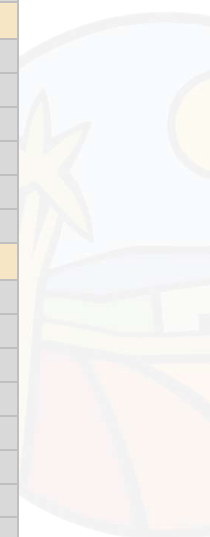
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Table 10: Population Growth Rate

Municipal Name	TIMELINE			ANNUAL POPULATION GROWTH RATE			
	2011	2016	2022	GROWTH RATE	2011 - 2016	GROWTH RATE	2016 - 2022
Frances Baard District	382086	387741	434343	0,33%	↗	1,24%	↗
Dikgatlong LM	46841	48473	56967	0,78%	↗	1,90%	↗
Phokwane LM	63000	60168	80481	-1,05%	↘	2,38%	↗
Sol Plaatje LM	248041	255041	270078	0,63%	↗	0,83%	↗
Magareng	24204	24059	26816	-0,14%	↘	1,00%	↗
John Taolo Gaetsewe District	224799	242264	272454	1,70%	↗	1,87%	↗
Joe Morolong LM	89530	84201	125420	-1,39%	↘	3,27%	↗
Ga-Segonyana LM	93651	104408	117454	2,47%	↗	2,20%	↗
Gamagara LM	41617	53656	29580	5,77%	↗	-3,31%	↘
ZF Mgcawu District	236783	252692	283624	1,48%	↗	1,75%	↗
Dawid Kruiper LM	100498	107161	125744	1,46%	↗	2,18%	↗
Kgatlopete LM	18687	20691	19854	2,32%	↗	0,59%	↗
Tsantsabane LM	35093	39345	30969	2,60%	↗	-1,21%	↘
!Kheis LM	16637	16566	21954	-0,10%	↘	2,69%	↗
Kai !Garib	65869	68929	85104	1,03%	↗	2,49%	↗
Namakwa District	115842	115488	148935	-0,07%	↗	2,44%	↗
Richtersveld LM	11982	12487	24235	0,94%	↗	6,84%	↗
Nama Khoi LM	47041	46512	67089	-0,26%	↘	3,45%	↗
Kamiesberg LM	10187	9605	15130	-1,34%	↘	3,84%	↗
Khâi-Ma LM	12446	12333	8510	-0,21%	↘	-3,69%	↘
Hantam LM	21671	21540	22281	-0,15%	↘	0,27%	↗
Karoo Hoogland LM	12514	13009	11691	0,91%	↘	-0,66%	↘
Pixley Ka Seme District	186351	195595	216589	1,10%	↗	1,46%	↗
Siyancuma LM	37076	35941	53165	-0,71%	↘	3,50%	↗
Siyathemba LM	21591	23075	27102	1,51%	↗	2,21%	↗
Thembelihle LM	15701	16230	22542	0,75%	↗	3,51%	↗
Renosterberg LM	10978	11818	10843	1,68%	↗	-0,12%	↘
Kareeberg LM	11673	12772	10961	2,04%	↗	-0,61%	↘
Emthanjeni LM	42356	45404	46587	1,58%	↗	0,92%	↗
Ubuntu LM	18601	19471	15836	1,04%	↗	-1,56%	↘
Umsobomvu LM	28376	30883	29555	1,92%	↗	0,40%	↗



5.2.1.1.1 Synthesis

5.2.1.1.1.1 Population Size and Growth

- Approximately 1 376 856 people / 336 641 households reside in the province.
- The average annual growth rate of the population is 1.5% per annum, while the average annual growth rate of households is 0.9% per annum.

5.2.1.1.1.2 Age and Gender Profile

- The age and gender profile reveals that:
 - The largest segment of the resident population is between the ages of 15 and 34 (34.8%) – classified as the youth population,
 - The second largest segment of the resident population is between the ages of 0 to 14 (30.1%) – classified as children,
 - The third largest segment of the resident population is between the ages of 35 to 64 (29.4%) – classified as the adult population, and
 - The smallest segment of the resident population is older than 64 years (5.7%) – classified as elderly.
- The profile shows a proportionally large contribution from the children and youth categories, indicating an expanding population.

5.2.1.1.1.3 Racial Profile

- The racial profile of the province shows that approximately 50.2% are Black African, followed by a large segment of Coloured (41.7%) and smaller segments of White (7.3%) and Coloured (0.8%) populations.

5.2.1.1.1.4 Migration Profile

- The 2022 census observed that the Western Cape, Northern Cape, North West, Gauteng and Mpumalanga provinces showed positive net migration. This means that more people migrated into these provinces than migrated out. Limpopo recorded the largest negative net migration, followed by Eastern Cape.
- Since 2011, the Northern Cape province has experienced a proportionally small influx of population, 3.4% of the population are

migrants of which, 2.9% of migrants are South African, while 0.4% are from outside the South African border.

- Census 2022 indicates that the largest influx of South African migrants was from the North West, Western Cape and Gauteng Provinces.
- Out-migration reveals a similar trend with the largest number of people migrating from the Northern Cape migrating to the Western Cape, followed by the Gauteng and North West Provinces.

5.2.1.1.1.5 Trends:

- The Namakwa and John Taolo Gaetsewe districts municipalities have the highest population growth rates in the province, of 2,44% and 1,87%.
- Namakwa District has illustrated a positive population growth since 2016.
- The economic growth experienced in John Taolo Gaetsewe is in the main attributable to the mining sector in the district.
- Pixley Ka Seme district population growth is mainly attributed to the Siyancuma and Siyathemba local municipalities and the agricultural economic growth within the towns of the respective municipalities.
- Negative growth rates across the province's rural municipalities can be attributed towards migration patterns to bigger nodes and economic regions.
- ZF Mgcawu's positive population growth rate is due to economic opportunities in the agricultural, renewable energy and mining sectors.
- The population growth rate in Frances Baard could be due to the increase in the number of migrations into the district, from within the province and beyond. The increase in the migration levels can be attributed to the vast economic opportunities presented by the district, as it hosts the Provincial Legislature and provincial government departments. The Sol Plaatje University has also led to an increase in the population of both students (in the province and across South Africa) and professionals.



5.2.1.1.1.6 Implications

Due to population growth within most of the local municipalities within the province, the following implications need to be considered:

- Access to formal housing within the respective towns.
- Pressure on Bulk Services.
- Access to basic services.
- Development pressures.
- Infrastructure upgrading.
- Development of social amenities to accommodate population increases.



1

Table 11: Number of Households

NUMBER OF HOUSEHOLDS										
WHERE WE COME FROM						CURRENT SITUATION				
Municipal Name	2011	2016	Household Difference 2011 - 2016	Percentage	2011- 2016	2016	2022	Household Difference 2016 - 2022	Percentage	2016 - 2022
Frances Baard District	95928	113330	17402	18,14	↗	113330	109089	-4241	-3,74	↘
Dikgatlong LM	11967	14824	2857	23,87	↗	14824	14406	-418	-2,82	↘
Phokwane LM	17544	19597	2053	11,70	↗	19597	19599	2	0,01	↗
Sol Plaatje LM	60296	71939	11643	19,31	↗	71939	68314	-3625	-5,04	↘
Magareng LM	6120	6970	850	13,89	↗	6970	6770	-200	-2,87	↘
John Taolo Gaetsewe District	61328	72310	10982	17,91	↗	72310	66347	-5963	-8,25	↘
Joe Morolong LM	23705	23919	214	0,90	↗	23919	26537	2618	10,95	↗
Ga-Segonyana LM	26816	32669	5853	21,83	↗	32669	29379	-3290	-10,07	↘
Gamagara LM	10807	15723	4916	45,49	↗	15723	10431	-5292	-33,66	↘
ZF Mgcawu District	61097	74091	12994	21,27	↗	74091	70433	-3658	-4,94	↘
Dawid Kruiper LM	25028	28704	3676	14,69	↗	28704	30434	1730	6,03	↗
Kgatlopete LM	5381	6206	825	15,33	↗	6206	5286	-920	-14,82	↘
Tsantsabane LM	9839	11821	1982	20,14	↗	11821	9381	-2440	-20,64	↘
!Kheis LM	4146	4344	198	4,78	↗	4344	4967	623	14,34	↗
Kai !Garib LM	16703	23017	6314	37,80	↗	23017	20366	-2651	-11,52	↘
Namakwa District	33856	37669	3813	11,26	↗	37669	33947	-3722	-9,88	↘
Richtersveld LM	3543	4211	668	18,85	↗	4211	5643	1432	34,01	↗
Nama Khoi LM	13193	14546	1353	10,26	↗	14546	14579	33	0,23	↗
Kamiesberg LM	3143	3319	176	5,60	↗	3319	3576	257	7,74	↗
Khâi-Ma LM	3787	4079	292	7,71	↗	4079	1938	-2141	-52,49	↘
Hantam LM	6387	6894	507	7,94	↗	6894	5326	-1568	-22,74	↘
Karoo Hoogland LM	3804	4620	816	21,45	↗	4620	2885	-1735	-37,55	↘
Pixley Ka Seme District	49191	56309	7118	14,47	↗	56309	53737	-2572	-4,57	↘
Siyancuma LM	9578	10191	613	6,40	↗	10191	13422	3231	31,70	↗
Siyathemba LM	5831	6615	784	13,45	↗	6615	6739	124	1,87	↗
Thembelihle LM	4138	4736	598	14,45	↗	4736	5211	475	10,03	↗
Renosterberg LM	2995	3563	568	18,96	↗	3563	3017	-546	-15,32	↘
Kareeberg LM	3222	3671	449	13,94	↗	3671	2677	-994	-27,08	↘
Emthanjeni LM	10457	11923	1466	14,02	↗	11923	10622	-1301	-10,91	↘
Ubuntu LM	5129	6034	905	17,64	↗	6034	3990	-2044	-33,87	↘
Umsobomvu LM	7841	9575	1734	22,11	↗	9575	8057	-1518	-15,85	↘
TOTAL	206447	353709	52309	83,05		353709	333553	-20156	-5,70	



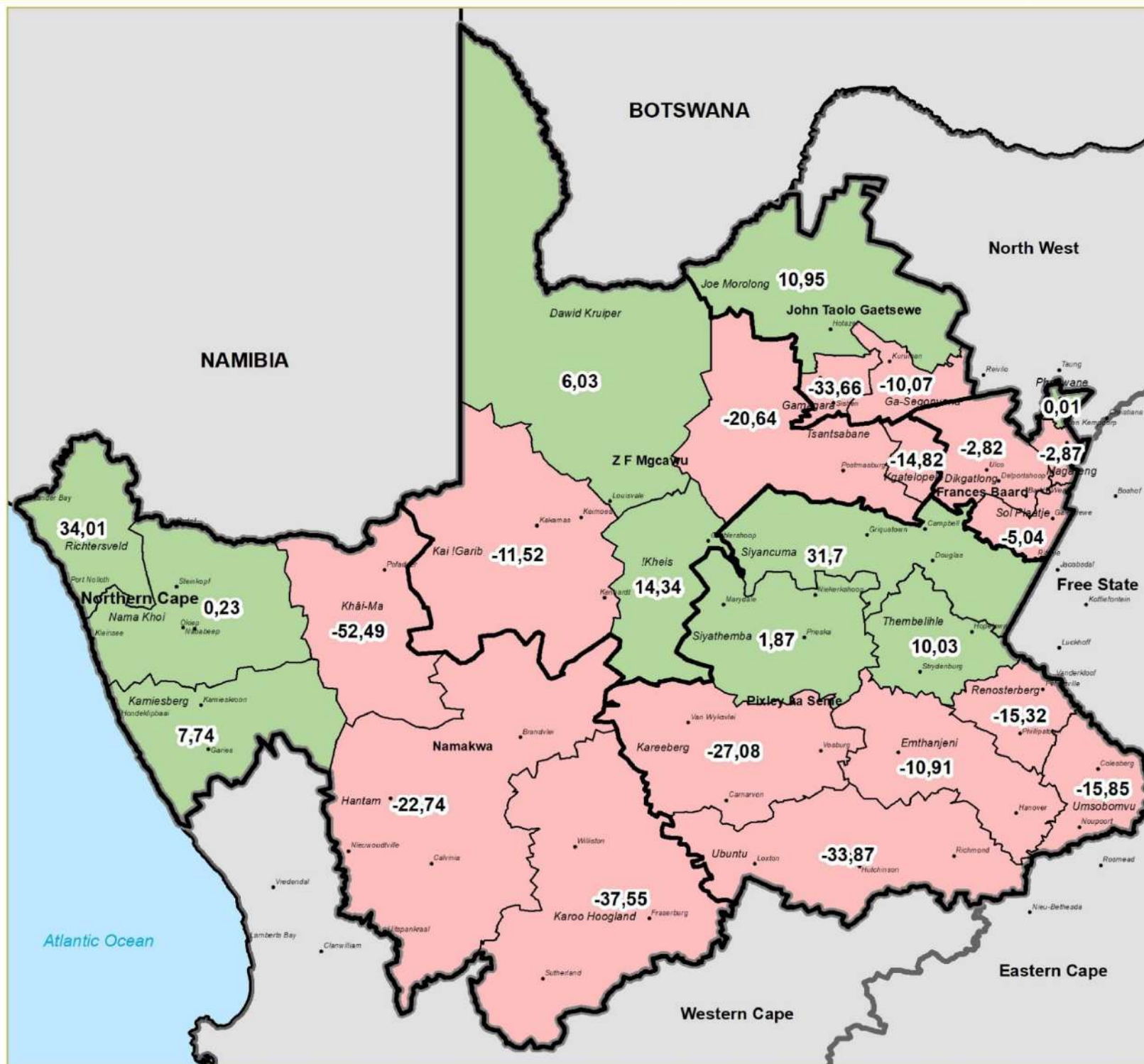
5.2.1.1.2 Trends

- Generally, there is a decline in the number of households from 2016 to 2022 within the province.
- All five (5) districts within the province have seen a negative growth in the total number of households. This can be attributed to the harsh economic environment, the COVID-19 pandemic, and migration patterns.
- Namakwa District has the highest number of households that have been removed as it indicates a loss of 3 722 Households giving it a - 9.88% growth rate.
- Gamagara Local Municipality within John Taolo Gaetsewe District Municipality has seen the biggest loss of all the local municipalities within the North Cape with a loss of 5 292 Households in the period between 2016 and 2022, this can be attributed to the slow growth within the mining sector and commodity prices which related to the loss of employment opportunities.
- Siyancuma, Kheis and Thembelihle have also shown a big increase of more than 10% growth in the number of households this can be attributed to the agricultural sector and mining activities taking place within the region creating employment opportunities and thus an influx of people into the region.
- Joe Morolong's growth is mainly located within the traditional areas where population growth has taken place and a demand for land tenure has seen an increase.

5.2.1.1.3 Implications

- Although the number of households has decreased within all the districts and most of the local municipalities the household sizes have increased, indicating that less amount of people can afford a household individually.
- The tendency is to see larger families staying together in one household thus putting more pressure on infrastructure services in a particular town or suburb.
- Families relocate to obtain support from relatives and other families thus creating irregular but forced migration patterns.
- Exodus of skilled labour force in sector-specific areas.

- A decline in the tax base for local municipalities.
- Delapidated areas form because of infrastructure that was built and is no longer in use.
- Social amenities are underutilised in certain areas and overused in other areas within the province due to the influx of migrants in search of economic opportunities.



Map 18: Northern Cape Household Growth

Source: StatsSA (Census 2022)

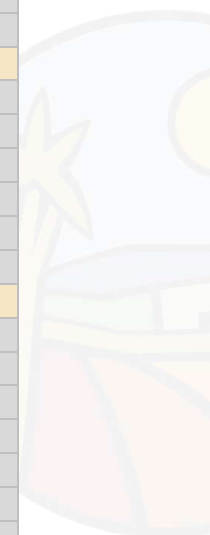
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Table 12: Household Size

HOUSEHOLD SIZE								
Municipal Name	2011	2016	Growth Percentage 2011 - 2016	2011 - 2016	2016	2022	Growth Percentage 2016 - 2022	2016 - 2022
Frances Baard District	4	3,4	-0,6	↘	3,4	4	0,6	↗
Dikgatlong LM	3,9	3,3	-0,6	↘	3,3	4	0,7	↗
Phokwane LM	3,6	3,1	-0,5	↘	3,1	4,1	1	↗
Sol Plaatje LM	4,1	3,5	-0,6	↘	3,5	4	0,5	↗
Magareng LM	4	3,5	-0,5	↘	3,5	4	0,5	↗
John Taolo Gaetsewe District	3,7	3,4	-0,3	↘	3,4	4,1	0,7	↗
Joe Morolong LM	3,8	3,5	-0,3	↘	3,5	4,7	1,2	↗
Ga-Segonyana LM	3,5	3,2	-0,3	↘	3,2	4	0,8	↗
Gamagara LM	3,9	3,4	-0,5	↘	3,4	2,8	-0,6	↘
ZF Mgcawu District	3,9	3,4	-0,5	↘	3,4	4	0,6	↗
Dawid Kruiper LM	4	3,7	-0,3	↘	3,7	4,1	0,4	↗
Kgatlopete LM	3,5	3,3	-0,2	↘	3,3	3,8	0,5	↗
Tsantsabane LM	3,6	3,3	-0,3	↘	3,3	3,3	0	↗
!Kheis LM	4	3,8	-0,2	↘	3,8	4,4	0,6	↗
Kai !Garib LM	3,9	3	-0,9	↘	3	4,2	1,2	↗
Namakwa District	3,4	3,1	-0,3	↘	3,1	4,4	1,3	↗
Richtersveld LM	3,4	3	-0,4	↘	3	4,3	1,3	↗
Nama Khoi LM	3,6	3,2	-0,4	↘	3,2	4,6	1,4	↗
Kamiesberg LM	3,2	2,9	-0,3	↘	2,9	4,2	1,3	↗
Khâi-Ma LM	3,3	3	-0,3	↘	3	4,4	1,4	↗
Hantam LM	3,4	3,1	-0,3	↘	3,1	4,2	1,1	↗
Karoo Hoogland LM	3,3	2,8	-0,5	↘	2,8	4,1	1,3	↗
Pixley Ka Seme District	3,8	3,5	-0,3	↘	3,5	4	0,5	↗
Siyancuma LM	3,9	3,5	-0,4	↘	3,5	4	0,5	↗
Siyathemba LM	3,7	3,5	-0,2	↘	3,5	4	0,5	↗
Thembelihle LM	3,8	3,4	-0,4	↘	3,4	4,3	0,9	↗
Renosterberg LM	3,7	3,3	-0,4	↘	3,3	3,6	0,3	↗
Kareeberg LM	3,6	3,5	-0,1	↘	3,5	4,1	0,6	↗
Emthanjeni LM	4,1	3,8	-0,3	↘	3,8	4,4	0,6	↗
Ubuntu LM	3,6	3,2	-0,4	↘	3,2	4	0,8	↗
Umsobomvu LM	3,6	3,2	-0,4	↘	3,2	3,7	0,5	↗



5.2.1.1.4 Trends

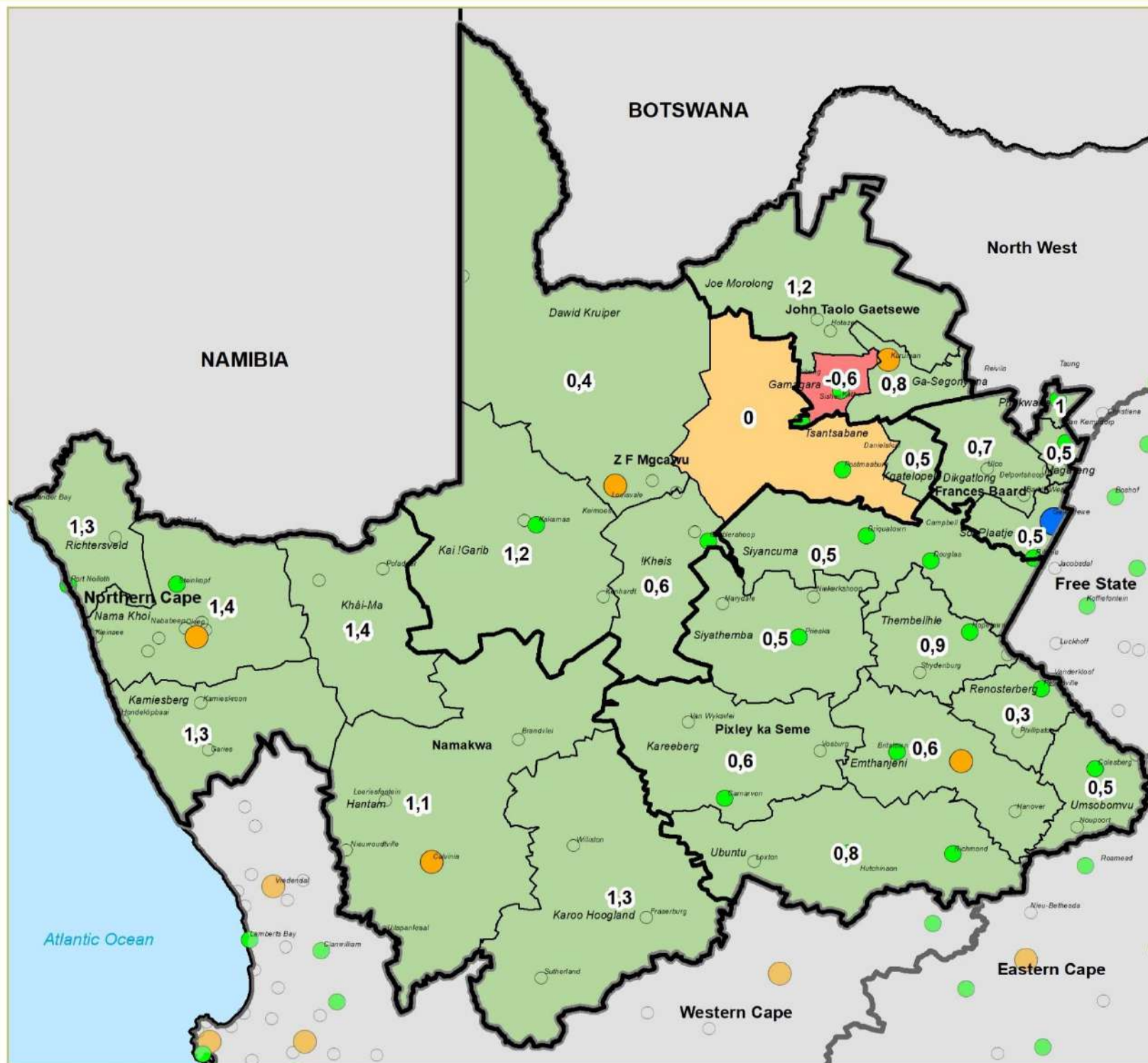
- Generally, there is an increase in the household size from 2016 to 2022 within the province from 3.8 to 4.1.
- All five (5) districts within the province have seen an increase in household size, with Namakwa district experiencing the highest percentage of 1.3%.
- The only local municipality that has seen a decrease in household size in the province is Gamagara, this can be related to employment cuts in the mining sector thus relating that specialized skill workers within the region no longer relocate their families to the region.
- Due to declining households within the province, the household sizes have increased as families have relocated and moved in together, thus creating larger household sizes within suburbs.

5.2.1.1.5 Implications

Implications as a result of large household sizes include the following:

- Pressure on ageing infrastructure within rural towns especially and bigger nodes.
- Accessibility toward social amenities such as schools, clinics, community centres, sports facilities etc.
- Irregular migration patterns.
- Loss of local knowledge.
- Pressure on Local Economic Development Opportunities.
- Municipal Revenue base and more pressure on local, district and provincial government in terms of providing access to basic services.





5.2.2 EDUCATION

DISTRICT	SECTOR	TYPE	TOTAL
FRANCES BAARD	PRIVATE	ORDINARY SCHOOL	14
	PUBLIC	ORDINARY SCHOOL	118
	PUBLIC	SNE	8
	TOTAL		140
JOHN TAULO GAETSEWE	PRIVATE	ORDINARY SCHOOL	9
	PUBLIC	ORDINARY SCHOOL	170
	PUBLIC	SNE	1
	TOTAL		180
NAMAKWA	PRIVATE	ORDINARY SCHOOL	7
	PUBLIC	ORDINARY SCHOOL	72
	PUBLIC	SNE	1
	TOTAL		80
PIXLEY-KA-SEME	PRIVATE	ORDINARY SCHOOL	6
	PUBLIC	ORDINARY SCHOOL	88
	TOTAL		94
ZF MGCWU	PRIVATE	ORDINARY SCHOOL	4
	PUBLIC	ORDINARY SCHOOL	97
	PUBLIC	SNE	1
	TOTAL		102
PROVINCIAL	PRIVATE	ORDINARY SCHOOL	40
	PUBLIC	ORDINARY SCHOOL	645
	PUBLIC	SNE	11
	TOTAL		596

Figure 62: Number of Educational Facilities within the Northern Cape

5.2.2.1 Frances Baard District

The learner enrolment numbers in Frances Baard DM. have increased over the last ten years by 8.90% and by the last 15 years by 17.23%, increasing yearly. Learner numbers declined from 2022 to 2023 academic year, with 178 learners. Northern Cape Province's central hub is Frances Baard DM. Migration trends are constantly growing. Extensive agriculture along the Vaal River towards Barkly West and Jan Kempdorp contributes to food security. As Kimberley is the capital of the Northern Cape, most work opportunities (Provincial Health Care Centre and the establishment of the new Sol Plaatje University) are within this District Municipality. Therefore, a continued influx of population affects this area, which increases the number of learners in the schools annually. Migration patterns from other provinces, mainly North-West, affect this district's population growth.

5.2.2.2 John Taolo Gaetsewe District

Learner enrolment in John Taolo Gaetsewe DM. has increased by 16.66% over the last ten years and by 37.24% over the last fifteen years. The

increase in learner growth from the academic year 2022 to 2023 was 254. If not for demarcation boundary changes (within the Kathu area) between John Taolo Gaetsewe and ZF Mgcawu, learner enrolment would have been higher than 60%. When compared to Frances Baard (identified as the NC Province's central hub), the largest learner enrolment occurs within John Taolo Gaetsewe DM, emphasizing the importance of infrastructure development projects.

The positive outcome emphasises good physical resource planning, which contributes to overall service delivery needs and community social development. There are many rural areas in these communities with limited access to and from schools. There is a challenge to provide infrastructure project planning and challenges such as learner transportation and time spent commuting to and from school. Outside of Physical Resource Planning, innovative teamwork and interactive communication with role players are critical.

5.2.2.3 Namakwa District

Learner enrolment in Namakwa DM. has decreased by 12.50% over the last ten years and by 6.68% over the last fifteen years, with further declines expected each year. Learners decreased from 87 in the 2022-2023 academic year.

Migration to urban areas explains the steady decline in learner numbers within Namakwa District Municipality, but environmental and climate change have had a significant impact on learner enrolment statistics over the last 15 years. As a result, Namakwa District has the lowest population density, with about one person per square kilometre. The Nama Khoi Local Municipality - Springbok area, on the other hand, has three people per square kilometre, while the remaining areas have less than one person per square kilometre. A downward trend allows for creative future planning and decision-making. It will be beneficial to place less emphasis on new infrastructure projects and more emphasis on property management and maintenance. SKA (Square Kilometre Array) operates within Namakwa



District Municipality and may be able to address some of the issues raised above.

5.2.2.4 Pixley Ka Seme District

The learner enrolment numbers in Pixley Ka Seme District Municipality have declined over the last ten years by 0.46%, increased by the last 15 years by 6.16%, and fluctuated both decreases and increases over this period. Learner enrolment increased from 2022 to 2023 academic year with 44 learners. Lessons learned from Namakwa DM, with a history of constant decline over the past 15 years, now allow for mitigation planning and innovative ways to encourage economic growth and the recovery of learner enrolment growth within the Pixley Ka Seme District Municipality. Intervention from the Public sector, specifically within the energy technology domain, will be very positive. For the past eight years, extensive alternative energy development has occurred within the Pixley Ka Seme DM., especially within the Emthanjeni Local Municipality (De Aar area). It lends itself towards international research outcome applications where electricity was replaced with solar at schools. Less emphasis will thus be on new Infrastructure buildings, but more focus on developing long-term energy solutions schools for the province.

5.2.2.5 Zf Mgcawu District

The learner enrolment numbers at ZF Mgcawu District Municipality have increased over the last ten years by 6.72% and 16.74% over the last 15 years. Learner enrolment increased from 2022 to 2023 academic year with 543 learners.

Mining and Agricultural development along the Orange River contribute extensively towards economic growth and food security. Regarding Physical Resource planning, the Department has the opportunity to develop Agriculture- and Mining-related technology schools within the ZF Mgcawu District Municipality to attract migration and population growth to the Northern Cape.

5.2.2.6 Special Needs Schools

The Northern Cape has 11 Special Needs Schools, whereas most Special Needs School for the Northern Cape Province is hosted within Sol Plaatje Local Municipality.

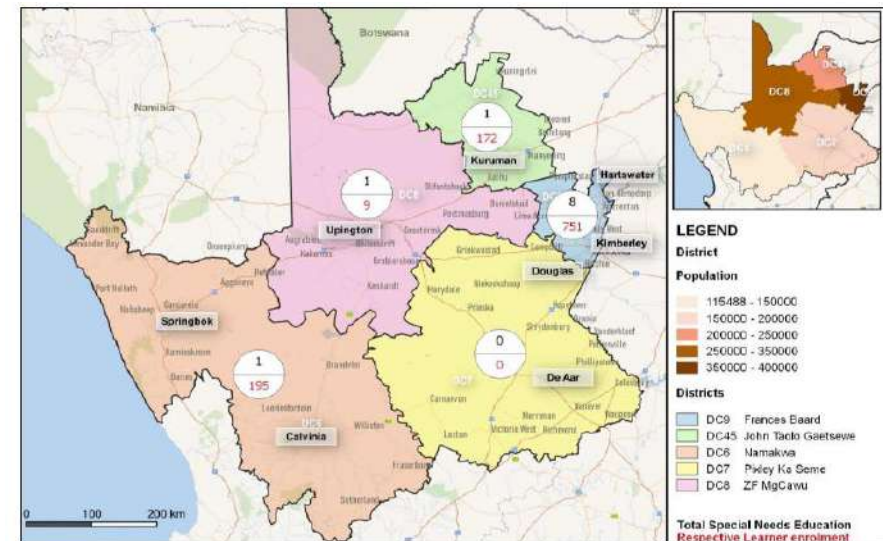


Figure 63: Special Needs Schools, NCDOE, 2023



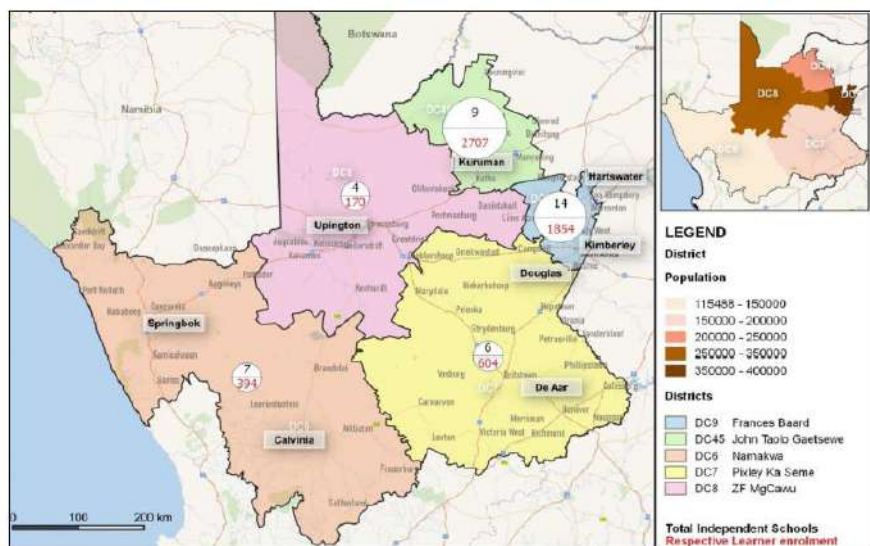


Figure 64: Independent Schools

5.2.2.7 Synthesis

5.2.2.7.1 Education Profile

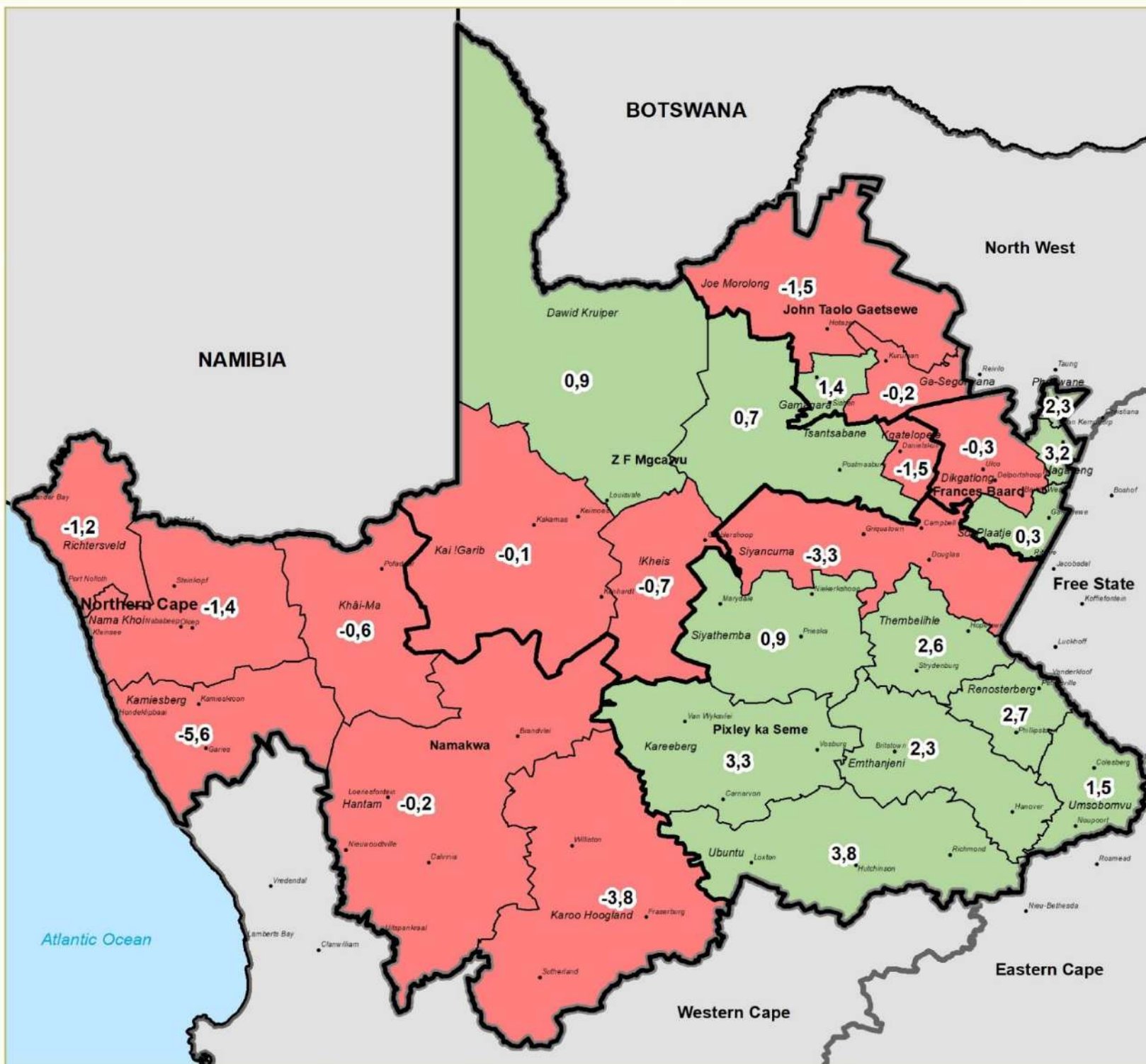
- Highest Level of Education Attained Of the working-age population, 6.6% have obtained no education. A large portion of the province has some secondary education (38.5%), or Grade 12 / Matric (30.7%).
- Attendance at an Education Institution (Persons Aged 20 and Older) Of the persons aged 20 years and older, 4.0% are currently enrolled at an educational institution. They are primarily enrolled at an ordinary school (33.1%), followed by enrolments at a university (25.6%) or FET colleges (16.7%)



Table 13: Educational Levels

Municipal Name	No Schooling					Higher Education				
	2011	2016	2022	Growth	2016-2022	2011	2016	2022	Growth	2016-2022
Frances Baard District	10,60%	7,10%	6,20%	-0,90%	↗	8,20%	9,10%	9,70%	0,60%	↗
Dikgatlong LM	17,70%	10,50%	8,50%	-2,00%	↗	2,60%	3,40%	3,10%	-0,30%	↘
Phokwane LM	17,70%	13,60%	11,20%	-2,40%	↗	6,40%	6,00%	8,30%	2,30%	↗
Sol Plaatje LM	7,10%	4,50%	4,10%	-0,40%	↗	10,00%	11,50%	11,80%	0,30%	↗
Magareng	16,60%	12,50%	8,80%	-3,70%	↗	3,30%	2,10%	5,30%	3,20%	↗
John Taolo Gaetsewe District	14,60%	9,80%	10,10%	0,30%	↘	7,90%	6,80%	5,50%	-1,30%	↘
Joe Morolong LM	22,80%	15,30%	15,00%	-0,30%	↗	3,90%	3,90%	2,40%	-1,50%	↘
Ga-Segonyana LM	9,70%	6,80%	6,30%	-0,50%	↗	9,50%	6,70%	6,50%	-0,20%	↘
Gamagara LM	10,50%	8,20%	7,20%	-1,00%	↗	11,30%	10,80%	12,20%	1,40%	↗
ZF Mgcawu District	16,30%	9,90%	9,20%	-0,70%	↗	6,20%	5,50%	7,00%	1,50%	↗
Dawid Kruiper LM	7,30%	4,50%	4,10%	-0,40%	↗	7,50%	6,40%	7,30%	0,90%	↗
Kgatlopete LM	12,20%	9,60%	7,60%	-2,00%	↗	8,40%	6,60%	5,10%	-1,50%	↘
Tsantsabane LM	13,70%	7,30%	6,00%	-1,30%	↗	6,00%	4,40%	5,10%	0,70%	↗
!Kheis LM	13,50%	11,60%	9,60%	-2,00%	↗	4,40%	3,40%	2,70%	-0,70%	↘
Kai !Garib	9,00%	5,60%	4,40%	-1,20%	↗	3,80%	3,60%	3,50%	-0,10%	↘
Namakwa District	6,60%	4,40%	3,10%	-1,30%	↗	7,10%	8,00%	6,20%	-1,80%	↘
Richtersveld LM	2,50%	0,50%	1,50%	1,00%	↘	6,90%	7,20%	6,00%	-1,20%	↘
Nama Khoi LM	2,20%	1,40%	1,20%	-0,20%	↗	7,50%	7,60%	6,20%	-1,40%	↘
Kamiesberg LM	5,20%	3,10%	3,00%	-0,10%	↗	4,10%	9,50%	3,90%	-5,60%	↘
Khâi-Ma LM	3,90%	2,80%	1,20%	-1,60%	↗	5,30%	5,20%	4,60%	-0,60%	↘
Hantam LM	14,40%	9,90%	7,20%	-2,70%	↗	8,00%	8,00%	7,80%	-0,20%	↘
Karoo Hoogland LM	18,40%	13,10%	12,00%	-1,10%	↗	8,50%	11,50%	7,70%	-3,80%	↘
Pixley Ka Seme District	14,60%	11,90%	8,30%	-3,60%	↗	5,90%	5,40%	6,60%	1,20%	↗
Siyancuma LM	16,70%	9,70%	8,60%	-1,10%	↗	5,30%	8,90%	5,60%	-3,30%	↘
Siyathemba LM	11,50%	7,10%	7,10%	0,00%	↔	5,20%	5,40%	6,30%	0,90%	↗
Thembelihle LM	15,10%	10,80%	9,20%	-1,60%	↘	6,50%	5,00%	7,60%	2,60%	↗
Renosterberg LM	16,00%	11,20%	13,70%	2,50%	↗	6,40%	4,80%	7,50%	2,70%	↗
Kareeberg LM	18,00%	14,70%	8,10%	-6,60%	↗	5,50%	1,90%	5,20%	3,30%	↗
Emthanjeni LM	11,00%	17,40%	5,90%	-11,50%	↗	6,40%	4,60%	6,90%	2,30%	↗
Ubuntu LM	16,40%	11,80%	9,60%	-2,20%	↗	5,90%	3,90%	7,70%	3,80%	↗
Umsobomvu LM	16,30%	9,90%	9,20%	-0,70%	↗	6,20%	5,50%	7,00%	1,50%	↗



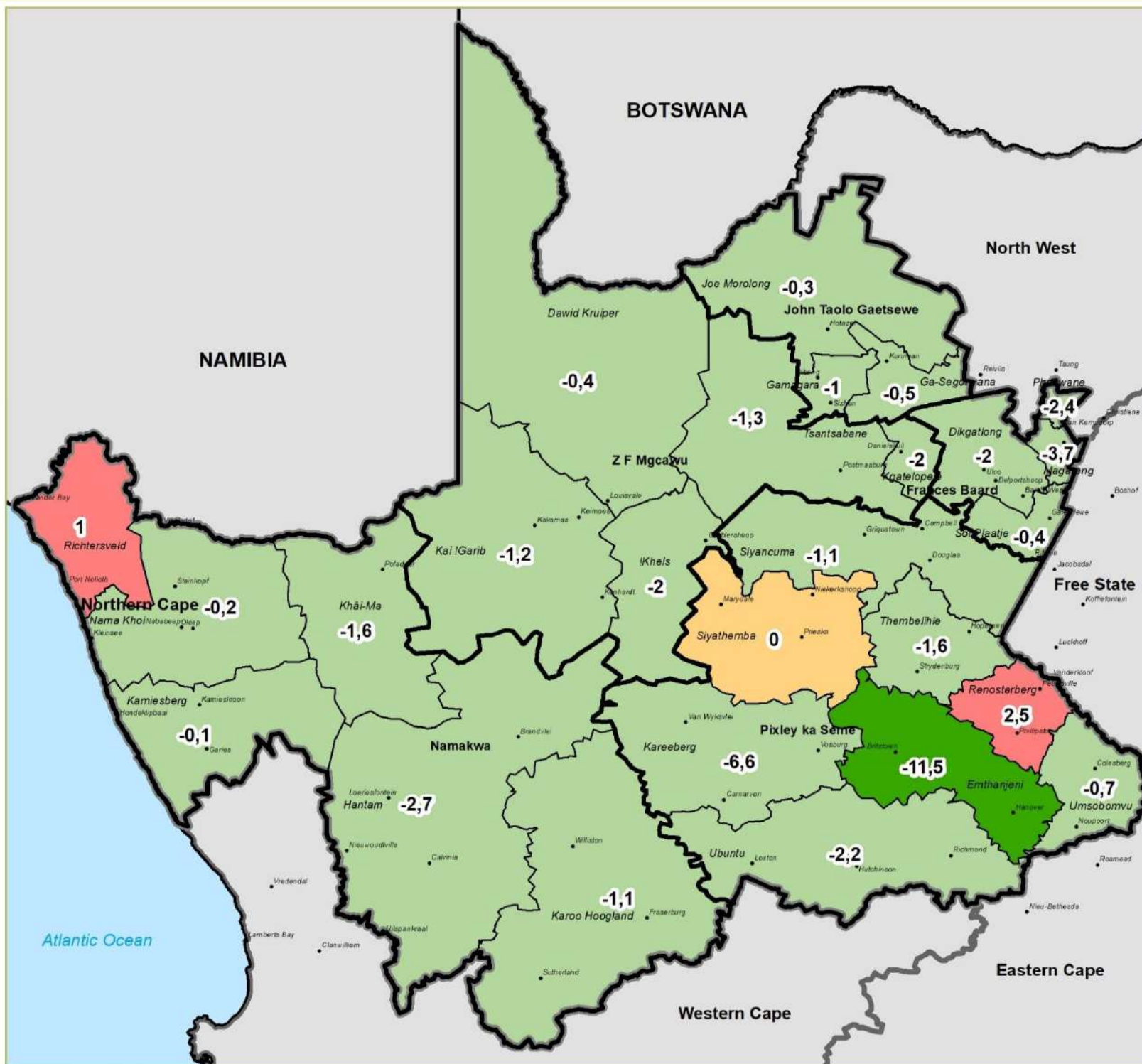


Map 20: Northern Cape Higher Education

Source: StatsSA (Census 2022)

**NORTHERN CAPE PROVINCIAL
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POPULATION WITH NO SCHOOLING

Legend

• Town/Settlement

Local Municipality

District Municipality

Population with No Schooling (2016 - 2022)

> 10% Positive Growth

Positive Growth

No Growth

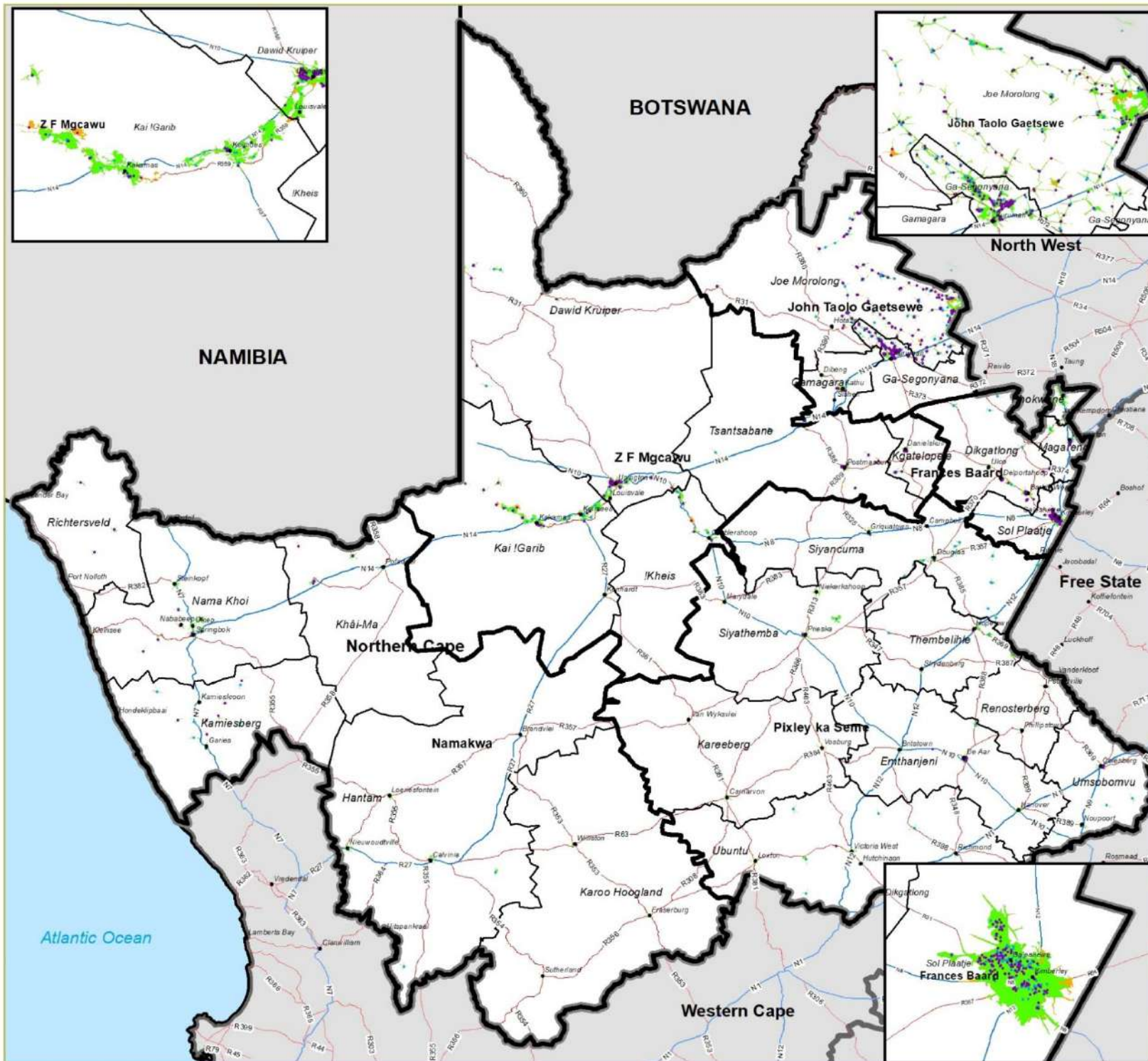
Negative Growth

**Map 21: Northern Cape
Population with No Schooling**

Source: StatsSA (Census 2022)

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**





EDUCATION

Legend

- Early Childhood Development Centre
- School
- Town/Settlement
- School 5km Walking Distance
- Main Roads
- National Roads
- ECD Centre 5km Walking Distance
- Local Municipality
- District Municipality

**Map 22: Northern Cape
Access to Education**

Source: Department of Education

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.2.3 HEALTH

Health issues can be caused as a result of various contributing factors such as limited refuse removal, especially in poor and rural communities. This can cause pollution and extensive health problems. Other health issues such as HIV/AIDS also pose extensive health issues. With better access to health care and health care services, diseases and other health issues can be attended to much quicker and can also increase the health conditions of the population. Several hospitals and clinics are distributed across the Northern Cape Province.

Data received from the Department of Health indicates that there are 248 health care facilities distributed across the Northern Cape Province of which 229 are clinics and 19 are hospitals.

The distribution of the Health Facilities is as follows:

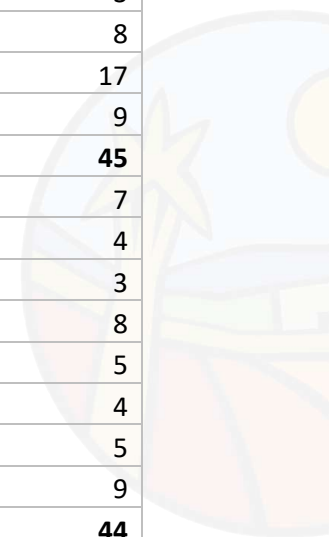
- 229 Clinics in the Northern Cape,
- 43 are located in the John Taolo Gaetsewe district, an increase of 7 since 2017.
- 38 located in the Frances Baard district, an increase of 14 since 2017.
- 59 are located in Namakwa, an increase of 24 since 2017.
- 44 located in ZF Mgcawu an increase of 24 since 2017, and
- 45 are located in Pixley ka Seme an increase of 13 since 2017.

The distribution of the hospitals is as follows:

- A total of 20 hospitals in the province,
- 2 in John Taolo Gaetsewe District.
- 8 in Frances Baard District
- 3 in Namakwa District,
- 4 in ZF Mgcawu District and
- 3 in Pixley ka Seme District.

Table 14: Health Facilities within the Northern Cape Province

Municipality	Hospital	Health Facility
Frances Baard DM	8	38
Dikgatlong LM	1	10
Magareng LM	0	4
Phokwane LM	1	8
Sol Plaatjie LM	5	16
John Taolo Gaetsewe DM	2	43
Gamagara LM	0	6
Ga-Segonyana LM	2	10
Joe Morolong LM	0	27
Namakwa DM	3	59
Hantam LM	1	6
Kamiesberg LM	0	16
Karoo Hoogland LM	0	3
Khai-Ma LM	1	8
Nama Khoi LM	1	17
Richtersveld LM	0	9
Pixley ka Seme DM	3	45
Emthanjeni LM	1	7
Kareeberg LM	0	4
Renosterberg LM	0	3
Siyancuma LM	0	8
Siyathemba LM	1	5
Thembelihle LM	0	4
Ubuntu LM	0	5
Umsobomvu LM	1	9
ZF Mgcawu DM	4	44
!Kheis LM	0	5
Dawid Kruiper LM	2	16
Kai !Garib LM	1	14



Municipality	Hospital	Health Facility
Kgatelopele LM	0	2
Tsantsabane LM	1	7
Total	20	229

Frances Baard's key health findings:

- Sol Plaatje has the highest concentration of health services within the province.
- Health facilities are mainly concentrated within larger settlement areas, limiting the accessibility to health care in rural communities.
- Gender roles play a major role in the determination of death causes (the main death causes of young males are drowning, interpersonal violence and road injuries, whereas the main female death causes are HIV/AIDS and TB).
- The leading death causes for the elderly are Cerebrovascular disease, ischemic heart disease and hypertensive heart disease.

