



Central Karoo District Municipal Spatial Development Framework (SDF)

Draft SDF for Public Comment

September 2019



Western Cape
Government

BETTER TOGETHER.



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List of Acronyms

CBA – Critical Biodiversity Area

CBD – Central Business District

DEA&DP - Department of Environmental Affairs and Development Planning (WCG)

DRDLR - Department of Rural Development and Land Reform

DM - District Municipality

ECD – Early Childhood Development

FET – Further Education and Training

FLISP – Financed Linked Individual Subsidy Programme

GDP - Gross Domestic Product

GPS - Growth Potential Study

HDI – Human Development Index

HSP – Human Settlement Plan

IDP - Integrated Development Plan

ISC – Intergovernmental Steering Committee

LUPA - Land Use Planning Act, 2014 (Act 3 of 2014)

MSA – Municipal Systems Act, 200 (Act 32 of 2000)

MSDF - Municipal Spatial Development Framework

MTREF – Medium Term Revenue and Expenditure Framework

NDP - National Development Plan

NDPG – Neighbourhood Partnership Development Grant

NEMA - National Environmental Management Act

NHRA - National Heritage Resources Act

NMT - Non-Motorised Transport

NPC – National Planning Commission

PSDF – Western Cape Provincial Spatial Development Framework, 2014

PAM – Prince Albert Municipality

SDF - Spatial Development Framework

SGD – Shale Gas Development

SPLUMA - Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)

SQ - Status Quo

WC - Western Cape

WCG - Western Cape Government

WWTW – Waste Water Treatment Works

CHAPTER 1: INTRODUCTION & BACKGROUND TO THE CENTRAL KAROO SDF

1. INTRODUCTION

1.1. PURPOSE OF THE REPORT

The purpose of this report is to update and synthesize the 2014 Central Karoo SDF, with a view to:

- 1) Establish the **existing level of development** of the Central Karoo District Municipality;
- 2) Review and update the **key issues and opportunities** in the District as they relate to its future spatial development;
- 3) Review and update the **spatial vision** of the municipality, to bring it in line with the 4th generation 2017/18 Central Karoo IDP; and
- 4) Review and update the **Spatial Development Framework proposals**.

It should be noted that this SDF is not an entirely new SDF for the Central Karoo, but simply seeks to update and synthesize the SDF that was developed for the Central Karoo in 2014.

The Central Karoo District SDF will mainly focus on the following:

- Identifying the structure and role of settlement, transportation, and regional services infrastructure across and between the local municipalities within the District area;
- Classifying areas that require protection and conservation (i.e. protected areas), which include threatened ecosystems, critical biodiversity areas, valuable agricultural land, water catchment areas and other resources of value within the District;

- Identifying growth nodes, priority investment areas and areas of rural decay within the District;
 - Classifying areas that require protection and conservation (i.e. protected areas), which include threatened ecosystems, critical biodiversity areas, valuable agricultural land, water catchment areas and other resources of value within the District;
 - Resolving contradictions between the planning visions of the District's local municipalities;
 - Describing the general urban design principles to be applied in all settlements located in the District
- Critically, the District SDF must guide local municipalities in the development of their own SDF's, without impeding on local-level planning detail. The District sets the framework and context for local municipalities to work within. It is also critical that the District aligns to the Provincial and National planning and policy context. It is therefore clear that the District must operate within fairly well defined (at the conceptual level) policy and planning context and therefore is constrained to this insofar as possible proposals that can be made. The SDF must both guide and be guided by municipal sector plans, as illustrated in Figure 1.1 below.

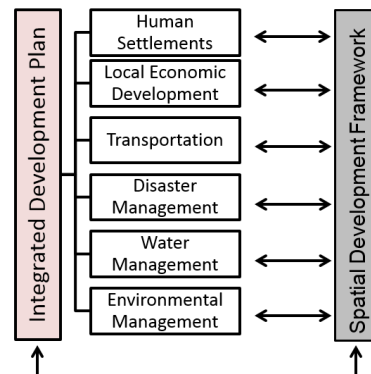


Figure 1.1: The relationship between the SDF, and sector plans

1.2. PROCESS AND TIMEFRAMES

1.2.1. SDF AMENDMENT PROCESS

The procedure to amend a Spatial Development Framework is set out in the Municipal Systems Act, 2000 (Act 32 of 2000), the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) and the Western Cape Land Use Planning Act, 2014 (Act 3 of 2015).

In short, the process entails the following:

- 1) The municipality decides whether or not to establish an Intergovernmental Steering Committee;
- 2) Members of Council to be given reasonable notice of the amendment;
- 3) The proposal to amend must be published in the media in at least 2 official languages;
- 4) The municipality must inform the provincial minister in writing of their intent to amend the SDF;
- 5) Municipality must establish a project committee;
- 6) If an ISC is established, then provincial and other departments must be invited to sit on it and provide input on the SDF amendment;
- 7) Once available, the draft SDF amendment must be made available for public comment for a period of 60 days.
- 8) The Project Committee must consider all comments received and compile a final SDF for council adoption;
- 9) SDF amendment is presented to council for approval or further amendment;
- 10) Once adopted, a notice of adoption must be placed in Provincial Gazette within 14 days;

- 11) The amended SDF submitted to provincial minister within 10 days of Council approval;

1.2.2. METHODOLOGY

The broad method to be followed in the amendment of the SDF is set out below.

The methodology follows a clear logic:

- 1) First, determine the **rationale** for the amending the current SDF which will inform the development of a problem statement;
- 2) Second, determine what the **policy and legislative context** is within which the SDF must be developed, while being cognisant of the fact that one doesn't operate in a policy vacuum;
- 3) Third, undertake a **status quo assessment** or 'state of development' of the district in terms of its natural environment, socio-economic development and built environment and identify the **key issues and opportunities** in the district;
- 4) Fourth, the spatial vision and concept will be assessed for its continued relevance, or if it needs to be revised, which will be the overarching framework that guides all subsequent policy interventions;
- 5) Finally, the spatial policy proposals, key directive and key protective actions will be identified for the district. These actions may either entail reaffirming those of the 2014 SDF, or devising entirely new proposals. Such actions will form the basis of an implementation plan.

Figure 1.2 illustrates broadly the process and products that will be developed in this SDF amendment.

Process...



Product...



Figure 1.2: The methodology in undertaking the SDF amendment – identifying both the process to be followed and the product to be developed

1.2.3. PUBLIC ENGAGEMENTS

This is an SDF amendment process based on the 2014 Central Karoo SDF. It is envisaged that once this SDF amendment is in a draft format, a 60-day public participation process will begin. During this time, public comments and representations can be made pertaining to the content in the draft document.

1.3. STRUCTURE OF THIS REPORT

Chapter 1 of the SDF provides the introduction, and sets the purpose of the SDF, the process to be followed, the method used and provides a high-level problem statement that sets out why the SDF amendment is required. **Chapter 2** of the SDF sets out the policy and legislative context – giving the primary policy informants to the SDF, which sets the scene for the direction of the SDF. **Chapter 3** provides the existing level of development or status quo of the municipality – looking at the state of the ecological, socio-economic and built environment assets of the municipality, as well as drawing out the key issues. **Chapter 4** sets out the **Spatial Proposals** for the Central Karoo, including a spatial vision, objectives, principles and strategies for implementation. **Chapter 5** sets out the **Implementation Framework**, clearly articulating policies, guidelines and Capital Investment Framework required for the implementation of the SDF, as well as the institutional arrangements for implementation.

1.4. PROBLEM STATEMENT

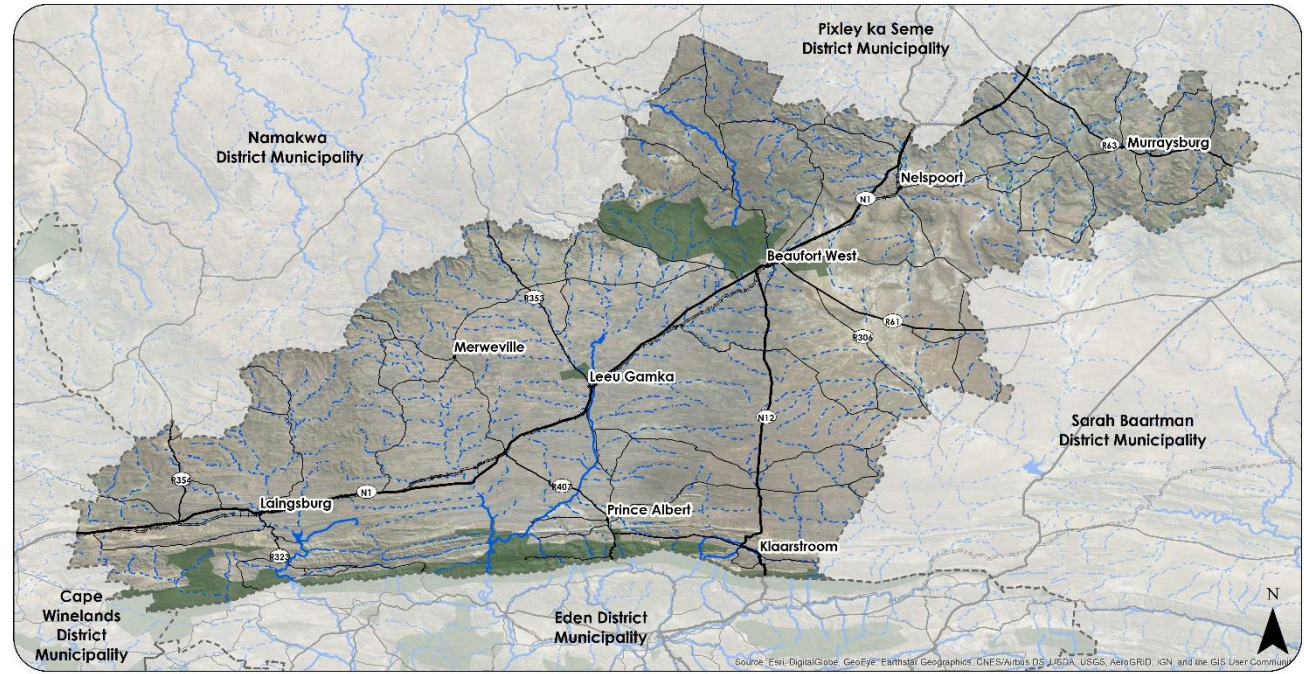
The Central Karoo District Municipality seeks to update and amend its 2014 Spatial Development Framework in order to bring it in line with the 2017/18 4th Generation Integrated Development Plan, as well as to update to include the latest intelligence as it relates to the region. Since the SDF was approved in 2014, there have been changes to the policy landscape which impacts upon the viability of the SDF. In addition, new data has shed light on changing economic and social conditions in the region, which necessitates the need for the SDF to be amended to address these. Some of the key changes relate to:

- Updated Critical Biodiversity Area information and Biodiversity Spatial Plans;
- New population growth figures, economic data, and service level data; and
- An evolving policy position on shale gas extraction;

1.5. BRIEF OVERVIEW OF THE CENTRAL KAROO DISTRICT MUNICIPALITY

The Central Karoo District Municipality (CKDM) is one of five Category C District municipalities in the Western Cape Province. The N1 (National road) and main railway cuts through the District in a northeast – southwest direction, connecting it to Cape Town (300km south west of the District) and Johannesburg (1000km north east of the district). Refer to the **figure 1.3** which provides a locality map of the district.

The CKDM covers a total area of 38 852km², making it the largest district municipality in the province. It stretches approximately 400km from its furthest south east point to its furthest north west point, and includes the towns of Beaufort West, Laingsburg and Prince



Locality Map: Central Karoo District Municipality

Road Type

— National Road	- - - DM Boundaries	■ Protected Areas
— Arterial Road	■ Dams	
— Secondary Road	— Permanent River	
— Railways	- - - Ephemeral River	

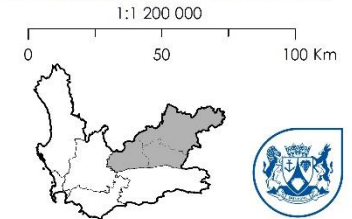


Figure 1.3: A Locality map of the Central Karoo

Albert (also the names of the 3 local municipalities within the district).

The Central Karoo is a low rainfall desert region, located on South Africa's central high-plateau and in the rain shadow of the Cape Fold mountains. It is classified as a cold desert climate (BWk) in terms of the Koppen climate classification. This means that a dry climate prevails, with generally low relative humidity.

Rainfall generally falls predominantly from thunder storms that occur in late summer (peaking in March), with the mountainous areas in the far north east receiving the most rains. Summer days can be brutally hot, with day-time peaks occasionally reaching 40 degrees Celsius, although early summer mornings are often cool and pleasant. Winter days are mild and warm, with the nights and mornings being cold – often experiencing frost. The Central Karoo is known for its fresh air, wide open cloudless skies and spectacular night time sky, showcasing a night sky that is often

seen anew by visitors due to its superb clarity and expanse. The area's ecosystem is xerophytic in nature. That is, the habitat is particularly drought-hardy; and the ecosystem is mostly composed of flora and fauna from the Nama-Karoo biome, with some Succulent Karoo and Fynbos.

The CKDM is surrounded by the Eden District Municipality to the south (Western Cape), the Cacadu District Municipality to the east (Eastern Cape), the Pixley-ka-Seme District Municipality in the north and the Namakwa District Municipality in the north-west (Northern Cape).

As per the 2016 Community Survey, the population of the Central Karoo stands at some 74 247 people living in 21 980 households, making it extremely low density and sparsely populated. 8.5% of these households recorded as having no income in 2016, with the teenage pregnancy rate standing at 13.3%, indicating a high poverty level in the region. The average GDP growth rate between 2005 and 2015 was 3.4%, with a much more muted growth rate after 2015, reflecting the national average which was also depressed. Employment growth, however, has been much lower at an annual average growth rate of 1% per annum between 2005 and 2015, which unfortunately has not kept up with the population growth rate during the same period. The 3 largest economic sectors in the region are commercial services (42.3% of the economy), government, community, social and personal services (29.7%) and agriculture, forestry and fishing (16.8%).

The main functions of a District Municipality as prescribed in the Constitution include:

- To plan for the development of the District Municipality as a whole;
- Supply of bulk water, sewer and electricity provision for a large portion of the local municipalities within the District;
- Provide for waste disposal sites for the District;
- Regulate passenger transport services for the District;
- Municipal Health Services provision for the District;
- Firefighting Services for the District;
- Control of cemeteries within the District;
- Control of the fresh produce markets and abattoirs in the District;
- Promoting local tourism for the District; and
- Municipal Public Works services for the District area.

CHAPTER 2: POLICY AND LEGISLATIVE CONTEXT

2 POLICY AND LEGISLATIVE CONTEXT

The purpose of this chapter is to briefly provide a summary of the policy and legislative landscape that has a bearing on the Spatial Development Framework for the Central Karoo. The chapter will seek to crystalize the key informants from each policy or piece of legislation and provide clear direction for the SDF proposals.

The intention of this chapter is not, however, to provide either an exhaustive list of relevant legislation and policy, or to comprehensively summarise the abovementioned, but to tease out the key policy and legislation drivers that impact the SDF.

2.1 RELEVANT NATIONAL POLICY AND LEGISLATION

2.1.1 THE NATIONAL DEVELOPMENT PLAN 2030

The National Development Plan, 2030, is the supreme and overarching plan for South Africa that sets out the most crucial objectives and actions that need to be undertaken in the Republic of South Africa in order to eliminate poverty and reduce inequality by 2030.

The following sets out some of the key interventions that the NDP seeks to achieve:

- Significantly reduce unemployment and increase the size of the economy through a range of actions.

- Invest in economic infrastructure, such as electricity, water, public transport and broadband networks.
- Enhance environmental sustainability and resilience.
- Develop an inclusive rural economy through agro processing and agriculture, tenure security, land reform.
- Increase trade within Southern Africa.
- Transform our human settlements, by co-locating places of work and human settlements, densifying our settlements and improving public transport.
- Improve education, training and innovation at all levels of the education system.
- Improve the health outcomes of the country.
- Enhance and ensure social protection and build safer communities.
- Build a capable state.
- Fight corruption.
- Promote nation building.

While the NDP is an extensive plan with a significant amount of detail, SDFs are envisioned to be local tools through which the NDP should be implemented.

2.1.2 INTEGRATED URBAN DEVELOPMENT FRAMEWORK (IUDF)

The IUDF's core objective is spatial transformation, drawing its mandate from the NDP and the realisation that urbanisation is an increasing challenge, as well as an opportunity for South Africa. The IUDF essentially proposes a growth model for urban areas in South African that promotes compaction, connectedness, and coordinated growth in respect to land, transport,

housing and job creation. The goal of the IUDF is to create efficient urban spaces by reducing the travel costs and improving public transport, aligning land use and transport planning, increasing densities, and promoting mixed land uses so that people and live and work in the same places and spaces.

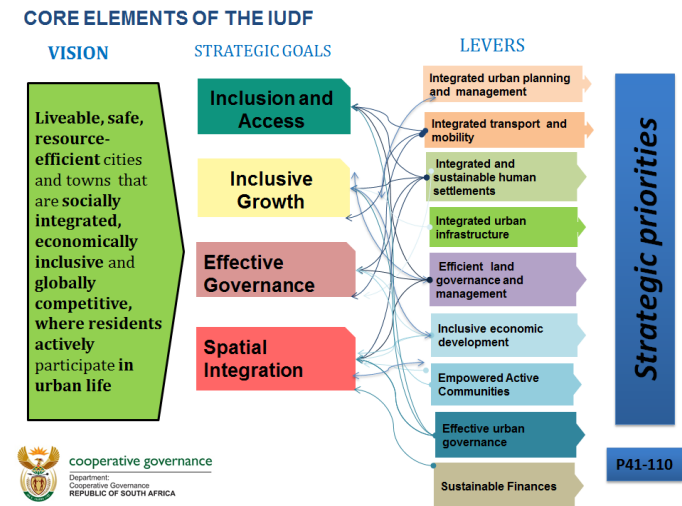


Figure 2.1: The Vision, Strategic Goals and Levers in the Integrated Urban Development Framework (COGTA, 2016)

It should be noted that the implementation of the IUDF is dependent on several critical dependencies, such as a competent and capacitated administration, integrated planning, integrated budgeting, and integrated implementation between all spheres of government and political and administrative will. The IUDF itself recognises these dependencies.

2.1.3 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT, 2013 (ACT 16 OF 2013)

SPLUMA establishes a process to develop an SDF, as well as the minimum content requirements of an SDF. An SDF must achieve the following:

- Create, and be informed by, a longer term spatial vision;
- Guide the planning of all spheres of government;
- Identify risks associated with particular developments;
- Identify and quantify engineering infrastructure needed for future growth; and
- Provide the spatial expression of the coordination, alignment and integration of all sector plans.

SPLUMA also includes a set of **5 development principles** which must guide the preparation, adoption and implementation of any SDF, policy and/or by-law concerning spatial planning and the development or use of land. These principles are set out below:

Spatial Justice refers to the need to redress the past apartheid spatial development imbalances and aim for equity in the provision of access to opportunities, facilities, services and land. In the broadest sense, it seeks to promote the integration of communities and the creation of settlements that allow the poor to access opportunities.

Spatial Sustainability essentially refers to a sustainable form of development. A part of this means promoting less resource consumptive development typologies, compaction, pedestrianisation, and mixed-use urban environments which allow for the development of a

functional public transport system and space economy. A spatially sustainable settlement will be one which has an equitable land market; while ensuring the protection of valuable agricultural land, environmentally sensitive and biodiversity rich areas, as well as scenic and cultural landscapes. A core component of spatial sustainability ultimately seeks to limit urban sprawl.

Efficiency refers to the need to create and restructure our settlements in order to optimise the use of space, energy, infrastructure, resources and land. Inherent in this statement is the need to promote densification and urban (as opposed to suburban) development typologies either in new build or retro-fitting exercises, gradually over time. Efficiency also has to do with the manner in which the settlement itself is designed and functions; which ought to reduce the need to travel long distances to access services, facilities and opportunities. Efficiency also refers to decision-making procedures which should be designed to minimise negative financial, social, economic or environmental impacts.

Spatial Resilience in the context of land use planning refers to the need to promote the development of sustainable livelihoods for the poor (i.e. communities that are most likely to suffer the impacts of economic and environmental shocks). The spatial plans, policies and land use management systems should enable the communities to be able to resist, absorb and accommodate shocks and to recover from these shocks in a timely and efficient manner. This includes the preservation and restoration of essential basic infrastructure and functions, and also long-term adaptation in order to ensure increased resilience in terms of future shocks (United Nations Office for Disaster Risk Reduction, 2009).

Good Administration in the context of land use planning refers to the promotion of integrated, consultative planning practices in which all spheres of government and other role-players ensure a joint planning approach is pursued. Furthermore, it is critical that decisions made in terms of land use planning seek to minimise the negative financial, social, economic and environmental impacts of a development. Furthermore, 'good administration' in the context of land use planning, refers to a system which is efficient, well run, and where the timeframe requirements are adhered to.

Key message: spatial planning is a normative (value driven) process that must be underpinned by these 5 principles and seek to jointly guide all actors in space.

2.1.4 MUNICIPAL SYSTEMS ACT, 2000 (ACT 32 OF 2000)

Section 24 of the MSA notes that planning undertaken by a municipality must be aligned with, and complement, the development plans and strategies of other affected municipalities and organs of state to give effect to the principles of co-operative governance contained in Section 41 of the Constitution. It further notes that municipalities must participate in national and provincial development programmes as required in section 153(b) of the Constitution, and it requires municipal planning to reflect this as well.

Key message: Planning must be joint, integrated and aligned and express all spheres of government development plans and programmes within the municipal space.

2.1.5 THE LOCAL GOVERNMENT: MUNICIPAL PLANNING AND PERFORMANCE MANAGEMENT REGULATIONS, 2001 (LG: MP&PM REGULATIONS)

Chapter 2 of the LG:MP&PM regulations, published in terms of the Municipal Systems Act, 2000 (Act 32 of 2000), provides some detail as to what SDFs should seek to achieve. Most importantly, SDFs must set out the desired spatial form on the municipality, contain strategies and policies of how these will be met, and set out basic guidelines for the land use management system, amongst other things. It should be noted that SPLUMA provides greater detail to these requirements.

2.1.6 IMPLICATIONS FOR THE CENTRAL KAROO MUNICIPALITY

National legislation and policy make it very clear that SDFs should seek to redress past imbalances, be transformational, whilst facilitating private sector development and confidence. The implication is that Central Karoo Municipality must endeavour to create more **resilient, integrated and dense urban settlements that provide higher quality urban environments than is currently the case and that provide healthy, happy and inspiring environments** in which people, the economy and the natural environment can flourish.

2.2 RELEVANT PROVINCIAL POLICY AND LEGISLATION

2.2.1 THE WESTERN CAPE PROVINCIAL SPATIAL DEVELOPMENT FRAMEWORK

The logic underpinning the PSDF's spatial strategy is to:

Capitalise and build on the Western Cape's comparative strengths (e.g. gateway status, knowledge economy, lifestyle offering) and leverage the sustainable use of its unique spatial assets;

Consolidate existing and emerging regional economic nodes as they offer the best prospects to generate jobs and stimulate innovation;

Connect urban and rural markets and consumers, fragmented settlements and critical biodiversity areas (i.e. freight logistics, public transport, broadband, priority climate change ecological corridors, etc.); and

Cluster economic infrastructure and facilities along

public transport routes to maximise the coverage of these public investments, and respond to unique regional identities within the Western Cape.

The PSDF includes four spatial themes namely; **Resources, Space Economy, Settlement** and **Spatial Governance**. The first three themes, which have a spatial component, resulted in the development of 13 spatial policies. The fourth theme, spatial governance, explored the governance structure required in order to implement the PSDF.

The key spatial policies in respect of the Central Karoo are:

- **POLICY R1:** Protect biodiversity and ecosystem services.

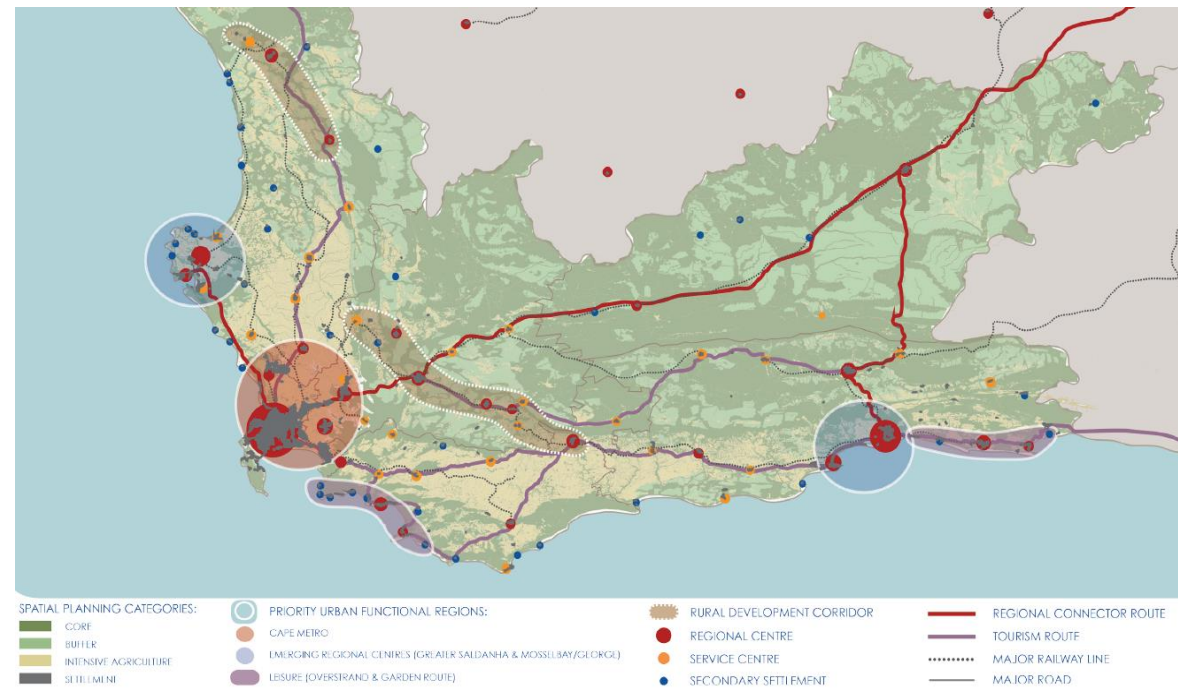


Figure 2.2: The PSDF Composite Map

- **POLICY R2:** Safeguard inland and coastal water resources, and manage the sustainable use of water.
- **POLICY R3:** Safeguard the Western Cape's agricultural and mineral resources, and manage their sustainable and productive use.
- **POLICY R4:** Recycle and recover waste, deliver clean sources of energy to urban households, shift from private to public transport, and adapt to and mitigate against climate change.
- **POLICY R5:** Protect and manage provincial landscape and scenic assets.
- **POLICY E1:** Use regional infrastructure investment to leverage economic growth.
- **POLICY E2:** Diversify and strengthen the rural economy.
- **POLICY E3:** Revitalise and strengthen urban space-economies as the engine of growth.
- **POLICY S1:** Protect, manage and enhance the provincial sense of place, heritage and cultural landscapes.
- **POLICY S2:** Improve provincial, inter- and intra-regional accessibility.
- **POLICY S3:** Ensure compact, balanced and strategically aligned activities and land uses.
- **POLICY S4:** Ensure balanced and coordinated delivery of facilities and social services.
- **POLICY S5:** Ensure sustainable, integrated and inclusive housing planning and implementation.

The PSDF composite map (see Figure 2.2) graphically portrays the Western Cape's spatial agenda. In line with the provincial spatial policies, the map shows what land use activities are suitable in different landscapes and highlights where efforts should be focused to grow the provincial economy.

2.2.2 THE WESTERN CAPE LAND USE PLANNING ACT, 2014 (ACT NO. 3 OF 2014)

The Western Cape Land Use Planning Act, 2014 (Act 3 of 2014) echoes much of what SPLUMA seeks to achieve from a spatial planning perspective, adding some detail in terms of the process that may be used to develop a Spatial Development Framework, content requirements of SDFs, as well as setting out the functions of municipalities and provincial government.

In brief, LUPA allows municipalities to follow 2 different processes in developing SDF's – one with an Intergovernmental Steering Committee and one without. The Central Karoo has decided to establish an Intergovernmental Steering Committee.

2.2.3 THE WESTERN CAPE HUMAN SETTLEMENTS FRAMEWORK (2017)

The Living Cape Framework aims to support a departure from the current housing delivery model. The focus of the Framework is explicitly on improving the quantity and quality of human settlements, where these settlements are understood as holistic spaces comprising of land, housing, social, economic and networked infrastructure, and communities (DHS, 2017).

Minister Madikizela, the Minister of the Department of Human Settlements in the Western Cape, emphasized the following three strategic objectives during his engagement with local municipalities in January & February 2017, namely seeking to:

1. Accelerate the provision of housing opportunities within the Affordable Housing Market (GAP Market);
2. Accelerate the upgrading of informal settlements, including the provision of basic interim services to ensure adequate living conditions for all residents in the Western Cape; and
3. Ensure that the most deserving individuals are prioritized when providing housing opportunities.

2.3 DISTRICT PLANNING INFORMANTS

The purpose of this section is to ascertain and set out the planning informants that exist in the District Municipality as it relates to spatial planning and land use management.

2.3.1 THE CENTRAL KAROO SPATIAL DEVELOPMENT FRAMEWORK, 2014 (CK SDF)

As has been stated previously, the 2014 Central Karoo SDF forms the basis upon which this review and amendment takes place. The intention is to gauge the continued relevance of the 2014 document, as well as update the intelligence, information, and policies in the SDF. Similarly, this amendment process will synthesize the old SDF into a more useful and shorter format.

Therefore, the existing Central Karoo Status Quo reports and policy proposals will be put to use as the basis for this SDF moving forward.

2.3.2 THE 2017 - 2022 CENTRAL KAROO INTEGRATED DEVELOPMENT PLAN (IDP)

The vision of the Central Karoo is that of **Working Together in Development and Growth** in order to ensure that the Central Karoo becomes a place where **economic growth, social development and sustainability is achieved whilst maintaining the rural character, as well as embracing and developing the diversity of the communities.**

There are 7 **strategic objectives** articulated in the IDP, relating to:

1. Facilitating **good governance** principles, and effective stakeholder participation;
2. Building a **well capacitated workforce**, skilled youth and communities;
3. Improve and maintain **district roads** and promote **safe road transport**;
4. **Prevent and minimize** the impact of possible **disasters** and improve **public safety**;
5. Promote safe, healthy and socially stable communities through the provision of a **sustainable environmental health service**;
6. Promote **regional economic development**, tourism and growth opportunities; and
7. Deliver a **sound and effective administrative and financial service** to achieve sustainability and viability in the region.

Overall, the IDP represents the 5-year plan for the development of the municipal area.

2.3.3 THE CENTRAL KAROO RURAL DEVELOPMENT PLAN

The revised Central Karoo District Rural Development Plan includes the integration of the Agri-Park Initiative and accompanying Department of Rural Development and Land Reform projects into Local Municipal IDPs and SDFs. It also aims to assist municipalities and other sector departments to invest in a coordinated manner in order to enable the development and functioning of the Central Karoo District Agri-Park. Detail of this is provided in chapter 3.

2.3.4 THE MUNICIPAL ECONOMIC REVIEW AND OUTLOOK (MERO)

The Municipal Economic Review and Outlook (MERO) is an annual research publication produced by the Provincial Treasury of the Western Cape Government. The first edition of the MERO was published in 2012. It is aimed at informing policymakers at municipalities on key economic issues that affect policy, planning and budgeting.

The following points will set out key information as abstracted from the Municipal Economic Review and Outlook as it pertains to the Central Karoo:

- In terms of the spatial distribution of provincial infrastructure spend, the Central Karoo received a total investment of **R128.1 million in 2017/18**, which represents 1% of the total infrastructure spend in the Province. This is broadly reflective of the population of the Central Karoo which makes up 1.18% of the total population of the Western Cape.

- The **Gini-coefficient** for the Central Karoo, which measures degree of income inequality, appears to show a slow trend of increasing income inequality from a low of **0.55 in 2010 to 0.575 in 2016**. This means that the region is becoming more unequal, even though it has the lowest levels of income inequality in the Province.
- Despite the above, the **Human Development Index** has shown a positive increase from **0.60 in 2010 to 0.68 in 2016**, which is a positive sign of improved human development conditions in the region. This therefore reflects that while asset and income inequality is worsening, access to basic services is improving.
- **Economic growth** has slowed considerably in the last 5 years, to an average **GDPR of 2.1% per annum**. 2016 was a particularly bad year with GDPR contracting in that year by 1.2%. This was attributable to the drought, political and policy uncertainty at the national level, and a volatile Rand. It is anticipated that 2017 and 2018 will register, at best, muted growth if national trends are indicative of the regional trend.
- Agriculture is far more significant in the Central Karoo as a proportion of the economy, than what it is in the rest of Western Cape.

2.3.5 CENTRAL KAROO SOCIO-ECONOMIC PROFILE (2016)

The following are some of the key highlights from the Socio-Economic Profile for the Central Karoo.

- In 2018, the population was predicted to be **75 688 with 22 460** households, meaning an average of **3.37 persons per household**. This indicates a

trend of decreasing numbers of people per household when compared to 2011 (population: 71 011; households: 19 220; ppl/household: 3.69); 2001 (pop: 60482, hh: 15 508; ppl/hh: 3.9); and 1996 (pop: 55776; hh: 12 971, ppl/hh: 4.3);

- The **matric pass rate** in 2015 was at 88.6%;
- The Central Karoo's **GDP** was R1.98 billion at the end of 2015, which made up 0.5% of the Western Cape economy of R391.6 billion. Of this, the primary sector contributed R333.45 million (or 16.8%), the secondary sector made up R145.96 million (8%) and the tertiary sector contributed R1 426.97 million (72%). The figures below illustrate the absolute contribution of each sector to the economy, together with growth trends and the employment numbers that each sector contributes.

GDP		2015	Trend 2005 – 2015	Recovery 2010 – 2015
		R51.08 million	2.0%	2.3%
Employment		299	-0.9%	-0.8%
Skill Levels	Skilled	16	-2.3%	-1.8%
	Semi-skilled	101	-1.6%	-1.4%
	Low-skilled	73	-1.7%	-1.7%
	Informal	109	0.8%	0.9%

Figure 2.3: The GDP and Employment provided in the Primary Sector (Central Karoo LG SEP, 2016)

GDP		2015	Trend 2005 – 2015	Recovery 2010 – 2015
		R94.88 million	8.1%	3.7%
Employment		1 138	3.2%	1.7%
Skill Levels	Skilled	38	2.5%	-0.3%
	Semi-skilled	322	0.6%	-1.5%
	Low-skilled	206	-1.0%	-3.5%
	Informal	572	8.1%	7.2%

Figure 2.4: The GDP and Employment provided in the Manufacturing part of the Secondary Sector (Central Karoo LG SEP, 2016)

GDP		2015	Trend 2005 – 2015	Recovery 2010 – 2015
		R333.45 million	4.2%	0.4%
Employment		4 205	-1.5%	4.2%
Skill Levels	Skilled	174	0.6%	6.7%
	Semi-skilled	1 479	-1.6%	4.6%
	Low-skilled	1 995	-2.4%	3.7%
	Informal	557	2.1%	4.2%

Figure 2.5: The GDP and Employment provided in the Construction part of the Secondary Sector (Central Karoo LG SEP, 2016)

GDP		2015	Trend 2005 – 2015	Recovery 2010 – 2015
		R837.49 million	2.9%	1.9%
Employment		6 731	2.5%	0.8%
Skill Levels	Skilled	691	0.3%	0.2%
	Semi-skilled	2 292	-0.3%	-0.5%
	Low-skilled	819	-0.1%	-0.3%
	Informal	2 929	8.5%	2.6%

Figure 2.6: The GDP and Employment provided in the Commercial Services part of the Tertiary Sector (Central Karoo LG SEP, 2016)

GDP		2015	Trend 2005 – 2015	Recovery 2010 – 2015
		R589.48 million	3.6%	3.2%
Employment		5 918	2.5%	2.0%
Skill Levels	Skilled	1 519	2.3%	1.9%
	Semi-skilled	1 593	2.7%	2.5%
	Low-skilled	2 379	1.3%	1.0%
	Informal	427	16.5%	8.7%

Figure 2.7: The GDP and Employment provided in the Government, Community, Social and Personal Services part of the Tertiary Sector (Central Karoo LG SEP, 2016)

- In **GDPR terms**, largest 3 sectors of the economy were commercial services (42.3%), government, community and social services (29.7%) and agriculture (16.8%).
- Despite a 10-year average GDPR growth rate of 3.4% per annum between 2005 and 2015, the **employment growth rate** was only 1% per annum during this period. This points to 'jobless growth' in the region which is evident in the increased inequality. Poverty headcount has subsequently increased in the Central Karoo from 2.4% to 3.1% whilst poverty intensity has increased from 40.6% to 41.1% between 2011 and 2016, despite these metrics being on the decline in the Western Cape during the same period.
- In **employment terms**, the largest employer in the district was commercial services (6731 people); government, social and personal services (5918 people employed); and agriculture (4205 people).
- In 2016, 62.9% of **households** were classified as low income households (earning below R50 613 per annum), 29.5% are classified as middle income households (earning between R50 614 and R404 901 per annum), and 4.6% as high income households (earning above R404 902 per annum). Indigent households increased in the Central Karoo between 2014 and 2015, despite the Western Cape registering a decline during the same period.
- In terms of **health facilities**, the Central Karoo has 8 fixed clinics, 9 mobile or satellite clinics, 1 community day centre, and 4 district hospitals and 1 regional hospital. Concerningly, the immunisation rate in the Central Karoo is only

74.8% compared to 88.8% for the entire Western Cape, whilst the child malnutrition rate is 10.9% compared to 2.4% for the Western Cape. Births to teenage mothers is 13.3%, compared to 5.5% for the Western Cape.

- Access to **basic services**, such as piped water within 200m of a household, electricity, sanitation and refuse removal all registered significant increases between 2011 and 2016. This reflects in the improved Human Development Index for the region. Formal housing made up 97.8% of all housing stock in the region in 2016, which is far above the national and provincial levels.
- In terms of **safety and security**, between 2015 and 2016, the murder rate experienced a significant (46.8%) increase from 36 to 53 murders per 100 000; sexual offences increased by 16.4%; drug related crime increased by 1.6%; driving under the influence decreased by 8.1%; and residential burglaries increased by 3.4%. These increases indicate a District in social distress, possibly caused in part by increasing unemployment, poor education outcomes and poverty levels.
- The following sets out the number of persons on the housing waiting list (as at May 2017):
 - **Beaufort West Municipality: 5275**
 - Beaufort West (town): 4125
 - Murraysburg: 746
 - Nelspoort: 227
 - Merweville: 176
 - **Laingsburg Municipality: 548**
 - Laingsburg Town: 516
 - Matjiesfontein: 32
 - **Prince Albert Municipality: 1364**
 - Prince Albert Town: 956
 - Leeu Gamka Town: 287

○ Klaarstroom Town:

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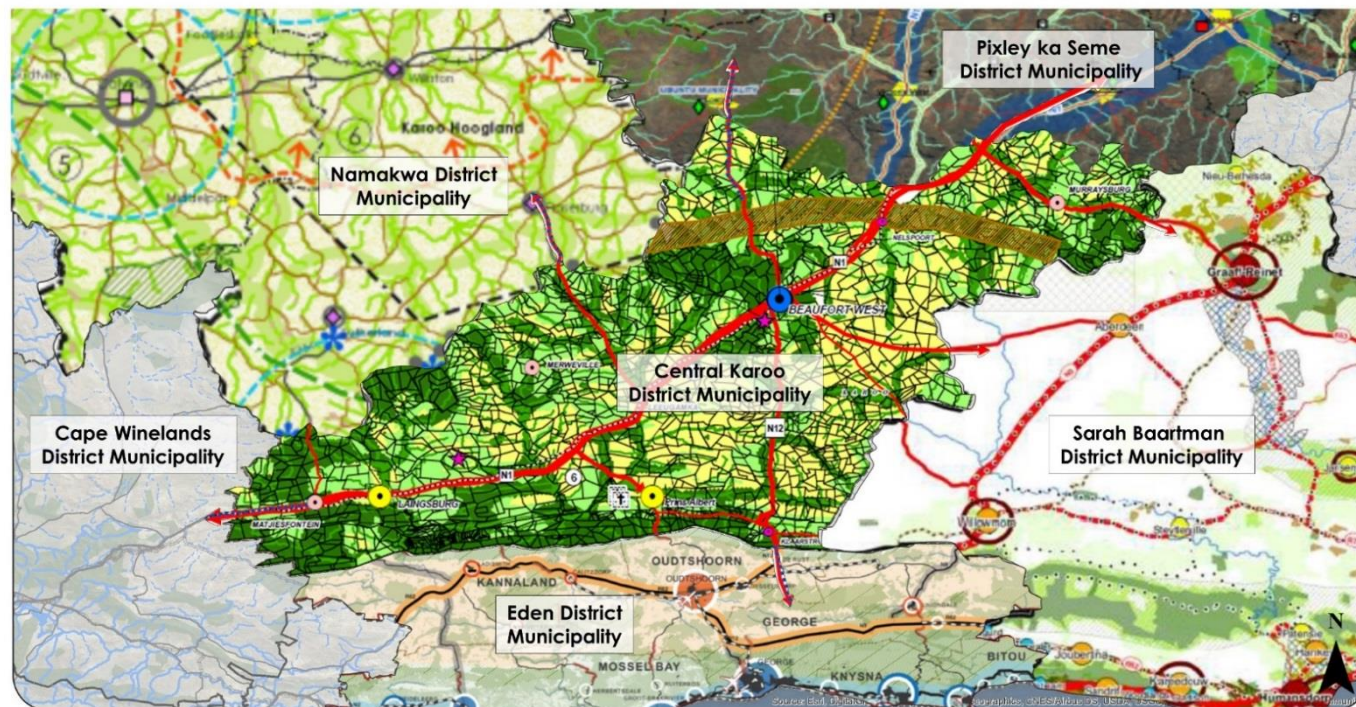
2.4 ADJACENT MUNICIPAL INFORMANTS

The purpose of this section is to test horizontal alignment between the Central Karoo and all adjacent municipal SDF's; primarily to check for areas of potential conflict, and to prevent contradictory spatial proposals.

