



Bergrivier Municipality Draft Spatial Development Framework 2024 – 2029 Draft Version 1, October 2023

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CHAPTER 1: Bergrivier MSDF Purpose, Principles and Legislative Context

This chapter states the purpose of the Municipal Spatial Development Framework (MSDF) and detailed the principles required to achieve the desired spatial form proposed in the MSDF.

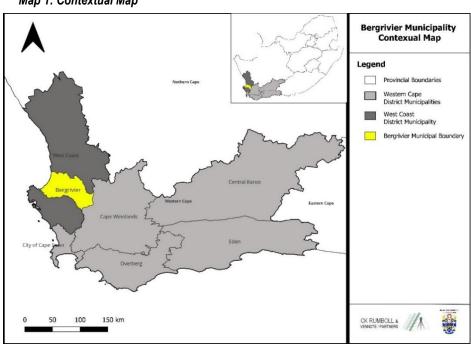
1.1 Purpose

The purpose of the Bergrivier Municipal Spatial Development Framework (MSDF) is to guide growth and development in the Bergrivier municipal area in a sustainable manner. Hence, future growth, development and land use planning will embrace the spatial vision and principles to protect and develop integrated, sustainable settlements and liveable environments, and enable economic and social prosperity. This rewritten version of the Bergrivier MSDF is for the 2024 – 2029 period and builds on the Bergrivier MSDF 2019 – 2024.1

1.2 Spatial Context

Bergrivier Municipality (WCO13) is located along the West cost of the Western Cape. Bergrivier and four other municipalities (Cederberg, Matzikama, Saldanha and Swartland) are part of the West Coast Region under the jurisdiction of the West Coast District Municipality.

The Municipality covers a geographic area of 4 407.04 km² which represents 14% of the West Coast region. The Municipality is geographically diverse and includes 7 proclaimed towns and 2 church settlements, approximately 40 kilometers of coastline, two RAMSAR sites and a vast rural area.

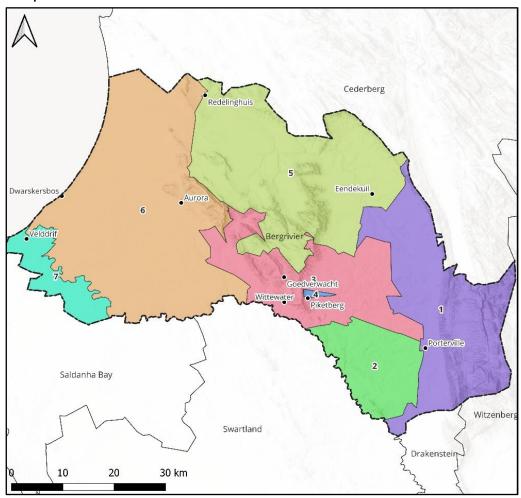


Map 1: Contextual Map

¹Scope of Work: SPLUMA Section 12 and SMA Section 24 (1) and 26 (e)

The municipality is divided into seven (7) wards which include the towns and settlements of Piketberg the administrative capital, Porterville, Velddrif/Laaiplek., Dwarskersbos, Eendekuil, Aurora, Redelinghuis, Goedverwacht and Wittewater (IDP, 2022).

Figure 1: Municipal Wards



Ward 1	Porterville, Voorberg, Rural areas north of Porterville.			
Ward 2	Monte Bertha (Porterville), Rural areas south of Porterville.			
Ward 3	Western & Southern portions of Piketberg, De Hoek, Wittewater and			
	Goedverwacht.			
Ward 4	North-eastern portion of Piketberg.			
Ward 5	Western and southern portions of Eendekuil, Redelinghuis and Genadenberg.			
Ward 6	Aurora, Noordhoek, Dwarskersbos and rural areas between these settlements.			
Ward 7	Velddrif, Port Owen and Laaiplek.			

1.3 Structure of the Bergrivier MSDF Document

The Bergrivier MSDF provides the municipality with the necessary tools for the effective management of future development to ensure that development is balanced, sustainable and creates socio-economic opportunities. The document comprises the following chapters:

Chapter 1: MSDF Purpose, Principles and Legislative Context

Chapter 2: Spatial and Sectoral Plan Analysis and MSDF Review

Chapter 3: Land Demand, Supply and Settlement Development Guidelines

Chapter 4: Issues, Vision and Goals

Chapter 5: Settlement Proposals

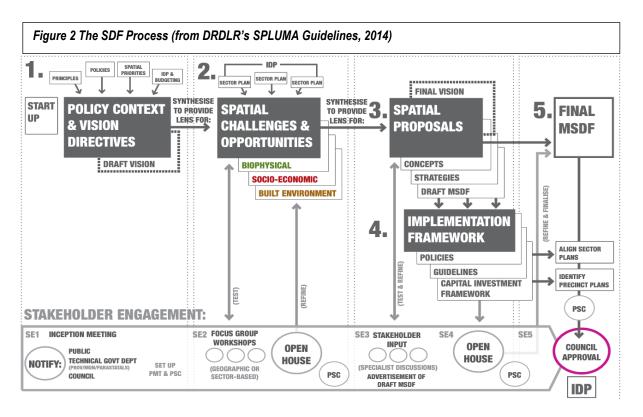
Chapter 6: Rural and Regional Cross-Border Proposals & Environmental Management

and Climate Mitigation Framework

Chapter 7: Implementation Plan and Capital Expenditure Framework

1.4 Bergrivier MSDF Status, Process and IDP, National & Provincial Policy Alignment

The diagram presented below provides a general overview of the steps involved in the preparation of an Municipal Spatial Development Framework (MSDF). This MSDF process can be broadly divided into five phases. The initial two phase primarily focuses on getting structures in place to support the MSDF development followed by an analysis, establishing the current state of spatial aspects within the municipal area. The subsequent two phases are characterized by conceptualising the desired spatial form, the formulation of definitive guidelines and defining proposals for settlements and rural areas that embody policy



decisions and the desired spatial form. An implementation framework and capital budget as well as framework gets developed after government departments and public comments were received. The final phase is getting the SDF print ready after presenting it to Council for adoption. Bergrivier Municipality had an Intergovernmental Project Steering Committee (IGSC) guiding the compilation of the MSDF, as required by the Land Use Planning Act (LUPA) together with a project steering committee (PSC). The process is documented below.