John Taolo Gaetsewe's key health findings:

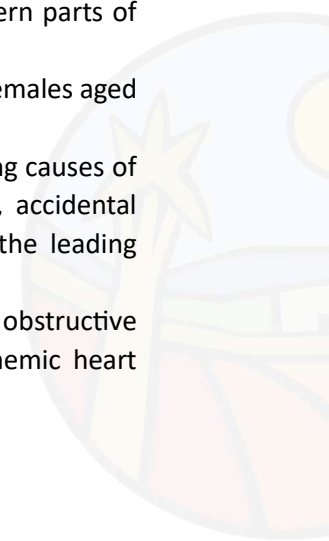
- Ga-Segonyana (Kuruman) has the highest concentration of health services within the district.
- Health facilities are scattered, with the only significant concentration in Kuruman.
- Gender roles play a major role in the determination of death causes (the main death causes of young males are diarrhoeal diseases, drowning, interpersonal violence and road injuries, whereas the main female death causes are respiratory infections, HIV/AIDS and TB).
- The leading death causes for the elderly are Lower respiratory infections, cerebrovascular disease, ischemic heart disease and hypertensive heart disease.

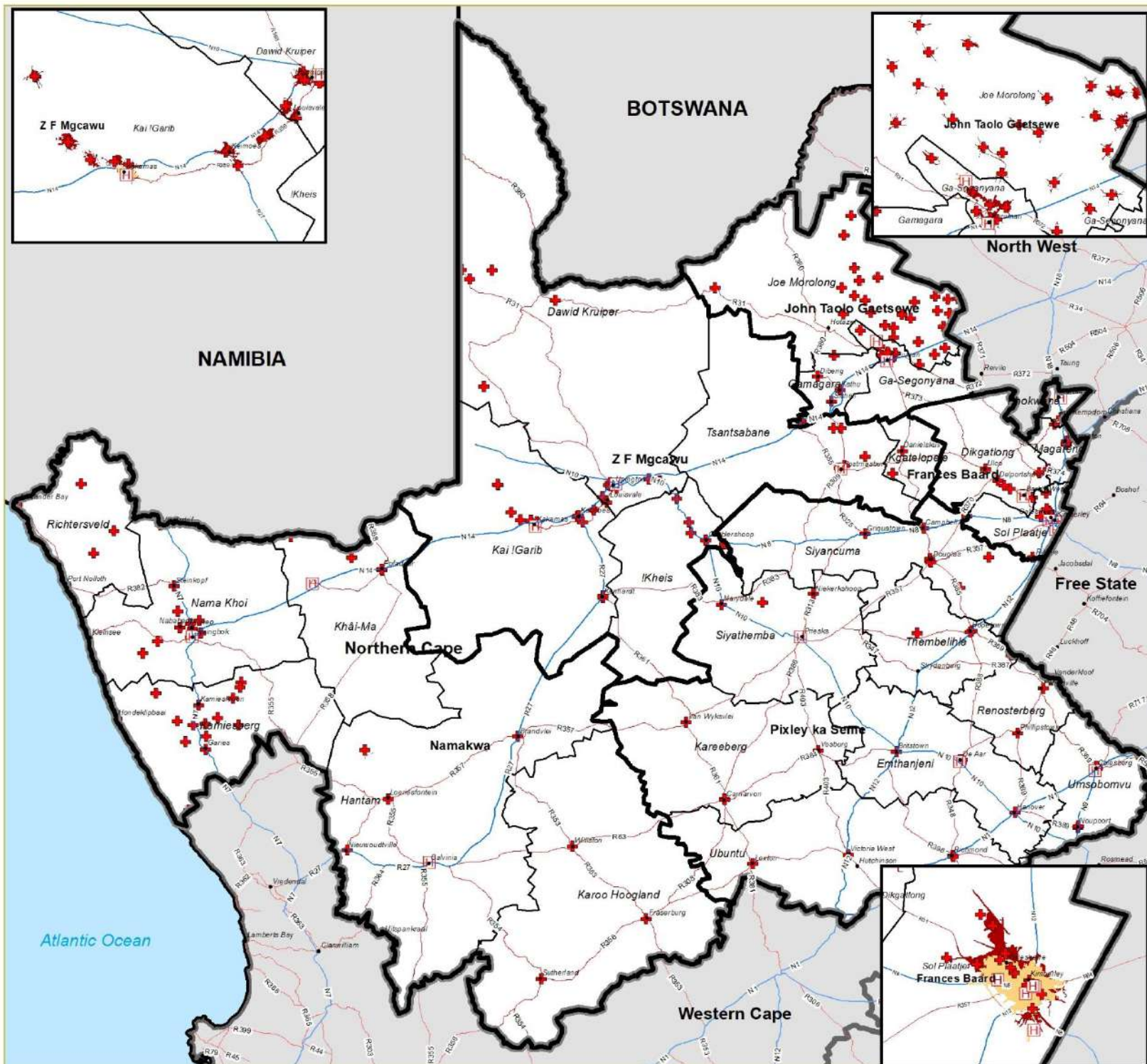
ZF Mgcawu key health findings:

- Health facilities are highly concentrated along the Orange River corridor, as well as in the prominent mining towns.
- District and other public hospitals have a more central location aiding in accessibility, although some rural areas, still have limited access to these health services.
- Gender roles play a smaller role in the determination of the leading causes of death, than in other districts.
- The leading death causes for the elderly are Diabetes, cerebrovascular disease, ischemic heart disease and hypertensive heart disease.

Namakwa key health findings:

- Health facilities are mainly concentrated in the Springbok and Garies regions.
- The limited remaining health facilities are scattered throughout the Khai-ma, Hantam, Karoo Hoogland and Richtersveld municipal regions.
- The only district hospital is located in Springbok, which creates accessibility challenges for residents located in the southern parts of the district.
- Limited data is available regarding the causes of death of females aged between 5 and 14.
- Gender roles play a part in the determination of the leading causes of death (main causes of death of young males: drowning, accidental threats to breathing and interpersonal violence, where the leading causes of death for young females are TB and HIV/Aids)
- The leading death causes for the elderly are chronic obstructive pulmonary disease (COPD), cerebrovascular disease, ischemic heart disease and hypertensive heart disease.





HEALTH

Legend

- Town/Settlement
- ✚ Clinic
- H Hospitals
- Main Roads
- National Roads
- Clinic 5km Driving Distance
- Hospital 5km Driving Distance
- Local Municipality
- District Municipality

Map 23: Northern Cape Access to Health Facilities

Source: Department of Health

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.2.4 SAFETY & SECURITY

Table 15: Crime statistics between 2021 and 2023, SAPS 2023

CRIME CATEGORY	2021-2022	2022-2023	Count Diff	(%) Change	Eastern Cape	Free State	Gauteng	KwaZulu-Natal	Limpopo	Mpumalanga	North West	Northern Cape	Western Cape
CONTACT CRIMES (CRIMES AGAINST THE PERSON)													
Murder	25181	27494	2313	9,2%	5150	979	6411	6947	1013	1344	1108	392	4150
Sexual offences	52694	53498	804	1,5%	8269	3415	10997	10106	4689	3294	3899	1535	7294
Attempted murder	22095	25131	3036	13,7%	2519	1326	6161	6307	1068	1417	1039	1700	3594
Assault with the intent to inflict grievous bodily harm	162842	169374	6532	4,0%	24218	12030	38031	26397	13205	10766	14377	6810	23540
Common assault	169963	185374	15411	9,1%	15095	15541	50891	25965	10889	8810	10622	5761	41800
Common robbery	41600	47057	5457	13,1%	2903	1945	15682	7562	3232	2007	2539	1107	10080
Robbery with aggravating circumstances	132788	146125	13337	10,0%	13021	4603	53633	26798	8004	8948	7108	1569	22441
Contact crime (crime against the person)	607163	654053	46890	7,7%	71175	39839	181806	110082	42100	36586	40692	18874	112899
Sexual Offences - Breakdown													
Rape	41739	42780	1041	2,5%	6829	2671	8708	8433	4021	2772	3218	1099	5029
Sexual assault	7798	7483	-315	-4,0%	913	488	1863	1140	391	374	387	253	1674
Attempted sexual offences	2027	2376	349	17,2%	419	163	273	394	229	103	245	144	406
Contact sexual offences	1130	859	-271	-24,0%	108	93	153	139	48	45	49	39	185
Some subcategories of aggravated robbery													
Carjacking	20923	22702	1779	8,5%	1866	271	11248	3731	569	1271	612	38	3096
Robbery at residential premises	21832	23065	1233	5,6%	2154	638	7728	5991	1354	1582	1093	157	2368
Robbery at non-residential premises	20012	20054	42	0,2%	2205	871	6312	3531	1943	1947	1394	269	1582
TRIO Crime	62767	65821	3054	4,9%	6225	1780	25288	13253	3866	4800	3099	464	7046
Robbery of cash in transit	238	238	0	0,0%	45	7	88	33	24	21	8	1	11
Bank robbery	13	4	-9	9 counts lower	2	0	2	0	0	0	0	0	0
Truck hijacking	1741	1995	254	14,6%	176	53	1219	105	38	229	67	2	106
CONTACT-RELATED CRIMES													
Arson	4102	3626	-476	-11,6%	583	142	440	690	344	270	250	196	711
Malicious damage to property	113403	115118	1715	1,5%	12874	6985	28767	14083	7808	5761	6903	4077	27860
Contact-related crime	117505	118744	1239	1,1%	13457	7127	29207	14773	8152	6031	7153	4273	28571



PROPERTY-RELATED CRIMES													
Burglary at non-residential premises	62197	62588	391	0,6%	7698	5008	13599	8882	6007	5279	4996	2759	8360
Burglary at residential premises	156170	163493	7323	4,7%	18916	11659	35899	26578	11768	12285	11850	6363	28175
Theft of motor vehicle and motorcycle	37402	37461	59	0,2%	1693	793	19530	6343	777	1484	1723	162	4956
Theft out of or from motor vehicle	81504	87173	5669	7,0%	8681	4147	23931	11813	3412	4490	4396	2227	24076
Stock-theft	25001	25255	254	1,0%	5561	3024	1112	5665	2539	2722	2955	987	690
Property-related crime	362274	375970	13696	3,8%	42549	24631	94071	59281	24503	26260	25920	12498	66257
OTHER SERIOUS CRIMES													
All theft not mentioned elsewhere	249215	275452	26237	10,5%	25440	16985	75296	37292	17452	13682	16088	8652	64565
Commercial crime	102057	112592	10535	10,3%	10295	4351	37581	18247	5853	5990	7110	1872	21293
Shoplifting	42549	49697	7148	16,8%	3768	2513	15659	8033	3350	3048	1918	1345	10063
Other serious crime	393821	437741	43920	11,2%	39503	23849	12853 6	63572	26655	22720	25116	11869	95921
17 Community reported serious crime	148076 3	158650 8	105745	7,1%	166684	95446	43362 0	247708	10141 0	91597	98881	47514	303648
CRIME DETECTED AS A RESULT OF POLICE ACTION													
Illegal possession of firearms and ammunition	13549	15649	2100	15,5%	2038	563	4273	3717	636	814	742	70	2796
Drug-related crime	140326	162122	21796	15,5%	11135	5607	34963	23045	6833	5001	5896	2579	67063
Driving under the influence of alcohol or drugs	43873	41768	-2105	-4,8%	2970	2468	18676	2783	1607	1447	2310	251	9256
Sexual offences detected as a result of police action	7242	9589	2347	32,4%	18	1184	1458	2694	2927	7	1257	3	41
Crime detected as a result of police action	204990	229128	24138	11,8%	16161	9822	59370	32239	12003	7269	10205	2903	79156
Kidnapping	10826	15342	4516	41,7%	784	538	7822	3089	452	979	628	98	952

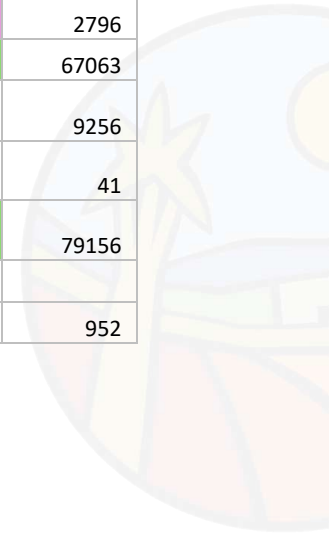
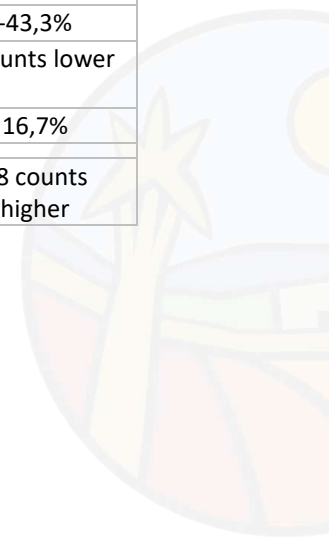


Table 16: Northern Cape Crime between 2013 to 2023

CRIME CATEGORY	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	Count Diff	(%) Change
CONTACT CRIMES (CRIMES AGAINST THE PERSON)												
Murder	437	413	372	344	340	322	326	287	366	392	26	7,1%
Sexual offences	1 731	1 578	1 719	1 587	1 538	1 578	1 590	1 295	1 317	1 535	218	16,6%
Attempted murder	603	562	658	550	480	532	468	474	780	1 700	920	117,9%
Assault with the intent to inflict grievous bodily harm	8 716	8 813	8 889	8 173	7 723	7 790	7 594	6 356	7 017	6 810	-207	-2,9%
Common assault	4 777	4 803	4 598	4 440	4 375	4 481	4 533	4 301	5 045	5 761	716	14,2%
Common robbery	1 277	1 262	1 348	1 506	1 285	1 408	1 437	1 170	999	1 107	108	10,8%
Robbery with aggravating circumstances	1 402	1 446	1 387	1 505	1 639	1 780	1 643	1 426	1 323	1 569	246	18,6%
Contact crime (crime against the person)	18 943	18 877	18 971	18 105	17 380	17 891	17 591	15 309	16 847	18 874	2 027	12,0%
Sexual Offences - Breakdown												
Rape	1 267	1 181	1 287	1 143	1 100	1 121	1 125	908	952	1 099	147	15,4%
Sexual assault	249	228	240	235	245	255	229	207	212	253	41	19,3%
Attempted sexual offences	153	128	147	154	130	150	186	142	101	144	43	42,6%
Contact sexual offences	62	41	45	55	63	52	50	38	52	39	-13	13 counts lower
Some subcategories of aggravated robbery												
Carjacking	28	15	47	29	37	39	34	20	23	38	15	15 counts higher
Robbery at residential premises	110	123	106	142	159	157	132	151	141	157	16	11,3%
Robbery at non-residential premises	282	240	258	304	299	332	198	225	211	269	58	27,5%
TRIO Crime	420	378	411	475	495	528	364	396	375	464	89	23,7%
Robbery of cash in transit	2	0	1	0	1	1	1	0	2	1	-1	1 count lower
Bank robbery	0	1	0	0	0	0	0	0	0	0	0	0 count diff
Truck hijacking	0	0	2	0	3	4	1	3	0	2	2	2 counts higher
CONTACT-RELATED CRIMES												
Arson	163	172	172	149	156	162	137	121	179	196	17	9,5%
Malicious damage to property	3 087	3 209	3 084	2 954	2 927	3 243	3 104	3 034	3 614	4 077	463	12,8%
Contact-related crime	3 250	3 381	3 256	3 103	3 083	3 405	3 241	3 155	3 793	4 273	480	12,7%
PROPERTY-RELATED CRIMES												
Burglary at non-residential premises	2 373	2 270	2 203	2 403	2 172	2 722	2 315	2 344	2 352	2 759	407	17,3%
Burglary at residential premises	6 013	6 204	6 469	6 518	6 228	6 325	6 208	5 543	5 280	6 363	1 083	20,5%



Theft of motor vehicle and motorcycle	321	327	246	219	233	215	214	134	172	162	-10	-5,8%
Theft out of or from motor vehicle	2 976	2 898	2 962	2 911	2 609	2 845	2 739	2 186	2 117	2 227	110	5,2%
Stock-theft	1 211	1 331	1 332	1 356	1 558	1 313	1 259	1 221	861	987	126	14,6%
Property-related crime	12	13	13	13	12	13	12	11	10	12	1	15,9%
	894	030	212	407	800	420	735	428	782	498	716	
OTHER SERIOUS CRIMES												
All theft not mentioned elsewhere	7 016	7 437	7 316	7 104	6 871	7 492	7 804	6 457	7 286	8 652	1 366	18,7%
Commercial crime	1 035	997	1 037	1 108	1 097	1 088	1 188	1 186	1 666	1 872	206	12,4%
Shoplifting	1 302	1 360	1 276	1 407	1 309	1 344	1 546	1 134	990	1 345	355	35,9%
Other serious crime	9 353	9 794	9 629	9 619	9 277	9 924	10	8 777	9 942	11	1	19,4%
							538			869	927	
17 Community reported serious crime	44	45	45	44	42	44	44	38	41	47	6	14,9%
	440	082	068	234	540	640	105	669	364	514	150	
CRIME DETECTED AS A RESULT OF POLICE ACTION												
Illegal possession of firearms and ammunition	92	102	92	102	103	99	70	81	70	70	0	0 count diff
Drug-related crime	3 247	3 527	4 344	5 136	5 563	3 813	2 620	2 108	1 969	2 579	610	31,0%
Driving under the influence of alcohol or drugs	744	804	725	797	812	652	620	398	443	251	-192	-43,3%
Sexual offences detected as a result of police action	10	3	22	49	17	9	6	7	5	3	-2	2 counts lower
Crime detected as a result of police action	4 093	4 436	5 183	6 084	6 495	4 573	3 316	2 594	2 487	2 903	416	16,7%
Kidnapping	38	47	64	71	64	61	69	65	70	98	28	28 counts higher



5.2.5 EMPLOYMENT STATUS

Employment Profile

ECONOMICALLY
ACTIVE
POPULATION



EMPLOYED
ECONOMICALLY
ACTIVE

Unemployed: 27.4%

Occupational Profile

Skilled
Occupations
19.1%



Semi-Skilled
Occupations
46.4%



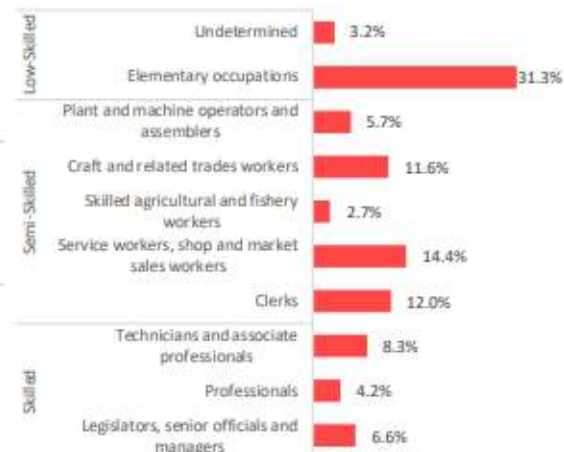
Low-Skilled
Occupations
31.3%



Elementary
occupations
31.3%

Service
workers, shop
and market
sales workers
14.4%

Clerks
12.0%



Employment per Industry

19.9% Primary Sector

13.9% Secondary Sector

56.2% Tertiary Sector



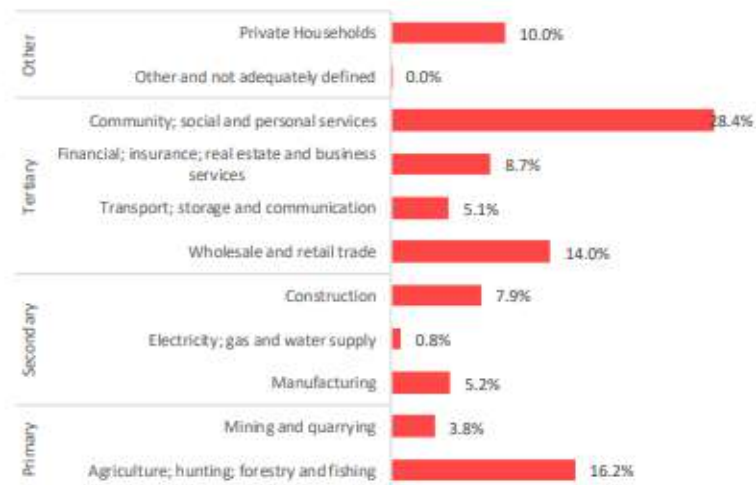
Undetermined: 10.0%

Biggest Employing Economic Sectors in the Market Area

28.4% Community; social and personal services

16.2% Agriculture; hunting; forestry and fishing

14.0% Wholesale and retail trade



+27 53 838 2600



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<http://www.northern-cape.gov.za>



T&I Building, 69 Memorial Road, Monuments Heights, Kimberley



5.2.6 HOUSEHOLD PROFILE

Dwelling Types

Majority of households reside in a **formal dwelling** **85.9%**

12.1% of households reside in an **informal dwelling**

1.4% of households reside in an **traditional dwelling**

Caravan/tent	0.1%
Cluster	0.3%
Townhouse	0.3%
Other	0.5%
Flatlet	0.6%
House/flat/room in backyard	1.3%
Traditional	1.4%
Semi-detached house	1.7%
Flat / Apartment	2.3%
Informal (Backyard)	2.9%
Informal (Main)	9.2%
House	79.5%

Tenure Status



47.3% of households **own** and have **paid** for the property where they reside

3.4% of households **own** but have not **finished paying** for the property where they reside

16.6% of households **rent** the property where they reside

27.7% of households **occupy** the property where they reside **rent-free**

SEM Profile

SEM Supergroup Distribution



Household Income Profile

Average annual household income for all SEM Groups (2023)

R109 398

Average annual household income for SEM 2+ Groups (2023)

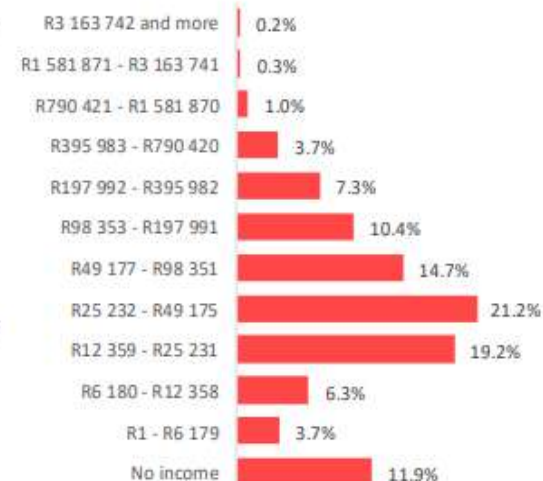
R318 229

Average monthly household income for all SEM Groups (2023)

R9 116

Average monthly household income for SEM 2+ Groups (2023)

R26 519



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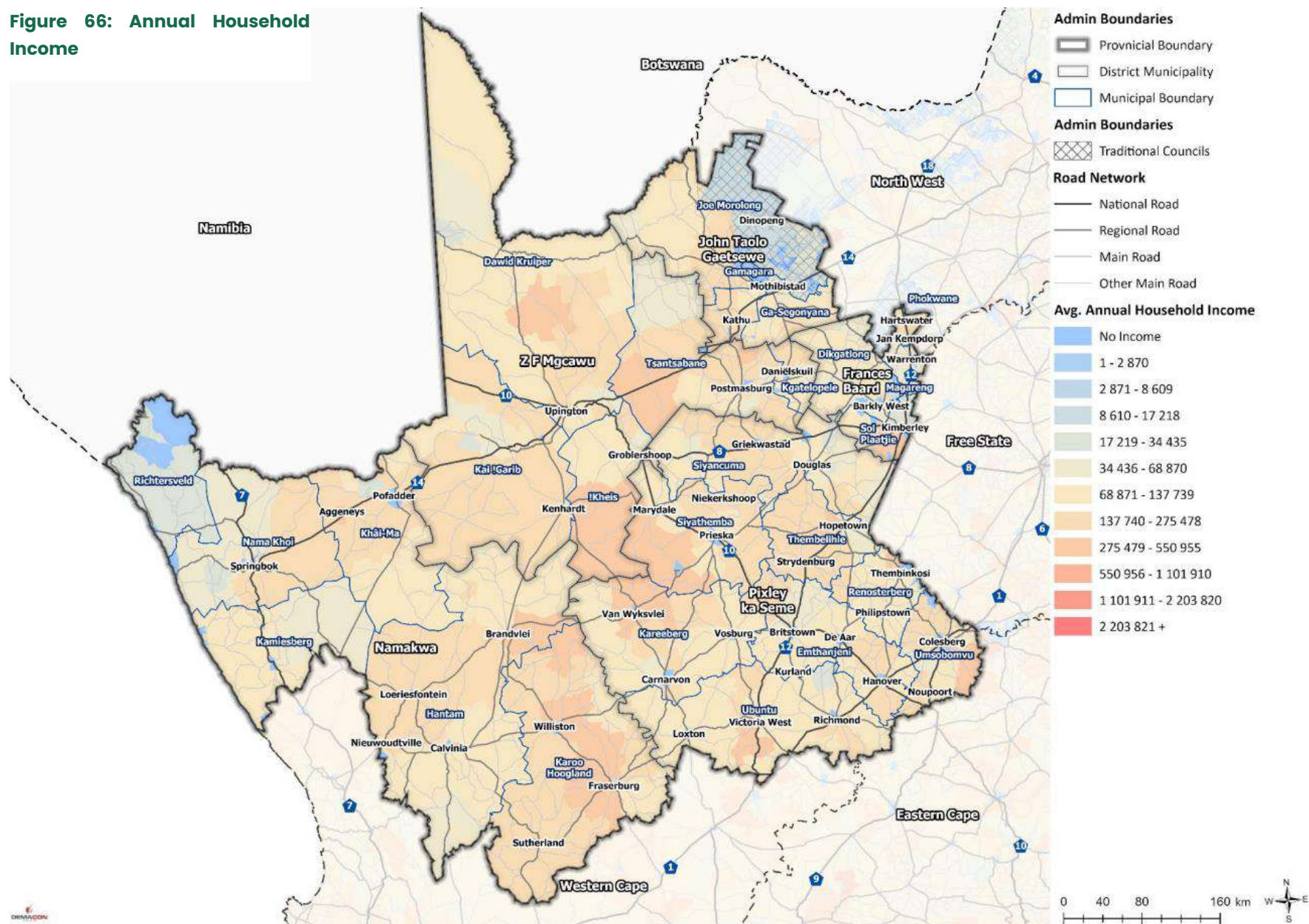


<http://www.northern-cape.gov.za>



T&I Building, 69 Memorial Road, Monuments Heights, Kimberley

Figure 66: Annual Household Income



5.2.6.1 LSM to SEM

The discontinuation of the All Media Products Survey (by the South African Audience Research Foundation (SAARF)), on which the Living Standard Measure (LSM) classifications were based, gave way to a new measurement system called The Socio-Economic Measure model (SEM). The SEM model first released in 2018 is a more accurate reflection of South African society in terms of how people live and is not dependent solely on durables, as the historical LSMs have been. The new SEM offers marketers a statistical and technical solution that depicts how our citizens are living, not only what they have in their homes.

LSM

VS

SEM

LATEST VARIABLES:

- Hot running water
- Fridge/freezer
- Flush toilet in house/on plot
- VCR in household
- Vacuum cleaner/floor polisher
- Have a washing machine
- Have a computer at home
- Have an electric stove
- Have TV set(s)
- Have a tumble dryer
- Have a Telkom telephone
- Hi-Fi or music centre
- Built-in kitchen sink
- Home security service
- Have a deep freeze
- Water in home/on stand
- Have M-Net and/or DSTV
- Have a dishwasher
- Metropolitan dweller
- Have a sewing machine
- DVD player
- House/cluster/townhouse
- 1/more motor vehicles
- No domestic worker
- No cellphone in household
- 1 cellphone in household
- None or only one radio
- Living in a non-urban area

LIMITATIONS OF LSM:

- LSM is not related to any specific brand or category
- LSM cannot accurately determine spending power
- Consumers have changed, LSM has not

FINAL VARIABLES:

- Post office nearby
- Police office nearby
- Built-in kitchen sink
- Home security service
- Motor car
- Deep freezer which is free standing
- Microwave oven
- Floor polisher or vacuum cleaner
- Washing machine
- Floor material
- Water source
- Type of toilet
- Roof material
- Number of sleeping rooms



Focus on structural items



Low reliance on durables



No reliance on technology items



Short and easy to use



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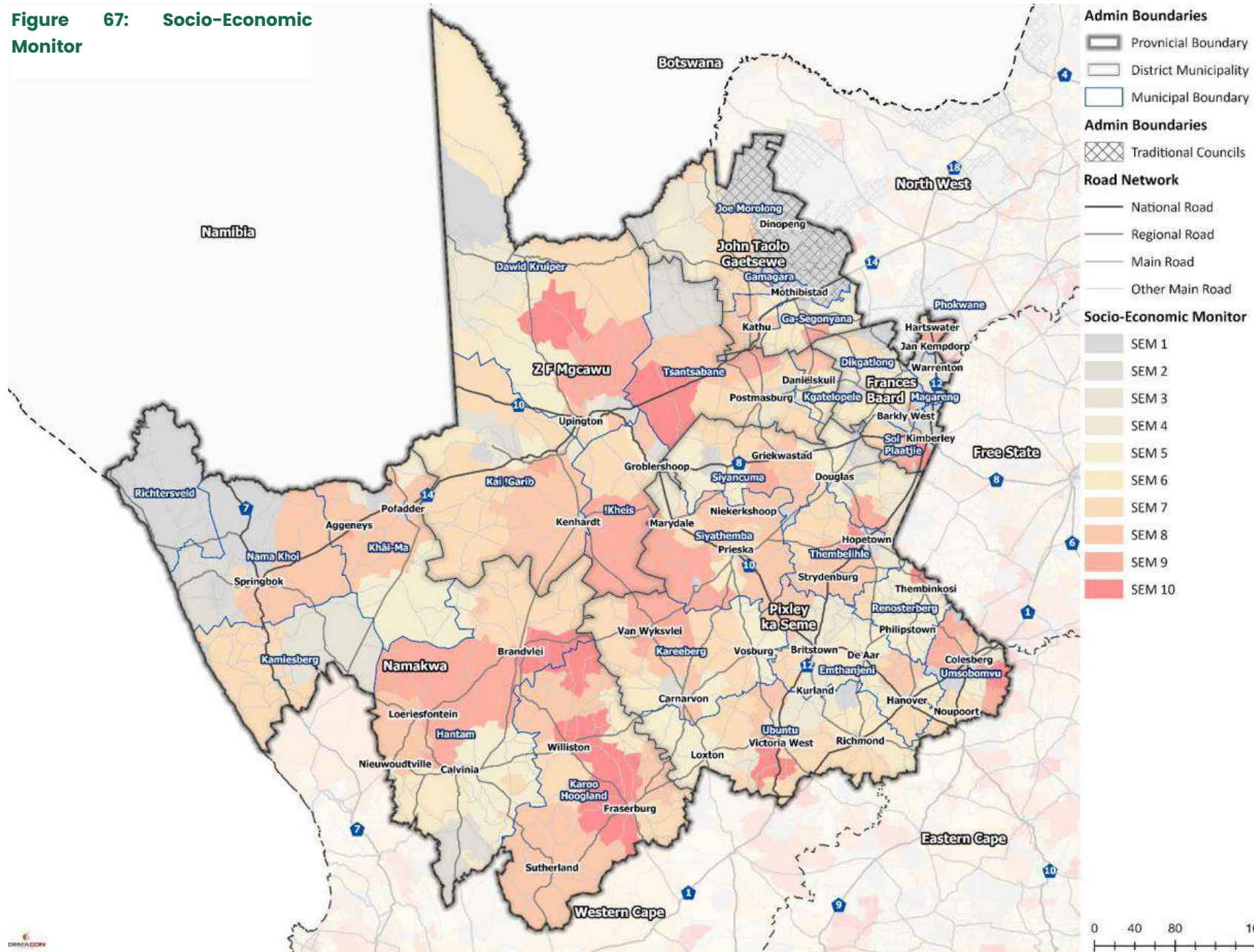


<http://www.northern-cape.gov.za>



T&I Building, 69 Memorial Road, Monuments Heights, Kimberley

Figure 67: Socio-Economic Monitor



DRINKWATER



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<http://www.northern-cape.gov.za>



T&I Building, 69 Memorial Road, Monuments Heights, Kimberley

5.2.6.2 Synthesis

5.2.6.2.1 Economically Active Population and Employment

- Of the population of the province, 52.9% are economically active, meaning that approximately half of the population is of working age and is actively participating in the economy or seeking employment.
- The remaining 47.1% represent population that fall outside the scope of the economically active population definition and represent people who are not available for work such as full-time scholars and students, full-time homemakers, those who are retired and those who are unable or unwilling to work.
- Of the economically active population, 72.6% are employed and 27.4% are unemployed. The province is characterised by moderate unemployment levels compared to the national average, reflecting moderate dependency ratios.

5.2.6.2.2 Employment per Industry:

- 19.9% of employed persons are employed in the primary economic sector of which the agriculture sector is the most prominent.
- The tertiary economic sector is proportionally, the largest contributor in terms of employment (56.2%) of which the community, social and personal services are the most prominent.
- The secondary economic sector proportionally contributes 13.9%, of which the manufacturing sector is the most prominent.

5.2.6.2.3 Employment per Occupation:

- In the province, 19.1% of the employed population are employed in skilled occupations of which technicians and associate professionals form the largest segment.
- Semi-skilled employed occupations proportionally make up 46.4% of employed persons of which service workers, shop and market sales workers and craft-related trade workers are the most prominent.
- Low-skilled occupations contribute 31.3% to the total employed persons. Elementary occupations are the most prominent.

5.2.6.2.4 Household Income Profile

- Affluent households (R1.6 million and more) make up 0.5% of households.
- Approximately 11.9% of households in the province earn no income.
- The weighted average annual household income for the resident population for 2023 amounts to R109 398 per annum, which amounts to R9 116 per month for all SEM groups.
- For SEM groups 2 and higher, the average income is R318 229 per annum, which amounts to R26 519 per month.
- Independent research affirms that income is typically understated.

5.2.6.2.5 Sem Profile

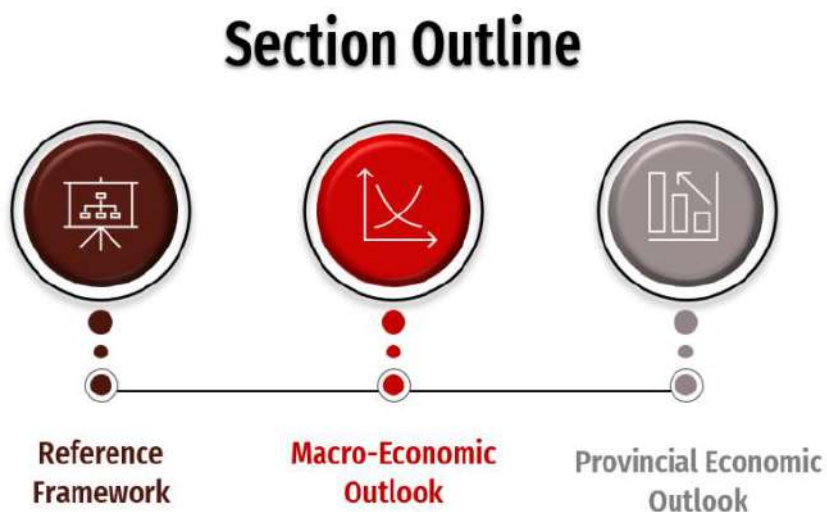
- The discontinuation of the All-Media Products Survey (by the South African Audience Research Foundation (SAARF)), on which the Living Standard Measure (LSM) classifications were based, gave way to a new measurement system called The Socio-Economic Measure model (SEM). The newly released SEM model is a more accurate reflection of South African society in terms of how people live and is not dependent solely on durables, as the historical LSMs have been. The new SEM offers marketers a statistical and technical solution that depicts how our citizens are living, not only what they have in their homes.
- Approximately 64.4% of the local municipality's households are classified within the SEM Supergroup 1 with 35.6% of households classified within the SEM Supergroup 2+ categories.

Note: Considering observations pertaining to residential growth and development, as well as aspects such as livestock ownership and shopping centre performance (fuelled by community income and expenditure), it would appear that despite efforts, neither system (i.e. LSM or SEM) fully accounts for the levels of wealth prevalent in Tribal areas in SA.



5.2.7 SPACE ECONOMY

This section provides insight into the composition and stability of the local economy, allowing for a more comprehensive assessment of medium- to long-term investment prospects than traditional demographic analysis. The sections that follow provide a concise overview of the local economy in terms of:



The causal relationship between economic sector performance and property market performance is illustrated in the diagram below.

The economic indicators of an area form the basis for the current demand for commercial product offerings and serve as drivers for future growth in demand. Subsequent paragraphs highlight the main indicators for the market area under investigation.

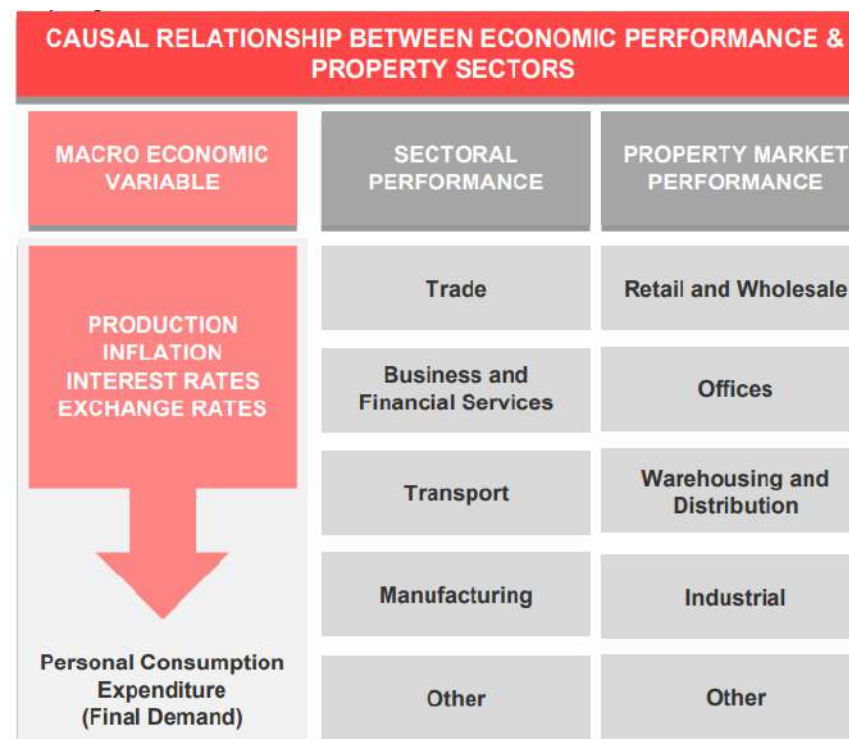


Figure 68: Relationship between Economic Performance and Property Market Performance, H Du Toit, Msc, PhD, 2023



MACRO-ECONOMIC INDICATORS

The following provides an overview of the current macro-economic trends and factors influencing national and local economic growth prospects, consumer demand growth and property market demand.

ECONOMIC OUTLOOK FOR SOUTH AFRICA (MAY 2023)



South Africa's Economic Disruptions

- South African Economy faced a series of global and local disruptions, including:
 - Slowing global growth
 - Geopolitical tensions
 - Acute power challenges
 - Inefficiencies in state-owned enterprises
 - Climate change, to list a few.
- No growth could be a reality for South Africa in 2023.
- To minimise further deterioration and create conditions for future growth, urgent action is required to address supply-side constraints – with emphasis on stable electricity access and improving of freight and logistics.



GDP Growth Trends

- As per StatsSA, the economy expanded by 0.3% since the outbreak of COVID (between 2019 and 2022).
- Six industries still lag pre-pandemic output levels:
 - Construction
 - Mining
 - Manufacturing
 - Utilities
 - Transport
 - Trade.
- The mining and manufacturing sectors have been the hardest hit by loadshedding challenges.
- The year 2022 experienced 200 days of loadshedding. Quarter 4 experienced only 2 of the 92 days without loadshedding.
- The first quarter of 2023 experienced only one day without loadshedding and blackout periods are longer.
- Mining (-1.9%) and manufacturing (-3.7%) production was lower compared to a year-ago.
- Freight and logistics bottlenecks with flatter commodity prices further undermined the growth prospects of the mining sector.



Retail Sales

- Retail sales deteriorated by -0.8% in January Year-on-Year.
 - Mostly due to constrained household finances:
 - Ongoing cost-of-living increases
 - Higher inflation
 - More expensive credit conditions
 - Loadshedding.
- With loadshedding expected to continue into at least the second half of 2023, consumers are likely to face more price hikes due to:
 - Retailers and consumer goods companies spend more on power back-up
 - Increasing cost of doing business
 - Exerting additional pressure on input costs.



GDP Growth Expectations

- A growth scenario of flat to no growth is a real possibility for 2023 according to Deloitte.
- The country could already be in a technical recession in 2023: Q1 (two consecutive negative quarters of growth)
- National Treasury forecast for 2023 is 0.9%.
- South African Reserve Bank forecast for 2023 was 0.3% in January, revised downward to 0.2% end of March.
- The International Monetary Fund forecast for 2023 was 1.2% in January, revised downwards to 0.1% end of March.



	Given lower net exports (logistical bottlenecks), easing of commodity prices, higher power-related imports the current account deficit is projected to increase to -1.8% of GDP in 2023 and -2.0% of GDP in 2024.
 Subdued Growth in Household Consumption Expenditure	- SA consumers are under financial strain. - End of February 2023, the Deloitte South African Consumer Tracker highlighted that 41% of consumers feel that their financial position has worsened over the past year and that they are concerned about their financial circumstances. - Consumers are making greater trade-offs (buying lower-cost items and store brands) and are being for frugal (buying only essentials). - FNB/ BER Consumer Confidence Index declined to -23 points in 2023: Q1 (down from -8 points in 2022: Q4). - Third lowest CCI since 1994, with likely repercussions on lower durable goods sales this year. - Consumers have already/ thinking of investing in backup renewable power solutions (given the recent tax rebate for the fiscal year of 2024).
 Inflationary Pressures	- Increased global food and fuel prices forced inflation rates beyond the target band. - Headline inflation increased from 6.9% Year-on-Year in January 2023 to 7.0% Year-on-year in February 2023.
 SA Reserve Bank	- The Monetary Policy Committee raised the repo rate by 75 basis points on 22 September 2022, followed by another hike of 75 basis points on 24 November 2022 and another 25 basis points on 26 January 2023, bringing the repo rate to 7.25%. - It is expected that the repo rate will be further increased by between 25 and 50 basis points on the 25th of May meeting, 2023.
 Public Finances	- Consolidated budget deficit forecast expected to decrease to 4.2% of GDP in 2022 to 2023, 4.0% in 2023-2024 and 3.2% in 2025-2026. - Despite an average annual increase of 4.5% in consolidated expenditure over the next three years, a primary budget surplus is still expected for 2023 to 2024. - Government's decision to provide debt relief to Eskom (taking on more than 50% of Eskom's debt over three years) will result in a deterioration of the debt-to-GDP ratio. - This will result in an increase in debt-service costs, while crowding out other expenditure.
 Grey Listing of South Africa	- Grey listing of South Africa by the FATF in February 2023. - While not expected to have permanent effects on the growth outlook, it could imply potential risks such as reputational damage, increased transaction costs for businesses and negative impact on foreign flows, posing additional burdens on the national economy. - Significant progress has already made in addressing some of the concerns of the FATF.
 Addressing Power Outages	- A National Energy Crisis Committee has been established and is taking on debt from Eskom to free up resources at the utility. - The National Energy Crisis Committee (Necom) intends to recover and add 8 800 megawatts (MW) of generating capacity this year in an effort to reduce the intensity of load shedding. - There are eight interventions in 2023: - Bring Kusile units 1, 2 and 3 back online, plus achieve commercial operation for Unit 5 (2 880MW). - Additional imports from neighbours (up to another 1 325MW). - An emergency generation programme and a standard offer from Eskom to buy excess capacity from commercial/industrial customers (1 000MW). - Utility-scale private embedded generation projects (up to 1 600MW).





Logistics Crisis

- Using feed-in tariffs to unlock supply from commercial and household rooftop solar (850MW).
- Ramp up demand-side and energy efficiency programmes to cut demand (250MW).
- Complete first phase of Eskom's battery energy storage system (200MW); and
- Contract surplus supply from existing renewable producers (70MW).
- Private Sector:
 - Government has also continued driving reforms and introduced rooftop solar incentive programs for households and businesses. The latter includes a one-year tax relief.
 - To eliminate loadshedding, about 18 000MW of renewable energy and storage are needed.
 - The private sector is making progress to bridge the country's 6 000 MW baseload energy gap.
 - Once 5 000 MW of renewables had been installed loadshedding can be cut by 61%.
- Plans are co-ordinated under Operation Vulindela to include:
 - upgrading of rail and ports infrastructure
 - increasing the number of goods transported by rail
 - enabling private sector investment.
- This will be supported by R903 billion of investment in infrastructure over the next three years.
- *"One of these reforms is to enable third party access to the freight rail network by private rail operators, while the network itself remains in the ownership of the state," the President said.*
He noted the progress that has been made to establish a separate Infrastructure Manager within Transnet Freight Rail by October this year as a crucial step towards creating a level playing field for public and private operators.
The President said that strong collaboration with the private sector, organised labour and other social partners is vital to improving logistics performance.
He referred to the strong willingness shown by members of the Minerals Council and others to invest in rolling stock and other equipment, to contribute skills and resources and to pursue opportunities for collaboration.
These collaborative efforts are essential to formulating workable solutions that will form part of a collective national effort to fix the country's transport system.
"Despite the crisis facing Transnet we must acknowledge the important progress that has been made in reversing the damage that was inflicted during state capture and recognise that there are many dedicated and hard-working people in the company that are committed to restoring Transnet to its potential.
"Transnet must quickly embark on a clear path to take us out of this crisis and ensure that the operation of our railways and ports contributes to the growth of our economy," said President Ramaphosa.



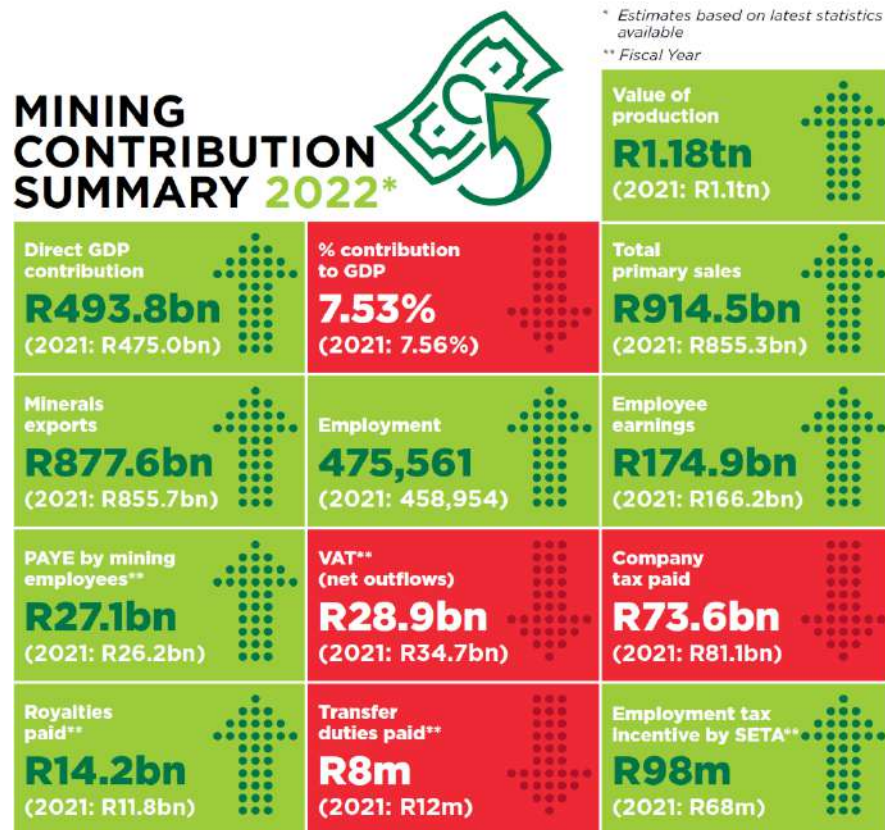
BUSINESS CONFIDENCE INDEX

- The business confidence index (BCI) slipped to 36 in the first quarter of 2023. The index has not been in positive trajectory for the larger part of the past decade.
- Power outages and deteriorating household income impacted confidence in the manufacturing and retail sectors hard. While sentiment among wholesalers and new vehicle dealers improved slightly according to the BER.
- Confidence Improvement:
 - Wholesaler confidence increased with three points.
 - New vehicle dealer confidence up with three points.
- Confidence Decrease driven by:
 - Manufacturing declined by nine points in the first quarter (largely due to intense load shedding and dilapidated and poorly managed logistic infrastructure).
 - Retail declined by eight points (largely due to loadshedding, reduced trading hours, increased operating costs due to diesel generators, high consumer price inflation, increased pressure on household disposable income.
 - Building confidence declined by three points (a silver lining relates to the installation of backup power).



5.2.7.1 South African Mineral Resources

The following diagram provides an overview of the mining contribution for 2022.



The main findings include the following:

- The positive impact of rising commodity prices continued to benefit mining performance, but volumes of production and exports remain a concern. The longer-term production trend is unstable and struggling to break out of its low trajectory.

- The value of production reached over R1 trillion in 2022, which was a 12% real improvement in 2021; however, a real decline of 6% is expected for 2022.
- Commodity prices kept on improving from 24% in 202 to 19% in 2021 and a further 70% up to December 2022 (rand terms). Dollar prices rose by 90% (by December 2022) but a strengthening exchange rate took some “shine” off that, hence the rand-dollar difference.
- Exports amounted to close to R900 billion (2022) or close to 5% higher than in 2021. This is tempered by an expected decline in volumes. Exports were 70% higher (values) but 20% lower (volumes) compared to pre-lockdown 2019.
- Transport and logistics (rail, harbour, electricity) constrained export growth to such a degree that monthly volumes were equal to 2017 levels; only in 2019 were 15 million tons exported but volumes dropped again below that level.
- Employment numbers are estimated to have been 475 561 in 2022.
- Mining input costs have been rising at over 15% on average during 2022.
- Early indications (from a sample of companies) are that fixed investment stagnated in 2022, although self-generation electricity projects may turn the tide in 2023. The latter, however, boils down to “stay in business investment”, and not mining capacity expansion.

5.2.7.1.1 Iron Ore Mining

The fourth biggest contributor to South African mining volumes, iron ore is the main ingredient in steel making. Steel is used in various applications around the world including structural engineering, manufacturing of cars, ships and general machinery.

In 2022 iron ore production is expected to have declined by 9.3% to 66.3 million tonnes compared to 2021. Comparing 2022 to 2019, production is expected to have gone down by 8.4% while the value of total sales is expected to have been R104.1 billion, representing an increase of

Direct Employees
22,976



Direct Employees
22,976



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47.3%. However, comparing 2022 to 2021 the value of total sales is expected to have declined by 14%.

5.2.7.1.1.1 Industry Developments

The Minerals Council's Northern Cape Mines Leadership Forum (predominantly representing iron ore, manganese and diamond producers) has had a series of engagements with the provincial government and the Department of Water Affairs and Sanitation to structure a suitable collaboration arrangement to ensure a sustainable, cost-effective supply of water from the Vaal Gamagara Water Supply Scheme.