Greater detail is provided in the subsections that follow, however it can be seen that the Central Karoo is surrounded by 5 other district municipalities – Namakwa to the north-west, Pixley ka Seme to the north east, Sarah Baartman to the east, Eden to the south and Cape Winelands to the west.

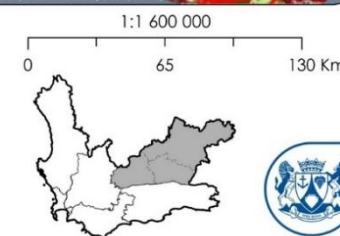
The expansive area covered by these adjacent municipalities varies from temperate forests and well-watered verdant landscapes in the south, to dramatic mountain-covered fynbos areas and vineyards in the west to desert and semi-desert arid flatlands in the north and Albany thicket type landscape and vegetation to the east.

Whilst no major areas of conflict are identifiable at this scale, it should be noted that an initiative is underway – under the leadership of SALGA and the Karoo Development Foundation – in which the karoo towns have come together to develop a Small Towns Regeneration and Regional Economic Development Strategy. This regional initiative seeks to bring together places of similar challenge and opportunity to collectively create a more prosperous future in these fragile yet unique places.



Central Karoo District Alignment with Adjacent District Municipality SDFs

Figure 2.8: Adjacent Municipal Planning informants



2.4.1 NAMAKWA DISTRICT SDF (NORTH WEST)

The Namakwa District is located to the north-west of Central Karoo District in the Northern Cape Province. The districts share two main road connections; namely, the R354 between Matjiesfontein and Sutherland, and the R353 between Leeu Gamka and Fraserburg.

Regarding alignment issues, Namakwa has earmarked much of the land which forms the border of the two municipalities as a critical biodiversity area (i.e. non-statutory conservation areas). Therefore, the municipality seeks to encourage private land-owners to protect, conserve, and rehabilitate land back to a natural condition where possible. Furthermore, Central Karoo District will need to be cognisant that Namakwa has identified two sites on the border for renewable wind energy projects, there are five existing mines on the District border, and the Square Kilometre Array (SKA) project crosses into the Central Karoo District area. These projects and land uses will impact on types of developments that Central Karoo District may consider in that area.

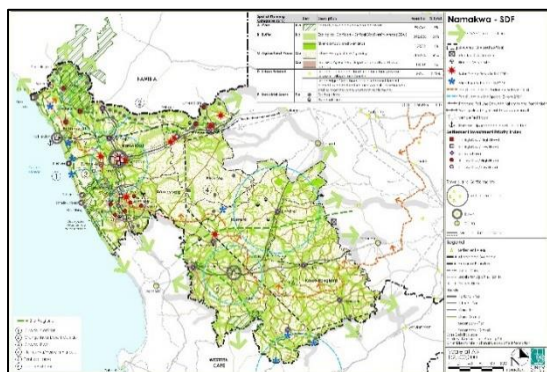


Figure 2.9: The Namakwa District SDF

2.4.2 PIXLEY KA SEME DISTRICT SDF (NORTH EAST)

Pixley District, as it is known, is located north of Central Karoo in the Northern Cape Province. The N1 national highway, connecting Cape Town and Johannesburg, is the most prominent shared feature between the two Districts as well as the N12 which branches off to Kimberly. The districts also share a number of smaller road connections including the R381 between Beaufort West and Loxton; and the R63 between Victoria West and Murraysburg.

Regarding alignment issues, the Pixley District has identified a series of critical biodiversity areas along the municipal border; particularly in the vicinity of, and to the east of the R381 near Loxton. In addition, the Pixley District recognises the national roads as a strategic asset. The most recent Pixley District SDF highlights a desire to encourage the development of economic activity along the national roads (i.e. the N12 and N1) through the use of a 'development corridor' approach. Nevertheless, development should be done in a responsible manner as to not impact regional mobility.

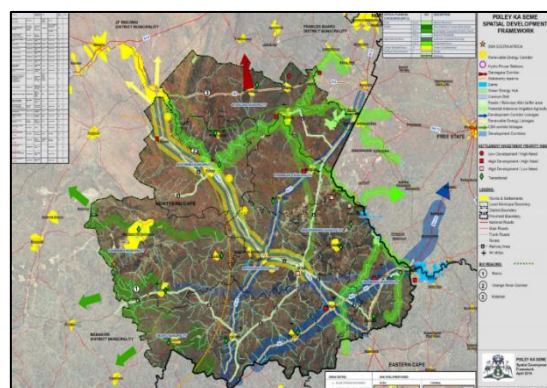


Figure 2.10: The Pixley District SDF

2.4.3 SARAH BAARTMAN DISTRICT SDF (EAST)

The Sarah Baartman District is located to the east of the Central Karoo in the Eastern Cape Province. Key transport routes linking the two districts are the R63 between Murraysburg and Graaff-Reinet, and the R61 between Beaufort West and Aberdeen. These routes experience extremely high traffic over the holiday periods when people travel between the Western and Eastern Cape Provinces.

The only major alignment issues identified include the desire to conserve critical biodiversity areas in the northern parts of the Sarah Baartman District in the vicinity of Nieu-Bethesda and the R63 corridors. Likewise, the Sarah Baartman District has earmarked land north of Aberdeen, and north of Graaff-Reinet for the purposes of shale gas extraction. These critical biodiversity areas and shale gas extraction areas border the Central Karoo District and may have implications for land use along the borderlands.

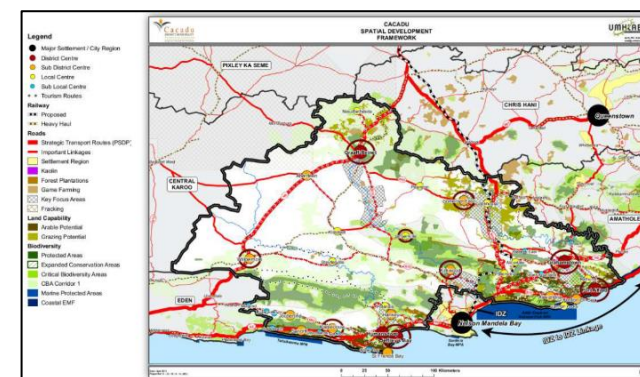


Figure 2.11: The Sarah Baartman District SDF

2.4.4 EDEN DM SDF (SOUTH)

Located to the South of the Central Karoo, this is the most economically vibrant municipality that is in the closest proximity to the major towns of the Central Karoo. They create many opportunities for the Central Karoo which must be explored relating to tourism.

The Swartberg mountain range forms the border between Eden and Central Karoo. Most of the land along the border is statutorily protected as nature reserves or mountain catchment areas. This will have an impact on development opportunities along the borderlands. Key transportation routes between the two municipalities include the Swartberg Pass between Oudtshoorn and Prince Albert (the R328), as well as the Meiringspoort Pass (N12) between De Rust and Klaarstroom, continuing on to Beaufort West. The two municipalities also share the lesser-travelled, but historically significant, Seweweeks Poort route (R323) which traverses between Laingsburg and Ladismith. The key message here is that there are a number of scenic passes and poorts the two municipalities share which could be better-leveraged for tourism purposes.

The Eden District has notionally indicated through its SDF that it wishes to upgrade the N12 corridor between De Rust and Klaarstroom to promote better connectivity with the interior. And the District wants to create an additional route to better connect Laingsburg (and the N1) with the Klein Karoo, and onwards to Riversdale and Stilbaai. However, these projects are not carried through to the SDF's implementation tables, and it is not clear if the District intends to proceed with these projects.



Figure 2.12: The Eden District SDF

2.4.5 CAPE WINELANDS DISTRICT SDF (WEST)

To the west, the Central Karoo is connected to the Cape Winelands District via the N1. This is the arid, sparsely populated part of the Cape Winelands, with the closest town to the western border of the Central Karoo being Touwsriver, in the Cape Winelands. Most of the land along the municipal border is currently being used for agriculture purposes. Currently, there are no apparent alignment issues between the two Districts.

2.5 LOCAL MUNICIPAL PLANNING INFORMANTS

The following section briefly sets out the key informants from the IDP of the three local municipalities within the Central Karoo.

2.5.1 PRINCE ALBERT MUNICIPALITY IDP

The 2017-2022 IDP for Prince Albert clearly sets out the vision for the 5-year period, being to create **an area characterised by a high quality of living and service delivery.**

The Development strategy is to ensure a sustainable Prince Albert, where all sectors are aligned for the betterment and benefit of the municipal area as a whole. To create an enabling environment for the inhabitants of Prince Albert towards guaranteed job opportunities and thus a better livelihood and citizen satisfaction.

The municipality has also identified seven Strategic Objectives (SO), being:

- SO 1 - To promote sustainable integrated development through social and spatial integration that eradicates the apartheid legacy.
- SO 2 - To stimulate, strengthen and improve the economy for sustainable growth.
- SO 3 - To improve the general standards of living
- SO 4 - To provide quality, affordable and sustainable services on an equitable basis;
- SO 5: To maintain financial viability & sustainability through prudent expenditure, and sound financial systems.
- SO 6 - To commit to the continued improvement of human skills and resources to deliver effective services.

- SO 7- To enhance participatory democracy

The above are critical informants to the SDF review for the municipality, as it assists in framing the spatial vision and priority action areas.

2.5.2 LAINGSBURG MUNICIPALITY IDP

The 2017-2022 IDP for Laingsburg clearly sets out the vision for the 5-year period, being to create **a destination of choice where people come first.**

The municipality has **six priorities** as set out below.

- Priority 1: Environmental & Spatial Development
- Priority 2: Local Economic Development
- Priority 3: Basic Service Delivery
- Priority 4: Social and Community Development
- Priority 5: Institutional Transformation
- Priority 6: Financial Viability

2.5.3 BEAUFORT WEST IDP

The vision of the 2017 – 2022 IDP for Beaufort West is to be the economic gateway in the Central Karoo, where people are developed and live in harmony together. The mission further unpacks this, providing directives regarding **service delivery**, growing the **economy**, **staff**, a **well-run administration**, ensuring **financial sustainability**, to be a safe place and to reduce poverty by focusing on sports and recreation.

The five priority areas are:

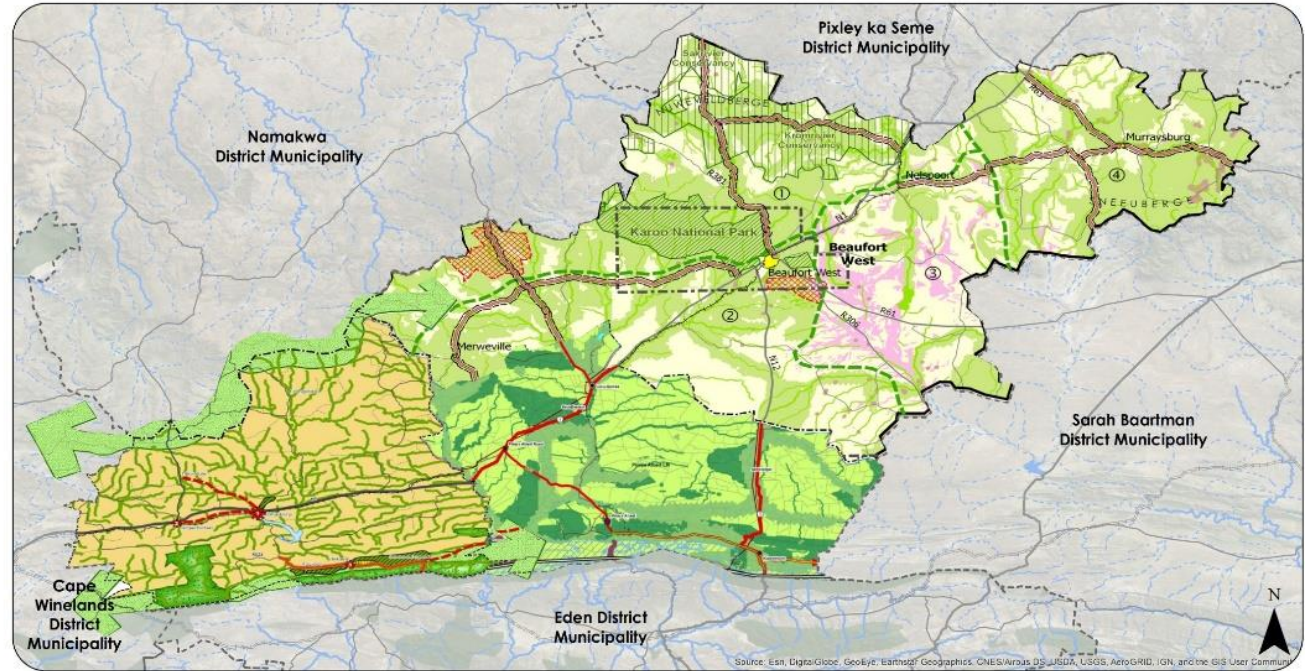
- 1) Service to the people – seeking to improve and maintain basic service delivery through infrastructure development;

- 2) Sustainable Economic Growth by leveraging competitive advantages of the region;
- 3) A Well run Administration that is efficient, effective and has the right skills mix;
- 4) Ensure Financial Sustainability; and
- 5) Be a transparent organisation.

2.5.4 THE LOCAL MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORKS OF BEAUFORT WEST, PRINCE ALBERT AND LAINGSBURG

A composite of all 3 local municipal SDF's is shown in Figure 2.12 below, which illustrates the following:

- The need for continuity in the 'green network' of ecological corridors is important at the landscape scale;
- Mountain passes and scenic routes contribute to the competitive advantage of the region;
- Riverine corridors contribute to ecological and biodiversity connectivity to core critical biodiversity areas;
- The critical importance of the N1 highway to connect the region to the rest of South Africa and other regional connector roads, such as the N12 connecting the region to the Southern Cape; and
- The need to ensure that the carrying capacity of the land is respected in agricultural grazing practices in order to prevent degradation of the land and potential desertification.



Central Karoo District Alignment with Internal Local Municipality SDFs

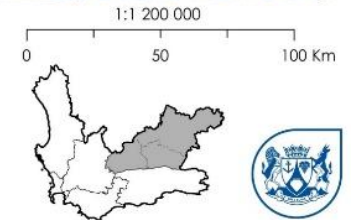


Figure 2.13: A composite map of all 3 local municipal SDF's in the Central karoo

CHAPTER 3: STATUS QUO ASSESSMENT: CURRENT STATE OF THE MUNICIPALITY

3 STATUS QUO ASSESSMENT – CURRENT STATE OF THE MUNICIPALITY

The purpose of this chapter is to give a brief overview of the existing state of development of the Central Karoo District Municipality. This section provides an overview of the key biophysical, natural, socio-economic and built environment sectors, their individual strengths, weaknesses, opportunities, and constraints. Following this, a synthesis will be undertaken, identifying the key issues that arise to be taken forward in the Spatial Development Framework.

3.1 THE BIO-PHYSICAL AND NATURAL ENVIRONMENT ASSESSMENT

The natural environment is the realm within which and the basis upon which all plant, animal and human life systems operate, including society, the economy and agriculture. In order to live sustainably, the natural environment should never be compromised to the point where its natural systems and services are unable to provide its ecological systems and services to both existing and future generations or people.

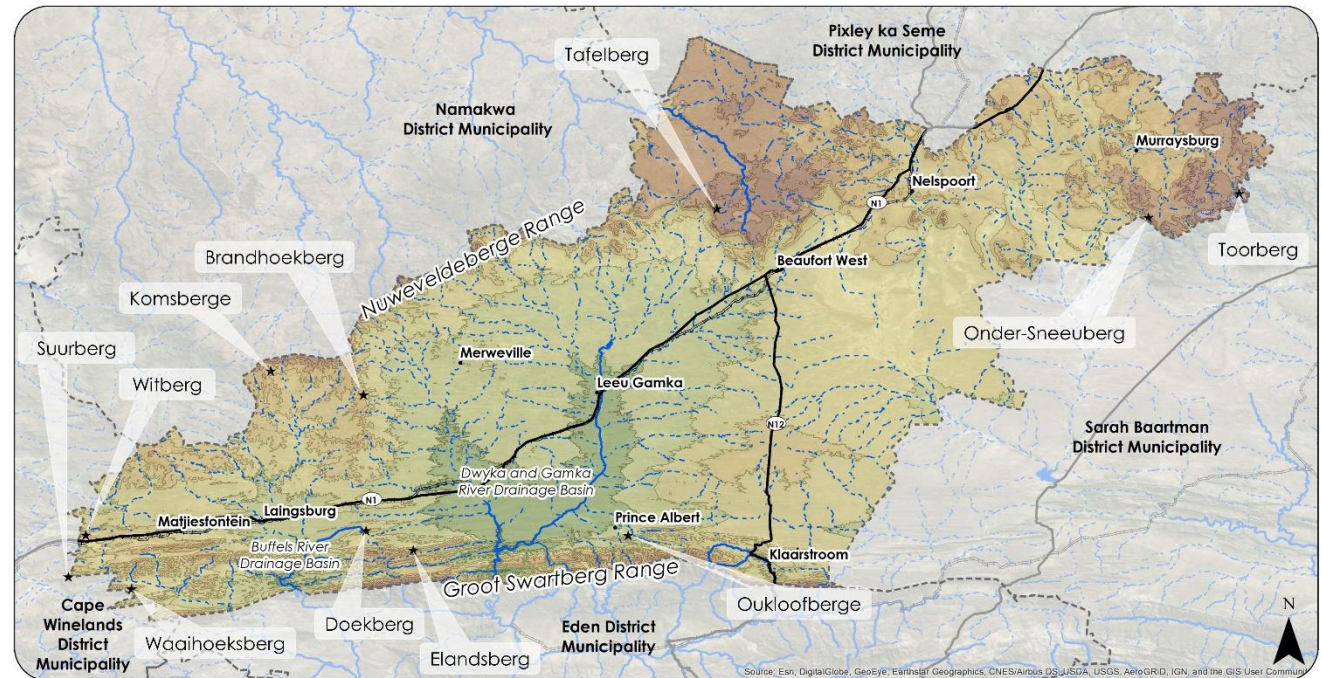
3.1.1 GEOLOGY, TOPOGRAPHY, LANDSCAPE CHARACTER & SCENIC ASSETS

The majority of the district consists of gently undulating plains, however, several mountain ranges provide for a dramatic contrast as illustrated on **Figure 3.1a** showing the Swartberg mountain range in the south of the district, providing a natural barrier between the interior and the southern Cape coast. This range, one of the longest in South Africa, spans 230 km from

Laingsburg in the west to Willowmore and Uniondale in the east. The highest peak within the range is the Seweweekspoot at 2,325 m above mean annual sea level (amasl). This range of mountains comprises predominantly of the Table Mountain group, boasting

many impressive sand stone strata and rock formations.

The Nuweveld Mountain range to the north of Beaufort West ranges between 825 to 1,911 m. Toorberg to the south of Murraysburg forms part of the



Elevation and Landscape Features Map: Central Karoo District Municipality

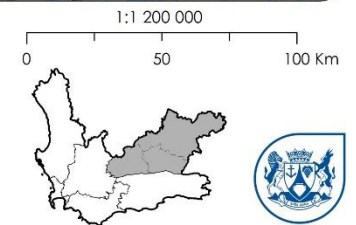


Figure 3.1a : Elevation and Landscape Features Map of Central Karoo District Municipality

Sneeuberg range which is the divide between the Central Karoo District and the Eastern Cape. The peak is 2,400 metres above sea level. Toorberg is known for its many watercourses.

Figure 3.1b, showing the key geological formations of the Karoo, highlights 3 broad geological regions – a southern mountain region made up of the Dwyke, Witteberg, Bokkeveld and Table Mountain Group, a central region dominated by the Adelaide Group and a northern portion where Karoo Dolomite outcrops create the Sneeuwberg mountain range.

It should be noted that the region can be classified into broad scenic assets or places of significant landscape character as shown in Figure 3.1c. As recognised by the Heritage and Scenic Resources Inventory and Policy Framework for the Western Cape (2013), the Central Karoo can be characterised into 4 broad landscape regions being:

- (1) the higher altitude 'Nuweveld Plateau';
- (2) the Nuweveld Mountain escarpment;
- (3) the lower altitude 'Die Vlakte' made up predominantly of Beaufort shales / Adelaide Group rock type; and
- (4) the Swartberg Mountains.

The view sheds on offer in the Karoo landscape reflects a silent, sparse and peaceful arid landscape.

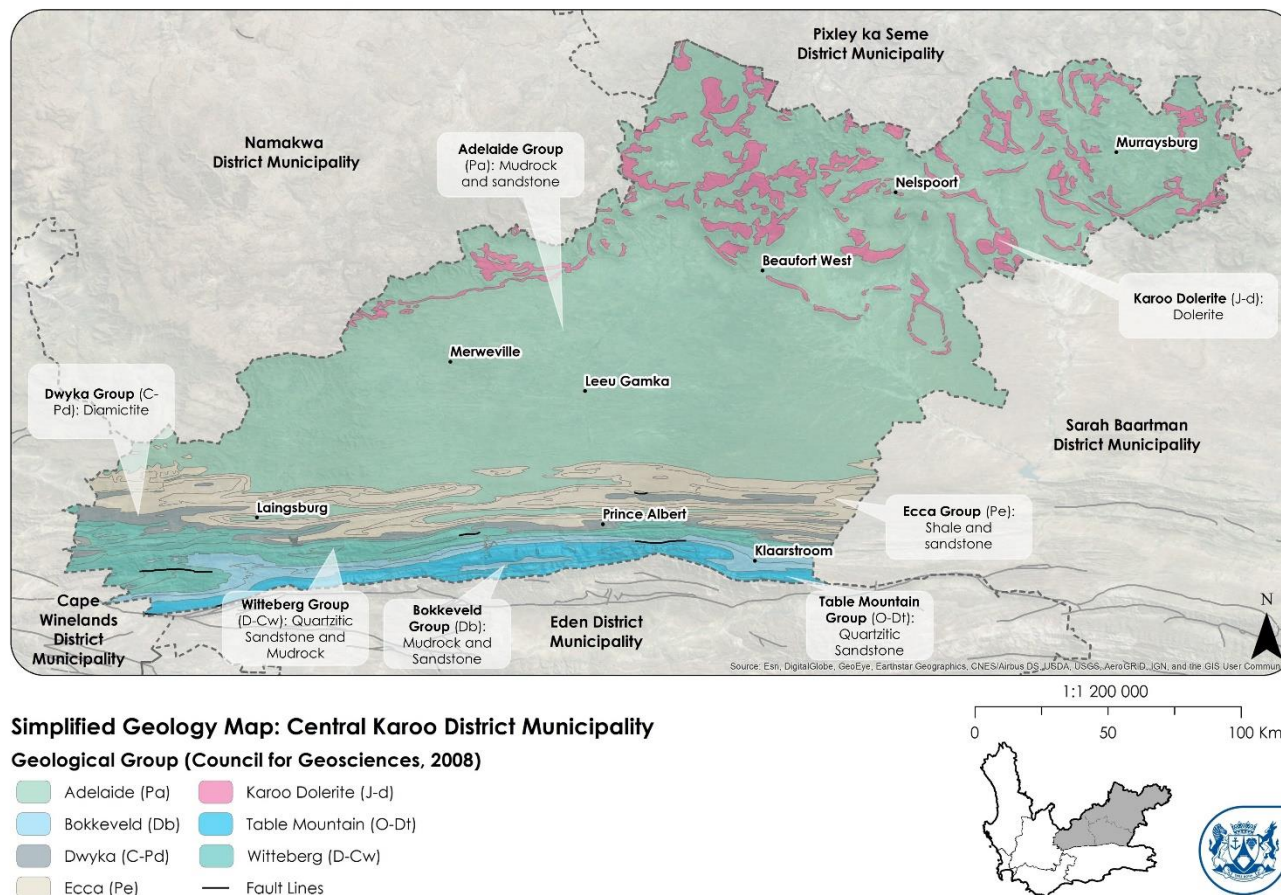


Figure 3.2b : Geological formations of the Central Karoo

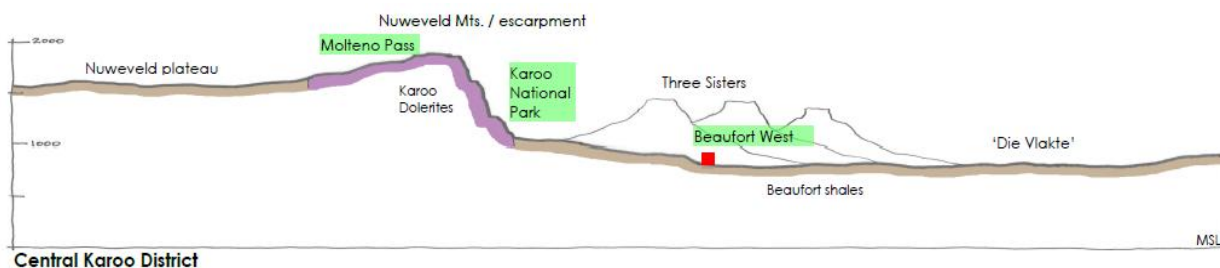
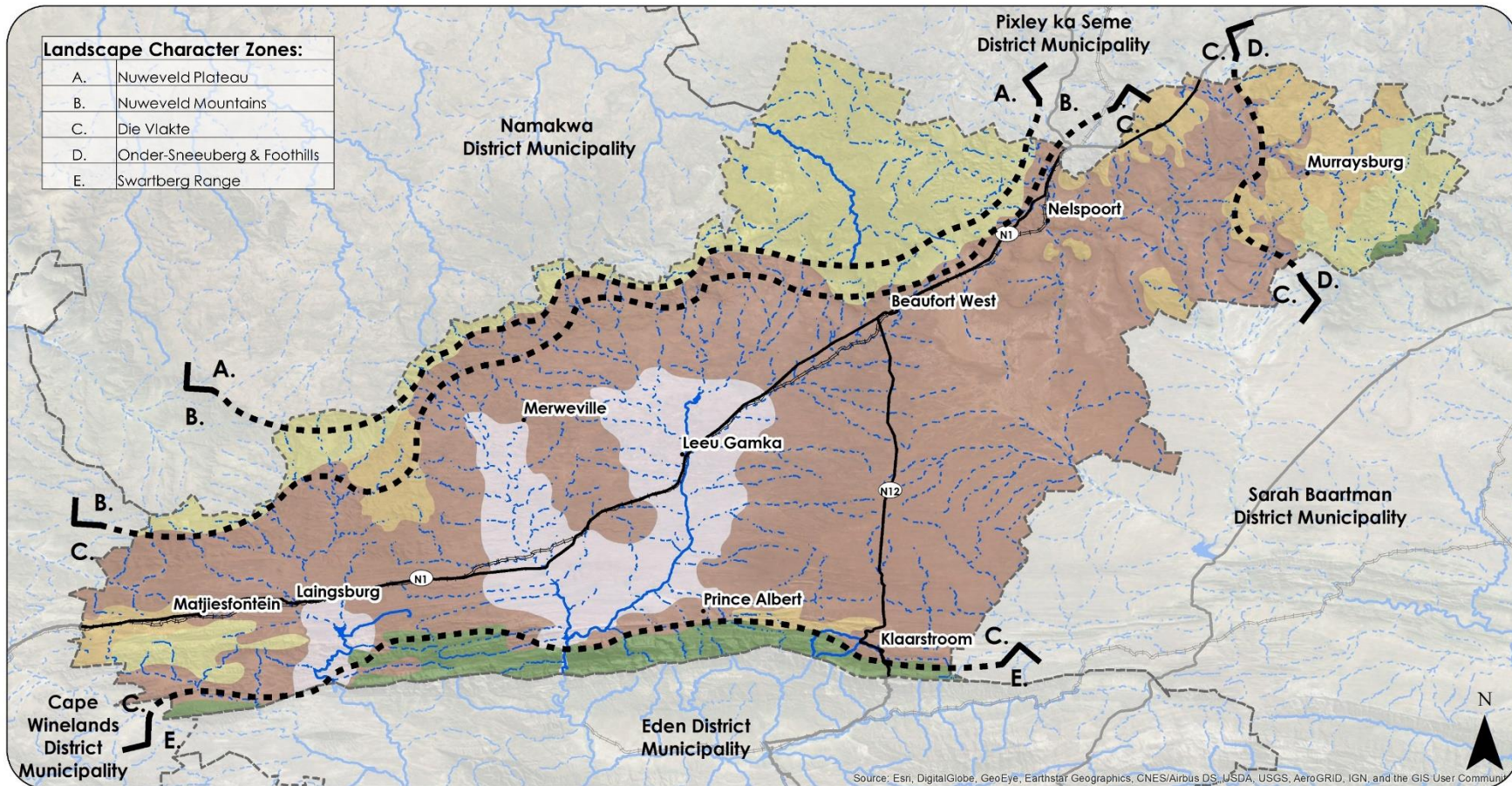


Figure 3.3c : Cross-section depicting landscape character of the Central Karoo



Landscape Character Map: Central Karoo District Municipality

Road Type

- National Road
- Railways
- - - DM Boundaries
- Dams

Landscape Character Category

- Permanent River
- - - Ephemeral River
- High Elevation Mountain Catchments
- Central Plateau Low-Medium Rainfall Region
- Medium Elevation Dry Hills Region
- Medium Elevation Dry Hot Plains
- Low Elevation Dry Hot Basins

1:1 200 000

0 50 100 Km

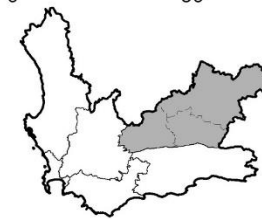
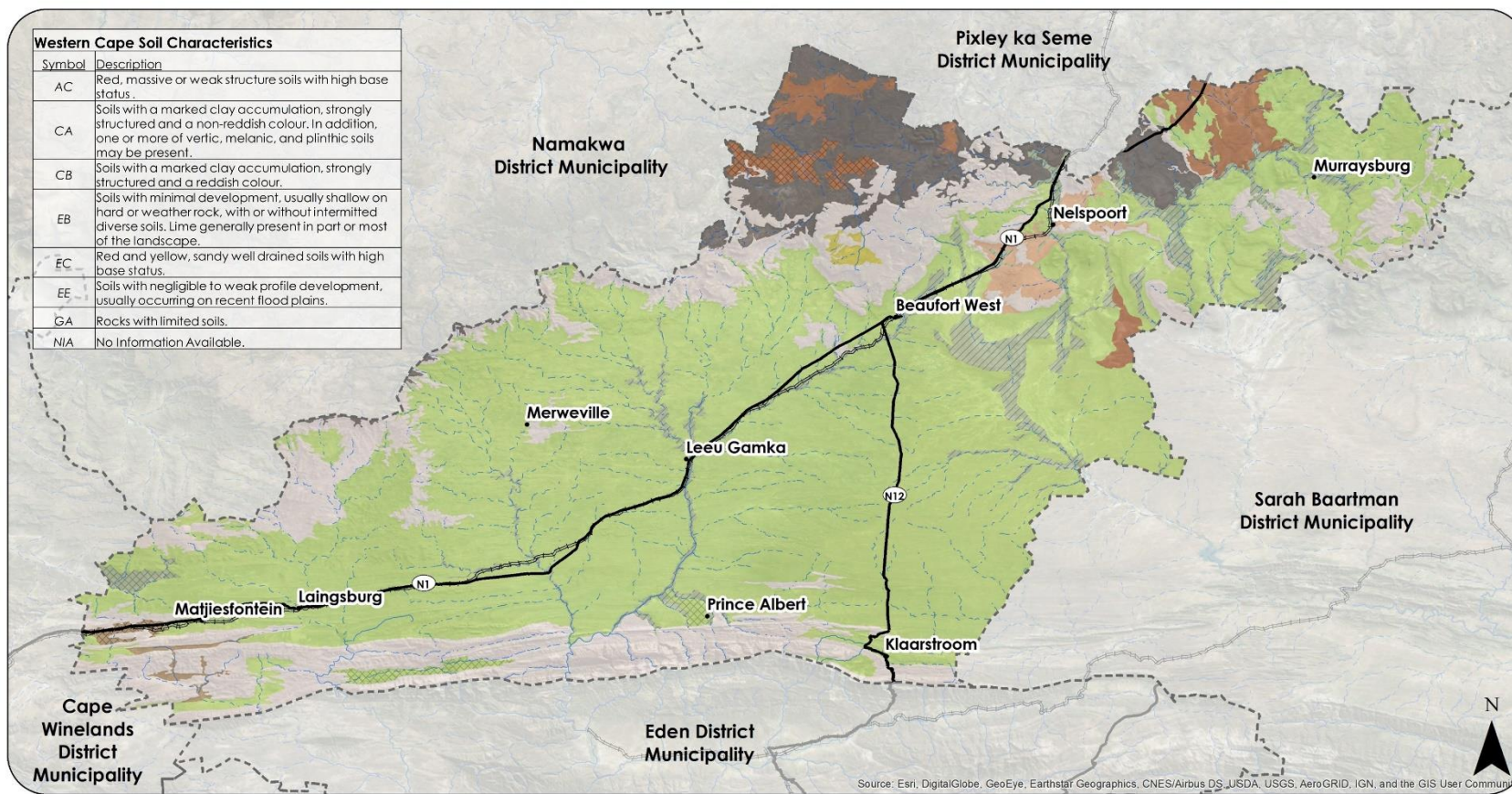


Figure 3.4d : Landscape Character zones of the Central Karoo



Soil Characteristics Map: Central Karoo District Municipality

Legend Items

- DM Boundaries
- National Road
- Railways
- Dams

- Permanent River
- Ephemeral River

Soil Symbol

- AC
- CA
- CB
- EB
- EC
- EE
- GA
- NIA

Soil Depth Description

- < 450 mm
- ≥ 450 mm and < 750 mm
- ≥ 750 mm

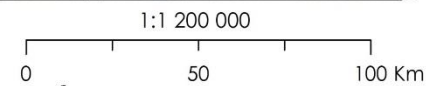


Figure 3.5e: Soil types of the Central Karoo

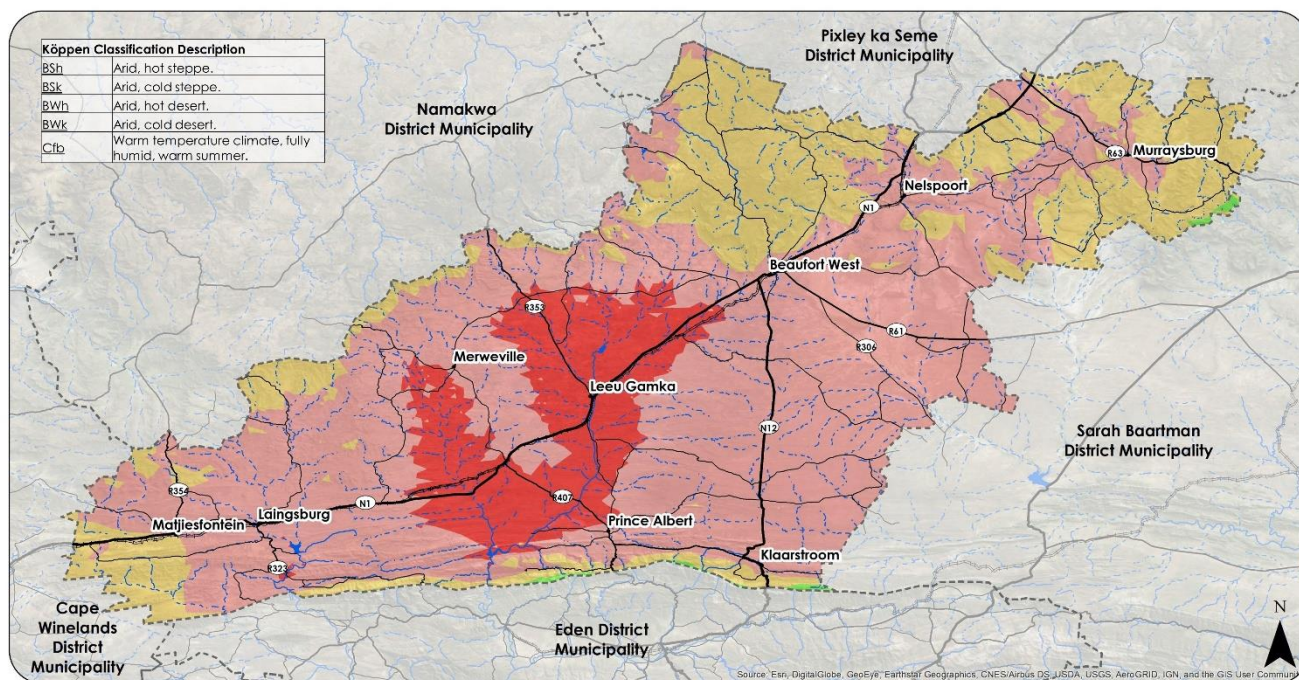
3.1.2 CLIMATE & CLIMATE CHANGE

The Central Karoo is a low rainfall desert region, located on South Africa's central high-plateau and in the rain shadow of the Cape Fold Mountains. It is classified as a cold desert climate (BWk) in terms of the Köppen climate classification, which is the most widely used climate classification systems in the world, as can be seen from **Figure 3.2**. This means that a dry climate prevails, with generally low relative humidity.

Rainfall generally falls predominantly from thunder storms that occur in late summer (peaking in March), with the mountainous areas in the far north east receiving the most rains. Summer days can be brutally hot, with day-time peaks occasionally reaching 40 degrees Celsius, although early summer mornings are often cool and pleasant. Winter days are mild and warm, with the nights and mornings being cold – often experiencing frost.

The semi desert conditions which prevail within the Central Karoo are a result of the harsh arid climate. The average annual rainfall for the District is 260 mm per annum. The highest rainfall occurs to the south with the Groot Swartberg mountain range, on the north-eastern side of the municipality, which receives between 500 to 700 mm per annum. Despite this, approximately 75% of the remaining region receives less than 200 mm per annum. The majority of the rain falls during between November (late spring) and April (early autumn), peaking in the late summer months of February and March, as can be seen from **Figure 3.2** below.

Climate change is expected to produce higher temperatures with possibly lower rainfall in the medium to long term, although there is a very low degree of certainty of the impacts of climate change on rainfall with some studies suggesting that parts of the Western Cape may receive greater rainfall (Western Cape Climate Change Response Framework, 2016), with concurrent higher levels of evpo-transpiration. Wind velocities are also expected to increase. These conditions will result in a reduction in Karoo vegetation with a potential increase in fires. Additionally, agriculture is expected to be negatively impacted with a decline in productivity and yield, resulting in a potential economic downturn in the region or the need to adopt far more drought-tolerant farming practices, plants species and approaches.