Phase		Overview	Important Dates
1	. Policy Context & Vision Directives	Project Initiation, Stakeholder registration and establishing an IGSC on receipt of departmental nominations.	April 2023.
2	 Spatial Challenges and Opportunities & Council Status Quo presentation 	Compilation of comprehensive assessment, including the review of government plans and policies, an analysis of challenges and opportunities related to four key themes (biophysical, socioeconomic, built environment, and institutional). Comments from citizens and department and interest groups regarding community and municipal issues. Compilation of Status Quo.	Mid-June 2023.
3	S. Spatial Proposals & Public Participation	Creating a spatial concept for future development and management of MSDF area, derived from key challenges and opportunities. Compilation of settlement and rural proposals. Obtaining comments from IGSC on Draft MSDF. Invite public to comment and contributions.	August 2023 – October 2023 & November 2023 – January 2024.
4	. Implementation Framework	Amendment of Draft SDF informed by issues and comments report supported by IGSC. Compilation of what capital requirements are and what money is available, Compilation of implementation framework and Council presentation.	February 2024 – March 2024
5	5. Final MSDF	Final presentation to Council.	April 2024

The Bergrivier MSDF, 2024 -2029, will be adopted as core component of the 5th generation Bergrivier IDP, 2023 – 2027 (MSA Section 26(e)). The rewrite of the SDF included the review of the next five-year cycle MSDF projects and 20-year development plan and its alignment with the Capital Expenditure Framework of Bergrivier Municipality. (MSA, 2000).

In accordance with Section 3(1) of the Bergrivier Municipality: By-Law on Municipal Land Use Planning, 11 December 2020 and the the Municipal Systems Act (MSA) (Act 32 of 2000) the Bergrivier MSDF was prepared as part of the municipal IDP. SLUMA (Act 16 of 2013) Section 12, 20 and 21 and LUPA (Act 3 of 2014) Sections 10 – 14 and Sections 3 - 10 of the Bergrivier Municipality: By-Law on Municipal Land Use Planning, 11 December 2020 guides the content of and procedure to follow to compile or amend an MSDF. The approval or adoption of this MSDF will be undertaken in accordance with Section 10 of the Bergrivier Municipality: By-Law on Municipal Land Use Planning, 2020.². According to Section 21 of SPLUMA (Act 16 of 2013) and Section 10 (2) of LUPA (Act 3 of 2014), MSDFs have to be <u>aligned with different national</u>, <u>provincial and local legislation</u>, policies³ and strategies which provide a spatial planning agenda.

²Scope of Work: SPLUMA Section 12; MSA Section 24 (1) & 26 (e)

³National Policy Context: SPLUMA Section 12(5) and Section 7e(ii) & Municipal Policy Context SPLUMA Chp4, Section 12.1, Sec 20(2) and Sec 7(e)(ii)

National Provincial Local

Delitical Mandata	NDD 0000	HIDE 2040	WORCDD 2044	Bergrivier	
Political Mandate	NDP 2030	IUDF 2016	WCPSDP 2014	MSDF (proposed)	IDP
	Pol	itical Theme & SPLUMA & LU	PA Principle: Jobs & Opportunities, Spatia	l Justice	
 Infrastructure-led growth. EPWP expansion. LED one stop shops, prioritise job- creation, partner local business. Implement taxi & bus services. Provide a range of housing topologies. Ownership transferred. Connect communities to internet. 	 Economy & Employment (No 1). Infrastructure (No 2). Inclusive rural economy (No 4). Local vs. SA (No 5). 	Integrated urban planning and management (No 1). Integrated transport and mobility (No 2). Inclusive economic development (No 6).	Housing: Effective approach to integrated human settlements and improved living conditions of all households. Safeguard inland and coastal water resources and manage the sustainable use of water (R2). Safeguard the Western Cape's agricultural and mineral resources, and manage their sustainable use (R3). Diversify and strengthen the rural economy (E2). Revitalise and strengthen urban space economies as the engine of growth (E3). Improve inter and intra-regional	Grow economic prosperity (Obj 1) [Economic Environment].	SG3: To improve the regulatory environment for ease of doing business. SG3: To facilitate an environment for the creation of jobs. SG3: To improve transport systems and enhance mobility of poor isolated communities in partnership with sector departments. SG3: To alleviate poverty.
			accessibility (S2).		
		•	Responsive Local Government – Efficiency &		
 Graduate recruitment appointments. Access drug addiction treatment. 	- Building capable state (No 11).	Efficient land governance and management (No 5). Empowered active communities (No 7). Effective urban governance (No 8). Sustainable finance (No 9).	Protect biodiversity and ecosystem services (R1). Recycle and recover waste, deliver clean sources of energy, shift from private to public transport and adapt to and mitigate against climate change (R4). Safeguard cultural and scenic assets (R5).	Protect and grow place identity and cultural integrity (Obj 4) [Built Environment]. Protect ecological and agricultural integrity (Obj 5) [Biophysical or Natural Environment].	SG3: To be responsive to the developmental needs of the communities.
Political Theme & SPLUMA & LUPA Principle: Better Service Delivery - Efficiency & Spatial Sustainability					
 Maintain roads (potholes). Access to electricity, water & sanitation. Regular maintenance of infrastructure. 	 Improve education, training & innovation (No 7). Health care for all (No 8). 	Integrated transport and mobility (No 2). Integrated Urban Infrastructure (No 4). Inclusive economic development (No 6).	Use regional infrastructure investment to leverage economic growth (E1).	Sustain material, physical and social well-being (Obj 3) [Social Environment]. Grow economic prosperity (Obj 1) [Economic Environment].	SG2:To develop and provide bulk infra-structure. SG2: To maintain existing bulk infrastructure and services.

	Political Theme & SPLUMA & LUPA Principle: Stop Corruption - Good Administration				
 Effective systems: complaints processing. Staff appointed: add value. Exclude councillors from recruitment. Open tender adjudication. Open council meetings. 	- Fighting Corruption (No 12).	Efficient land governance and management (No 5). Empowered active communities (No 7). Effective urban governance (No 8). Sustainable finance (No 9).	Protect, manage and enhance sense of place, cultural and scenic landscapes (S1).	Protect and grow place identity and cultural integrity (Obj 4) [Built Environment].	SG1: To create an efficient, effective, economic and accountable administration. SG1: To provide a transparent and corruption free municipality.
			PA Principle: Meaningful redress – S	•	
Inclusive amenities & spaces.Reliable public transport.	Environmental resilience (No 3).Transform	Integrated urban planning and management (No 1). Integrated transport and	Promote compact, mixed use and integrated settlements (S3). Balance and coordinate the	Proximate, convenient and equal access (Obj 2) [Economic	SG4: To promote a safe environment for all who live in Bergrivier Municipality.
 True B-BBEE. Urban planning integrates communities & levels of income. 	settlements (No 6) Nation Building (No 13).	mobility (No 2). Integrated sustainable human settlements (No 3).	delivery of facilities and social services (S4). Promote sustainable, integrated and inclusive housing in formal	Environment].	SG4: To promote healthy lifestyles through the provision of sport and other facilities and opportunities.
	,		and informal markets (S5).		SG3: To alleviate poverty.
	Politica	Theme & SPLUMA & LUPA P	rinciple: Making Communities safer –	Spatial Resilience	
Prevention units: gang & drugs.Law enforcement service:	Social protection (No 9).Safer	Empowered active communities (No 7). Effective urban governance	Promote compact, mixed use and integrated settlements (S3). Balance and coordinate the	Sustain material, physical and social well- being (Obj 3) [Social	SG4: To promote a safe environment for all who live in Bergrivier Municipality.
traffic & crime.	Communities (No 10).	(No 8).	delivery of facilities and social services (S4).	Environment].	SG4: To promote healthy lifestyles through the provision of sport and other facilities and opportunities.
					SG5: To create innovative partnerships with sector departments for improved education outcomes and opportunities for youth development.
					SG1: To communicate effectively with the public.