The Minerals Council members in the Northern Cape started a collaborative initiative with The Impact Catalyst with the objective of scaling projects that will change the lives and livelihoods of communities in the areas where they operate. These projects deliver greater economic benefits to local communities. Two programmes attracted 4 000 stipends for the youth in the province and involved the removal of alien vegetation around mines; while the other was a tyre recycling project that will build an integrative tyre recycling park. The latter conforms to the new strategy of the Department of Forestry, Fisheries and the Environment.

5.2.7.1.1.2 Industry Constraints

Iron ore, as part of the bulk minerals (which include coal, chrome and manganese), faces the same inadequate and inefficient rail and port challenges.

Transnet cannot presently discharge its contractual commitments to its existing customers because of poor performance. The iron ore rail channel's nameplate capacity is 60 million tonnes per annum, and it continues to underperform at around 51 million tonnes per annum.

Water remains a challenge in the Northern Cape.

5.2.7.1.1.3 Industry Outlook

Inadequate rail capacity and inefficiencies will continue to affect iron ore exports in the short- to medium-term.



Figure 69: Iron Ore Industry Production and Employment, DMRE, Minerals Council South Africa

5.2.7.1.2 Manganese

Manganese continues to be the fourth most used metal globally in terms of tonnage, after iron, aluminium, and copper.

It is used in various applications where it helps improve the corrosion resistance and mechanical properties of alloys and compounds including objects made of steel, portable batteries, and aluminium beverage cans.

Manganese also assists in making steel resistant to corrosion and abrasion and is a key ingredient in lithium-ion batteries. Its main use is in iron and steel manufacturing (which accounts for around 90% of manganese demand) to reduce brittleness and strengthen steel products.



Although South Africa is estimated to host around 80% of the world's identified manganese reserves, it only accounts for approximately 45% of the global manganese market share in terms of exports. The manganese industry performed well relative to pre-pandemic levels with production and sales at higher levels in 2022 compared to 2019.

1.1.1.1.2.1 Industry Developments in 2022

Of the estimated 18.96 million tonnes of manganese produced, 87.5% was exported in 2022. Of this export share, 89.9% went to Asia (70.4% to China and 14.5% to India) followed by the European Union at 8.94%. This is mostly driven by the demand for steel in these countries.

Sales for the year were up by nearly a third compared to 2021 (around 30% higher at R48 billion) but due to structural constraints in rail and electricity supply as well as labour disruptions, the industry saw its physical production volumes decline slightly by 0.56% year-on-year.

The increased sales were, therefore, driven by prices that were 17.3% higher on average compared to 2021 and not by increased production.

1.1.1.1.2.2 Industry Constraints

Rail and port capacity constraints that cause bottlenecks, labour disruptions, equipment breakdowns and a lack of maintenance on the Cape Corridor line disrupt day-to-day performance and efficiency.

Rail and port disruptions and constraints at Gqeberha and Saldanha harbours (which in 2022 processed around 66% and 24% of all manganese exports respectively) hampers manganese export performance.

Rail limitations and disruptions result in output being transported via road, which carries a higher cost premium.

1.1.1.1.2.3 Industry Outlook

China has eased its zero-COVID policy stance, which is expected to drive domestic demand for industrial minerals including manganese and steel.

Planned rail and port infrastructure upgrades at Gqeberha and Saldanha are expected to increase overall rail and port capacity by 2 to 5Mt, which could help the industry capitalise on its competitive advantage.

The World Bank expects economic growth of around 4.6% in Asia in 2023 (up from 3.2% in 2022). As the biggest market for South African manganese exports, there is an expectation that demand for manganese will increase due to an expansion in construction and international trade where steel plays a crucial role.

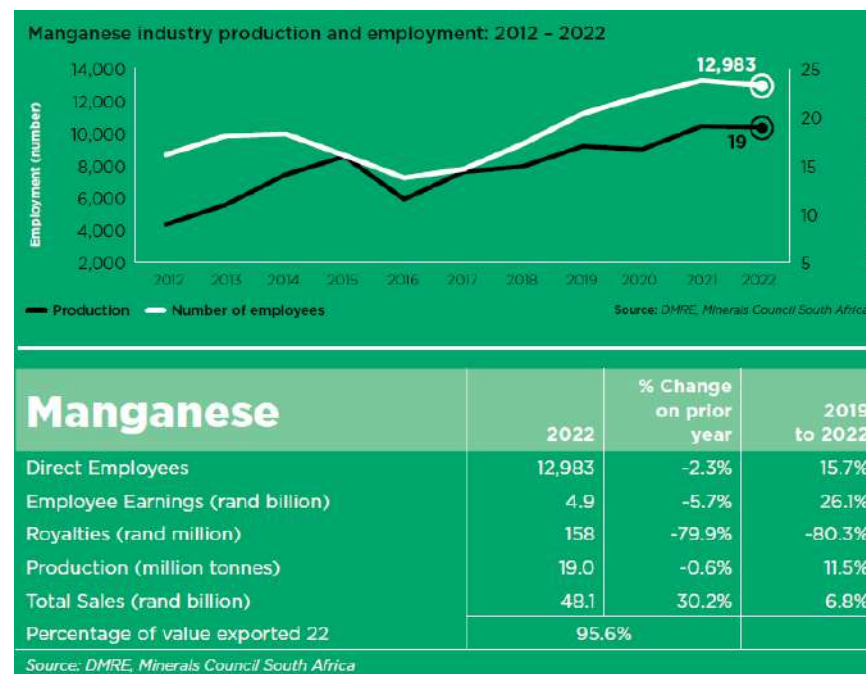


Figure 70: Manganese Industry Production and Employment, DMRE, Minerals Council South Africa



5.2.7.1.3 Industrial Minerals Mining

South Africa is richly endowed with a vast array of minerals. The country not only ranks highly in the resource or reserve in some commodities, relative to the global endowment but also in the diversity of minerals available. In 2022, we estimate that total industrial mineral sales amounted to R21.3 billion.

Non-metallic sales saw substantial growth in 2022 with sales up by around 30% at R9.29 billion. This sector, which includes minerals such as silica, vermiculite and feldspar, contributed 43.6% to total sales. This was followed by the aggregate and sand sector and the limestone and lime sector each contributing 31.1% and 18.9% respectively.

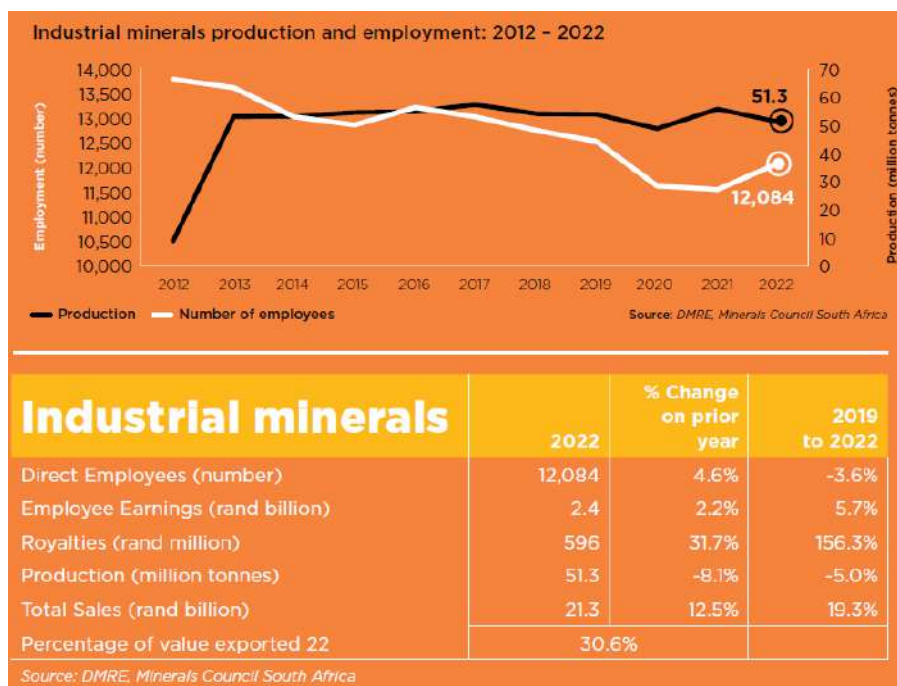


Figure 71: Industrial Minerals Production and Employment, DMRE, Minerals Council South Africa

5.2.7.1.4 Diamond Mining

Diamonds have a crystalline structure that makes them harder than any other form in nature. They are not only very popular in jewellery and adornment, but also desirable in high-tech cutting, grinding, and polishing tools.

For the first time since the 2008 GFC local production of diamonds is expected to have exceeded the 10 million-carat mark. Comparing 2022 to 2019, production is expected to have been 42.2% higher at 10.2 million carats.

Comparing 2022 to 2021, production figures are likely to have been 5.1% higher. The value of total diamond sales is expected to have climbed 30.3% in 2022 compared to the previous year mainly on account of higher international prices. Compared to 2019 the total value of sales is projected to have been more than 110% higher in 2022.

5.2.7.1.4.1 Industry Developments in 2022

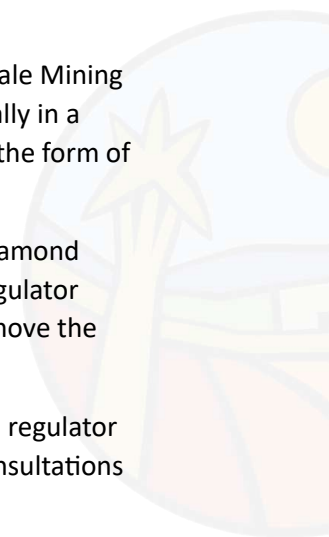
In March 2022 the DMRE published the Artisanal and Small-Scale Mining Policy with the aim of enabling the industry to “operate optimally in a sustainable manner while also contributing to the economy in the form of taxes and royalties”.

2022 saw an increase in constructive engagements between diamond producers, the South African Diamond and Precious Metals Regulator (SADPMR), and the State Diamond Trader (SDT) in trying to remove the constraints affecting the industry.

The engagements are quarterly and, while progress is slow, the regulator and the SDT officials must be commended for the continual consultations with the industry.

The Minerals Council continues to engage the National Treasury and SARS on the removal of the following:


Direct Employees
14,577



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- The requirement for a provisional VAT on imported rough diamonds would aid the cash flow position of beneficiations.
- VAT payment on the local sale of diamond jewellery purchases exceeding R10,000 by tourists. This will mean that tourists will not have to go through the highly administrative process of claiming back VAT by submitting proof of where they obtained the cash – whether it be from an ATM, a bank, or a Bureau de Change. The process limits the number of diamond sales the local industry can make to tourists.
- Provisional VAT payments on temporary imports to South Africa which applies to shipments higher than R14,000. SARS requires jewellery firms from neighbouring countries to pay this amount upfront. The result is that neighbouring firms are dissuaded from acquiring domestic services for repairs, warranty claims, sending gemstones for grading and sending sweeps, and filings.

5.2.7.1.4.2 Industry Constraints

The industry faces a number of challenges such as the Diamond Export Levy Act, the role of the SDT and the Diamond Exchange and Export Centre (DEEC), and the Section 74 Exemption in the Diamond Act, among others.

For example, regarding the Diamond Export Levy Act, the view of the Minerals Council is that it unfortunately does not take into account the economic circumstances of the downstream cutting and polishing industry. There have been instances where downstream players buy diamonds on dealer licences and then export the diamonds without beneficiation.

5.2.7.1.4.3 Industry Outlook

- The industry still has a long way to go to reach pre-2008 production levels.
- The volatility in the global economy hardly fosters consumer confidence, save to mention that the US economy, which consumes more than 50% of diamonds globally, continues to grow despite higher-than-usual consumer inflation.

- Locally, one of the major constraints to beneficiation and increased consumption of diamonds is VAT. The Minerals Council continues to advocate the removal of VAT on the sale of all rough diamonds.

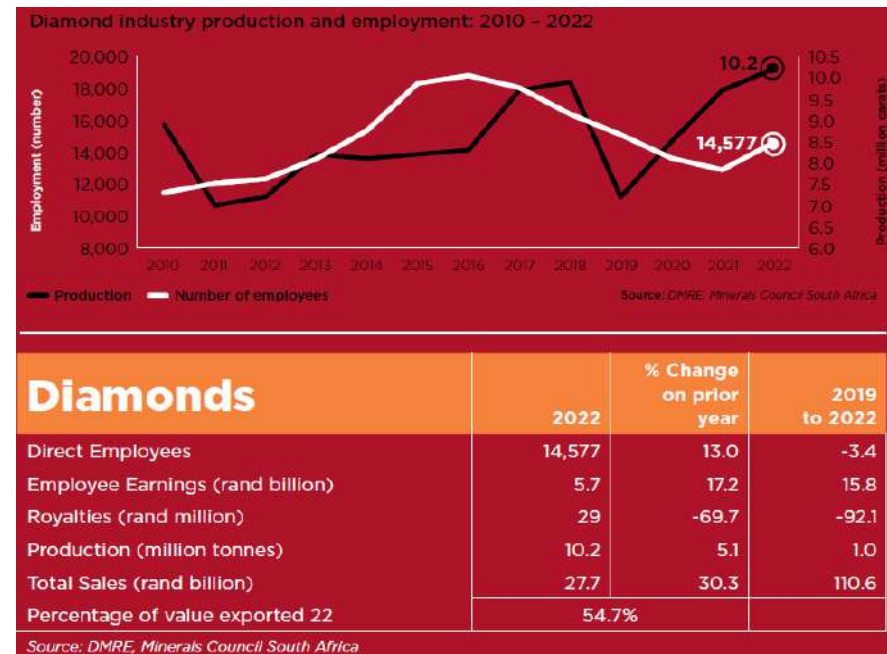
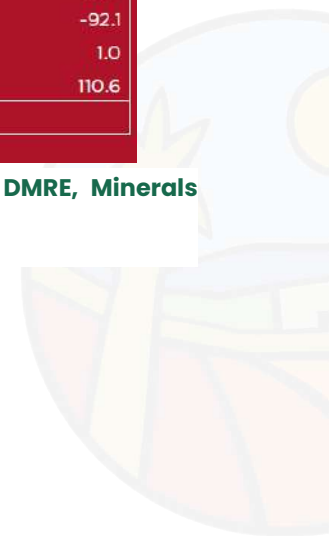


Figure 72: Diamond Industry Production and Employment, DMRE, Minerals Council South Africa



5.2.8 PROVINCIAL ECONOMY

ECONOMY SIZE, 2022

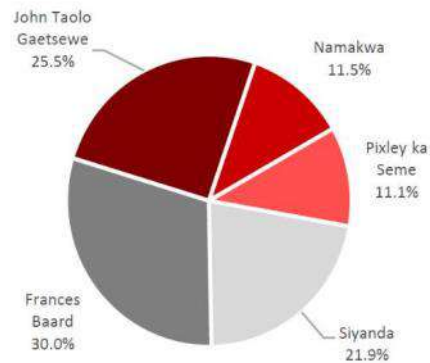
Northern Cape
Provincial Economy
R130.5 billion

ECONOMY CONTRIBUTION



contribution to the
National Economy

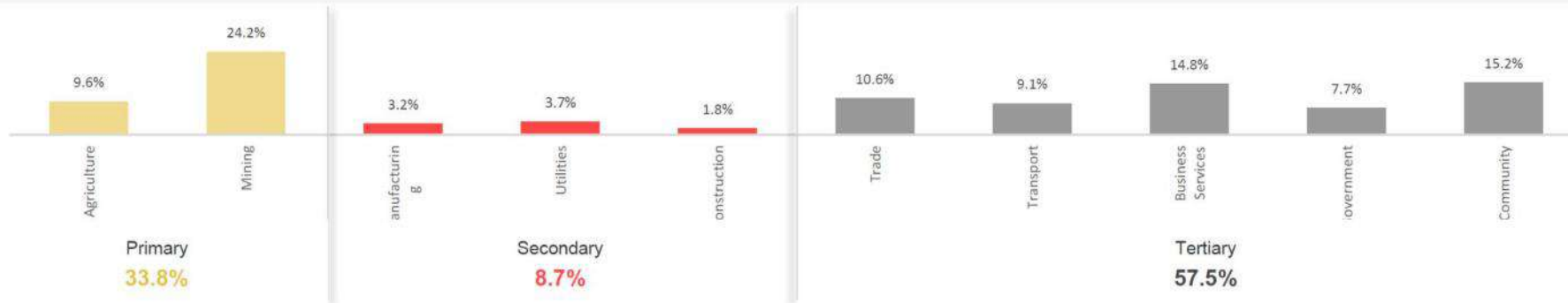
SPATIAL CONTRIBUTION TO TOTAL ECONOMIC OUTPUT, 2022



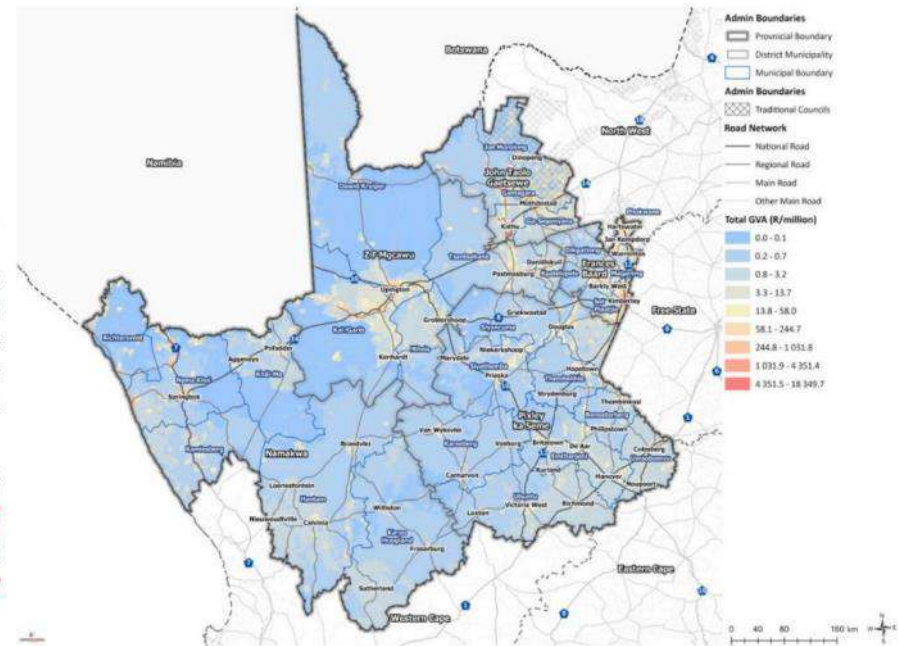
The provincial economy consists of 5 district economies with strong contributions from Frances Baard District (30.0%) and John Taolo Gaetsewe District (25.5%).

The provincial economy is characterised by **tertiary economy** activities with a strong reliance on the **primary economy**.

ECONOMY STRUCTURE, 2022



SPATIAL DISTRIBUTION OF THE ECONOMY



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5.2.8.1 Economic Growth and Household Consumption and Expenditure

ECONOMIC GROWTH ('12 – '22)

1.2%

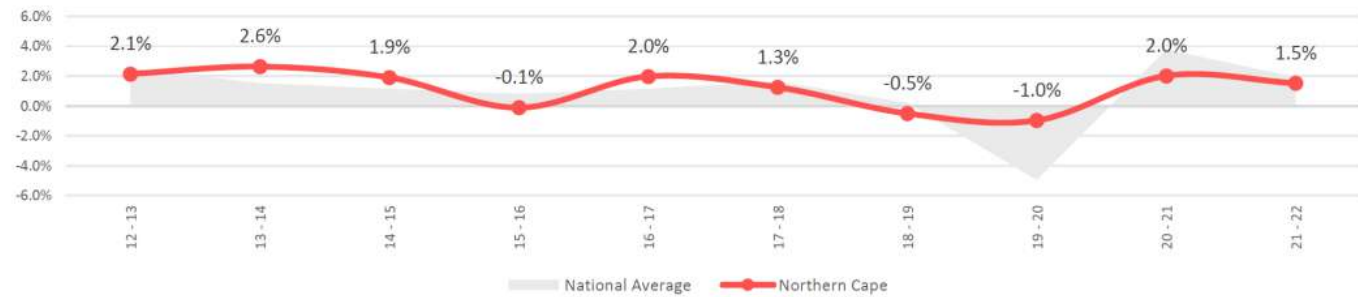
(2012 to 2022)

Average annual growth of the local economy over the previous **10 years**

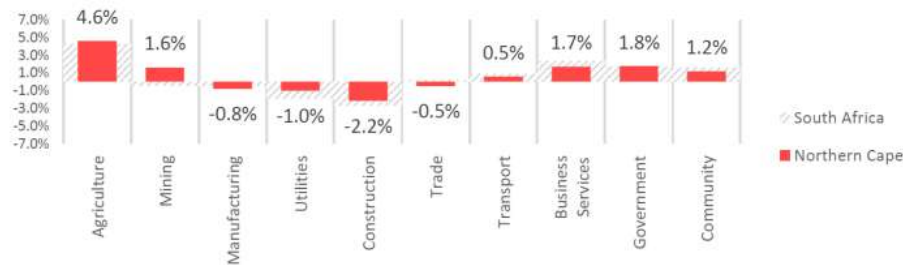
0.7%

(2017 to 2022)

Average annual growth of the local economy over the previous **5 years**



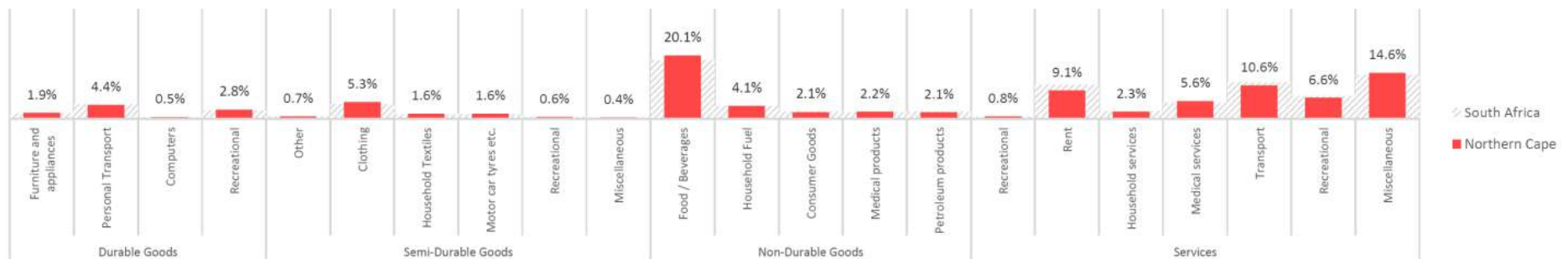
AVERAGE ANNUAL GROWTH PER ECONOMIC SECTOR ('12 – '22)



DISPOSABLE INCOME & CONSUMPTION EXPENDITURE ('12 – '22)



HOUSEHOLD EXPENDITURE PER CONSUMPTION ITEM, 2022



5.2.8.2 Labour Force Participation

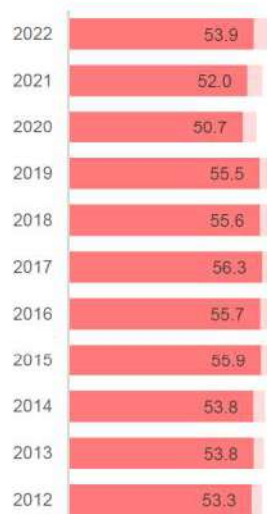
LABOUR FORCE PARTICIPATION

53.9% of the potential labour force participate in the provincial economy



58.0%
National average

Compared to the national average, the provincial economy maintains, on average, a **lower** labour force participation rate



■ Northern Cape ■ South Africa

STRUCTURE OF EMPLOYMENT

315 003 jobs exist in the provincial economy



76.5%
Formal employment

241 132 formal jobs in the Northern Cape Provincial Economy.

The formal economy gained 19 570 jobs since 2012 at an average rate of 1 957 jobs per annum.

23.5%
Informal employment.

73 871 informal jobs exist in the provincial economy.

The informal economy lost 10 559 jobs since 2012 at an average rate of 21 056 jobs per annum.

Skilled Jobs



52 996 jobs.
5 457 jobs gained since 2012.
546 jobs gained per annum.

Semi-Skilled Jobs



101 824 jobs.
8 682 jobs lost since 2012.
868 jobs lost per annum.

Low-Skilled



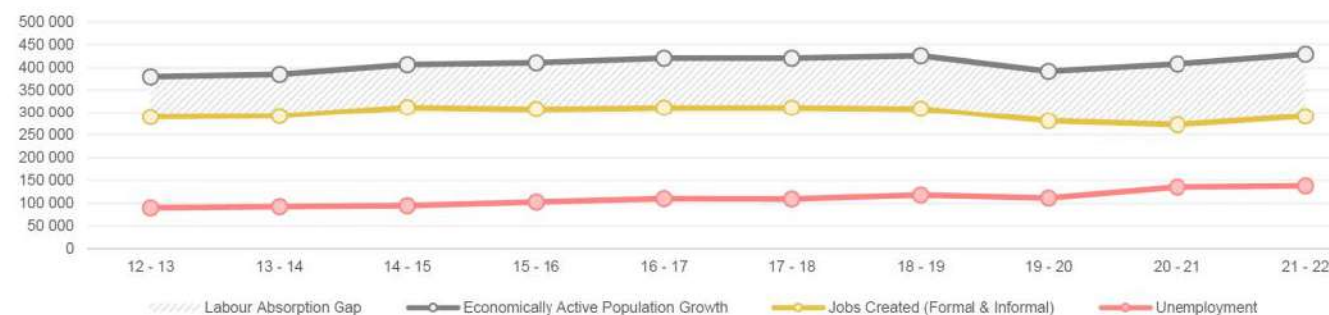
86 312 jobs.
5 431 jobs gained since 2012.
543 jobs gained per annum.

EMPLOYMENT DEMAND AND LABOUR ABSORPTION

58 530 People became economically active since 2012.

Employment increased with **9 011**

49 519 People became unemployed since 2012.



Labour Absorption Gap

Economically Active Population Growth

Jobs Created (Formal & Informal)

Unemployment



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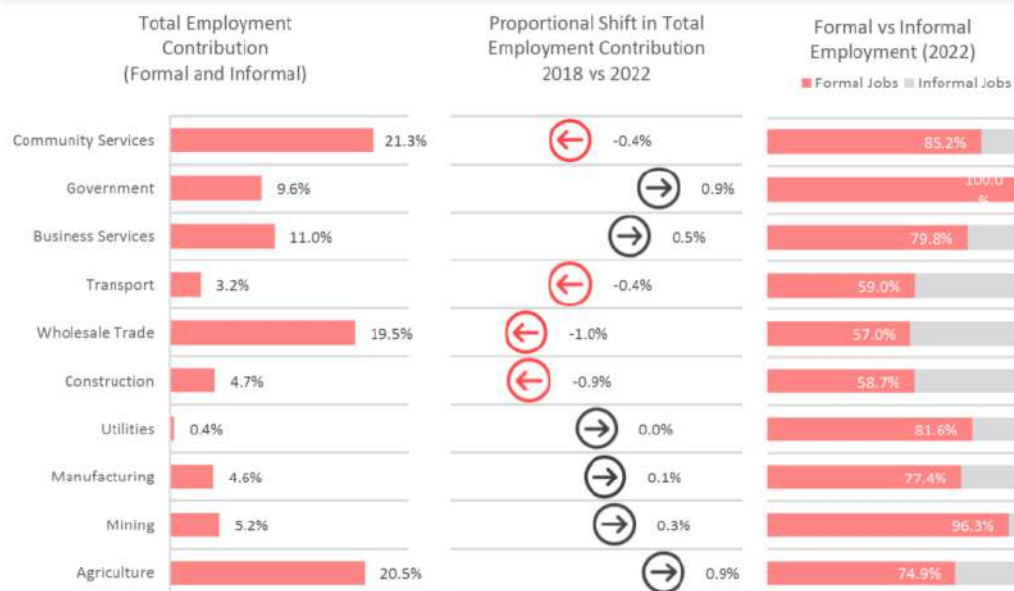
<http://www.northern-cape.gov.za>



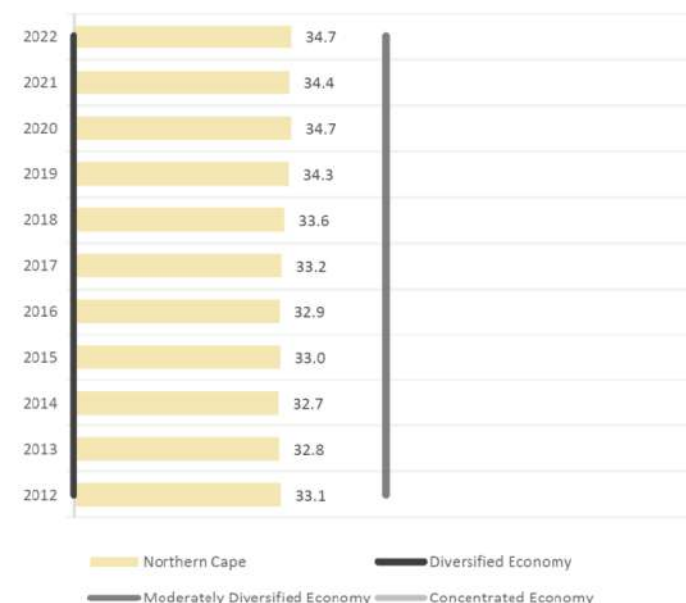
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5.2.8.3 Labour Force Breakdown

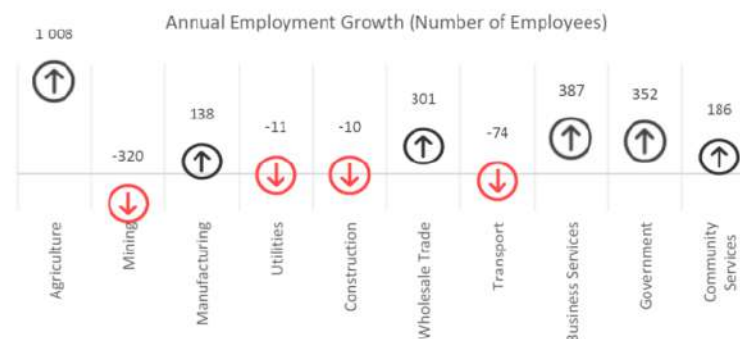
EMPLOYMENT CONTRIBUTION PER ECONOMIC SECTOR



TRESS INDEX (10 INDUSTRIES)



EMPLOYMENT GROWTH PER SECTOR, 2012 – 2022



5.2.8.4 Mining Sector and Growth

MINING SECTOR CONTRIBUTION, 2022

GVA Contribution



■ Northern Cape ■ Remainder of South Africa

The Northern Cape Province contributes **6.5%** to the total mining GVA of South Africa.

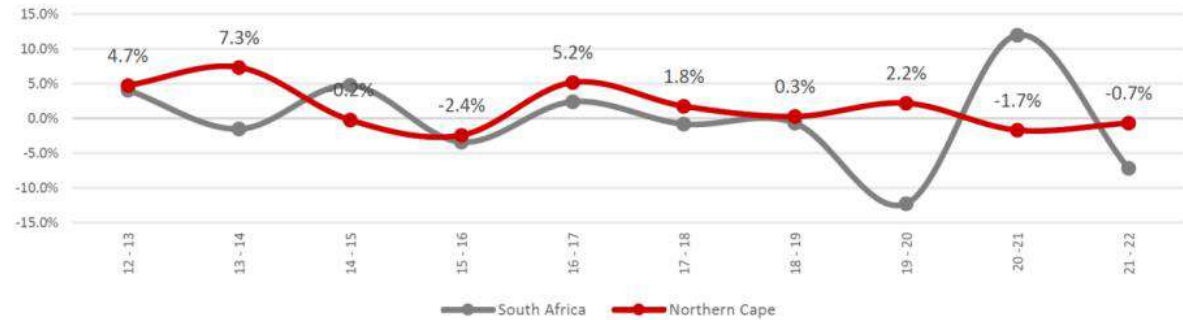
Employment Contribution



■ Northern Cape ■ Remainder of South Africa

The Northern Cape Province contributes **3.4%** to the total mining employment of South Africa.

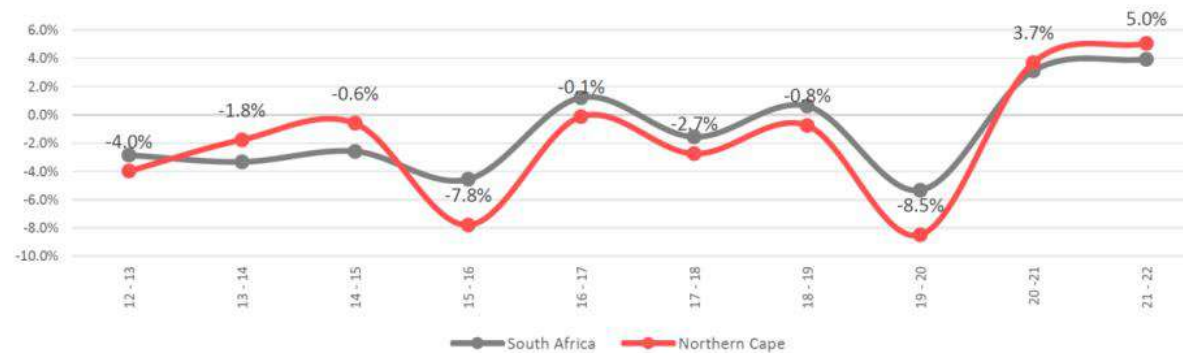
MINING SECTOR GVA GROWTH PERFORMANCE ('12 – '22)



❖ National Growth: **-0.5%** (long term) **-2.1%** (short term)

❖ Provincial Growth: **1.6%** (long term) **0.4%** (short term)

MINING SECTOR EMPLOYMENT GROWTH PERFORMANCE ('12 – '22)



❖ National Growth: **-1.6%** (long term) **0.1%** (short term)

❖ Provincial Growth: **-1.8%** (long term) **-0.8%** (short term)



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5.2.8.5 Competitive Advantage Analysis

The following analysis focuses on identifying and reviewing the competitive advantage that the Northern Cape Provincial Economy has, considering the broader National Economy. The purpose is to identify whether the Provincial Economy has a competitive advantage over other local economies/regions in South Africa because of its structure and historic performance. Competitive Advantage Analysis (CAA) is an assessment of the structure and performance of the economy of a geographic region to identify local strengths (“competitive advantages”) and potential for economic development.

The following approach used for CAA is focused on examining local industries/sectors to identify leading and lagging economic sectors and the potential prospects of these sectors for economic and employment growth. The outcome of the analysis reveals which economic sectors should be targeted for development based on growth trends, specialisation, and development potential.

The following diagram depicts a concise overview of the analysis process and methodology.

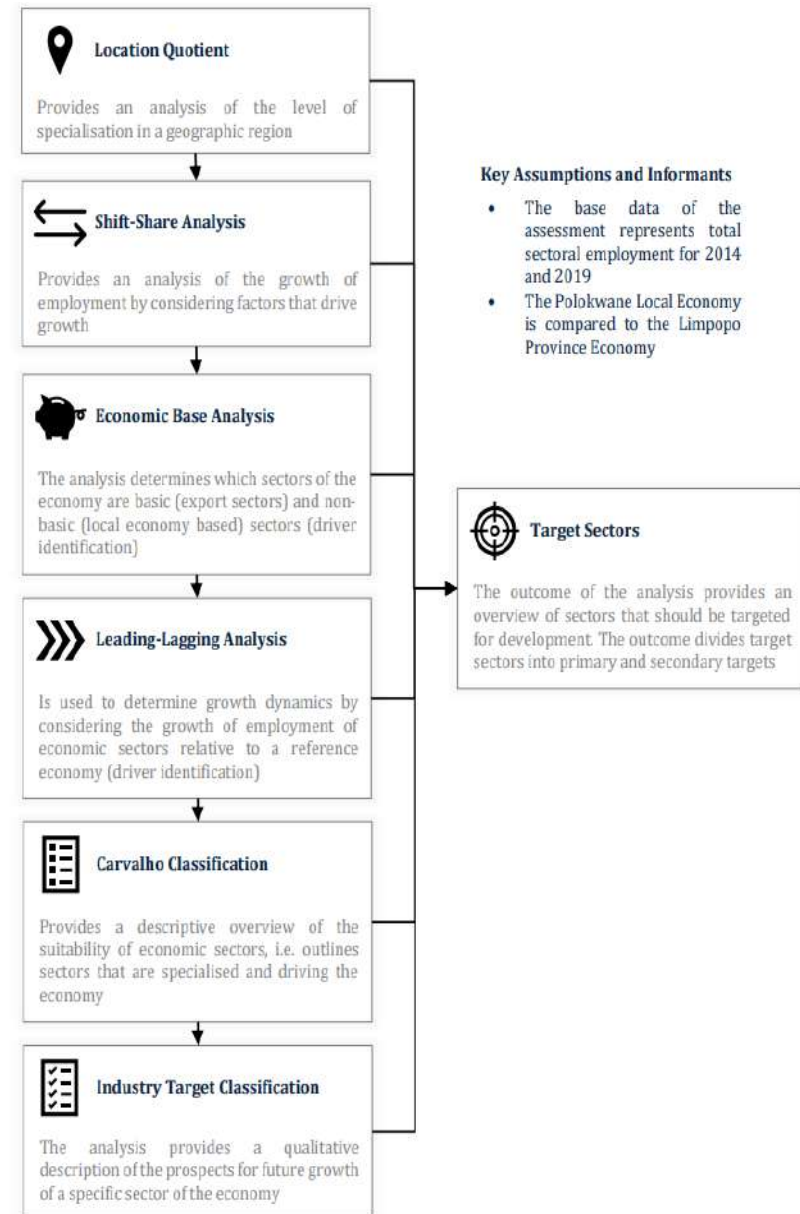


Figure 73: Competitive Advantage Analysis and Target Sector



5.2.8.6 Location Quotient Analysis

A location quotient identifies the level of specialisation in a geographic region. In simple terms, it measures the concentration of certain industry sectors in the region relative to the aggregate/reference economy.

Location Quotient (LQ) is a means of comparing the performance of regions against a benchmark region, usually the Province or the Nation. It compares how a sector is performing in a region, compared to the performance of the same sector in the benchmark region. A LQ of between 1 and 1.25 means that the regions are performing equally, whereas a LQ of less than 1 means that the regions are not performing well. A LQ of >1.25 shows that the region is outperforming the other regions.

Table 17: Location Quotients of the Northern Cape Provincial Economy

Primary Economy	LQ	Classification
Agriculture	3.27	High
Agriculture	3.59	High
Forestry	0.86	Medium
Fishing	0.37	Low
Mining	3.19	High
Manufacturing	0.25	Low
Food, beverages, and tobacco	0.35	Low
Textiles, clothing, and leather products	0.14	Low
Wood and paper, publishing and printing	0.10	Low
Petroleum products, chemicals, rubber, and plastic	0.13	Low
Other non-metal mineral products	0.75	Medium
Metals, metal products, machinery, and equipment	0.22	Low
Electrical machinery and apparatus	0.08	Low
Radio, TV, instruments, watches, and clocks	0.20	Low
Transport equipment	0.09	Low
Furniture, other manufacturing	0.53	Low
Utilities	1.23	Medium
Electricity and gas	1.15	Medium
Water	1.47	High
Construction	0.77	Low
Trade	0.83	Medium

Wholesale and retail trade	0.84	Medium
Catering and accommodation services	0.82	Medium
Transport and storage	1.29	High
Transport and storage	1.46	High
Communication	1.00	Medium
Business and Financial Services	0.68	Low
Finance and insurance	0.66	Medium
Business Services	0.69	Low
Professional business services	0.64	Low
Business activities n.e.c.	0.95	Medium
Government	0.96	Medium
National and Provincial government	0.92	Medium
Local government	1.09	Medium
Community and Personal Services	1.00	Medium
Education (Private)	1.09	Medium
Health and social work (Private)	0.97	Medium
Other community, social and personal services	0.82	Medium

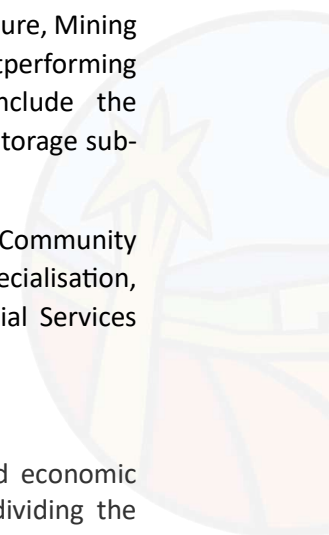
The preceding data shows that the economic sectors of Agriculture, Mining and Transport and storage sectors are the only sectors outperforming South Africa. Sub-sectors outperforming South Africa include the agriculture sub-sector, water sub-sector, and the transport & storage sub-sector.

The data shows that the Utilities, Trade, Government and Community sectors of the provincial economy have a medium level of specialisation, whilst Manufacturing, Construction and Business and Financial Services sectors have a low level of specialisation.

5.2.8.7 Economic Base Analysis

An economic base analysis is designed to analyse the broad economic structure of the Northern Cape economy. It does this by dividing the economy into two sectors:

- ➔ Basic sectors (which include all output (goods and services) sold outside the borders of the local economy – bring money in for the local economy.



- Non-basic sectors (which include all output that is sold within the local economy) – cater to the local economy.

A local region's export industries are its economic foundation, and all other industries thrive by servicing the export industries and one another. A change in the basic sector will automatically lead to a similar change in the non-basic sector. The ratio of non-basic to basic activity is reasonably stable over the long term. Overall, if a region can increase the level of basic employment, it can concomitantly increase total employment. For this study, the location quotient method is applied. It is important to understand that not all of a basic industry is 'basic'. Only that part of the industry that serves the export market is considered basic. It is the part of the industry that raises the location quotient above 1.0. Any employment below an LQ of 1.0 is Non-Basic – those jobs typically serve local demand.

Table 18: Northern Cape Provincial Economy Base Analysis

Economic Sector	Sector Classification	BM Multiplier
Agriculture	Basic sector	1.44
Mining	Basic sector	1.46
Manufacturing	Non-basic sector	
Food, beverages and tobacco	Non-basic sector	
Textiles, clothing and leather products	Non-basic sector	
Wood and paper, publishing and printing	Non-basic sector	
Petroleum products, chemicals, rubber and plastic	Non-basic sector	
Other non-metal mineral products	Non-basic sector	
Metals, metal products, machinery and equipment	Non-basic sector	
Electrical machinery and apparatus	Non-basic sector	
Radio, TV, instruments, watches and clocks	Non-basic sector	
Transport equipment	Non-basic sector	
Furniture, other manufacturing	Non-basic sector	
Utilities	Basic sector	5.43
Electricity and gas	Basic sector	7.70
Water	Basic sector	3.12
Construction	Non-basic sector	

Trade	Non-basic sector	
Wholesale and retail trade	Non-basic sector	
Catering and accommodation services	Non-basic sector	
Transport and storage	Basic sector	4.49
Transport and storage	Basic sector	3.16
Communication	Non-basic sector	
Business and Financial Services	Non-basic sector	
Finance and insurance	Non-basic sector	
Business Services	Non-basic sector	
Government	Non-basic sector	
National and Provincial government	Non-basic sector	
Local government	Basic sector	11.88
Community and Personal Services	Non-basic sector	
Education (Private)	Basic sector	11.67
Health and social work (Private)	Non-basic sector	
Other community, social and personal services	Non-basic sector	
Northern Cape Provincial Economy Basic Sector Multiplier		2.24

The Agriculture, Mining, Utilities, Transport and storage sectors are all basic sectors, indicating that they are exporting goods and services and ensuring that money comes into the provincial economy. These sectors drive the provincial economy and investment in these sectors will lead to investment in the supporting non-basic sectors. The data also shows that the basic multiplier for the provincial economy is 2.24. The data suggests that for every employment opportunity created in the basic sector, approximately 2.24 employment opportunities are created in non-basic sectors.

5.2.8.8 Carvalho Classification

The analysis is used to interpret the local economy's growth potential. The analysis seeks to compare the local economy's growth relative to the South African national economy's growth and to assess the suitability of economic sectors for growth and development based on their potential to cluster. The Carvalho Classification describes each economic sector based on its relative growth and cluster potential in terms of 12 classes.



Therefore, the classification of economic sectors is for descriptive purposes and to enable decision-makers to target key sectors based on growth potential.

Table 19: Northern Cape Provincial Economy Carvalho Classification

Economic Sector	Provincial Relative Growth	Local Relative Growth	Classification
Agriculture	Leading	Lagging	Promising
Mining	Lagging	Leading	Evolving
Manufacturing	Lagging	Lagging	Marginal
Food, beverages and tobacco	Leading	Lagging	Modest
Textiles, clothing and leather products	Lagging	Lagging	Marginal
Wood and paper, publishing and printing	Lagging	Lagging	Marginal
Petroleum products, chemicals, rubber and plastic	Lagging	Lagging	Marginal
Other non-metal mineral products	Lagging	Lagging	Vulnerable
Metals, metal products, machinery and equipment	Lagging	Lagging	Marginal
Electrical machinery and apparatus	Lagging	Leading	Moderate
Radio, TV, instruments, watches and clocks	Lagging	Leading	Moderate
Transport equipment	Lagging	Lagging	Marginal
Furniture, other manufacturing	Lagging	Leading	Moderate
Utilities	Lagging	Leading	Transitional
Electricity and gas	Lagging	Leading	Transitional
Water	Leading	Lagging	Promising
Construction	Lagging	Leading	Transitional
Trade	Lagging	Lagging	Vulnerable
Wholesale and retail trade	Lagging	Lagging	Vulnerable
Catering and accommodation services	Lagging	Lagging	Vulnerable
Transport and storage	Lagging	Lagging	Challenging
Transport and storage	Lagging	Leading	Evolving

Communication	Leading	Lagging	Yielding
Business and Financial Services	Leading	Lagging	Modest
Finance and insurance	Leading	Lagging	Modest
Business Services	Leading	Lagging	Modest
Professional business services	Leading	Lagging	Modest
Business activities n.e.c.	Leading	Lagging	Yielding
Government	Leading	Lagging	Yielding
National and Provincial government	Leading	Lagging	Yielding
Local government	Leading	Lagging	Yielding
Community and Personal Services	Leading	Lagging	Yielding
Education (Private)	Leading	Lagging	Yielding
Health and social work (Private)	Lagging	Leading	Transitional
Other community, social and personal services	Leading	Leading	Accelerating

The preceding data shows that there are no driving sectors in the economy. The only accelerating sector is the Community, Social & Personal Services subsector. The agriculture sector is promising.

Table 20: Interpretation of the Carvalho Classification of the Local Economy Sectors

Definition	Classification
Driving	Community is highly specialised in this sector, which is growing nationally/provincially and growing at an even higher rate locally
Accelerating	Community is neither highly specialised nor under-specialised in this sector, which is growing nationally/provincially and growing at an even higher rate locally
Rising	Relatively low proportion of local employment, but will likely increase due to growth in this sector, which is growing on a national level and growing at an even higher rate locally
Evolving	High local specialisation in a sector which grew at a provincial level at a slower rate than overall growth, local growth exceeded national growth in this sector
Transitional	Average specialisation in a sector which grew at a national level at a slower rate than overall growth, provincial growth exceeded national growth in this sector



Moderate	Relatively underrepresented in a sector which grew at a national level at a slower rate than overall growth; provincial growth exceeded national growth in this sector
Promising	High local specialisation in a sector which grew at a national level, provincial growth was slower than national growth in this sector
Yielding	Average specialisation in a sector which grew at a national level, provincial growth was slower than national growth in this sector
Modest	Relatively low specialisation in a sector which grew at a national level; provincial growth was slower than national growth in this sector
Challenging	Industries have a relatively high concentration of employment in the community, which suggests that they play a prominent role in overall employment in the community and should be monitored carefully
Vulnerable	Industries have an average concentration of employment
Marginal	Industries are under-represented in the community

5.2.8.9 Industry Targeting

This classification is similar to that of the Carvalho Model in that it is based on a combination of the location quotient, Provincial Sector Growth and Local Sector Growth values and it is expressed qualitatively not quantitatively. It is somewhat different in the way that it classifies the sectors, the categories are phrases that suggest the kind of prospects for growth that could be expected and, in some cases, whether the sector should be a retention target.

Table 21: Northern Cape Economy Targeting Classification

Economic Sector	Classification
Agriculture	High-priority retention target
Mining	Prospects limited by external trends
Manufacturing	Prospects limited overall
Food, beverages and tobacco	Prospects limited by weak base and declining competitiveness
Textiles, clothing and leather products	Prospects limited overall

Wood and paper, publishing and printing	Prospects limited overall
Petroleum products, chemicals, rubber and plastic	Prospects limited overall
Other non-metal mineral products	Prospects limited overall
Metals, metal products, machinery and equipment	Prospects limited overall
Electrical machinery and apparatus	Prospects limited by weak base and external trends
Radio, TV, instruments, watches and clocks	Prospects limited by weak base and external trends
Transport equipment	Prospects limited overall
Furniture, other manufacturing	Prospects limited by weak base and external trends
Utilities	Prospects limited by external trends
Electricity and gas	Prospects limited by external trends
Water	High-priority retention target
Construction	Prospects limited by external trends
Trade	Prospects limited by external trends and declining competitiveness
Wholesale and retail trade	Prospects limited by external trends and declining competitiveness
Catering and accommodation services	Prospects limited by external trends and declining competitiveness
Transport and storage	Prospects limited by external trends and declining competitiveness
Transport and storage	Prospects limited by external trends
Communication	High-priority retention target
Business and Financial Services	Prospects limited by weak base and declining competitiveness
Finance and insurance	Prospects limited by weak base and declining competitiveness
Business Services	Prospects limited by weak base and declining competitiveness
Professional business services	Prospects limited by weak base and declining competitiveness



Business activities n.e.c.	High-priority retention target
Government	High-priority retention target
National and Provincial government	High-priority retention target
Local government	High-priority retention target
Community and Personal Services	High-priority retention target
Education (Private)	High-priority retention target
Health and social work (Private)	Prospects limited by external trends
Other community, social and personal services	Current Strength

The industry target classification is displayed graphically in the subsequent Figure. The size of the circles represents the location quotient, that is, the relative size of the sector.

Sectors located in the top and bottom left quadrants are considered to have limited prospects because these industries are declining in the aggregate economy. If they are small, they have additional challenges and if they are within the negative range in terms of LSRG, they also suffer from declining competitiveness.

In business terminology, the upper left quadrant reflects industry groups that are increasing their market share in a declining market, industries in the lower left quadrant represent industries that are losing market share in a declining market.

Sectors falling within the lower right quadrant are classified as retention targets (if large enough) because they are growing in the aggregate economy but more slowly locally. Smaller industry groups in this quadrant are deemed to have limited prospects. Sectors within the upper right quadrant are growing in the aggregate economy and locally. These industries represent the strengths and emerging strengths of the local economy.

If the circles are large, they represent current strengths and if the circles are smaller then it reflects emerging strengths. In business terminology industries in the upper right quadrant are increasing their market share in

an expanding market, whereas the industries in the lower right quadrant are losing market share in an expanding market.

Sectors with growth potential include:

- Mining
- Utilities
- Construction.

These sectors are increasing their market share in a declining market. The subsectors with growth potential include the "electrical machinery and apparatus", "Furniture and other manufacturing," and "Radio, TV, instruments, watches and clocks" manufacturing sub-sectors.