Köppen-Geiger Climate Classification Map: Central Karoo District Municipality

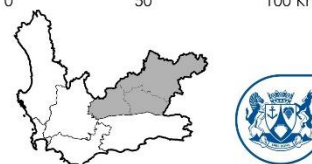
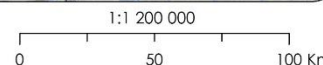


Figure 3.6 -Köppen-Geiger Climate Classification Map of Central Karoo District Municipality

3.1.3 WATER RESOURCES & HYDROLOGY

Most of its rainfall occurs in the summer during the months of February to April. The dry climate and erratic rainfall leads to surface run-off in the form of flash floods which fill up the usually empty dams. Due to the scarce precipitation and subsequent surface run-off, ground water sources are the primary source for the supply of potable water. The region is currently (2017/18) experiencing a deep and prolonged drought of significantly below average rainfall and very low to empty dams, making ground water even more important in the region. The importance of episodic drainage lines and non-perennial streams as ecological infrastructure should not be underestimated in this regard. This ecological infrastructure provides significant ecosystem services by assisting in the conveyance of good quality water to various dams.

The Central Karoo District falls into 3 Water Management Areas – the Gouritz Water Management Area (WMA), which constitutes the greatest land area of the District; the Fish to Tsitsikamma WMA in the north-eastern portion of the district and extending to the Eastern Cape and the Lower Orange WMA, in a small northern portion of the District, extending into the expanse of the Northern Cape. The main rivers of the region, although mostly non-perennial in nature, are the Buffels and Geelbek Rivers, passing through Laingsburg, the Dwyka and Gamka River and the Sout River. Despite its arid conditions, there are many non-perennial rivers and tributaries that exist in the Central Karoo. Despite this, all aquatic habitats in the Central Karoo requires protection and suitable buffers to ensure their continued provision of ecosystem services.

Main dams in the Central Karoo are the Beaufort West Dam situated along the Kuils River and near to the

Gamka River; the Floriskraal Dam, situated along the Buffels River near Laingsburg and serving the needs of the Little Karoo; the Gamkapoort Dam situated at the confluence of the Gamka and Dwyka Rivers west of Prince Albert and serving local agricultural needs; the Leeu-Gamka Dam situated along the Leeu River between Beaufort West and Laingsburg and serving local agricultural needs; and the Oukloof Dam situated along the Cordiers River near Prince Albert and serving local agricultural needs. It should be

noted, however, that these dams are becoming less reliable as secure water sources, and ground water and key aquifers are playing a greater role in the water security of the region. See **Figure 3.3a** to understand the spatial distribution of rainfall and **Figure 3.3b** for a broad indication of ground water resource potential. What can be observed is that the southern mountain areas and north-eastern mountain areas receive the most rainfall, whilst the north-eastern mountain areas around Murraysburg, Nelspoort and

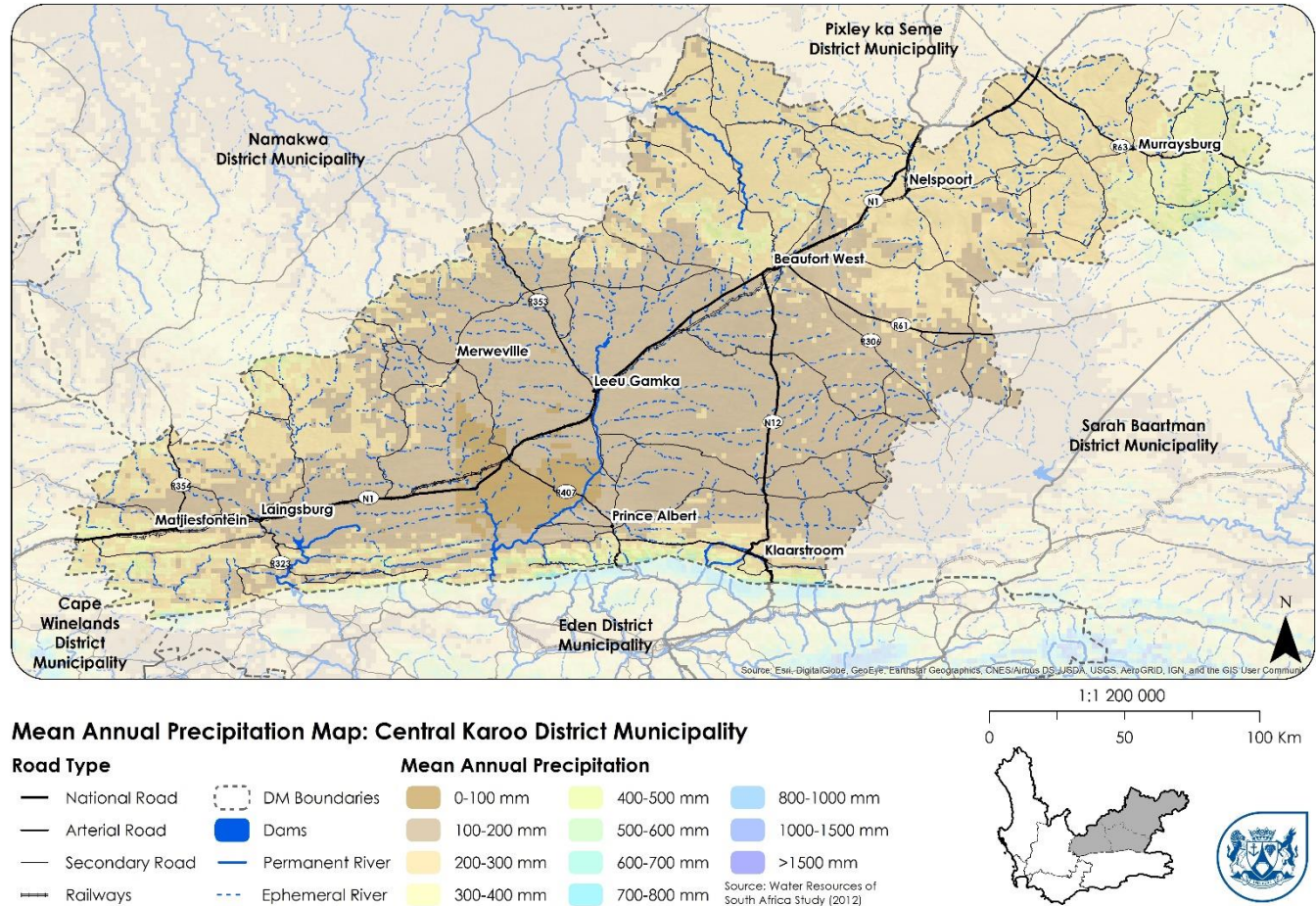
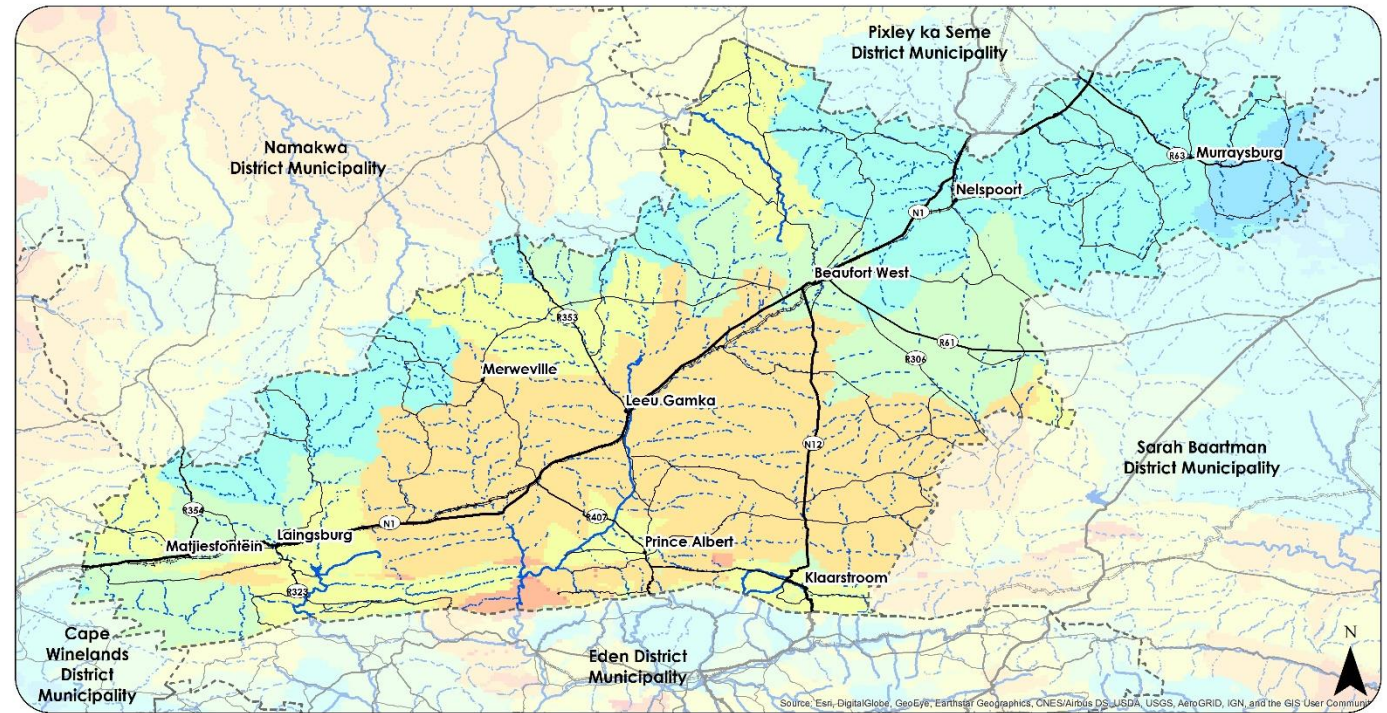


Figure 3.3 a: Mean Annual Precipitation Map for Central Karoo District Municipality

northern Laingsburg have the highest ground water resource potential. **Figure 3.4** shows the primary surface water resources in the region – illustrating the primacy of the Gamka River, as well as the 5 major dams for the region, 3 of which sit at the foot of the Swartburg Mountain area, and the remaining 2 in the town of Beaufort West and Leeu Gamka respectively. Of interest is that although Beaufort West is by far the largest municipality in terms of population it has one dam and it is the smallest of the 5. This illustrates the critical importance of ground water in this municipality.

Riparian ecosystems within the district, due to their proximity to water, have largely been transformed for agricultural related activities. Based on the National Protected Areas Expansion Strategy (NPAES) freshwater priorities, the district has 6399 km of major river reach, of which 1748 km can be considered critically endangered (27%) and 201 km (3%) endangered. Of the 249 sensitive wetlands identified, 107 comprise vlei type wetlands, 85 pans and 55 dam wetlands



Groundwater Resource Potential Map: Central Karoo District Municipality

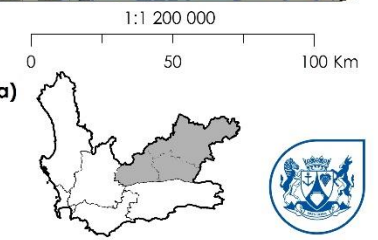
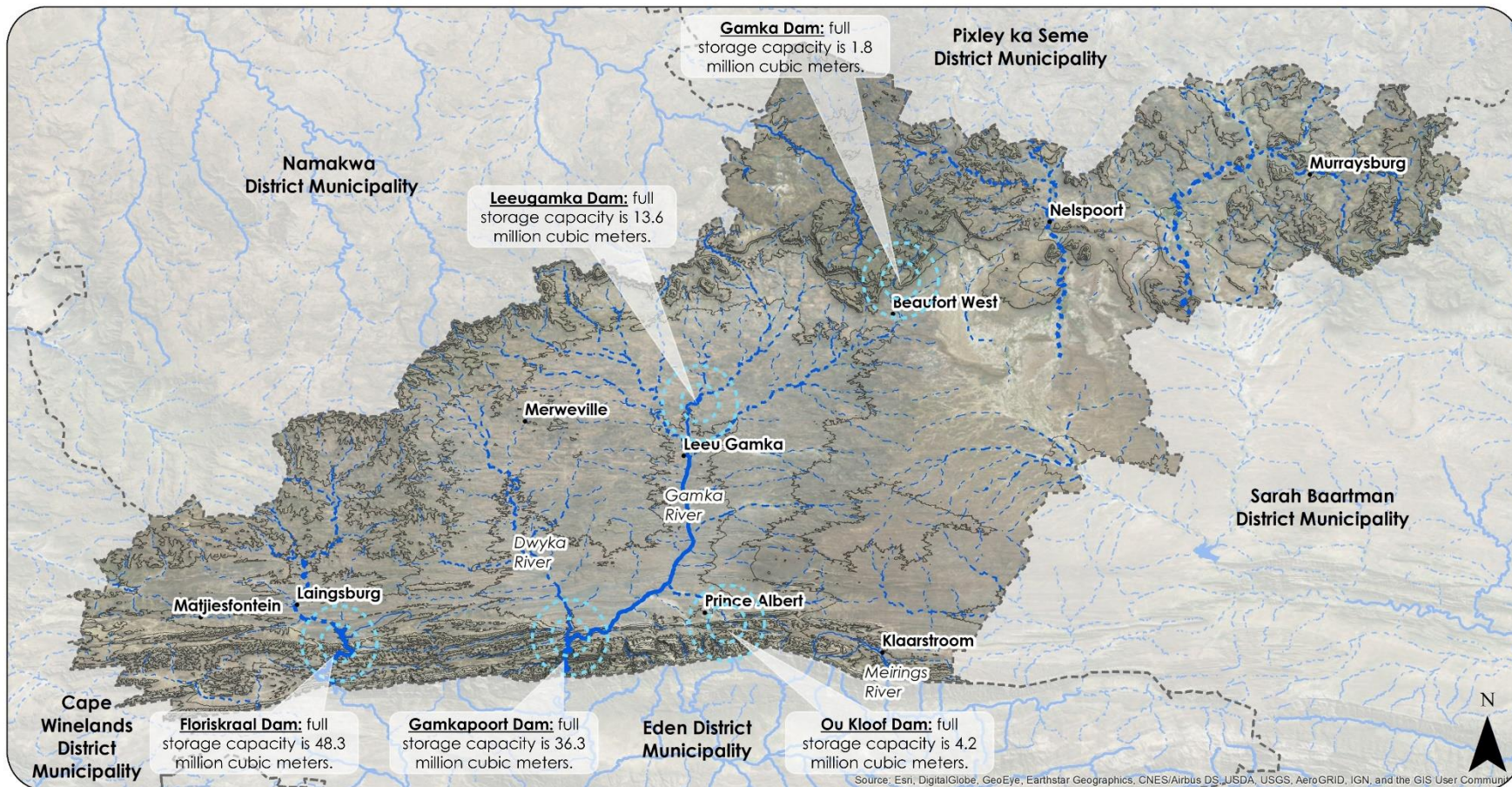


Figure 3.3b : Ground Water Resource Potential of the Central Karoo



Area Surface Water Map: Central Karoo District Municipality

Road Type

- National Road
- Arterial Road
- Secondary Road
- Railways
- ⋯ DM Boundaries
- 200 m Contours
- Dams

River Order and Flow

- Order: 4 (Permanent)
- ⋯ Order: 4 (Ephemeral)
- Order: 3 (Permanent)
- ⋯ Order: 3 (Ephemeral)
- Order: 2 (Permanent)
- ⋯ Order: 2 (Ephemeral)
- Order: 1 (Permanent)
- ⋯ Order: 1 (Ephemeral)

1:1 200 000

0 50 100 Km

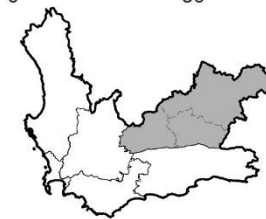


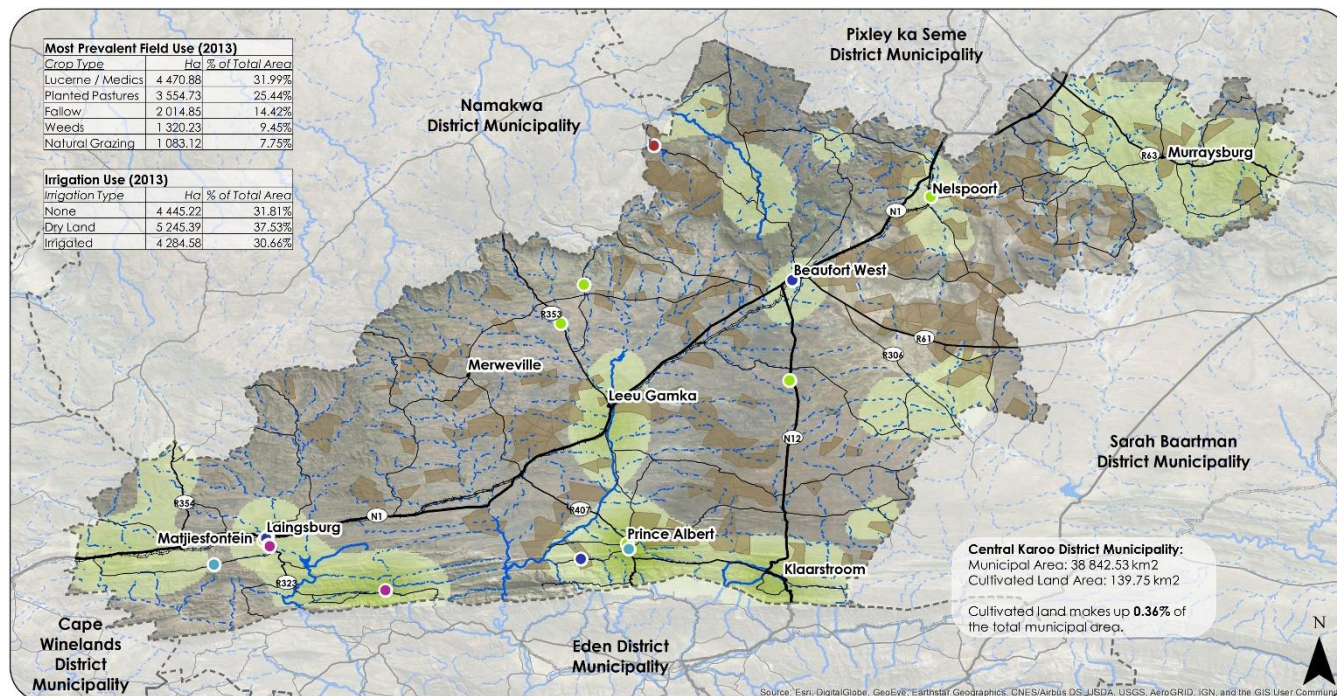
Figure 7.4 : Area Surface Water Map for Central Karoo District Municipality

3.1.4 AGRICULTURE

Broadly, there are three different agricultural practices occurring in the Central Karoo. The most widespread is livestock farming which is dominated by the sheep farmers (cattle and ostrich farming also occur in the district, but on a much smaller scale). The district has good grazing and adequate access to groundwater through the use of wind pumps. However, in order for these livestock farms to remain viable, they need to remain large enough to allow for a sustainable carrying capacity. Laingsburg and Price Albert have the highest grazing capacity.

The second agricultural practice is based on the rain-fed cultivation of wheat which has a very limited occurrence in the southwest of the district. The final agricultural practice is that of irrigated crops which are prominent in the southern regions of the district. Irrigated crops include apricot, olive, wine grapes, peach, pear, prune, quince, and table grapes. The main constraints to irrigated crop production in this region are attributable to poor road infrastructure for the transport of delicate and fresh produce, distance to the market, availability and quality of water supplies, and the reliability of labour.

Agriculture's share of the District's economy fell from 15.4% to 9% between 1999 and 2009. This may be as a result of both diversifications in the District's economic activities, as well as deteriorating market conditions for agricultural products. Strengthening the District's agricultural production, agri-processing, and agri-business opportunities remain a key focus for the region.



Agriculture Activities Map: Central Karoo District Municipality

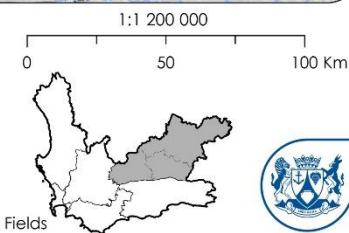
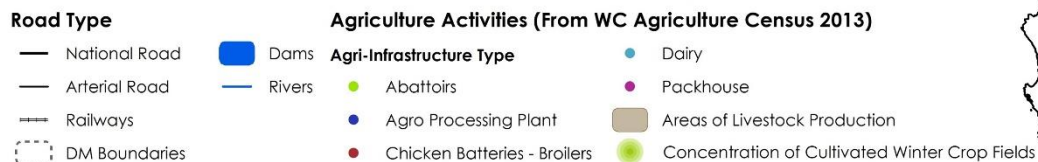


Figure 3.5 : Agricultural activities Map for Central Karoo District Municipality

3.1.5 BIODIVERSITY AND BIODIVERSITY CONSERVATION

The Western Cape Biodiversity Spatial Plan (WCBSP) was released in 2017 and provides updates spatial data for the Central Karoo. This is a critical informant for the future development of the region, as it illustrates Critical Biodiversity Areas (CBA) which are terrestrial features (e.g. threatened vegetation type remnants) and aquatic features (e.g. vleis, rivers and estuaries), and the buffer areas along aquatic CBA features, whose safeguarding is critically required in order to meet biodiversity pattern and process thresholds. They are identified through a systematic biodiversity planning approach and represent the most land-efficient option to meeting all thresholds. The spatial tool is comprised of the Biodiversity Spatial Plan Map and contextual information and land use guidelines. The WCBSP recognises that the Central Karoo region could potentially contain important minerals (e.g. uranium) and fossil fuel (e.g. shale gas) resources which are currently under investigation and could result in high levels of transformation in an area that has to date had relatively low levels of transformation.

The Nama-Karoo Biome is the dominant biome of the region, making up roughly 70% of the landscape, the Succulent Karoo making up 13% in the Southern yet north-facing stretches of the region at the foot of the Swartberg Mountains and Fynbos making up 9% in the mountain regions of the district (see **Figure 3.6** and **Figure 3.7**).

As stated in the Western Cape Biodiversity Spatial Planning handbook, *the Nama Karoo is important for several threatened faunal species, such as the riverine rabbit (*Bunolagus monticularis*) which is restricted to riparian habitats in the Karoo. As with the Succulent Karoo, the Nama Karoo is too arid for cultivation but*

has been impacted through overgrazing practices (Quoted from WCBSP, 2018).

As recognised in the 2014 SDF, approximately 88% of the land area of the Central Karoo is natural vegetation, 10.4% is degraded and 1.5% is transformed completely by urbanisation, cultivation, mining and dams. Protected areas within the district comprise 207 917 ha (5.78% of the district), with an

additional 9 077 ha (0.23% of the district) under conservation.

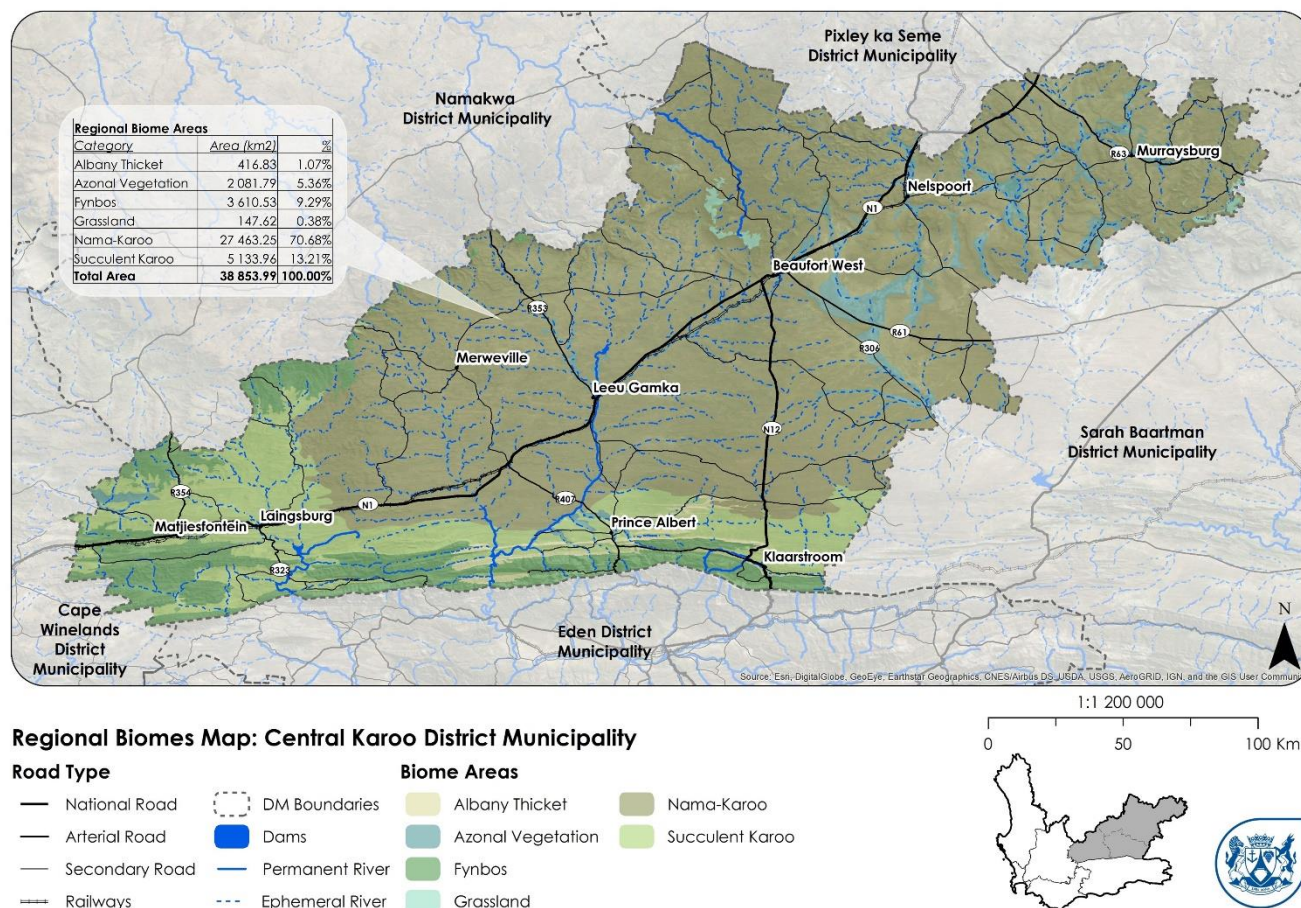
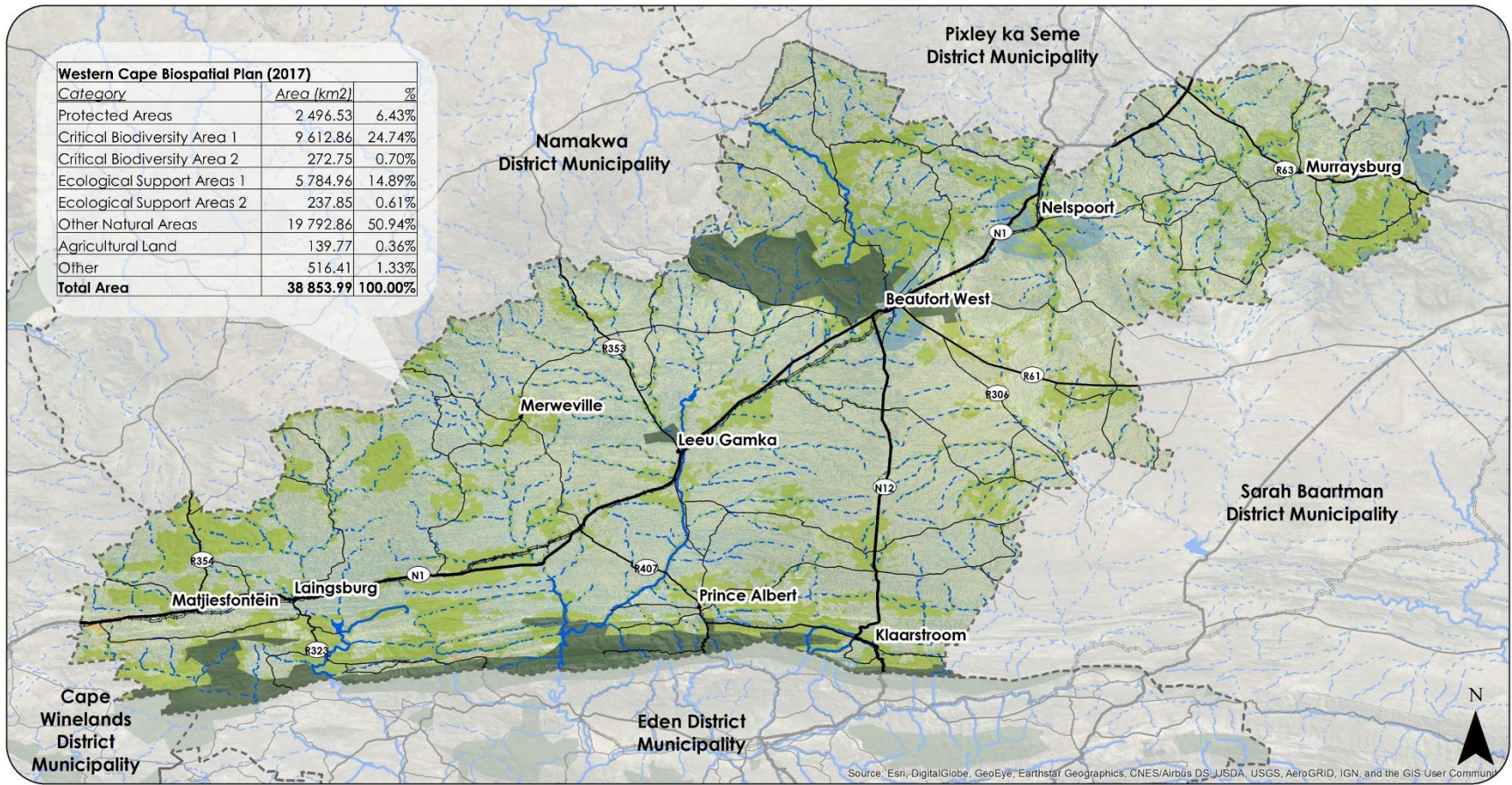


Figure 3.6 : Areas Biomes Map for Central Karoo District Municipality



Western Cape Biospatial Plan (2017) Land Use Map: Central Karoo District Municipality

Road Type

- National Road
- Arterial Road
- Secondary Road
- Railways

- - - DM Boundaries
- Dams
- Permanent River
- - - Ephemeral River

Biospatial Plan Categories

- Protected Areas
- Critical Biodiversity Areas 1
- Critical Biodiversity Areas 2
- Ecological Support Areas 2
- Other Natural Areas
- Agricultural Land
- Ecological Support Areas 1

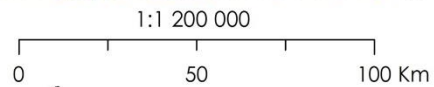


Figure 3.7 : Biodiversity Planning Land Use Map for Central Karoo District Municipality (Western Cape Biodiversity Spatial Plan, 2017)

3.1.6 MINERAL RESOURCES

Central Karoo has mineral resources that have been underutilised, up until now. There are three mines currently located in the district which are predominantly quarries used for local building materials. One quarry is located on the R354 north of Matjiesfontein, one is adjacent to the R328 south of Prince Albert, and one is located in the vicinity of the intersection of the N1 and R63 (see **Figure 3.8**).

However, the District is on the cusp of major change in the mineral resources sector. Firstly, the Central Karoo has extensive uranium deposits which begin north of Prince Albert and Laingsburg and reach their highest density north of the N1 in the vicinity of Merweville. These deposits have attracted the attention of energy and mining conglomerates, but remain untouched. Currently, the area-south east of Beaufort West is undergoing a process for receiving prospecting rights.

Secondly, the region also contains expanses of gas-rich shale which are currently being explored by energy companies. Exploration permits may soon be granted for blocks which begin at latitude 33-degrees south and extend northward into the Northern Cape, and eastward into the Eastern Cape. This impacts Central Karoo in most areas north of Prince Albert and Laingsburg and the entire municipality of Beaufort West. The exact location of the most economically recoverable shale gas fields remains an information gap, with a potential 'sweet spot' being identified eastwards of the town of Beaufort West and westwards of Murraysburg.

As recognised in the Strategic Environmental Assessment for Shale Gas in the Karoo (CSIR, 2016), whilst the potential economic and energy impact of medium to large scale shale gas extraction could be

substantial, there are also potential environmental trade-offs which must be fully understood in order to be prevented or mitigated. The SEA makes several recommendations in respect to air quality, earthquakes, water resources, waste planning, ecological impacts, agriculture, tourism, health, sense of place, noise and spatial implications. It should be noted that the impact is dependent on the scale at which shale gas extraction takes place. Some of the key spatial impacts relate to:

- Towns experiencing higher than **expected growth in population** of persons seeking economic opportunities associated with shale gas. This places greater **service delivery demands** of housing, water provision, social services, electricity and roads;
- Increased **traffic volumes** and the corresponding **maintenance** and rehabilitation needs for roads;
- Potential **rail re-establishment** and laying new pipeline infrastructure for gas;
- Higher demands on **municipal planning capacity** to approve land use applications;
- Groundwater contamination; and
- Disturbing biodiversity, particularly CBA's.

It should be noted that a spatial representation of risk profiles has been undertaken for shale gas in the karoo, we can be seen in Figure 3.8a. It should be noted that it is desirable, should shale gas extraction occur, that the areas where it should take place should ideally be areas of low to moderate risk rather than high risk.

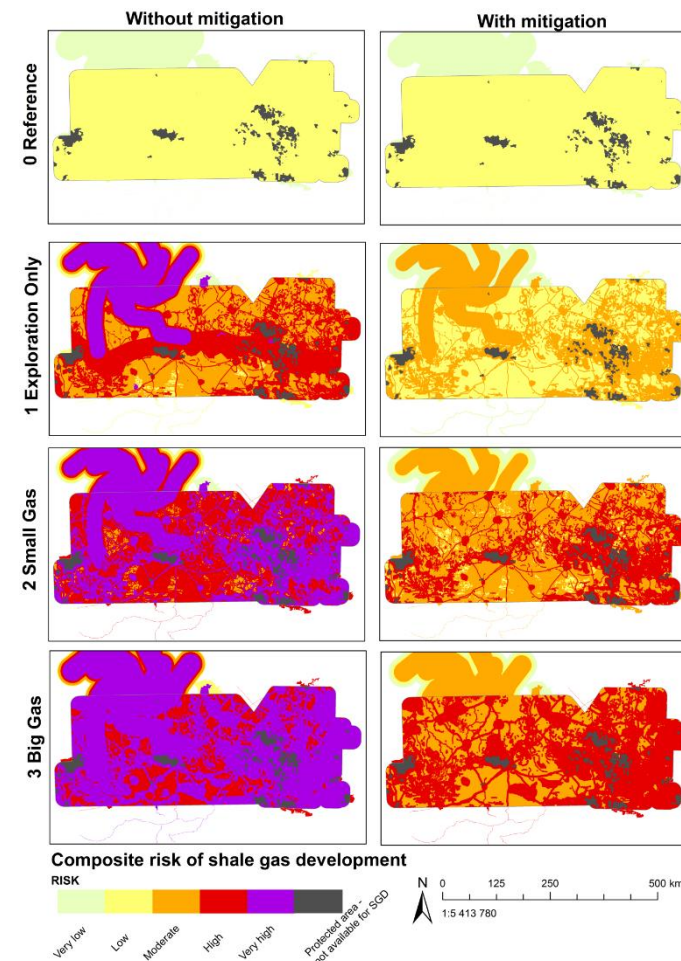
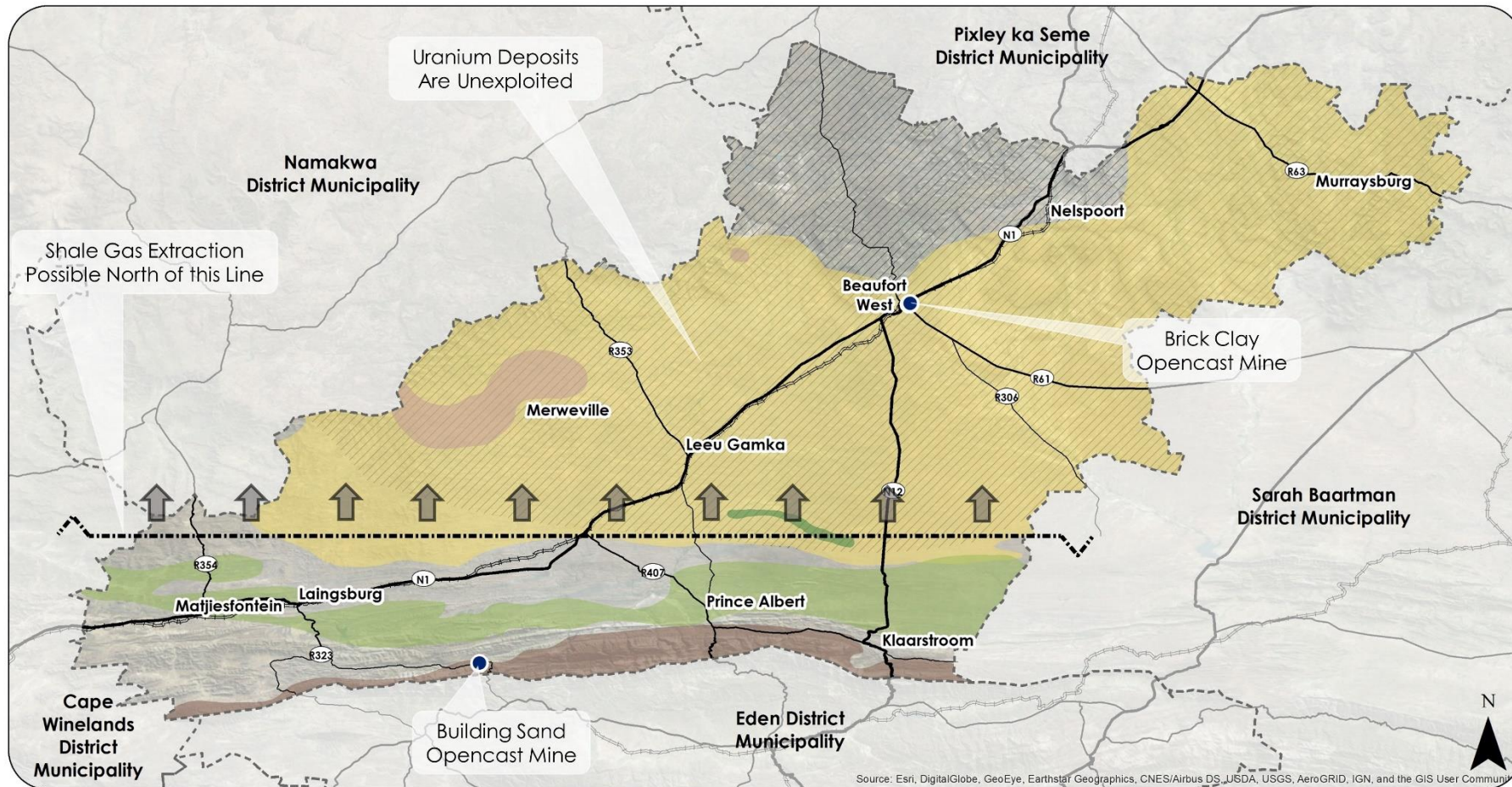


Figure 3.8a – Composite risk of shale gas development (CSIR, 2016)



Area Mineral Resources Map: Central Karoo District Municipality

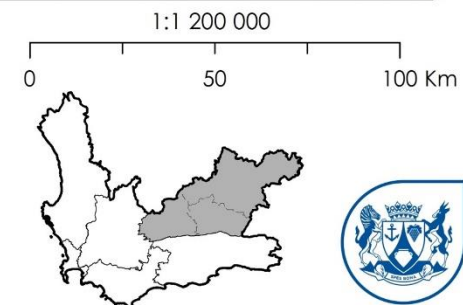
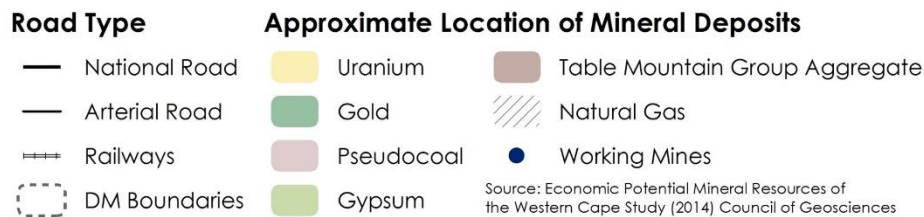


Figure 3.8b : Mineral Resources Map for Central Karoo District Municipality

3.1.7 SWOT OF THE NATURAL ENVIRONMENT

STRENGTHS

- Central Karoo has large tracts of natural vegetation, with excellent statutory protection of mountain catchment areas. Mountain catchment areas are important for water supply and source protection which are protected under the Mountain Catchment Areas Act (Act 63 of 1970).
- Very sparsely located, and relatively compact settlements.
- Vast tracks of livestock range.
- Excellent scenic assets in the form of nature reserves, mountain passes, and heritage centres which can be better leveraged for tourism.