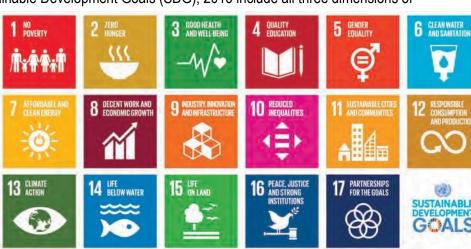
1.5 Legislative Directives

Several national acts, policies and frameworks provide spatial directives which enable Municipalities to guide development and to focus capital expenditure.⁴. The following are of particular relevance:

International policy:

The United Nations' Sustainable Development Goals (SDG), 2016 include all three dimensions of

sustainable development
– social, economic and
environmental. The
SDGs should benefit all –
eradicating poverty and
reducing inequalities.



The New Urban Agenda

(NUA), 2016 aim for city sustainability and responds to the growth of cities and their spatial, social, cultural and economic inequalities. SDG 11, aims to: make cities, communities and human settlements inclusive, safe, resilient and sustainable. The NUA Implementation Framework promotes effective planning and design dependent on the principles of connectedness, inclusivity and resilience and calls for appropriate planning and design processes contributing compact urban footprint, agricultural and natural protection areas, preventing unwanted urban sprawl, and strengthening urban-rural linkages.

The Habitat III Issue Papers, No 10 – Urban-Rural Linkages, 2016 stress that "urban and rural areas depend on each other. Urban centres depend on the rural area for a range of goods and services, notably food, clean water, environmental services, and raw materials among others. Rural areas in turn depend on urban areas for access to services, employment opportunities, and markets. The role of small and medium sized towns, is integral, as they frequently provide a bridge between rural dwellers and urban centres, strengthening economic opportunities, providing a market and access to basic services. Rather than competing for scarce resources, trade-offs from sustainable, balanced investments should be managed to achieve a shared vision and destiny.

The NUA acknowledged the International Guidelines on Urban and Territorial Planning (IG-UTP), 2015 and has one goal: improving policies, plans, designs and implementation processes leading to more compact, socially inclusive, better integrated and connected cities and territories that foster sustainable urban development and are resilient to climate change.

⁴ National Policy Context: SPLUMA Section 12(5) and Section 7e(ii)

The International Framework for the Evaluation of Sustainable Land Management (FESLM) (1993) drives for sustainable agriculture by combining technology, policies and activities to integrate natural resources with socio-economic principles of: Productivity, Security, Protection, Viability and Acceptability.

National Laws and Policies:

The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA) provides for the conservation of the natural agricultural resources of South Africa by the maintenance of the production potential of land and it promotes the conservation of the soil, the water sources and the vegetation.

The National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) calls for development to be socially, environmentally and economically sustainable as the environment is held in public trust for the people; the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage. The Act provides for a framework for integrating good environmental management into all development activities.

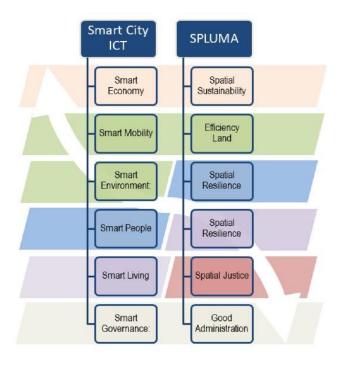
The Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (SPLUMA) provided for a three-sphere system of integrated planning at the national, provincial and municipal level. The role of municipalities as the authorities of first instance has been re-affirmed and the Act allows for the creation of Provincial Legislation and Municipal By-laws.

The 2012 National Development Plan (NDP) envisaged by 2030 a united South Africans, unleashing the energies of its citizens, growing an inclusive economy, building capabilities, and enhancing the capability of the state and leaders working together to solve complex problems. To by 2030 eliminate income poverty and reduce inequality, the NDP's sets spatial priorities Urban and Rural Transformation; Improving Infrastructure' Building Environmental Sustainability and Resilience.

The 2016 Integrated Urban Development Framework (IUDF) steers urban growth towards a sustainable model of compact, connected and coordinated towns and cities and provides a roadmap to implement the NDP's vision for spatial transformation – creating liveable, inclusive and resilient towns and cities while reversing apartheid's spatial legacy. To achieve the vision, the IUDF sets four strategic goals promoting Spatial integration, Inclusion and access to social and economic services, opportunities and choices, Inclusive, sustainable economic growth and development and Governance. Good infrastructure should enhance socio-economic development by providing access to urban markets, health and education facilities, and employment opportunities. Furthermore, road and rail infrastructure should link local farmers to food processing industries. National and provincial governments, working with local government, should invest in the development of good transport networks (road and rail) and ensure the alignment of Strategic Infrastructure Projects (SIPs) with other major transport investments. Promoting access to ICT infrastructure (such as fast broadband and mobile coverage) in both urban and rural areas is also critical in improving rural-urban linkages.

The Smart City Initiatives promotes **Smart Economy**, boosting economic development establishing and enhancing hubs, incubators and development precincts; Smart Mobility: enhancing reliability, convenience and efficiency of traditional transport using of big data, machine learning and sensors; Smart Environment: retrofitting buildings for energy and water efficiency and generation and use of smart meters to monitor usage; Smart People using ICTbased technologies to communicate with authorities; Smart Living improving settlement liveability and ease access to public WiFi, surveillance to reduce crime, improving walkability, and providing leisure and fitness facilities in public open spaces and Smart Governance use technology to support decision making and deliver improved services to the public.

Figure 3: SMART City Information and Communication Technology (ICT) outcomes vs SPLUMA principles



The National Strategy for Sustainable Development and Action Plan 2011 – 2014 (NSSD 1) defined sustainability in a South African context:

- a sustainable society implies ecological sustainability and recognises that maintaining healthy
 ecosystems and natural resources are preconditions for human wellbeing. It recognises there are
 limits to the goods and services that can be provided.
- Sustainable development is achieved by selecting and implementing a development option, which
 allows for appropriate and justifiable social and economic goals to be achieved, whilst meeting of
 basic needs and equity, without compromising natural system.

The Rural Land Use Management and Regulatory Guidelines for South Africa (2019) provides the necessary guidance in the definition of rural areas, framing of desired rural spatial planning outcomes and facilitate interaction between the various spheres of government in achievement of such outcomes.

The Guideline on Need and Desirability (2017) promotes information on best practice and how to meet the peremptory requirements prescribed by the legislation for the consideration of the need and desirability of a development involving any one of the NEMA listed activities. Hence sustainable development, that is ecologically sustainable and socially and economically justifiable – and ensuring the simultaneous achievement of the triple bottom-line is the focus.