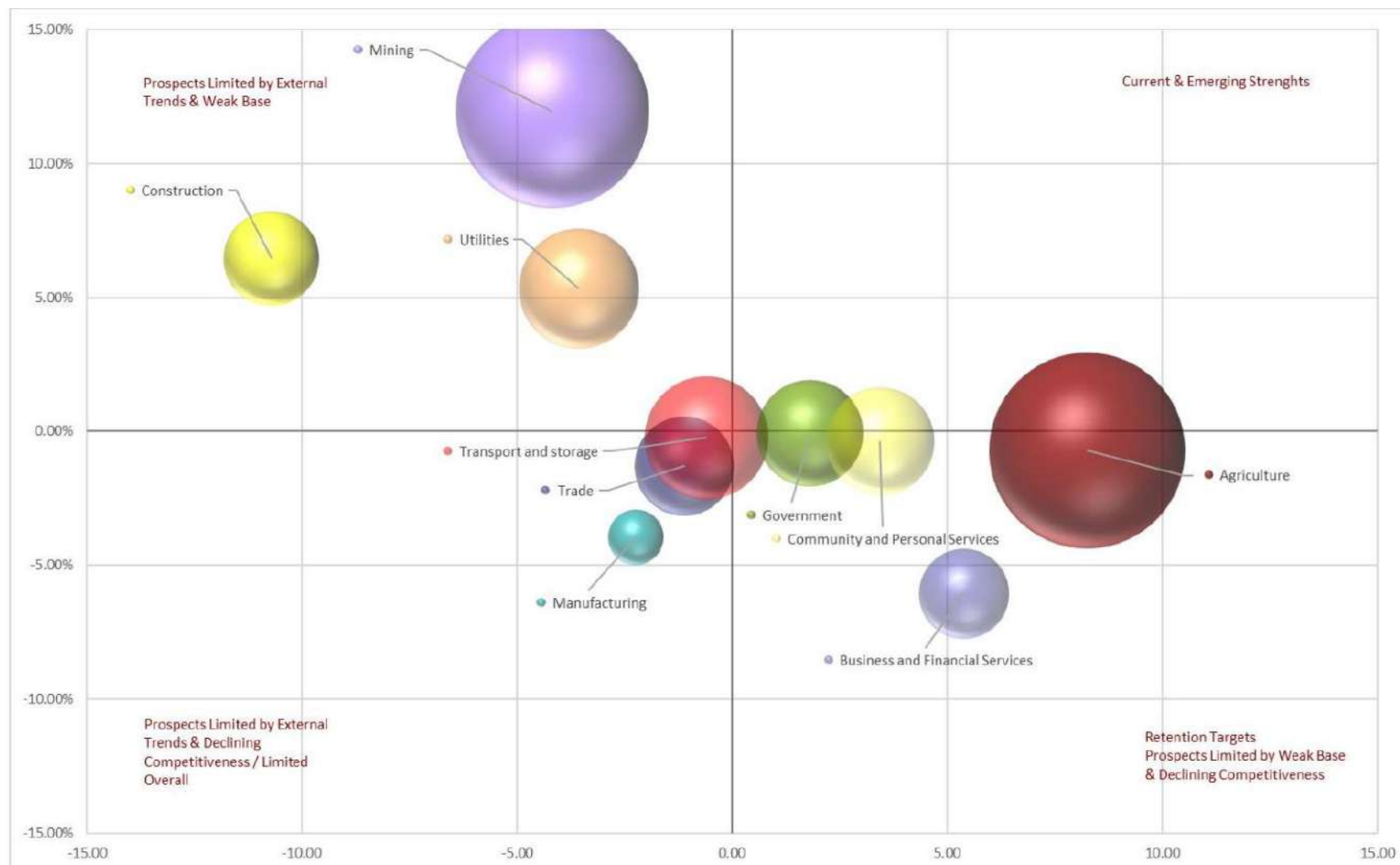


Figure 74: Northern Cape Provincial Economy Primary Economic Sectors Targeting Classification



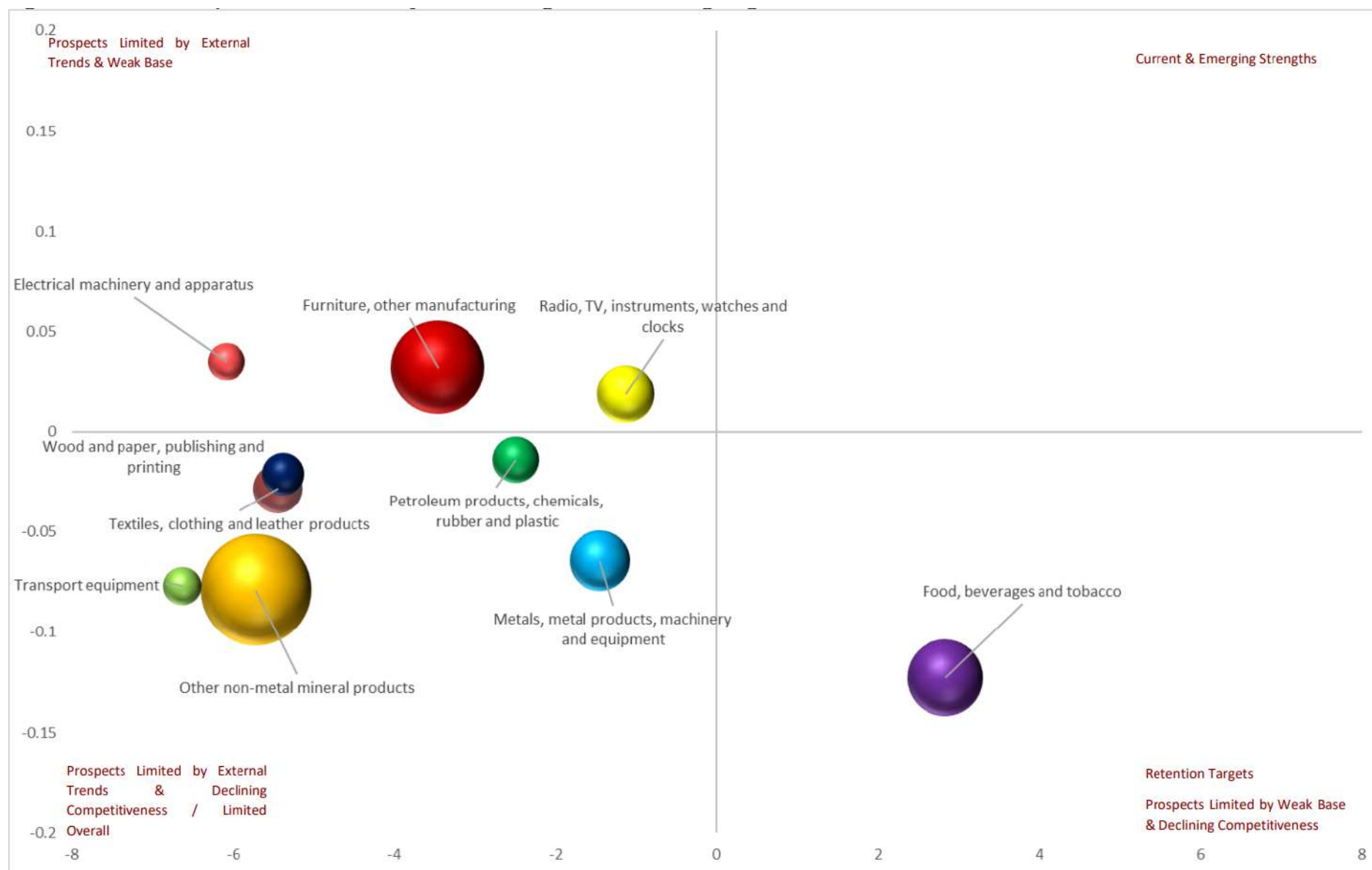


Figure 75: Northern Cape Provincial Economy Manufacturing Sub-Sectors Targeting Classification



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5.2.8.10 Synthesis

5.2.8.10.1 Economy Size and Distribution

- The size of the provincial economy in relation to other economic geographies indicates the relative importance of a local economy in the context of the broader economic environment within which it functions.
- The Northern Cape Province proportionally contributes 2.2% to the national economy.
- The provincial economy consists of 5 district economies with strong contributions from Frances Baard District (30.0%) and John Taolo Gaetsewe District (25.5%).

5.2.8.10.2 Economic Profile

- To highlight the economic growth trends of the Northern Cape Provincial economy, reference is made to the growth and associated trends of sub-sectors that make up the economy. The reference focuses on the proportional contribution made by each economic sub-sector to the total Northern Cape Provincial economy.
- The historical trends for the local economy as well as contributions made by each economic sub-sector to the total economy of the local economy show that in 2022, the tertiary economic sector proportionally contributed 57.5% to the total economy of the Northern Cape Provincial economy, while the secondary sector proportionally contributes 8.7%. The primary sector, an important contributor to the provincial economy, contributes 33.8%.
- Proportionally, the mining sector (24.2%) is the single largest contributor to the provincial economy, followed by the community services sector (15.2%) and the business services sector (14.8%).
 - The above indicates that the economy is diversified and not reliant on a single sector.

5.2.8.10.3 Economic Growth

- The Northern Cape Provincial economy achieved an average annual growth rate of 1.2% during a long-term cycle between 2012 to 2022. Over the short to medium-term cycle, from 2017 to 2022, the local economy experienced a growth rate of 0.7%.
- In comparison to South Africa, the provincial economy is experiencing annual economic growth similar to the national growth rate whereby the national growth rate amounts to 1.0% over the long term and 0.5% over the short to medium-term.

5.2.8.10.4 Growth In Final Consumption Expenditure & Disposable Income

- A positive correlation exists between final consumption expenditure and disposable income, which in turn reveals similar ups and downs to the business cycle as a whole.
- The average annual growth rate of final consumption expenditure in the Northern Cape Provincial economy for the period 2012 to 2022 is 1.5%, while over the short to medium term (2017 to 2022) the average annual growth rate was similar at 1.6%.
- The average annual growth rate for disposable income for the period 2012 to 2022 is 1.6%, while over the short to medium term (2017 to 2022) the average annual growth rate was 1.6%.

5.2.8.10.5 Household Expenditure Per Category

- The trade sector is largely driven by expenditure on goods and services (retail sales) by a wide variety of consumer elements such as households, businesses, government departments and exports. Retail sales can be classified in accordance with different types of goods and services.
- Goods, in this instance, can be considered in terms of durable, semi-durable and non-durable goods. Durable goods refer to items such as furniture, personal transport equipment and entertainment goods, while semi-durable goods refer to clothing, footwear, and household textiles.



- Non-durable goods refer to food, medicine, and petroleum products. These goods are consumed and used daily.
- A general urban South African trend indicates that the decrease in expenditure directed towards non-durable groceries is declining year-on-year with a rise in consumption expenditure on semi durables including clothes and footwear.
- These trends can be ascribed to the high rate of inflation on non-durables (especially meat) and unabated clothing and footwear deflation.
- The food and beverages sector is the largest section of household expenditure categories, with a proportional contribution of 20.1% in 2022.
- The second largest proportional contributing section is represented by the miscellaneous services category, with a contribution of 14.6%, followed by the transport services category (10.6%).

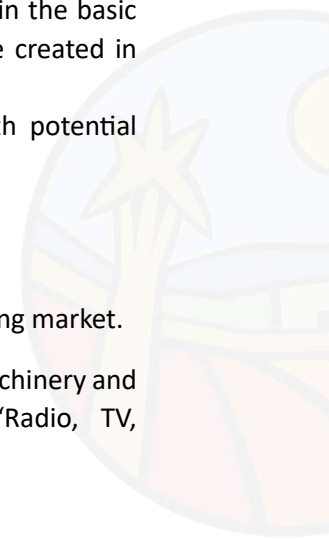
5.2.8.10.6 Employment And Labour Participation

- The average labour force participation rate for the Northern Cape Provincial economy amounts to 53.9%, which is lower compared to that of the national average of 58.0%.
- The formal economy gained 19 570 jobs since 2012 at an average rate of 1 957 jobs per annum.
- The number of skilled employment opportunities increased at an average of 546 jobs per year, while semi-skilled employment gained 868 jobs per year, and low-skilled employment gained 543 jobs per year.
- The economically active segment increased by 58 530 people between 2012 and 2022 and 49 519 additional people became unemployed.
- It is evident that the economically active segment of the population is growing faster than the absorption capacity of the provincial economy, meaning that potential job seekers are growing faster than the rate at which the provincial economy is creating employment. This could force job seekers to look for employment outside the local economy.

5.2.8.10.7 Competitive Advantage Analysis

- The preceding data shows that the economic sectors of Agriculture, Mining and Transport and storage sectors are the only sectors outperforming South Africa. Sub-sectors outperforming South Africa include the agriculture sub-sector, water sub-sector, and the transport & storage sub-sector.
- The data shows that the Utilities, Trade, Government and Community sectors of the provincial economy have a medium level of specialisation, whilst Manufacturing, Construction and Business and Financial Services sectors have a low level of specialisation.
- The Agriculture, Mining, Utilities, Transport and storage sectors are all basic sectors, indicating that they are exporting goods and services and ensuring that money comes into the provincial economy. These sectors drive the provincial economy and investment in these sectors will lead to investment in the supporting non-basic sectors. The data also shows that the basic multiplier for the provincial economy is 2.24. The data suggests that for every employment opportunity created in the basic sector, approximately 2.24 employment opportunities are created in non-basic sectors.
- The Carvalho Analysis indicates that sectors with growth potential include:
 - Mining
 - Utilities
 - Construction.
- These sectors are increasing their market share in a declining market.

The subsectors with growth potential include the "electrical machinery and apparatus", "Furniture and other manufacturing," and "Radio, TV, instruments, watches and clocks" manufacturing sub-sectors.



5.3 BUILT ENVIRONMENT ANALYSIS

Provincial Overview...



1 230 000
SMALLEST
POPULATION



TOTAL OF
351 000
HOUSEHOLDS

2 Major water supply systems namely:
Vaal and Orange

4 Dams and **3** balancing dam

173 water supply systems

44 Water treatment works

79 waste water treatment works

1488 Municipal boreholes



ORANGE & VAAL

2 PERENNIAL
RIVERS



THE NORTHERN CAPE
HAVE A TOTAL OF
439 TOWNS

72% (316)
OF THE TOWNS RELY
ON GROUNDWATER



26% (114)
OF THE TOWNS RELY
ON SURFACE WATER

2% (9)
OF THE TOWNS RELY
ON A MIXTURE OF BOTH



5.3.1 WATER

South Africa is a semi-arid, water-stressed country (the 20th most water-scarce country in the world) which adds to the challenge of providing water and sanitation services. The country's average rainfall is about 450mm, well below the world average of about 860mm per year. Despite many interventions to increase water supply, reduce losses and encourage water conservation, the water demand is expected to outstrip the supply within the next 10 years. The continual increase in population and industrial growth places more stress on water quality and the ecosystems. In addition to the above, the continued threat to water supply due to drought, illegal connections and water wastage needs to be addressed. Several water resource development and sanitation projects have been proposed and are currently being implemented by the Water and Sanitation Unit in order to mitigate these issues. The projects can be broadly divided into the following categories:

- Drought mitigation measures.
- Optimisation and augmentation of current water supply.
- Alternative water supply options.
- Sanitation projects.
- Management and financial aspects.
- Education and training, and
- Energy and carbon projects.

5.3.1.1 District Perspective

5.3.1.1.1 Namakwa District Municipality³⁶

- Most of the rural areas within the Namakwa district obtain water from boreholes scattered through the landscape of the arid areas within the district.

- The Namakwa District receives water from the Namakwa Water Supply Scheme and Pelladrift Scheme. Raw water is abstracted from the lower Orange River for both the Schemes.
- The Namakwa Scheme provides water to the Nama Khoi Local Municipality, small-scale mines and industries. The Pelladrift water supply scheme provides water services to the Black Mountain Mine, the Khâi-Ma Local Municipality, the Aggeneyes Township and its surrounds.
- The Namakwa Bioregional Plan indicates that the high mountain areas in the south are the higher water-yielding areas and provide a significant amount of freshwater to the surrounding towns, the yields of these areas are being impacted by the “lack of efficient water management strategies.”, and

5.3.1.1.2 Pixley ka Seme District Municipality³⁷

- Irrigation Canals are located at the Vanderkloof to help distribute water to intensive agricultural land located away from the river.
- By developing and maintaining the canals, the irrigation schemes could expand, providing more opportunities to local and emerging farmers within the district to cultivate on fertile land.
- The Vanderkloof Dam plays an important role in providing water for irrigation to more than 100 000 hectares of productive agricultural land. The dam is also perfect for angling and water-related sports including sailing, skiing and windsurfing. Building the dam gave birth to the beautiful town Vanderkloof, popular with holiday makers and travellers, and
- Middle Orange Irrigation Area – South Africa The Middle Orange Irrigation Area comprises riparian irrigators from Hopetown to Boegoeberg Dam. The area irrigated from Marksdrift to Boegoeberg Weir amounts to approximately 15 434ha. Irrigators in this area are not part of a formalized scheme with a common supply system. Irrigators

³⁶ Namakwa District Municipality, Integrated Development Plan 2022 – 2027 & Namakwa SDF 2023

³⁷ Pixley Ka Seme District Municipality, Integrated Development Plan 2022 – 2027, & Pixley Ka Seme District SDF 2023



abstract water directly from the Orange River on an individual basis and are supported with releases from Vanderkloof Dam.

5.3.1.1.3 Frances Baard District Municipality

- The main water resource is obtained from the Vaal, Modder and Riet Rivers together with the Spitskopdam.
- The Vaal Harts Irrigation scheme provides the high agricultural land areas with water for irrigation purposes within the Phokwane municipal area.
- Boreholes are the main water resource within the northern parts of the Dikgatlong area, and
- Small-scale agricultural schemes surrounding all the rivers are present. These farmers have water use licenses to utilise a certain amount of water out of the rivers to irrigate their crops thus expanding the market potential within the district by producing more commodities.

5.3.1.1.4 ZF Mgcawu District Municipality

- There are no significant dams in the district, however, there are numerous containment dams from which water is diverted for irrigation and urban settlements via canals, examples of these include the Boegoeberg Dam and Neusberg Dam.
- Other Containment dams within the district include the Rooiberg Dam and Leeubos Dam, but both are sometimes empty due to the inconsistency of river flows into them.
- A lot of canals are visible and utilised for intensive irrigation purposes along the immediate surroundings of the Orange River, and
- Between Upington and the Au-grabies Falls, irrigation is closely linked to river gradients and low flows. Flooding remains a danger, especially to the numerous islands that occur in the river. Between Upington and the Friersdale rapids, the river valley and the islands, form a second distinct irrigation area. In this area, the crops, in order of importance, include lucerne, grapes, wheat and much smaller crops of vegetables, cotton, deciduous fruits, maize and citrus.

5.3.1.1.5 John Taolo Gaetsewe District Municipality

- The district is not known for irrigated agricultural land due to the lack of water sources. The only significant area in the district where irrigation is taking place is in Manyeding with water from a nearby fountain.
- Around 20 Villages have ageing water infrastructure that needs to be upgraded and addressed to ensure no water shortage problems.
- Most settlements rely on water abstracted from boreholes (± 780) throughout the district.
- The settlements of Heuningvlei, Eiffel, Makhubung and Shalang receive water from local boreholes but are also connected to the Heuningsvlei Borehole Pipeline Scheme, and
- Hotazel receives water directly from the Vaal Gamagara Pipeline to ensure communities in the area have water, as no reservoirs exist within the area.

5.3.1.2 Water Demand

Water demand in the province has increased due to rapid industrialization, mining, agricultural activities and population growth. Water demand in household consumption will increase in towns such as Upington, Prieska, Douglas, Sol Plaatje and other towns that indicate growth. The projected water demand in the Northern Cape is unlikely to meet the water availability due to climate change impacts on the province. The availability of raw water is limited which will increase the demand compared to supply. The annual runoff is not evenly distributed across the Northern Cape, where some part receives more water supply than other areas.

5.3.2 GROUND WATER

Over a third of the rural population of South Africa is dependent on groundwater resources for household and agricultural use (Colvin et al. 2007). In all areas of the Northern Cape, except along the Orange and Vaal rivers, the population is dependent on groundwater. In the Orange River tributaries, more than fifty percent of the available water is supplied from groundwater sources. A very small component of the available water in the



vicinity of the Orange River is groundwater. It, however, constitutes an important source of water for rural water supplies in this sub-area. A significant amount of groundwater is being abstracted near the river, where the ground water levels are replenished by means of induced recharge from the river. The present volume of groundwater use is estimated at between 2 000 and 3 000 million m³/a. The total realistically accessible groundwater potential is approx. 4 500 million m³/a of the estimated sustainable potential groundwater yield of around 7 500 million m³/a.³⁸ Groundwater currently is an underutilised resource in South Africa. Most groundwater infrastructure for municipal domestic water supply was developed, and is operated and maintained by local authorities. Artificial groundwater recharge, whereby surplus surface water is transferred underground to be stored in an aquifer for later abstraction and use, is growing in importance in South Africa and internationally. Artificial recharge of groundwater needs to become a strategic focus in ensuring sustainable reliable water resources in future.

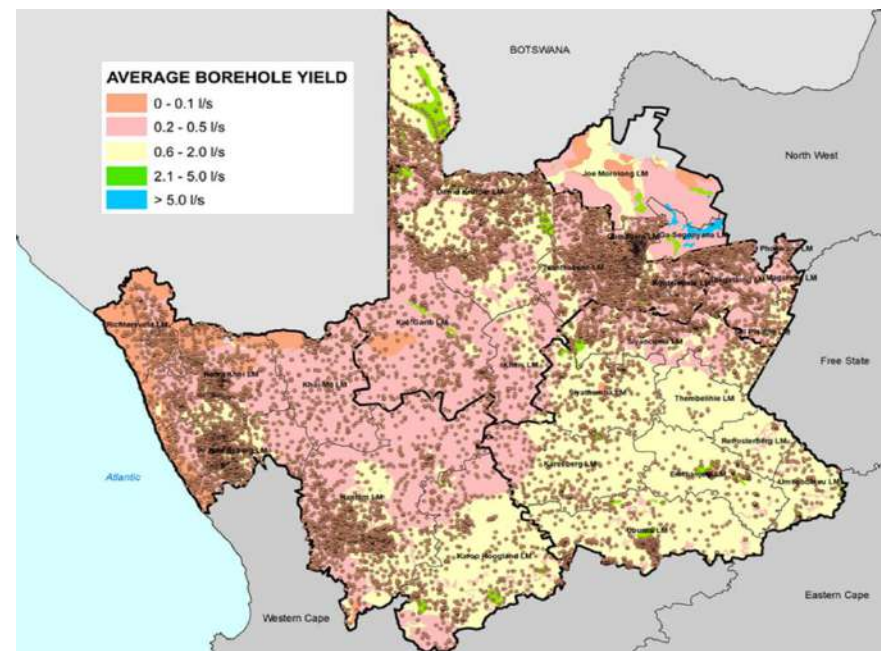


Figure 76: Average borehole yield and boreholes in the Province

5.3.2.1 Water Management

The institutional landscape for the water sector is set out in the Water Services Act of 1997 and the National Water Act of 1998. The 1997 Water Services Act is the instrument that regulates the accessibility of water by domestic users. It secures the right of access to basic water supply and basic sanitation necessary to ensure efficient water and an environment not harmful to health or well-being as stipulated in the Constitution of the Republic of South Africa. In terms of the Water Services Act Water Services Institution is defined as a water services authority, water services provider, water board or a water service committee.

³⁸ Draft National Water and Sanitation Master Plan (NW&SMP), November 2017



Access to water is the most important resource to enable sustainable development. The Northern Cape Province is in an arid landscape with limited access to natural water. It is therefore important for the province to identify all possible agricultural land for irrigation purposes. The province should also plan effectively and efficiently to provide water through pipelines and channels to the possible agricultural land, and urban areas, thus unlocking the potential for rural communities and ultimately sustainable development throughout the province. The Northern Cape Province is so vast that it expands over six different water management areas, which each provide different water schemes and irrigation schemes for human consumption and agriculture cultivation purposes. The six management areas are:

- Lower Orange Water Management Area.
- Lower Vaal Water Management Area.
- Upper Orange Water Management Area; and
- Olifants /Doorn Water Management Area.

5.3.2.1.1 Water Management Areas (WMA's)

5.3.2.1.1.1 The Lower Orange WMA

The Lower Orange WMA forms the lower reaches of the larger Orange River Basin but excludes the Vaal River Basin. The Orange River originates in the highlands of Lesotho, where it is known as the Senqu River. The Lower Orange River is unique in that it is over 1000km long, from the confluence of the Orange with the Vaal to its point where it becomes an estuary at Alexandra Bay and eventually meets the South Atlantic Ocean. For about half this distance it forms the main border with Namibia. Near the mouth of the river is a wetland which was declared a Ramsar Site in 1991. It is home to a rich birdlife, including the endemic Barlow's Lark.

The Lower Orange Water Management Area is the largest of all the WMA's within South Africa, and for this purpose it has been divided into four sub-areas (see figure above):

- Sub-Area 1: Just upstream of the confluence of the Orange River with the Vaal River to Boegoeberg Weir (including just upstream of both the Orange and Vaal Rivers).
- Sub-Area 2: Boegoeberg Weir to Kanoneiland.
- Sub-Area 3: Kanoneiland to Pella, and
- Sub-Area 4: Pella to Alexander Bay.

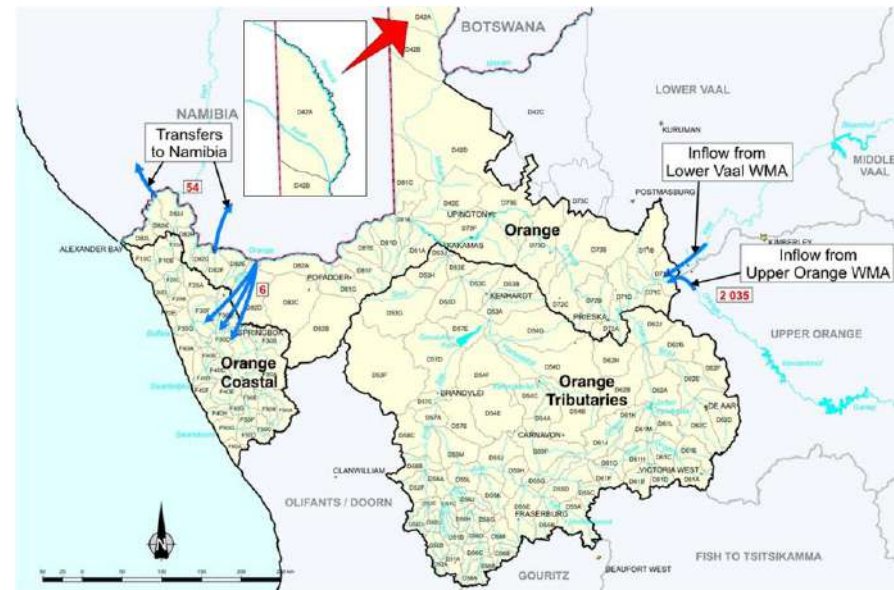


Figure 77: Overview of the Lower Orange Water Management Area (WMA)

The Orange River feeds several water supply schemes within the Northern Cape Province, which provide the livelihood for a range of activities in the catchment area, which would otherwise not be possible in such dry and harsh conditions. These include rural, domestic, industrial and mining activities. Furthermore, an extensive network of irrigation canals provides water for intensive agricultural activities for large sections along the banks of the Lower Orange River, which include areas of Douglas, Boegoeberg, Upington, Kakamas and Vioolsdrift. The unique landscape of the lower half of the LOWMA is home to three significant conservation areas namely the



Augrabies Falls National Park, the Kgalagadi Transfrontier Park and the Ai Ais / Richtersveld Transfrontier Park.

5.3.2.1.1.2 Upper Orange River WMA

The Upper Orange Water Management Area stretches from the origin of the Senqu River in Lesotho to its confluence with the Vaal River at Douglas. Land use in the Upper Orange area of the WMA is mainly under natural vegetation with livestock farming as main economic activity. Extensive areas under dry land cultivation, mostly for the production of grains, are found in the north-eastern parts of the Upper Orange. The Modder Riet catchment is dominated by agricultural activities, with limited mining, and a few urban centres. Two large hydropower stations were constructed at Gariep and Vanderkloof Dams.



Figure 78: Overview of the Upper Orange Water Management Area (WMA)

³⁹ Directorate National Water Resource Planning. Department of Water Affairs and Forestry, South Africa, September 2009. INTEGRATED WATER QUALITY MANAGEMENT

5.3.2.1.1.3 Lower Vaal WMA:³⁹

The Lower Vaal is less developed with agriculture being the predominant land use. The significant development within the system includes both formal and informal urbanisation, industrial growth, agricultural activities and widespread mining activities. The Vaal River is the only major river in the Lower Vaal WMA flowing across its south-eastern corner connecting it to the Middle Vaal and Lower Orange WMA's. The Harts River is the only significant tributary to the Vaal River as it enters the Lower Orange WMA. The largest part of the Lower Vaal WMA falls within the catchment of the Molopo River, a tributary to the Orange River. However, the Molopo is an endorheic river with its flow not reaching the Orange River. Intensive irrigation is practiced at Vaalharts and along the Vaal River. The Vaalharts Irrigation Scheme is the largest in the country and of its 35 302ha, 31 732ha is located in the Northern Cape. There are no distinct topographic features in the Lower Vaal WMA and most of the terrain is relatively flat with no climatic barriers. Climate over the Lower Vaal WMA therefore varies gradually according to the larger regional patterns. Annual rainfall ranges from about 500 mm in the east to as low as 100mm in the west. Potential evaporation can be as high as 2 800mm per year, which, as is the case with the Upper and Lower Orange WMAs, exceeds the rainfall.

5.3.2.1.1.4 Olifants / Doorn WMA

The WMA includes the Berg and Olifants catchment areas, and the major rivers, Berg, Diep, Steenbras, Olifants, Doorn, Krom, Sand and Sout. The WMA lies within the Western Cape and Northern Cape Provinces and includes Cape Town, the second most populous metropolitan area in South Africa. There are several large towns in the WMA, with economies based in tourism, education, agriculture and industry. Natural vegetation comprises large areas of Cape Fynbos, which represents one of the unique floral kingdoms of the world and is a recognised World Heritage Site. A number

PLAN FOR THE VAAL RIVER SYSTEM: Task 8: Water Quality Management Strategy for the Vaal River System. Report No. P RSA C000/00/2305/7.



of conservation and heritage sites are found in the WMA. Large spatial variations in rainfall, water availability, level and nature of economic development, population density as well as potential for development for growth exists in the WMA. The Berg River catchment comprises the Upper Berg area which includes the Berg River catchment down to Misverstand Weir; the Lower Berg area, which includes the downstream reaches of the Berg River together with the endoreic areas along the west coast including the Diep River catchment and the Greater Cape Town area, the southern portion of the WMA with a number of smaller river catchments. The Olifants and Doring River catchment comprises the well-watered valleys of the Olifants River catchment, the arid Doring River catchment and the highly developed Sandveld area forming the western coastal boundary. The diversified economy of the Berg River catchment is dominated by industrial and other activities in the Cape Town Metropolitan area. Other significant economic sectors include irrigated agriculture, namely wine production, table grapes and deciduous fruit exports, and tourism. The Olifants area is dominated by extensive commercial agriculture (irrigated citrus, deciduous fruits, grapes and potatoes), but also includes tourism, livestock farming, some industries related to food processing and packaging, and limited forestry. The water resources of the WMA are fully developed and investigations are underway to assess options to augment water supply, including water conservation and demand management, infrastructure development, re-use of water, groundwater exploitation and desalination.

Figure 79: Overview of the Olifants/Doorn Management Area (WMA)

5.3.3 BLUE DROP STATUS

Overall performance for Northern Cape Province is summarised as follows:

- 46.7% (93) of supply systems are in the low-risk category,
- 22.1% (44) of supply systems are in the medium-risk category,
- 11.6% (23) of supply systems are in the high-risk category, and
- 19.6% (39) of supply systems are in the critical risk category.

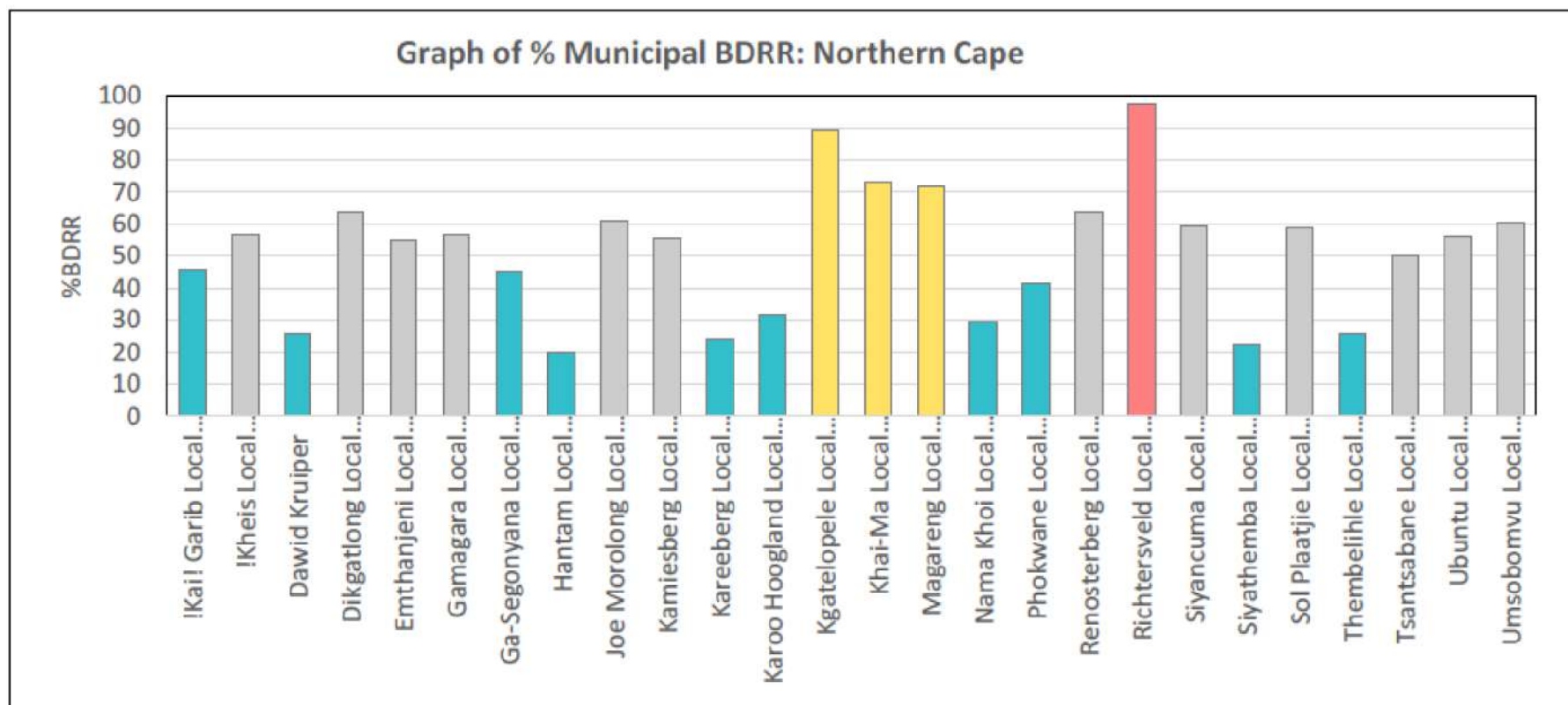


Figure 80: Blue Drop – Municipal BDRR



5.3.4 BASIC SERVICES

5.3.4.1 Water

5.3.4.1.1 Trends

- Access to piped water throughout all the local municipalities has improved in the province except in the case of Karoo Hoogland local municipality which has seen a decline in providing access to piped water for households.
- Approximately 80.13% of the households in the Northern Cape either have access to piped water supply in their dwellings or their yard. The remaining 19.87% are reliant on other water sources including standpipes, springs, and boreholes.
- The districts with the biggest growth in providing provision of water to households are Frances Baard, ZF Mgcawu and Pixley Ka Seme Districts.
- Through the last decade between 2011(45,8%) and 2022 (54,5), there has been a steady increase in providing households with access to piped water.

5.3.4.1.2 Implications

- Providing access to piped water in households creates sustainable settlements within the urban spaces.
- Provides better health quality for citizens within the province.
- Improvement of water quality.
- Limits health risks such as cholera, hepatitis A and diarrhoea.

5.3.4.1.3 Vaal Gamagara Regional Bulk Water Project

- The Vaal Gamagara Bulk Water Supply refurbishment and upgrade project was conceptualised as a public-private collaboration with two phases, with **joint funding by the government and the mining forum**.
- Phase 1 entailed the upgrade of 80km of gravity pipeline between Roscoe and Blackrock and was **completed in June 2022**.
- Phase 2 of the project is required to start with a 44% contribution by the government and 56% from the private sector, as negotiated with the Northern Cape Mining Leadership Forum.

- Investigate the future bulk water and sanitation infrastructure demand for all settlements in Ga-Segonyana and Joe Morolong, which include bulk water and sewer lines, reservoirs, pump stations, wastewater treatment works etc. The goal is to determine the total infrastructure requirement to provide all residents with erf water connections and waterborne sanitation.

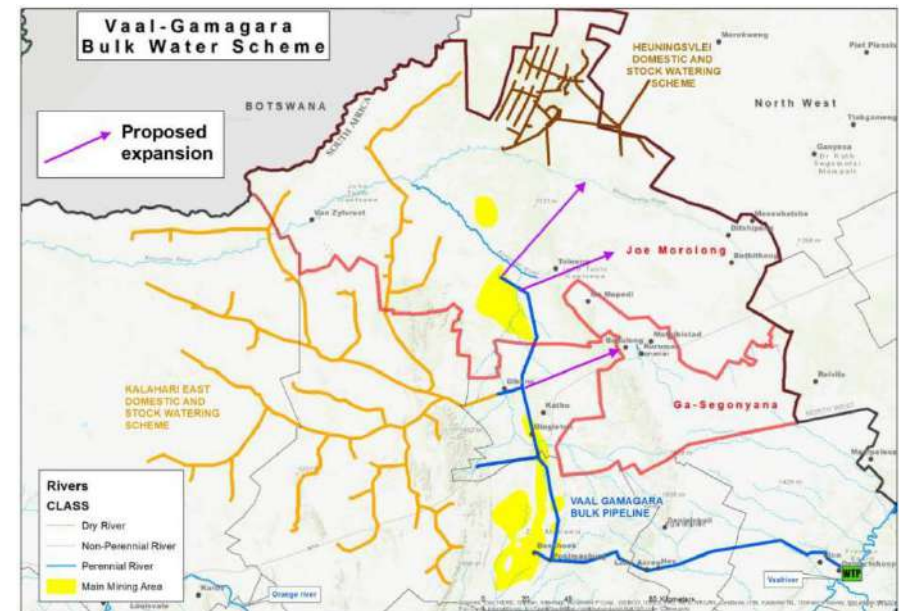
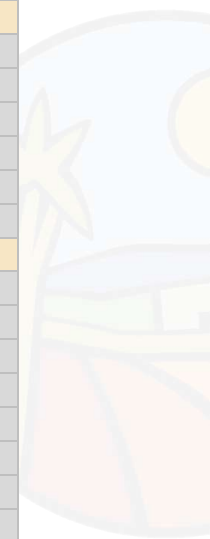
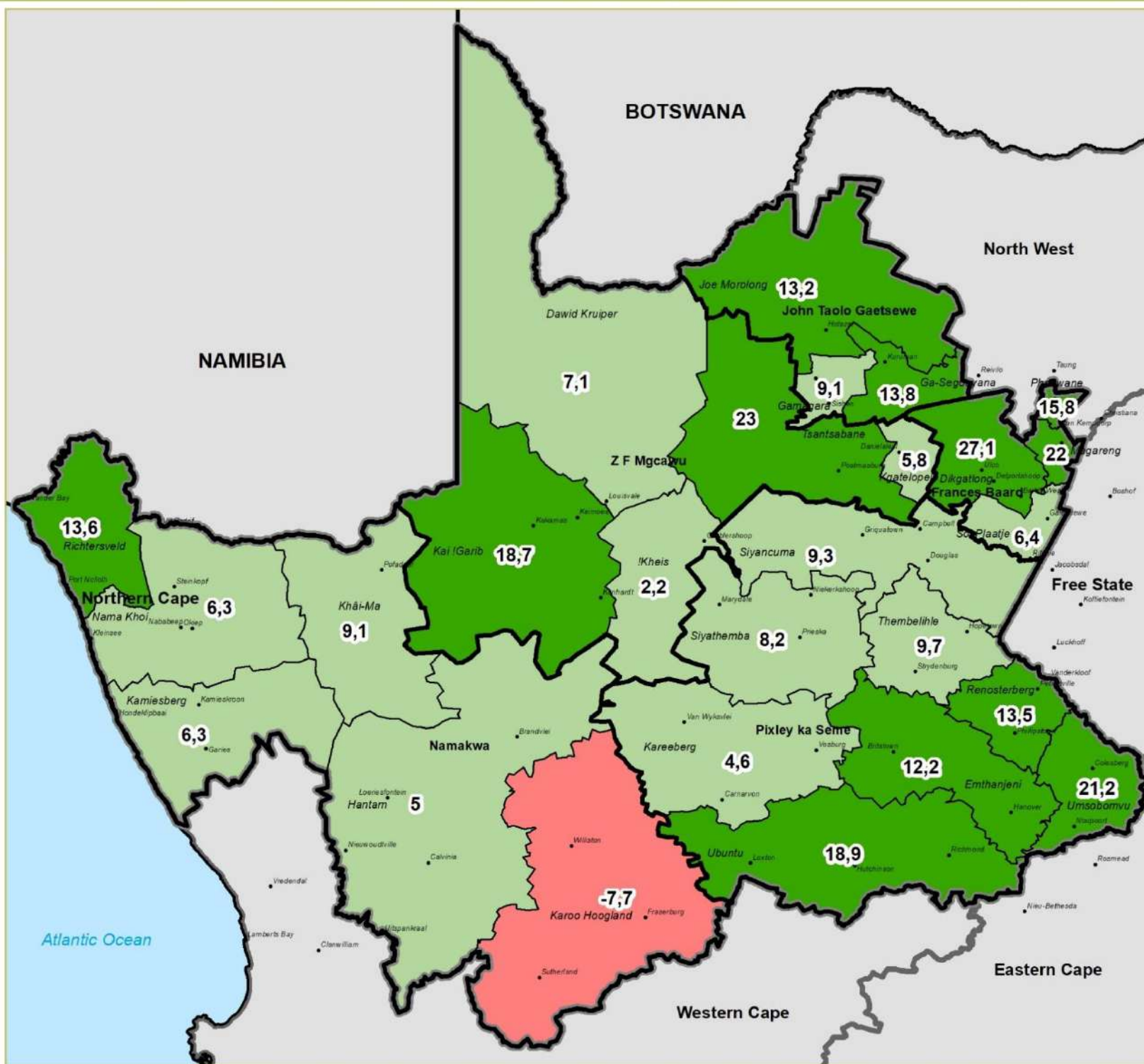


Figure 81: Vaal-Gamagara Bulk Water Scheme

Table 22: Access to Water

ACCESS TO PIPED WATER								
Municipal Name	2011	2016	Growth	2011-2016	2016	2022	Growth	2016-2022
Frances Baard District	52,00%	48,40%	-3,60%	↘	48,40%	60,00%	11,60%	↗
Dikgatlong LM	30,70%	23,90%	-6,80%	↘	23,90%	51,00%	27,10%	↗
Phokwane LM	37,90%	33,10%	-4,80%	↘	33,10%	48,90%	15,80%	↗
Sol Plaatje LM	61,90%	60,20%	-1,70%	↘	60,20%	66,60%	6,40%	↗
Magareng LM	37,00%	21,90%	-15,10%	↘	21,90%	43,90%	22,00%	↗
John Taolo Gaetsewe District	22,60%	19,20%	-3,40%	↘	19,20%	28,70%	9,50%	↗
Joe Morolong LM	9,10%	4,80%	-4,30%	↘	4,80%	18,00%	13,20%	↗
Ga-Segonyana LM	19,90%	11,00%	-8,90%	↘	11,00%	24,80%	13,80%	↗
Gamagara LM	59,10%	58,20%	-0,90%	↘	58,20%	67,30%	9,10%	↗
ZF Mgcau District	48,50%	45,60%	-2,90%	↘	45,60%	57,70%	12,10%	↗
Dawid Kruiper LM	54,40%	50,40%	-4,00%	↘	50,40%	57,50%	7,10%	↗
Kgatlopete LM	74,40%	67,40%	-7,00%	↘	67,40%	73,20%	5,80%	↗
Tsantsabane LM	45,30%	44,60%	-0,70%	↘	44,60%	67,60%	23,00%	↗
!Kheis LM	16,70%	21,40%	4,70%	↗	21,40%	23,60%	2,20%	↗
Kai !Garib LM	41,00%	39,00%	-2,00%	↘	39,00%	57,70%	18,70%	↗
Namakwa District	63,30%	70,50%	7,20%	↗	70,50%	76,80%	6,30%	↗
Richtersveld LM	68,60%	69,70%	1,10%	↗	69,70%	83,30%	13,60%	↗
Nama Khoi LM	74,90%	79,80%	4,90%	↗	79,80%	86,10%	6,30%	↗
Kamiesberg LM	41,70%	40,10%	-1,60%	↘	40,10%	46,40%	6,30%	↗
Khâi-Ma LM	45,50%	65,30%	19,80%	↗	65,30%	74,40%	9,10%	↗
Hantam LM	59,80%	65,70%	5,90%	↗	65,70%	70,70%	5,00%	↗
Karoo Hoogland LM	59,70%	75,20%	15,50%	↗	75,20%	67,50%	-7,70%	↘
Pixley Ka Seme District	47,00%	45,10%	-1,90%	↘	45,10%	56,90%	11,80%	↗
Siyancuma LM	41,40%	41,50%	0,10%	↗	41,50%	50,80%	9,30%	↗
Siyathemba LM	43,10%	42,30%	-0,80%	↘	42,30%	50,50%	8,20%	↗
Thembelihle LM	33,50%	39,90%	6,40%	↗	39,90%	49,60%	9,70%	↗
Renosterberg LM	53,40%	43,30%	-10,10%	↘	43,30%	56,80%	13,50%	↗
Kareeberg LM	41,50%	47,00%	5,50%	↗	47,00%	51,60%	4,60%	↗
Emthanjeni LM	59,80%	53,50%	-6,30%	↘	53,50%	65,70%	12,20%	↗
Ubuntu LM	49,20%	46,30%	-2,90%	↘	46,30%	65,20%	18,90%	↗
Umsobomvu LM	45,10%	42,30%	-2,80%	↘	42,30%	63,50%	21,20%	↗





ACCESS TO PIPED WATER

Legend

- Town/Settlement
- Local Municipality
- District Municipality

Access To Piped Water Growth (2016 - 2022)

- Negative Growth
- No Growth
- Positive Growth
- > 10% Positive Growth

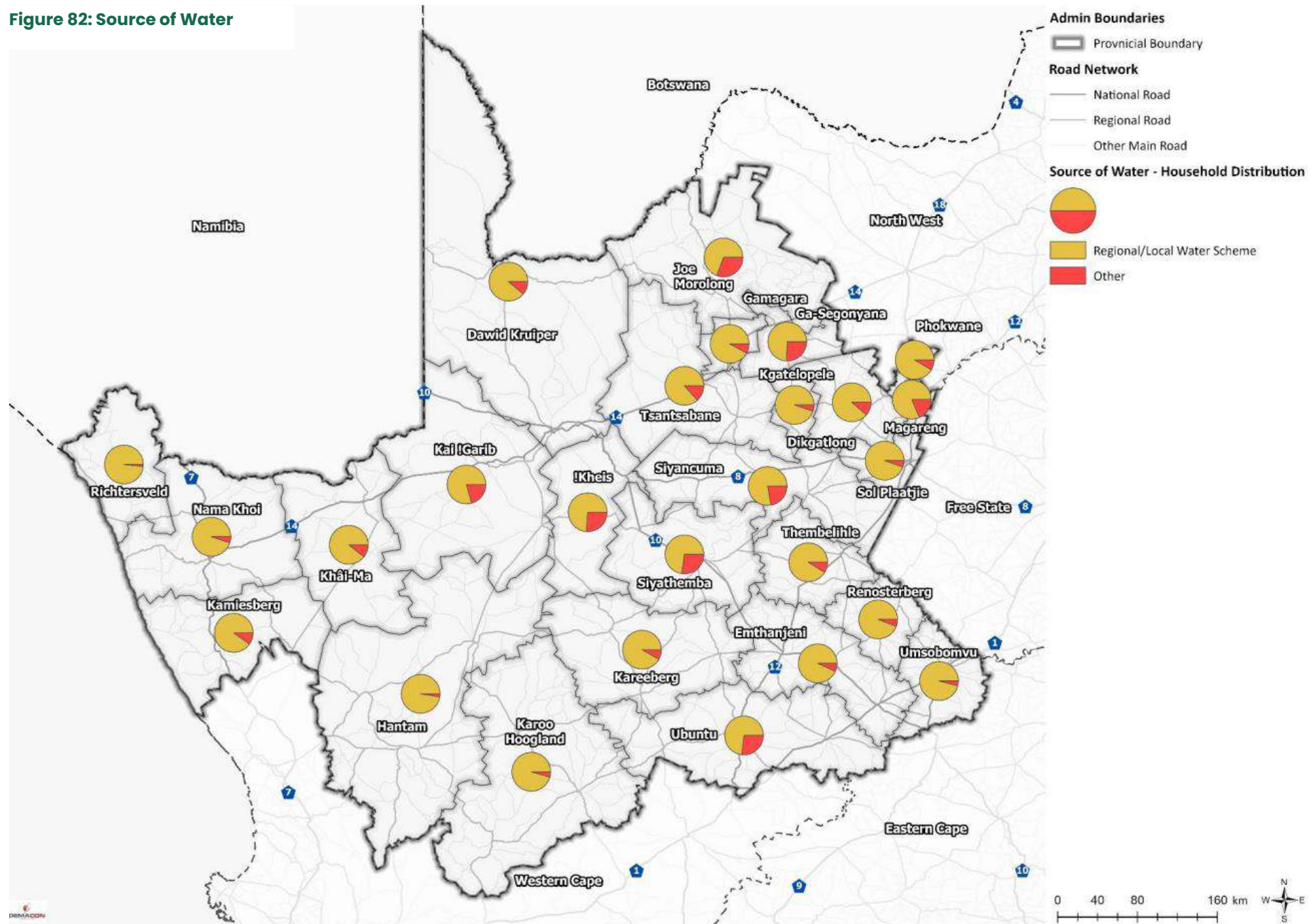
Map 24: Northern Cape Access to Piped Water

Source: StatsSA (Census 2022)

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



Figure 82: Source of Water



DEMAGCON

5.3.4.2 Sanitation

- 68.6% of households have access to a flush toilet connected to the sewerage system.
- 3.9% of households do not have access to sanitation, therefore implying open defecation.
- The remaining 27.5% utilise some form of on-site sanitation system including pit latrines with ventilation (i.e. VIPs) (11%), chemical toilets (2.3%), pit latrines without ventilation (5.1%), septic tanks (5.9%) and bucket latrines (3.1%).
- The National Sanitation Framework (NSF) should also be taken into account as it constitutes an implementation framework that will guide sanitation project implementation in all settlements.
- The 2021 assessment cycle highlighted regressive shifts with a decrease in the number of low (8 to 0), medium (14 to 5) and high-risk (30 to 27) WWTWs, and an increase in critical risk WWTWs (27 to 46).

Town	Settlement Name	Number of Buckets		TOTAL
		FORMAL	INFORMAL	
Dawid Kruiper	11	5069	-	5 069
Hantam	2	-	335	335
Siyancuma LM	7	673	-	673
Sol Plaatje	5	477	65	542
Ubuntu	3	270	180	450
TOTAL	28	7 085	580	7 665

Figure 83: Bucket Toilets in the Northern Cape

5.3.4.2.1 WWTW Status

Municipal Infrastructure Support Agent (MISA-NC) in collaboration with NC Provincial DWS are working together towards incremental authorization of unauthorised WWTW.