WEAKNESSES

- Central Karoo's arid nature impacts the growth potential of towns, and the viability of agriculture in the region. The District is very dependent on groundwater.
- Agriculture practices have modified area riparian habitats.
- Long distances and poor transport infrastructure are impeding the movement of agriculture products to major centres.
- Overgrazing has resulted in the degradation of large tracts of land and resulted in extensive soil erosion, with an associated decline in grazing potential and in water quality due to siltation.

OPPORTUNITIES

- Shale Gas exploration may present an opportunity for the District municipality to stimulate economic growth and job creation.
- A focus on the development of better transport infrastructure, along with agri-processing and agri-businesses may also help stimulate economic growth and job creation.
- The areas scenic and heritage assets, conservation areas, and farming areas can be better leveraged to support tourism.
- There are various renewable energy projects which have already been approved but have yet to be implemented.
- Creation of climate change corridors, e.g. through protected area expansion resulting in upland-lowland links.
- Improving agricultural potential through veld rehabilitation and through the implementation of sustainable agricultural practices.
- The establishment of a municipal shared services centre to improve the municipal capacity and reduce the amount of unregulated activities taking place which may negatively impact the environment

THREATS

- Shale gas extraction may impact, in ways that may not be entirely mitigatable, the region's scenic qualities, as well as threaten biodiversity and the quality of groundwater.
- Climate change – a hotter, drier future could impact on the liveability of the region. The Central Karoo is an area of high-range warming (Smart-Agri climate change prediction).
- Natural disasters (e.g. drought, flash floods, veld fires). Veld in poor condition has low resilience to droughts and floods.
- Lack of capacity at the local level to monitor land use and regulate the impact of human activities on the environment.
- Farmers implementing inappropriate stocking rates on veld, which have low carrying capacity and are sensitive to overgrazing.
- Uranium mining could negatively impact environmental health and human wellbeing.
- Cumulatively, renewable energy developments (especially solar PV and CSP) could have negative environmental impacts, e.g. by reducing bat populations which control agricultural insect pests.
- Invasive alien plants affect water quantity (including a reduction in groundwater recharge) and quality.

3.2 SOCIO-ECONOMIC CONDITIONS

The purpose of this section is to provide an overview of the prevailing socio-economic conditions in the Central Karoo, drawing on the latest intelligence that exists.

3.2.1 DEMOGRAPHIC PROFILE

Demographics is broadly defined as the study of population dynamics which is significantly influenced by a wide array of factors such as birth and death rates, migration patterns, age, race, gender and life expectancy. Demographics are a decisive factor in shaping our current socio-economic reality and is therefore critical when developing long term strategic plans.

According to Census 2011, the population of the Central Karoo was 71 011. **Figure 3.9** below illustrates the spatial distribution of the Central Karoo's residents. According to this survey, over 80% of the District's residents are concentrated in urban areas including Beaufort West, Laingsburg, Prince Albert, Murraysburg, and the other small towns and hamlets. Central Karoo's non-urban areas are sparsely populated.

According to the forecasts of the 2017 Socio-Economic Profile for the Central Karoo (WCG, 2017), the Central Karoo's population is estimated to **be 75 688 in 2018, compared to 71 011 in 2011**. This represents an annual average growth rate of approximately **0.91% per annum** or 6.59% within this 7-year period, which is lower than the growth rate that the Central Karoo experienced between 2001 and 2011 which was an annual average growth rate of 1.46%. The population of the Central Karoo is expected to grow to **80 584 by 2025 and 84 335 by 2030**, assuming the annual average growth rate of **0.91%** persists. This trend of slowing growth rates is both

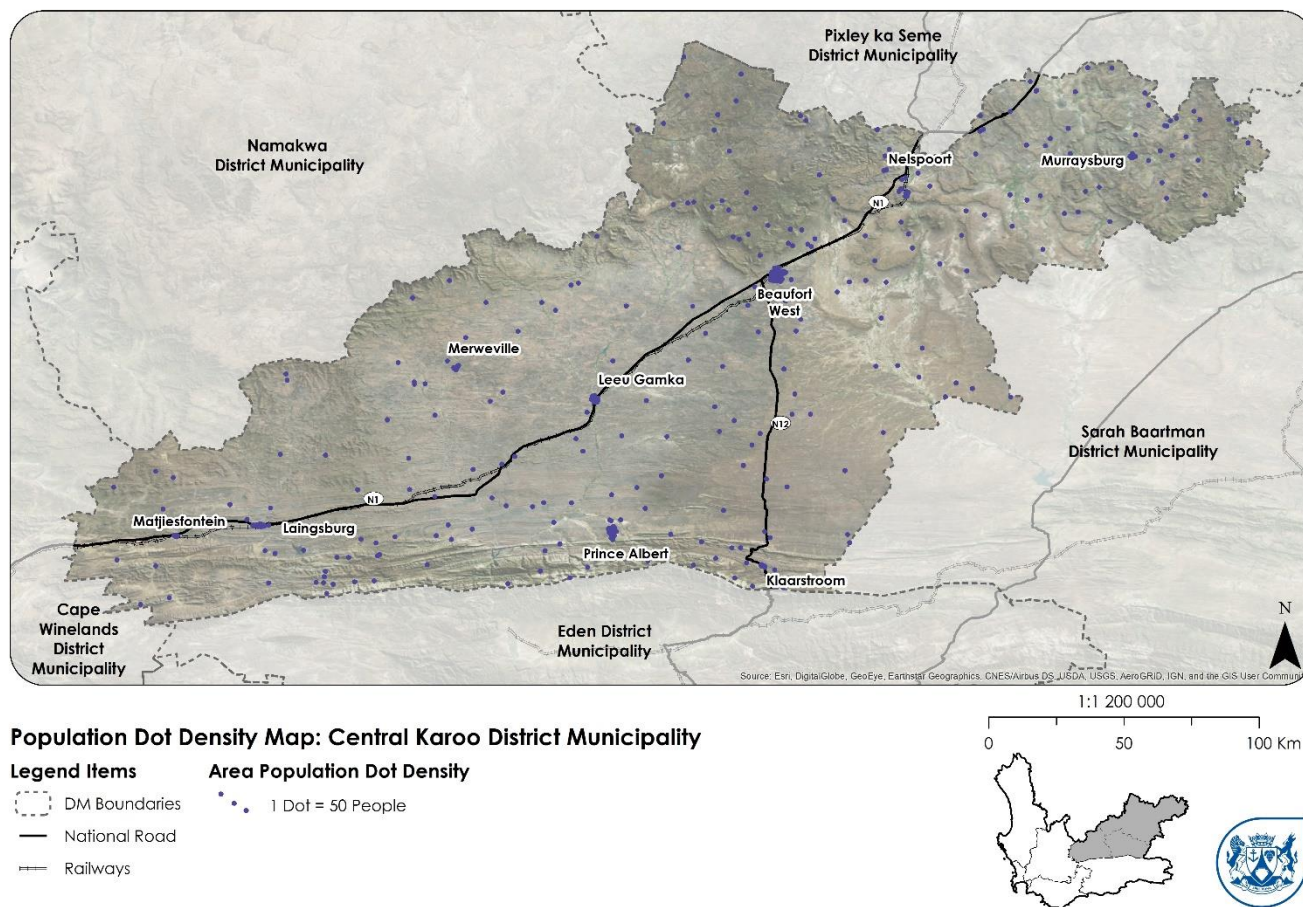


Figure 3.9 : Area Population Density Map for Central Karoo District Municipality

a nationwide phenomenon and indicative of a stabilising population figure (Central Karoo SEP-LG, 2018).

Due to a predicted increase number of working age people (15 – 65 years) between 2011 and 2023, and a concurrent decrease in the number of children (0 – 14 years), the dependency ratio is expected to significant decrease from 58.0 in 2011 to 49.2 in 2023, as indicated in **Figure 3.10**, below.

Year	Children: 0 - 14 Years	Working Age: 15 - 65 Years	Aged: 65 +	Dependency Ratio
2011	21 683	44 950	4 370	58.0
2018	20 430	49 643	5 616	52.5
2023	19 267	52 975	6 772	49.2

Figure 3.10 : Changes in the Dependency Ratio for the Central Karoo between 2011 and 2023

It is estimated that there are **21 980 households in the Central Karoo in 2018**, meaning that there are, on average, 3.44 people per household, compared to 3.97 people per household in 2001. This means that household sizes are shrinking, and therefore despite the slowing population growth rate, the household growth rate may still be higher which has implications for land and space budgeting of municipalities.

The table below seeks to understand how the population of the Central Karoo is set to grow into the future, and correspondingly, how the number of households will increase and land requirements for these households will grow.

In summary, the population of the Central Karoo is anticipated to grow from **71 011 people and 20 643 households in 2011** to **84 335 people and 24 516 households in 2030**, assuming an annual average growth rate of 0.9% which differs significantly between local municipalities. Prince Albert, for example, is set to grow at a rate that is three times that of Beaufort West's (1.73% per annum for Prince Albert vs. 0.6% for Beaufort West between 2016 and 2030). It must be emphasized that the growth rates between 2011 and 2016 were extrapolated beyond 2016, accounting for this differentiated growth rate per local municipality.

Land required to accommodate this growth, **assuming** an average density of **25 dwelling units per hectare** is a total of **117 hectares** needed– 52 hectares for Beaufort West municipality, 45 hectares for Prince Albert municipality and 23 hectares for Laingsburg municipality. This is all indicated in the 3 adjacent tables showing population, household and land requirements growth projections up to 2030.

POPULATION PROJECTIONS - UP TO 2030 (MED GROWTH RATE OF 0.9% ON AVERAGE)								
Municipality	Population (2001)	Growth Rate per annum (2001 - 2011)	Population (2011)	Rate per annum (2011 - 2016)	Mid-Year Est 2016	Projected Population 2020	Projected Population 2025	Projected Population 2030
Beaufort West	43291	1.45	49586	0.6	51080	52321	53914	55556
Prince Albert	10512	2.5	13136	1.73	14272	15295	16676	18183
Laingsburg	6681	2.41	8289	1.46	8895	9430	10144	10912
Total	60484	1.74	71011	0.91	74247	76999	80584	84335

HOUSEHOLD PROJECTIONS					
**assuming 3.44 people per household (2011 Census)					
Municipality	No. of households 2011	No. of households 2016	No. of households 2020	No. of households 2025	No. of households 2030
Beaufort West	14415	14849	15210	15673	16150
Prince Albert	3819	4149	4446	4848	5286
Laingsburg	2410	2586	2741	2949	3172
Total	20643	21583	22384	23426	24516

LAND REQUIREMENTS FOR NEW HOUSEHOLDS						
Future land requirements for new housing, assuming a future gross dwelling unit density of 25du/ha:						
Municipality	New households between 2016 - 2020	Land Required by 2020 (ha)	New Households between 2016 - 2025	Land Rerquired by 2025	New households between 2016 - 2030	Land Required by 2030 (ha)
Beaufort West	361	14	824	33	1301	52
Prince Albert	297	12	699	28	1137	45
Laingsburg	156	6	363	15	586	23
Total	800	32	1842	74	2933	117

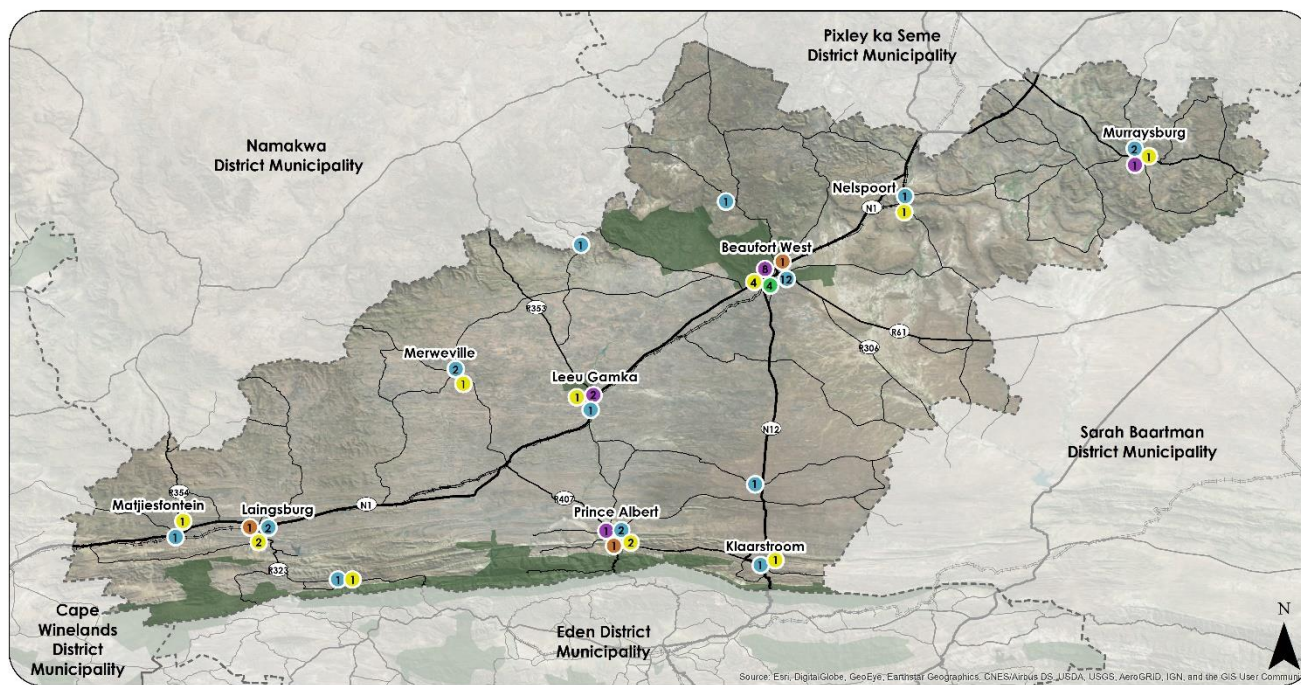
3.2.2 EDUCATION

The availability of adequate education facilities such as schools, FET colleges and schools equipped with libraries and media centres directly impact academic outcomes. In 2016, there were 29 schools within the Central Karoo region which had to accommodate 14 333 learners. The number of schools with libraries in the region stands at 23, meaning that 6 schools do not

have library facilities. **Figure 3.11** illustrates the location and number of educational facilities in the District. The literacy rate in the Central Karoo was recorded at 60% in 2011. The learner to teacher ratio in the Central Karoo in 2016 is extremely high sitting at about 51 learners per teacher, which is an increase from the 2014 value of about 47 learners per teacher. The learner enrolment numbers only increased marginally from 14 151 in 2014 to 14 333 in 2016. Continuing this alarming trend,

dropout rates are high in the Central Karoo – specifically in Laingsburg where the dropout rate was 72.3% in 2016 (this is the percentage of learners that enrol in grade 10 but do not complete grade 12).

Matric pass rates in the Central Karoo are irregular and fluctuating and do not indicate any trend. See **Figure 3.12** below.



Education Social Facilities Map: Central Karoo District Municipality

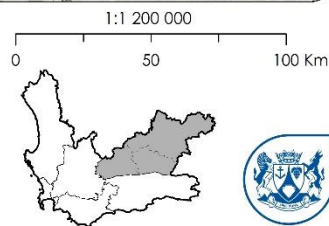


Figure 3.11 : Education Facilities Map for the Central Karoo District Municipality

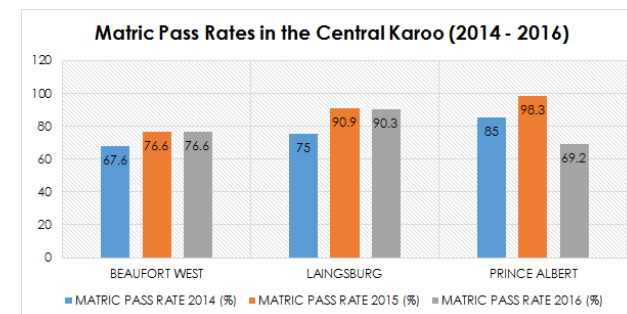


Figure 3.12 - The Matric Pass rates in the Central Karoo between 2014 and 2016.

3.2.3 HEALTH

Healthcare facilities in the Central Karoo are listed in the Local Government Socio Economic Profile (LGSEP) and consist of **4 district hospitals**, as well as **Nelspoort Hospital (psychiatric and TB hospital)** supported by a compliment of **9 fixed Primary Health Care facilities made up of 8 fixed public health care facilities and one community day centre**. There are a further 4

mobile and 3 satellite clinics which service the Central Karoo region. **Figure 3.13** shows the location of these health facilities in the District. It is clear that a facility rationalisation process is underway, since the number of mobile clinics and TB clinics has decreased over the last 5 years, in order to reduce costs and provide more consolidated and effective services.

The provision of ambulance services in the Central Karoo is a significant issue, due to the extremely small population and sparsely populated and expansive region. There are currently 1.71 ambulances per 10 000 people.

Serious illness is a concern for all Municipalities. At the end of 2016, anti-retroviral treatment (ART) for HIV/Aids was provided for 1631 persons in the Central Karoo municipality. The municipality acquired a further 926 new ART patients between 2014 and 2016. Concerningly, the HIV transmission rate for 2014 was 3.4% and for 2015 was 4.3% before dropping down to 1.4% in 2016. These rates of transmission were significantly above provincial averages, as can be seen in **Figure 3.14** below.

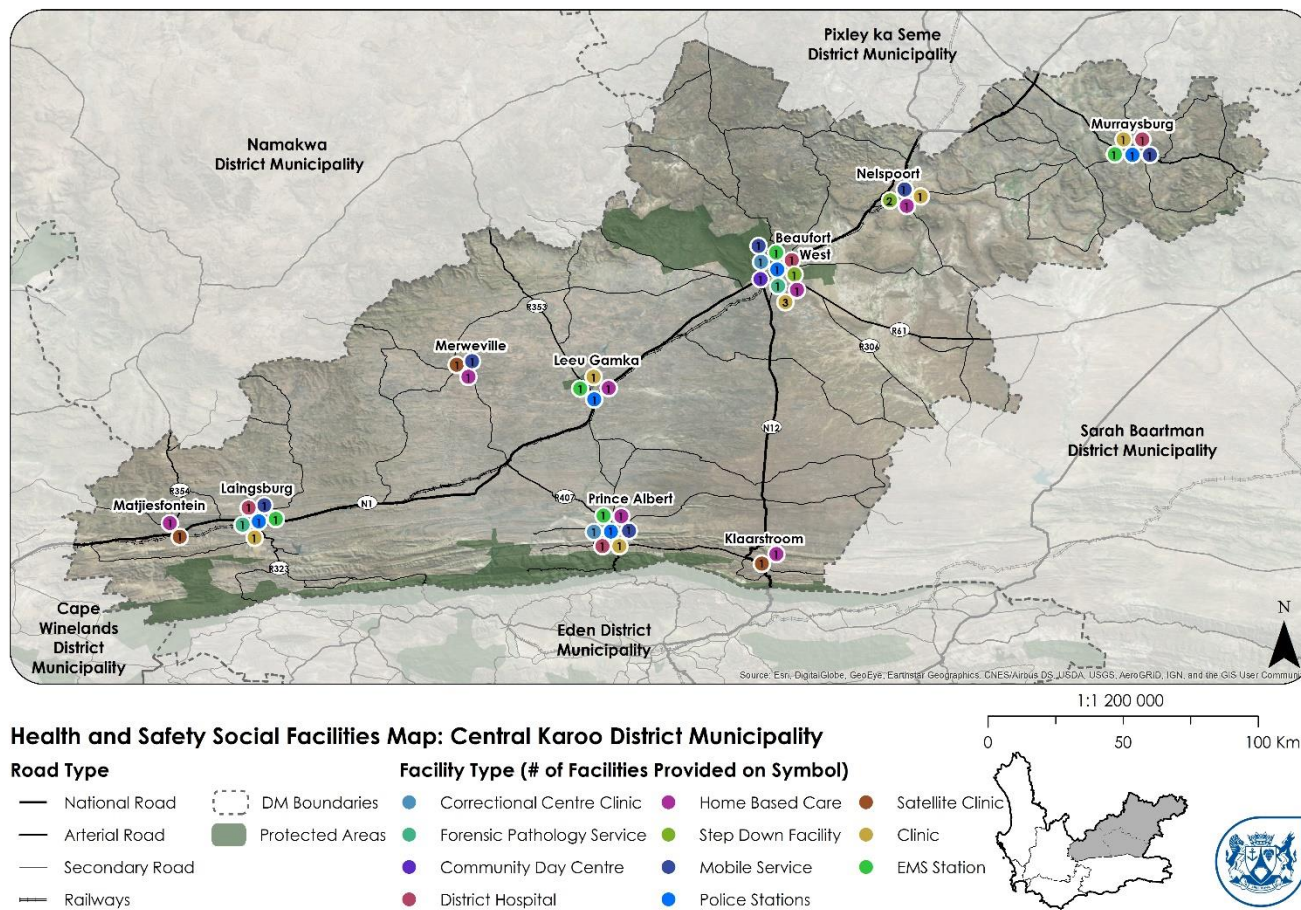


Figure 3.13 : Healthy and Safety Social Facilities Map for the Central Karoo District Municipality

Area	Registered patients receiving ART			Number of new ART patients			HIV Transmission Rate		
	2014	2015	2016	2014	2015	2016	2014	2015	2016
City of Cape Town	131 177	145 232	162 704	27 663	30 275	32 268	1.3	1.3	0.7
West Coast	6 521	7 651	8 910	1 484	1 790	1 835	1.4	1.5	0.8
Cape Winelands	19 615	23 172	27 162	4 595	5 195	5 097	1.7	1.7	1.5
Overberg	7 233	8 703	10 397	1 451	1 983	1 767	1.3	0.6	0.0
Eden	14 805	17 391	20 127	3 278	3 820	3 603	1.6	1.4	1.8
Central Karoo	1 418	1 416	1 631	327	300	299	3.4	4.3	1.4

Figure 3.14 : ART patients in the Western Cape

In terms of child health in 2016, immunization rates sit at 74.9% - which is below the Western Cape average of 79.9%. Malnutrition is also higher in the Central Karoo (10.2 per 100 000 people) compared to the Western Cape average - reflective of the high levels of poverty in the region. The neo-natal mortality rate in 2016 was 14 neonatal deaths per 1000 live births, which is significantly above the target of 6 or less neonatal deaths per 1000 live births. Also concerning, is that 21.8% of all babies born in the Central Karoo in 2017 were deemed to be underweight, compared to the provincial rate of 14.3%.

The maternal mortality rate for 2016 was zero, attributed to the high quality of health care being provided by health professionals, but also attributable to the very low number of people in the region. The delivery rate to women under 18 stood at 8.0% in 2016 (the % of babies born to mothers under the age of 18), compared to 5.7% within the Western Cape.

3.2.4 CRIME, SAFETY & SECURITY

The extent of crime in South Africa does not only have a significant impact on the livelihood of citizens, but also a detrimental effect on the economy of an area. Crime hampers growth and discourages investment and capital accumulation. The Central Karoo District has five police stations located in Murraysburg, Beaufort West, Prince Albert, Leeu Gamka, and Laingsburg (see **Figure 3.13**).

Decreases

The murder rate in the Central Karoo decreased by 11.3% from 54 incidents per 100 000 people in 2016 to 48 per 100 000 in 2017. Similarly, reported sexual offences decreased by 22.1% during this period from 184 to 143 incidents per 100 000 people, however is still significantly above the provincial average of 108 incidents per 100 000 people. Driving under the influence appears to have decreased between 2016 and 2017 by 21.8% from 173 to 135 persons per 100 000. Residential burglaries decreased from 1039 to 945 per 100 000 between 2016 to 2017.

Increases

Drug related crime continues to rise in the Central Karoo from 1655 per 100 000 in 2016 to 1847 per 100 000 in 2017, indicative of a 11.8% increase.

Fatal crashes increased marginally from 38 in 2015 to 39 in 2016 whilst road user fatalities decreased slightly from 61 to 58 between 2016 and 2017.

3.2.5 ACCESS TO BASIC SERVICES

The Constitution of the Republic of South Africa guarantees that every citizen has the right to access adequate housing and potable water. Basic services are adequate sanitation, safe energy sources, and refuse removal. The Constitution compels local governments to progressively achieve the realisation of these rights and services within their available financial means. The data below is drawn from Central Karoo's latest SEP:LG report (refer to **Figure 3.15**).

In **2011**, approximately **97%** of households in the District had access to a **formal dwelling**. By **2016**, **97.8%** of households had access to a **formal dwelling**. This indicates that housing delivery across the District takes place at a faster rate than the growth in the total number of households.

With regards to potable water, in **2011** approximately **99.4%** of households had access to **pipled water** inside the dwelling or yard, or within 200 metres from the yard. By **2016**, this figured had decreased to **95.1%**. This indicates that the growth in the number of households is outpacing the delivery of water services. It should also be noted that the region does not fully

understand the extent of its groundwater resource, including whether its use of it is sustainable or depletive.

Household **sanitation** is integral as it promotes health and dignity through the provision of safe disposal and treatment of human waste. Accordingly, in **2011 89.5%** had access to a flush or chemical toilet connected to the municipal sewage system. By **2016**, this figure had increased to **97.1%**. In this sense, the District has made significant progress in providing its constituents with access to acceptable standards of sanitation services.

In terms of **electricity** as a primary source of lighting, in **2011 89.4%** of the District's households had access to this form of energy. And by **2016**, this figure had increased to **95.4%**. This marks a significant improvement which can largely be attributed to the roll-out of the Integrated National Electrification Programme (INEP).

Finally, the SEP-LG report notes that in **2011 78.7%** of households had their **refuse collected** by local authorities once a week, and by **2016** this number had increased to **90.8%**. The report notes that the remaining backlog may be attributed to outlying farm areas, which may not be easy to reach for municipal waste removal. Recycling could also be greatly improved in the region in order to deal with waste.

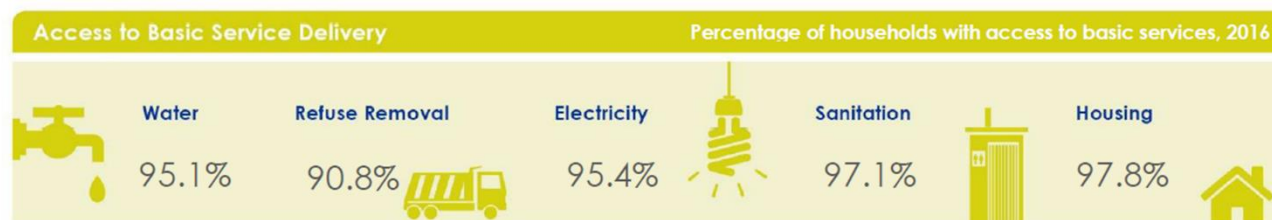


Figure 3.15 : Percentages of Households with Access to Basic Services

3.2.6 LAND REFORM & RURAL DEVELOPMENT

Land reform and rural development have an important contribution to make in promoting inclusive and integrated rural economies.

In 2001, the Department of Rural Development and Land Reform (DRDLR) initiated a programme to establish and promote black emergent farmers; the Land Redistribution for Agricultural Development (LRAD) grant was developed for this purpose. In

response to the Land Summit resolutions of 2005, which called for the acceleration of the pace of land reform, the DRDLR introduced the Proactive Land Acquisition Strategy (PLAS). In 2009, the Department conducted a series of consultations with land reform beneficiaries which resulted in the termination of the use of the LRAD and SLAG grants. The focus shifted towards the acquisition of strategically located agricultural land through PLAS and land is made

available to beneficiaries by way of lease agreements (DRDLR, 2012).

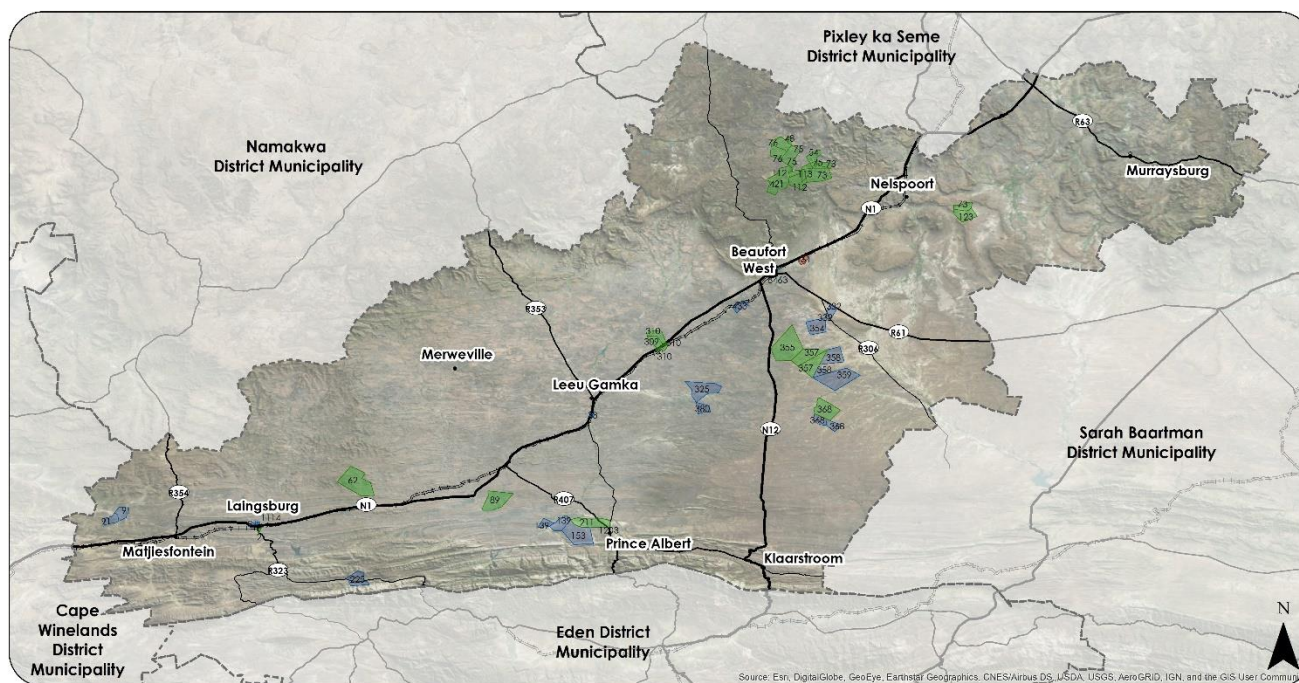
The majority of DRDLR land reform projects are located in the Beaufort West municipal area. The District Land Reform Registry indicates that there are thirteen (13) PLAS projects, twenty-two (22) LRAD projects, and four (4) SLAG projects which are currently ongoing. This translates through to roughly **100 700 hectares of land being transferred** to previously disadvantaged South Africans. All of these projects are spatialized in **Figure 3.16a** below.

The revised Central Karoo District Rural Development Plan for 2018 (CKDRDP) will include the integration of the Agri-Park Initiative and accompanying Department of Rural Development and Land Reform (DRDLR) projects into Local Municipal IDPs and SDFs. It also aims to assist municipalities and other sector departments to invest in a coordinated manner in order to enable the development and functioning of the Central Karoo District Agri-Park.

An Agri-Park is defined as being a networked innovation system (not only physical buildings located in single locations) of agri-production, processing, logistics, marketing, training and extension services, located in District Municipalities. As a network, it enables the growth of market-driven commodity value chains and contributes to the achievement of the DRDLR's rural economic transformation model.

An Agri-Park comprises of three basic units:

1. A district-scale **Agri-Hub** Unit: a production, equipment hire, processing, packaging, logistics and training (demonstration) unit, typically located in a larger agricultural service center.



Land Reform Map: Central Karoo District Municipality

Legend Items	DRDLR Projects
— National Road	Land Redistribution and Development (LRAD)
— Arterial Road	Proactive Land Acquisition Strategy (PLAS)
— Railways	Settlement Land Acquisition Grant (SLAG)
- - - DM Boundaries	*NB - Project labels indicate farm parcel number.

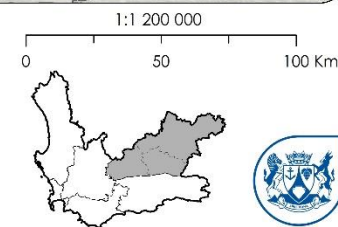


Figure 3.16a :Land Reform Map for the Central Karoo District Municipality

2. A local-scale **Farmer Production Support Unit (FPSU)**: a rural outreach unit connected with an Agri-Hub that does primary produce collection, some storage, some processing for the local market, and provides extension services including mechanization.

3. The **Rural Urban Market Centre Unit (RUMC)**: typically located in a higher order urban center with three main purposes; linking and binding together role-players in rural, urban and international markets through contracts; acts as a holding-facility, releasing produce to urban markets based on seasonal trends; and provides market intelligence and information feedback to the network of FPSUs and the Agri-Hub.

Figure 3.16b sets out the DRDLR Agri-Park components including the enlarged FPSU catchment areas (60km) applicable in the Central Karoo and reference to the Rural Nodes (CRDP Wards).

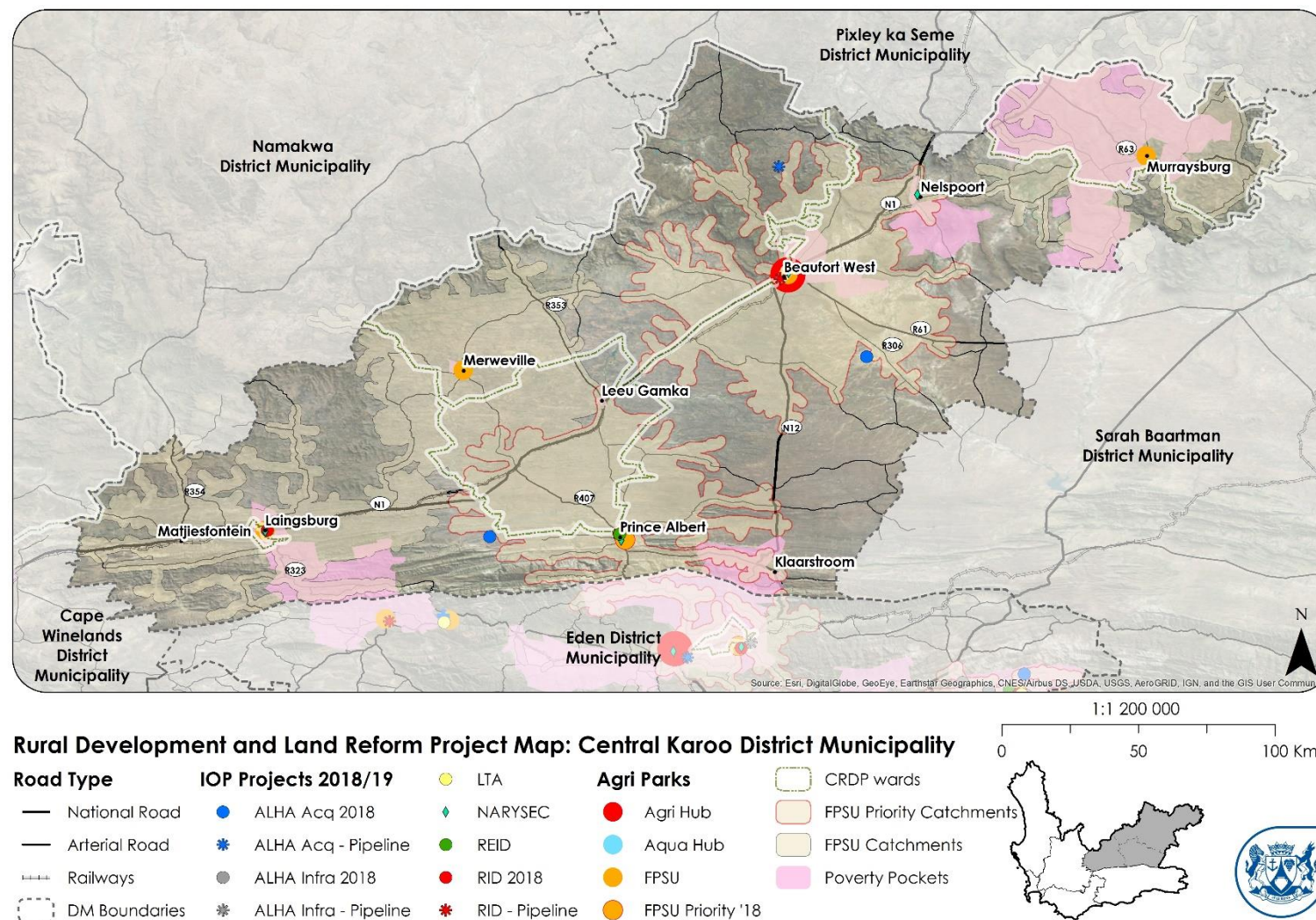


Figure 3.16b : Agri-Parks, FPSU catchment areas (60km) and Rural Nodes in the Central Karoo

3.2.7 PROPERTY MARKET PATTERNS

This analysis of the Central Karoo District's property market patterns was conducted on the 13th of April 2018 using the information available on the online platforms property24.com and safarmtraders.co.za. Broadly, the technique applied to identify property market patterns required the authors to first identify relevant categories of real estate to be analysed, and second to observe regional open market property prices and arrive at an average. For this exercise, the author's analysed three categories of real estate typology which are agricultural land, entry-level open market housing, and higher-income open market housing; and the data were averaged at the scale of the local municipality to allow for regional characteristics to emerge. The information is tabulated in **Figure 3.17** above.

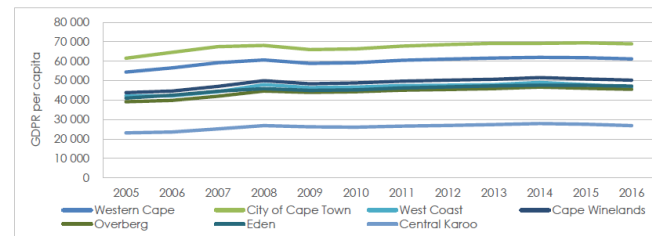
In terms of agricultural land, regional variations in land prices may be attributable to water availability, farm size, current use, and carrying capacity. Based on this analysis, it is worth highlighting that property prices for both the entry level and higher income categories are substantially higher in the Prince Albert region. In terms of entry-level housing, the high property prices in Prince Albert could make it difficult for poorer households to access residential properties on the open market. However, the strong performance of real estate in the high-income category presents an opportunity for further development, particularly in Prince Albert town area.

Municipality	Agricultural Land	Entry-Level Housing	Higher-Income Housing
Laingsburg LM	R10,507,600	R671,000	-
Prince Albert LM	R9,585,000	R741,900	R5,069,500
Beaufort West LM	R7,772,833	R611,200	R1,590,900
District Average	R9,340,741	R675,440	R3,330,200

Figure 3.17: Table of Findings for Average Open Market Property Prices Analysis for Central Karoo District

3.2.8 INCOME AND EMPLOYMENT

Concerningly, the Central Karoo's GDP per Capita is significantly below that of any other District in the Western Cape, currently sitting at just below R30 000 per person per annum, as shown in **Figure 3.18**, below.



Source: Stats SA 2017, own calculations

Figure 3.18: The GDP per capita of each District within the Western Cape

Similarly, income inequality has increased between 2010 and 2016 from a Gini co-efficient of 0.55 to 0.57. Positively, however, the Human Development Index has shown an increase from 0.6 in 2010 to 0.68 in 2016.

The number of indigent households in the Central Karoo rose by a staggering 35% from 6161 in 2014 to 8341 in 2016, largely due to job losses that were experienced within the agricultural sector. This has pushed many families into poverty in the region and is

a significant threat to the long term financial sustainability of the municipality. Job creating economic growth is therefore direly needed in the Central Karoo.