The National Spatial Development Framework, 2018 (NSDF) drives the Post-Apartheid Spatial Development Pattern. It recognize the need to develop and strengthen regional-rural, 'regional development anchors' in rural areas, to (1) connect urban to rural areas in mutually-beneficial ways, and (2) act as catalysts for

regional-rural development, 'polycentric rural service-delivery network' around regional developments anchor and carefully selected 'rural service towns', to provide quality public services, and ensure far greater levels of rural-to-rural interaction and local economic development, 'rural edges' in rural areas to ensure the protection of (1) the unique, intrinsic qualities of our rural areas, (2) their cultural, customary and historical value, and (3) the often highly sensitive ecosystems they harbour, pursuing intra-rural trade and greater resilience of rural areas through diversification avoiding 'single economic sector' places.

The Small-Town Regeneration (STR) Programme aimed at regeneration, restoration and fulfilling the economic potential of underperforming small towns. It looks for ways to strengthen small town economies; provide better quality of life; and build and leverage on local assets. It acknowledges that regional connectivity and economic value chains are the main conduits that enable economic development on a larger scale. Understanding the economic regions presents opportunity for cross boundary municipal collaboration, cooperative spatial governance and joint planning to achieve a shared economy.

Provincial Laws and Policies:

The PSDF builds on the complementary national and provincial development agendas of the NDP and OneCape2040 to promote three spatial themes: resources, space economy and settlement embedded in Spatial governance. The PSDF serves to guide the location and form of public investment in the natural and built environment, so that the returns on these investments are consistent with the Province's development objectives.

Land use planning principles set out in SPLUMA and the Western Cape Land Use Planning Act, 2014 (Act 3 of 2014) (LUPA) apply to all organs of state responsible for the implementation of legislation regulating the utilisation and development of land and guide spatial development frameworks, zoning schemes or any policy concerning land use planning, any steps to ensure sustainable development and the consideration of applications that impacts on the utilisation and development of land.

The Provincial Strategic Plan (PSP) sets out the Western Cape Government's vision and strategic priorities. The WCG remains committed to building an "Open-opportunity Society for All" in the Province. The PSP follows a "whole-of-society" approach in which citizens, civil society and business actively partner with the state – encapsulated in the Western Cape Government's "Better Together" slogan. The PSP commits South Africa to ending poverty by 2030 and the longer-term OneCape 2040 vision of "a highly skilled, innovation-driven, resource-efficient, connected, high-opportunity society for all". The PSP underpins the six core values of the WCG: Caring, Competence, Accountability, Integrity, Innovation and Responsiveness.

The Provincial Biodiversity Strategy and Action Plan (PBSAP) aligns with the National and Provincial Medium Term Strategic Frameworks 2014-2019, the National Biodiversity Strategy and Action Plan (NBSAP), 2015-2025. It integrates South Africa's obligations under the Convention on Biological Diversity into the provincial context. The PBSAP is a strategic framework which prioritises and co-ordinates the collective efforts of

stakeholders to ensure that biodiversity and ecological infrastructure is optimally conserved, sustainably utilised; and that benefits are equitably shared.

The SmartAgri Plan, the Western Cape Climate Change Response Framework and Implementation Plan for the Agricultural Sector (2016) builds on the Western Cape Climate Change Response Strategy (2014) and its Implementation Framework, specifically the focus area of "Food Security". It also aligns closely with the WCG.

1.6 Values and Performance Qualities

Planning shifted from separate development and modernism (with its basis of functionalism) to human and nature-centred approaches to settlement making. Such settlements are scaled for pedestrians (neither pedestrians nor vehicles dominate); are compact (with high building densities); are integrated; have composite parts which reinforce each other; have a strong spatial feel with well-defined public spaces and have complex spatial structures offering choices i.t.o. intensity of interaction, privacy of living conditions, lifestyles, housing options and movement systems (physical, social and economic integration). Well-performing settlements and regions have the qualities of Liveable Environments and Sustainable Settlements. These performance qualities are defined and described below and reference is made to the SPLUMA principle each quality represents:

Definition Liveable Environments:

A liveable settlement satisfies more than the basic needs of a community as the individual as well as the community's needs for social facilities and health facilities are met. Quality of life is key. (Van Kamp et al, 2003). (Social Justice)

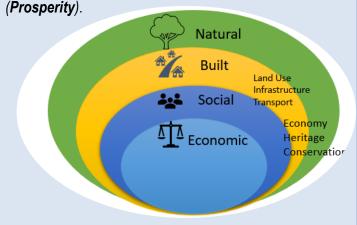
Features and qualities

Liveable environments are recognized by the present relationship between people and their settlements and features economic growth, accessibility and Place identity. (Resilience)

Sustainable Settlements:

- Are Well-managed entities in which economic growth and social development are in balance with the carrying capacity of the natural systems on which they depend for their existence and result in sustainable development, wealth creation, poverty alleviation and equity (Department of Local Government and Housing, 2005). (Sustainability)
- Improve the liveability of settlements by reducing the impact on the environment through reduced use of resources and the generation of less waste (Efficiency).

Present the future relationship between **settlement and environment and features**. Ecological integrity (Planet), Social justice (People) and Economical effectiveness (Presentity)



1.6.1 Spatial Elements of Settlements and Regions

Settlements are structured spaces that facilitate the interplay between a) formally planned development (assigned land uses and corresponding engineering services) and spontaneous development (settlement plans which accommodate uncertainty and change) as well as b) public environments, shared by all inhabitants, vs. private realms of individual households. The spatial elements of regions are topography (form), cultivation and landscape and man-made elements that include road networks and settlements, as described below:

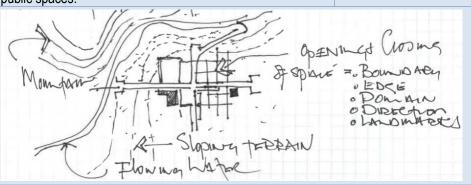
Space, built and natural

At settlement level

- Lie at the heart of a non-programmatic approach to settlement making, not just one element or space e.g. public open space, but part of the whole.
- Characterised by diversity, different spaces on continuum of public to private, there is a structural order.
- Public spaces in settlement are meeting places of people, comprising of urban "rooms" and "seams" of connectivity. There is a degree of both publicness and privacy.
- A continuum or hierarchy of public spaces and movement systems, which attract and give order to activities, events and elements in accordance with their need for publicness or privacy. Considering roads as public spaces.

At regional level

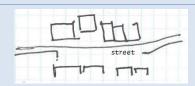
- Delineated and merged landscapes which are characterised by conservation, cultivation and nature.
- Mountains and Fynbos ecosystems, Rivers and Freshwater ecosystems, Wetlands, Formal and Informal Conservation areas, Arable land.