Table 23: WWTW Authorisation in the Northern Cape

WWTW Authorisation status in the Northern Cape		
STATUS	NUMBER	TOWN
Exemption	21	Low-risk facilities are exempted from volume limitation and general conditions, The bulk of Evaporation ponds in NC: Pofadder, OCC Nigramoep, OCC Nababeep, Kommaggas, Steinkopf, Springbok N7, Port Nolloth, Douglas, Marydale, Prieska, Augrabies, Kenhardt, Keimoes, Louisvleweg, Groblershoop, Koingnaas & Mitchells Bay, Kleinsee, Twee Rivieren, Baken, Reuning, Hondeklipbaai
License/ GA's	12	Licensed through the process with conditions: Brandvlei, Carnarvon, Aggeneys, Springbok, Homevale, Kathu, Bestwood Estate, Upington Kameelmond, Colesberg, Fraserburg, Finsch Mine, Alexander Bay (Alexcor)
Permit	10	ELU with volume and conditions, Upgraded facilities in NC: Kamieskroon, Garies, Okiep, Carolusberg, Kakamas, De Aar, Williston, Sutherland, Beaconsfield, Postmasburg
No Authorisation	39	High Risk: Barkley West, Hartswater, Jan Kempdorp, Kuruman, Mothibistad, Dibeng, Warrenton, Pampierstad, Douglas, Hope Town Low Risk: Dingleton, Oliphantshoek, Hotazel, Richmond, Kharkams, Onseepkans, Pella, Concordia, Britstown, Vosburg, Niekerkshoop, Griekwastad, Strydenburg (new plant), Loxton, Victoria West, Jenn Haven , Danielskuil, Brandboom, Middlepos, Askham, Loubos, Philandersbron, Rietfontein, Welkom, Delpportshoop / Longlands, Windsorton, Van Zylsrus, Vaalgama-gara, Lohatla Military
Total	82	



WSA	Total Households (HH)	% Flush Sewerage System		% Flush Septic Tank		% Pit Latrine with Ventilation		% Chemical Toilet		% Pit Latrine without Ventilation		% Bucket		% Open Defecation	
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
Dikgatlong	15,735	9,158	58.2	4,532	28.8	393	2.5	897	5.7	63	0.4	31	0.2	661	4.2
Magareng	7,394	6,396	86.5	333	4.5	362	4.9	155	2.1	0	0	22	0.3	126	1.7
Phokwane	20,788	15,570	74.9	790	3.8	1,289	6.2	1,996	9.6	166	0.8	0	0	956	4.6
Sol Plaatje	76,356	68,873	90.2	305	0.4	1,069	1.4	1,374	1.8	76	0.1	3,665	4.8	993	1.3
Ga-Segonyana	34,542	7,323	21.2	1,865	5.4	8,566	24.8	0	0	14,197	41.1	138	0.4	2,487	7.2
Gamagara	16,687	14,851	89	551	3.3	133	0.8	17	0.1	0	0	0	0	1,151	6.9
Joe Morolong	25,206	1,084	4.3	328	1.3	17,972	71.3	1,815	7.2	2,042	8.1	353	1.4	1,588	6.3
Hantam	7,312	6,464	88.4	592	8.1	249	3.4	0	0	0	0	0	0	0	0
Kamiesberg	3,507	2,223	63.4	74	2.1	750	21.4	0	0	39	1.1	151	4.3	267	7.6
Karoo Hoogland	4,904	2,099	42.8	1,481	30.2	314	6.4	0	0	461	9.4	397	8.1	152	3.1
Khai-Ma	4,325	3,071	71	852	19.7	385	8.9	0	0	0	0	0	0	17	0.4
Nama Khoi	15,428	12,173	78.9	1,296	8.4	1,173	7.6	0	0	494	3.2	154	1	139	0.9
Richtersveld	4,469	3,870	86.6	170	3.8	380	8.5	40	0.9	0	0	0	0	9	0.2
Emthanjeni	12,655	10,985	86.8	1,291	10.2	190	1.5	38	0.3	0	0	89	0.7	63	0.5
Kareeberg	3,891	3,117	80.1	128	3.3	553	14.2	43	1.1	0	0	12	0.3	39	1
Renosterberg	3,787	3,181	84	382	10.1	0	0	15	0.4	0	0	8	0.2	204	5.4
Siyancuma	10,793	7,641	70.8	324	3	809	7.5	0	0	367	3.4	1,435	13.3	216	2



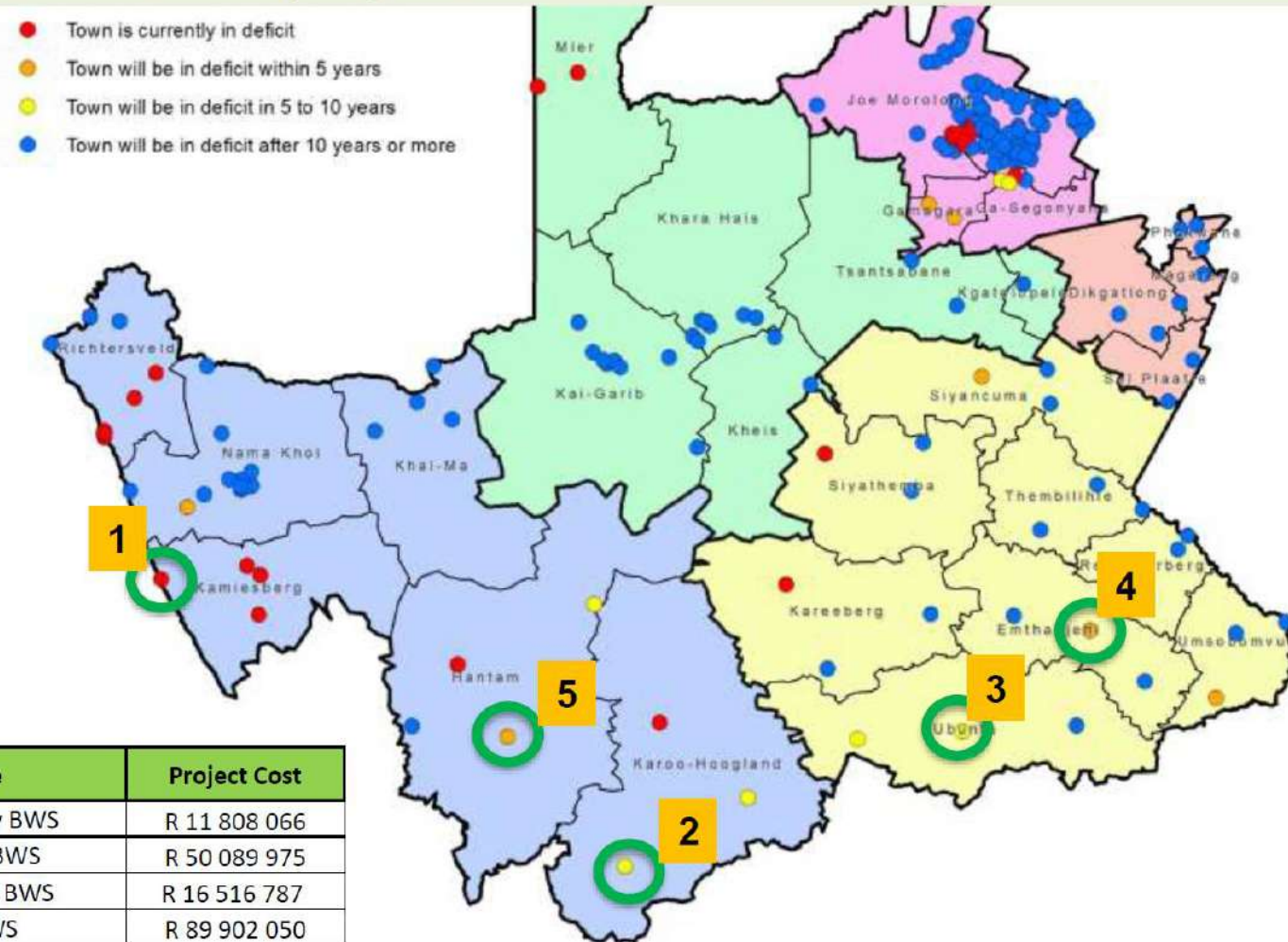
WSA	Total Households (HH)	% Flush Sewerage System		% Flush Septic Tank		% Pit Latrine with Ventilation		% Chemical Toilet		% Pit Latrine without Ventilation		% Bucket		% Open Defecation	
		HH	%	HH	%	HH	%	HH	%	HH	%	HH	%	HH	%
Siyathemba	7,023	5,583	79.5	365	5.2	253	3.6	351	5	49	0.7	183	2.6	239	3.4
Thembelihle	5,032	3,714	73.8	161	3.2	332	6.6	0	0	206	4.1	70	1.4	548	10.9
Ubuntu	6,403	5,622	87.8	371	5.8	13	0.2	0	0	26	0.4	134	2.1	237	3.7
Umsobomvu	10,157	8,065	79.4	823	8.1	437	4.3	457	4.5	0	0	102	1	274	2.7
IKheis	4,616	2,086	45.2	277	6	1,509	32.7	0	0	392	8.5	32	0.7	323	7
Dawid Kruiper	30,472	2,064	66.5	2,651	8.7	1,188	3.9	1,067	3.5	274	0.9	3,961	13	1,036	3.4
Kai !Garib	24,411	16,966	69.5	1,636	6.7	2,417	9.9	464	1.9	269	1.1	561	2.3	2,099	8.6
Kgatelopele	6,578	6,032	91.7	533	8.1	20	0.3	0	0	0	0	0	0	0	0
Tsantsabane	12,542	10,736	85.6	201	1.6	426	3.4	13	0.1	0	0	226	1.8	941	7.5
Northern Cape	375,013	257,259	68.6	22,126	5.9	41,251	11	8,625	2.3	19,126	5.1	11,625	3.1	14,626	3.9

Figure 84: Access to Sanitation, DWS NIWIS, 2022



Figure 85: Major Resource Water Projects Under Construction

Implementation of the Water Recon strategies (All Town studies) Major water resource projects under construction



Nr	ProjNme	Project Cost
1	Hondeklip Bay BWS	R 11 808 066
2	Sutherland BWS	R 50 089 975
3	Victoria West BWS	R 16 516 787
4	De Aar BWS	R 89 902 050
5	Calvinia BWS	R 281 442 896
TOTAL		R 449 759 774



Implementation of the Water Recon strategies (All Town studies) Major water resource completed projects

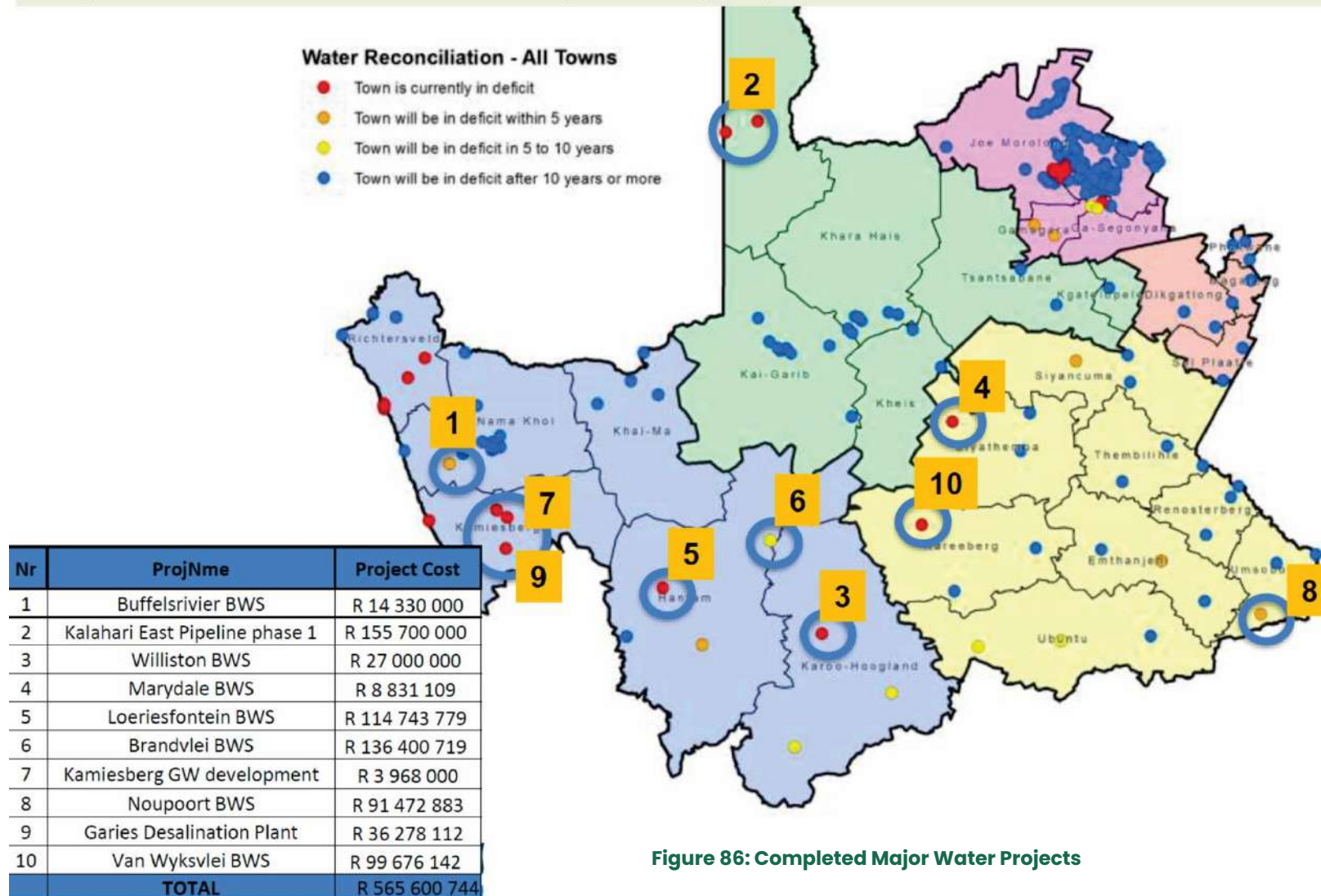


Figure 86: Completed Major Water Projects



5.3.4.2.2 Bulk Infrastructure Challenges

The table below lists the Local Municipalities that are dealing with bulk infrastructure issues. Six local municipalities face extremely constrained bulk infrastructure conditions, while three face constrained bulk infrastructure conditions, as shown in the table. These nine municipalities are divided into four District Municipalities. Namakwa is the only District Municipality that is not affected. These constraints are currently impeding future housing construction, particularly in Kathu, Kuruman, De Aar, and Upington.

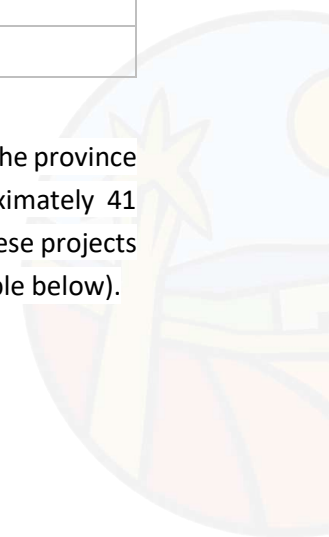
Water supply is a major issue throughout the Northern Cape. Unless appropriate service levels are agreed upon, this will limit housing development. Waterborne sewerage is not feasible in several areas (particularly in the ZFM and JTG DM's). Dry sanitation systems should be given serious consideration.

Table 24: Bulk Infrastructure Challenges

District Municipality	Local municipality	Bulk Infrastructure Challenge
Frances Baard	Sol Plaatje	Bulk services can cope currently but attention will have to be given in the near future
	Dikgatlong	Has very limited capacity and will experience problems concerning bulk water
JTG	Gamagara	Have serious bulk water & sanitation problems. Kathu can allow the construction of 200 houses maximum until bulk services are addressed
	Ga Segonyana	Have serious bulk water & sanitation problems. The Kuruman wastewater treatment works is running at over capacity. Further houses cannot be constructed unless they use ventilated pit latrines

District Municipality	Local municipality	Bulk Infrastructure Challenge
Pixley Ka Seme	Emthanjeni LM	The De Aar Waste Water Treatment Works is almost at full capacity . It is estimated that only 800 additional houses can be connected. Britstown will also experience wastewater treatment capacity problems in the near future
	Siyancoma LM	Experiencing serious bulk problems concerning water, water treatment and water storage
ZFM	Tsantsabane LM	Experiencing serious capacity problems at the wastewater treatment works
	Dawid Kruiper LM	All bulk services are at full capacity and there are very few opportunities for the immediate construction of housing
	Kai! Gariep	Experiencing bulk water & sanitation shortages
Namakwa	All LM's	No challenges specified

The total cost to address bulk water and sanitation backlogs in the province is estimated to be R18,8 billion. There are currently approximately 41 projects being planned or underway at a value of R2 billion. These projects are anticipated to be undertaken in the next five years (see table below).



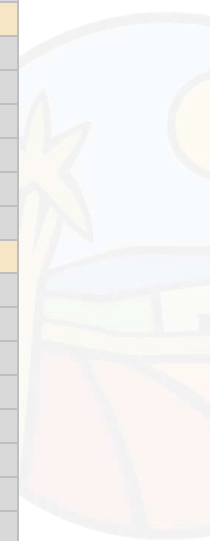
Local Municipality	Status	Projects	Estimated value (R)
Sol Plaatje LM	Bulk services can cope currently but attention will have to be given to bulk water in the near future	3 x Regional Bulk Water 2 x Internal Bulk Water 3 x Sanitation Bulk	809,000,000
Gamagara LM	Has serious bulk water and sanitation problems	1x sanitation bulk 1 x internal bulk water	107,800,000
Ga-Segonyana LM	Has serious bulk water and sanitation problems	1 x sanitation bulk 1 x water bulk	490,400,000
Kai Gariep LM	Is currently experiencing bulk water and sanitation shortages	10 x water internal bulk	46,000,000
Tsantsabane LM	Serious capacity problems in respect of wastewater treatment	1 x bulk water 1 x bulk sanitation	243,000,000
David Kruiper LM	Problems with regard to all bulk services	5 x sanitation bulk 1 x internal bulk 1 x regional bulk	32,300,000
Emthanjeni LM	Bulk and wastewater are only able to sustain a further 800 houses in De Aar. Britstown will also experience wastewater treatment problems in the near future	2 x regional bulk	392,600,000
Dikgatlong LM	Has very limited capacity & will experience problems with regard to bulk water	Four projects under investigation	
Siyancuma LM	Serious problems regarding wastewater treatment, water treatment and storage	4 x internal sanitation	
Total			2,121,100,000

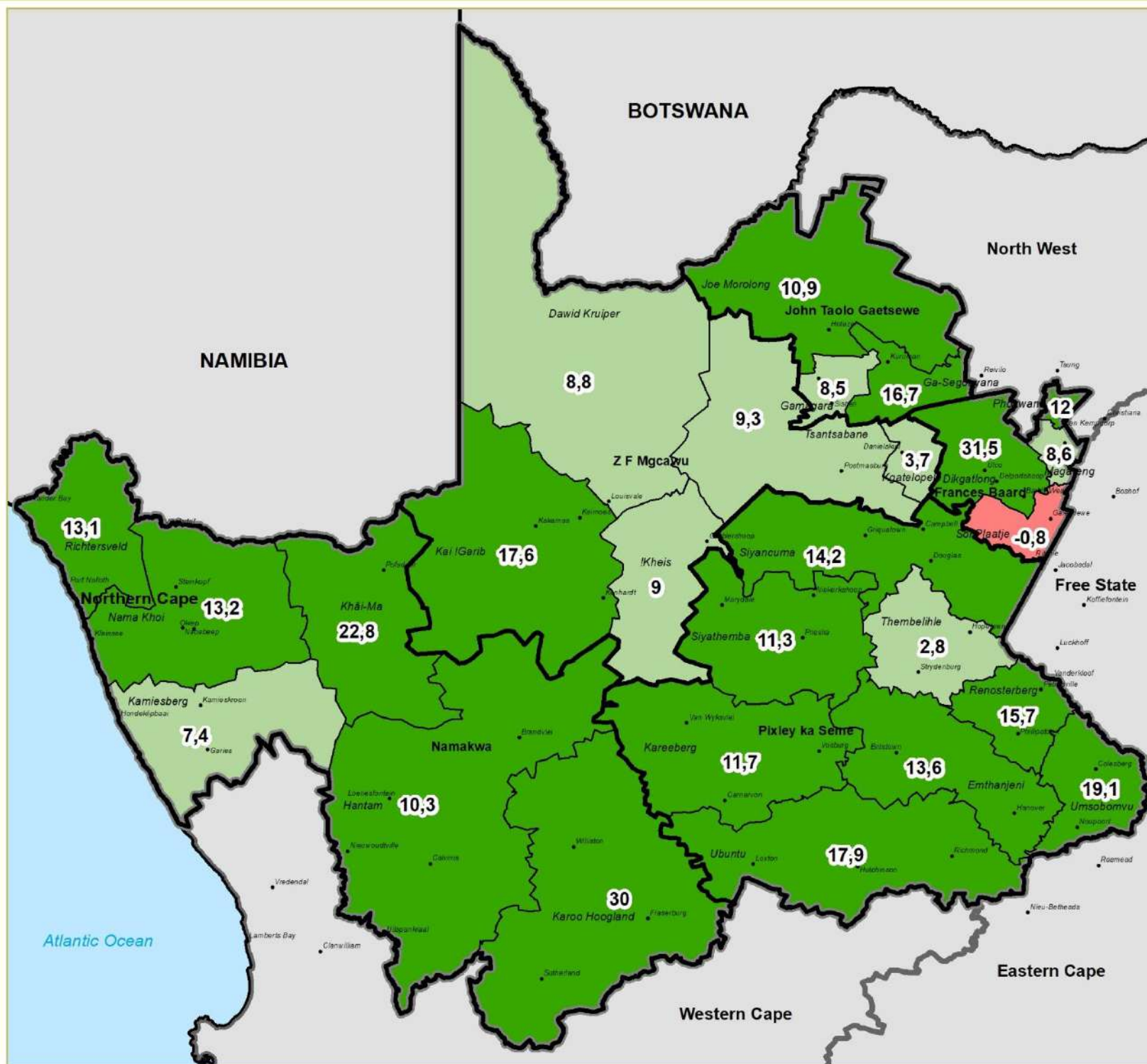
Figure 87: Bulk water and sanitation pipeline, COGHSTA, 2020. Northern Cape Multi-Year Development Plan, 2019 – 2024



Table 25: Access to Sanitation

ACCESS TO SANITATION (Flushed Toilets)								
Municipal Name	2011	2016	Growth	2011-2016	2016	2022	Growth	2016-2022
Frances Baard District	80,00%	78,40%	-1,60%	↘	78,40%	84,60%	6,20%	↗
Dikgatlong LM	70,00%	50,60%	-19,40%	↘	50,60%	82,10%	31,50%	↗
Phokwane LM	69,90%	65,10%	-4,80%	↘	65,10%	77,10%	12,00%	↗
Sol Plaatje LM	84,50%	87,70%	3,20%	↗	87,70%	86,90%	-0,80%	↘
Magareng LM	83,60%	79,10%	-4,50%	↘	79,10%	87,70%	8,60%	↗
John Taolo Gaetsewe District	29,70%	27,30%	-2,40%	↘	27,30%	35,70%	8,40%	↗
Joe Morolong LM	7,30%	5,40%	-1,90%	↘	5,40%	16,30%	10,90%	↗
Ga-Segonyana LM	26,20%	17,50%	-8,70%	↘	17,50%	34,20%	16,70%	↗
Gamagara LM	87,60%	80,80%	-6,80%	↘	80,80%	89,30%	8,50%	↗
ZF Mgcawu District	72,20%	65,70%	-6,50%	↘	65,70%	76,00%	10,30%	↗
Dawid Kruiper LM	73,00%	64,50%	-8,50%	↘	64,50%	73,30%	8,80%	↗
Kgatlopete LM	93,20%	91,20%	-2,00%	↘	91,20%	94,90%	3,70%	↗
Tsantsabane LM	68,90%	76,10%	7,20%	↗	76,10%	85,40%	9,30%	↗
!Kheis LM	48,30%	40,90%	-7,40%	↘	40,90%	49,90%	9,00%	↗
Kai !Garib LM	72,00%	59,60%	-12,40%	↘	59,60%	77,20%	17,60%	↗
Namakwa District	70,80%	67,90%	-2,90%	↘	67,90%	83,80%	15,90%	↗
Richtersveld LM	78,00%	80,20%	2,20%	↗	80,20%	93,30%	13,10%	↗
Nama Khoi LM	74,40%	74,20%	-0,20%	↘	74,20%	87,40%	13,20%	↗
Kamiesberg LM	45,60%	51,10%	5,50%	↗	51,10%	58,50%	7,40%	↗
Khâi-Ma LM	76,80%	60,30%	-16,50%	↘	60,30%	83,10%	22,80%	↗
Hantam LM	76,20%	78,30%	2,10%	↗	78,30%	88,60%	10,30%	↗
Karoo Hoogland LM	57,00%	39,70%	-17,30%	↘	39,70%	69,70%	30,00%	↗
Pixley Ka Seme District	72,80%	72,60%	-0,20%	↘	72,60%	85,00%	12,40%	↗
Siyancuma LM	60,20%	59,70%	-0,50%	↘	59,70%	73,90%	14,20%	↗
Siyathemba LM	71,30%	73,80%	2,50%	↗	73,80%	85,10%	11,30%	↗
Thembelihle LM	65,40%	66,40%	1,00%	↗	66,40%	69,20%	2,80%	↗
Renosterberg LM	83,10%	77,40%	-5,70%	↘	77,40%	93,10%	15,70%	↗
Kareeberg LM	68,50%	69,00%	0,50%	↗	69,00%	80,70%	11,70%	↗
Emthanjeni LM	85,10%	84,00%	-1,10%	↘	84,00%	97,60%	13,60%	↗
Ubuntu LM	74,30%	74,60%	0,30%	↗	74,60%	92,50%	17,90%	↗
Umsobomvu LM	74,00%	72,60%	-1,40%	↘	72,60%	91,70%	19,10%	↗





ACCESS TO SANITATION

Legend

- Town/Settlement
- Local Municipality
- District Municipality

Access To Sanitation Growth (2016 - 2022)

- Negative Growth
- No Growth
- Positive Growth
- > 10% Positive Growth

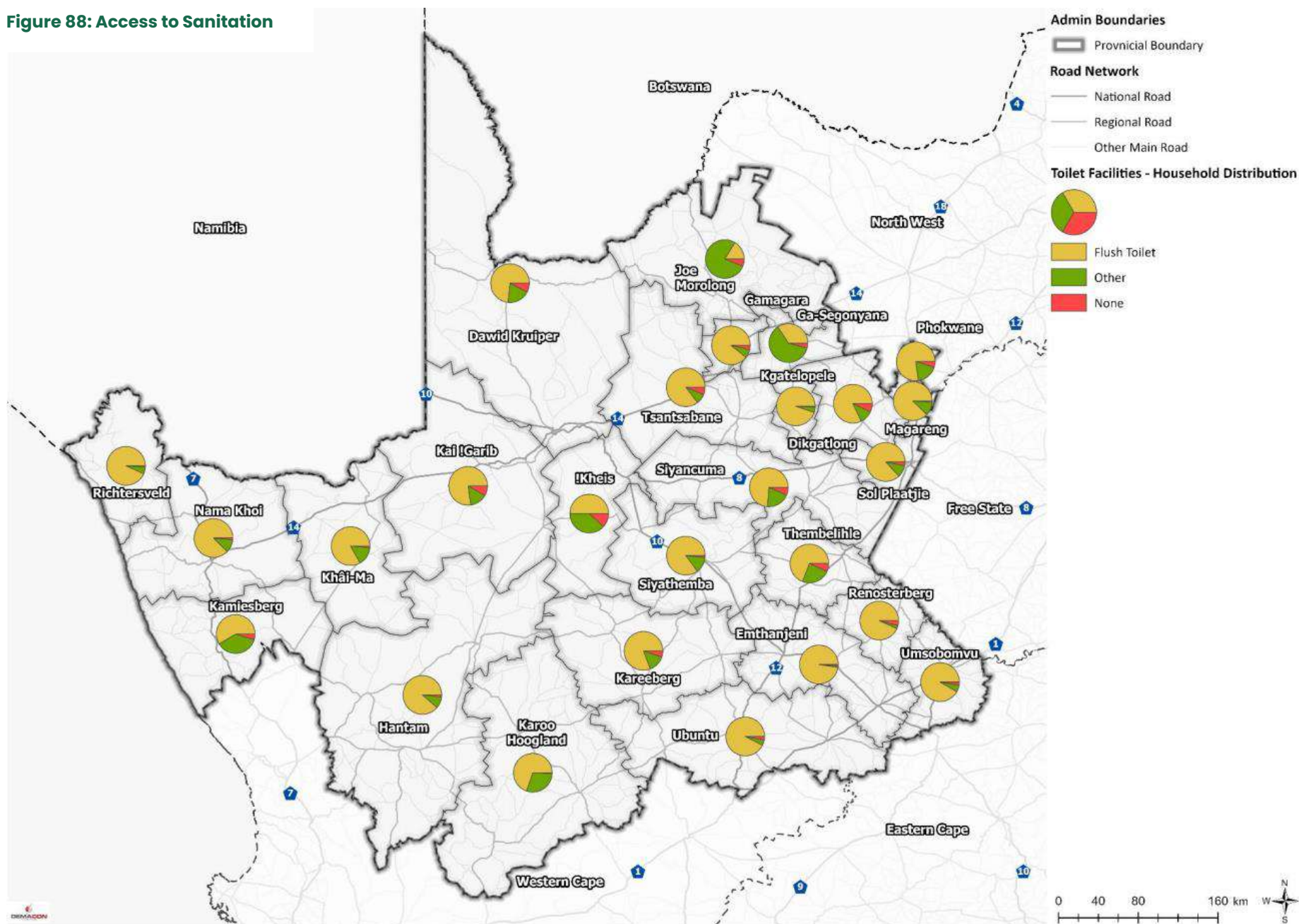
**Map 25: Northern Cape
Access to Sanitation**

Source: StatsSA (Census 2022)

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



Figure 88: Access to Sanitation



INFRASTRUCTURE WATER AND SANITATION

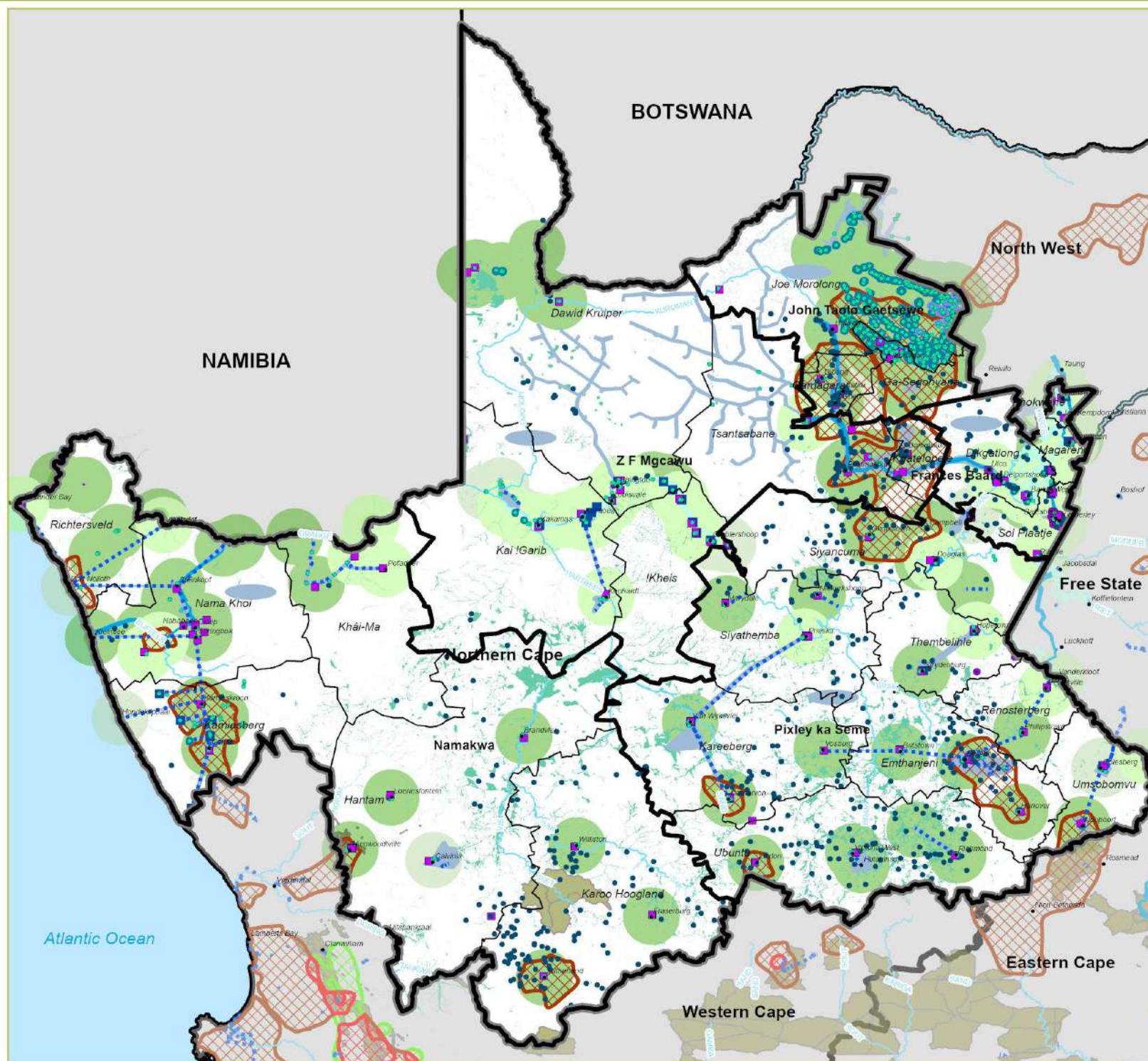
Legend

- Town/Settlement
- Reservoirs
- Licensed Boreholes
- Communal Standpipe
- Prepaid Standpipe
- Sewer Pump
- WTW
- WWTW
- Main Rivers
- Canals
- Sewer Pipeline
- Bulk water pipelines
- Inter-Basin Water Transfers Lines
- Local Municipality
- ▬ District Municipality
- Hydrological Area
- Stressed Catchment
- Water Schemes
- Strategic water areas
 - Groundwater
 - Surface water
 - Both
- Water Usage
 - Combination
 - Groundwater
 - Surface water

Map 26: Northern Cape Water & Sanitation Infrastructure

Source: Department of Water & Sanitation; Karoo RSDF

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.3.4.3 Electricity

Table 26: Access to Electricity

ACCESS TO ELECTRICITY (LIGHTING)								
Municipal Name	2011	2016	Growth	2011-2016	2016	2022	Growth	2016-2022
Frances Baard District	83,30%	90,20%	6,90%	↗	90,20%	92,30%	2,10%	↗
Dikgatlong LM	75,90%	84,50%	8,60%	↗	84,50%	89,80%	5,30%	↗
Phokwane LM	82,30%	90,70%	8,40%	↗	90,70%	94,80%	4,10%	↗
Sol Plaatje LM	84,90%	90,80%	5,90%	↗	90,80%	91,70%	0,90%	↗
Magareng LM	85,00%	95,00%	10,00%	↗	95,00%	96,30%	1,30%	↗
John Taolo Gaetsewe District	87,00%	86,30%	-0,70%	↘	86,30%	91,30%	5,00%	↗
Joe Morolong LM	81,80%	84,20%	2,40%	↗	84,20%	94,50%	10,30%	↗
Ga-Segonyana LM	91,20%	87,00%	-4,20%	↘	87,00%	87,00%	0,00%	↗
Gamagara LM	87,90%	88,10%	0,20%	↗	88,10%	95,10%	7,00%	↗
ZF Mgcawu District	86,60%	85,50%	-1,10%	↘	85,50%	91,90%	6,40%	↗
Dawid Kruiper LM	89,90%	88,00%	-1,90%	↘	88,00%	91,40%	3,40%	↗
Kgatlopele LM	91,70%	95,70%	4,00%	↗	95,70%	96,60%	0,90%	↗
Tsantsabane LM	83,50%	84,90%	1,40%	↗	84,90%	92,00%	7,10%	↗
!Kheis LM	64,00%	73,60%	9,60%	↗	73,60%	91,00%	17,40%	↗
Kai !Garib LM	87,40%	82,00%	-5,40%	↘	82,00%	91,80%	9,80%	↗
Namakwa District	86,50%	88,40%	1,90%	↗	88,40%	96,70%	8,30%	↗
Richtersveld LM	96,00%	97,30%	1,30%	↗	97,30%	98,80%	1,50%	↗
Nama Khoi LM	93,70%	95,80%	2,10%	↗	95,80%	96,80%	1,00%	↗
Kamiesberg LM	87,40%	89,80%	2,40%	↗	89,80%	98,00%	8,20%	↗
Khâi-Ma LM	89,60%	87,60%	-2,00%	↘	87,60%	97,20%	9,60%	↗
Hantam LM	76,90%	80,90%	4,00%	↗	80,90%	94,50%	13,60%	↗
Karoo Hoogland LM	64,90%	67,50%	2,60%	↗	67,50%	94,80%	27,30%	↗
Pixley Ka Seme District	85,10%	89,80%	4,70%	↗	89,80%	92,50%	2,70%	↗
Siyancuma LM	82,20%	89,10%	6,90%	↗	89,10%	90,10%	1,00%	↗
Siyathemba LM	86,20%	89,20%	3,00%	↗	89,20%	94,60%	5,40%	↗
Thembelihle LM	75,20%	84,20%	9,00%	↗	84,20%	86,80%	2,60%	↗
Renosterberg LM	88,10%	86,30%	-1,80%	↘	86,30%	91,30%	5,00%	↗
Kareeberg LM	73,50%	83,40%	9,90%	↗	83,40%	86,40%	3,00%	↗
Emthanjeni LM	92,60%	93,00%	0,40%	↗	93,00%	96,50%	3,50%	↗
Ubuntu LM	84,80%	89,60%	4,80%	↗	89,60%	90,90%	1,30%	↗
Umsobomvu LM	86,70%	93,70%	7,00%	↗	93,70%	96,10%	2,40%	↗

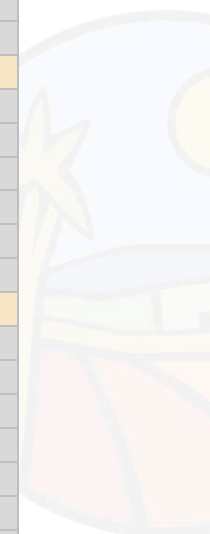
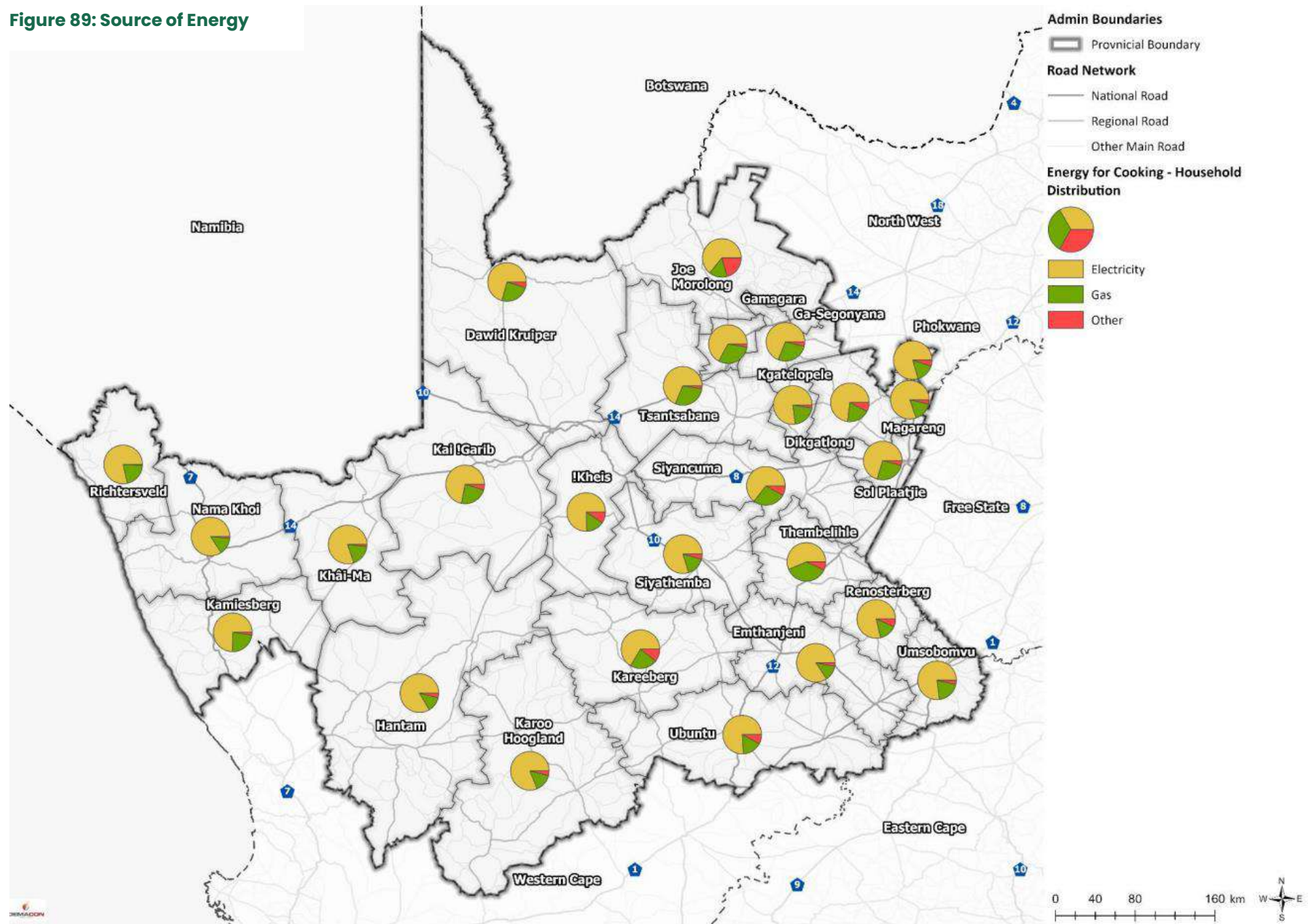
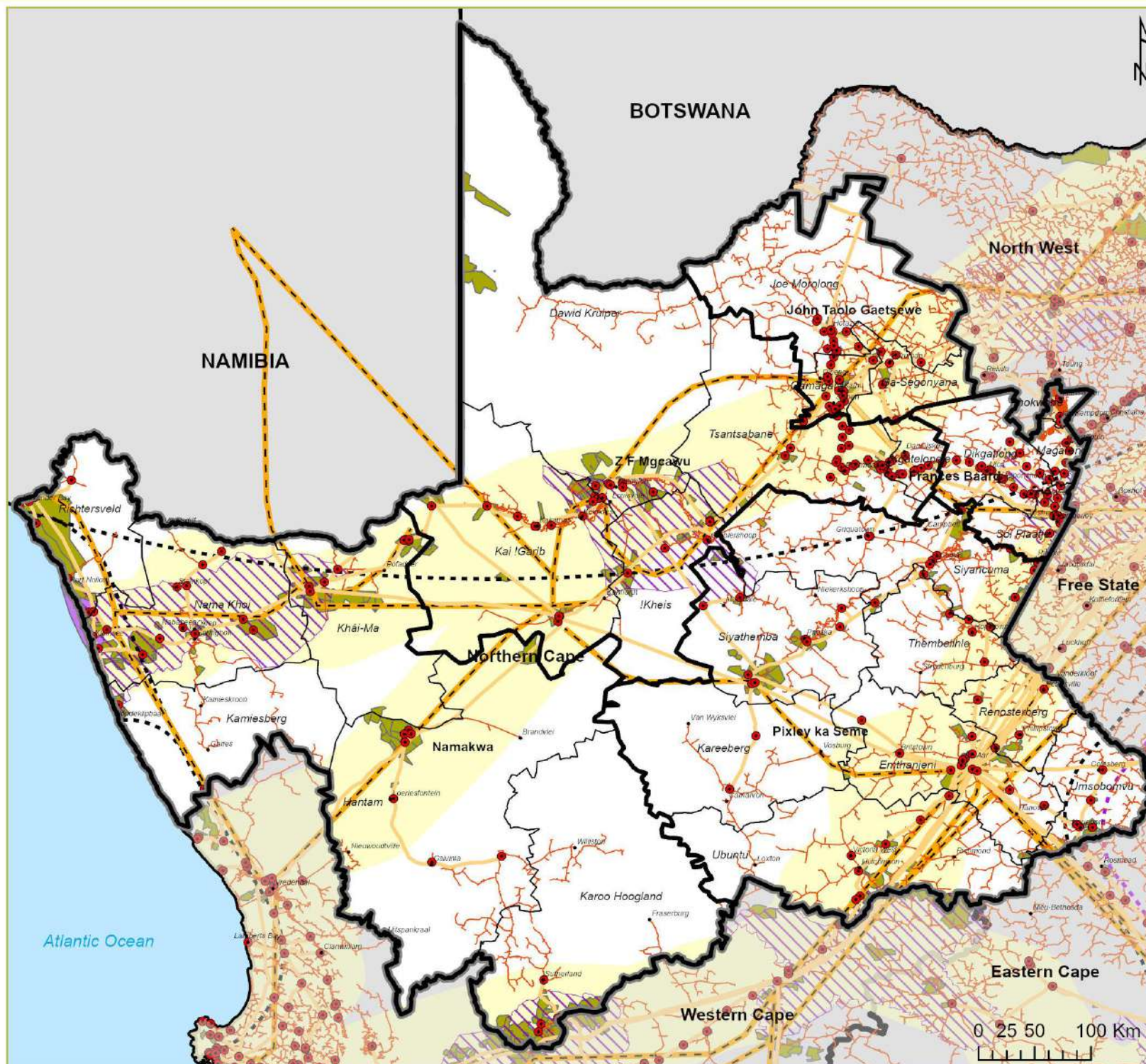


Figure 89: Source of Energy





INFRASTRUCTURE ENERGY

Legend

- Town/Settlement
- Substations
- Eskom HV Lines
- Eskom MV Lines
- Eskom Expansion Projects
- Proposed Gas Pipelines
- ... Proposed Liquid Fuel Pipeline
- Local Municipality
- District Municipality
- ▨ Renewable Energy Development Zone
- Wind Energy Generation
- Renewable Energy Projects
- Eskom Power Corridors

**Map 28: Northern Cape
Infrastructure Electricity**

Source: Karoo RSDf, Eskom;
Department of Forestry, Fisheries & the Environment

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



5.3.4.4 ICT Infrastructure

Information and communications technology in its broadest form pertains mainly to the internet-enabled domain, the mobile environment and to a lesser extent landline telephones, radios and televisions. It is an environment that is diverse and constantly changing with new and better technology enhancements that grow as the requirements grow and the demand for access and communication through the different spheres evolve. One of the principal factors for the growth and roll-out of these technologies is demand and the provision of access to the areas where the demand necessitates upgrades and installation of hardware to cater for the demand as well as future growth. This factor plays an enormous role in the information and communication technology landscape for the Northern Cape Province.

Many areas of the province lack coverage or access to the internet. However, the major towns and cities are well served.

ADSL (Asymmetric digital subscriber line) is focused on the bigger towns in the Northern Cape, due to the demand, that are predominantly alongside the main roads. Although the ADSL lines are more stable than Wi-Fi the speed of the line and the number of users accessing the line has a huge effect on the experience. Telkom indicates a maximum of 10 Mb lines for the towns but the average range between 2 Mb and 10 Mb.

ADSL lines are however being replaced as an option throughout South Africa with Fibre lines that are fast, stable, reliable and have less latency and provide better bandwidth. The option, irrespective of the fact that it is better, entails and requires dedicated infrastructure that is expensive to roll out which on its own creates a problem in the Northern Cape due to lesser demand and the fact that the towns are so far apart from each other. It is not as cost-effective as other options provided and available. Areas that do

have fibre are restricted to Kimberley and in most cases to a very dedicated area within the Southern parts of Kimberley.

5.3.4.4.1 Square Kilometre Array (SKA)⁴⁰

SKA site in the Karoo consists of two farms (Losberg and Meysdam) and covers 13,406ha. Here pathfinder and precursor radio telescope dishes have been erected. The Kat-7 project, a test bed of seven dishes, was completed years ago. The MeerKAT project comprises 64 dishes, a technology demonstrator for South Africa's bid to host the Square Kilometer Array, which forms part of SKA phase 1. The SKA telescope will be the most sophisticated of its kind, on earth. On-site development includes internal roads, expansion of the dish sets, completion of the airstrip and the upgrading of the Karoo power station. Onsite buildings include the development of a bunkered computer processing centre. Defining and finalising SKA work packages is ongoing. The first phase commences in 2016. The project is to be completed at a cost of R23 billion by 2024. The SKA will be one of the largest scientific research facilities in the world and it is envisaged that it would consolidate the Southern African region as a major international hub for astronomy and cutting-edge technology. Construction of the project has commenced, with the target date for completion set in 2024.

Thousands of SKA antenna dishes will be built in South Africa (in the Karoo, not far from the small town called Carnarvon), with outstations in other parts of South Africa, as well as in eight African partner countries, namely Botswana, Ghana, Kenya, Madagascar, Mauritius, Mozambique, Namibia and Zambia. Another part of the telescope, the low-frequency array, will be built in Western Australia. Radio telescopes must be located as far away as possible from man-made electronics or machines that emit radio waves that will interfere with the faint radio signals coming from the distant

⁴⁰ <http://www.ska.ac.za/about/location/>



Universe. The site should also be high and dry because some radio waves are absorbed by the moisture in our atmosphere. South Africa already hosts the KAT-7 telescope array, an important testing ground for the MeerKAT telescope array, a 64-dish system which will form a precursor to the full SKA telescope. In SKA Phase 1, the 64-dish MeerKAT precursor array which is currently under construction and expected to come online in a few years will be integrated into SKA1 MID, with the construction of another 130 dishes. In total, SKA1 MID will count almost 200 dishes spread around the Karoo⁴¹. The SKA is a global mega-science project, building an advanced radio-telescope facility linked to research infrastructure and high-speed ICT capacity & providing an opportunity for Africa and South Africa to contribute towards advanced science.

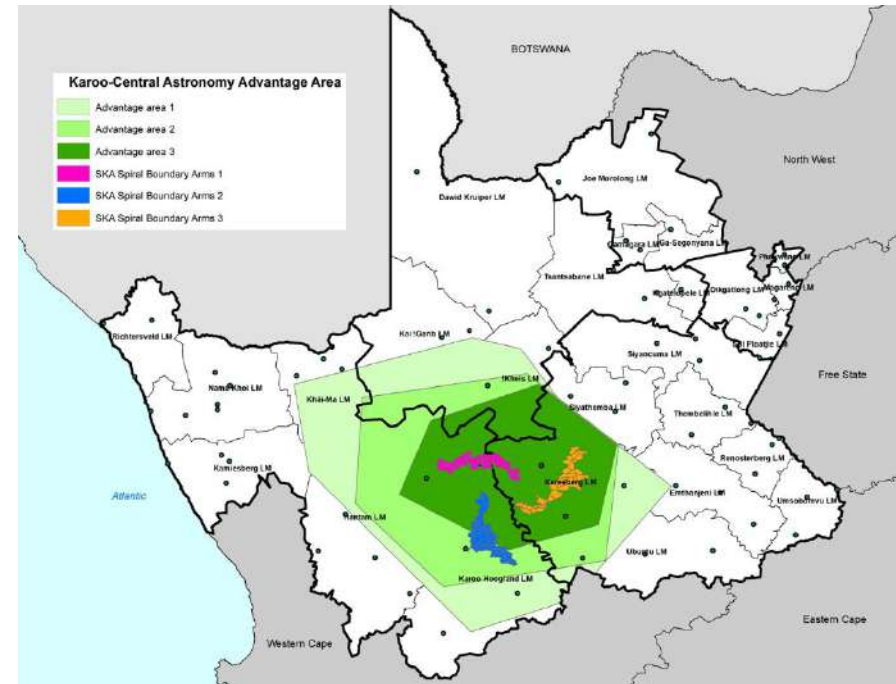


Figure 90: Footprint of the Karoo-Central Astronomy Advantage Area (SKA)

5.3.4.4.2 Karoo array telescope (MeerKAT)

South Africa has built the Karoo Array Telescope (MeerKAT) which is a precursor instrument for the SKA but is in its own right amongst the largest and most powerful telescopes in the world. MeerKAT has been built in the same radio astronomy reserve near Carnarvon where the SKA is situated. Consisting of 64 dishes, each 13.5m in diameter. The MeerKAT radio telescope will be integrated into the mid-frequency component of SKA Phase 1. The first seven dishes, KAT-7, are complete and have already produced their first pictures; more than 500 international astronomers and

⁴¹ Department of Economic Development and Tourism Economic Infrastructure Annual Report, 2016/2017



58 from Africa have submitted proposals to work with MeerKAT once it is complete.