Sector	Contribution to employment (%) 2015	Number of jobs 2015	Trend		Employment (net change)					
			2005 - 2015	2010 - 2015	2011	2012	2013	2014	2015	2016e
Primary Sector	22.9	4 243	-798	814	-119	211	195	-209	979	-16
Agriculture, forestry and fishing	22.9	4 242	-798	814	-119	211	195	-209	979	-16
Mining and quarrying	0.0	1	0	0	0	0	0	0	0	0
Secondary Sector	8.4	1 550	125	104	33	18	46	59	28	32
Manufacturing	1.6	305	-77	-15	-5	-17	16	-11	5	-10
Electricity, gas and water	0.5	93	37	21	2	5	3	2	4	5
Construction	6.2	1 152	165	98	36	30	27	68	19	37
Tertiary Sector	68.7	12 708	2 749	1 105	243	240	340	337	248	-10
Wholesale and retail trade, catering and accommodation	22.9	4 231	773	219	92	94	65	81	96	-64
Transport, storage and communication	5.5	1 014	276	65	-6	36	39	-25	62	-46
Finance, insurance, real estate and business services	7.9	1 461	234	52	24	-1	21	-2	47	-17
General government	17.7	3 278	1 021	561	149	76	72	211	-52	82
Community, social and personal services	14.7	2 724	445	208	-16	35	143	72	95	35
Total Central Karoo District	100	18 501	2 076	2 023	157	469	581	187	1 255	6

Figure 3.19: Central Karoo District Employment Growth Per Sector (2005 – 2016)

3.2.9 THE ECONOMY

The last 5 years have seen the Central Karoo experience an annual average GDP growth rate of 2.1%, which is lower than the 10-year average of 3% (Central Karoo SEP-LG, 2018), indicative of a slowing economy. 2016 was a particularly bad year for the economy, where the primary sector contracted by some 9.3%, the secondary sector contracted by 0.1%, whilst the tertiary sector only grew by 0.6%. This contraction can in part be attributed to the drought that the Western Cape has been experiencing. It can be seen that these are not conditions for job growth to occur.

Overview of the Economy

In 2015, the **primary sector** (predominantly agriculture) contributed **14.6%** to the economy of the Central Karoo, adding R382.3 million to the economy; the **secondary sector** (predominantly manufacturing, electricity, gas, water and construction) contributed **13.8%** (R361.3 million) and the **tertiary sector** (predominantly wholesale, retail, catering, accommodation, transport, finance, insurance, real estate, general government, community services) contributed **71.7%** (R1 882.9 million) to the economy. The Central Karoo economy's total value in 2015 stood at R2 626.5 million. **Figure 3.19**, above illustrates key trends in each economic sector between 2005 and 2016. The key trends to take out from the performance of the economy over the 10 years are:

- The agricultural economy grew at an average of 4.5% per annum between 2005 and 2015, although it experienced a deep recession in 2015 and 2016, retracting by 2.9% and 9.3% respectively in each of those years.
- The secondary sector grew at a more moderate rate of on average 2.6% between 2005 and 2015

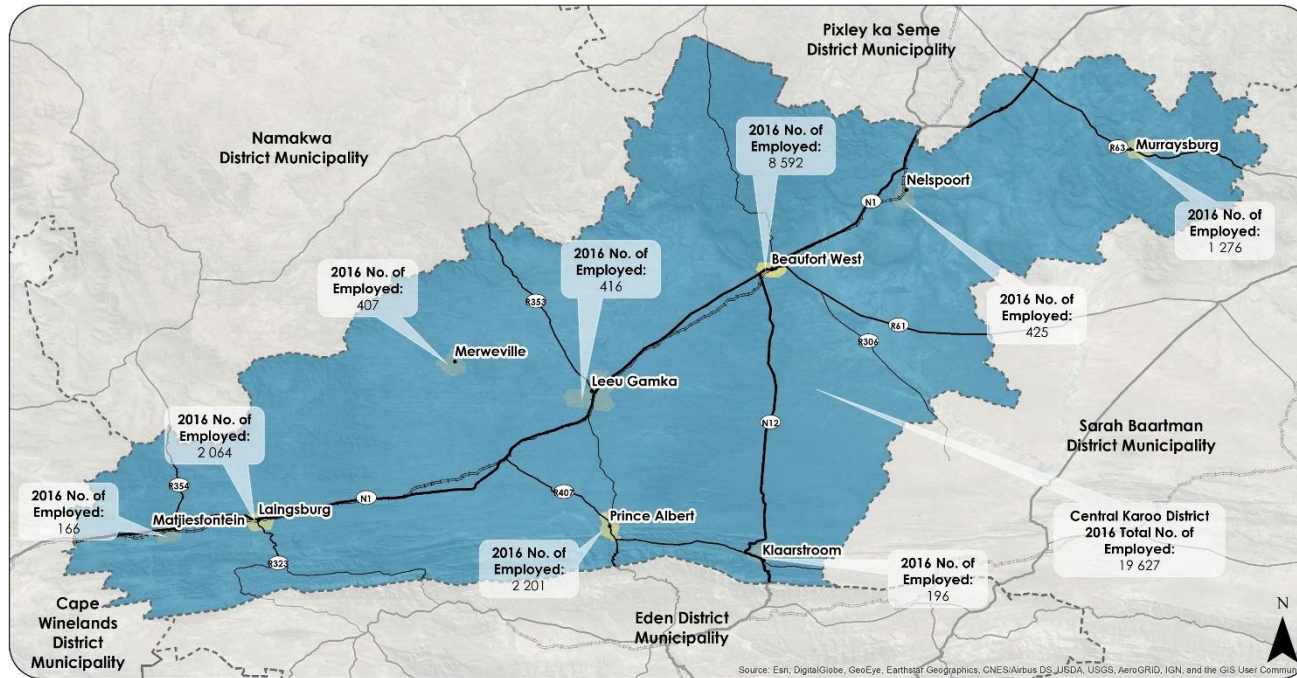
but also contracted by rates of -0.3% in 2015, and -0.1% in 2016.

- The tertiary sector also grew at a moderate rate of an average of 2.8% between 2005 and 2015. While growth has slowed, particularly in the period between 2014-2016, this sector has not seen negative growth.

Central Karoo District GDP performance per sector, 2005 – 2016										
Sector	Contribution to GDP (%) 2015	R million value 2015	Trend		Real GDP growth (%)					
			2005 - 2015	2010 - 2015	2011	2012	2013	2014	2015	2016e
Primary Sector	14.6	382.3	4.5	1.1	0.8	1.9	3.0	8.7	-2.9	-9.3
Agriculture, forestry and fishing	14.5	381.2	4.5	1.1	0.8	1.9	3.0	8.7	-2.9	-9.3
Mining and quarrying	0.0	1.1	0.8	3.5	3.5	1.8	4.1	8.0	1.5	-5.0
Secondary Sector	13.8	361.3	2.6	1.8	2.0	-0.2	1.6	3.4	-0.3	-0.1
Manufacturing	2.5	66.9	1.1	2.3	2.6	1.9	-1.6	1.7	0.4	-0.4
Electricity, gas and water	5.6	146.1	1.1	1.3	3.7	1.1	-0.1	0.0	0.1	-5.3
Construction	5.6	148.3	5.4	1.9	0.2	-2.8	5.3	7.4	-1.1	4.4
Tertiary Sector	71.7	1 882.9	2.8	2.4	4.1	2.9	2.9	1.8	1.0	0.6
Wholesale and retail trade, catering and accommodation	15.0	392.9	2.1	2.3	3.6	3.0	1.1	0.5	0.3	0.8
Transport, storage and communication	15.6	409.8	0.5	0.3	2.0	0.7	1.0	1.7	-1.9	-2.2
Finance, insurance, real estate and business services	11.1	290.2	4.3	2.6	2.8	3.4	2.3	2.5	3.7	2.1
General government	20.4	536.6	4.2	4.0	6.4	3.9	5.2	3.6	1.4	2.0
Community, social and personal services	9.6	253.4	3.0	2.4	5.1	3.8	5.1	-0.7	2.0	-0.8
Total Central Karoo District	100	2 626.5	3.0	2.1	3.2	2.4	2.8	3.2	0.2	-1.2

Source: Quantec Research, 2017 (e denotes estimate)

Figure 3.20 : Economic Performance per sector (2005 – 2016)



2016 Location of Employed Individuals Map: Central Karoo District Municipality

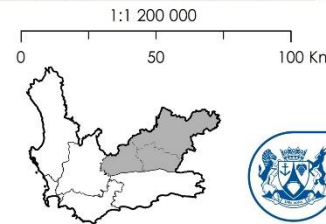
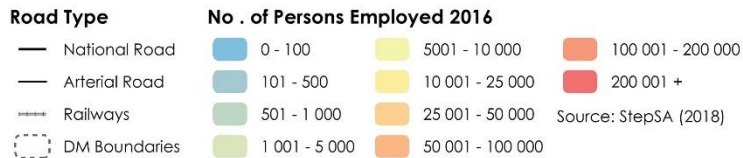


Figure 3.21: Total Employment Index Map for the Central Karoo District Municipality

EMPLOYMENT TRENDS

During the 5-year period between **2010-2015**, the Central Karoo District added **2,649 employment opportunities**. As of 2015, the Beaufort West area contributed 65.6% to the employment in the District, followed by Prince Albert at 19.7%, and Laingsburg at 14.7%. In 2016, there was a contraction in the number of new job opportunities being created across the

District, and Beaufort West experienced a net loss of 77 jobs.

Proportionally, **22.9%** of jobs are found in the **primary sector**, **8.4%** are found in the **secondary sector**, and **68.7%** are found in the **tertiary sector**. This translates through to **18,501 job opportunities across the District in 2015** (see **Figure 3.20**). The primary sector experienced net decrease in employment opportunities in 2011, 2014, and 2016 contributing to a

rise in poverty in the region. The tertiary sector likewise experienced net decrease in employment opportunities in 2016.

Figure 3.21 provides map which spatially indicates employment per sector (excluding construction) expressed as the number of potential job opportunities at the place where people will work in 2013. This map shows that a majority of job opportunities are clustered around the urban settlements, and along the N1 corridor.

3.2.10 TOURISM

The Karoo is a massive region which stretches over several of South Africa's provinces. However, this distinctive landscape, its natural environment, and heritage resources are of a significant tourism value for the Central Karoo District. The Karoo offers a diverse range of tourism activities and attractions which are broken down by theme in **Figure 3.22** below. Based on these themes, the following Central Karoo towns offer the following activities established in **Figure 3.23a**.

Theme	Element Description
Heritage & History	Fossils, Rock-Art, Anglo-Boer War, Cemeteries, Historic Towns, Monuments and Museums.
Architecture	Cape Dutch, Karoo Gothic and Neo-Gothic, Victoria, Railway Architecture.
Natural & Environmental Tourism	Game Viewing, Bird Watching, hiking, National Parks, Nature Reserves, and Resorts.
Adventure Tourism	Paragliding, Sky-Jumping, Abseiling, Mountain-Biking, Hunting.
Arts, Crafts & Literature	Guided Literary Tours, Craft-Making, Craft-Selling, Artistry, Art Galleries and Exhibitions.
Cuisine	Restaurants, Food, Wine-Making and Wine-Tasting, Cheese-Making.

Figure 3.22: Broader Karoo Tourism Themes.

There may be an opportunity to enhance tourism at the regional scale if greater attention is paid to detailing natural, heritage, and landscape assets at the local/town level, and then focusing on collaborative and district-wide marketing opportunities and synergies.

Town	Heritage & Architecture	Natural & Environmental	Crafts, Cuisine & Others
Laingsburg	Laingsburg Flood & Karoo Architecture.	Star-Gazing, Nature Reserves, Floriskraal Dam.	Craft Shopping and Overnight Accommodation.
Prince Albert	Cape Dutch, Karoo & Victorian Architecture.	Die Hel (Gamka's Kloof), Swartberg Pass, Mountains and Reserve, Seweweekspoort, Meiringspoort.	Craft-Making and Shopping, Chef School, Agricultural Activities (Olive, Wine and Fruit Farms), and Art Galleries.
Beaufort West	Chris Barnard Museum, Block Houses, Khoi-San Rock Art (Nelspoort).	Karoo National Park, Game Hunting, and Game Farms.	Karoo Cuisine, Overnight Accommodation, Crafts Shopping, and Conferencing.

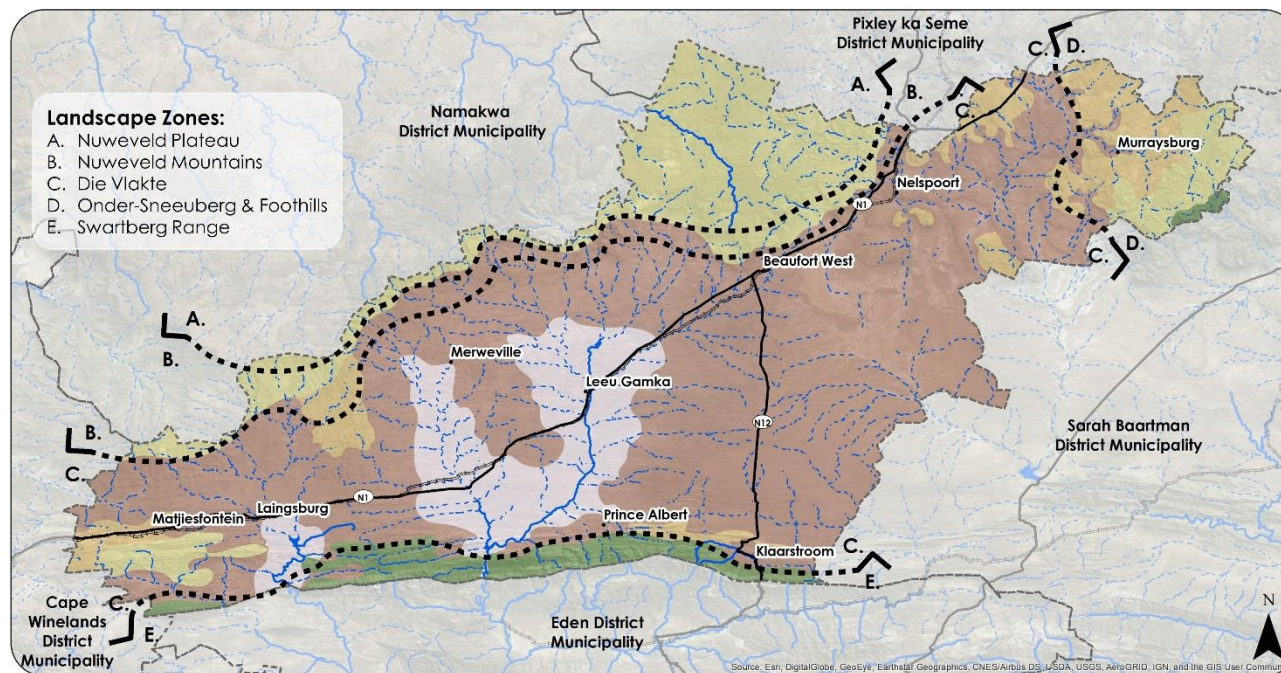


Figure 3.23a : Comparison of the Tourism Character of Central Karoo District Towns.

Figure 3.23b seeks illustrate the 5 broad types of landscape character in the Central Karoo.

Landscape Character Map: Central Karoo District Municipality

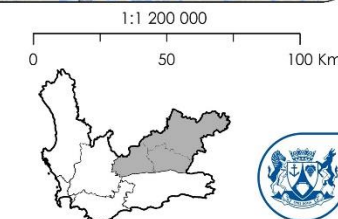


Figure 3.23b: Landscape Character Map for the Central Karoo

3.2.11 GINI COEFFICIENT

Income inequality has increased in the Central Karoo between 2010 and 2016. Income inequality in the Central Karoo District is however lower than in any other District. This implies that either households and individuals within the Central Karoo benefit more equally from regional growth or there are fewer wealthy individuals within the District to drive up the Gini-coefficient. The Gini coefficient for the Central Karoo was estimated to be 0.57 in 2016, from 0.55 in 2010.

3.2.12 HUMAN DEVELOPMENT INDEX (HDI)

Despite increasing inequality, human development is gradually on the increase in the Central Karoo, representing a gradually increase in the levels of human development in the District. Despite it being lower than other districts, the rate of change between 2010 and 2016 was the fastest. HDI represents a select number of indicators (education, housing, access to basic services and health) and therefore attempts to reflect overall levels of human development. The Central Karoo District's HDI is calculated to be 0.68 in 2016, from 0.60 in 2010.

major threat faced by the District is that budgets are being cut at both the National and Provincial level. This may impact on the income received and money available to fund infrastructure projects.

3.2.13 MUNICIPAL FINANCES

For the 2017/2018 financial year, the Central Karoo District received R11.5 million from National Government through the equitable share allocation, R52 million from the Western Cape Province for infrastructure spending, and an additional R1 million in grants to improve financial management and emergency services.

District Municipalities have narrow mandates (see 84(1) of the Municipal Structures Act, 2000), and do not have the authority to raise capital through rates and taxes. Practically, a District is heavily reliant on income from Provincial and National Government to provide services to the community.

Most of the expenditure for the 2017/2018 financial year was be applied towards to the maintenance of surface (R19.1 million) and gravel (R19.9 million) roads. In addition, an amount of R9.0 million will be directed towards repairing flood damage in the Laingsburg area. Maintaining and improving the road network is integral to supporting economic growth in the area. A

3.2.14 SWOT OF THE SOCIO-ECONOMIC CONDITIONS

STRENGTHS

- The Central Karoo has some solid **tourism assets** relating to landscape, sense of place, wilderness and peace which are worth preserving, enhancing and exploiting opportunities relating thereto.
- From a **services perspective**, municipalities within the region were able to provide housing, sanitation and electricity at a rate faster than the population growth rate – translating into increasing coverage rates for all of these services over the last 5 years, and also implying a decreasing level of informality and better overall service provision.
- In terms of **economic development**, the tertiary sector and in particular government services, is by far the biggest employer and biggest sector of the economy, and this trend appears to be a continuing trend where the tertiary sector's growth outstrips the primary and secondary sector's.
- The **Human Development Index** of the region has improved over the last 5-year period, indicative that despite increasing inequality, access to services and facilities has improved.

WEAKNESSES

- From an education perspective, an alarmingly high student to teacher ratio is undermining the quality of education and outcomes in the region.
- High poverty rates, poor health outcomes (high degree of malnutrition and HIV transmission rates)

undermine quality of life and economic development potential of the region.

- The GDP per capita in the region is extremely low and income inequality is increasing and the number of indigent households is growing. These pressures have a direct impact on municipal financial sustainability to deliver services and the ability of residents to both sustain themselves and pay for services.
- Following on from the above, drug crime appears to be worsening in the region, indicative of severe socio-economic stress and poverty pressures in the region.
- Slowing economic growth is weighing heavily on the overall socio-economic prognosis in the region, which doesn't see any immediate improvements in the short term.

OPPORTUNITIES

- The stabilising population growth rate means that government has an opportunity to attend to backlogs in delivery of services and facilities, as well as for economic growth to lift more people out of poverty in the medium to long term.
- The decreasing dependency ratio in the region means that there is the potential for more people to earn an income and fewer people to rely on those earning an income.
- The primary and secondary sectors of the economy are currently small and hence have significant scope for long term growth if these sectors become desirable for investors to expand operations in.

THREATS

- Vast distances between settlements and a sparsely distributed population makes the region difficult to efficiently serve equitably with infrastructure, services and facilities. Similarly, low thresholds make public transport and business opportunities difficult to financially sustain.
- The agricultural economy is highly variable and susceptible to hydrological droughts and water availability which is generally extremely scarce in the region.
- There is insufficient information of the extent of the ground water of the region and whether its current use by the municipality is sustainable or not.
- A threat to the area is an influx of people hoping to secure shale gas and mining jobs if public expectations of these industries are poorly managed. For example, when the first figures for shale gas were being reported, the number of associated jobs were arguably inflated.

3.3 BUILT ENVIRONMENT ASSESSMENT

The purpose of this section is to provide an overview of the built environment features in the Central Karoo, drawing on the latest information that is available.

3.3.1 URBAN SETTLEMENTS & SETTLEMENT HIERARCHY

According to the CSRI, "a settlement refers to a distinct human community in its physical, socio-economic and environmental whole which requires the provisioning of services such as engineering and social services. Settlements can be ordered by size and other factors to define a settlement hierarchy, ranging from city regions to hamlets or dispersed rural settlements". Often, population is a crucial factor in determining the hierarchy of settlements in a region and deciding where to target essential basic services.

The Central Karoo is a predominantly rural District and is home to many small towns and hamlets. Referring to **Figure 3.24**, Beaufort West is the District's regional service centre and is home to most of the medical, educational, commercial, and regional administration activities. Laingsburg, Prince Albert, and Murraysburg are major rural settlements which offer some services mentioned above to the surrounding farming communities. Minor rural settlements like Matjiesfontein, Klarstroom, Leeu Gamka, and Merweville offer limited services and are usually structured around farming, railway, or transport activities within the District.

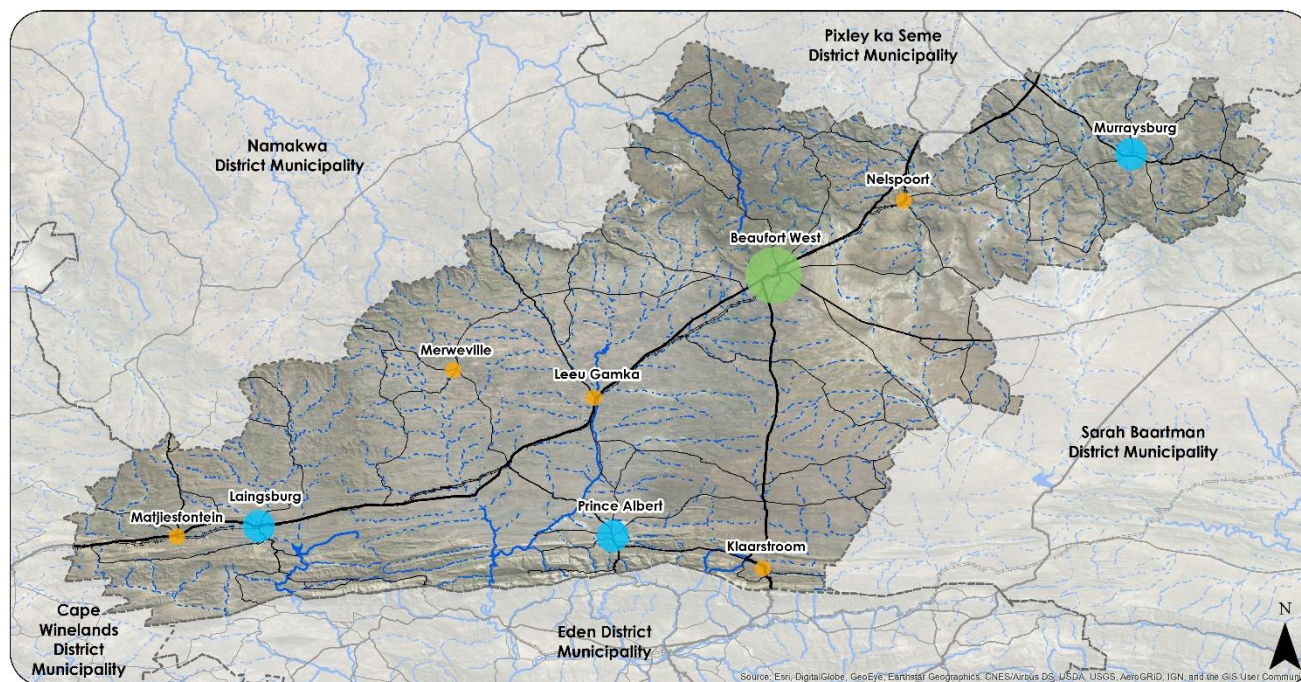
3.3.2 HOUSING

The information in this section is drawn from the MERO 2017 report, and the latest Human Settlements Housing Delivery Plan. In 2017, 98.2% of the District's 21,487 households had access to formal housing. Of

the 1.8% who currently live in informal structures, 184 households are located in Prince Albert, 173 are located in Beaufort West, and 35 are located in Laingsburg. The following sets out the number of persons on the housing waiting list (as at May 2017):

- **Beaufort West Municipality: 5275**
- Beaufort West (town): 4125
- Murraysburg: 746
- Nelspoort: 227

- Merweville: 176
- **Laingsburg Municipality: 548**
- Laingsburg Town: 516
- Matjiesfontein: 32
- **Prince Albert Municipality: 1364**
- Prince Albert Town: 956
- Leeu Gamka Town: 287
- Klarstroom Town: 121
- **Total for Central Karoo: 7187**



Settlement Hierarchy Map: Central Karoo District Municipality

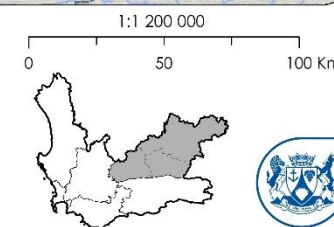
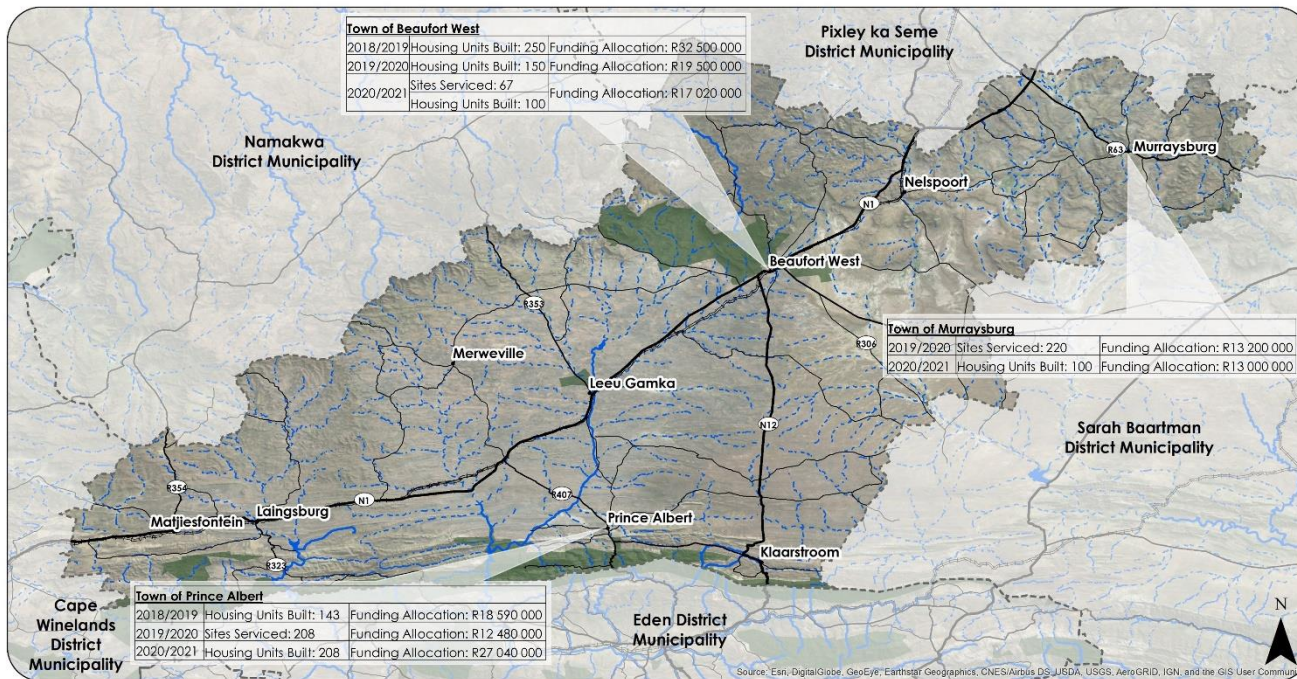


Figure 3.24 : Settlement Hierarchy Map for the Central Karoo District Municipality



Planned Housing Projects Map: Central Karoo District Municipality

Road Type

- National Road
- Arterial Road
- Secondary Road
- Railways
- - - DM Boundaries
- Protected Areas
- Dams
- Permanent River
- - - Ephemeral River

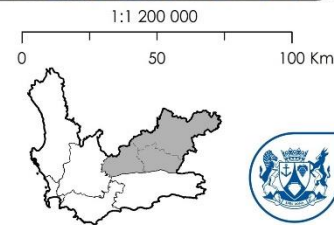


Figure 3.25: Planned Housing Projects for the Central Karoo District Municipality

Figure 3.25 illustrates the location of planned housing interventions in the Central Karoo over the next three years. In the **2018/2019** financial year, the Department of Human Settlements plans to build 250 houses in Beaufort West and 143 in Prince Albert. In **2019/2020**, Human Settlements plans to build an additional 150 units in the Beaufort West area. And in **2020/2021**, Human Settlements plans to build 100 units in Beaufort West, 100 units in Murraysburg, and 208 units in Prince

Albert. Human Settlements also plan to service 67 sites in Beaufort West in the 2020/2021 financial year.

Housing is not one of the development mandates of District Municipality. With that being said, one of the key strengths related to housing in the Central Karoo is that the low population growth rates and low prevalence of existing informal dwellings make it easier for the competent local and provincial

authorities to keep on top of housing demand. Budget cuts or sudden changes in population growth rates could threaten this fragile equilibrium.

The district municipality's mandate is to provide a supportive function to local municipalities, whose mandate it is to provide housing. The planning for the provision of housing needs to be accompanied by planning for the provision of services, including refuse removal services. The district municipality needs to ensure that the local municipalities' waste management departments can accommodate the planned housing with respect to refuse removal and other services.

3.3.3 ROAD, RAIL & PUBLIC TRANSPORT

The following section will discuss transportation infrastructure in the Central Karoo, as drawn from the Integrated Transport Plan for the Central Karoo (2015).

ROAD NETWORK

The road system in the Central Karoo is made up of a combination of national, provincial, and municipal roads of which 14% of the total road length (or, 986 km of 7,252 km) is surfaced (see **Figure 3.26**).

A defining feature of the District is the N1, a national road which runs in a southwest-northeast direction 364 kilometres through the municipality. The N1 enters the District in the west from the Cape Winelands District, and passes through Laingsburg, Leeu Gamka, Beaufort West, and Nelspoort and then exits the District into the Northern Cape. The N1 is maintained by SANRAL, and the full length of this road is surfaced. According to the 2015-2020 District Integrated Transport Plan (ITP), the road "carries an average of 2,496 vehicles per day of which 52% are heavy

vehicles". This road is a key national connector between Cape Town and Johannesburg – the two biggest cities in South Africa.

In the eastern part of the District, the N12 runs in a north-south direction from Beaufort West through Klaarstroom, and on to Oudtshoorn. This road has a total extent of 128 kilometres. While the N12 has a national road designation, this road is considered a 'trunk road' and is therefore maintained by the Western Cape Provincial Government. The District ITP indicates that the N12 is in a relatively poor condition.

Other important roads in the Central Karoo include:

- R61 which runs in an easterly direction from Beaufort West to Aberdeen with a length of 74 kilometres to the District boundary (surface: asphalt; condition: fair to good).
- R63 which runs from the N1 towards Murraysburg and Graaff-Reinet with a total length of 87 kilometres (surface: asphalt; condition: mostly poor, but fair to good in places).

Road Category	Surfaced (km)	Gravel (km)	Total Length (km)	Designation	Authority
National Roads	364	0	364	N1	SANRAL
Trunk Roads	554	68	622	N12, R61, R353, R63	PGWC
Main Roads	52	629	681	-	PGWC/CKDM
Divisional Roads	15	1,679	1,694	-	
Minor Roads	1	3,890	3,891	-	
TOTAL	986	6,266	7,252		

Figure 3.26: Total Road Network Lengths in Central Karoo District Municipality

- R407 which connects Prince Albert to Klaarstroom and the N12 via the Kredouw Pass (distance: 47 kilometres, surface: asphalt; condition: fair to good).

- R328 which connects Prince Albert Road at the N1 to Prince Albert town which covers a distanced of 44 kilometres. The R328 then continues over the Swartberg Pass (surface: asphalt; condition: poor to fair).
- R381 from Beaufort West towards Loxton in the Northern Cape which is 95 kilometres in length to the District boundary (surface: asphalt for 28 km, and gravel for 68 km; condition: paved roads are in good condition, gravel roads are in poor condition).
- R323 from Laingsburg to the Seweweekspoort which is 77 kilometres in length of which only 30 kilometres is surfaced (surface: asphalt; condition: fair to good).
- R353 which runs northwards from Leeu Gamka at the N1 towards Fraserburg which is 74 kilometres in length (surface: asphalt; condition: good).
- R354 from Matjiesfontein towards Sutherland which is 43 kilometres to the District boundary (surface: asphalt; condition: fair to poor in places).
- R306 from the R61 to Rietbron in the Eastern Cape which runs for 60 kilometres to the District boundary (surface: gravel; condition: fair to good).

The District ITP report notes that some surfaced roads may need attention in the medium term. Particularly, the R328 between Prince Albert Road and Prince Albert, and R63 between Murraysburg and the Eastern Cape. The condition of the District's gravel road network is mostly poor, and requires much

attention to better support the region's agriculture sector.

In terms of road safety, the N1 accounts for almost 2/3rds of all fatalities, mostly attributed to poor driver behaviour and fatigue. Head/rear collisions, overturned vehicles and side-swipes account for almost 9 out of 10 incidents on the N1 (Central Karoo ITP, 2016).

RAIL NETWORK

The history and development of the Central Karoo is closely linked to the expansion of the South African Railways in the 19th century. South African railway history is particularly notable in the town of Matjiesfontein. Today, the railway operates freight and passenger services which travel across the District, running in parallel to the N1. The rail line specifically runs in a southwest-northeast direction and passes through Matjiesfontein, Laingsburg, Leeu Gamka, Beaufort West, and Nelspoort. The District has two major railway stations at Beaufort West and Laingsburg which can accommodate both passenger and freight services. While the Central Karoo has significant and relatively modern rail infrastructure, it is not used to the full benefit of local communities.

PUBLIC TRANSPORTATION

Formal public transport services are very limited across the District. Given its size, the town of Beaufort West has mini-bus taxis, sedan taxis, a single bus service, and mini-bus taxi rank infrastructure in its CBD. However, there are irregular mini-bus taxi services operating between settlements across the District in medium to long-haul type services. This makes travelling for education, health, and leisure

opportunities both costly and unpredictable for many of the Central Karoo's residents.

Long distance bus operators have scheduled daily stops at Laingsburg, Prince Albert Road, and Beaufort West with connections to Cape Town, Kimberley, Bloemfontein, Durban, Johannesburg and Pretoria. More than 28 buses (with a potential passenger capacity of 12,000 per week) from established national operators pass through the Central Karoo daily.

NON-MOTORISED TRANSPORT

Walking is a primary transport mode for intra-town movement. All three Local Municipalities have constructed bicycle and pedestrian paths and sidewalks to a limited extent. However, these interventions have been criticized for not being holistic or coordinated, and seldom provide adequate links to important settlement areas and activities.

AIR TRANSPORT

There are three landing strips/airfields across the District; one in every Local Municipality. These facilities are primarily used by light aircraft for tourism and leisure purposes. There are no national or international airports in the region, with the closest one being George Airport. It is unclear if there is sufficient demand to warrant a national airport within the region, situated near to Beaufort West, however this would be a function of demand and economic growth into the future.

3.3.4 WATER INFRASTRUCTURE

Water is extremely scarce in the Karoo, where supply is hardly able to meet the demand. The current hydrological drought, whose onset started in 2015 and is still ongoing as of 2018, in which significantly below average rainfall has fallen during this period, is the primary reason for the drought. The opportunity remains, however, that if aquifers could be adequately tapped, and water extraction managed sustainably, water security could be significantly improved in the region. Concerningly, however, the scale and extent of the ground water resource is not well known and therefore it is unclear as to whether ground water is being sustainably used or not.

Whilst Beaufort West has a water reclamation plant, these plants are not financially or operationally viable for the smaller towns as it is necessary to have a sewerage purification plant for this to happen.

Towns in the Karoo are mostly dependent on underground water such as boreholes and fountains. In the case of Beaufort West, there is also the Gamka Dam and the Water reclamation plant, although the Gamka Dam cannot supply water during droughts, it does serve to supplement the water use during non-drought periods, especially in assisting to meet higher daily demands in summer.

There are no plans to build any additional dams by the Dept. of Water and Sanitation in the foreseeable future. Exploration for further aquifers and the development of these is therefore the solution for all towns to make their water supply sustainable. Prince Albert has, however, considered building an off stream dam to enhance its raw storage capacity. Another project is underway to replenish boreholes in good rainy seasons to recharge the aquifers.

The biggest challenge in relation to ground water in the Central Karoo is the quality of the water that in most cases does not meet the specification of SANS 245. Groundwater development is therefore an expensive exercise as it must be treated to these specifications.

In terms of existing water infrastructure, the following sets out the status of each town in the Central Karoo:

BEAUFORT WEST MUNICIPALITY: WATER INFRASTRUCTURE

Merweville:

- Six production boreholes
- One borehole not equipped
- Two reservoirs – 200 kl each
- Water purification – only chlorine

Nelspoort:

- Two production boreholes
- Surface water – weir in river with two pumps
- Aerator for water from boreholes - H₂S removal
- Two sand filters to remove silt from surface water
- Water purification – only chlorine
- One reservoir – 1 Ml

Murraysburg:

- Five Boreholes
- Four reservoirs
- Water purification – only chlorine

Beaufort West

- Thirty-five production boreholes in operation
- Five Boreholes ran dry
- Water reclamation plant with extra capacity
- Gamkadam - below zero – no delivery
- Three reservoirs – 13.75 Ml

Beaufort West Municipality: Water demand and supply

Merweville

- Demand - 0.31 Ml/day
- Supply - 0.32 Ml/day

Nelspoort

- Demand - 0.35 Ml/day
- Supply - 0.42 Ml/day

Murraysburg

- Supply meets demand – 0.47 Ml/day

Beaufort West

- Demand - 5.2 Ml/day
- Supply - 6.2 Ml/day

Key Water Projects in Beaufort West

- No drilling for boreholes anticipated in area for 2018/19;
- Five data loggers to be installed in various boreholes to monitor water levels as well as one each at Merweville, Nelspoort and Murraysburg;
- Borehole of Council of Geoscience to be equipped in 2018/19;
- Exploration for new aquifers in Beaufort West to be undertaken to reduce the reliance on surface water;
- No projects on any dam are planned or underway.

PRINCE ALBERT MUNICIPALITY: WATER INFRASTRUCTURE

Prince Albert

- Nine Production boreholes;
- Fountain – 20 hours a week as well as 10 of irrigation water on a 24/7 basis;
- Four raw storage dams – 2.4 Ml;
- Reservoirs – 4.0 Ml;
- Purification works

Prince Albert Road

- One production borehole – Transnet;
- One reservoir - 50 kl;

Klaarstroom

- Two production boreholes close to each other;
- Four newly drilled boreholes, one equipped in 2017/18;
- Two reservoirs – 0,1kl and 0.2 kl.

Leeu Gamka

- Two production boreholes – one belonging to Transnet;
- Four newly drilled boreholes, one to be equipped in 2018/19;
- Transnet can also supply water in a crisis;
- One reservoir.

Prince Albert Water demand and supply

Prince Albert

- Demand – 1.5 Ml/day
- Supply - 1.9 Ml/day

Prince Albert Road

- Supply meets demand

Klaarstroom

- Supply meets demand

Leeu Gamka

- Supply meets demand

Key Water Projects in Prince Albert

- Upgrading of raw water storage reservoirs in Prince Albert – 2017/18/19;
- Two boreholes to be re-drilled and equipped in Prince Albert – 2018/19;
- Borehole to be drilled at Noordeinde in Prince Albert;
- Build diversion structure in river with gabions for irrigation furrow in Prince Albert 2018/19;
- Four data loggers to be installed at Prince Albert in various boreholes to monitor water levels as well as one at Leeu Gamka;
- Equipping boreholes in Klaarstroom , Prince Albert and Leeu Gamka-2017/18;
- Package plant to take Fluoride out of Transnet borehole water in Leeu Gamka – 2018/19;
- Future projects might be drilling of two boreholes and package plant near Noordeinde Prince Albert;
- Off stream dam for fountain water in Prince Albert
- Bulk water meters to be installed also on boreholes in all towns.

LAINGSBURG MUNICIPALITY: WATER INFRASTRUCTURE

Laingsburg

- Soutkloof fountain
- Well at Soutkloof
- Two wells in town
- Borehole in town
- Reservoir – n/a
- Purification works

Matjiesfontein

- Two production boreholes in operation
- One with high iron content to be cleaned in 2018/19;
- Three production boreholes dried up.
- Two newly drilled boreholes to be equipped and connected to infrastructure – one in 2017/18
- Reservoir -n/a

Laingsburg Water demand and supply

Laingsburg

- | | | |
|----------|---|-------------|
| • Demand | – | 1.56 Ml/day |
| • Supply | – | 1.9 Ml/day |

Matjiesfontein

- Supply meets demand

Key Water Projects in Laingsburg

- Soutkloof fountain to be upgraded and a new pipeline to Laingsburg – 2017/18/19;
- Borehole at Soutkloof to be equipped – 2017/18/19;

- Borehole in Laingsburg (Van Riebeeck street) to be equipped and connected to infrastructure – 2017/18;
- One borehole in Matjiesfontein to be equipped and connected to infrastructure - 2017/18;
- Four data loggers to be installed at Laingsburg in various boreholes to monitor water levels as well as one at Matjiesfontein – 2018/19;
- Water meters on all boreholes;
- Future intervention is the effective monitoring and management of current water sources and ground water exploration.