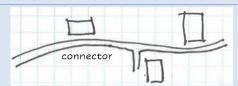


At settlement level

Institutions (public amenities) At regional level

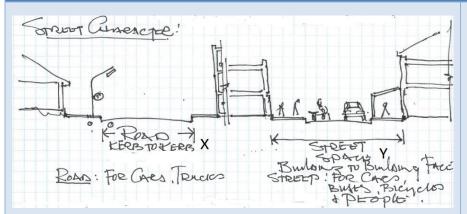
- Institutions most valued by society, i.e. institutions of learning, worship, exchange, markets, serve as structuring elements.
- Their location determined the location of other more private uses. Most important public institution today is the open or social space. Location of institutions in relation to other elements of structure is of critical importance (central places, easily accessible i.t.o movement patterns, announced by public space).
- Abutting institutions give unique character and often attract informal activities.





Connection including networks and systems

At settlement level

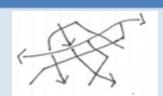


Refers to movement of all kinds, including fixed line systems e.g. roads, light and heavy rail, underground rail, pedestrian and bicycle routes, public and private transport systems.

Movement system is a network of spaces through which people move whilst allowing for the public life of a community.

At regional level

- Movement system and movement or circulation network; linear spaces connecting settlements.
- Movement Infrastructure includes Main Routes, Railway line and Stations between and within settlements.
- Movement of people, goods and services are channelled along specific routes.



Regional

Utility services (engineering services)

Refer to engineering services that are essential services for settlements to function and to maintain public health and include water provision, sewage removal,

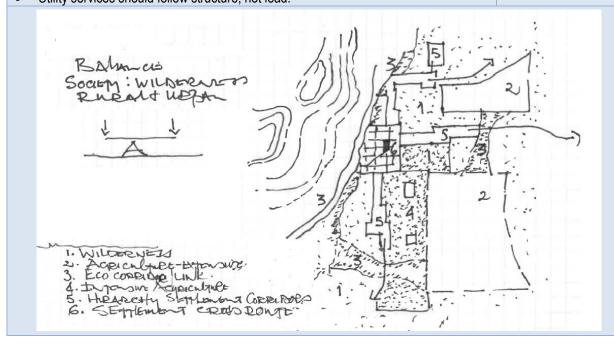
stormwater disposal, solid waste removal and electricity supply.

Should be provided as efficiently and cost-effectively as possible, taking due

cognisance of human and nature centred approach to settlement making.

• Utility services should follow structure, not lead.

Refer to bulk services that are essential to functioning of regions (area) e.g. solar farms.



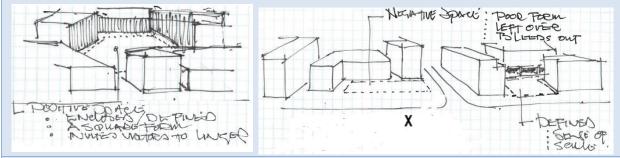
1.6.2 Structural Tools: Measures and SPLUMA Principles

Settlements demonstrating desirable spatial element qualities are scaled for pedestrians (neither pedestrians nor vehicles dominate); are compact (with high building densities); are integrated and composite parts reinforce each other; have a strong spatial feel with well-defined public spaces and have complex spatial structures offering choices i.t.o. intensity of interaction, privacy of living conditions, lifestyles, housing options and movement systems.

The application of four spatial measures is central to the use of space to create positive settlements: definition, scale, flexibility and intensity. Each spatial measure consists of two opposite measures or structural tools as per the table below:

Spatial Measures

<u>Definition</u>: In positive environments, public open spaces are defined by buildings and other space defining elements such as walls and landscaping. The elements create a feeling of enclosure in contrast with free standing elements in a shapeless sea of space.

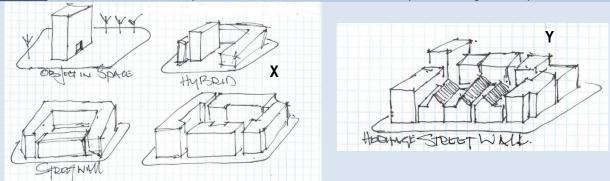


Structural Tools: Continuity and Discontinuity (Containment).

<u>Scale</u>: Refers to the relationship between size, distance and height. "Human Scale" is a norm for all development planning.

<u>Structural Tools</u>: Externalization and Localization.

<u>Flexibility</u>: Refers to the creation of spatial structures that accommodate unexpected change over a period of time.



Structural Tools: Same and Different (Homogeneity and Heterogeneity).

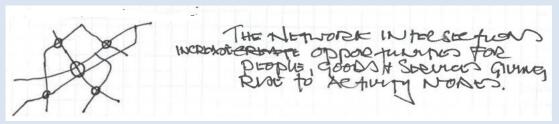
Intensity: Refers to the creation of:

- high level support for economic and social goods and services to prosper economic activities.
- the conditions for sustainable public transport systems,
- effective infrastructure use, improved land use, contributing to compact urban areas, reduced transportation and energy use as well as the reduction of pollution.

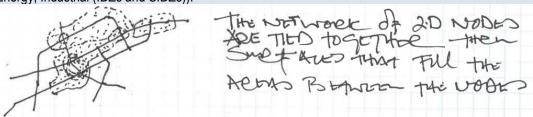
Structural Tools: Denseness and Sparsity (Openness).

The application of structural tools creates man-made spatial elements e.g.

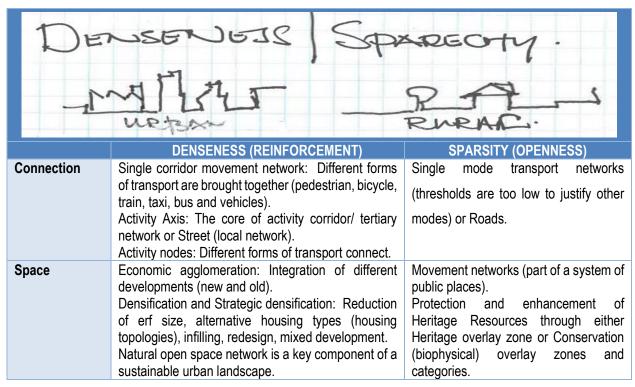
- Centres/ Parks/ Precincts (Administrative, Educational, Legal and Services).
- Nodes (Collective & Specialised Economies, Services, Manufacturing, Tourist Attractions). Highly accessible: high-intensity land use activity located along or at the start and end points of existing, emerging or national corridors: include areas of residence, industrial activity or trade that are either generators of transport demand and/or supporters of transport functions.



- Hubs (Economic specialization: Jewellery, Petro Chemical, Logistic). Highly accessible.
- Axis or Streets (Transport & mobility Spines).
- Corridors (include, but not limited to scenic, tourism, freight, transport, industrial development zones (IDZ), intensive agriculture or rural including agri-industry & related & supportive services and Conservation etc.).
- Zones/ Precincts (Tourism, Commercial (special economic zones), Agricultural and Irrigation, Alternative Energy, Industrial (IDZs and SIDZs)).