5.3.4.4.3 Southern African Large Telescope (SALT)

The Southern African Large Telescope (SALT) is the largest single optical telescope in the southern hemisphere and among the largest in the world. It has a hexagonal primary mirror array 11 metres across, comprising 91 individual 1m hexagonal mirrors.

Sutherland is home to the Southern African Large Telescope (SALT) which has a hexagonal mirror array that measures 11m across. This is the largest facility of its type in the southern hemisphere and one of the top 10 facilities in the world. SALT is an international collaboration that includes scientists and academics in Germany, India, Poland, the UK and the USA. It allows astronomers to examine the scale and age of the universe, the life and death of stars and the earliest galaxies. The site was established in the early 1970s at an altitude of 1 759m and the night skies are among the world's clearest and darkest. Furthermore, the weather conditions are good and stable which enhances its viewing opportunities (Northern Cape Business 2011/2012). The SALT facility is operated under contract to the South African Astronomical Observatory (SAAO).

5.3.4.4.4 Marine Infrastructure

There are several submarine cable systems which serve South Africa's telecommunications needs by carrying telephone calls, internet connections and data. South Africa is currently connected to the rest of the world through several submarine cables that include but are not limited to the West African Cable System (WACS)/SAT-3/SAFE, and the Seacom Eastern African Submarine Cable System (EASSy) and Africa-1. There are more than five active cables in South Africa's Ocean with a combined length of more than 70,000 km.

Pipelines are used for oil and gas in the offshore marine environment of South Africa, extending over 155 km from land to offshore platforms and

over 170 km from platform carrying products to Gas-to-liquids plants.^{79,80} There are also pipelines close to the coastline used to discharge wastewater into the marine environment.⁸¹ No submarine power cables exist.

An international network of telecommunication cables passes through South Africa's Ocean connecting the country to West and East Africa, Madagascar, Mauritius, La Réunion and Asia further East as well as Latin America via Brazil. These cables tend to be laid on the seabed with a shallow gradient and soft sediment, often meandering to find the most suitable route around any seabed obstructions. The South African sections of the international cables lie on the seafloor and are not buried; the greatest cable depth is 6,000m.

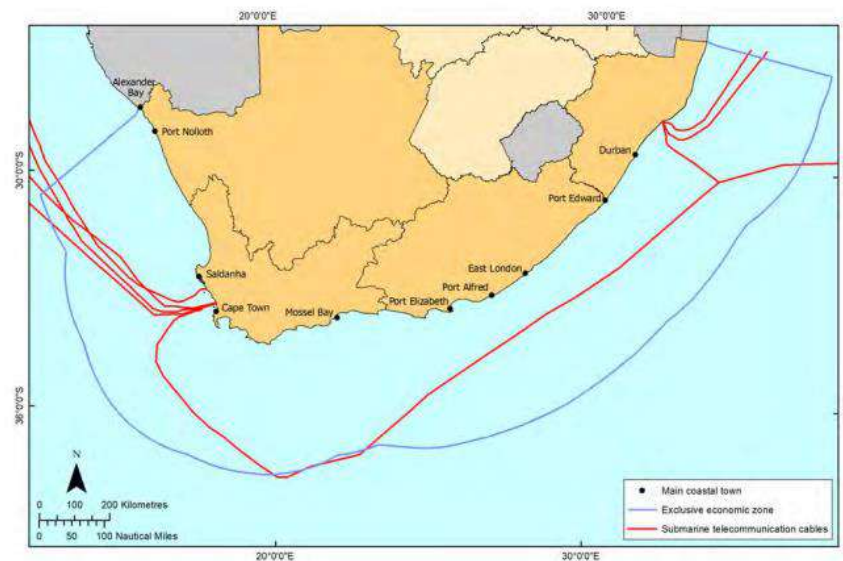


Figure 91: Underwater ICT Cables

Both – coastal and underwater infrastructure – are a key prerequisite for the functioning of our modern society and a backbone of South Africa's society and economy. It is therefore impossible to estimate the direct use and socio-economic value of the coastal and underwater infrastructure.



5.3.4.4.1 Trends

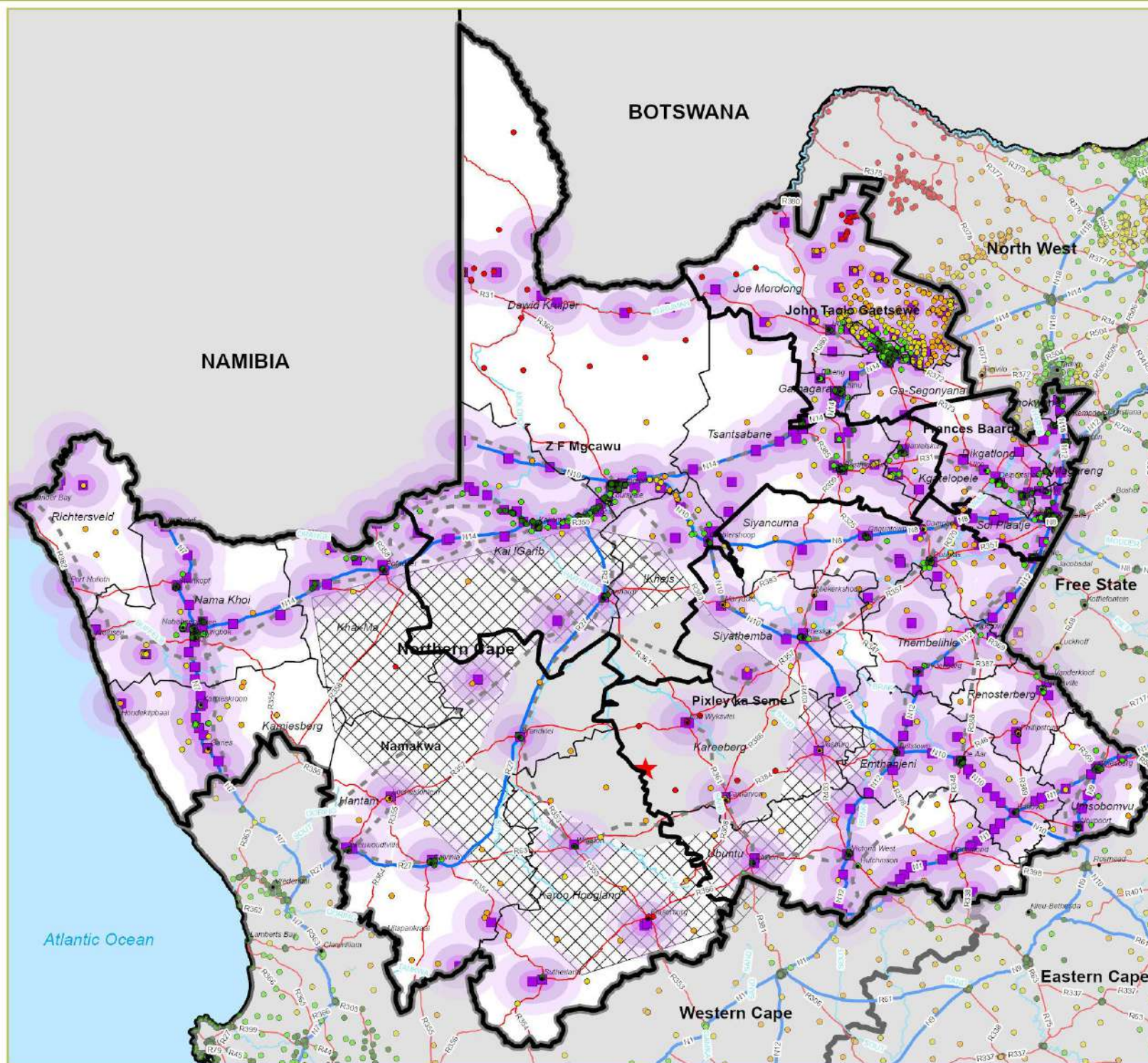
- With the rise in sea levels and a predicted increased risk of storm surges, the country's coastal infrastructure may be placed under increasing threat. This will likely increase the demand for coastal defence infrastructure. The impacts of climate change will also lead to the construction of new desalination plants along the coast of South Africa, particularly in the Cape Provinces.
- An increase in marine and coastal tourism may also lead to the development of coastal and tourism-associated infrastructure in certain sections along the coast. This includes the development and upgrade of the country's maritime transport infrastructure: boat launch sites, small harbours, marina's and commercial ports, which are necessary elements of the tourism cruise ship sector, all of which are also a pre-requisite to other human uses of the ocean such as fisheries and mining.
- In case marine renewable energy production sites will be developed, submarine power cables may need to be installed in the medium to long term.
- With the intended growth of the offshore oil and gas sector in South African waters, an extension of the existing system of pipelines is to be expected.
- Given the growth in coastal population and industries, new wastewater discharge outfall pipelines may need to be installed in future.

5.3.4.4.2 Key Issues to Consider.

- Unlocking the economic potential of South Africa's oceans relies on the coastal infrastructure and its gradual upgrade. This requires space on land for the various sectors.
- The existing network of underwater infrastructure – cables and pipelines – needs to be maintained. The routeing of the existing submarine telecommunication cables and pipelines should be considered when new cables or pipelines are installed, for example, through bundling and laying in parallel to existing structures.

- When selecting new routes for cables and pipelines in the future, special attention should be paid to avoid conflicts with other uses and the interest of environmental protection.





INFRASTRUCTURE TECHNOLOGY

Legend

- Town/Settlement
- Cellphone Towers
- ★ SKA Core Site
- Main Roads
- National Roads
- Main Rivers
- - - Broadband Lines
- Local Municipality
- District Municipality
- 10km Cellphone Towers Radius
- 20km Cellphone Towers Radius
- 30km Cellphone Towers Radius
- SKA Area
- SKA Core Area
- ICT Fibre Connection Distance
- Distance (m)
- 1 - 5000 (Good)
- 6000 - 10000
- 20000 - 30000 (Average)
- 40000 - 80000
- 90000 - 300000 (Poor)

Map 29: Northern Cape Infrastructure Technology

Source: Karoo RSDF; NSDF

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.3.4.5 Refuse Removal

Table 27: Access to Waste Removal

REFUSE REMOVAL								
Municipal Name	2011	2016	Growth	2011-2016	2016	2022	Growth	2016-2022
Frances Baard District	74,30%	69,30%	-5,00%	↓	69,30%	73,20%	3,90%	↑
Dikgatlong LM	49,60%	23,80%	-25,80%	↓	23,80%	44,20%	20,40%	↑
Phokwane LM	60,80%	58,50%	-2,30%	↓	58,50%	58,90%	0,40%	↑
Sol Plaatje LM	84,30%	82,70%	-1,60%	↓	82,70%	83,10%	0,40%	↑
Magareng LM	63,30%	58,00%	-5,30%	↓	58,00%	76,70%	18,70%	↑
John Taolo Gaetsewe District	26,00%	24,00%	-2,00%	↓	24,00%	29,10%	5,10%	↑
Joe Morolong LM	6,10%	4,00%	-2,10%	↓	4,00%	14,60%	10,60%	↑
Ga-Segonyana LM	17,60%	12,30%	-5,30%	↓	12,30%	22,50%	10,20%	↑
Gamagara LM	90,60%	78,90%	-11,70%	↓	78,90%	84,70%	5,80%	↑
ZF Mgcawu District	70,30%	67,60%	-2,70%	↓	67,60%	65,20%	-2,40%	↓
Dawid Kruiper LM	84,60%	80,90%	-3,70%	↓	80,90%	73,50%	-7,40%	↓
Kgatlolepe LM	91,70%	91,70%	0,00%	--	91,70%	89,80%	-1,90%	↓
Tsantsabane LM	57,40%	52,50%	-4,90%	↓	52,50%	76,10%	23,60%	↑
!Kheis LM	53,30%	62,10%	8,80%	↑	62,10%	30,50%	-31,60%	↓
Kai !Garib LM	53,80%	53,40%	-0,40%	↓	53,40%	49,70%	-3,70%	↓
Namakwa District	80,10%	81,70%	1,60%	↑	81,70%	83,10%	1,40%	↑
Richtersveld LM	82,80%	87,20%	4,40%	↑	87,20%	92,50%	5,30%	↑
Nama Khoi LM	89,40%	89,20%	-0,20%	↓	89,20%	84,90%	-4,30%	↓
Kamiesberg LM	79,40%	81,50%	2,10%	↑	81,50%	60,10%	-21,40%	↓
Khâi-Ma LM	75,70%	84,90%	9,20%	↑	84,90%	50,30%	-34,60%	↓
Hantam LM	72,00%	76,20%	4,20%	↑	76,20%	89,50%	13,30%	↑
Karoo Hoogland LM	63,30%	58,30%	-5,00%	↓	58,30%	94,10%	35,80%	↑
Pixley Ka Seme District	72,60%	74,20%	1,60%	↑	74,20%	77,00%	2,80%	↑
Siyancuma LM	62,30%	71,90%	9,60%	↑	71,90%	69,10%	-2,80%	↓
Siyathemba LM	73,90%	80,50%	6,60%	↑	80,50%	78,20%	-2,30%	↓
Thembelihle LM	68,40%	59,40%	-9,00%	↓	59,40%	49,70%	-9,70%	↓
Renosterberg LM	74,40%	52,20%	-22,20%	↓	52,20%	68,40%	16,20%	↑
Kareeberg LM	70,90%	84,30%	13,40%	↑	84,30%	83,20%	-1,10%	↓
Emthanjeni LM	83,30%	79,70%	-3,60%	↓	79,70%	92,10%	12,40%	↑
Ubuntu LM	66,60%	74,90%	8,30%	↑	74,90%	79,20%	4,30%	↑
Umsobomvu LM	76,30%	76,70%	0,40%	↑	76,70%	87,30%	10,60%	↑



5.3.4.6 Overall Access to Services

- Data indicates that approximately 73.0% of households have access to a flush toilet.
- Piped water inside the dwelling yard (54.5%) is the main source of access to piped water, followed by piped water inside the yard (27.4%).
- It should be noted that 65.5% of households in the province reported water interruptions during the last 12 months.
- Of the households in the province, 92.5% use electricity as the main source of lighting and 72.0% use electricity as the main source for cooking.
- The refuse is removed at least once a week for 64.4% of households.
- Households that have no access to the Internet amount to 28.8%, which is higher than the national average of 21.1%.
- Ownership of household goods indicates that 18.2% have access to a computer, 30.2% have access to a television and 85.4% have access to a cell phone.

5.3.5 TRANSPORT MOVEMENT SYSTEMS

Transport Infrastructure is made up of transport network elements and facilities. The transport network includes road-based, rail-based and air-based infrastructure to enable the mobility of people and freight.

Transport acts as the vascular system of modern society and the heart of the economy on all scales. Without it, the logistics of everyday activities and economic enterprise would be impossible. Innovations in transport have allowed activities to transpire in different places, enabling space-based specialisation and the subsequent mass advances in economic output and employment since the period of the Industrial Revolution.

The province has a good network of national roads that links all areas of current economic interest. Nevertheless, access to many parts of the province is difficult because of the wide spacing of the infrastructure network. The areas between national roads are covered mainly by gravel

roads, of which the condition varies greatly. The cost of transport is a major factor affecting business activities in the province.

The province manages a total of 27,348km of provincial roads (of which 13% is paved) under the jurisdiction of the Department of Roads and Public Works (DR&PW). Traffic volumes on the paved network are predominantly low, with 60% of these roads carrying less than 500 vehicles per day, and only 23% carrying more than 1,000 vehicles per day. For unpaved roads, 70% carry less than 50 vehicles per day, and only 3% more than 250.

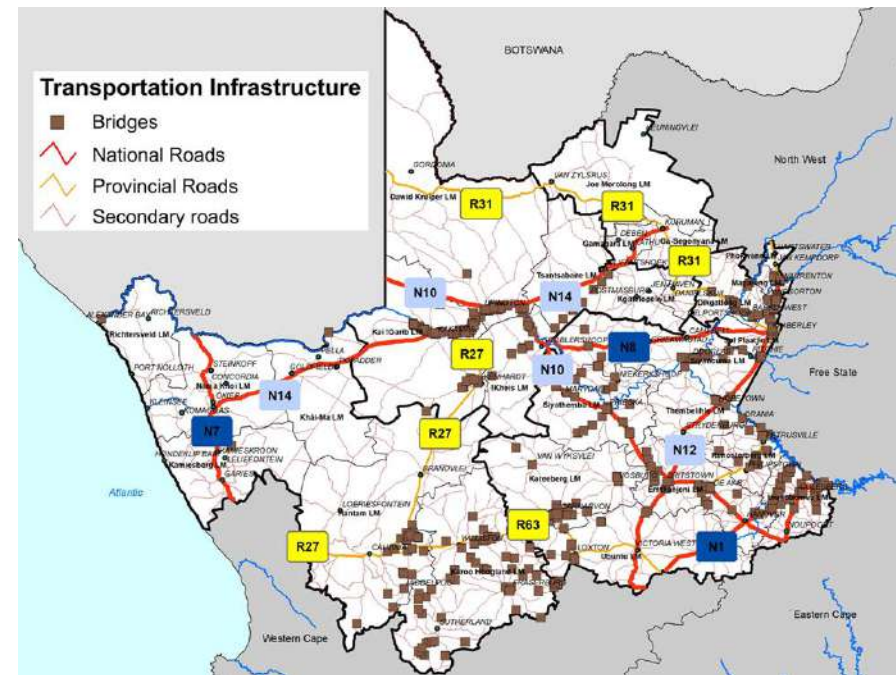


Figure 92: Northern Cape Transport Infrastructure

5.3.5.1 Corridors and Transport

Northern Cape is linked to surrounding areas by a system of national and provincial roads. The national and provincial road systems within the Northern Cape provide the following regional links:

- The N14 links Gauteng with Springbok (N7). Development nodes along this route include Kuruman, Kathu, Upington (N10), Kakamas and Pofadder.
- The N12 route between Gauteng and Cape Town includes the development nodes of Kimberley, Hopetown, Britstown and Victoria West.
- The N1 route linking Gauteng with Cape Town includes the development nodes of Bloemfontein, Colesberg, Hanover and Richmond.
- The N7 linking Windhoek (Namibia) with Vioolsdrift, Nababeep, Springbok (N14) and Garies.
- The N10 links Keetmanshoop (Namibia) with Upington, Prieska, De Aar and Hanover (N1).

5.3.5.2 Travel Patterns

The running and management of public transport is absolutely in the hands of the private sector. This depends on demand and supply principles and is managed by the taxi associations (long-distance and local). The performance, affordability and convenience thereof are important to the lower income of the population.

5.3.5.3 Aviation Facilities

The Upington International Airport has the longest runway in the southern hemisphere. Upington is centrally located in the province. The purpose of the Upington Cargo Hub project is to promote the airport and air services development within the Northern Cape Province.

Upington is centrally located within South Africa and the Upington International Airport could be considered as a viable alternative to OR Tambo International Airport for cargo traffic. The development of the Upington Cargo Hub represents considerable and attractive benefits for users, such as:

- Less congestion.
- Quicker airport turn-around times.

- Potential for payload factors.
- Lower handling and airport charges.
- **Three major airports are provided:**
- Kimberley Airport (ACSA)
- Upington Airport (ACSA)
- Sishen Airport (ACSA)

5.3.5.4 Freight

The economic efficiency in the movement of goods is the objective of all freight transport. Freight transport should therefore aim to provide conditions in support of this objective. A very large proportion of freight transport movement is provided by parastatals in railways, ports, pipelines, and aviation.

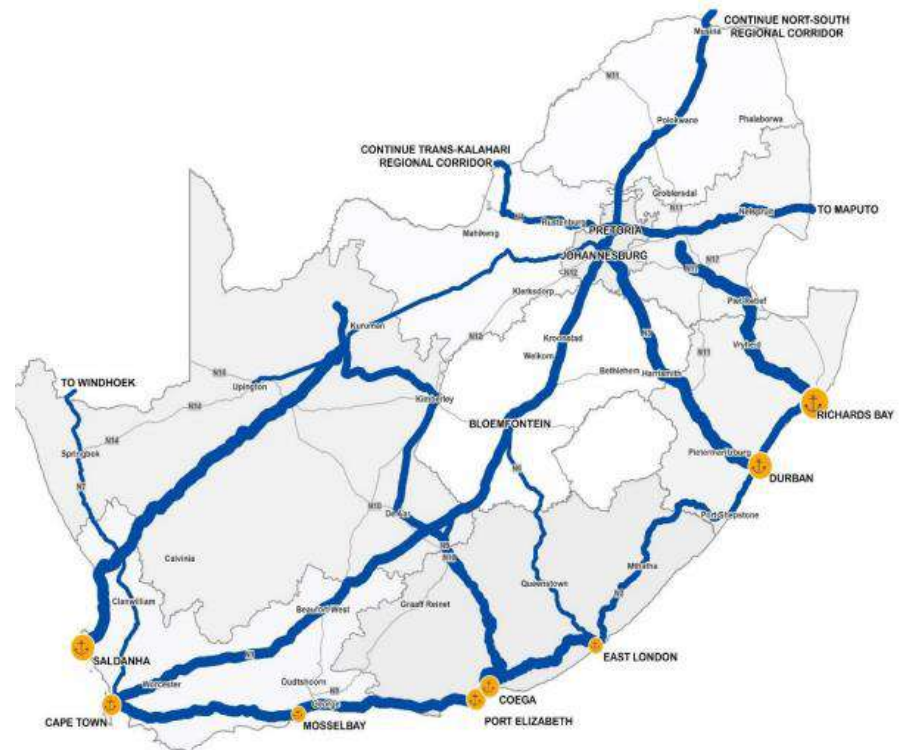


Figure 93: Freight Movement for Road and Rail



5.3.5.4.1 Freight Transport Issues

The pertinent issues regarding Freight Transport include road–rail competition, road freight overloading, the lack of freight planning information, and aviation.

5.3.5.4.1.1 Road–Rail Competition

- The road freight industry is in a favourable position to compete with long-haul railway services for high-value commodities. Due to the increase in vehicle-carrying capacity. This increased the road freight market share along major corridors and covers high-value commodities and other goods that are normally regarded as suitable commodities for rail haulage, such as maize, fuel, coal, vehicles, containers, and cement.
- The rail market share declined due to operational policy constraints on the rail service provider resulting from the transport policy decisions of the government as a major shareholder.

5.3.5.4.1.2 Road-To-Rail Strategy

- The significant deterioration of the road network due to overloading and traffic congestion has resulted in the development and formulation of Transnet's road-to-rail strategy, the primary aim of which is to rebalance the road freight–rail freight split in an attempt to create a more appropriate market share and to reduce the number of heavy trucks on the roads to decrease overloading on the road network.
- The implication of the Road to Rail Strategy is a reduction in overall transport and logistics costs and externality costs (e.g. road damage, road accidents, road congestion, noise pollution and carbon emissions).
- The following commodities are best suited to be transported exclusively by rail in the form of break-bulk, liquid bulk and bulk due to factors such as route, type, distance, quality, and high pressure:
 - Timber
 - Sugar
 - Cement
 - Zinc

- Coal
- Grain
- Liquid bulk
- Car parts.

5.3.5.4.1.3 Road Freight Overloading

The increase in legal axle masses, combined with the rapid increase in the volumes of traffic, is the primary cause of the deterioration of the roads in all the provinces. The provincial and national authorities responsible for providing and maintaining roads are faced with an ongoing concern about the levels of overloading recorded across South Africa.

5.3.5.4.2 Road Freight Corridors

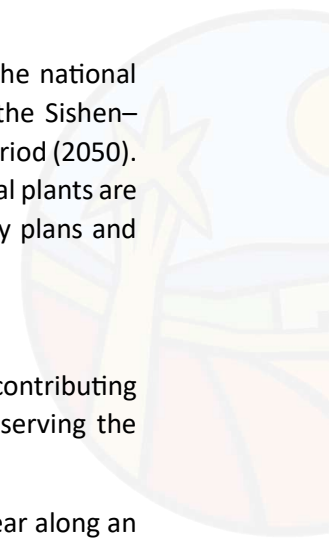
The NDP 2030 identifies the strengthening and optimisation of these corridors as one of the key policy and planning priorities under the wider focus area of economic infrastructure. The Durban–Free State–Gauteng freight corridor is seen as a model corridor in this regard by the NDP 2030 and is supported by the NATMAP 2050.

It is expected that the demand, for road freight on most of the national corridors, to increase over the period. Further expansion of the Sishen–Saldanha iron ore line to 45 million tonnes is planned for this period (2050). The limited handling facilities available at the ports and industrial plants are inadequate to accommodate the volumes proposed by railway plans and budgets.

5.3.5.5 Rail Network

The provincial rail network plays a vital strategic economic role contributing to the national economy. The most important rail networks serving the province are:

The Sishen–Saldanha Ore Line (moves 40 million tons every year along an 861 km route. The Sishen–Saldanha railway line, also known as the Ore Export Line (OREX), is an 861-kilometre-long (535 mi) heavy-haul railway line)



- Ngqura (Coega) Manganese Line
- Cape Town – Windhoek Line
- Johannesburg- Upington Line

Currently, the railway infrastructure is mainly used to transport goods, although there is a private train as well. The railway infrastructure is underutilised which places a lot of strain on road infrastructure, and it is important to investigate the upgrade and revitalisation of the railway infrastructure.

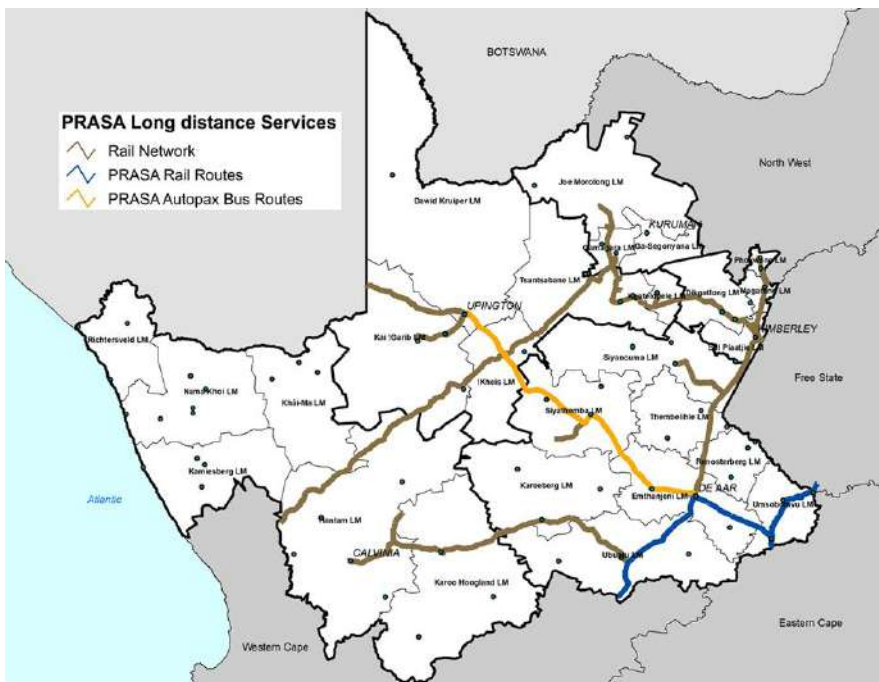
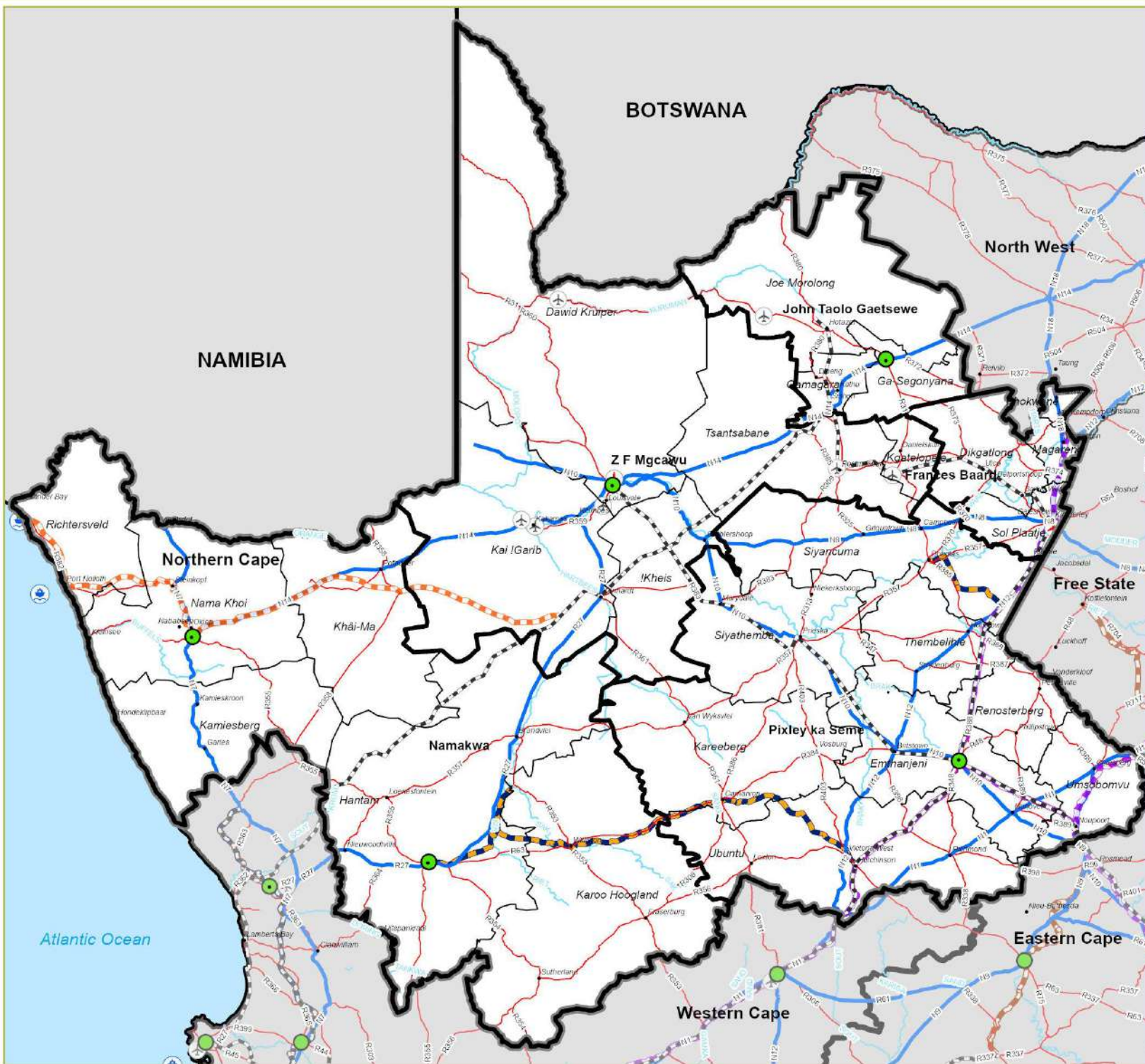


Figure 94: PRASA Long distance services





INFRASTRUCTURE TRANSPORT

Legend

- Town/Settlement
- Regional Development Anchor
- ✈ Airport
- ⚓ Ports
- ✈ Major Airports
- Main Roads
- National Roads
- Main Rivers
- Proposed Rail (Kenhardt to Boegoebaai via Springbok)
- Passenger Rail
- Railline re-instatement
- Possible railline re-instatement
- Freight Rail
- Local Municipality
- District Municipality

**Map 31: Northern Cape
Infrastructure Transport**

Source: Karoo RSDF

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.3.6 SPATIAL STRUCTURE AND SETTLEMENT PATTERNS

5.3.6.1 Spatial Structure

The Northern Cape Provincial Spatial Development Framework is developed through an interrelated set of growth centres, nodes, corridors, and zones. The essence of development in this system is the movement of people, goods and services that produces the basic impetus for developing functional relationships between otherwise independent and unrelated elements. The movement of people, goods, and services is channelled along specific routes that describe a network of interaction. Where networks intersect the opportunity for people, goods and services develop to interact and this gives rise to growth centres. The intensity of interaction gives rise to the development of a hierarchy of centres of different sizes depending on the level of interaction taking place in a node. This one-dimensional system of corridors and centres is tied together through surfaces that fill the areas between the centres and corridors.

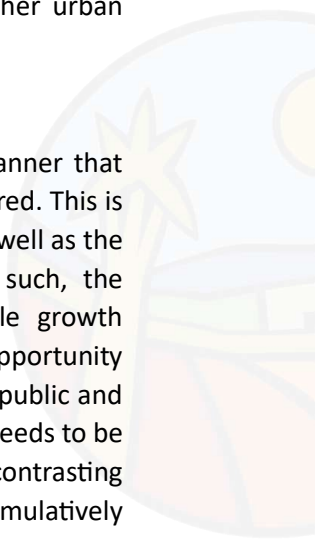
The first structuring element is the development and reinforcement of a system of varied growth centres. This will enable greater access to development opportunities, as well as equitable access to a system of local opportunities. The idea is to ensure that all people within the province live with equal and easy access to public transport, economic opportunities and social amenities. These centres, depending on their position in the hierarchy, will form points of access to a range of local and in some cases regional opportunities. Through the focus on development at these points, the following key objectives could be realised:

- Higher-density settlements should be located along the main transportation routes and held together by a web of local access roads and public facilities.
- At a regional level, they should be knit together by a system of regional access routes.
- Towns should not be creations and remnants of the apartheid regime by converted into sustainable human settlements.
- Effective and sustainable urbanisation.

- Urban coastal areas promote integrated mixed-use residential development; they should earmark all the strategically marked land parcels that can be used as opportunities.
- Mitigating climate change through the promotion of densification.
- Improved access to basic social and service needs.
- Improved infrastructure investment by focusing development within confined areas, improves the return on investment within the public sector.
- A centrally located settlement should provide improved access to higher-order public facilities, intensive agriculture, and other urban services.
- They should generate a wide range of opportunities.
- Rural sparsely populated settlements should be considered as opportunity areas for agricultural development such as crop production and livestock farming; and
- A centrally located settlement should provide improved access to higher-order public facilities, intensive agriculture, and other urban services.

5.3.6.2 A System of Interactive Growth Centres

The assembling and location of services and facilities, in a manner that promotes accessibility and efficiency in service delivery, is required. This is critical for the sustainability of urban and rural development as well as the economic performance of the Northern Cape Province. As such, the clustering of various activities at appropriate and accessible growth locations provides the province with a network/system of opportunity centres. Some of these centres have benefited from significant public and private sector investment in services and infrastructure, which needs to be managed and maintained. Although the growth centres have contrasting characters, profiles and management issues, they accumulatively accommodate most economic activities, employment prospects, an existing/growing residential stock, and access to community facilities. As such, the strength and feasibility of the growth centres are directly linked to the functioning and health of their catchment areas. The concentration



of activities in and around these areas will stimulate the further development of higher-order activities.

5.3.6.3 Growth Centre Delineation

The bioregional planning approach requires that development planning be undertaken in the context of five distinct spheres, namely the international level, national level, provincial level, district municipal level and local municipal level. This implies that the inter-relationship of settlements or growth centres should be recognised and understood. As stated throughout the document, the Northern Cape is an immensely important hub in the international, national, regional and local context.

The various spheres of growth centres (as defined in the National Spatial Development Framework, 2022) are illustrated below.

5.3.6.4 Roles Of Towns in the Province

Towns play an important role as urban service anchors in both urban and rural South Africa, providing goods and services to residents of the town as well as communities living in the surrounding rural areas. The provision of goods and services (water, sanitation, infrastructure, etc.) can be made more efficient by increasing densities and achieving economies of scale through the concentrated development of towns. This densification will allow for the establishment of critical public facilities such as health care and education.

The importance of small towns in regional development cannot be overstated, as they are critical in establishing rural-urban linkages that reflect bottom-up urbanisation and serve as a gateway to larger markets.

In addition to the primary function of acting as an urban-rural linkage, small towns serve as centres of demand/markets or logistics hubs for products from rural regions (e.g. agricultural produce). This key function will allow access to the trade markets, which is beneficial for the rural region as it will increase rural agriculture production and rural incomes as a whole. In addition to this, proximity to local, small, and intermediate centres of

agricultural and service-centred production areas is considered a key factor in promoting rural development.

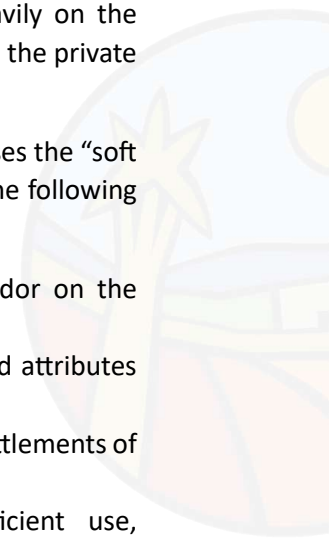
degree of development concentration is created by serving as centres for the production and distribution of goods and services to their surrounding rural regions. This sense of concentration is expected to reduce overall costs and improve access to key services for the public and private sectors, as well as rural households and businesses.

5.3.6.4.1 The NSDF Regional-Rural Development Model

The NSDF uses the **Regional-Rural Development Model** (Rural Service Centre concept) as a key spatial strategy to support regional economic development, focus spatial development and improve service delivery through urban-rural and rural-rural linkages. The projected benefits of focused nodal development include a reduction in transport operating costs and limiting urban and rural sprawl. However, these outcomes can only be achieved through the successful implementation of the Regional-Rural Development Model approach, which will depend heavily on the spatial alignment of government infrastructure investment and the private sector.

The model adopts a **systemic view** of rural areas, which proposes the “soft delineation” of *polycentric rural regions*, which will embody the following characteristics:

- ➔ At least one well-connected regional development corridor on the national transport network
- ➔ Social, cultural, historical and economic characteristics and attributes make the development of a functional region possible.
- ➔ Reveal the potential for intraregional trade between the settlements of the region.
- ➔ The arid nature of the Karoo Region requires efficient use, management and protection of natural resources.
- ➔ The use of the **Social Service Provisioning Model** (see Section 3.1.8.2), will enable the provision of social services in villages, towns and regional development anchors as well as ensure the creation of at least



one regional development anchor to attract and retain human resources.

In addition to this, the NSDF, 2022 proposes a National Urban Network, which will be used to guide spatial development and investment. It identifies the following aspects to promote and drive rural development:

- Regional Development Anchors, which will allow targeted settlement planning/development, infrastructure provision, and support to economic development.
- Rural Service Centers, which will facilitate rural development and provide key services.

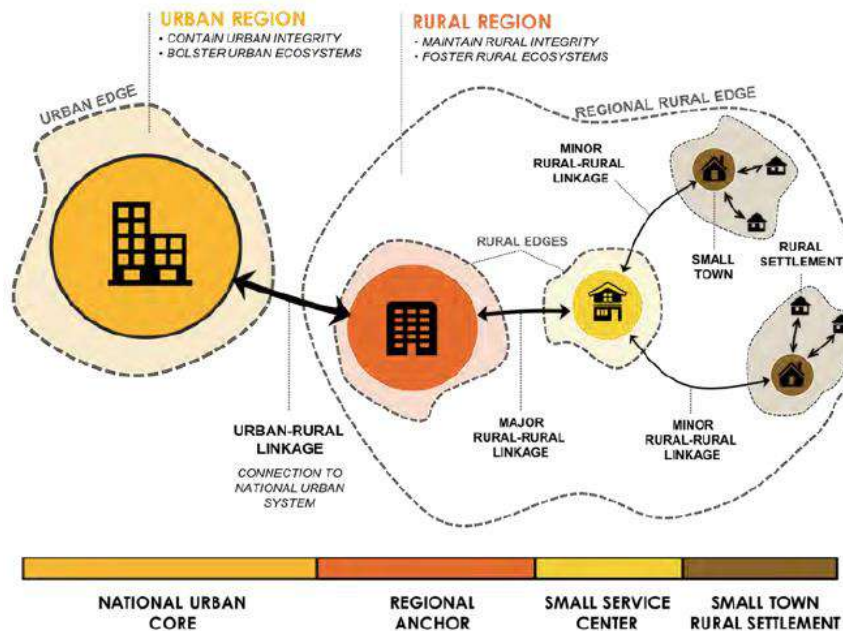
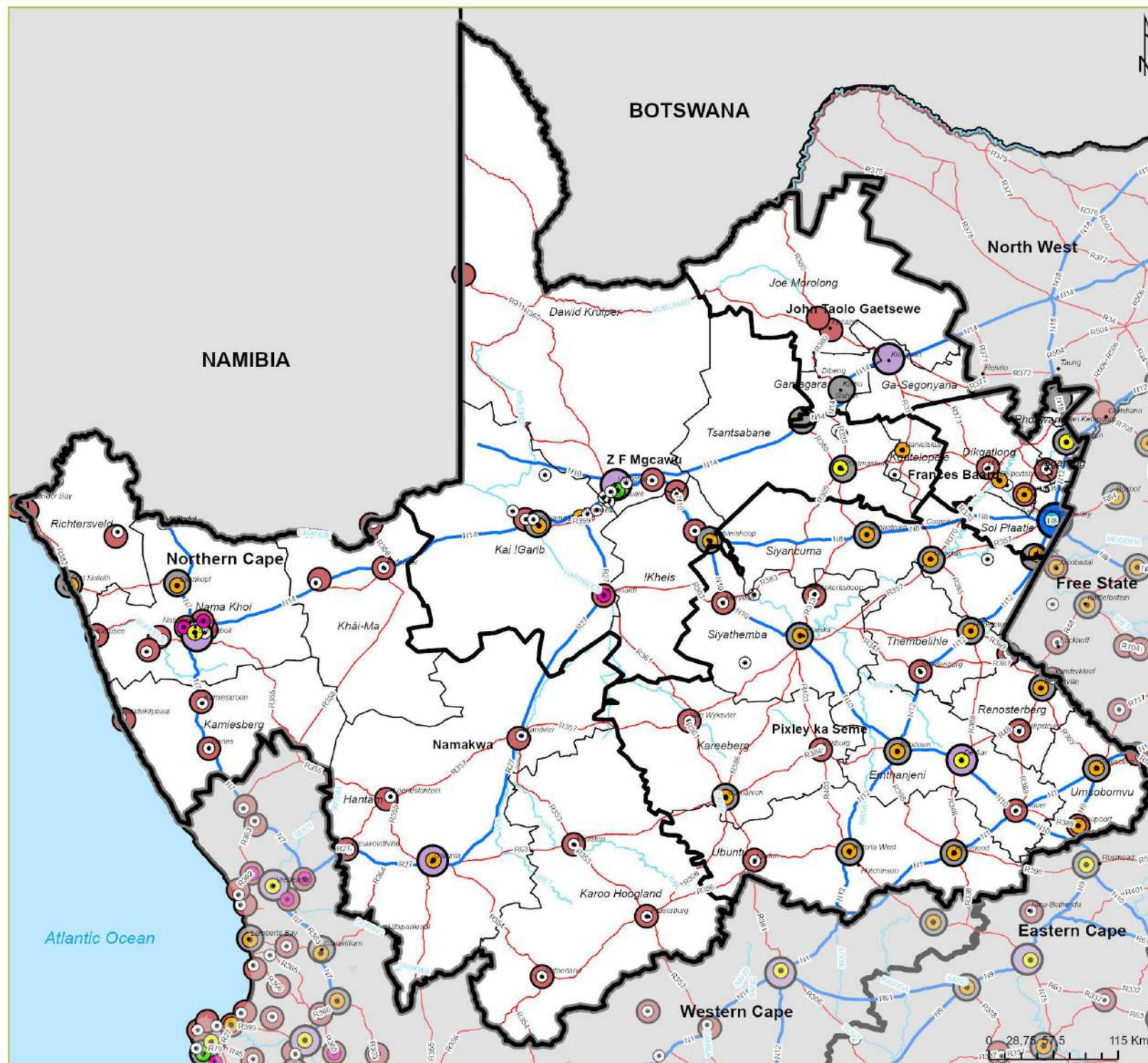


Figure 95: NSDF Regional-Rural Development Model





SETTLEMENT PATTERNS

Legend

- Town/Settlement
- Main Roads
- National Roads
- Main Rivers
- Local Municipality
- District Municipality

Social Service Typology

- City Region
- Cities and Large Regional Centres
- Regional Service Centre
- Service Town
- Small Service Town
- Small Local Town
- Local Service Node

Functional Town Hierarchy

- National Urban Regions
- National Urban Nodes
- Regional Development Anchor
- Rural Service Centres
- Other Towns

Map 32: Northern Cape Settlement Patterns

Source: NSDF

**NORTHERN CAPE PROVINCIAL
SPATIAL DEVELOPMENT FRAMEWORK**



5.3.6.5 Secondary Nodal Functions

5.3.6.5.1 Tourism Nodes

Tourism nodes represent growth centres with potential for agri-tourism, eco-tourism, botanical tourism, marine and coastal tourism, heritage tourism and adventure areas. Any development within the areas proposed in the table above (see secondary nodal functions) that may have adverse effects on the tourism industry needs to be discouraged. These areas are strategically situated in the province and represent the access points towards tourism areas.

Key objectives of tourism nodes include:

- To improve and optimise provincial tourism opportunities, through directing tourism-related activities to identified tourism areas and creating strong links between tourism towns and surrounding eco-tourism opportunities.
- To protect tourism assets, especially natural and agricultural resources and to ensure a sustainable coexistence between urban, mining, agricultural and ecological land uses in areas where the different competing land uses do coexist.
- Protect the character and attractiveness of agriculture and tourism areas from development that may subtract from their functional value or compromise their unique irreplaceable qualities.
- By preserving and promoting eco-tourism, especially in the ecologically sensitive areas of the province.
- Promoting and extending unique branding of tourism areas and routes in the province.
- The character of the province's rural areas should be protected from harmful developments that might detract from their functional value or visual quality. Strong, functional movement and economic linkages and synergies must also be created between rural nodes and surrounding eco-tourism opportunities.
- To improve broadband connectivity and cell phone access on routes proposed as tourism destinations. ICT infrastructure development can

lead to real job creation in both the knowledge economy and tourism industry.

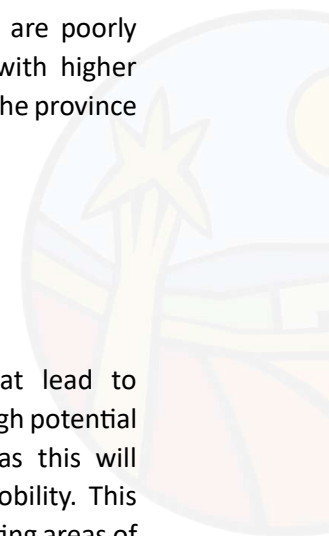
- The development of tourism sector-based SMMEs.
- To maintain and/or upgrade roads proposed as tourism routes.
- Promote and direct tourism-related activities into identified tourism areas, to strengthen their pull factor, promote essential cultural services and take advantage of the inherent value of such areas.
- Create strong, functional movement and economic linkages and synergies between tourism towns and surrounding eco-tourism opportunities.

5.3.6.6 Corridors

Corridor development as a spatial structuring element, and a tool for economic growth, seeks to create functional linkages between areas of higher thresholds (levels of support) and economic potential, with those that have insufficient thresholds. This will enable areas that are poorly serviced to be linked to areas of opportunity and benefit with higher thresholds. As a result, the system of development corridors in the province is developed on the following fundamental aspects:

- Levels of Mobility.
- Levels of Access
- Land use intensity and role in the spatial economy; and
- Functionality of the corridor.

Upgrade and road maintenance projects on corridors that lead to development opportunity areas such as rural service centres, high potential agricultural land and tourism nodes should be prioritized as this will encourage investment, improve accessibility and enhance mobility. This principle supports the phased approach to development, targeting areas of greatest potential first. Development corridors are effective in linking infrastructure and economic development as towns and structures connect to each other in a functionally effective manner.



The spatial development concept starts by understanding the mobility networks of people, goods, and services which are channelled along specific routes that describe a network of interaction. The level of activity that these networks provide results in “Development Corridors” which are broad areas of high-intensity urban development centred along activity and development routes. They are characterised by a dynamic, mutually supporting relationship between land use and the supporting movement system.

Development corridors are generally supported by a hierarchy of transport services that function as an integrated system to facilitate ease of movement for private and public transport users. Corridor development is focused predominantly on activity/ development routes serviced by mass rapid public transport services (i.e. rail or bus); however, the system of routes may serve distinct functions, with some routes combining route functionality in terms of accessibility and mobility.

The National Spatial Development Framework further presents priority inter-regional development corridors of national importance. The national corridors strive towards consolidating growth and prioritising economic development through trade infrastructure and activities within a well-connected inter-regional corridor network. Based on the above, the Northern Cape conceptual spatial framework reflects:

- Inter-Regional and National Development Corridors; and
- Provincial Development Corridors to strengthen inter-regional development within the province.