3.3.5 WASTE INFRASTRUCTURE

As of 2016, 90.8% of the households in Central Karoo have their solid waste removed at least once a week. Laingsburg has the lowest rate of refuse removal at 79.5%, Beaufort West is at 91.7%, and Prince Albert is at 95.4%. The low rates of collection may in part be attributable to the sparse population distribution and the presence of waste handled on farms.

Currently, there are nine landfill sites in operation across the District in Laingsburg, Prince Albert Road (operated by Transnet), Leeu Gamka, Prince Albert Town, Klaarstroom, Merweville, Beaufort West, Nelspoort, and Murraysburg, as shown in the **Figure 3.27**. All three municipalities note in their planning documents that they lack adequate capacity at the local level to fully monitor their waste management programmes. More urgently, the town of Beaufort West's landfill will be running out of airspace

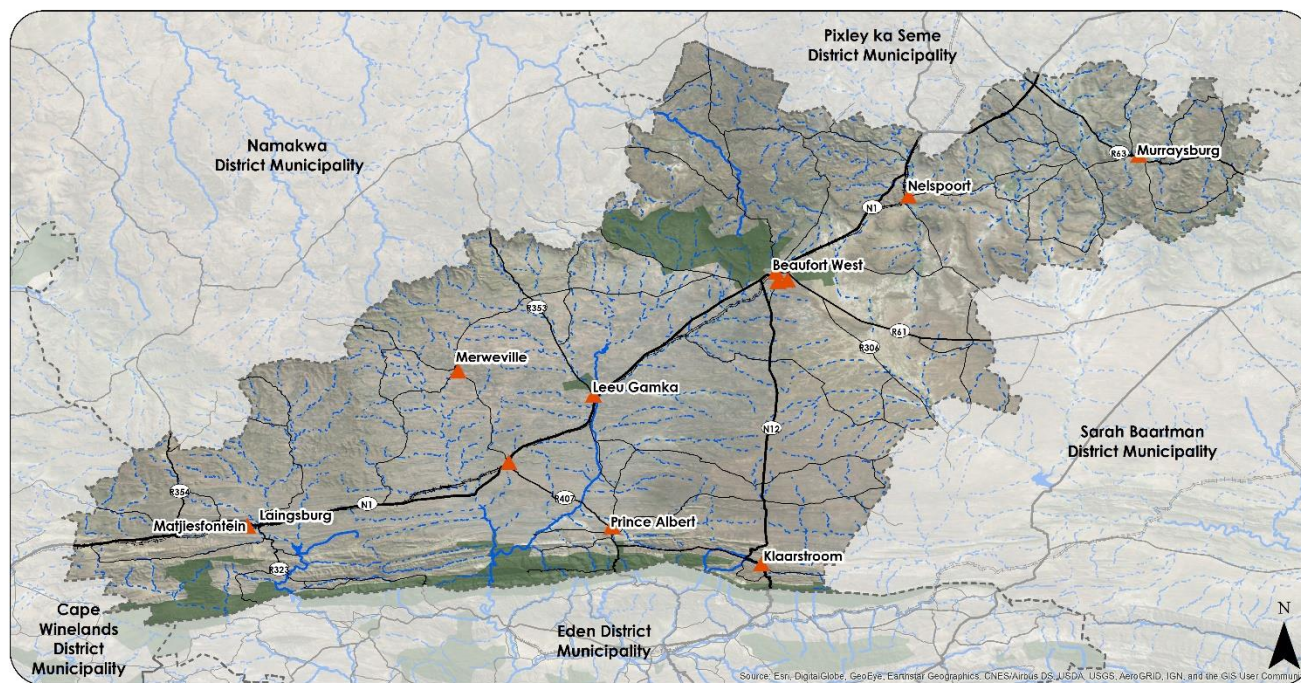
imminently, with other landfill sites also approaching capacity in the next decade. Murraysburg needs decommissioning and no storage or waste diversion facilities exist in the region (see **Figure 3.28**). It is noted that a new landfill site in Murraysburg has been applied for, which is yet to be approved.

Opportunities for waste separation and recycling exist across the District. Only Prince Albert Town has had limited success in implementing a recycling programme. In Prince Albert, recyclables are collected directly from households (separate to general waste) once a week, and there is an on-site recycling facility adjacent to the town's waste disposal area.

Technically, solid waste management is the legislative mandate of a District Municipality only where disposal sites serve the area of the district as a whole. Laingsburg, Prince Albert, and Beaufort West are currently managing waste at the local level, and the small scale and vast distances of the municipality may make it difficult to manage waste regionally. There are no current plans to regionalise solid waste management in the District.

All available waste plans make it clear that the goal for the Western Cape is to ensure that at least 20% of waste is diverted from waste sites before 2019. This can be achieved from recycling; recovery of garden waste for mulching, composting and wood chipping; recovery of construction and demolition waste by crushing and re-using; as well as utilising incineration through direct combustion.

Detailed compliance requirements and costs have been set forth in the report titled 'Assessment of the Municipal Integrated Waste Management Infrastructure in the Central Karoo' of 2016 and will not



Landfill and Waste Management Sites Map: Central Karoo District Municipality

Road Type

- National Road
- Arterial Road
- Secondary Road
- Railways
- - - DM Boundaries
- Protected Areas
- Dams
- Permanent River
- - - Ephemeral River
- ▲ Landfill and Waste Management Sites

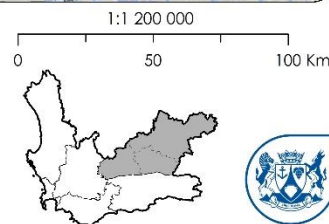


Figure 3.27: Landfill and Waste Management Sites Map for the Central Karoo District Municipality.

be reiterated here, other than to highlight the following:

- Many waste sites require new cells / airspace to be provided before 2030 – for example, Vaalkoppies requires a 12-year cell to last until 2030. The cost of this new cell would be approximately R23 million, requiring significant cost-recovery (to the value of about R500 per person using the facility);
- The waste profile of municipalities illustrates significant potential for composting, crushing and recycling.

Figure 3.29 illustrates the compliance cost expectations for Waste in the Central Karoo. Figure 3.30 illustrates the cost to achieve 20% diversion by 2019. The final Figure 3.31 illustrates the cost of additional infrastructure required up until 2030 (DEA&DP, 2016).

The Waste Act requires local municipalities to provide integrated waste services, which means they must have waste minimisation initiatives in place. The fact that vast distances make it impossible for the local municipalities to provide certain services does not prevent them from forming partnerships with local municipalities outside the Central Karoo DM but adjacent to them. All the municipalities within the Central Karoo DM are obligated to contribute towards to provincial diversion target and Prince Albert cannot do so alone.

MUNICIPALITY	OPERATIONAL COMPLIANCE COST	REHABILITATION COMPLIANCE COST
Beaufort West Municipality	R6,984,500	R5,264,700
Laingsburg Municipality	R2,115,500	
Prince Albert Municipality	R9,788,100	
Total	R18,888,100	R5,264,700

Figure 3.29 – Cost to Comply for waste management per municipality

MUNICIPALITY	FACILITY	ESTABLISHMENT COST
Beaufort West Municipality	Composting Facility in Beaufort West	R2,462,000
Laingsburg Municipality	Composting Facility in Laingsburg	R1,792,000
Prince Albert Municipality	Composting Facility in Prince Albert	R2,154,000
Total		R6,408,000

Figure 3.30 – Costs to achieve 20% diversion per municipality

MUNICIPALITY	FACILITY	ESTABLISHMENT COST
Beaufort West Municipality	Airspace Provision at Vaalkoppies Landfill	R23,796,000
	Rehabilitation of Merweville Landfill	R2,501,400
	Public Drop-off in Merweville	R2,680,300
	Public Drop-off in Nelspoort	R2,680,300
	Public Drop-off in Murraysburg	R2,680,300
Laingsburg Municipality	Airspace Provision at Laingsburg Landfill	R16,539,000
Prince Albert Municipality	Airspace Provision at Prince Albert Landfill	R14,876,000
	Rehabilitation of Leeu Gamka Landfill	R5,271,800
	Public Drop-off in Leeu Gamka	R2,680,300
	Public Drop-off in Klaarstroom	R2,680,300
Total		R76,385,700

Figure 3.31: Costs of additional infrastructure required until 2030

3.3.6 ENERGY & ELECTRICITY

According to the Central Karoo District Energy Consumption and CO₂ Emissions Report (2013), 88% of the energy requirement of the District is provided for through the use of liquid fossil fuels; namely, diesel and petrol. This high reliance on liquid fossil fuels is probably attributable to the high volume of automobiles that transit through the District, and the vast distances

residents are required to travel between towns. The other 12% of the energy consumed at the District scale is in the form of electricity which is delivered through Eskom's national power grid. As of 2016, 95.4% of households in the Central Karoo have access to electricity. It is important to note that the sale of electricity to residents is a major source of revenue for the area's local municipalities.

Referring to **Figure 3.32**, Eskom has some important energy infrastructure running through the Central Karoo. A set of major high voltage powerlines crosses the District in a west-northeast direction, connecting at a major substation in Beaufort West. In addition, another set of high voltage powerlines connects from the Beaufort West substation and heads south into Eden District. These powerlines form part of the national power grid. Furthermore, the District is crossed by medium voltage powerlines which follow roughly the same route as the N1 corridor. This set of powerlines has several substations which then branch out to supply energy to the local municipalities. 59% of the District's electricity provision is consumed in the residential sector, and most of the electricity generated and provided by Eskom is drawn from coal-fired power plants (which emit substantial amounts of greenhouse gas).

This report notes that there are several on-shore wind and solar energy projects which are currently being planned for the District.

3.3.7 HERITAGE

Due to the Central Karoo District Municipality being underlain by the Beaufort Group of rocks consisting of shales, mudstone, sandstone and tillite, with the mountains to the south of the district extending onto these rocks, the district is rich in fossils and is thus of great paleontological importance.

Pre-colonial archaeology is evident across the entire district, with particularly San and Khoi artefacts being evident. The San artefacts include rock paintings (in rocky terrain), stone tools and middens containing inter alia bones and food items. The middens were generally found along water courses, pans and flood plains. Beaufort West has a rich collection of rock

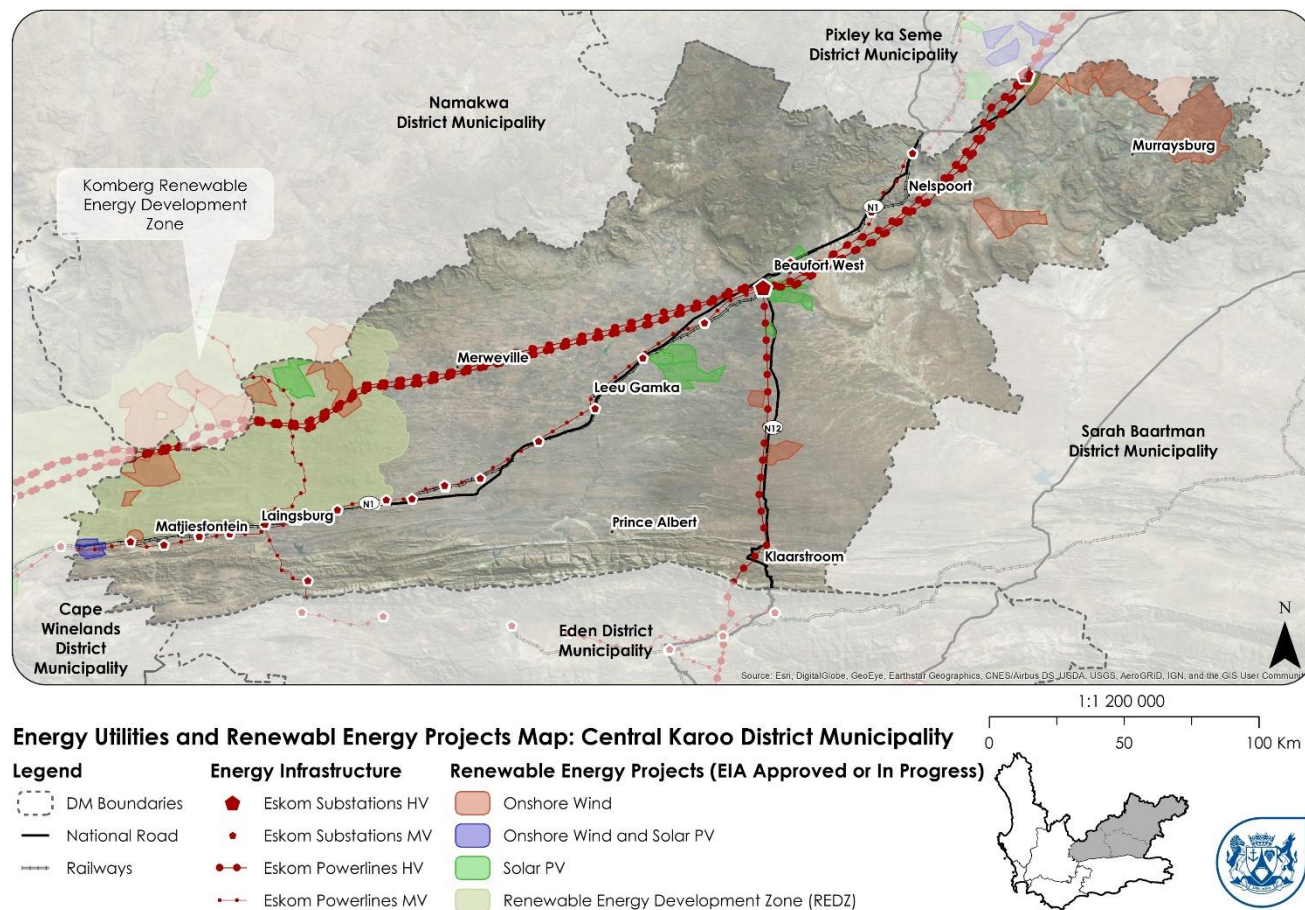


Figure 3.32: Energy Utilities Map for the Central Karoo District Municipality

paintings and engravings, with the most notable being Nelspoort.

Khoekhoen pastoralists are known to have inhabited the District. Several stone kraal complexes have been identified. At about 1200-1400AD, a global climatic fluctuation appears to have caused an increase in rainfall. This may have increased grazing availability, resulting in the introduction of cattle into the District. The current climatic conditions however favour small stock, such as sheep and goats.

The colonial period provides greater recorded in-sight into the district's past. Early nomadic pastoralists (Trekboere) paved the way for increased expansion into the interior. This expansion not only resulted in frequent and violent clashes with the last of the stone-age peoples, but also in the indiscriminate hunting of large game, to near extinction. The establishment of early settlements took place from the late 1700's and early 1800's, generally in close proximity to water resources. This in turn resulted in many skirmishes over the scarce resource. Soon, these settlements developed into what are today the main towns within the District.

Evidence of the Anglo-Boer War in the early 1900s still remains in the form of grave sites and blockhouses along the railway line, and places such as Matjiesfontein and Prince Albert were used as garrisons by the British. There a number of provincial heritage sites across the District Municipality and they include the Swartberg Pass and Gamkaskloof Pass.

Provincial heritage sites are also found in the towns of Beaufort West and Prince Albert, a few farmsteads such as Baviaanskloof and Vrolikheid, churches in Merweville and Laingsburg, and a corbelled structure on the farm Vlieefontein near Beaufort West. There are many more individual sites that are worthy of formal

protection. These include, fossil sites, archaeological sites, farmsteads, corbelled structures, dwellings, religious sites, graves and burial grounds, military fortifications, and scenic landscapes. **Figure 3.30** below provides examples of some of the District's heritage assets. However, this report recommends that a more detailed investigation and assessment be conducted to identify and extend protection to other sites worthy of heritage conservation.

Heritage Element	Theme & Description
Witberge	Natural Landscapes - Comprises one of South Africa's most characteristic landscape – with vast plains or 'vlaktes', flat-topped koppies and rocky outcrops, and defined by great mountain ranges of the escarpment and Swartberg Mountains.
Suurberg/Waaihoeksberg	
Elandsberg	
Groot Swartberge	
Oukloofberge / Droekloofberge	
Klein Roggeveldberg / Brandberg	
Komsberg	
Nuweveldberge / Die Rant	
Karoo Koppies	
Onder Sneeuberg / Toorberg	
Gamkaskloof Rural Settlement & Reserve	Cultural Landscapes: Archaeological remains, stone and fossil sites, San hunter-gatherers & Khoi pastoralists, Trekboer history (Social History) as well as Anglo Boer War remains and relics.
Nelspoort Rock Engravings	
Matjiesfontein Valley	
Vleiland	
Scholzekloof	
Klaarstroom	
Seweweekspoor Pass	
Swartberg Pass	Scenic Routes and Passes: Historic mountain passes constructed to provide access from the coast to the hinterland, railway history and important transportation linkages and elements.
Gamkaskloof Pass	
Meiringspoort	
Molteno Pass & Roseberg Pass	
R354 Route	
Rooinek Pass	
R353 Route and Teekloof Pass	
R407 Route	
Kareedouwberg Pass	
N12 Route & Droekloof	
R63 Route	
N1 Route	
Murraysburg Historic Town	Historical Elements: Settlements established as church towns during the 1700's and early 1800's; urban morphology due to river/ribbon and/or grid pattern development; railway and institutional settlements.
Beaufort West Historic Town	
Prince Albert Historic Town	
Merweville Historic Town	
Matjiesfontein Historic Village	
Klaarstroom Valley Historic Village	
Vleiland Valley Historic Valley	

Figure 3.33: Table of Central Karoo District heritage elements and their descriptions.

3.3.8 SWOT OF THE BUILT ENVIRONMENT

STRENGTHS

- Beaufort West is an established and well-located service centre for the region – strategically located on the N1 and the primary rail route between Cape Town and Johannesburg. This locational advantage has in the past and will continue to in the future benefit the town and the region more broadly.
- Low levels of informality and informal housing means that the municipality operates from a comparatively low base when compared to other regions – this makes service delivery more efficient for urban dwellers.

WEAKNESSES

- Distances to and between settlements (and hence services and facilities) is very high and often very cost-prohibitive, making services and facilities both expensive to access and expensive to deliver, particularly because populations are very small and hence thresholds often not met to provide the service sustainably.
- The cost of public transport and location in an arid, relatively non-productive and poorly educated area makes the region generally under-performing.
- Significant infrastructure backlogs with limited rates-generating potential and heavy dependence on national and provincial grants make this region fiscally vulnerable and undermine municipal financial sustainability.

OPPORTUNITIES

- Non-motorised transport infrastructure expansion in all the Karoo towns will significantly improve mobility for those who walk or cycle, which is the majority of residents.
- Both passenger and freight rail is expected to increase significantly into the future. The Central Karoo region is positioned to benefit from this both from an access and economic spin-off perspective.
- All town's in the Central karoo have varying degrees of heritage-based tourism opportunities and potential exists to upgrade and improve urban design and quality of these environments to generate income and economic spin-off's.
- Waste diversion and waste recycling initiatives could be up scaled in the region and could be jobs generating.
- Opportunities exist for expanding renewable energy projects related to solar and wind power in the Central Karoo.
- Metering of privately-owned boreholes could both regulate ground water use more effectively and generate income for local municipalities.

CONSTRAINTS

- Limited income generating potential from rates payers and hence limited infrastructure maintenance and new build potential.
- Financial sustainability of the Central Karoo District Municipality is in question.

- A lack of public transport and its associated viability hinders access opportunities for the residents of the Central Karoo.
- Water availability, drought and water infrastructure maintenance are significant constrainters to general urban growth and development, as well as from an agricultural perspective.

3.4 SYNTHESIS AND KEY ISSUES

Given the above sectoral analysis of the Central Karoo region, the following sets out a synthesis and identification of the cross-cutting regional spatial issues that have been identified in relation to the desired spatial policy outcomes:

1. **Poverty levels, unemployment and inequality** are high in the region, and particularly within settlements, where spatial fragmentation and inequity are clearly visible. Teenage pregnancy, domestic abuse, drug abuse and inequality continue to plague the poor in each settlement. Despite this, stabilising population numbers, improved levels of human development and a decreasing dependency ration present opportunities and a glimmer of hope for the future.
2. The **Critical Biodiversity Network, transport infrastructure network and water resources** of the region are potentially threatened by the prospect of mineral resources extraction (both shale gas and uranium mining) on an expansive scale. Extensive agricultural practices is also threatened by mineral resources extraction potential.
3. **Water security** is a significant threat to a region where **ground water resources** are both extremely valuable and scarce, and underpin the economic and social continuity and resilience of it – providing a much needed stop-gap between surface water availability and the urban and agricultural need for water. Concerningly, the 'sweet spot' for shale gas is also the same part of the District where water production and agricultural potential is highest (this is the areas eastwards of Beaufort West and westwards of Murraysburg). Doubly concerning, is that climate

change and alien vegetation further undermine future water security.

4. The Central Karoo region has significant **sense of place, heritage and tourism** assets both in its landscape quality in the rural areas as well as its underutilised urban heritage potential that can easily be undermined or eroded by poor development decisions and land use practices. All towns in the Central Karoo can enhance their heritage assets, main streets and entrances to the towns through appropriate urban design and urban renewal interventions.
5. **Accessibility** in the region is generally poor between settlements and higher order facilities, and non-motorised and public transport infrastructure within settlements is inadequate to accommodate the need. High speed rail, a potential future nationwide project, as well as investment in the existing freight and passenger rail systems bring many connectivity opportunities to Beaufort West. The N1 corridor is the life blood of the region.
6. The **financial sustainability** of the District is being eroded by significant budget cuts at national and provincial levels, as well as deepening maintenance backlogs in infrastructure, creating opportunities for shared services, rationalisation and improved efficiencies.
7. **Waste and waste management** is a concern, with the need to explore regional and sustainable waste solutions in dealing with the generation of waste.
8. The pace of **land reform** is too slow, the location of land reform projects may not be optimal in terms of farm productivity and the agricultural potential of the Central Karoo as a whole is significantly lower than most other parts of South Africa.

9. **Agricultural beneficiation** and value-add can be enhanced in the region significantly, however the sector is extremely vulnerable to drought, is currently shedding jobs and generally underperforming. Similarly, unsustainable practices are eroding the carrying capacity of the land.
10. **Renewable energy** production can be up-scaled in the region and create downstream opportunities.
11. The need to improve **education outcomes**, partly through improved teacher: student ratios and providing good quality foundational through to tertiary education opportunities could equip persons in the region to exploit the emerging opportunities that present themselves as the economy diversifies towards a tertiary sector economy and grows.

As can be seen from the synthesis above, as well as synthesis maps that follows in **Figure 3.34, Figure 3.35 and Figure 3.36** the following observations about the state of development of the Central Karoo can be made:

- The urban settlements of **Beaufort West, Prince Albert** and **Laingsburg** are the primary regional service centres with high degrees of poverty, inequality and social issues. Beaufort West offers the highest order service centre of the Central Karoo, with the highest population number and highest degree of social challenge. Prince Albert, however, is experiencing the highest levels of population growth. These settlements need to focus on infrastructure maintenance, appropriate infrastructure expansion and gearing the settlements to experience a degree of population

and economic growth, leveraging their economic assets, which in the case of Beaufort West and Laingsburg is their positioning along the N1, whilst in the case of Prince Albert, the positioning at the foothills of the Swartberg Mountain Pass.

- The urban settlements of **Murraysburg, Leeu Gamka, Merweville, Klaarstroom, and Nelspoort** and **Matjiesfontein** are lower order settlements that provide basic services and access to basic goods. Whilst these urban centres also suffer from socio-economic challenges, their growth potential is limited and capacity for expansion undesirable. These settlements need to focus on consolidation, skills development and job-creating activities, rather than residential development, particularly in the low-income segment of the market, where the economic carrying capacity of the settlements is insufficient to accommodate population and residential growth.
- **Critical Biodiversity Areas** are currently not sufficiently connected and riverine habitats insufficiently protected from overgrazing and other potential developments.
- **Vast distances** exist between settlements with largely unaffordable non-regularised public transport services.
- The **rail asset** of the region underperforms significantly, largely due to an underperforming national rail asset which could accommodate higher levels of freight and passenger rail and significantly relieve road-based traffic demand.

settlements and where the loci of poverty exists in the Central karoo – being the urban settlements.

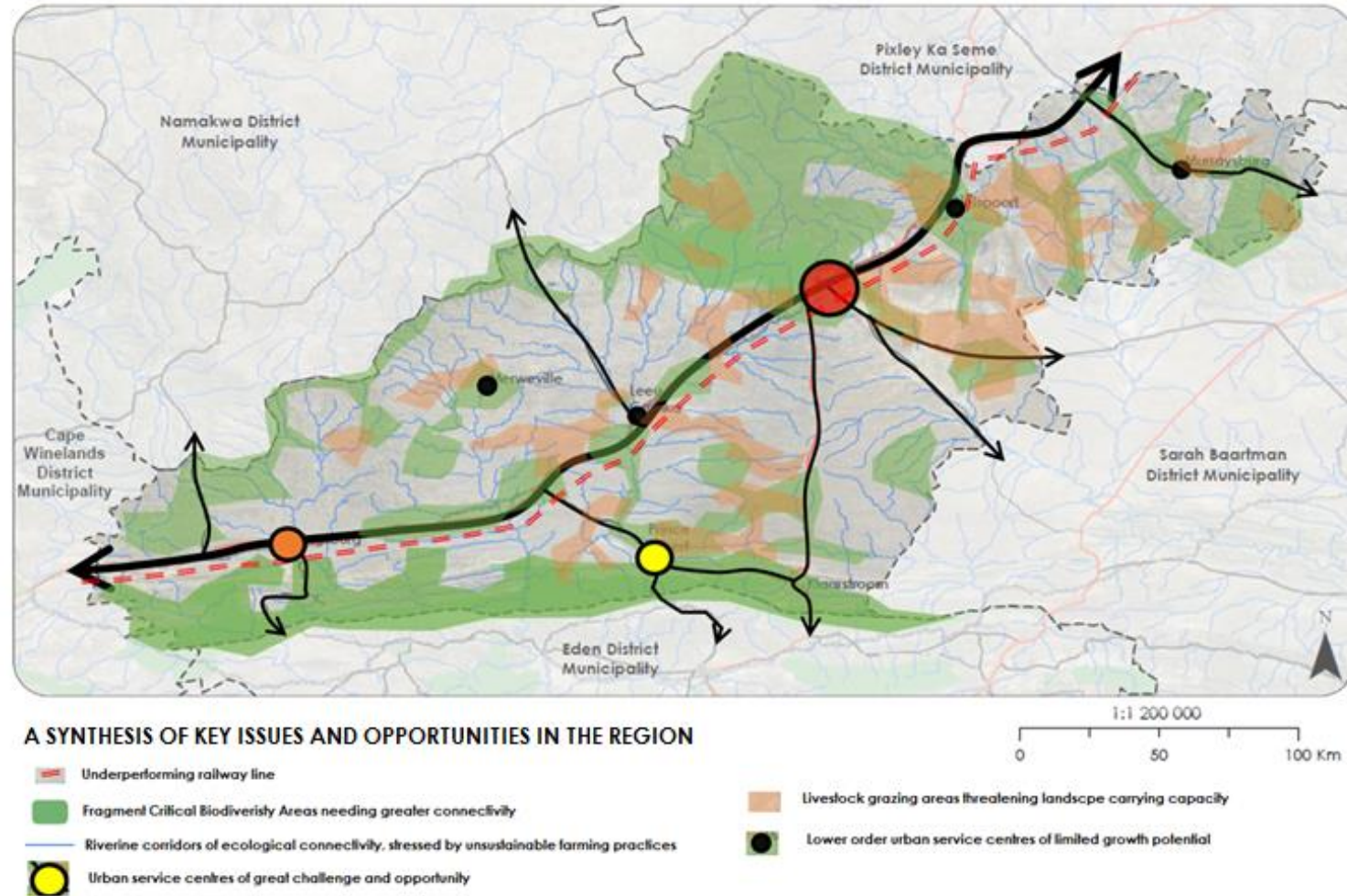
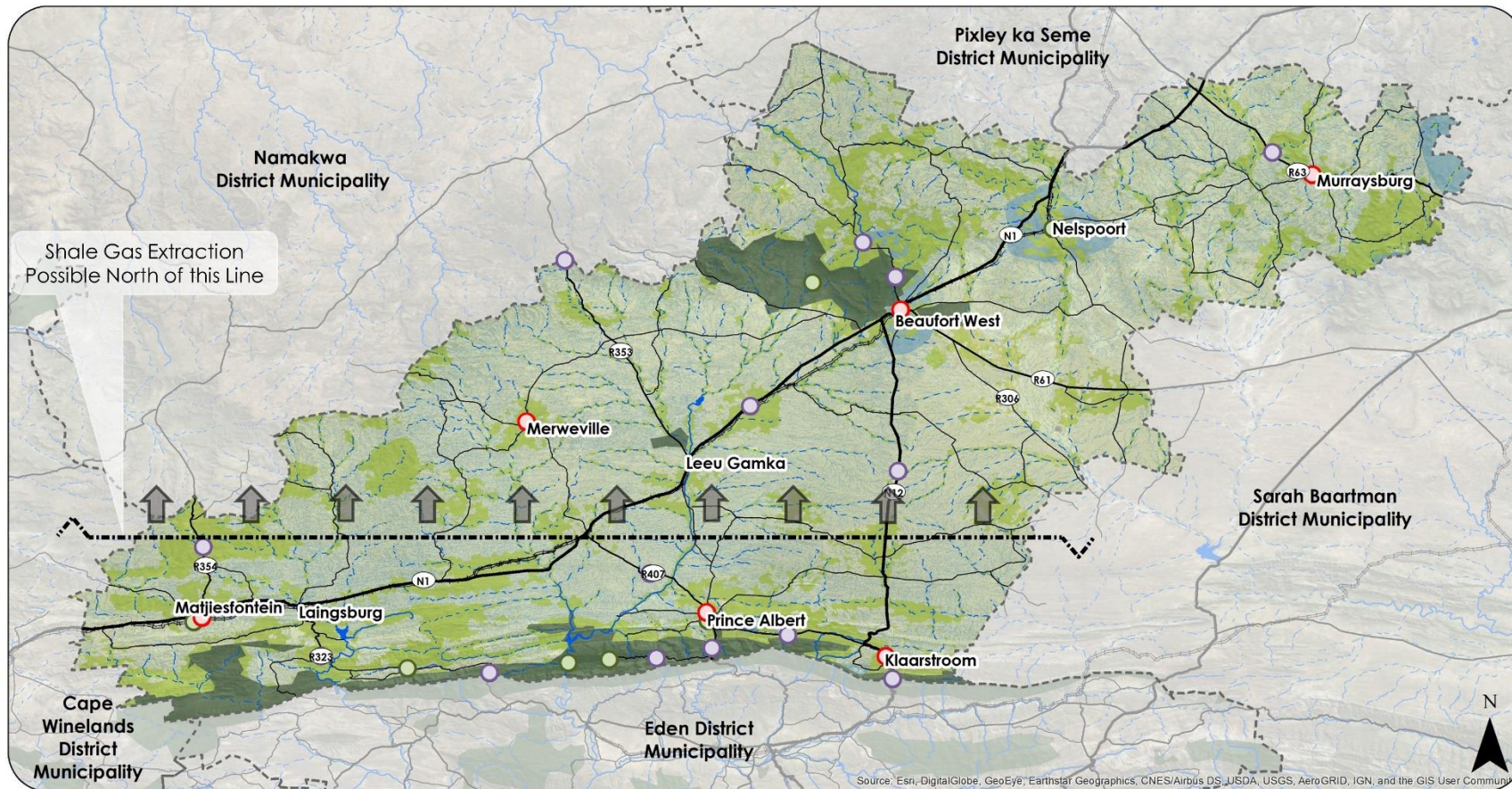


Figure 3.34 – Synthesis map 1: Key issues and Opportunities in the region

Figure 3.35 seeks to illustrate the overlap between potential shale gas extraction areas and Critical Biodiversity Areas, the vast distances between



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Natural Environment Status Quo Synthesis Map: Central Karoo District Municipality

Scenic and Cultural Assets WC Biospatial Plan Categories

- Scenic Routes & Passes
- Historical Settlements
- Cultural Landscapes
- Protected Areas
- Critical Biodiversity Areas 1
- Critical Biodiversity Areas 2
- Ecological Support Areas 2
- Other Natural Areas
- Ecological Support Areas 1

1:1 200 000
0 50 100 Km

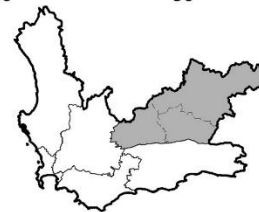
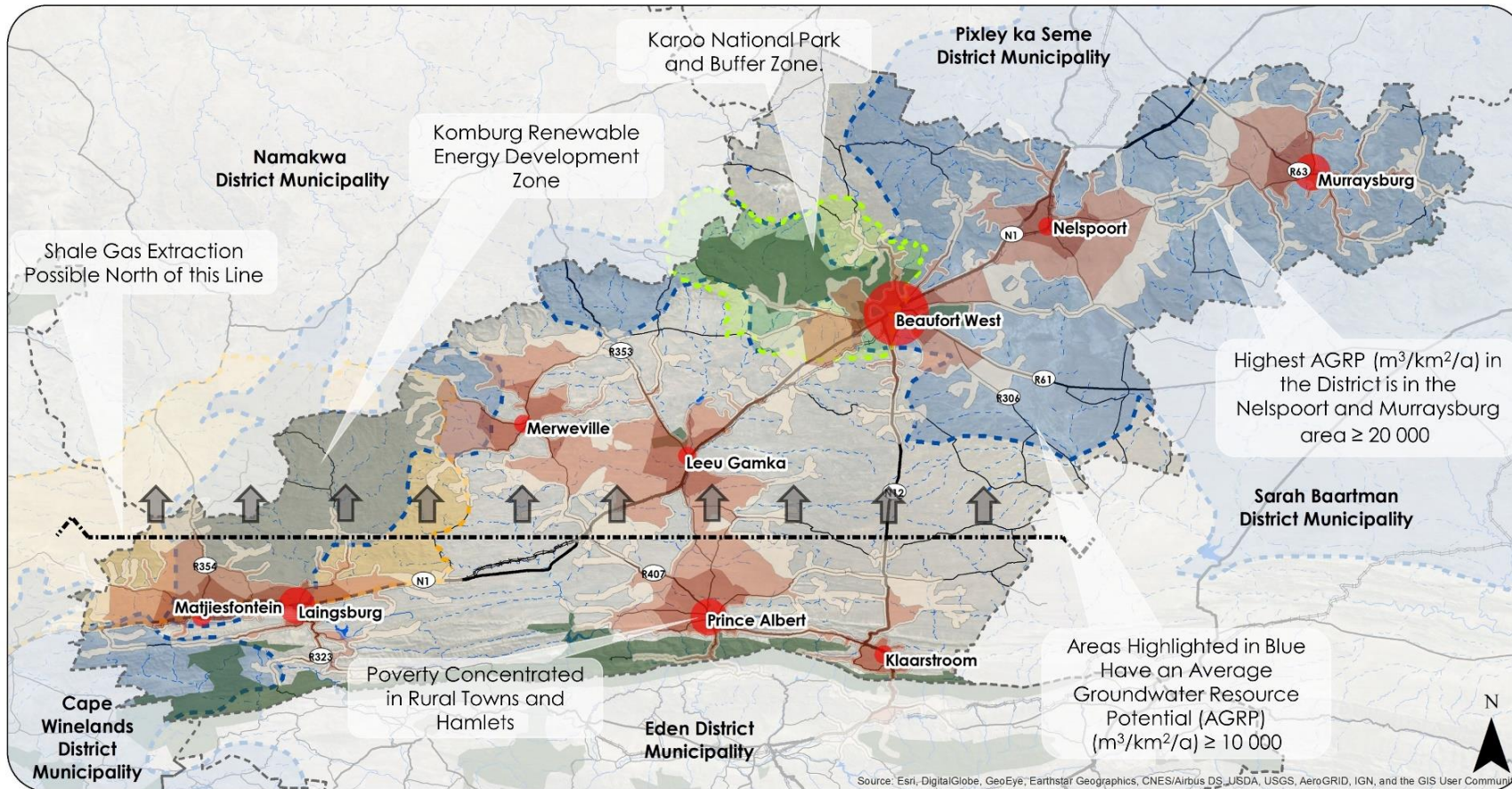


Figure 3.35: Synthesis map 2: Key Resource and Environmental issues and Opportunities in the region



Built Environment Status Quo Synthesis Map: Central Karoo District Municipality

Legend Items

- Urban Poverty Centres
- Karoo NP Buffer Zone
- REDZ
- High Average Groundwater Potential

Distance Bands*

- 15 Kilometres
- 30 Kilometres
- 45 Kilometres

*NB: Illustrating scale.

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0 50 100 Km

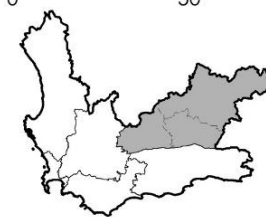


Figure 3.36: Synthesis map 3: Key built environment issues and opportunities in the region

CHAPTER 4: SPATIAL PROPOSALS FOR THE CENTRAL KAROO

4 SPATIAL PROPOSALS

The purpose of this section is to provide the overarching spatial direction, spatial development policy and associated strategies for the development and protection of the Central Karoo.

This chapter will start out by highlighting the spatial vision for the Central Karoo, understand the future growth needs of the municipality, set out the spatial concept for the future growth and development of the region, set out the spatial strategies required to attain this concept and finally make known how this concept manifests in reality and within the entire Central Karoo District Municipality.

4.1 SPATIAL CONCEPT

4.1.1 SPATIAL VISION STATEMENT

The 2017 – 2022 Central Karoo Integrated Development Plan has the following vision for the Central Karoo: **Working together in Development and Growth.**

The mission goes on to state that the Central Karoo places a **high priority upon ensuring that future growth improves the quality of life** in the region. The region also seeks to **achieve sustainability, maintain its rural character** and create **healthy communities** by facilitating **economic growth**, improving infrastructure and **green energy opportunities**, providing and supporting **alternative modes of delivery** (shared services), improve **marketing, branding and**

communication, provide excellent **disaster management services** and maintaining **housing choices** for a range of income levels.

It is worth noting that the 2014 SDF's vision was **Working together in Sustainable Spatial Development and Growth**. This vision was then unpacked around 10 spatial principles which have been repackaged in this SDF in this section and section 4.1.4. The revised spatial vision and associated strategies is proposed as follows:

Working together in Sustainable Spatial Development and Growth towards a Resilient Central Karoo

Unpacking the spatial vision, the key phrases imply the following:

“Working together” – seeking partnership driven solutions, realising that the challenges facing the Karoo are multi-faceted and cannot be addressed only by the local sphere of government. Solutions must involve the district, provincial and national spheres of government, state owned enterprises, as well as multiple private sector role layers as well, such as corporates, businesses and farmers who play a critical role in job creation and the improvement of the lives of the people of the Central Karoo.