The table below provides a description of the structural tools applied to the spatial elements and its resultant man-made elements and or qualities:



Public Institutions	Multipurpose facilities and nodes where different social services are offered. A system of public spaces and hierarchy of facilities which order activities and resources.	A single facility i.e. school.
Public Ut <mark>i</mark> lities	Infrastructure cluster where different utilities are managed e.g. water & sewerage	Single Infrastructure yard e.g. sewerage works or solar farm.
	Mynumy D	No company
Y		
	CONTINUITY	DISCONTINUITY (CONTAINMENT)
Connection	Ordering structure of movement networks: Settlement level: network energy released through stopping, exit (not through movement); server rather than integrate space. Inter-settlement level: Routes which do not allow stopping (i.e. freeways) serve as integrators of space.	Along higher-order routes, create special places, such as public open space (squares) and parks. On lower-order routes create qualities of secrecy or privacy, discourage throughtraffic.
Space	Enclosure: Achieving a sense of enclosure and definition. Buildings, either through the building itself, its walls, or planting, should contribute to defining the public space it abuts.	Natural habitats: Ecological systems, complex, continuous, allow migration of species, productive/ conservation/ preservation space. Integrate natural and rural areas into urban landscape.
Public Institutions	Integration: Integrate new parcels of development with existing development to obtain agglomeration economies. Absorb settlement output: in green spaces i.e. evaporation ponds and storm water retention systems.	Use public space to interrupt built form, to ensure convenient access or create dimensions of scale. Multifunctional centres. Mobile services.
Public Utilities	Above Ground Infrastructure.	Underground Infrastructure.
Ex	tendrous Locu	elisation.
	EXTERNALIZATION	LOCALIZATION
Connection	Social facilities and higher order urban activities should be located along continuous movement routes rather than within residential precincts.	Intensive activities to be concentrated at most accessible points along continuous movement routes.
Space	Higher order facilities should reinforce private quality of residential areas and contribute to symbiotic relationship between different activities and facilities.	Multi-purpose facilities as public spaces. Corridors as agglomeration of economic and industrial activities.
Public Institutional	Higher order facilities not to be entirely dependent on the resources of a particular local community. Facilities to be widely accessible.	Functional integration ensures availability and accessibility of a wide range of service and facilities.
Public Utilities	District or regional utilities.	Local Utilities.

SA		DIFFERENCE OF L.
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Connection	Non-motorized vs motorized.	Non-motorized vs motorized corridors: intensification of development; mix uses; pedestrian and cycling friendly; high quality streetscaping.
Space Public and private space are either separated or clustered and could be part of a mixed-use development.		Connection between space and structure recognises that different activities, cultures, and lifestyles have their own requirements, which must be met in the settlement making process.
Public Minimalism: Centralize decisions at institutional level, not at site level.		Mixed use: commercial, social, service, trade and residential areas of different densities and types.
Public Utilities	Centralize decision making involving local directives and needs.	Various Utility types e.g. solar farm, electrical transformers, etc.

1.7 Structural Tool: Bioregional Spatial Planning Categories

The Bioregional Spatial Planning Categories (SPCs), consistent with the principles of bioregional planning and UNESCO's MaB (Man and the Biosphere) Programme have their origins in the Bioregional Planning Framework for the Western Cape. Bioregions can occur across municipal boundaries to provide meaningful geographical areas with common interest. SPCs serve to organise space and provide structure and the implementation of these categories' guides development to the most appropriate areas and supports conservation and integration of natural areas, e.g., nature reserves and biospheres.

The conservation and biodiversity categories, their definition and management objective, as well as the Bioregional Spatial Planning Categories (SPCs) in brackets, follow in the summary & complete tables below.

BSP Category SPC	Protected Areas	CBA 1	CBA 2	ESA 1	ESA 2	ONA	NNR
Core 1							
Core 2							
Buffer 1							
Buffer 2							
Intensive Agriculture							
Settlement							
Industry & Existing Mining							

^{*(}CBA - Critical Biodiversity Areas, ESA - Ecological Support Areas, ONA - Other Natural Areas, NNR - No Natural Remaining)

Table 1: CBA & ESA Map Categories, recommended corresponding Spatial Planning Category

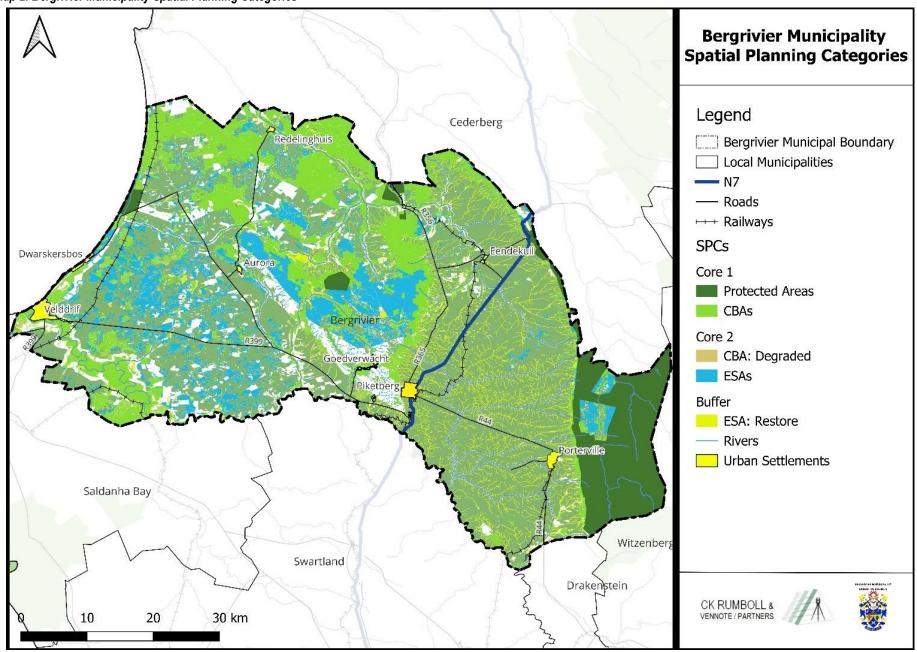
Map Category (SPCs)	DEFINITION	DESIRED MANAGEMENT OBJECTIVE	SUB-CATEGORY	ALLOWABLE LAND USE	
Protected Area (Core 1)	Areas that are proclaimed as protected under national or provincial legislation.	Must be kept in a natural state, with a management plan focused on maintaining or improving the state of biodiversity. A benchmark for biodiversity.	n/a	No go area, only non-consumptive activities are permitted, e.g., passive recreation and tourism (hiking trails, bird watching), religious ceremonies, research and environmental education & associated buildings. No	
Critical Biodiversity Area 1 – CBA 1 (Core 1)	Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses area appropriate.	CBA: River CBA: Estuary CBA: Wetland CBA: Forest CBA: Terrestrial	agriculture.	
Critical Biodiversity Area 2 – CBA 2 (Core 2)	Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a functional, natural or near-natural state, with no further loss of natural habitat. These areas should be rehabilitated.	CBA: Degraded	Biodiversity compatible and low impact conservation land uses as per Core 1 areas, but allowing for a limited increase in the scale of development in less sensitive areas.	
Ecological Support Area 1 – ESA 1 (Core 2)	Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services.	Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.	ESA: Foredune ESA: Forest ESA: Climate Adaptation Corridor ESA: Coastal Resource Protection ESA: Endangered Ecosystem ESA: River ESA: Estuary ESA: Wetland ESA: Watercourse Protection ESA: Water Source Protection ESA: Water Recharge Protection		
Ecological Support Area 2 – ESA 2 (Buffer 2)	Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services.	Restore and/manage to minimise impact on ecological infrastructure, especially soil and water related services.	ESA: Restore from NN	Activities and uses directly related to primary agricultural enterprise, including a homestead, agricultural buildings and worker accommodation, (additional dwelling units limited to 5 units). Additional land uses include small scale holiday accommodation (farm stay, B&B, guesthouse, boutique hotel); restaurant, lifestyle retail, venue facility; farm stall & farm store; home occupation; local product processing (e.g., cheese making), and tourist and recreational facilities (e.g., hiking trail, mountain biking, 4 x 4 routes).	