Table 28: Northern Cape development corridors

REGION AND CORRIDOR	DESCRIPTION	FUNCTION
Namaqua Ocean Corridor	The Namaqualand coast is the centre of the fishing and Mariculture sector. This corridor has its primary node at Port	→ Mariculture → Coastal Tourism

REGION AND CORRIDOR	DESCRIPTION	FUNCTION
	Nolloth and secondary nodes at Hondeklip Bay and Alexander Bay. The Oceans Economy concept is driven by the Operation Phakisa initiative of the South African government which aims to implement priority economic and social programmes better, faster, and more effectively. Operation Phakisa: Oceans Economy was launched by President J.G. Zuma, in October 2014. Initially, four growth areas were prioritised to contribute to unlocking the economic potential of South Africa’s oceans. This was based on their potential contribution to economic growth and job creation. The following growth areas and corresponding departments were prioritised: → Marine Transport and Manufacturing led by the Department of Transport. → Offshore Oil and Gas Exploration led by the Department of Mineral Resources. → Aquaculture led by the Department of Agriculture, Forestry and Fisheries; and → Marine Protection Services and Ocean Governance led by	→ Marine Biodiversity protection → Nature Conservation → Fishing Value Chain development



REGION AND CORRIDOR	DESCRIPTION	FUNCTION
	the Department of Environmental Affairs.	
Gamagara corridor	This corridor comprises the mining belt of the John Taolo Gaetsewe and Siyanda districts and runs from Lime Acres and Danielskuil to Hotazel in the north. The corridor focuses on the mining of iron and manganese.	→ Mining → Manufacturing → Industrialisation → Mining Value Chains → Terminal development → Heavy Industries
De Aar Technology Corridor	This corridor centres around Carnarvon and extends to the proximity of De Aar and Calvinia. The corridor presents access towards the SARA0 astronomy zone and seeks to develop the following key initiatives: → Broadband access → Science and Technology → Astronomy tourism development → Logistics Hub → Electronics development hub	→ Electronics development → Broadband Development → Science and Technology Research → Astronomy Tourism → Logistics Hub (Rail and Heavy Vehicle)
Tourism corridors	This corridor centres around Lake Gariep and has significant tourism potential. It is a potential interprovincial hub for tourism which affects the Northern Cape, the Free State, and the Eastern Cape. Since the Province is known for its mining assets and not really for its tourism potential, there is scope	→ Adventure Tourism → Eco-Tourism → Botanical tourism → Avi-tourism → Tourism nodes → Nature Conservation

REGION AND CORRIDOR	DESCRIPTION	FUNCTION
	for better utilisation of opportunities. This will have to take place bearing in mind that such development is not detrimental to the natural environment. Tourism activities should be in accordance with the image of the tourism features of the province, and various initiatives are to be coordinated.	
N1	This corridor connects Gauteng, Free State, Eastern Cape and Western Cape. Colesberg, Richmond and the other settlements along this route are the key beneficiaries and tourism hubs along this route.	→ Transportation → Tourism development → Provincial gateway
Trans-orange development corridor (N7)	This corridor stretches from Cape Town through Namaqualand up to Namibia. It is renowned for its unique aesthetic appeal and seasonal flower displays.	→ Export and Import gateway → Weigh Bridge → Tourism Development → Botanical Tourism → Tourism Node → Link towards Metropolitan areas

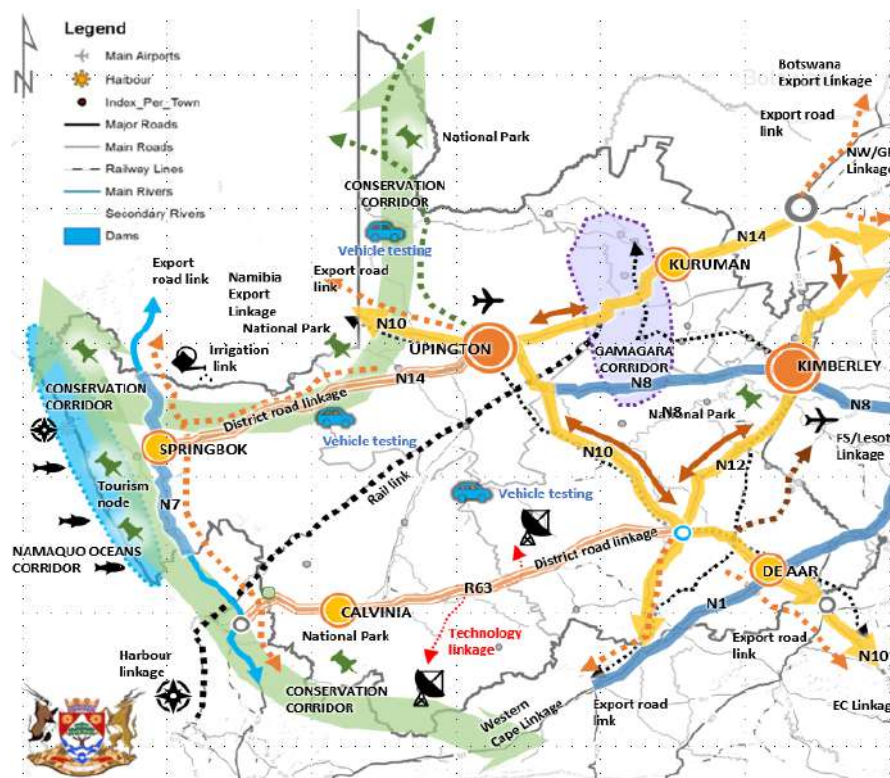


Figure 96: Northern Cape Corridors and Linkages

Corridor development is associated with a system of transport facilities on key routes that work together as an integrated system to facilitate ease of movement. A system of regional and local transport routes, which link a number of areas, should be viewed as the logical focus areas of an ordered strategy for rural development. These routes should be seen as activity and investment lines.

The structure they give to the area is articulated in the form of movement patterns and systematic distribution of land uses in space. However, not all regional routes are the same in terms of the intensity of use and ability to attract investment, services, economic activities and settlement.

Generally, larger routes linking economic engines of movement and investment have a greater generative capacity than smaller routes. It thus follows that regional facilities and services should gravitate towards these areas. Smaller facilities with smaller thresholds should be located along smaller routes. Viewed in this way, the issue of regional and rural spatial organization becomes one of creating a systemic framework of interlocking activity routes over time. This has an impact of:

- increasing equitable access to all levels of services.
- promoting investment.
- reducing spatial marginalisation.
- integrate communities with service provision; and
- fulfilling a range of economic and social needs.

The location of facilities along major routes recognizes the importance of choice to the rural communities concerning services such as education, health, and welfare facilities. Upgrading road maintenance projects on corridors that lead to development opportunity areas such as rural service centres, high-potential agricultural land and tourism nodes should be prioritized as this will encourage investment, improve accessibility and enhance mobility. This principle supports the phased approach to development, targeting areas of greatest potential first. Development corridors are effective in linking infrastructure and economic development as towns and structures connect to each other in a functionally effective manner.

5.3.6.6.1 Key Corridor Development Focus

The following table provides a detailed analysis of the current and future development potential of corridors within the Northern Cape.

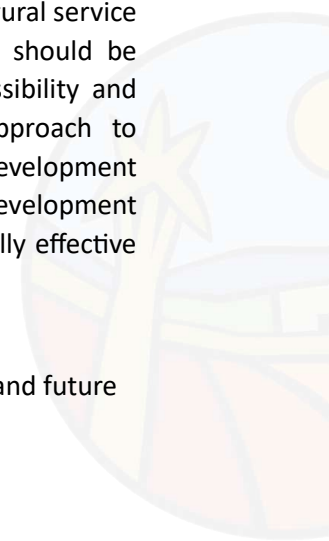


Table 29: Key corridor focus areas

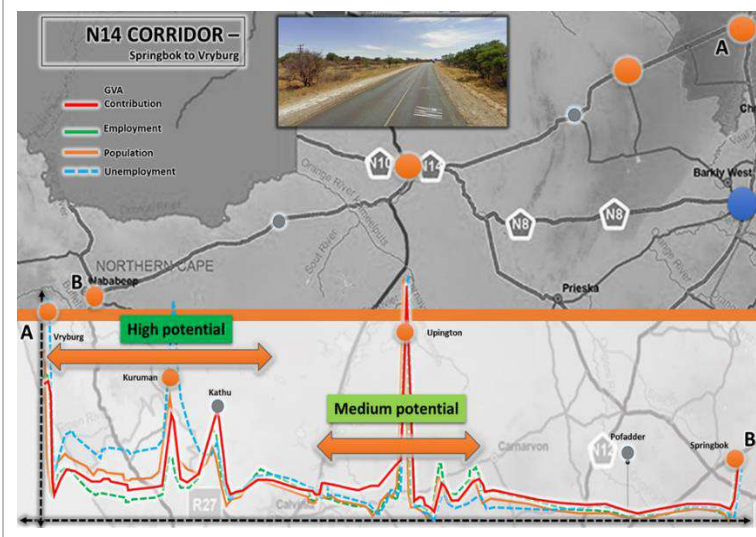
	N10 Focus area description: - Medium corridor development potential is available between the Namibian border and Groblershoop, along the agricultural development zone. - Further potential lies between De Aar and Middelburg towards Cradock. The Prieska section has limited potential for corridor development close to the town
	N7 Focus area description: Limited to no potential for corridor development is evident as the Cape Town Metropolitan area is not within close proximity of the Springbok area. The corridor is to be used as a Transportation corridor only





N8 Focus area description:

- ❑ A strong economic and administrative link existing between Kimberley and Bloemfontein. Further studies are required to investigate the potential.
- ❑ Corridor development efforts are evident in Bloemfontein whereas Kimberley has still to improve and access future corridor development potential between the cities.



N14 Focus Area Description:

- ❑ High corridor potential is evident between Vryburg, Kuruman and Kathu. Further studies are required to determine the economic potential.
- ❑ Corridor development potential along the Upington, Kakamas area is also evident and needs to be consolidated through a corridor development strategy.



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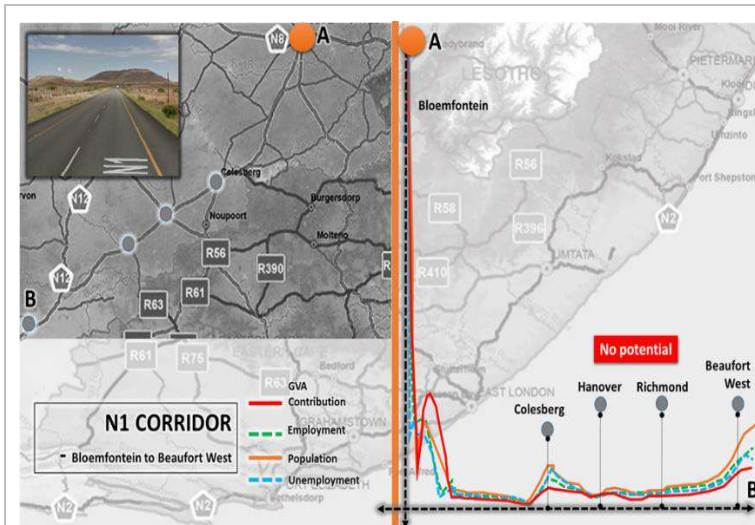
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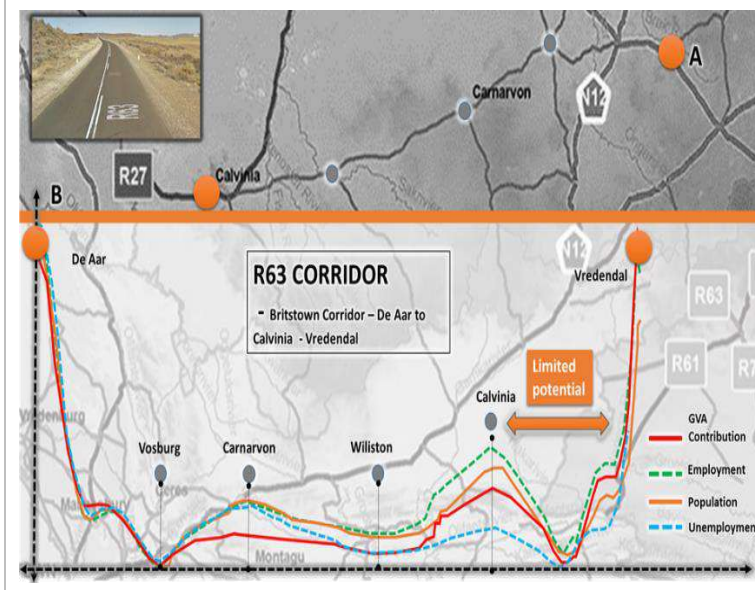


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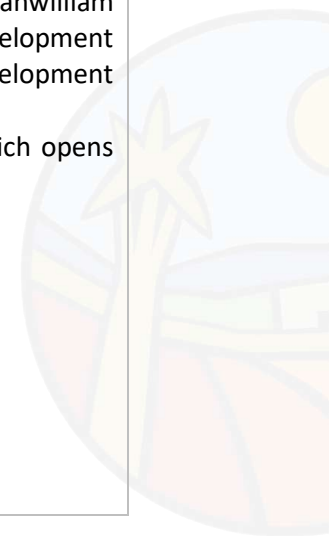
N1 Focus area description:

- ☐ The corridor presents very limited corridor development potential and needs to function as a transport corridor and gateway towards the Northern Cape province.
- ☐ Tourism development can be viable for overnight accommodation and related facilities, especially where the N1 and N6 intersect just south of Colesberg.



R63 focus area description:

- ☐ Corridor development potential exists between Calvinia and Vredendal/Clanwilliam area. Although only limited to medium potential is evident future development studies could give strategic direction to improve the viability of the development corridor.
- ☐ The corridor further provides access to the SARAO astronomy zone which opens tourism, research and technology potential.



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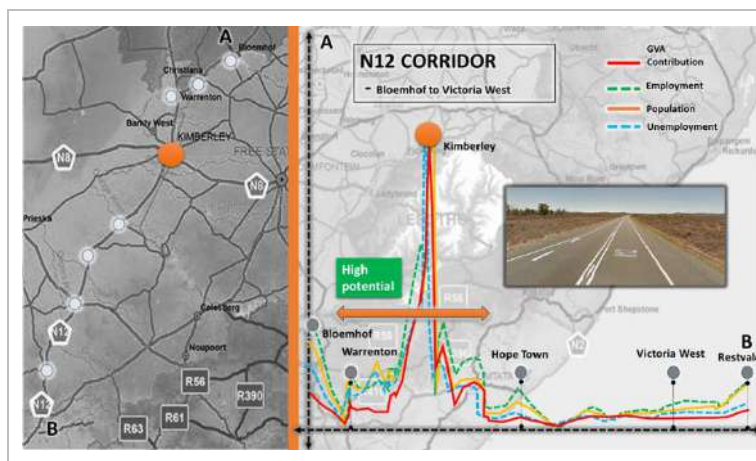
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N12 Focus area description:

- A medium to strong economic linkage coexists between Ritchie, Kimberley, Warrenton towards Christiana, and Bloemhof. Further studies are required to determine the corridor development potential.
- The route further links to Gauteng and is regarded as a Treasure route.

The table below provides an indication of the estimated economic size along the development corridors. The estimated total GVA contribution along the respective corridors is as follows (in order of highest potential):

- N12 corridor – GVA⁴² value of 22000 as contributed by the economic potential of the towns along the N12 corridor section. The link between Kimberley and Bloemhof shows economic potential, especially through the diversification of the economic activities taking the agricultural, mining, transportation and administrative activities along the route into consideration.
- N8 corridor – GVA value of 21100 as contributed along the Kimberley section only, the GVA of Bloemfontein has not been included and is in the order of 40000. Compared to Bloemfontein, Kimberley shows poor economic performance taking the balance between GVA contribution, Employment and Population size into consideration. This shows that Kimberley is underperforming and requires catalytic projects to kick-start the local economy. The economic potential between Kimberley and Bloemfontein is not fully exploited and requires urgent development and strategic interventions.

- N14 Corridor – GVA value of 8500 as contributed by the Kuruman and Upington growth centres. This section provides economic diversity whereby the Upington region could improve agricultural linkages towards the Kuruman area to improve the rural food security challenge. A corridor development strategy is required to determine the potential towards future expansion of the economic opportunities that could improve the link between the two growth centres.
- N10 Corridor – GVA value of 5500 as contributed by Upington, Prieska, De Aar and smaller towns. The distance between these growth centres does limit the corridor potential. The N10 and N14 intersect in Upington and present an improved GVA contribution for the Upington growth centre.
- Other corridors contribute little towards the GVA and show little potential for corridor development.

⁴² The Economic Activity of the Corridor using the Total GVA xR1000



Table 30: Total GVA contribution along the proposed development corridors

CORRIDOR	TOWNS	GVA OF TOWN*	AVERAGE GVA
N14	Vryburg	1332	718
	Kuruman	1519	304
	Kathu	1252	626
	Upington	3541	885
	Keimoes	370	370
	Kakamas	509	255
N7	Springbok	785	393
	Steinkopf	122	122
	Kamieskroon	38	38
	Garies	39	39
N10	Upington	3541	885
	Straussburg	173	173
	Leerkrans	304	304
	Grobblershoop	156	156
	Prieska	295	295
	De Aar	813	813
	Hanover	160	160
N8	Kimberley	21097	3516
N12	Warrenton	270	270
	Kimberley	21097	3516
	Ritchie	352	352
	Hopetown	192	192
R63	Calvinia	234	234
	Niewoudtville	56	56

* Units R'000, constant prices

Table 31 reaffirms the development potential with more focus provided on the GVA contributions of the sections highlighted.

Table 31: Total GVA contribution as per priority development section

CORRIDOR	SECTIONS	GVA OF SECTION TOTAL	GVA OF SECTION AVERAGE
N14	Vryburg to Kuruman	4855	381
	Kuruman to Kathu	2980	271
	Kathu to Upington	5242	122
N14	Upington to Keimoes	3349	478
	Keimoes to Kakamas	991	165
	Kakamas to Pofadder	900	37
N7	Steinkopf to Springbok	966	81
	Springbok to Kamieskroon	825	63
	Kamieskroon to Garies	96	11
N10	Namibia Border to Upington	3416	142
	Upington to Leerkrans	3380	676
	Britstown to De Aar	1072	97
	De Aar to Hanover	1070	71
N8	Kimberley to Bloemfontein	36510	974
N12	Warrenton to Kimberley	10639	760
	Kimberley to Ritchie	9103	1517
	Ritchie to Hopetown	741	41
R63	Calvinia to Niewoudtville	315	21

5.3.6.6.2 Future Development Corridor

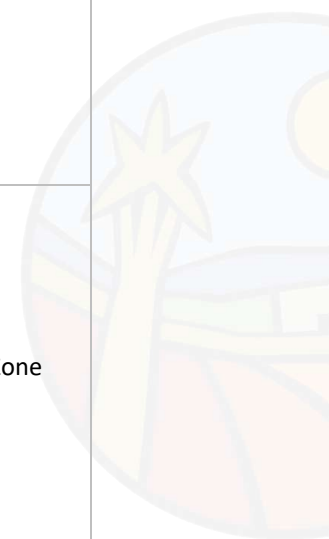
A Future Development Corridor (R31) is proposed to facilitate the expansion of Kuruman, Hotazel and Kathu towards the Sol Plaatje Local Municipality. The Corridor is proposed to unlock the Rural Economic Development Zone, the corridor further links towards the Central Urban Cluster as proposed in the National Spatial Development Framework. The expansion would improve the economic diversity of the Central Urban Cluster as the Gamagara Corridor would be included in the last-mentioned cluster. The proposal would further encourage mixed land use activities, improved access and mobility, improved road safety and increased



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Table 32: Northern Cape Development Zones

DEVELOPMENT ZONE	DESCRIPTION AND OBJECTIVES	FUNCTION
Astronomy Zone	The following activities are declared as prohibited or restricted activities in the core or central astronomy advantage area: → Prospecting or mining activities. → The construction, expansion or operation of any fixed radio frequency interference source. → Harmful industrial processes. → The construction and development of new business or residential areas or recreational facilities. → The construction or expansion of road or rail transport networks or parts thereof. → The construction or expansion of any airfield or airport. → The operation, construction or expansion of facilities for the generation, transmission or distribution of electricity. → Activities capable of causing light pollution, including the installation or operation of street lighting, outdoor security lights, laser promotional lights or self-lit billboards. → Activities capable of causing radio frequency interference, including bringing into the area or operating any interference source, mobile radio frequency interference source or short-range device. → Activities capable of causing air pollution; and → Any other activity which may detrimentally impact astronomy and related scientific endeavours, or the astronomy advantage of any core or central astronomy advantage area.	→ Science and technology development → Broadband development → Restricted development (frequencies) → Tourism development → Nature Conservation/declaration of a Biosphere Reserve → Research development → IT development industries
The Vaal-Orange Agricultural Zone and Douglas-Hartswater Agricultural Zone	This corridor constitutes the food-producing area from Hartswater and Jan Kempdorp through to Prieska, Hopetown and Douglas. Agricultural zones have been proposed to protect and guide agricultural development along the Orange and Vaal River systems. Key objectives of this zone include: → To maintain the productive capacity of agricultural activities by frugally managing water resources, protecting against contamination, and preventing them from becoming conduits for pollution. → Sustainable water management strategies. → Sustainable and Environmentally sound fertilisation strategy. → Integrated agricultural value chains. → Integrated transport management system to commute workers, and produce in and out of the province. To develop a detailed Agricultural Master Plan for the proposed development zones which needs to improve the effectiveness and management of the region (e.g. irrigation	→ Agro-processing → Agri-tourism → Agricultural value chains → Protection of Agricultural Land → Public Transportation network → Special Economic Development Zone → Cargo hub



DEVELOPMENT ZONE	DESCRIPTION AND OBJECTIVES	FUNCTION
	quotas, fertilisers, crop genetics, agro-processing, value chains, transportation of goods and services, SMME development).	
Rural Regeneration Zone	Development within the John Taolo Gaetsewe District raises an issue of the traditional dichotomy between urban and rural, town and countryside. The structure of the local economy shadows the discrepancy between urban and rural. These realities underscore the necessity of putting together a spatial strategy within the broader development context. It should thus focus on managing the form and texture of development, in a manner that contributes to the following performance criteria: → Developing a comprehensive spatial system that promotes integration of the previously disparate areas and eliminates the gap between where people live and where they work. → Improving the overall quality of the urban environment by better integrating environmental concerns within development planning and urban management practices. → Creating the base for efficiency in the delivery of services (water, electricity, sanitation, etc.), movement, investment and decision-making. → Promoting integrated and coordinated development with all stakeholders working towards a common development vision and agenda. → Creating a more efficient and productive sub-region through the development and adoption of policies that seek to build competitive advantages while also unlocking new opportunities. A Rural Economic Development Zone strategy needs to be developed to improve the living conditions and opportunities of the communities residing in traditional areas. The strategy needs to aim at the following objectives: → Upgrading informal settlements and transforming illegal structures into legal ones thus improving the provincial housing statistics. → The recognition of three fundamental conditions which include property rights, property values and physical attributes of the underlying assets and their impact on each other. → Beyond the legal dimensions of upgrading the informal settlements, the strategy also needs to aim at promoting the improvement of services such as water, electricity, sanitation, road infrastructure, etc. → Kuruman has been identified as the Rural Investment Node. It is strategically located to serve rural settlements. → The Kuruman node would improve accessibility towards provincial and national development markets and opportunities by unlocking the proposed national road (R31) upgrade between Kimberley and Kuruman.	→ Rural regeneration strategy → Rural Intervention Area (RIA) → Improved housing delivery → Land Tenure upgrading → Traditional Leadership management strategy → Public Transportation Strategy → Manufacturing → Skills development → Broadband access → SMME Development hub → Densification Strategy



DEVELOPMENT ZONE	DESCRIPTION AND OBJECTIVES	FUNCTION
Conservation Zones	Conservation corridors are stretches of land that link protected areas to ensure healthy, connected landscapes and habitats that support and are supported by, local communities. Corridors act as passages for fauna and flora to move from one region to the next. In light of climate change, they also play a vital role in allowing species to move from a warmer to a cooler region and vice versa. Conservation corridors assist landowners and land users to improve the way they manage the economic, social and ecological aspects of their environment while improving the well-being of local communities. Key conservation strategies to adopt and accommodate within the conservation corridors are: → Promoting the conservation linkages between existing natural protected areas, thereby reinforcing the natural resource foundation towards mitigating climate change. The linkages can be strengthened by the extension of buffer/transition zones to embrace large areas suitable for appropriate ecosystem management. The approach explores and demonstrates techniques for sustainable development at the regional scale. Appropriate attention should, therefore, be given to the transitional and/or buffer areas. → Maintaining landscape connectivity is a major action that municipalities can implement through land use planning to mitigate climate change impacts within the province and South Africa as a whole. → Mountains, ridges, and rivers, including wetland systems, represent important natural corridors in the Northern Cape Province. → Protection of intact natural habitat, especially wetlands, floodplains and intact riparian habitat is extremely important for reducing the magnitude of flood events as these areas play an important role in regulating hydrological processes, such as stormwater run-off. In addition, these areas (especially floodplains) are extremely high risk for communities living in these areas. → Ensuring that infrastructure and agricultural development are avoided, where possible, in high-risk areas to reduce the long-term impact of climate change, particularly on poor communities. → For biodiversity conservation to succeed, the maintenance of environmental integrity (as defined by ecological, economic, and social criteria) must be one of the primary determinants of land-use planning and development.	→ Expansion of Nature Conservation areas → Improved ecological corridor development. → Improved protection of sensitive natural areas (SKEP etc.) → Mitigation of climate change → Eco-tourism development
Karoo Zone (region)	The Karoo is a semi-desert natural region, a more defined definition is due to be formulated in the proposed Karoo Regional Spatial Development Framework. The Karoo is partly defined by its topography, geology and climate, and above all, its low rainfall, arid air, cloudless skies, and extreme temperatures. The Karoo also hosted a well-preserved ecosystem hundreds of million years ago which is now represented by many fossils. The unique climatic conditions, bio-diversity sparse landscapes and tranquillity	→ Expansion of Nature Conservation areas → Improved ecological corridor development. → Improved protection of sensitive natural areas (SKEP etc.)



DEVELOPMENT ZONE	DESCRIPTION AND OBJECTIVES	FUNCTION
	have lent themselves to a unique appeal and cultural identity. The Karoo is also a source of agricultural production, such as lamb and goat meat as well as table fruit. The Karoo has recently seen significant investment in the production of renewable energy, both wind and solar. Due to its unique characteristics and location, it is also home to scientific exploration in astronomy with projects such as the Square Kilometre Array located in the Karoo. The region holds reserves of shale gas and uranium for which there is currently significant interest to conduct exploration. The towns in the Karoo are important due to the sparse settlement pattern of the region, therefore each plays an important role in providing goods and services to its residents and its hinterland rural communities. However, the Karoo also poses some important development challenges namely: → The Karoo is a water-stressed biologically diverse and sensitive bio-region requiring a careful weighing up of development options. → Individual municipalities have limited resources (human, financial, technical) to deal with factors that affect the entire region, such as shale gas and uranium mining, renewable energy investment, climate change and adaption, poverty and unemployment. → Developing a strategic response to the development challenges will have limited impact, without considering the area as a region. Key conservation strategies to adopt and accommodate within the conservation corridors are: → Building on the Karoo's location as the region is centrally located, providing connection between various regions (logistics). → Unlock unique tourism opportunities with the unique Karoo Identity and culture (tourism). → Mining industries - iron, uranium, shale gas – (beneficiation, energy mix). → Building on the region's unique Agricultural characteristics (Orange River belt, livestock (Karoo meat of origin)) → Maximising the potential benefits of the production of renewable energy (energy mix). → Unlocking the knowledge economy through science development (astronomy: SKA, SALT; indigenous knowledge).	→ Mitigation of climate change → Eco-tourism development



5.3.7 HUMAN SETTLEMENTS

5.3.7.1 Settlement Trends

The highest concentration of formal housing is located within the capital of the Northern Cape: Kimberley. This is due to the origin of the diamond industry within the city, which resulted in the first formal settlements being constructed, concentrated among the diamond claims, that can be observed at the Big Hole Centre.

Upington and its surrounding regions have the second highest concentration of formal centres, mainly due to the high level of economic activity originating from intensive agriculture activities.

The settlements in the Springbok and Kuruman regions jointly form the areas with the third highest concentration of formal settlements. The high concentration is mainly due to mining activity within the areas, providing economic and housing opportunities.

The Apartheid legacy is still visible, as the formal settlements are mainly in the previously 'white' restricted areas, with the highest level of social infrastructure. The previously dedicated areas for other racial groups have steadily been formalised and emphasis has been placed on the provision of basic, and social services.

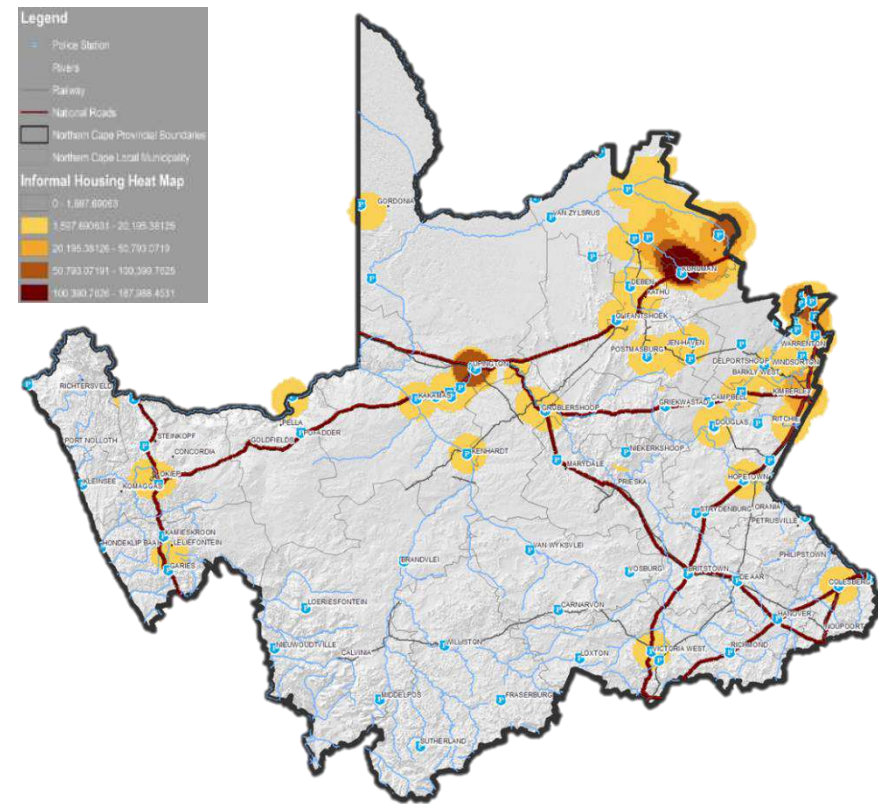


Figure 98: Formal Settlement Distribution

5.3.7.2 Informal Settlements and Basic Services

Informal settlements are concentrated in areas with the highest population densities, typically associated with areas with high economic potential, associated with mining and intensive agriculture activities.

The high concentration of informal settlements in these areas is caused by migration, driven by the hope of job opportunities for the labour force. Typically, the provision of formal housing cannot keep up with the influx of migrants, resulting in the growth of informal areas.

Informal areas towards the east are mainly concentrated in tribal or communal areas, such as in the case of Concordia and Pella. Informal settlements are also evident in the tribal regions of the John Taolo Gaetsewe district.

5.3.7.2.1 Delivery Approach Concerning Informal Settlements Upgrading

The delivery model currently utilised by the Department concerning upgrading informal settlements entails a project-based approach over the MTEF. In respect of informal settlements, the province plays the role of developer directly implementing projects. Some municipalities will implement projects themselves, but this is limited and predominantly in respect of providing services⁴³.

Implementation is undertaken in alignment with the Provincial long-term vision and upgrading strategy and programme (see section 2.3.3) and within the specifications of the Housing Code predominantly using the:

- Upgrading Informal Settlement Programme (UISP),
- Integrated Residential Development Programme (IRDP); and
- Community Residential Programme (CRU).

The current informal settlement upgrading strategy was formulated in 2014 and applies the following approach⁴⁴ :

- 1) The scale of delivery within informal settlements should be accelerated through executing strategies and programmes in six LM including a total of 98 projects which are ready to start.
- 2) Robust plans should be developed at the provincial and local levels to roll out NUSP assistance to more Local Municipalities. In addition, a human settlement needs analysis in the mining corridor should be undertaken. Further support should be provided through the (Integrated Development Plan (IDP) process.
- 3) Streamline access to grant funding by ensuring that the multi-year plan includes the Informal Settlement Upgrading Programme (ISUP)

- 4) Enable intra-governmental cooperation through the National Upgrading Support Programme (NUSP) forum meetings continuing to include sector partners, and to establish a cluster working group of the Premier.
- 5) Strengthen capacity within the sector.
- 6) Continual review of plans and performance
- 7) Establish community structures through ward committees and other structures.
- 8) Establish a working group to identify well-located land, geotechnical and dolomite intervention & tribal land development working group.

5.3.7.3 Housing

In the last decade, 6,600 houses have been delivered and 9,000 stands serviced. This is an under delivery in terms of the targets set. In addition, annual delivery is substantially lower than projected annual household growth. On average 1,100 houses and 1,500 stands are serviced a year. The stated reasons for under delivery are funding shortfalls and the logistical challenges related to the large geographic extent of the province.

5.3.7.3.1 Catalytic Projects and Priority Human Settlement Development Areas

Catalytic projects are spatially targeted interventions that aim to change the way in which infrastructure is provided and to restructure settlement patterns. Investment in human settlement development is being directed into catalytic projects. Two catalytic projects are being undertaken in the Northern Cape namely Lerato Park in Kimberley and Postmansburg together estimated to generate 8,151 housing opportunities (see below).

⁴³ COGHSTA, 2020. Northern Cape Multi Year Development Plan, 2019 – 2024.

⁴⁴ NUSP, July 2014. Northern Cape Strategy and Programme for the Upgrading of Informal Settlements



Table 33: Northern Cape: Catalytic projects

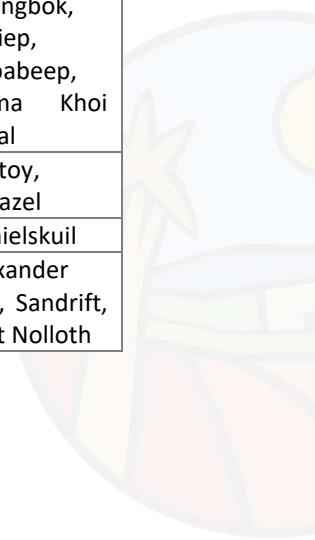
No opportunities	housing	Project duration	Development cost	Status
Lerato Park (Kimberley)	4,651	10 years	R1,27 billion	1084 subsidised houses complete. Contractor appointed for next phase
Postmansburg	3,500	5-10 years	R1,64 billion	Township establishment is underway. A key issue is the availability of bulk

On 15 May 2020, 136 Priority Human Settlements and Housing Development Areas (PHSHDAs) were gazetted to advance human settlement spatial transformation and consolidation by focusing investment into these specific areas. The main objectives of PHSDAs are spatial justice and efficiency; access to connectivity, economic and social infrastructure; access to adequate accommodation and provision of quality housing options. Five PHSDAs are gazetted for the Northern Cape and an additional seven have been added (see table below).

Table 34: Northern Cape PHSDA's

DM	LM	Name	Main places
Gazette	Frances Baard	Sol Plaatjie	Kimberley
			Direlanang Industrial, Galeshwe, Ipeleng, Poppeng, Kimberley, Lerato Park, Redirile, Retswelele, Tlhageng, Tshwarangan

DM	LM	Name	Main places
			O, Vergenoeg, West End.
	JTG	Gamagara	Kathu
	Namakwa	Khai-Ma	Aggeneys/Pofadder
	ZF Mgcawu	Dawid Kruiper	Upington
		Tsantsa-bane	Postmansburg/Tsantsabane
Additional	Pixley Seme	Kareeberg	Carnarvon
		Emthanjeni	De Aar
	JTG	Ga-Segonyana	Greater Kuruman Development Area
		Nama Khoi	Greater Springbok Development Area
		Joe Morolong	Joe Morolong Mining Area
	ZF Mgcawu	Kgatelopele	Kgatelopele
	Namakwa	Richtersveld	Port Nolloth/Alexander Bay



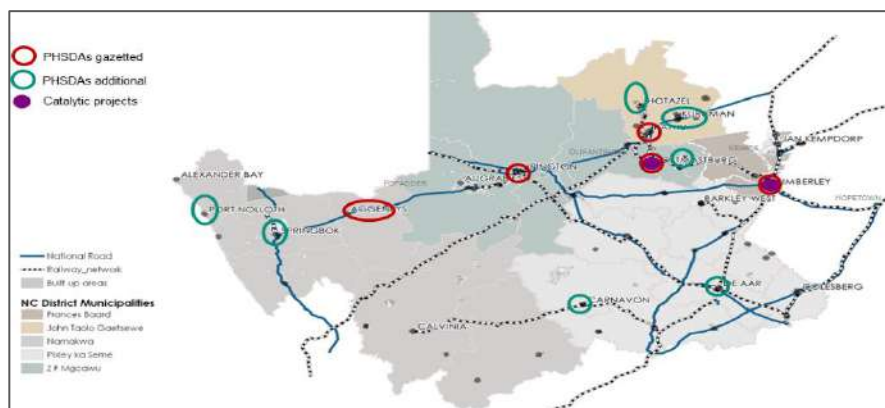


Figure 99: Northern Cape: Spatial location of catalytic projects and PHSDA's

5.3.7.3.2 Synthesis

DWELLING TYPOLOGY

- The primary dwelling type for households in the province is a house or brick structure – formal dwelling (85.9%). The largest segment of formal dwellings are free-standing houses on single erven (79.5%).
- Approximately 12.1% of households reside in informal dwellings, whilst only 1.4% of households reside in traditional dwellings.

TENURE STATUS

- Of households in the province, 47.3% own the dwelling/property in which they reside and have fully paid the bond registered to the property with a further 3.4% of households in the process of paying off their bond.
- A large segment of households (16.6%) rent their current dwelling, whilst 27.7% occupy their current dwelling rent-free.



6 FUNCTIONAL REGIONS

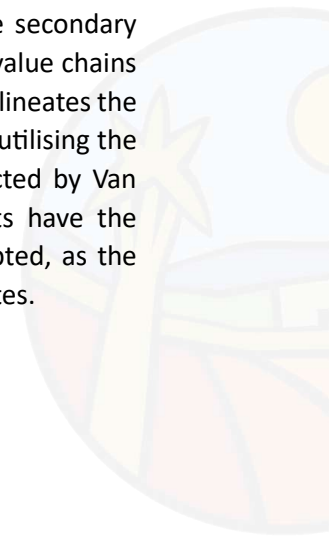
The National Development Plan calls for spatial targeting and highlights certain key space economy interventions that need further planning. Taking their cue from this plan, a process to delineate and analyse functional economic regions was done to determine the interrelationships of economic development trends between different towns and bigger growth centres. The approach will consider the functional economic relationships occurring across a contiguous space by analysing regional value chains, market trends, sector territories, economic clusters and transportation flows amongst other aspects of the space economy.

The intention in defining functional regions is to “improve cross-boundary infrastructure planning, ensure better integration of a wider network of human settlements and support the sharing of economic assets to secure economies of scale”. Key objectives for the determination of the functional regions included the following:

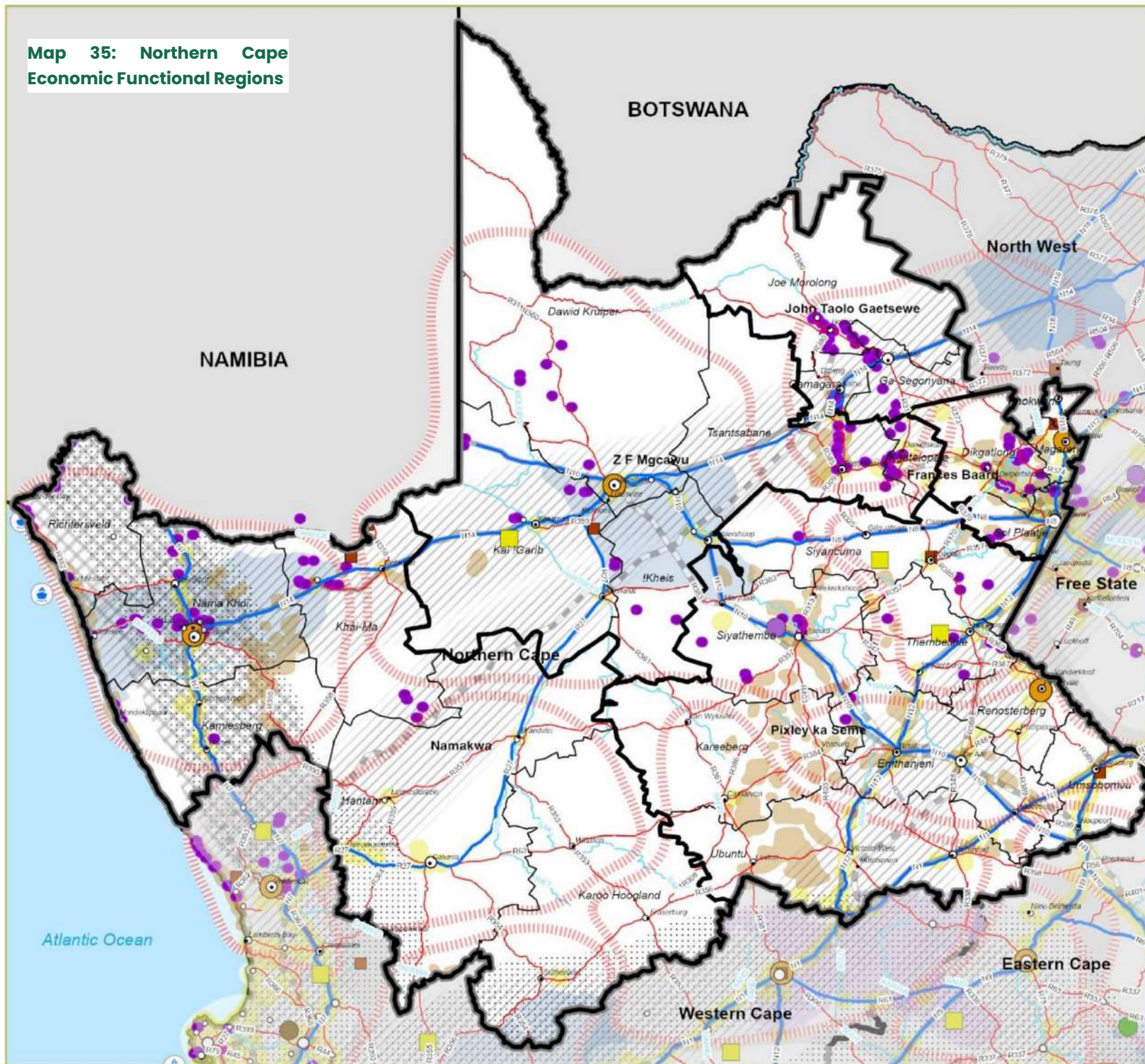
- The process needed to be evidence-based, thus providing an opportunity for more effective planning across sectors as opposed to the more linear silo approach.
- Development of spatial economic perspective that will essentially support both the NSDF’s Spatial structuring elements (Growth zones, Urban core Areas, Rural service Centres) as well as the Government’s new Infrastructure build programme and SIPs.
- To cost the strengths of the different economic functional regions and to give perspective on the future development opportunities these regions pose.
- To create space for cross-boundary planning. Allowing municipalities that configure into functional economic regions to collectively plan catalytic interventions.
- To provide a basis for the prioritisation of high-impact infrastructure investment across the province.

- To enable the potential basis for Provincial Economic Development Departments to support economic planning on a regional basis with Districts strengthening the economic component of the PGDP.
- To allow for planning that is based on an understanding of the potential of economic value chains over space.
- To provide a spatial platform for scaling up jobs by maximizing opportunities resulting from high-impact initiatives; and
- To ensure greater leverage off major structuring elements such as transport and development corridors.

To provide an economic context/ platform for key spatial initiatives of government, such as the SIP, IDZ and new SEZ programmes. The proposed economic development approach is to create an integrated cross-provincial system of growth nodes with “well-articulated strategic functional economic linkages to less-developed areas (rural areas)” to help unlock latent economic potential and create more inclusive and widespread regional development. The functional regions would require formalised linkages through the proposed development corridors where secondary cities and regional service centres will get to anchor their key value chains in a broader economic region. The map below indicates and delineates the Northern Cape functional regions, which were determined by utilising the CSIR settlement typology (2019) and similar research conducted by Van Huyssteen *et al*, (2015:5) which indicated which settlements have the highest levels of interactions. The approach was slightly adapted, as the original methods were not based on the existing transport routes.



**Map 35: Northern Cape
Economic Functional Regions**



ECONOMIC FUNCTIONAL REGIONS

Legend

- Town/Settlement
- Harbour
- FPSUs
- Agrihubs
- Beneficiation opportunities
 - Prepared foodstuff, beverages
 - Livestock and Animal Products
 - Mineral Products
 - Vegetables, fruit and grains
- Main Roads
- National Roads
- Main Rivers
- Network and linkages
 - Rail
 - Strategic Roads; Strategic Transport Routes
 - Electricity Grid Expansion Area (EGI)
 - REDZ Power Corridors
 - Strategic Gas Pipeline Network
- Economic Functional Regions
 - Renewable Energy Development Zones - Phase 1
 - Cellphone Coverage
 - Existing mining areas
 - Mining potential areas
 - Renewable Energy Development Zones - Phase 2
- Functional Town Hierarchy
 - National Urban Regions
 - National Urban Nodes
 - Regional Development Anchor
 - Rural Service Centres
 - Other Towns

Source: Karoo RSDF

NORTHERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK



6.1.1.1 Vulnerability

As communities can be classified as vulnerable due to numerous aspects influencing their livelihoods, it is necessary to explore which aspects will have the greatest negative and positive influences on the population of the Northern Cape Province.

Grant dependency: High grant dependence is one of the contributing factors to vulnerability. The central part of the Region is most affected. The relatively high grant dependency percentage throughout the Region is a reminder of the high level of reliance on the government as an economic role player in the area, with government spending in the form of grants contributing significantly to the local economies of towns.

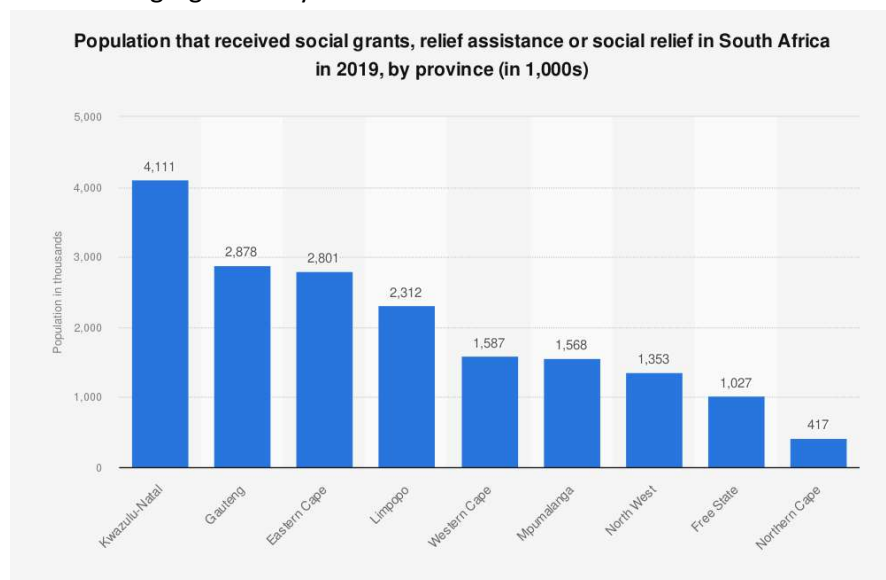


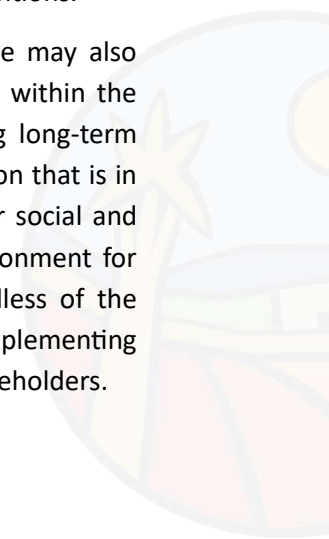
Figure 101: Population percentage that received Social Grants within the Northern Cape

Figure 102: Population percentage that received Social Grants within the Northern Cape

are normally more active in this regard. As discussed in the November 2020 media headlines, a large number of towns in the Northern Cape experience water shortages, based on mismanagement. This contradicts the recorded public unrest incidents and may indicate a low level of public activism in the study area.

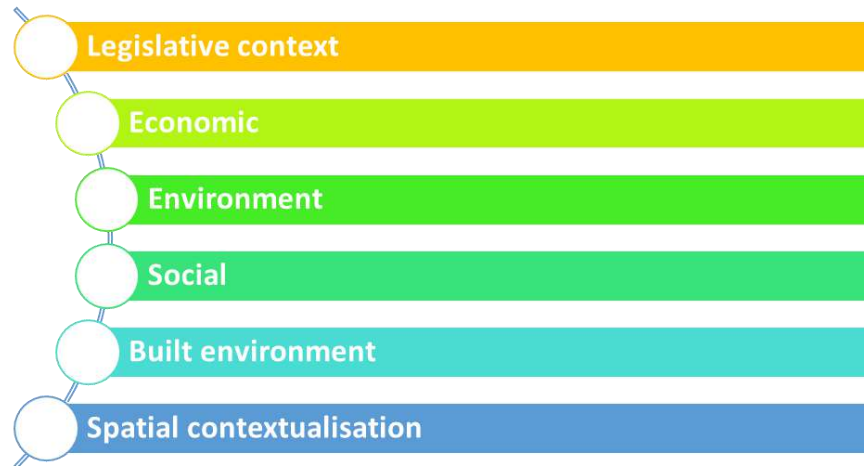
Politics and governance: One of the key challenges faced by the Northern Cape is the overall functioning of the governance structure, which results in limited cooperation between provincial departments as well as between the different spheres of government. Strong political leadership is crucial in order to create an enabling environment for cooperation and integration of provincial planning by the various sector departments. Currently, the performance of the Northern Cape's governance is hindered by political infighting, corruption and unwilling or insufficient political leadership at management levels within sector departments, and in some cases between branches within departments. Due to the unwillingness to cooperate, various efforts and resources are duplicated, limiting the overall effectiveness and impact of governmental projects and interventions.

Furthermore, the overall political climate within the province may also influence the risk profile. It will be crucial to create stability within the Northern Cape, by consistently implementing and endorsing long-term strategies and objectives, regardless of the political organisation that is in power (or newly elected), in order to obtain the sought-after social and economic transformation. Doing so will create a stable environment for investors as well as ensure sector departments that, regardless of the political climate, the focus of the province will be placed on implementing medium and long-term strategies that are accessible to all stakeholders.



7 OVERVIEW

The following section provides an overview of the key aspects of the Northern Cape context, that were identified during the status quo analysis. The summary is structured as follows:



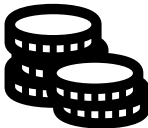
The summary will indicate which aspects and challenges are to be addressed. Some of the key aspects will be addressed in phases 3 and 4, where other issues will need to be addressed by the Office of the Premier and provincial government, to enable the province to effectively implement the PGDP and PSDF strategies.

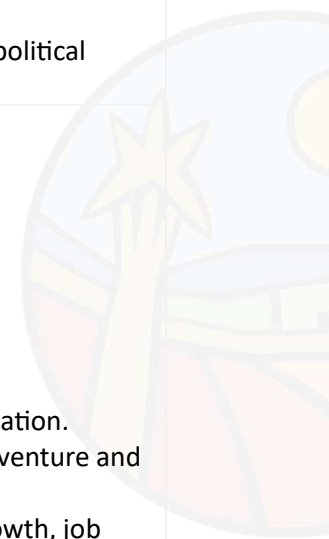
7.1 SUMMARY OF KEY FINDINGS

The following table provides a summary of the Status Quo key findings.

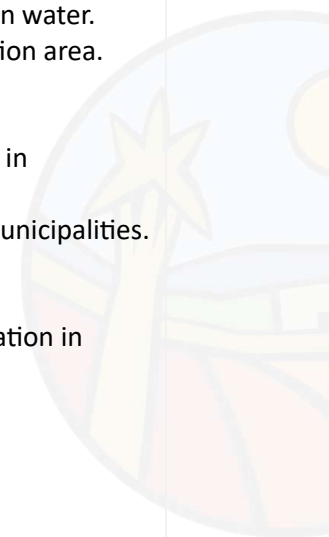


Table 35: Summary of the Status Quo key findings

CATEGORY	KEY ASPECTS AND FINDINGS
Legislative context 	Key actions required: → Identify departments and units that require urgent intervention in order to obtain the skills and capacity required to implement key legislation and policies. → Launch a programme to determine why provincial departments are not functioning effectively (apart from capacity and skills challenges) → Provide a manual for alignment of national, provincial and local level policy. → Provide spatial and policy framework for integration of sectoral interests. → Ensure that all provincial departments are obligated to utilise the PGDP and PSDF policies in order to gain access to funds. → Improve communication between the Provincial Government and municipalities pertaining to planning, land use, etc. → Provide guidelines to ensure compliance of SDFs of district and local municipalities with PSDF. → Identify and address legislation and policy that create barriers for sustainable development. → Provide guidance pertaining to long-term management of the coastal zone through the implementation of appropriate overlay zones. → Strengthen environmental legislation compliance and enforcement. → Support coherent implementation of the Comprehensive Rural Development Program (CRDP). → Provide a strategy to ensure that infrastructure spending has a long-term focus which is not subject to short-term political cycles and IDP budgets only
Economic 	The following key observations were made: → Limited beneficiation occurs with mining and other high-impact projects. → High transport costs and long distances are trapping households in poverty. → Limited employment opportunities are created. → High-impact projects are hindered due to the lack of infrastructure (e.g. electrical lines etc.) → Transport costs and long distances are hindering SMME registration. → Trade agreements are limiting the opportunities for manufacturing within the province. The following is required: → Provide a plan for supporting bulk services and infrastructure, including roads, electricity, water and telecommunication. → Unlock the potential of tourism markets, especially in rural areas where new product opportunities for cultural, adventure and ecotourism exist. → Create a transformed and vibrant agricultural sector with an increasing contribution to the provincial economic growth, job creation and food security. → Promote the opportunities for communities to establish transport and logistic enterprises. → Ensure that new development is subject to the availability of resources, with specific reference to water and bulk services infrastructure.