THE SPATIAL CONCEPT FOR THE CENTRAL KAROO

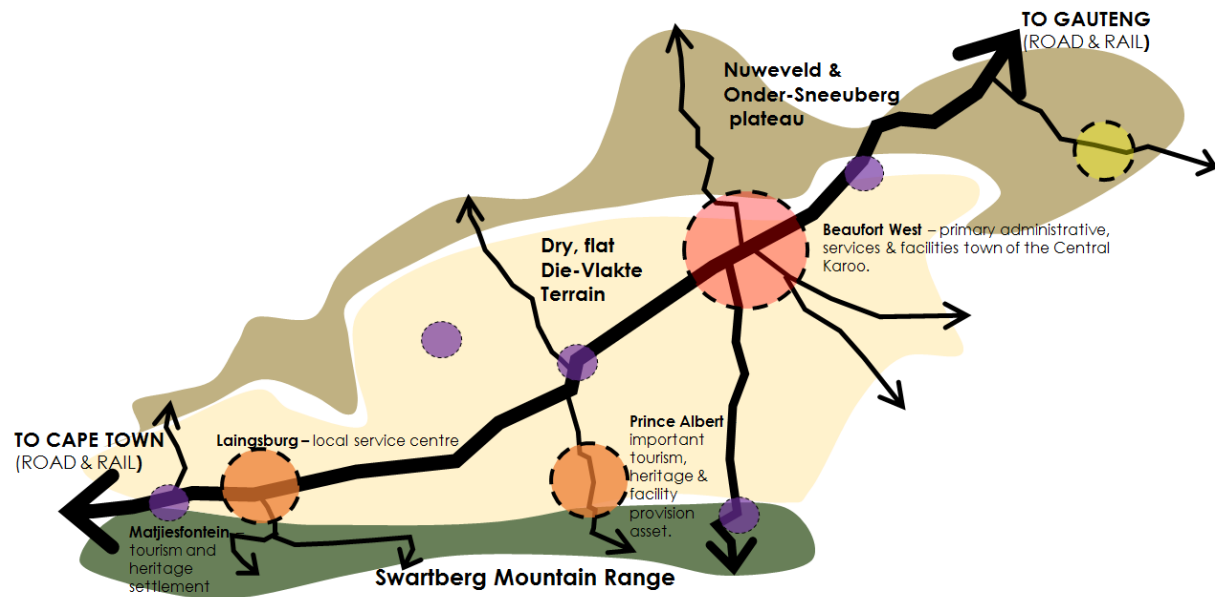


FIGURE 4.1: THE SPATIAL CONCEPT FOR THE CENTRAL KAROO

“Sustainable Spatial Development and Growth” –

Economic growth is a priority, but this economic growth must be done in a manner that does not harm the current and future inhabitants of the Central Karoo. Sustainable Spatial Development and Growth must ensure that economic and human growth and development initiatives undertaken in the region does not undermine, and ideally enhance, the sustainability of the ecological, social, economic and built environment. Furthermore, spatial growth must be undertaken in a manner that is consistent with the 5 SPLUMA principles of efficiency, spatial resilience, spatial justice, spatial sustainability and good administration. These principles will be unpacked in the various policies that will follow later sections of this SDF.

“Towards a Resilient Central Karoo” – a Central Karoo that can withstand sudden shocks or gradual changes to ecological, climate, social or economic systems. Such shocks could be climate related (flooding, heat waves, drought, frosts); ecological (breakdown of ecological systems such as water or biodiversity that render services to the people of the Karoo); social (increases in crime, service delivery protests, social unrest and drug-related); economic (economic decline or stagnation and increasing joblessness). A resilient region is one where the economy is diversified, where the people are employable, skilled and employed, and where the natural environment provides adequate natural resources, including a sufficient reserve of such resources in times of scarcity and stress. Essentially, the region needs to not exceed its inherent carrying capacity to sustain human life as well as continued biodiversity integrity. Specifically, the Karoo is a water stressed region, and hence water resilience is the cornerstone of the future resilience of the region, in a way that either enhances or undermines future

growth and development, depending on how this future resource is managed, as well as how climate change impacts the region.

From Vision to Strategy

It is proposed that this vision is anchored on the following four strategies and pillars of implementing this vision, as shown in Figure xx, below.



FIGURE 4.2: THE FOUR STRATEGIES UNDERPINNING THE SPATIAL VISION FOR THE CENTRAL KAROO

1) A REGION THAT PROTECTS THE ENVIRONMENT, ENHANCES RESILIENCE AND CAPITALISES ON AND HONOURS THE KAROO CHARM IN SUPPORT OF A VIBRANT PEOPLE AND ECONOMY

The Central Karoo is a dry, arid landscape, sparsely populated. The Growth Potential of Town's Study (2014) views its overall growth potential as low to very low, however it does possess a few **inherent competitive advantages** which must be capitalised upon to grow the economy, provide more people with access to work opportunities or perhaps even more importantly, the ability to see and create latent entrepreneurial opportunities in the economy.

This competitive advantage centres on its scenic appeal, sense of place and related tourism potential, limited yet important agricultural activities and related agri-processing potential, green energy (Solar and wind) energy potential, as well as on the potential shale gas reserves that exist in the region. Furthermore, the region has a significant rail and national highway asset running through it, providing the potential for improved connectivity to the broader South African economy.

The region is also incredibly water scarce which inhibits both economic growth (insufficient water to aggressively expand traditional agricultural output or industrial production) as well as restricts human carrying capacity (in terms of what can be supplied to residential users).

Numerous elements of spatial planning will determine if a municipality can lower its carbon emissions and maintain and enhance resilience to climate change and these cut across a variety of sectors including biodiversity, water management, parks and open spaces, transport and critical infrastructure and

disaster management. These elements must form a key component of the planning considerations incorporated in all planning decisions. The focus on non-motorised transport and walkability is critical for the Central Karoo, as well as looking at opportunities that the railway line can have for freight could play a role in reducing emissions in the area.

2) IMPROVE REGIONAL AND RURAL ACCESSIBILITY AND MOBILITY FOR PEOPLE AND GOODS IN SUPPORT OF A RESILIENT ECONOMY

The N1-corridor, which includes the N1 highway as well as the rail link between Cape Town and Gauteng, are important assets. Currently, the road link provides much needed through flow of people, goods and economic stimulus to the region, but the rail is underperforming significantly and has the potential to be a significant link for the movement of goods and people in the future. There is currently no subsidised public transport system in the region, making it incredibly expensive for people to move within this sparsely populated region to access goods, services and facilities.

3) ALLOCATE GOVERNMENT RESOURCES, INFRASTRUCTURE AND FACILITIES IN A MANNER THAT UPLIFTS AND SKILLS PEOPLE AND FOCUSSES ON MAXIMISING IMPACT ON THE MOST POSSIBLE PEOPLE, WHILE PROVIDING A BASIC LEVEL OF SERVICE FOR ALL

Given the limited nature of government resources, there needs to be a strong focus on ensuring that a full suite of facilities and services are provided in the higher order urban settlements (being Beaufort West) with more rudimentary services and lower order services in the smaller settlements – and even mobile service solutions in the sparsest, smallest settlements or hamlets where there is insufficient demand and insufficient funds for a permanent service. The NSDF (2019) provides the national spatial social service provisioning model which assists in the effective, affordable and equitable development of social service delivery, as seen in Figure xx, below.

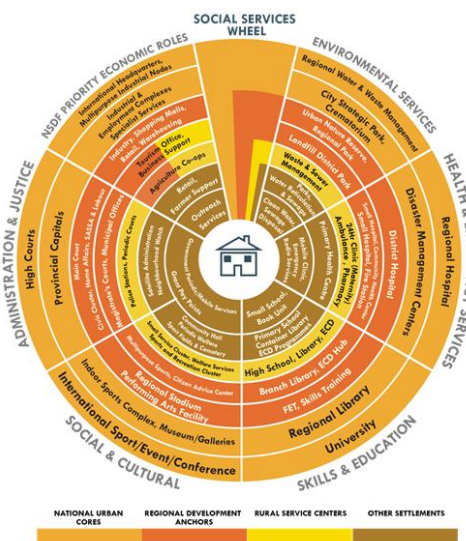


FIGURE 4.3: THE NSDF'S 'SOCIAL SERVICES WHEEL' (NSDF, 2019)

4) PARTNERSHIP-DRIVEN GOVERNANCE AND ADMINISTRATION TOWARDS IMPROVED FINANCIAL AND NON-FINANCIAL SUSTAINABILITY AND RESILIENCE

There is a growing understanding that an 'integrated governance' approach is required to ensure better coordination, alignment, and impact of planning, budgeting and delivery. The Central Karoo District must pursue a range of partnerships to either build or strengthen desired impacts, as well as explore shared service solutions within the Central Karoo to ensure financial viability as well as sharing of administrative and logistical burdens associated with servicing a sparse region.

In addition to this, SPLUMA requires municipalities to pursue good administration practices to enhance and strengthen the spatial planning and land use management systems of the municipality.

4.1.2 FUTURE DEMAND APPROACH STATEMENT

As set out in section 3.2.1, the following sets out the predicted population, housing and land requirements for future growth and development within the Central Karoo.

The population is set to grow to approximately **84 335 people in 2030** from the estimated mid-year population of **74 247 in 2016**, representing an increase of just over **10 000 new people, or 2 933 new households**.

It is anticipated that of these new 2 933 households, 1 301 will be in the municipality of Beaufort West (4 476 people); 1 137 will be in the municipality of Prince Albert (3 911 people) and 586 will be in the municipality of Laingsburg (2 017 people). It is evident then, that the municipality of Prince Albert will have the fastest population growth rate, while Beaufort West will have the largest absolute increase in population and households.

Looking at this on the town scale, the following is evident:

- There is a trend of a **significantly slowing growth rates** comparing the 2001 to 2011 periods and the 2011 to 2016 periods, across the board.
- Each local municipality has a different average growth rate, with **Beaufort West** growing the slowest (**0.6%** per annum) and **Prince Albert** growing at nearly **three times** as fast (1.73% per annum).
- The town of Beaufort West is anticipated to have **37 776 living in it by 2030**, up from 34 732 in 2016.

BEAUFORT WEST POPULATION PROJECTIONS - UP TO 2030 (MED GROWTH RATE OF 0.6% ON AVERAGE)								
Municipality	Population (2001)	Growth Rate per annum (2001 - 2011)	Population (2011)	Growth Rate per annum (2011 - 2016)	Mid-Year Est 2016	Projected Population 2020	Projected Population 2025	Projected Population 2030
Beaufort West town	31358	1.45	34085	0.6	34732	35576	36659	37776
Merweville	1143		1592		1699	1740	1793	1848
Murraysburg	4418		5069		5224	5351	5514	5682
Nelspoort	1483		1699		1750	1793	1847	1903
B-West Non-urban population	4889		7141		7676	7862	8102	8349
Beaufort West Mun total	43291		49586		51080	52321	53914	55556

PRINCE ALBERT POPULATION PROJECTIONS - UP TO 2030 (MED GROWTH RATE OF 1.73% ON AVERAGE)								
Municipality	Population (2001)	Growth Rate per annum (2001 - 2011)	Population (2011)	Growth Rate per annum (2011 - 2016)	Mid-Year Est 2016	Projected Population 2020	Projected Population 2025	Projected Population 2030
Prince Albert Town	5217	2.5	7054	1.73	7849	8411	9171	10000
Leeu Gamka	2134		2727		2984	3198	3487	3802
Klaarstroom	467		584		634	679	741	808
Prince Albert Non-urban population	2694		2771		2804	3005	3276	3572
Prince Albert Mun total	10512		13136		14272	15295	16676	18183

LAINGSBURG POPULATION PROJECTIONS - UP TO 2030 (MED GROWTH RATE OF 1.46% ON AVERAGE)								
Municipality	Population (2001)	Growth Rate per annum (2001 - 2011)	Population (2011)	Growth Rate per annum (2011 - 2016)	Mid-Year Est 2016	Projected Population 2020	Projected Population 2025	Projected Population 2030
Laingsburg Town	4 386	2.41	5 667	1.46	6 150	6 520	7 014	7 545
Maljiesfontein Town	391		422		434	460	495	532
Laingsburg Non-Urban	1904		2200		2312	2 451	2 637	2 836
Laingsburg Mun Total	6 681		8 289		8 895	9 430	10 144	10 912

FIGURE 4.4: THE POPULATION PROJECTIONS PER SETTLEMENT FOR THE CENTRAL KAROO UP UNTIL 2030

- The town of **Prince Albert** will have a population of **10 000 by 2030**, from 7 849 in 2016.
- The town of **Laingsburg** will have a population **7545 in 2030**, from 6150.
- **Murraysburg** – the fourth largest town in the Central Karoo - will grow from 5224 in 2016 to **5682 in 2030**.
- **Leeu-Gamka** will grow from 2984 in 2016 to 3802 in 2030.
- The growth or decline in non-urban populations in the Central Karoo are less easy to predict as it is unclear if these populations will move more towards urban centres and agriculture decline due to water scarcity or if these populations will grow due to agricultural innovation and expansion. Nevertheless, non-urban populations are significant – of not sparsely distributed – in the region.

In terms of **households and land requirements** for development in each town into the future, as shown in Figure xx and Figure xx below, the following is evident (please note the assumption of an average gross dwelling unity density of 25 dwelling units per hectare):

- **Beaufort West (the town)** will need to accommodate **885 new households** by 2030, equating to approximately **35 hectares**.
- **Prince Albert (the town)** will need to accommodate **625 new households** by 2030, equating to **25 hectares**.
- **Laingsburg (the town)** will need to accommodate **405 new households** by 2030, equating to approximately **16 hectares**.
- **Murraysburg** will accommodate 133 new households, translating to 5 hectares by 2030.
- **Leeu-Gamka** will accommodate 238 new households, translating to 10 hectares needed by 2030.

HOUSEHOLD NUMBER PROJECTIONS FOR CENTRAL KAROO					
**assuming 3.44 people per household (2011 Census)					
Municipality	No. of households 2011	No. of households 2016	No. of households 2020	No. of households 2025	No. of households 2030
Beaufort West town	9908	10097	10342	10657	10981
Merweville	463	494	506	521	537
Murraysburg	1474	1519	1555	1603	1652
Nelspoort	494	509	521	537	553
B-West Non-urban population	2076	2231	2286	2355	2427
Beaufort West Mun Total	14415	14849	15210	15673	16150
Prince Albert Town	2051	2282	2445	2666	2907
Leeu Gamka	793	867	930	1014	1105
Klaarstroom	170	184	198	215	235
Prince Albert Non-urban population	806	815	874	952	1038
Prince Albert Mun Total	3819	4149	4446	4847	5285
Laingsburg Town	1647	1788	1895	2039	2193
Matjiesfontein Town	123	126	134	144	155
Laingsburg Non-Urban	640	672	713	766	825
Laingsburg Mun Total	2410	2586	2742	2949	3173
Total	20643	21584	22397	23470	24608

FIGURE 4.5: THE HOUSEHOLD PROJECTIONS PER SETTLEMENT FOR THE CENTRAL KAROO UP UNTIL 2030

LAND REQUIREMENTS FOR NEW HOUSEHOLDS IN CENTRAL KAROO						
Future land requirements for new housing, assuming a future gross dwelling unit density of 25du/ha						
Municipality	New households between 2016 - 2020	Land Required by 2020 (ha)	New Households between 2016 - 2025	Land Required by 2025	New households between 2016 - 2030	Land Required by 2030 (ha)
Beaufort West town	245	9.8	560	22.4	885	35
Merweville	12	0.5	27	1.1	43	2
Murraysburg	37	1.5	84	3.4	133	5
Nelspoort	12	0.5	28	1.1	45	2
B-West Non Urban	54	2.2	124	5.0	196	8
Prince Albert Town	163	6.5	384	15.4	625	25
Leeu Gamka	62	2.5	146	5.8	238	10
Klaarstroom	13	0.5	31	1.2	51	2
Prince Albert Non-urban	58	2.3	137	5.5	223	9
Laingsburg Town	108	4.3	251	10.0	405	16
Matjiesfontein Town	8	0.3	18	0.7	29	1
Laingsburg Non-urban	40	1.6	94	3.8	152	6
Total	813	33	1886	75	3025	121

FIGURE 4.6: THE LAND REQUIREMENT PROJECTIONS PER SETTLEMENT FOR THE CENTRAL KAROO UP UNTIL 2030

Implications for facilities and services

Increases in populations and number of households has direct impacts on the future needs for facilities such as schools and clinics. The Western Cape Government has a Development Parameters Guideline, and the CSIR has developed a Facilities Provision Toolkit which helps us to model future facilities needed to accommodate growth. It is anticipated that the 2933 new households in the Central Karoo by 2030 will trigger the need for **approximately**:

- 3 to 4 new ECD facilities;
- 2 to 3 new primary schools;
- 1 to 2 new secondary schools;
- Up to 2 new sports fields;
- 1 local library;
- Various new open spaces / parks; and
- 1 new community hall.

These new facilities must obviously be provided **where the new households are going to be located** and hence the Municipal SDF's for each local municipality will need to verify and determine location.

A note on assumptions

It should be recognised that these population, household, land and facility projections are based on **several assumptions**, such as the population growth rates experienced between 2011 and 2016 continuing in a linear manner, that each household average 3.44 people per household, and that the average gross dwelling unit density is 25 dwelling units per hectare. Although linear growth is an unlikely outcome, it is the only reasonable scenario that can be used to project future growth and is the 'middle road' growth scenario. Any variance in these assumptions will drastically change the future growth and development scenario, which is also intimately tied to and related to the future availability of water in the region, the growth or decline of the agricultural sector, migration and any major regional development initiatives (such as shale gas development) that may occur. Therefore, these figures are **indicative and approximate** and assist in identifying future land for development within the plans. It should be noted that both commercial and industrial new land requirements haven't been approximated, although the SDF maps will make provision for this.

Building	2933	houses will require between	3	Early Childhood Development Centres	and	4	Early Childhood Development Centres
			3	Primary Schools		3	Primary Schools
			1	Secondary Schools		2	Secondary Schools
			0	Community Sports Field		2	Community Sports Field
			0	Local Library		1	Local Library
			0	Community Health Care Centre		1	Community Health Care Centre
			0	District Hospital		0	District Hospital
			0	Children's Homes		0	Children's Homes
			0	Homes for the Aged		0	Homes for the Aged
			0	Community Halls / Centres		1	Community Halls / Centres
			0	Municipal Offices		0	Municipal Offices
			0	Firestations		0	Firestations
			1	Space (Community)		5	Space (Community)
			0	Cemeteries		2	Cemeteries
0	Police Stations	0	Police Stations				

FIGURE 4.7: NEW FACILITIES REQUIRED TO SUPPORT 2933 NEW HOUSEHOLDS BY 2030 IN THE CENTRAL KAROO

4.1.3 MUNICIPAL-WIDE SPATIAL CONCEPT DIAGRAM

As articulated in the spatial vision, the spatial concept for the region focusses on focusing on **sustainable development, resilience** and **partnerships**.

The four strategies of the municipal wide spatial concept are:

- A region that **protects the environment, enhances resilience and capitalises** on and honour's the Karoo charm in support of a vibrant people and economy;
- Improve **regional and rural accessibility** and mobility for people and goods in support of a resilient economy;
- **Allocate government resources, infrastructure and facilities** in a manner that uplifts and skills people and focusses on **maximising impact** on the most possible people, while providing a basic level of service for all; and
- **Partnership-driven governance** and administration towards improved financial and non-financial sustainability and resilience.

How the above translates spatially in the region is described as follows:

- 1) **Protect and enhance** the **natural systems** of the Central Karoo, ensuring **continuity** in the natural systems and ensure the river corridors in the region are provided with the necessary buffers and set back (of at least 32m from the side of each riverbank) to preserve **continuity and integrity** of biodiversity systems. Prioritise Critical Biodiversity Areas and Environmental Support Areas for protection.

THE SPATIAL CONCEPT FOR THE CENTRAL KAROO

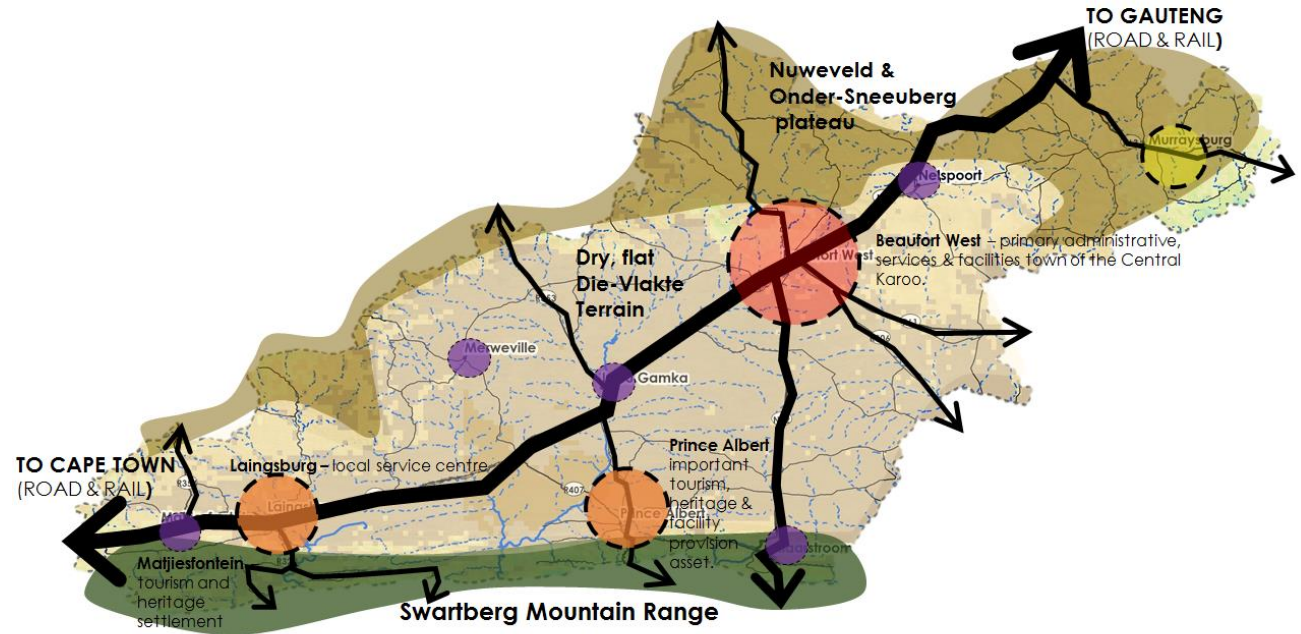


FIGURE 4.8: THE SPATIAL CONCEPT FOR THE CENTRAL KAROO

- 2) **Protect and enhance** water **catchment** areas, and **water resources** by demarcating Critical Biodiversity Areas and Environmental Support Areas and preventing inappropriate development within these areas.
- 3) **Capitalise on the tourism appeal** of the various assets that exist in the Central Karoo, such as the heritage appeal of existing town centres, as well as scenic ports and passes. Ensure that all development in the Karoo is compatible with the **sense of place, Karoo character and charm**. This intrinsic value create lifestyle, tourism and hospitality opportunities, as is seen in Prince Albert,

and hence creates jobs and assists in poverty alleviation.

- 4) Ensure the **development and maintenance** of a **road network** that provides good access and mobility for the region, as well as ensure the **regional rail network** is equipped to provide for the movement needs. The N1 corridor is a key economic and social asset in the region that must be maintained and enhanced where appropriate, also looking at road safety in the region.
- 5) Specific focus is also needed on **non-motorised transport** within the region. Non-motorised transport, particularly pedestrian movement, is

the primary transport mode among residents. Key interventions for implementation in this area are pedestrian walkways, bridges and underpasses, and cycle paths. An important consideration in the planning of such interventions is safety and security.

- 6) Ensure that **Beaufort West** provides the **primary administrative services and facilities** in the region, with Laingsburg and Prince Albert also playing local service centre roles. Business opportunities within these towns to be maximised to encourage the multiplier effect of investment and expenditure of these towns. From a governance capital investment and maintenance perspective, these towns are the crucial drivers of growth and development opportunities.
- 7) Strongly encourage **value-add, industrial and agri-processing industries** locating in the primary and local service centres to create jobs and add value to the region's agricultural goods and services.
- 8) Focus **government investment, facilities, services and housing opportunities** in Beaufort West, Prince Albert and to a lesser extent Laingsburg and Murraysburg. Prevent the creation of new low-income settlements in low growth, job deficient towns that have little prospect of creating employment.
- 9) Seek **partnerships to enhance various interventions**, with a focus on the top 3 most impactful and critical interventions for the region. These will have to be determined based on the priorities of the District and the transversal nature of the issues. Currently water, gas and energy, and rural mobility are three areas of potential partnership between the spheres of government and civil society.

4.1.4 SETTLEMENT-SPECIFIC SPATIAL CONCEPTS

Although it is recognised that the Central Karoo district is not responsible for the local-level planning decisions that indeed the local municipalities are, it is the role of the District municipality to emulate and set out the planning principles that must be used throughout the district. This section sets these spatial principles out, building on the Western Cape Provincial Spatial Development Framework.

The **key spatial principles** that must be espoused in all development, maintenance or protection initiatives are:

1. **Spatial efficiency** – ensuring that land, infrastructure and resources are used efficiently and not wastefully.

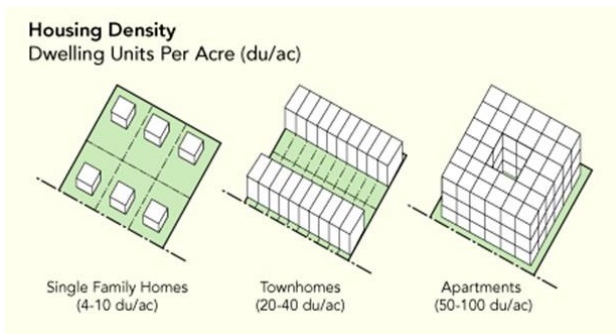


FIGURE 4.9: LAND MUST BE USED EFFICIENTLY. LOW DENSITY DEVELOPMENT TYPOLOGIES ARE COSTLY FOR THE MUNICIPALITY TO SERVICE AND CREATE INEQUITABLE SETTLEMENTS THAT ARE COSTLY TO LIVE IN

2. **Spatial justice & urban restructuring** – ensuring the apartheid legacy is addressed in a way that includes the urban poor in settlement

development. This is important not only for the reasons of redress, but for long term stability and economic growth which requires that **all citizens** are empowered to participate in the economy and become tax and rate paying citizens. Urban restructuring will require well-locate underutilised land to be identified for development of residential, retail and commercial activities.

3. **Spatial resilience** – creating settlements that are resilient to change and flexible in times of stress. What this practically means, and in the case of the Central Karoo, is to create water-resilient settlements that focus on diversification of water sources (including rain water capture as a source of water for households) as well as diversification of economy, social support, energy generation and multiple other systems and services that the region relies upon.
4. **Walkability** & appropriate densification. Linked to the principles of spatial efficiency and spatial justice, is the basic yet catalytic principle of promoting walkability and ensuring appropriate densification takes place in the settlements of the Karoo. The goal is to create neighbourhoods and settlements that one can traverse on foot or by bicycle in a safe and dignified manner. The State of Place (2017) identified the following 10 universal urban design principles as central to achieving walkability, as set out in the graphic below. This graphic highlight the importance of density, aesthetics, traffic safety, connectivity, public spaces, safety, form, recreation, pedestrian amenities and proximity as key success factors to promoting more walkable settlements. Indeed, Karoo settlements already have some of the elements of this.

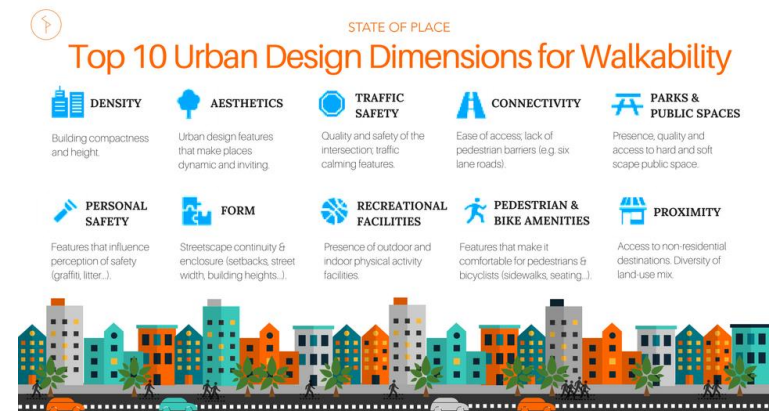


FIGURE 4.10: THE TOP 10 URBAN DESIGN DIMENSIONS FOR WALKABILITY (<http://www.stateofplace.co/state-of-place-profile/>)

5. **Municipal financial sustainability** – do not undermine the long term financial sustainability of the settlements of the Karoo. Municipal financial sustainability is undermined in the following ways: (1) by investing in new infrastructure that the municipality is unable to afford to maintain in the long term, (2) by not paying sufficient attention to asset and infrastructure maintenance, (3) by allowing low density urban sprawl that requires more infrastructure per housing unit than denser urban forms, (4) by investing only in the creation of non-rates generating indigent households that ultimately grow in relation to rates-generating households. This is not to imply that the local municipalities should not be pro-poor, but they must **also** consider how they will grow their income, rates and ability to service residents.
6. **Honour, enhance and build upon the unique architectural charm and tradition of the Karoo** – the Karoo has a certain set of building and housing typologies that can indeed be honoured and enhanced in future growth and development – to make these places even more

appealing and desirable for tourism. These typologies need not be expensive and indeed could be replicated in government subsidy housing initiatives, as well as in gap and market housing development. The figures below illustrate the different housing typologies which should be first and foremost protected, but also proliferated in the Karoo to add to its charm, tourism appeal and character.



FIGURE 4.11A: TYPICAL KAROO-STYLE ROAD-FRONTING TOWN COTTAGE



FIGURE 4.11B: ANOTHER TYPICAL KAROO-STYLE ROAD-FRONTING TOWN COTTAGE



FIGURE 4.11C: TYPICAL KAROO-STYLE ROAD-FRONTING TOWN COTTAGE (source: <http://www.findtripinfo.com/south-africa/northern-cape/karoo.html>.)



FIGURE 4.11D: TYPICAL KAROO-STYLE ROAD-FRONTING TOWN COTTAGE (source: <https://www.portfoliocollection.com/travel-blog/kicking-back-karoo-country-style-at-nieuwehuyz>)

4.2 MUNICIPAL-WIDE SPATIAL STRATEGIES

4.2.1 **STRATEGY A: A REGION THAT PROTECTS THE ENVIRONMENT, ENHANCES RESILIENCE AND CAPITALISES ON AND HONOURS THE KAROO CHARM IN SUPPORT OF A VIBRANT PEOPLE AND GROWING THE ECONOMY**

A resilient region is one that can adapt to and mitigate against the negative effects of climate change, increasing temperatures, reduced rainfall and the host of downstream impacts on the economy and society at large. The future vibrancy of the economy and social advances will invariably be rooted in the resilience of the natural environment to a host of negative impacts. This section seeks to set out policies in support of this strategy.

4.2.1.1 **POLICY A1: PROTECT CRITICAL BIODIVERSITY AREAS, ENVIRONMENTAL SUPPORT AREAS & NATURAL ENVIRONMENT TOWARDS A RESILIENT KAROO**

Policy A1 Guidelines: Manage land use management in the rural areas of the Central Karoo through the application of **Spatial Planning Categories (SPC's)** as set out in the Western Cape Rural Land Use Planning Guidelines and the Western Cape Biodiversity Spatial Plan, and ensure that all investment in the Karoo landscape seeks to underpin the principles of spatial sustainability and spatial resilience. Greater detail on each SPC layer can be found in the Western Cape Rural Land Use Guidelines. The Central Karoo District Municipality SDF maps sets out development proposals that are in line with the inherent land use suitability of its varying landscapes.

The SDF Plan comprises of the following Spatial Planning Categories (SPC's):

- i. **Core 1 Areas** - those parts of the rural landscape required to meet targets / thresholds for **biodiversity patterns or ecological processes** (i.e. Protected Areas and Critical Biodiversity Areas).
- ii. **Core 2 Areas** - places in **a degraded condition** that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. These areas **should be rehabilitated** and only **low-impact**, biodiversity-sensitive **land-uses** are appropriate. Also includes Ecological Support Areas (ESA) that are not essential for meeting biodiversity targets but play an important role in **supporting the ecological functioning** of CBAs.
- iii. **Buffer 1 Areas** – These areas may be natural or they may be degraded but still **play an important role in supporting the functioning of Protected Areas or CBAs**, and are essential for delivering ecosystem services. These areas **should be restored and/or managed to minimize impact** on ecological infrastructure functioning.
- iv. **Buffer 2 Areas** - This category includes areas **designated as Other Natural Areas**, located in an extensive and/or intensive agriculture matrix (i.e. livestock production) as the dominant land use.
- v. **Agriculture Areas** - The Agriculture SPC comprises a consolidation of the **existing and potential intensive agricultural footprint** (i.e. homogeneous farming areas made up of cultivated land and production support areas). It is those areas in which **significant or complete loss of natural habitat and ecological functioning has taken place** due to activities such as ploughing, hardening of surfaces, mining, cultivation and

other activities that modify natural habitat. Even so, they may include **small remnants of natural habitat** such as the patches or strips of natural habitat that survive between cultivated lands, along river-lines and ridges.

- vi. **Settlement Areas** - This category includes all existing cities, large and smaller towns, villages and hamlets. Settlements are delineated by municipalities in terms of an urban edge or by the Department of Environmental Affairs and Development Planning in terms of the 2014 NEMA Listing Notices as urban areas.

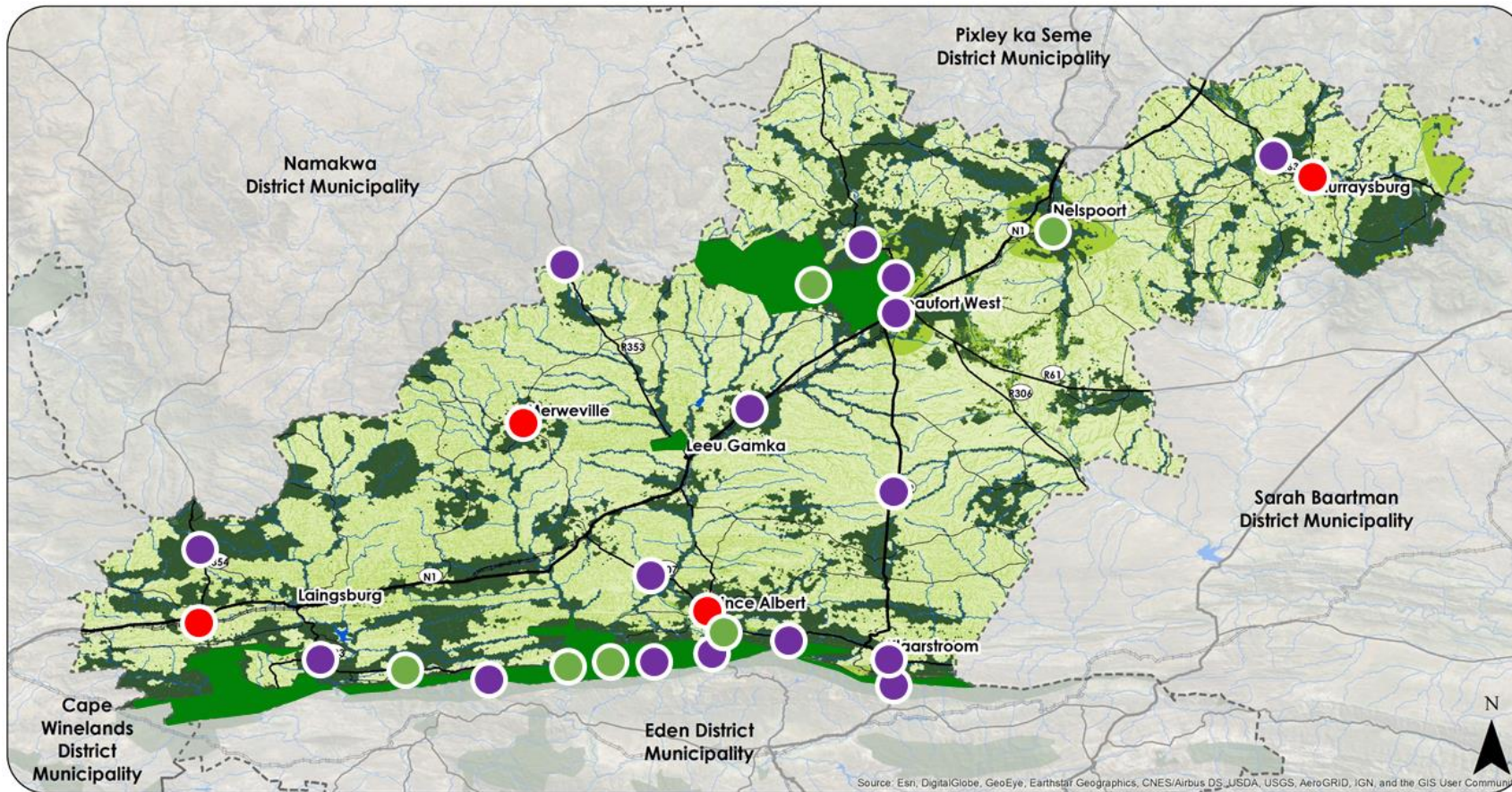
The table below, in Figure xx, seeks to show how to convert Protected Areas, Critical Biodiversity Areas, Ecological Support Areas and other natural areas to the various Spatial Planning Categories talked about above, as set out in the Western Cape Biodiversity Spatial Planning Map.

WCBS Map Category →	Protected Areas	Critical Biodiversity Area 1 (Terrestrial/Aquatic)	Critical Biodiversity Area 2 (Degraded)	Ecological Support Area 1 (Terrestrial/Aquatic)	Ecological Support Area 2	Other Natural Areas (Natural to Near-natural / Degraded)	No Natural Remaining
Spatial Planning Category ↓	PA	CBA 1	CBA 2	ESA 1	ESA 2	ONA	NNR
CORE 1	•	•					
CORE 2			•	•			
BUFFER 1						•	
BUFFER 2					•	•	
AGRICULTURE							•
SETTLEMENT							•

FIGURE 4.12: A TABLE SHOWING HOW TO CONVERT A BIODIVERSITY SPATIAL PLAN MAP TO A SPATIAL PLANNING CATEGORY MAP

The map on the following page, Figure xx, seeks to illustrate the proposed Spatial Planning Categories for the Central Karoo, showing:

- **Core 1 Areas** – predominantly in the Swartberg mountains, Karoo National Park, and the riverine areas of the Karoo.
- **Core 2 Areas** – predominantly areas of water importance - around Beaufort West, Nelspoort and Murraysburg.
- **Buffer 1 and Buffer 2 areas** – around all riverine areas in the Karoo.



A Region that Protects the Environment, Enhances Resilience & Capitalises on the Karoo Charm in Support of a Vibrant People & Growing Economy

Legend

- Maintain and Expand Protected Areas
- Core 1 SPC: No development in CBA's
- Enhance & Leverage Cultural Landscapes
- Core 2 SPC: Rehabilitate & Restore, low impact development
- Maintain & Enhance Scenic Routes & Passes
- Buffer 1 & 2 SPC: Minimize impact & allow agricultural activity
- Revitalise Historic Settlements
- River Systems: Protect, Rehabilitate – a minimum of 32m buffer

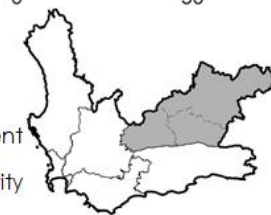
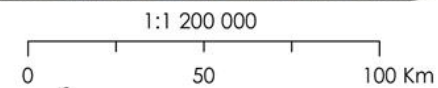


FIGURE 4.13: A REGION THAT PROTECTS THE ENVIRONMENT, ENHANCES RESILIENCE AND CAPITALISES ON AND HONOUR'S THE KAROO CHARM IN SUPPORT OF A VIBRANT PEOPLE AND GROWING THE ECONOMY

4.2.1.2 POLICY A2: PROMOTE AND DEVELOP A WATER RESILIENT CENTRAL KAROO

Without water, this region is economically, socially and environmentally not unsustainable. Indeed, it can neither support any further growth in population or economy if water is not managed, extracted and utilised sustainably. If the status quo remains, the region will continue to experience economic shocks related to water unavailability, inhibiting the chance of the poor in the region to access jobs and ultimately move out of poverty. Water is very much the heart of the economy of the region.

Policy A2 Guidelines:

Adapting to water scarcity by:

- i. Developing water and sanitation infrastructure that utilises water re-cycling and reuse.
- ii. Promote household and farm-scale rain water capturing for non-potable uses.
- iii. Regulate borehole use to ensure sustainable use of groundwater systems
- iv. Monitoring ground water resources and implementing effective water reduction techniques when sources are low.
- v. Ensuring the integrity of valuable rainwater catchment areas and riverine systems are kept clear of invasive plant species or any use that will either degrade the quality or quantity of water available for use.
- vi. Promoting farming techniques that minimise water use.

4.2.1.3 POLICY A3: TOURISM ENHANCEMENT & PROTECTION OF SCENIC ASSETS

Together with agriculture and agri-processing, tourism is a sector of the economy that can significantly assist in achieving future growth and development in the region, and playing a significant part in uplifting the poor out of poverty. The way the region is managed from a built environment perspective can either enhance or degrade the tourism, scenic and heritage potential of the region. It is desirable to ensure that current heritage assets are maintained and enhanced and new built environment assets created in line with existing vernacular architecture and heritage.

Policy A3 Guidelines:

- i. Manage **all development** in the Karoo (whether rural or urban, high income or low income) in a way that respects and enhances the sense of place, scenic assets and unique Karoo charm.
- ii. Promote **vernacular Karoo-style building typologies** in all development – low income housing development could be adapted to have Karoo-style features.