ONA: Natural to Near-Natural (Buffer 1 & 2)	Areas that have not been identified as a priority in the current systematic biodiversity plan, but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although they have not been prioritised for biodiversity, they are still an important part of the natural ecosystem.	Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land uses, but some authorisation may still be required for high-impact land uses.	ONA: Natural to Near-Natural ONA: Degraded	Biodiversity compatible uses as informed by transformation thresholds, including: low density rural residential development, resort and holiday accommodation, tourist and recreation facilities, additional dwelling units, renewable energy projects. Extensive agriculture: game and livestock farming.
No Natural Remaining (Intensive Agriculture Settlements, Industry, Mining)	Areas that have been modified by human activity to the extent that they are no longer natural, and do not contribute to biodiversity targets. These areas may still provide limited biodiversity and ecological infrastructure functions, even if they are never prioritised for conservation action.	Manage in a biodiversity-sensitive manner, aiming to maximise ecological functionality. Offers the most flexibility regarding potential land uses, but some authorisation may still be required for high-impact land uses.	No Natural Remaining	Activities and uses directly related to the primary agricultural enterprise, Farm buildings and associated infrastructure (e.g., homestead barns, farm worker accommodation, etc.). 5 Additional dwelling units. Ancillary rural activities of appropriate scale, which do not detract from farming production but diversify farm income, and add value to locally produced products Agricultural activities of an excessive scale (regional product processing) and nonagricultural activities not suited for location in the Intensive Agricultural and Buffer 1 and Buffer 2 areas to be located within settlements or their "fringe areas".

Sustainable development is generally defined as development that satisfies the needs of the current generation without jeopardising the ability of future generations to provide for their needs. The National Environmental Act, Act 107 of 1998, defines sustainable development as integration of social, economic and environmental factors through planning, implementation and decision making to ensure that development can support future generations.

A SPC map has been developed for the Bergrivier municipal area.

Map 2: Bergrivier Municipality Spatial Planning Categories



1.8 Structural Tools: Coastal Management Lines

Continuous economic and population growth and climate change will prominently impact the coastline. Despite climate change increasing the abrasive nature of wave action and storm events, the onshore areas will remain host to settlements along the coast. Coastal zones direct the most desirable location of settlement, industry, harvesting of natural resources as well as recreational activities. The sensitive, vulnerable, often highly dynamic and stressed ecosystems found along the coast require specific attention in management and planning to preserve coastal resources, protect coastal quality and reduce coastal related risk.

In 2014 the Western Cape Department of Environmental Affairs and Development Planning delineated coastal set-back or management lines for the West Coast District.

Coastal Management/Setback Lines:

The use of coastal management/setback lines involves both qualification and risk and proactive planning of future development. The West Coast management/setback line differentiates between areas along the coastline with existing development rights and future development options and those areas that should be left undeveloped due to a high risk from dynamic coastal processes or as coastal public property. The following coastal features were considered along the coastal risk zone to determine the coastal management/setback line:

- Environmental buffers required inland to form the high-water mark to maintain a functional coastal ecosystem under future sea level rise scenarios;
- Social buffers required along the coast. For example, public beach access through and along the
 coastal frontage, areas which have cultural significance or heritage resources and historically
 sensitive locations that require specific management;
- Economic development requirements for the coast, for example allowance for new beach facilities that will need to be placed closer than standard development to serve the public.

*CML - Coastal Management Line

Economic Buffers			
Resource	Description	Location	Action/comment
Pelikaan Harbour	Historical buildings on riverfront.	Velddrif, west of Carinus Bridge	Retain CML on 1:100yr risk line.
Laaiplek Harbour, Stywe Lyne and Pelikaan Holiday Resorts	Jetties, boat repair yards, related buildings, resort infrastructure.	At Berg River mouth and north of river mouth along the coast (within urban footprint).	Will be within CML once Admiralty Reserve is included as sensitive area.

The resultant zone is conceptualised as the area below the coastal management line. It includes all sensitive areas along the coast, both in terms of biophysical sensitivity and socio-economic value.

The demarcation of the actual coastal management/setback line is different for developed and undeveloped areas. In *rural areas* the coastal management/setback line follows the landward boundary of the long-term risk projections. Where necessary, a separate line can be drawn around existing development and development rights within the risk zone to protect the development rights. As it is not the intention to use the coastal management/setback line to impact on existing development rights, the line is drawn seaward of properties abutting the shoreline with existing development or development rights in *urban or developed areas*.

Coastal Management Overlay Zones:

Coastal management overlay zones are collectively envisaged as the area close to the sea within which development should be managed in order to preserve coastal quality and protect property and lives. Development in these zones is possible under certain circumstances and after appropriate environmental and risk assessments have been undertaken. Restrictions in this area can be applied strictly and consistently, since it is informed by scientifically modelled coastal processes or hazard zones.

Three Coastal Management Overlay Zones are proposed for **urban areas** along the West Coast:

- 1. High risk zone 20-year horizon 0 meter above mean sea level;
- 2. *Medium risk zone* 50-year horizon high risk line to medium risk line;
- 3. Low risk zone 100 years medium risk line to low-risk line.

Overlay zones refer to areas designated by risk modelling as subject to short term (1:20 year), medium term (1:50 year) or long term (1:100 year) risk emanating from coastal processes such as coastal erosion, storm surges, sea level rise and storm wave run-up. In **rural areas**, the risk grading from low to high is not necessary, and hence only a default 'risk' zone is indicated as the entire area between the 0 m above mean sea level and landward boundary of the low risk (long term risk) zone. This risk zone is expanded in places where littoral active zones are present, as these contribute to the risk of exposure to possible future coastal erosion.