	→ Promote innovative and sustainable Local Economic Development, such as bakeries in order to reduce the cost (due to transport etc) of basic food items. → Utilise the Paris Agreement and Carbon Credits to access additional funding for the province. → Establishing stronger backward and forward linkages between sectors to ensure stronger multipliers. → Create incentives and opportunities for commercial banks to extend their input into LED and unlock benefits associated with banking charters more efficiently. → Explore models for public-private partnerships (e.g. the Karsten Women Trust).
Environmental 	The following key observations were made: → Limited protection is provided to surface and groundwater resources. → Disjuncture of environmental priorities between the various Environmental departments and units. → Limited awareness programmes and recycling initiatives. → The negative impacts of renewable energy projects are not fully comprehended or understood. → The increasing prominence of degraded land. → Communities are not educated on how to sustainably utilise natural resources. → Ineffective waste management and practices are a large contributor to environmental pollution. The following is required: → Consider the designation of agricultural reserves in areas of high-potential agricultural soils with adequate irrigation water. → Create appropriate ecological linkages between conservation areas. Designate the coastal zone as a core conservation area. → Institute standard development approach along the Orange River by all relevant municipalities. → Enhance sustainable use of formal conservation areas and their resources. → Explore the desirability of implementing strategies such as Protected Nature Areas and Special Management Areas in collaboration with organised agriculture and the Department of the Environment. → Preparation and implementation of an efficient Water Demand Conservation Strategy must be mandatory for all municipalities. → Promote cross-border conservation initiatives – explore the merit and desirability of UNESCO biosphere reserves. → Promote history and archaeology as primary tourism resources. → Protect high-potential agricultural land through appropriate land-use designation. Provide for biodiversity conservation in terms of SANBI's critical biodiversity area (CBA) indicators. → Provide guidelines for the re-use and/or the more sustainable use of resources. → Provide innovative strategies to help conserve conservation-worthy habitats on private land. → Provide a land-use plan as a basis for the integration of mining activities with conservation. → Establish various training centres close to conservation areas to train tour guides etc. from the local communities. → Improve communication and awareness programs as currently, they do not reach the communities on ground level. → A system is required to measure pollution levels which includes mitigation strategies. → Formulate guidelines for the preparation of a provincial climate-neutrality strategy in terms of international best practices.
Social	→ The following key observations were made:





- Health services are not easily accessible by all.
 - Emphasis is placed on the health requirements of the elderly, and not the youth or other age groups.
 - The quality of health services varies greatly throughout the province.
 - Scientific-orientated school subjects are not provided in rural areas.
 - Disjuncture between skills provided within education systems and what is required by the market.
 - An increase in substance abuse is observed.
 - Crime is becoming more prominent due to poverty, unemployment, and inequality.
 - Large dependence on social grants.
 - CPA's and Traditional authority's roles are not delineated, while the CPA's and Tribal authorities also tend to not provide a true reflection of the community's wants and needs.
 - Loss and deterioration of heritage sites and knowledge is prevalent throughout the province.
- The following is required:
- A new approach to health service delivery needs to be investigated.
 - High-quality basic education needs to be prioritised.
 - Programmes and initiatives to preserve heritage, indigenous knowledge and practices need to be established.
 - Utilisation of existing or abandoned health facilities needs to be prioritised.
 - Emphasis needs to be placed on youth and self-development.
 - Joint ventures between NGOs and the Department of Social Development should be promoted.

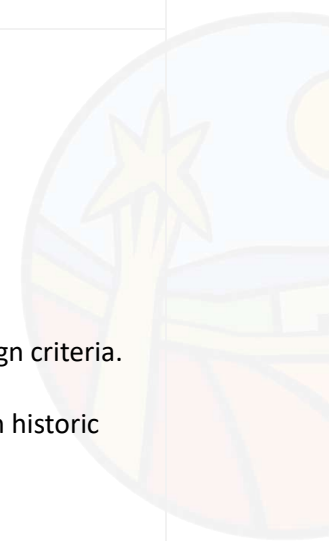
Built Environment



- The following key observations were made:
- The limited bulk infrastructure is hindering the implementation of high-impact projects.
 - Limited maintenance of existing infrastructure.
 - Urban sprawl is increasing the costs associated with service delivery.
 - Waste management practices need to be improved and effectively regulated.
 - It is not feasible to provide services to all isolated communities within the province.
- The following is required:
- Planning and design of industrial and mining infrastructure must be undertaken in accordance with dedicated design criteria.
 - Provide a spatial plan for bulk services and infrastructure for settlement priorities.
 - District and local SDFs should incorporate place-specific guidelines for architecture and landscaping premised upon historic design precedents and vernacular.
 - Provide a framework for performance management of municipalities and settlements.
 - Ensure infrastructure of major projects benefits the communities, and not only the project.
 - Duplication of services should be limited.

Spatial Contextualisation

- The following key observations were made:
- The main structuring elements within the province are the Orange and Vaal Rivers.



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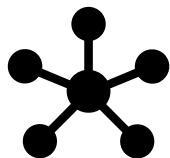
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- The current PSDF corridors do not reflect the spatial reality.
 - The majority of land use schemes and spatial development frameworks are SPLUMA compliant.
 - Settlements need to densify and reduce urban sprawl.
- The following is required:
- District and local SDFs should incorporate place-specific guidelines for architecture and landscaping premised upon historic design precedents and vernacular.
 - Update of corridor and nodes proposed within the current NSDF and Karoo RSDF.
 - Growth in isolated towns, with limited potential needs to be restricted.
 - Promotion of urbanisation, to be able to concentrate service delivery.
 - Development of a mitigation strategy for municipalities that are not yet SPLUMA compliant.
 - Indicate actions to be taken by municipalities to enhance the status of settlements as they relate to development potential and human needs.
 - Indicate investment typologies required by the various municipalities and settlements.
 - Provide a spatial plan for settlement development priorities.
 - Provide a spatial premise and rationale for decision-making as it relates to the appropriation of government funds.
 - Provide a spatial premise and rationale for decision-making as it relates to the private sector investment in development.
 - Provide broad guidelines for improvement of subsidised housing – district and local municipalities must adopt such guidelines in their SDFs. These guidelines must be mandatory.
 - Provide spatial structuring elements to facilitate sustainable urban development.
 - Provide appropriate spatial context and orientation for the Northern Cape in terms of international agreements, protocols and conventions.
 - Interrogate the delineation of the provincial, district, municipal and ward boundaries.



8 SPATIAL VISION

8.1 INTRODUCTION

The spatial agenda is based on the existing development situation of the Northern Cape. The revised PSDF positions the Northern Cape for a more inclusive, productive, and resilient economic future, with a particular emphasis on the following critical concerns impeding growth in the province:

- Limited accessibility and mobility in the province.
- The limited reverse of the apartheid planning systems (a primary strategy of apartheid was to manipulate urban and rural space economies so that those enfranchised had preferential access to economic assets, particularly well-located and resource-endowed land, and the disenfranchised were severely restricted in accessing these opportunities).
- It is primarily driven by the primary sector (the NDP attempts to modify the nature and performance of the economy to achieve sustainable economic development, increased environmental resilience, and improved inclusivity).
- High reliance on the mining sector, which demonstrates only short-term investment potential and advantages (many mining towns rely on the mining sector with low-value addition).
- Little management and protection of local resources.
- Uncoordinated infrastructure development (economic growth is the province's top objective).
- The province is vulnerable to global environmental risks (for example, climate change, resource depletion, anticipated changes to the global carbon regulatory environment, and food and water insecurity).
- Poor rural-urban links (the PSDF must take on the challenge of restructuring urban and rural landscapes to provide socioeconomic opportunities for all).

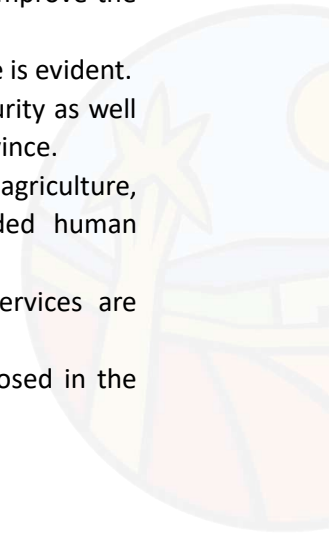
- Uncoordinated spatial planning (politicians, businesses, and planners all have different agendas and timelines. Political decisions frequently contradict stated policies).
- The establishment of key development entry points is causing uncoordinated approval and issuing of development applications/licenses.

“Despite reforms to the planning system, colonial and apartheid legacies still structure space across different scales”

(NDP, 2012:260)

The conceptual spatial vision seeks to strive toward a Municipality where the following is achieved:

- Key natural assets are protected and the community benefits from the wide range of tourism opportunities created by the demarcated protected and coastal areas.
- Settlements are integrated with limited urban sprawl to improve the sustainability of services.
- A wide variety of intensive and extensive agricultural usage is evident.
- Key-value chains are developed to address local food security as well as provide access to employment opportunities in the province.
- High skill levels are evident in the ocean economy, tourism, agriculture, mining, and construction sectors providing much-needed human resources support in the economy of the province.
- Satisfactory health services and relevant educational services are provided to all.
- Key regional development services are provided as proposed in the NSDF (Rural Development Anchors).



8.2 SPATIAL GOALS

To address the identified spatial challenges, the PSDF seeks to steer the Northern Cape towards:

- Increased provincial space economy productivity, competitiveness, and opportunities.
- More inclusive development of its urban and rural areas (the current spatial management system incentivises the wrong outcomes (e.g. number of residential units delivered as opposed to progress made in developing sustainable human settlements).
- Strengthened resilience and sustainability of its natural and built environments, and
- Greater effectiveness in the governance of its urban and rural areas (Given the durability of the built environment and the time it takes to change land ownership and usage patterns, there is no quick fix to spatial transformation). The NDP acknowledges that systemic change will take generations to manifest on the ground but emphasises that decisions made now will influence whether or not these changes occur in the future).

8.3 SPATIAL LOGIC

The logic underlying the proposed spatial agenda is aligned with the NSDF and takes its strategic direction from the NDP and can be interpreted as follows:

8.3.1 CONCERNING INCLUSIVE GROWTH

- Transition to a compact, service-based, resource-efficient space economy that includes both rural and urban spaces and recognises the provincial natural resource base's limitations.
- Consider the long-term resilience benefits of a smaller settlement footprint in areas less vulnerable to climate change impacts, and adjust settlement development forms and patterns, housing types, building

materials, construction methods, and transportation and service networks accordingly.

- Increase access and remove barriers to the often concentrated and barricaded benefits of the provincial resource base, and the locational benefits and amenities of exquisite and exclusive places developed for the few.
- Supporting growing economic nodes in previously forgotten and neglected regions, as well as ensuring a more diverse economy.
- Handle distressed mining and industrial areas in compassionate, just, smart, affordable, and long-term ways.
- To reconcile and improve connectivity between rural and urban areas through the promotion of sustainable human settlements (e.g., urbanisation strategies).

8.3.2 CONCERNING THE CAPACITY OF OUR PEOPLE

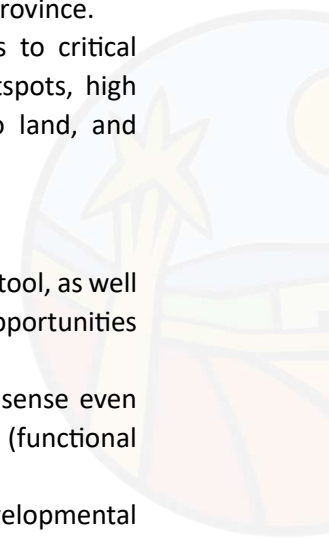
- Ensure equal access to and provision of high-quality services for all to foster the development of human capital throughout the province.
- Create differentiated, place-specific, and viable solutions to critical issues such as basic service delivery gaps, migration hotspots, high levels of youth unemployment and exclusion, access to land, and insecure tenure.

8.3.3 CONCERNING A CAPABLE STATE

- Recognise and apply spatial planning as a transformational tool, as well as spatial planning processes and plans, such as SDFs, as opportunities for integrating and coordinating State action.
- To develop a high-level regional spatial logic that makes sense even when administrative boundaries are removed or altered (functional logic).
- Address state capacity gaps to ensure that the NDP's developmental agenda is met.

It further also needs to take cognisance from the following:

- To ensure that development is based on SPLUMA Principles.



- Capitalizing on the Northern Cape Province's distinct strengths and opportunities (e.g., Kalahari region, remoteness, natural and mineral resources, and renewable energy sector).
- To coincide and align with the key development principles proposed through SPLUMA.
- Improving the province's regional accessibility and connectivity by leveraging existing national and provincial corridors (e.g., transportation, ecology, tourism, renewable energy).
- To target areas with economic potential through the beneficiation of local communities through value-adding initiatives.
- To concentrate economic activity along and within development corridors and zones.
- Providing spatial direction for public and private sector development, as well as encouraging collaboration between these sectors, to drive a single, well-coordinated development in the province.
- To develop a high-level regional spatial logic that makes sense even when administrative boundaries are removed or altered (functional logic), and
- Inform provincial government's social and capital planning, budgeting and implementation, with performance monitoring and evaluation enhanced by spatial intelligence supplied through a centralised GIS (such as NSPDR or other real-time spatially enabled data repository systems).

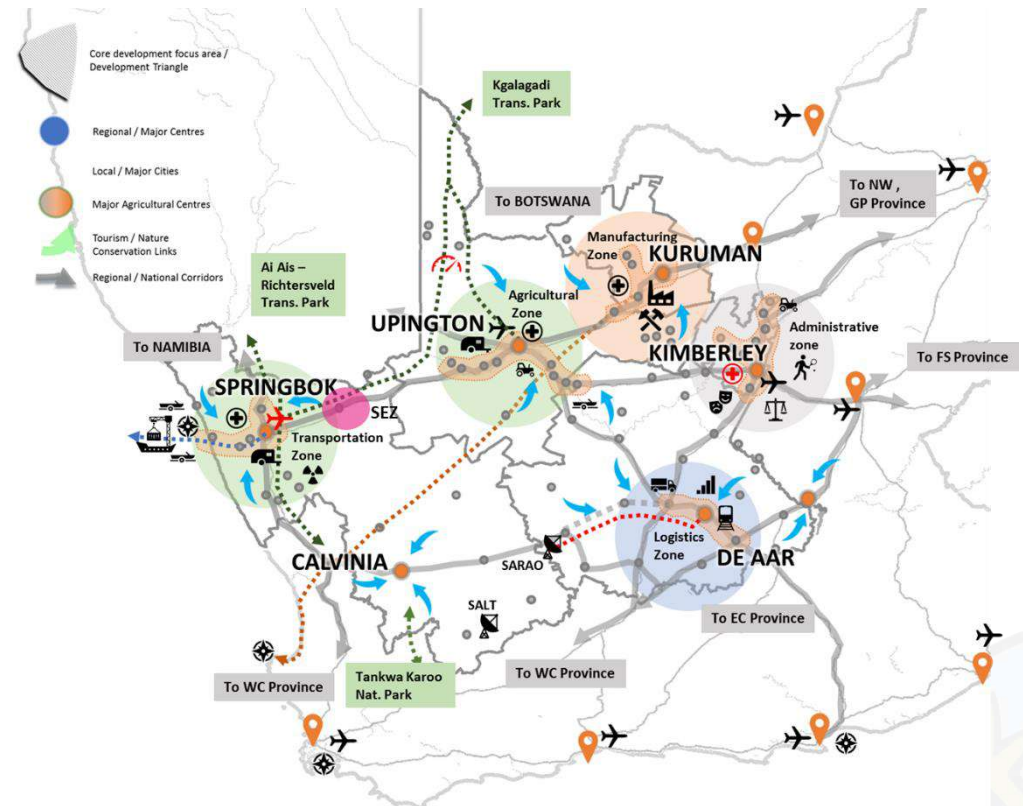


Figure 104: Northern Cape Spatial Logic



8.4 DEVELOPMENT VISION

Northern Cape Province has numerous distinct and significant development potential attributes, such as environmental quality of life in certain areas, resource availability, an extreme climate, and urban and rural development opportunities. Most of the Northern Cape has limited water resources, which is a major determinant of development trends.

The National Spatial Development Framework, 2022 accepts a *Spatial Development Vision and Mission* built on the overarching goal of *equity, unity, and connectedness*, and reads as follows:

VISION STATEMENT:

“All Our People Living in Shared and Transformed Places in an Integrated, Inclusive, Sustainable and Competitive National Space Economy”

MISSION STATEMENT:

“Making our Common Desired Spatial Future Together Through Better Planning, Investment, Delivery and Monitoring”.

The following is a summary of the above vision statements and principles:

- Sustainable Development.
- Environmental integrity.
- Well-coordinated community development.
- Improved development opportunities, accessible to all.
- Adapting to climate change/resilience.
- Building on local knowledge and improved institutional capacity.
- Equitable access to the use of key resources.
- Coastal and Eco-Tourism, Mining, Mariculture, and Agricultural Growth.
- Integrated Development.

The Northern Cape Province Spatial Development Framework has the function at a provincial strategic level to plan and coordinate the broad

spatial structure of the area, integrating the policy frameworks set by the national and municipal spheres of government and ensuring the alignment of municipal spatial frameworks and policies. A future functional spatial development pattern for Northern Cape Province requires the integration of sustainable natural resources, economic development job creation and human development to provide the Spatial Development Vision:

NORTHERN CAPE SPATIAL VISION (towards 2040)

“Sustainable urban and rural spatial development based on a modern space economy supported by an integrated national and provincial infrastructure network and the responsible use of natural resources providing sustainable livelihoods for all “

The future spatial perspective is expected to include a Spatial Development Framework of managed human settlements clustered in settlement nodes and corridors alongside productive areas, managed ecological natural resource areas, and linked to a network of strategic transportation routes accessible to the global, national, and provincial economies.

Several strategic requirements must be addressed in the context of a future development framework that underpins the Spatial Development Framework vision for the Northern Cape Province. These include the following:

- Harnessing the opportunities provided by urbanisation forces to achieve effective rural development.
- Taking a flexible approach that suits the province and promotes long-term development rather than stifling growth and development.
- Developing world-class infrastructure, services, and amenities to entice investment.
- Integrated infrastructure development planning to respond to long-term forecasted requirements.
- Proactive planning that integrates aspirant economic activities into mainstream economies and urban fabric.



- Preserving existing resources and fostering opportunities for renewable energy development.
- Prioritise development areas in the province.
- Creating an implementation framework and plan that connects spatial frameworks to catalytic programs.
- Increasing international, national, provincial, and municipal connectivity through strategic transportation routes in the province.
- Improving the quality of life in communities through formalisation, the provision of planned amenities, the consolidation of land uses, and
- Strengthening spatial planning capacity, skills, systems, and procedures to achieve the vision.

8.5 VISION

The vision highlights the Northern Cape Province's strategic location in terms of logistical connections, renewable energy potential, mining opportunities, agricultural potential, ecological landscape, and tourism. The spatial vision examines the Northern Cape's role in protecting and capitalising on these opportunities. To address the province's challenges holistically and achieve balance and completeness, a holistic approach is required:

- Legacies are addressed in the way that growth is managed.
- Current challenges are faced and addressed in a just and sustainable manner, and
- Future risks are reduced to improve the chances of a socially, economically, and environmentally sustainable future.

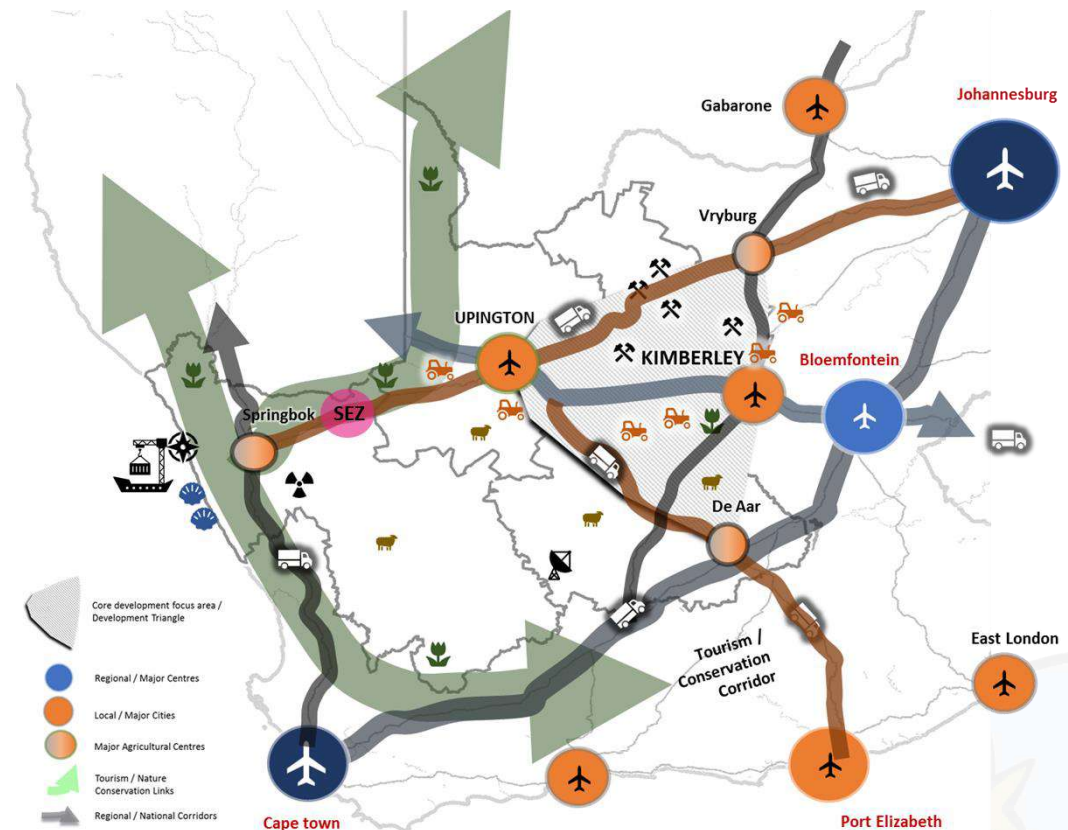


Figure 106: Northern Cape Spatial Vision



KEY OPPORTUNITIES INCLUDE:

- Increasing the strength of the core development focus area / development triangle formed by connecting Kimberley, Vryburg, Upington, and De Aar. This region has the highest population and economic concentration. The region is easily accessible, with major highways connecting it to Namibia, Gauteng, Lesotho (via Bloemfontein), Port Elizabeth (Coega), and the city of Cape Town. The development triangle supports a diverse economy that is strong in mining, agriculture, and renewable energy. To improve the return on public investment in the province, a sustainable and viable economic network must be driven within the development triangle.
- Improving public transportation modes within the development triangle is required to improve access to economic development opportunities.
- Environmental corridors could be expanded by connecting the province's major nature reserves via wildlife or conservation corridors to the west and north. Upington is well situated to serve as a tourism gateway into Africa (particularly when it comes to overlanding opportunities), and
- The development of the Boegoebaai harbour will have a significant impact on the Namakwa region's socio-economic and economic potential, particularly in terms of international trade and the export of minerals and other commodities.

The vision is to create a province that is abundant, unbiased, and inclusive of environmental protection, social reconciliation, and economic development, in which everyone can participate without jeopardizing the resources needed to sustain future generations.

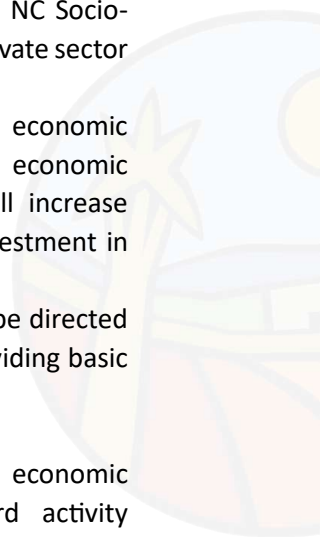
8.6 SPATIAL DEVELOPMENT VALUES

To plan and manage the spatial implementation of development in the province, all stakeholders must agree on the core values that will help shape the province's spatial framework. The core values are intended to

achieve stakeholder integration through improved linkages that connect sector programs and align infrastructure, social services, government spending, private sector investment, and economic development.

The following core values are recommended for addressing spatial justice in the Northern Cape Province:

- Environmental integrity and sustainability are achieved by striking a balance between protecting natural resources, improving community livelihoods, and developing a thriving economy.
- Making the best use of existing resources, such as water, agriculture, renewable energy potential, already impacted land (brownfield areas), minerals, bulk infrastructure, roads, transportation, and social facilities.
- Reduced settlement sprawl and more compact formalized settlement through densification and diverse, mixed land uses.
- Rapid, sustainable, and inclusive economic growth.
- Government spending on fixed investment focused on areas of economic growth and/or economic potential (refer to the NC Socio-Economic Potential of Towns study updated) to stimulate private sector investment and create long-term job opportunities.
- The development of productive land uses (creating economic opportunity) has the potential to stimulate much-needed economic growth, job creation, and tax base expansion. This will increase municipal income, allowing for increased public-sector investment in social upliftment.
- In areas with low economic potential, investments should be directed toward projects and programs addressing poverty and providing basic services to address past and current social inequalities.
- The economic development of rural areas (CRDP).
- Strategic capital investment in future settlement and economic development opportunities should be directed toward activity corridors and nodes adjacent to or linked to major growth centres for them to serve as regional gateways.



- Integration, synergy, and linkages between urban and rural areas (specific reference is made to the NC Rural Development Sector Plans⁴⁵), supported by adequate infrastructure.
 - Community-based spatial planning and enforceable land use management based on mutually agreed-upon sustainable community development codes and unified provincial legislation.
 - Correction of historically distorted spatial patterns of settlement through the best use of existing infrastructure, and integration of residential and employment opportunities close to one another.
- Upkeep of existing infrastructure and development of new infrastructure to unlock regional economic opportunities (for example, the road link from Pofadder to Namibia and Williston to Sutherland).
 - Achieving integrated community development, and
 - Monitoring and evaluating service delivery performance.



⁴⁵ Northern Cape Rural Development Sector Plans 2023



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ANNEXURE A: PSDF STATUS QUO REVIEW

PSDF 2020 STATUS QUO ANALYSIS	REVIEWED PSDF 2023 STATUS QUO ANALYSIS
CHAPTER 1 INTRODUCTION	
PURPOSE AND BACKGROUND	Aligned towards to ToR and why the review is necessary
Provincial Growth and Development Plan	Removed from Status Quo Report
Provincial Spatial Development Framework	Moved to the National Policy Context Section
LEGISLATIVE ALIGNMENT	
Provincial Growth and Development Plan	Removed from Status Quo Report
The Constitution of the Republic of South Africa, 1996	Moved to the National Policy Context Section
National Development Plan	Moved to the National Policy Context Section
Expectations of the PGDP	Removed from Status Quo Report
Provincial Spatial Development Framework	Remained the same as in PSDF 2020
SPLUMA, Act No.16 of 2013	Re-Aligned and updated with more context in terms of the SPLUMA principles
METHODOLOGY	Removed from Document will be included in Final PSDF
PSDF Assessment	Removed from Document will be included in Final PSDF
CHAPTER 2 PROVINCIAL CONTEXT	
PROVINCIAL PLANNING OVERVIEW	
INTERNATIONAL PLANNING	Included a section regarding Regional Planning which included policies from SADC
The Sustainable Development Goals (SDG's)	Updated with relevant context
The New Urban Agenda	Remained the same as in PSDF 2020
The African Union Agenda 2063	Remained the same as in PSDF 2020
National Planning	
The National Development Plan	Remained the same as in PSDF 2020
The National Spatial Development Framework	Updated from Draft to Final NSDF, 2022, and unpacked the Arid Innovation Region as well as the Northwestern National Spatial Transformation and Economic Transition Region
The Medium-Term Strategic Framework	Remained the same as in PSDF 2020
The Integrated Urban Development Framework	Remained the same as in PSDF 2020
Provincial Planning	Remained the same as in PSDF 2020
District Planning	Included a table to indicate SPLUMA Readiness and compliance of all SDFs within the Province
Local Planning	

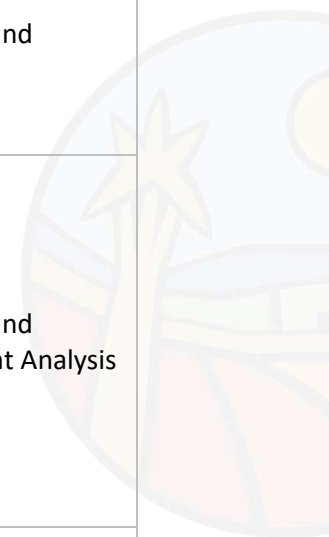
Role of the PGDP and PSDF	Removed from Status Quo Report
LEGISLATIVE ALIGNMENT TOWARDS PROVINCIAL PLANNING SYSTEMS	To be dealt with in Phase 3 of the project of the review of the Northern Cape PSDF (Sector Department Analysis and Stakeholder Consultation)
Current governance structure	
Northern Cape Governance Structure and operation	
GOVERNANCE SYNOPSIS	
Overview of Key Issues and Challenges	
SECTOR DEPARTMENT SYNOPSIS	
Agriculture, Land Reform and Rural Development	
Co-operative Governance, Human Settlements and Traditional Affairs	
Economic Development and Tourism	
Education	
Environment and Nature Conservation	
Health	
Provincial Treasury	
Roads and Public Works	
Social Development	
Sports, Arts and Culture	
Transport, Safety and Liaison	
Office of the premier governance structure	
CHAPTER 3 STATUS QUO ANALYSIS APPROACH	
REPORT STRUCTURE	
Status quo synopsis	Aligned towards DALRRD Guidelines, 2017, the structure of a PSDF
Status Quo layout	
Alignment towards the National Guidelines for the Development of Spatial Development Frameworks	
DATA USE	
GIS AND STRATEGIC PLANNING	
GIS DATA MANIPULATION	
Cost Surface Analysis	Removed from Document
Data weighting	Removed from Document
Data visualisation	Removed from Document
CHAPTER 4 ECONOMIC ANALYSIS	



ECONOMIC INFOGRAPHIC	
ECONOMIC OVERVIEW	
Economic Growth	Updated with the Latest Statistics and Information
Economic Base	Updated with the Latest Statistics and Information
Economic Diversification	Updated with the Latest Statistics and Information
Green Economy	Updated with the Latest Statistics and Information
Space Economy	Updated with the Latest Statistics and Information
Knowledge economy	Updated with the Latest Statistics and Information
Oceans economy	Updated with the Latest Statistics and Information
Landscape economy	Updated with the Latest Statistics and Information
Employment and Unemployment	Updated with the Latest Statistics and Information
Unemployment Rate	Updated with the Latest Statistics and Information
Economic active people	Updated with the Latest Statistics and Information
Employment per Sector	Updated with the Latest Statistics and Information
Labour participation rate	Updated with the Latest Statistics and Information
Employment Skills	Updated with the Latest Statistics and Information
Income AND EXPENDITURE	
Household income	Removed from Document
Gini Coefficient	Removed from Document
Disposable income	Removed from Document
Expenditure	Removed from Document
Revenue enhancement	Removed from Document
Equitable Share	Removed from Document
Revenue collection	Removed from Document
SMME Development	Removed from Document
ECONOMIC SECTORS	
Primary	Updated with the Latest Statistics and Information
Agriculture and Forestry	Updated with the Latest Statistics and Information
Mining	Updated with the Latest Statistics and Information
Fishing	Updated with the Latest Statistics and Information
Secondary	Updated with the Latest Statistics and Information
Manufacturing	Updated with the Latest Statistics and Information



Construction	Updated with the Latest Statistics and Information
Utilities	Updated with the Latest Statistics and Information
Tertiary	Updated with the Latest Statistics and Information
Finance	Updated with the Latest Statistics and Information
Transport and storage	Updated with the Latest Statistics and Information
Health and Social work	Updated with the Latest Statistics and Information
Education	Updated with the Latest Statistics and Information
Trade and Investment	Updated with the Latest Statistics and Information
International Relations	Removed From Document
BRICS Initiative	Removed From Document
African Union	Removed From Document
CHAPTER 5 SOCIAL ANALYSIS	
SOCIAL INFOGRAPHIC	
SOCIAL OVERVIEW	
POPULATION	Updated in terms of Stats SA Census data as well as trends and implications within the province
Population growth	
Population group comparison	
Household Size	
Population Structure	
Basic Services	Updated in terms of Stats SA Census data as well as trends and implications within the Province under the Built Environment Analysis
Overview	
Access to piped water	
Access to sanitation	
Access to refuse removal	
Access to electricity	
Access to Housing	
Housing backlogs	
Planned housing projects	
Municipal Infrastructure Grant (MIG)	Will be Addressed in Phase 3 Sector Department Analysis
EDUCATION	
Education Overview	Updated with the latest information received from DoE
Learner Teacher Ratio	



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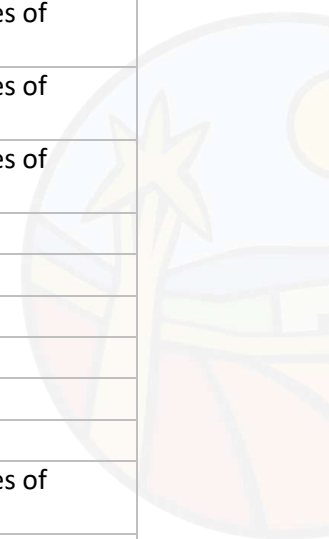


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HEALTH	
Health OVERVIEW	Updated with the latest information received from Health
District health profiles	
HIV+/AIDS – Northern Cape Province	
Safety and Security	Updated with the latest information received from SAPS, Annual Crime Statistics 2023
Crime overview	
Murder	
Attempted murder	
Sexual crimes	
Assault with the intent to inflict grievous bodily harm	
Robbery with aggravating circumstances	
Burglary at residential premises	
Theft of motor vehicles and motorcycles	
Car hijacking	
Stock theft	
Drug-related crime	
Driving under the influence of alcohol or drugs	
Public Violence	
Public protest	
Protest actors	
Protest motivations	
Protest economic status	
Protest recommendations	
POVERTY POCKETS	To be Addressed in Phase 3 Sector Department Analysis
POVERTY Overview	
Poverty per local municipality	
Poverty by Settlement type	
Poverty by population group	
Food security	
Social grants	
Vulnerable Groups	
Social cohesion	



CHAPTER 6 ENVIRONMENT	
ENVIRONMENT INFOGRAPHIC	
ENVIRONMENTAL OVERVIEW	
GEOGRAPHY	Removed from Document
Earth System	Removed from Document
BIOSPHERE	Biophysical Analysis
Ecology	Updated with the latest information in regards to the Policies of "Nature Capital"
Threats	Remained the same as in PSDF 2020
Opportunities	Remained the same as in PSDF 2020
Fauna and Flora	Updated with the latest information in regards to the Policies of "Nature Capital"
Nama Karoo Biome	Updated with the latest information in regards to the Policies of "Nature Capital"
Succulent Karoo biome	Updated with the latest information in regards to the Policies of "Nature Capital"
Savanna biome	Updated with the latest information in regards to the Policies of "Nature Capital"
Grassland biome	Updated with the latest information in regards to the Policies of "Nature Capital"
Fynbos biome	Updated with the latest information in regards to the Policies of "Nature Capital"
Centres of endemism	Remained the same as in PSDF 2020
Threats	Remained the same as in PSDF 2020
The economy is unsustainably resource-intensive	
Opportunities	
Critical Biodiversity Areas	Included Marine Biodiversity
Biodiversity features and targets	
Protected Areas	Updated with the latest information in regards to the Policies of "Nature Capital"
Aquatic features	Updated with Marine Spatial Planning Policy
Threats to critical biodiversity areas	Remained the same as in PSDF 2020
Opportunities (protection and expansion of CBAs)	Updated with the latest information in regards to the Policies of "Nature Capital"



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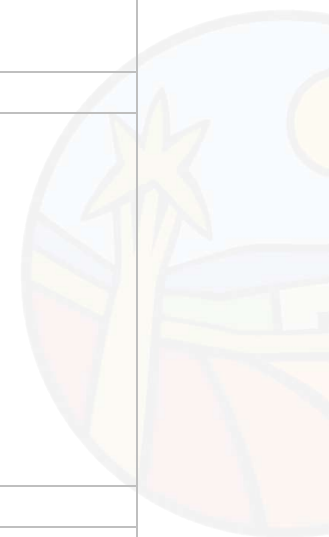


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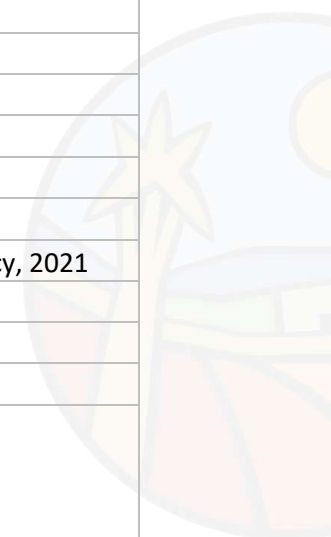


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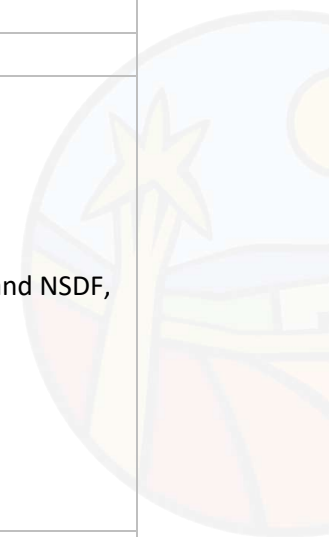
Environmental Sensitive Areas	Remained the same as in PSDF 2020
Threats	Remained the same as in PSDF 2020
Opportunities	Remained the same as in PSDF 2020
Pollution	Updated information from Karoo RSDF
Threats	Remained the same as in PSDF 2020
Opportunities	Remained the same as in PSDF 2020
Land Cover	Updated to Latest Land Cover, 2020
ATMOSPHERE	Biophysical Analysis
Climate	Included Climate Change implications to the northern cape, Climate events through the Greenbook
Northern Cape atmospheric conditions and pollution levels	
Climate change	
Temperature	
Increase of fire risk days	
International policies and agreements	
Solar Radiation	
Solar energy potential	
Health Risks associated with solar radiation	
HYDROSPHERE	Biophysical Analysis
Coastal Zone	Update information in certain sections, especially regarding Biodiversity, Ecosystems, Marine Tourism and Hydr Carbon Exploration
South Africa's Exclusive Economic Zone (EEZ)	
Habitat classification	
Marine Protected Areas (MPAs)	
Biozones	
Depth strata	
Marine Biodiversity threats	
River systems	
Rainfall	
GEOSPHERE (LITHOSPHERE)	Biophysical Analysis
Topography	Remained the same as in PSDF 2020
Topography overview	Remained the same as in PSDF 2020
Pixley ka Seme District	Remained the same as in PSDF 2020
Frances Baard District	Remained the same as in PSDF 2020



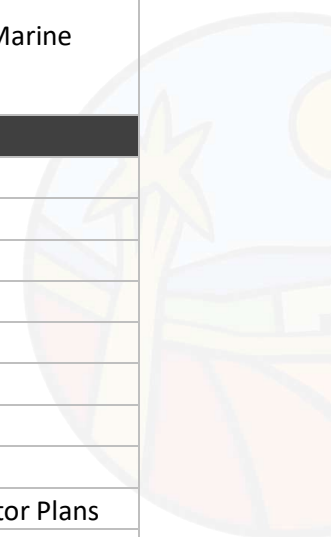
John Taolo Gaetsewe District Municipality	Remained the same as in PSDF 2020
Namakwa District	Remained the same as in PSDF 2020
ZF Mgcawu District	Remained the same as in PSDF 2020
Geology	Incorporated Geology from the Ocean along the West Coast
Dolerite	Remained the same as in PSDF 2020
Tillite	Remained the same as in PSDF 2020
Sand	Remained the same as in PSDF 2020
Andesite	Remained the same as in PSDF 2020
Quartzite	Remained the same as in PSDF 2020
Mudstone	Remained the same as in PSDF 2020
Shale	Remained the same as in PSDF 2020
Geo Hazards	Remained the same as in PSDF 2020
Sinkholes	Remained the same as in PSDF 2020
Subsidence	Remained the same as in PSDF 2020
Gully erosion	Remained the same as in PSDF 2020
Water Erosion	Incorporated findings from the NSDF, 2022
Groundwater Vulnerability	Incorporated findings from the NSDF, 2022
Problem soils	Remained the same as in PSDF 2020
Mine related geohazards	Remained the same as in PSDF 2020
Minerals	Remained the same as in PSDF 2020
Summary of primary minerals	Remained the same as in PSDF 2020
Coastal Exploration	Updated information from the Marine Spatial Planning Policy, 2021
Mining and Water	Included latest Mining Information available from DMRE
Mineral rights status	Included latest Mining Information available from DMRE
SUSTAINABILITY	
Overview	Removed this section from the Status quo report
Policies on Sustainable Development	
Approach	
Modelling Sustainability	
Sustainable Investment Model (SIM)	
Results	
No Poverty	



Zero hunger	
Good wealth and well-being	
Quality education	
Gender equality	
Clean water and sanitation	
Affordable and clean energy	
Decent work and economic growth	
Industry, innovation and infrastructure	
Reduced inequalities	
Sustainable cities and communities	
Responsible consumption and production	
Climate action	
Life below water	
Life on land	
Peace, justice and strong institutions	
Partnerships for the goals	
VULNERABILITY	Updated Vulnerability taking into account the Karoo RSDF, and NSDF, 2022
VULNERABILITY INFOGRAPHIC	
Defining vulnerability	
Vulnerability within the Northern Cape	
CRUCIAL RISK ASPECTS OF THE NORTHERN CAPE	
Politics and governance	
Environment	
Social	
Economic	
Resilience	
Disaster risk management	
Overall Vulnerability	
TOURISM	Aligned and updated with Karoo RSDF
Overview	
Frances Baard District	



Pixley Ka Seme District	
Namakwa District	
ZF Mgcau District	
John Taolo Gaetsewe District	
Summary of key tourism assets	
TOURISM REGIONS	
TOURISM ROUTES	
Existing Tourism Routes	Remained the same as in PSDF 2020
Other proposed Routes:	Remained the same as in PSDF 2020
TOURISM MARKETS	Remained the same as in PSDF 2020
Avi-tourism	Remained the same as in PSDF 2020
Botanical tourism	Remained the same as in PSDF 2020
Eco-tourism	Remained the same as in PSDF 2020
Adventure and outdoor activities	Remained the same as in PSDF 2020
Agri tourism	Remained the same as in PSDF 2020
Marine and Coastal Tourism	
Heritage tourism	Updated Tourism section with the latest information from Marine Spatial Planning, Karoo RSDF, District SDF's
State of Tourism Infrastructure	
CHAPTER 7 AGRICULTURE AND RURAL DEVELOPMENT	
OVERVIEW	
AGRICULTURE	
Overview	Remained the same as in PSDF 2020
Demographic analysis	Removed from Document
Namakwa District	Remained the same as in PSDF 2020
John Taolo Gaetsewe (JTG) District	Remained the same as in PSDF 2020
Frances Baard District Municipality	Remained the same as in PSDF 2020
Pixley Ka Seme (PKS) District	Remained the same as in PSDF 2020
ZF Mgcau (ZFM) District Municipality	Updated with information from the Rural Development Sector Plans
Agricultural potential	Updated with information from the Rural Development Sector Plans
Land capability	Updated with information from the Rural Development Sector Plans
Soil capability	Updated with information from the Rural Development Sector Plans
Climate capability	Updated with information from the Rural Development Sector Plans



Terrain capability	Updated with information from the Rural Development Sector Plans
Grazing potential	Updated with information from the Rural Development Sector Plans
Irrigation potential	Updated with information from the Rural Development Sector Plans
Overall potential	Updated with information from the Rural Development Sector Plans
AGRICULTURAL REGIONS AND KEY STAKEHOLDERS	Updated with information from the Rural Development Sector Plans
COMMODITIES	Updated with information from the Rural Development Sector Plans
Aquaculture and Mari-culture	Updated with information from the Rural Development Sector Plans
Horticulture	Updated with information from the Rural Development Sector Plans
Field crops	Updated with information from the Rural Development Sector Plans
Livestock	Updated with information from the Rural Development Sector Plans
Game farming	Updated with information from the Rural Development Sector Plans
INFRASTRUCTURE	Updated with information from the Rural Development Sector Plans
Agro-processing	Updated with information from the Rural Development Sector Plans
PROJECTS	Updated with information from the Rural Development Sector Plans
Department of Agriculture	Updated with information from the Rural Development Sector Plans
Department of Rural Development and Land Reform	Updated with information from the Rural Development Sector Plans
Agriculture and food security	Updated with information from the Rural Development Sector Plans
opportunities in the agricultural sector	Updated with information from the Rural Development Sector Plans
RURAL DEVELOPMENT	Updated with information from the Rural Development Sector Plans
Understanding the Rural Space and Dynamics	Updated with information from the Rural Development Sector Plans
Rural livelihoods and poverty	Updated with information from the Rural Development Sector Plans
INSTITUTIONAL LAND ANALYSIS	Updated with information from the Rural Development Sector Plans
Role of Traditional Authorities in Rural Development	Updated with information from the Rural Development Sector Plans
Communal Land	Updated with information from the Rural Development Sector Plans
Land reform	Updated with information from the Rural Development Sector Plans
TRANCRAA/Act 9 Areas	Updated with information from the Rural Development Sector Plans
CHAPTER 8 BUILT ENVIRONMENT	
BUILT ENVIRONMENT INFOGRAPHICS	
OVERVIEW	
Energy	Updated with the latest information regarding Renewable Energy, Green Hydrogen, etc.
OVERVIEW	Remained the same as in PSDF 2020



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Existing infrastructure	Remained the same as in PSDF 2020
Energy sources	Updated with information from Stats SA Census 2022
Transmission	Remained the same as in PSDF 2020
Planned Infrastructure	Remained the same as in PSDF 2020
Renewable Energy	Updated with the latest information regarding Renewable Energy, Green Hydrogen, etc.
Eskom's Transmission Development Plan (TDP)	To be assessed and analysed in Phase 3 - Sector Department Analysis
New generation summary	
Major schemes	
Substation firm capacity	
Underrated equipment	
Provincial summary	
Northern Cape scenario - Impact of the DoE generation scenarios	
WATER	Built Environment Analysis
Overview	Updated with information from Water and Sanitation 2022
District perspective	
Value chain	Updated with information from Water and Sanitation 2022
Water Resources	Updated with information from Water and Sanitation 2022
River systems	Updated with information from Water and Sanitation 2022
Groundwater	Updated with information from Water and Sanitation 2022
Other water sources	Updated with information from Water and Sanitation 2022
Water Management	Updated with information from Water and Sanitation 2022
Water Management Areas (WMA's)	Updated with information from Water and Sanitation 2022
Lower Vaal Water Management Area:	Updated with information from Water and Sanitation 2022
Water Services Areas (WSA's)	Updated with information from Water and Sanitation 2022
Water User Associations (WUA's)	To be assessed and analysed in Phase 3 - Sector Department Analysis
Water Tariffs	
Water Balance	
Water losses	
WATER USAGE	
Water demand	
Future scenario	



Water Infrastructure	
Existing infrastructure	
Planned infrastructure	
WATER QUALITY	Updated with information from Water and Sanitation 2022
Water treatment works	Updated with information from Water and Sanitation 2022
2014 Blue Drop Score	Updated with information from Water and Sanitation 2022
Water treatment works	Updated with information from Water and Sanitation 2022
Wastewater treatment works	Updated with information from Water and Sanitation 2022
Municipal Services Strategic Assessment (MuSSA) for South Africa	Removed from Status Quo Report
Strategic overview	Remained the same as in PSDF 2020
Information and Communication Technology (ICT)	Aligned to NSDF AND RSDF information
Overview	Remained the same as in PSDF 2020
Expanding access to communications technology	Removed from Status Quo Report
National Broadband Policy targets	Remained the same as in PSDF 2020
Broadband capacity	Remained the same as in PSDF 2020
Data storage and management	Remained the same as in PSDF 2020
INSPIRE	Remained the same as in PSDF 2020
Square Kilometre Array (SKA)	Aligned to the latest Information in the NSDF and Karoo RSDF
Karoo array telescope (MeerKAT)	Remained the same as in PSDF 2020
Southern African Large Telescope (SALT)	Remained the same as in PSDF 2020
ROADS AND TRANSPORT	Built Environment Analysis
Overview	Updated and Aligned with NSDF, 2022
Main roads	
Railway	
Airports and Airfields	
Small Harbours	
Development implications	
Road MANAGEMENT	
Road classification	Addressed in Policy Context
NATIONAL TRANSPORT MASTER PLAN -NATMAP 2050	
NATMAP priorities	
Medium- to Long-Term Priorities	



Land Use, Transportation and the Economy	
Key Issues Relevant to Land Use Planning	
NATMAP 2050 Future Spatial Vision	
Focus Areas	
Spatial Integration of NATMAP 2050 with Policies	
Freight	
Freight Transport Issues	Updated and aligned with the NSDF and Karoo RSDF within the Built Environment Analysis
Freight Transport Analysis and Forecasting	
Road Freight Corridors	
Analysis of Aviation Freight Transport	
National Freight Transport Strategic Imperatives: Rail Freight Strategies	To be Addressed in Phase 3 Sector Department Analysis
National freight transport strategic imperatives: Road freight strategies	
Aviation freight transport	
Proposed Freight Interventions Proposed	
Air Passenger Transport	
PROPOSED INTERVENTIONS	
Proposed Interventions for Passenger Transport Include the Following:	
CHAPTER 9 SPATIAL CONTEXTUALISATION	
OVERVIEW	
guiding policies and legislation	Addressed in Policy Context
THE NATIONAL DEVELOPMENT PLAN	Addressed in Policy Context
SPATIAL PLANNING AND LAND USE MANAGEMENT ACT	Addressed in Policy Context
INTEGRATED URBAN DEVELOPMENT PLAN (IUDF)	Addressed in Policy Context
KEY FINDINGS	
Settlements	
CURRENT SETTLEMENT TRENDS	
Formal Settlement Distribution	Updated with the Latest data
Informal Settlements Distribution	Updated with the Latest data
Urbanisation and Migration	Updated with the Latest data
Upgrading of informal settlements	Updated with the Latest data
Resilient and sustainable human settlements	Updated with the Latest data
Settlement specialisation	Updated with the Latest data



Settlement hierarchy	Updated and Aligned with NSDF, 2022
Spatial and land use management mechanism analysis	
Provincial Spatial Development Framework	To be Addressed in Phase 3 Sector Department Analysis
Existing District Spatial Development Frameworks	
Local Spatial Development Framework Analysis	
Land Use Schemes and Management Systems (LUS and LUMS)	
Spatial Planning Categories (SPC's)	
Spatial structuring elements	Updated and Aligned with NSDF, 2022
Alignment of spatial strategies	
Cross-Municipal Boundary Planning and Alignment	To be Addressed in Phase 3 Sector Department Analysis
Horizontal and Vertical alignment (Transversal Alignment)	
CHAPTER 10 CONCLUSION	
OVERVIEW	Remained the same as in PSDF 2020
Summary of key findings	Updated with the Latest Information