- iii. When delivering any agri-processing, renewable energy or any infrastructure in rural areas, ensure that key view sheds, vistas and views are not undermined.
- iv. Develop and implement a Destination and tourism branding, marketing and sales strategy to sell both the tourism opportunities as well as the key economic assets.
- v. Ensure adequate setbacks and screenings (by planting) of all new development from key movement routes in scenic areas of the region.
- vi. Rejuvenate and invest in the historic settlement cores of each town to make these appealing to tourists, businesses and attract investment into the town centres.

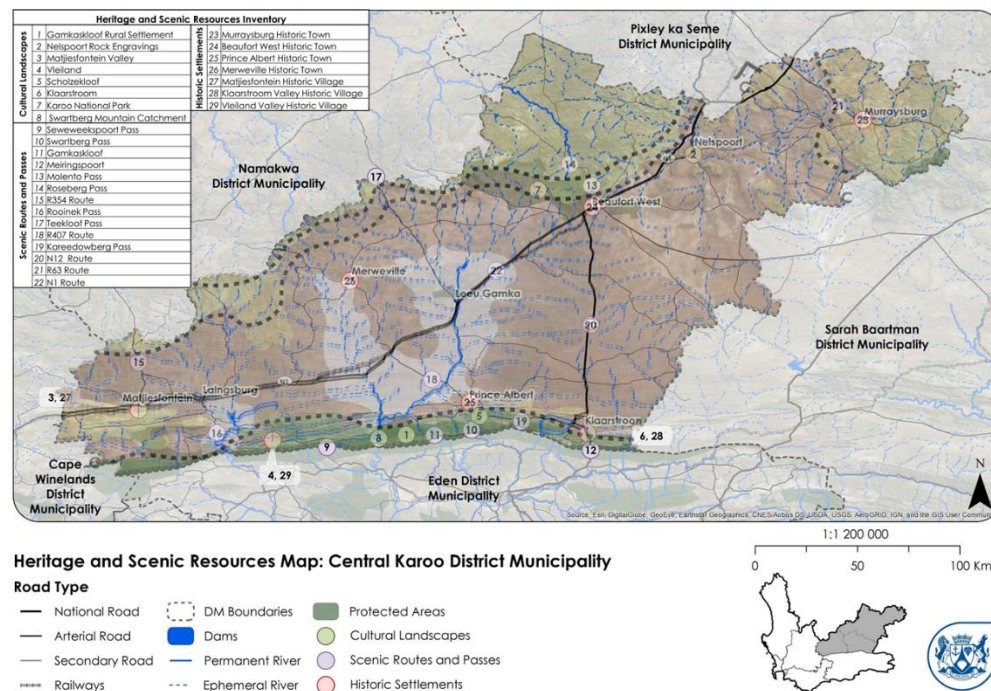


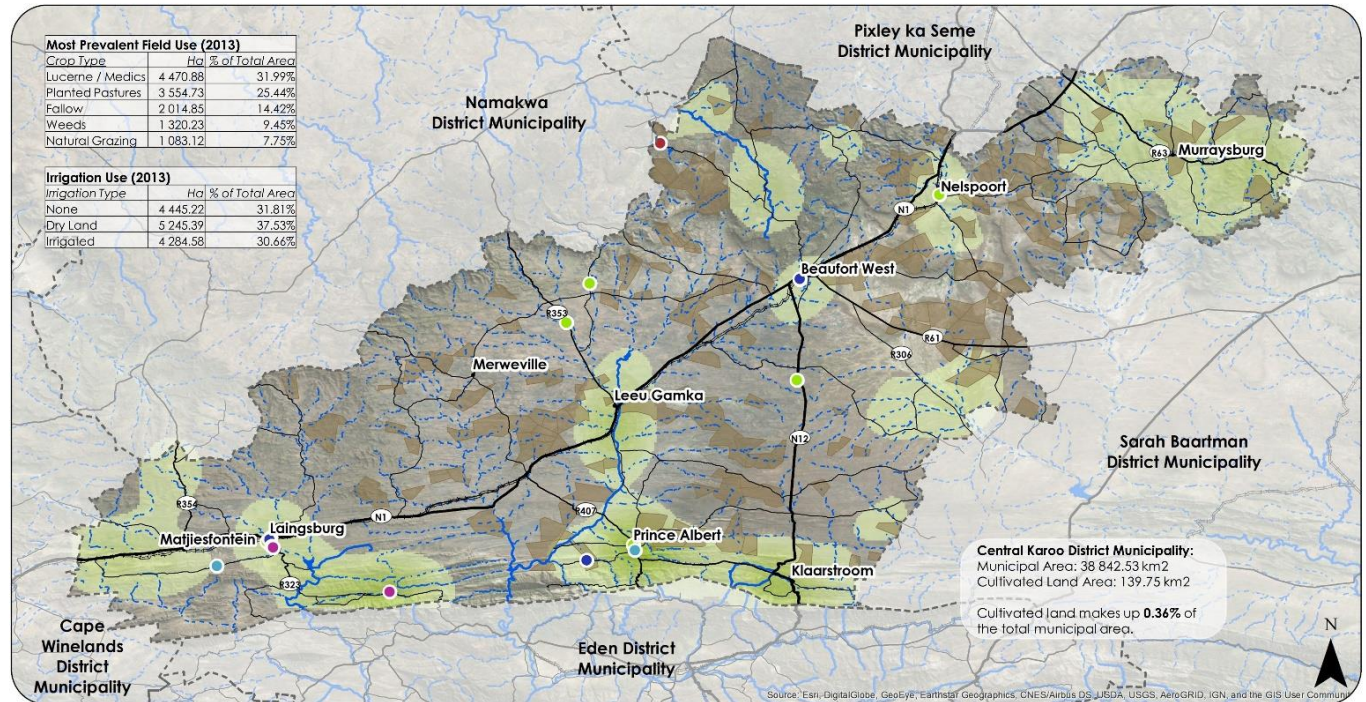
FIGURE 4.14: INDICATING HERITAGE AND SCENIC RESOURCES IN THE MUNICIPALITY

4.2.1.4 POLICY A4: PROMOTE RESILIENT, SUSTAINABLE AGRICULTURE & AGRI-PROCESSING

The Karoo, being a water scarce region, is also a region with constrained yet valuable agricultural production taking place mostly in those areas where rainfall and irrigation is sufficient to sustain it.

Policy A4 Guidelines:

- i. Encourage water-resilient farming practices that enable more efficient and productive use of water.
- ii. Encourage the use of drought-resistance crops and crop hybrids that tolerate drought conditions and use less water.
- iii. Actively and aggressively promote value-add to all locally produced agricultural products in the region.
- iv. Develop, market and enhance the Karoo brand for meat as well as key fruit and vegetable assets.
- v. Ensure farmers in the region are granted the necessary rights and building plans on their farms to promote agri-processing and job creation, but in a way that doesn't undermine Karoo charm and character (i.e. designed well and fitting in well with the landscape).
- vi. Provide the necessary farmer support for drought relief, water use efficiencies and agricultural expansion in the region, with a specific focus on emerging farmers.



Agriculture Activities Map: Central Karoo District Municipality

Road Type

- National Road
- Arterial Road
- Railways
- - - DM Boundaries

Agriculture Activities (From WC Agriculture Census 2013)

Agri-Infrastructure Type

- Dams
- Rivers
- Abattoirs
- Agro Processing Plant
- Chicken Batteries - Broilers
- Dairy
- Packhouse
- Areas of Livestock Production
- Concentration of Cultivated Winter Crop Fields

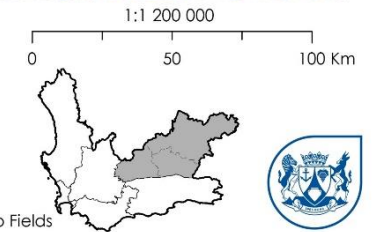


FIGURE 4.15: A HEAT MAP OF AGRICULTURAL ACTIVITIES, AND AGRICULTURAL INFRASTRUCTURE

4.2.1.5 POLICY A5: SUPPORT AND PROMOTE THE RENEWABLE ENERGY ECONOMY

The Karoo region is blessed with significant solar and wind energy – the prerequisites for successful renewable energy projects. The Karoo should leverage this asset to encourage Independent Power Producers to locate in the region, also making the Central Karoo a well-managed and desirable place to locate, if one is connected to this industry. The Proximity of the Central Karoo to the Garden Route is an additional asset in that industry professionals are more likely to locate to these regions if they operate in the solar, wind or gas generation industries.

National government has identified preferred areas or Renewable Energy Development Zones (REDZ's), as well as identified areas for electricity generation. Notwithstanding this, there are vast areas of the Central Karoo outside of these REDZ's that hold potential to generate renewable energy. These areas should not be completely ignored in supporting the future energy resilience of the province and country.

Policy A5 Guidelines:

- i. Actively seek out green energy projects to be located in the region.
- ii. Put in place incentives to encourage green energy operators to locate in the Central Karoo.

4.2.1.6 POLICY A6: SHALE GAS DEVELOPMENT (SGD)

Background

The use of hydraulic fracturing (commonly known as “fracking”) to extract shale gas deposits in the Karoo

Basin is undoubtedly one of South Africa's more contentious proposals in the last decade.

To date, SGD is still only a theoretical proposal within the Karoo Basin. Most notably, there is limited evidence that shale gas reserves can be viably recovered within the Karoo Basin, and estimates of shale gas reserves vary widely.

Considering the dearth of evidence for the Karoo Basin, the extent and viability of these gas reserves, as well as the characteristics of their subsurface environment, can only be known with satisfactory levels of certainty by means of exploration, that is, drilling into the target shale deposits and, if hydrocarbons are encountered, undertaking a limited amount of hydraulic fracturing.

Policy Position / Policy A6 Guidelines:

- i. A key area of concern around shale gas extraction in the Karoo is the potential impact of this activity on ground water resources. All impacts of this activity, on ground water resources specifically, **must** be adequately mitigated if it is to proceed in the Karoo basin.
- ii. Critical Biodiversity Areas, Environmental Support Areas, Protected Areas and areas with valuable aquifers **must** be protected from shale gas extraction or any other kind of environmentally compromising activity.
- iii. Shale gas extraction shall not take place within the Square Kilometre Array (SKA) development and activity restriction buffer as set out in the CSIR Strategic Environmental Assessment for Shale Gas extraction or any such buffer that replaces this.

- iv. Local communities potentially exposed to negative air quality as a result of shale gas extraction and related activities will be protected by an adequate buffer.
- v. Agricultural, tourism, visual and heritage areas that are deemed sensitive to shale gas extraction shall be avoided as per the CSIR's Shale Gas Strategic Environmental Assessment (2017).
- vi. Information gathering and evidence-based policy development remain key priorities for providing relevant information upon which decisions can be taken.
- vii. Natural gas represents a significant opportunity for economic development in the Western Cape (and South Africa as a whole).
- viii. With South Africa focusing on its climate change commitments, natural gas should only be regarded as a transition fuel on the way to a reliance on increased renewable energy generation. The use of natural gas must occur in support of renewable energy, not at the cost thereof, or as an alternative thereto.
- ix. When considering Karoo shale gas as a possible source of natural gas, the following must be considered: the anticipated shale gas drilling costs in South Africa will be significantly higher than those of the United States due to the lack of infrastructure; the remoteness of the gas reserves (i.e. far away from the markets); a lack of drilling technology and expertise; an inadequate institutional context (i.e. regulatory framework, human resources and knowledge capacity); undeveloped markets; and socio-ecological implications, inclusive of latent environmental impacts.

- x. There is inadequate information to support or oppose full or large-scale production of shale gas. The Western Cape Government does however, acknowledge that the need for information necessitates the commencement of exploration.
- xi. The Western Cape Government supports shale gas exploration conducted in a phased manner, with evidence-based decision making. A prerequisite however, is an improved state of readiness of both government and non-governmental stakeholders prior to the commencement of exploration activities. This includes the improvement of the regulatory and broader institutional framework based on the findings of the SEA process. Significant progress has been made in this regard through, for example, establishing a regulatory framework for hydraulic fracturing, although it is acknowledged that a lot must still be done to review and enhance our institutional framework.
- xii. Support for the commencement of exploration activities does not constitute support for the production phase of shale gas development. The need for information is still a primary aim of the exploration phase in understanding the extent of the shale gas resource as well as the receiving environment. Once this information has been considered, an informed (and evidence-based) decision to move into the production phase for SGD can be taken. This is inclusive of the open and transparent consideration of information generated through the exploration phase.
- xiii. Should shale gas prove to be a viable environmentally sustainable source of natural gas, the Western Cape Government will consider both the potential risks and opportunities related to shale gas development, including how these may affect the Karoo environment. The Western Cape

Government is in the process of evaluating its readiness to respond to SGD demands if exploration goes ahead within the Karoo Basin of South Africa.

4.2.1.7 POLICY A7: LAND REFORM SUPPORT POLICY

The following sets out **four criteria** used to identify **Strategically Located Land (SLL)** for land reform in the Central Karoo. These criteria will be generally used to inform the **acquisition** of farms in rural areas for land reform purposes.

1. The farm should fall within the Farmer Production Support Unit (FPSU) catchment area, which indicates its proximity to the nearest town, potential markets and accessibility to the District road network. The FPSU catchment area is defined as being within 60 km of an FPSU.
2. The farm should not contain significant amounts of Spatial Planning Categories (SPC) or Biodiversity Spatial Planning area that indicates it as sensitive or having constraints (i.e. in a core or buffer SPC). Ideally, an Agricultural SPC is the most suitable land for acquisition purposes.
3. The farm should not contain significant amounts of steep slopes (i.e. slopes above 12%).
4. Land ownership determination: ideally, unused or under-utilised state owned land should be considered above private farms, unless these are available for acquisition purposes or are determined to be crucial to settling a land claim for a parcel of land.

4.2.1.8 POLICY A8: CENTRAL KAROO CLIMATE CHANGE ADAPTATION AND MITIGATION POLICY

Drought is perhaps the most severe of the suite of potential climate change impacts for the Central Karoo. Extended periods of drought not only have water-related impacts but biodiversity, infrastructure, food and human health impacts. The Central Karoo will focus deliberately in integrating climate change mitigation (reducing greenhouse gas emissions) and climate change adaptation (creating an environment resilient to the impacts of climate change) into its future growth path in the following ways:

Policy A8 Guideline for Mitigation:

1. Identify and protect primary carbon sinks in the municipal area – relating predominantly to Critical Biodiversity Areas and Environmental Support Areas;
2. Promote walkable settlements with Non-Motorised Transport infrastructure and pedestrian friendly urban design;
3. Promote renewable energy generation and use;
4. Promote green-building principles in new builds and retrofitting of buildings;

Policy A8 Guideline for Adaptation:

1. Identify and protect future flood risk zones, and avoid these areas in new development;

2. Promote water-efficient infrastructure development to reduce urban and rural water use;
3. Identify and remove alien vegetation from water catchments and for fire risk reasons;
4. Promote planting, shade and urban forms that promote urban cooling effects in summer heat waves;
5. Ensure storm water system in urban areas can accommodate flooding conditions effectively;
6. Promote the development of infrastructure that is resistant to increased heatwaves;
7. Ensure local food production systems are resilient to heatwaves and drought;

4.2.2

STRATEGY B: IMPROVE REGIONAL AND RURAL ACCESSIBILITY AND MOBILITY FOR PEOPLE AND GOODS IN SUPPORT OF A RESILIENT ECONOMY

Access to services and the mobility of the poor are two significant concerns in the region. In addition to this, the existing road and rail infrastructure provides access to markets and serves as the life line for the region – providing a potential market that passes through the N1 corridor daily between Cape Town and Gauteng. The Central Karoo must leverage this enormous asset and ensure that it maximises the economic benefits that such a key movement corridor presents.

4.2.2.1 POLICY B1: N1 ROAD AND RAIL CORRIDOR REVITALISATION

The N1 corridor, consisting of a national highway and underutilised but no less important rail asset, currently contributes significantly to the economy of the region (through money spent in towns by passers-by, at petrol stations, farm stalls, bed and breakfasts and related tourism stop-overs). The rail asset is currently underutilised and in the future, could provide important passenger and freight services which the Central Karoo could benefit from, both in terms of connectivity but also people passing through.

The N1 corridor – as a corridor of national importance – must continue to maintain and enhance the excellent road infrastructure of the region but also work must be done to revitalise the passenger and freight rail industries. Government must seek innovative ways to ensure rail is revitalised, even if this means reconsidering the regulation, management and operations of the national rail network – allowing

private operators to operate on government-owned infrastructure, opening opportunities in the economy.

Policy B1 Guidelines

- i. Maintain and enhance N1 road infrastructure quality in the region;
- ii. Revitalise rail corridor for passenger and freight rail;
- iii. Invest in and enhance key rail stations such as Beaufort West, Matjiesfontein and Laingsburg rail way stations.

4.2.2.2 POLICY B2: TOWN IMPROVEMENT PLANS

As part of improving money spent in the region of people passing through it, each town in the region needs to ensure that it creates an environment conducive to attracting passers-by to spend money in these towns. In some instances, beautification programmes could be carried out and in other, infrastructure interventions may be required.

Policy B2 Guidelines

- i. All settlements to carry out basic beautification measures at its entrances and main through-fares, including cleaning and sanitation services, tree-planting (in drought-tolerant species) and investment in public-walkways and main streets, including infrastructure maintenance.
- ii. Investigate low-cost high-impact measures to increase the appeal of settlements for attracting tourists.
- iii. ...

4.2.2.3 POLICY B3: CENTRAL KAROO MOBILITY POLICY

As has been clearly articulated in the Integrated Transport Plan for the Central Karoo as well as the Central Karoo Mobility Strategy (2013), mobility for the rural poor between settlements is a key social support need. Provincial Government and local government must find ways to provide low-cost mobility solutions to ensure people in the region have access to basic services, facilities, education and employment, in line with the Provincial Sustainable Transport Policy.

Policy B3 Guidelines

- i. Lobby Transnet and PRASA to upscale the rural rail service passing through the region (Shosholoz Meyl) to provide a more regular and reliable services to the region.
- ii. Lobby the implementation of the Central Karoo Mobility Strategy, even if a reduced service thereof, to provide the most basic level of accessibility.
- iii. Invest in rural pedestrian safety, non-motorised transport networks and scholar transport safety.

4.2.2.4 POLICY B4: DISASTER MANAGEMENT & RESILIENCE

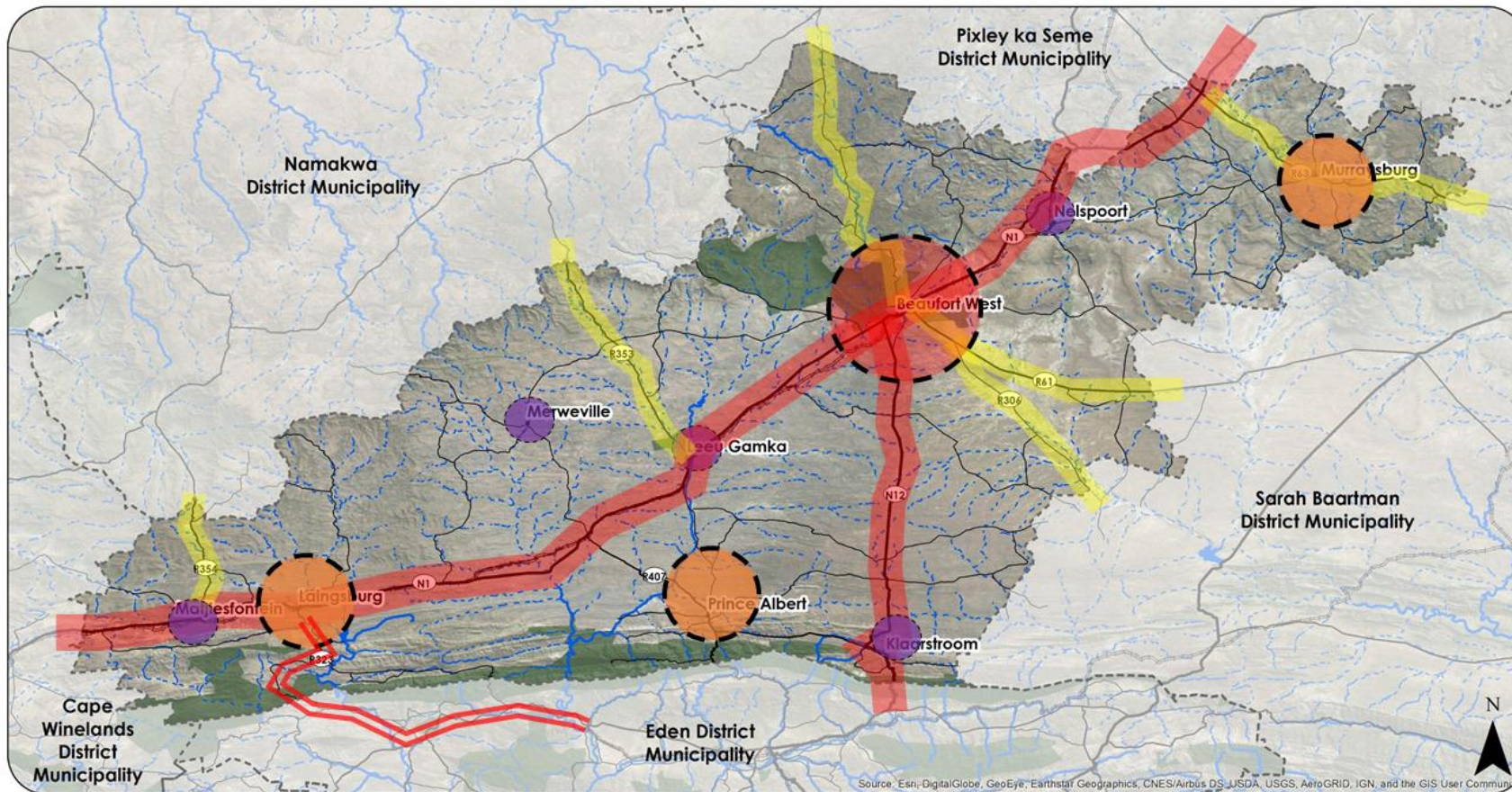
The Central Karoo is an extremely water stressed region. The likelihood of future water-related disaster (both drought and flooding) remains high, particularly in areas that experience population growth pressures or that are located within flood lines. Similarly, mountain areas and urban areas are subject to fire-related risks. The Central Karoo must work to become more resilient and disaster-ready.

Policy B4 Disaster Prevention Guidelines

- i. Develop and implement a water resilience plan, including looking at rain water capture, ground water extraction and water reuse as central to future economic growth and sustainability. A variety of water interventions are required at a range of scales (household,
- ii. Promote water resilient and sustainable agricultural practices that reduce reliance on water as a resource.

Policy B4 Disaster Management and Mitigation Guidelines

- i. Develop disaster management plans that prepare the region for the consequences of drought, flooding and other disaster risks that the region faces, considering the spatial informants as set out in this SDF being – Critical Biodiversity Areas, Environmental Support Areas, 1:50 year flood lines, steep slopes, aquifers and other spatial assets, opportunities and risks in the Central Karoo.



Improve Regional and Rural Accessibility and Mobility for People and Goods in Support of a Resilient Economy

Legend

- Route of National Importance & Priority
- Route of Regional Importance & Priority
- Upgrade linkage between Laingsburg & Ladismith
- Regional Service Centre
- Major Rural Settlement
- Minor Rural Settlement

1:1 200 000
0 50 100 Km

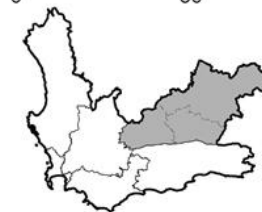


FIGURE 4.16: IMPROVE REGIONAL AND RURAL ACCESSIBILITY AND MOBILITY FOR PEOPLE AND GOODS IN SUPPORT OF A RESILIENT ECONOMY

4.2.3

STRATEGY C: ALLOCATE GOVERNMENT RESOURCES, INFRASTRUCTURE AND FACILITIES IN A MANNER THAT UPLIFTS AND SKILLS PEOPLE AND FOCUSES ON MAXIMISING IMPACT ON THE MOST POSSIBLE PEOPLE, WHILE PROVIDING A BASIC LEVEL OF SERVICE FOR ALL IN THE SETTLEMENTS OF THE KAROO

Government has limited budget, limited capacity to implement and limited land. Therefore, clustering and co-locating facilities and services must be pursued to ensure the maximum utilisation of land and resources.

4.2.3.1 POLICY C1: FACILITY CLUSTERING & DESIGN PROTOCOL

To optimise the use of land, and precious resources, all new facility development must be multi-functional in nature. Facility types such as sports fields and halls must be designed and located in a way that affords different user groups at different times. The principles of space efficiency, multi- functionality and clustering must be applied to all facility provision projects.

In addition to the above, housing provision on the peripheries of large school sites has the potential to firstly reduce the housing backlog and secondly provide much-needed security and passive surveillance on school sites. See Figure xx below which illustrates how

A report by the Department of Transport and Public Works and CSIR titled “An efficient and coordinated future for government offices in the Western Cape: A spatially-enabled accessibility study” may be used as a guiding tool, especially for the placement of social services.

Policy C1 Guidelines:

- i. Ensure all new facility development explore co-locating and clustering as a solution
- ii. Identify land where housing opportunities can be provided around existing schools.
- iii. Ensure facilities are not developed in a land extensive manner.



FIGURE 4.17: HOW EXISTING SCHOOL SITES CAN BE ‘WRAPPED’ WITH DIFFERENT HOUSING TYPOLOGIES TO PROVIDE PASSIVE SURVEILLANCE, OPTIMISE LAND USE AND INCLUDE OTHER PUBLIC FACILITIES (WCG, 2015)

The concept illustrated above can be seen practically applied in the case of Riebeeck Primary School in Belhar, Cape Town, in Figure xx below.



FIGURE 4.18: RIEBEEK PRIMARY SCHOOL IN BELHARM CAPE TOWN, WHERE HOUSING HAS BEEN ‘WRAPPED AROUND’ THE SCHOOL SITE AND THE HALL IS MULTIFUNCTIONAL FOR BOTH SCHOOL AND COMMUNITY USE.

4.2.3.2 POLICY C2: HUMAN SETTLEMENT FOCUS AREAS FOR 2019 – 2024

Based on the population projections and housing numbers, the following are the priority investment area for human settlements, infrastructure and services for the next 5-year period (2019 – 2024):

- i. Priority 1: Beaufort West
- ii. Priority 2: Prince Albert
- iii. Priority 3: Laingsburg

The region must actively desist from providing any more government subsidy housing in areas where there are few to no economic opportunities such as Leeu-Gamka / Bitterwater. This entrenches the cycle

of poverty and create poverty pockets and poverty traps in the Province. Housing must be provided in areas where there is some reasonable prospect of job creation, economic growth and prospects for the children of the Karoo.

Instead, the focus in low growth potential settlements must be to improve skills of the persons living in these settlements, as well as to encourage the development of economic opportunities.

4.2.3.3 POLICY C3: ASSET MANAGEMENT & INFRASTRUCTURE MAINTENANCE POLICY

Assets and infrastructure in the Central Karoo, consistent with national and provincial trends, are under severe strain in part due to historic underinvestment in rehabilitation and renewal, diminishing budgets, aging assets and infrastructure and a focus on the creation of new infrastructure rather than on the maintenance of existing infrastructure.

Given the above, the following sets out the asset management & infrastructure maintenance policy that applies to water and sanitation assets, roads and sidewalks, solid waste, building, storm water, and community facility assets.

Policy C3 Guidelines

The District and local municipalities **must** prepare and implement **Asset and Infrastructure Maintenance Plans** that are responsive to their mandates and responsibilities (or delegated responsibilities):

1. Define **maintenance outcomes** desired per asset / infrastructure class;

2. Identify **all assets** in the Central Karoo District and who is responsible for maintaining (i.e. **develop asset register**);
3. Identify **critical assets** based on the risk and impact of asset or infrastructure failure;
4. Determine the **maintenance options** available and select option that has the lowest life-cycle cost.

Greater detail is available on asset and infrastructure maintenance from various guidelines developed, such as the MFMA Local Government Capital Asset Management Guideline (2008), Guidelines for Infrastructure Asset Management in Local Government (2007) and International Infrastructure Management Manual (2006).

The core objective of this policy is to bring back focus on asset and infrastructure maintenance, in recognition that no further spatial development, or growth, can be accommodated without the commensurate focus on maintaining those assets and infrastructure that underpins existing urban growth and development.

4.2.3.4 POLICY C4: A SKILLED PEOPLE

Many municipalities focus on creating internal skills development plans for employees within the organisation. Beyond this, and arguably a far more pressing need, there exists a clear mismatch between the skill set of the people of the Central Karoo when compared to those sectors of the economy that are exhibiting GDP and employment growth. The trend, as illustrated in section 3.2.8, is that the tertiary sector of the economy makes up over two-thirds of employment opportunities in the economy, and are growing the fastest in relation to new job opportunities. In contrast, manufacturing makes up only 1.6% of all jobs in the economy, which is in

decline. Whilst the primary sector (and agriculture specifically) make up 23% of all jobs in the Central Karoo, these jobs are generally poorly paid, subject to seasonal variation and fluctuation due to the drought conditions of the Karoo.

The Western Cape Government's Apprenticeship Game Changer focuses on identifying the critical occupations for which there is, or will be high demand, but inadequate supply within the **5 priority economic sectors** and implementing a strategy to tackle these shortages.

The main goal of the Apprenticeship Game Changer is to achieve sufficient, appropriately qualified technical and vocational skilled people to meet the needs of prioritised economic growth areas in the Western Cape, which are:

1. Oil and Gas,
2. Agri-processing,
3. Tourism,
4. Energy, and
5. ICT (Broadband).

The Central Karoo will primarily be involved in agri-processing, tourism and energy apprenticeships into the future, with the potential for oil and gas in the medium to long term.

Policy C4 Guidelines:

Based on the above, the Central Karoo should seek ways to upskill persons to:

- Participate in the **tertiary economy** – specifically in **retail, trade, catering and accommodation** (i.e. the **tourism sector**), **business** and **social** services;
- Enter and create employment opportunities in the **secondary (manufacturing) sector** which is

currently barely registering any performance in the region.

- Access the various apprenticeship game changer opportunities that arise.

Although the District Municipality is not functionally responsible for skilling the people of the Karoo, developmentally, this a critical task in fulfilling its objectives to improve the quality of life of the people of the region, and to drive down unemployment as well as create a virtuous cycle of development.

Stakeholders in the tertiary skills, training and further education sectors should be engaged to ensure the youth and adults are able to access training and skills development opportunities to be able to create and take up employment in these sectors of the economy.

4.2.3.5 POLICY C5: A HEALTHY PEOPLE

The region generally has access to adequate health facilities, however key public health concerns relating to the Central Karoo are food security, malnutrition, teenage pregnancy, drug and alcohol abuse, and above-average HIV/AIDS rates. Many of these are linked to deeper-seated socio-economic issues, however there exists a role for public health awareness, training, and various other public health interventions. Whilst it is not the role of an SDF to set out these interventions, it is critical that governmental role-players in this space create the necessary public health interventions in this region to address these issues, as again they are key factors in determining spatial growth and development outcomes for the region.

The Western Cape Government's Healthcare 2030 sets out the health strategy of the Province, which

must be reflected in the Karoo. Some of the priority focus area are:

- 1) Reducing Infectious diseases such as HIV/TB;
- 2) Improving healthy lifestyles;
- 3) Preventing injuries and violence;
- 4) Improving maternal and child health;
- 5) Strengthening women's health;
- 6) Improving Mental Health;

4.2.3.6 POLICY G7C6: POVERTY ALLEVIATION

Poverty alleviation is rooted heavily in improving education outcomes, expanding access to post-school skills and training, growing the local economy and increasing the number and quality of jobs that are available.

The only sustainable way to reduce poverty is by creating opportunities for growth and jobs. This insight informed the Western Cape Provincial Strategic Plan 2009-2014, which sought to shift resources and energy into creating a context for growth and job opportunities without compromising the state's ability to deliver better outcomes in health, education and social development, and while refocusing efforts to promote social inclusion.

Strategically, the region must ensure all its programmes, projects and actions support these goals, rather than undermine them

4.2.4 STRATEGY D: PARTNERSHIP-DRIVEN GOVERNANCE AND ADMINISTRATION TOWARDS IMPROVED FINANCIAL AND NON-FINANCIAL SUSTAINABILITY AND RESILIENCE

The Central Karoo District municipality cannot, alone, address many of the social, economic and environmental issues and opportunities it faces. Indeed, it requires cooperation and partnership not only with other spheres of government, but also partnerships with civic organisations, private sector business and the public at large to comprehensively address many of the challenges.

This section sets out the key policy interventions required to promote partnership-driven governance in support of implementing the Central Karoo's Spatial Development Framework.

4.2.4.1 POLICY D1: SHARED SERVICE CENTRE FOR THE CENTRAL KAROO

The Central Karoo is a sparsely populated region that can greatly benefit from 'bringing together' the experience, capabilities and finances of the 3 local municipalities under a single umbrella shared service centre for a range of functions, no least of which is the planning function as defined in SPLUMA, LUPA and the local municipal planning bylaws. Such shared service centres could also include provincial regional offices and expertise as well, if this is required.

A Shared Service Centre Model for the Karoo was developed in 2012 but not implemented. **This must be implemented as a matter of priority, specifically for the Planning function, but not exclusively so. All municipalities must budget for this action as a matter**

of priority. There is simply no longer an option to 'do nothing'.

4.2.4.2 POLICY D2: INTEGRATED PLANNING, BUDGETTING AND IMPLEMENTATION

The Western Cape Government, together with the municipalities of the Western Cape, has implemented an Integrated Work Plan with the intention that all of government plan, budget and implement in a more coordinated, integrated and sequenced manner.

The various platforms and engagements each have their own purposes, however it should be noted that these are the engagements through which integrated planning, integrated budgeting and integrated implementation are reported on and should take place. The Central Karoo DM should use these forums to ensure the implementation of the Integrated Development Plan and Spatial Development Framework.

Various annual engagements are set out in the Integrated Work Plan (2018), as shown in Figure xx, which in short are:

- **Provincial Strategic Planning** in **July** – ensuring provincial alignment at the strategic label;
- **PTM & MM engagement** in **September** – ensuring provincial and municipal planning engagement over strategic planning alignment;
- **Integrated Municipal Engagements** (IDP Indaba 1) in **October / November** – ensuring strategic and technical alignment between provincial government and municipal government;
- **PGMTEC 1 & 2** in **November** and **January** for provincial budget alignment; and

- **LGMTEC engagements** in **April / May** to ensure municipal budget alignment.

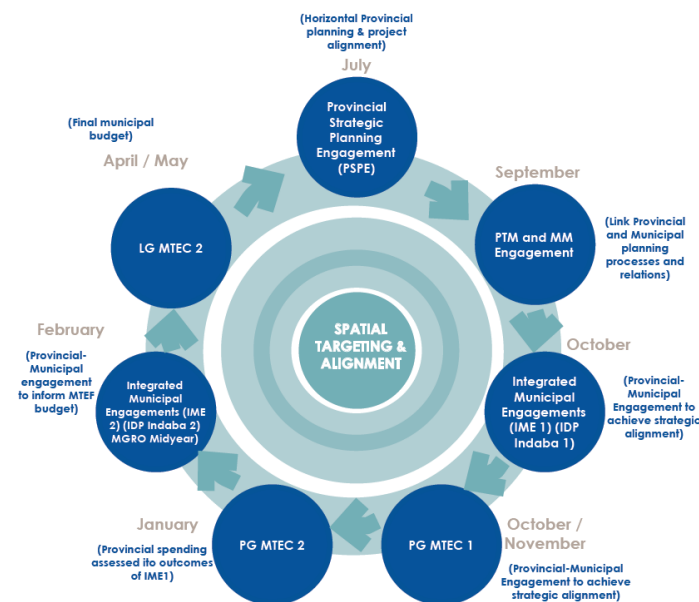
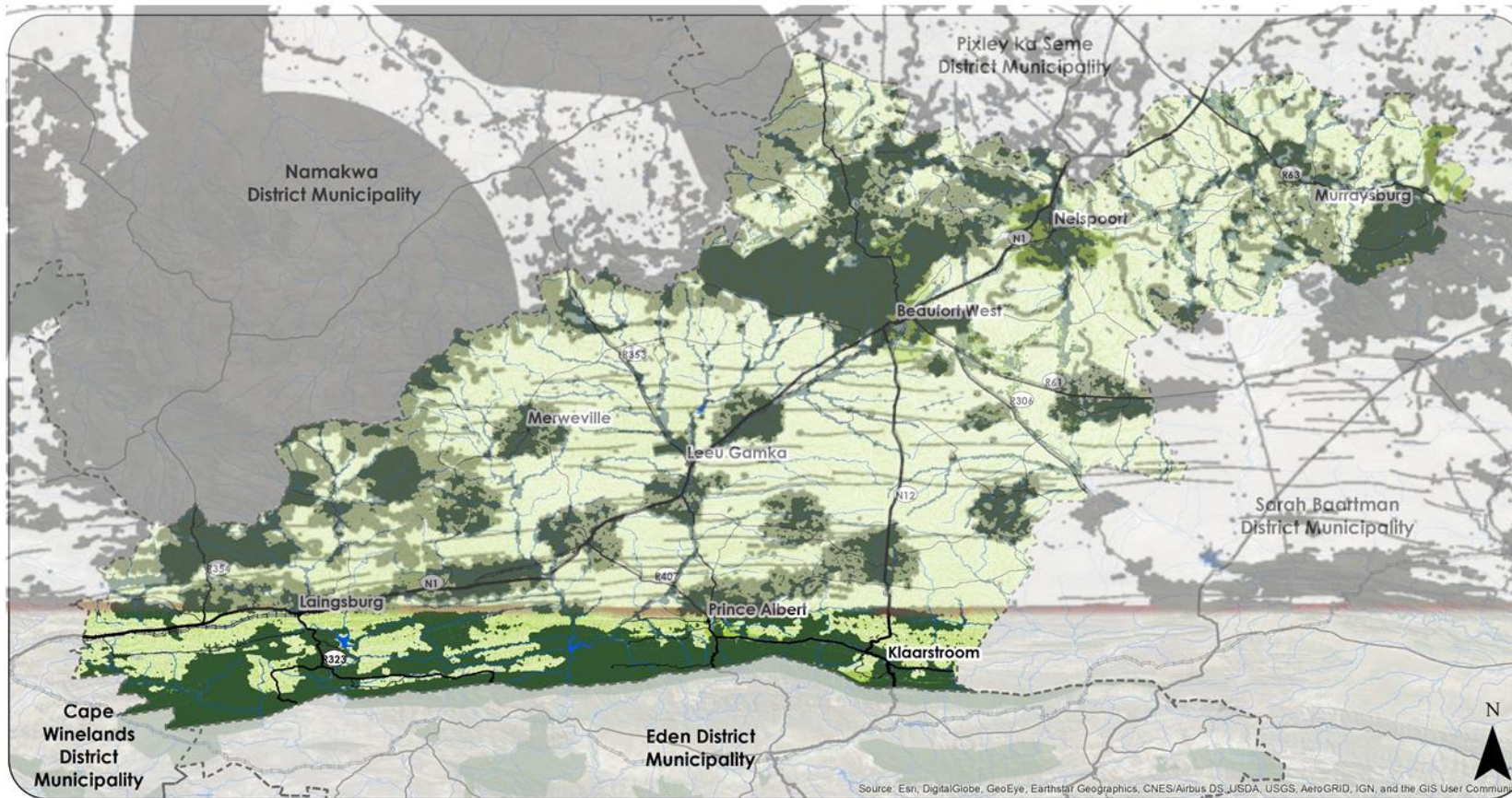


FIGURE 4.19: THE INTEGRATED WORK PLAN AS SEEN AS AN ANNUAL CYCLE

4.2.5 Municipal wide composite map



Biodiversity Planning Land Use Map: Central Karoo District Municipality

Road Type

- National Road
- Arterial Road
- Secondary Road
- Railways
- - - DM Boundaries
- Dams
- River

Biodiversity Spatial Planning Categories (SPCs)

- SPC Core 1
- SPC Core 2
- SPC Buffer 1
- SPC Buffer 2
- Exclusion areas for Phase 1 Exploration for Shale Gas Extraction (as per Shale Gas Strategic Environmental Assessment, CSIR, 2017)

1:1 200 000
0 50 100 Km

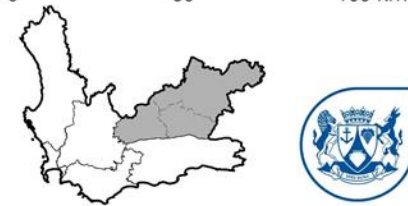


FIGURE 4.20: COMPOSITE SPATIAL DEVELOPMENT FRAMEWORK FOR THE CENTRAL KAROO INDICATING SPATIAL PLANNING CATEGORIES