Coastal Protection Zone:

The National Environmental Management: Integrated Coastal Management Act (ICM Act 24 of 2008) makes provision for the demarcation of a zone adjacent to coastal public property that "plays a significant role in a coastal ecosystem". The demarcation allows the area to be managed, regulated or restricted in a way that differs from non-coastal areas, in order to:

- a) Protect the ecological integrity, natural character and the economic, social and aesthetic value of coastal public property;
- b) Avoid increasing the effect or severity of natural hazards in the coastal zone;
- c) Protect people, property and economic activities from risks arising from dynamic coastal processes, including the risk of sea-level rise;
- d) Maintain the natural functioning of the littoral active zone;

- e) Maintain the productive capacity of the coastal zone by protecting ecological integrity of the coastal environment; and
- f) Make land near the seashore available to organs of state and other authorised persons for performing rescue operations; or temporarily depositing objects and materials washed up by the sea or tidal waters.

The ICM Act defines a default CPZ which, consists of a continuous strip of land, starting from the high-water mark and extending 100 metres inland in developed urban areas zoned as residential, commercial, or public open space, or 1 000 metres inland in areas that remain undeveloped or that are commonly referred to as rural areas. These default boundaries may only be changed through a formal process of adjustment by the relevant Provincial MEC or National Minister.

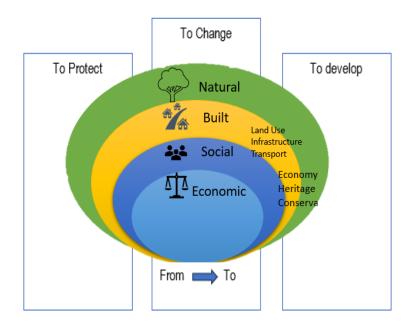
The SPLUMA principles and structural and spatial tools will be applied at regional (rural) and settlement levels to generate MSDF proposals (Chapters 5 and 6) to enhance the desired performance qualities.

CHAPTER 2: Spatial and Sectoral Plan Analysis and MSDF Review

The spatial analysis of three environments, that is biophysical, socio-economic, and built environment and the sector plans will provide broad directives within and across border from Bergrivier Municipality. These and the directives derived from the applicable legislation governing these environments and related sector plans form the basis for the proposals to be made at settlement and rural area level. Directives generated from the legal and Status Quo analysis, can broadly be categorised into three proposal types:

- to protect,
- to change, and
- to develop resources in the three environments.

The proposals and directives in the chapters to follow, are presented accordingly.



2.1 Spatial Analysis of Status Quo

Biophysical

Geology & Soils:

The geology and soils of the municipal area encompasses various rock formations, including sandstone, shale, limestone, granite, and basalt, among others. The diverse geology and soil composition present both opportunities and challenges for agricultural productivity and land management practices in the municipality. Agricultural activities rely on the <u>suitability</u> and fertility of the soil, and have to employ soil conservation techniques to prevent erosion and maintain soil health. Several types of soil are found across the region, including sandy soil, loamy soil, clay soil and soil derived from weathered shale or sandstone, with most of the soils having a clay percentage of less than 15%.

The <u>soil depth</u> in the municipal area varies generally between 450 – 750 cm.

Climate:

Bergrivier Municipality's Mediterranean climate is typically characterized by mild, wet winters and warm, dry summers.

<u>Temperature:</u> Summers (December to February) are generally warm to hot, with average high temperatures ranging from 25°C to 30°C. Winters (June to August) are mild, with average high temperatures around 17°C to 20°C.

Sun

<u>Sunshine</u>: There is a good amount of sunshine throughout the year, with an average of 8 to 10 hours of sunshine per day during the summer months.

Rainfall

Rainfall: Most of its rainfall occur during the winter months. The average annual precipitation ranges from around 300 to 500 millimeters (12 to 20 inches). However, rainfall patterns can vary within the municipality due to its diverse topography.

Wind

<u>Wind:</u> Strong winds, particularly during the summer season brings relief from the heat. The South-Easter can blow at high speeds, reaching gusts of 50 kilometers per hour (31 miles per hour) or more.

Summers in the Bergrivier Municipal area generally warm to hot and relatively dry. The region experiences a decrease in precipitation during this time, leading to drier conditions. The summer season may also be accompanied by occasional heat waves and strong winds. The transitional seasons of spring and autumn are likely characterized by moderate temperatures and more variable weather patterns. These seasons may exhibit fluctuations in temperature and occasional rainfall.

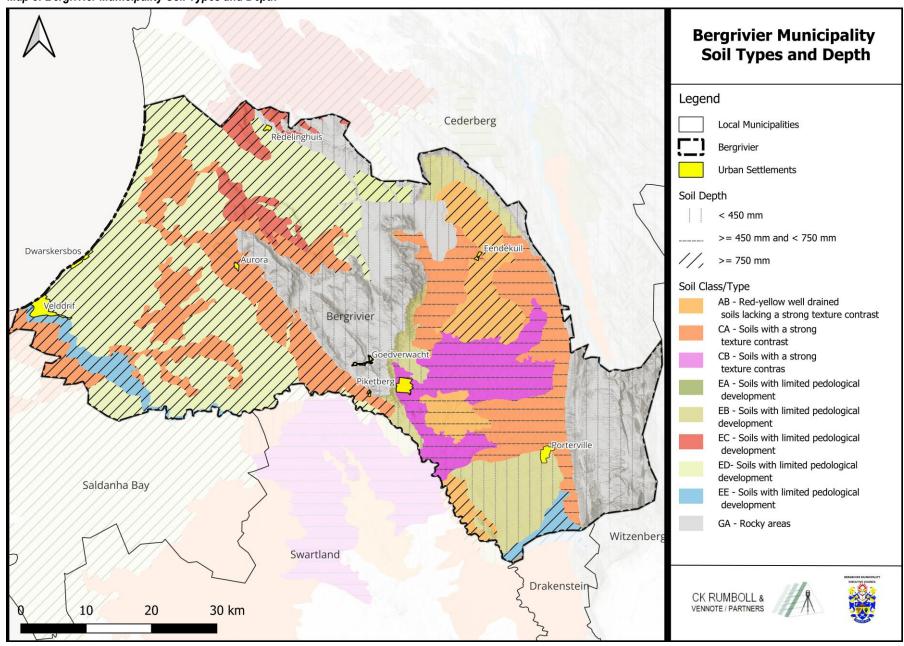
The climate is influenced by: its proximity to the Atlantic Ocean, prevailing winds and the topography of the region. The ocean's influence helps moderate temperature extremes, keeping summers cooler and winters milder compared to inland areas. Prevailing winds, such as the southeasterly winds influence weather patterns and contribute to the region's climate characteristics.

<u>Climate change:</u> Climate change poses several risks to the Bergrivier Municipality, including impacts on natural resources, infrastructure, and the local economy. The Bergrivier Municipality has coastal regions that are vulnerable to sea-level rise and increased storm surges. Coastal erosion, saltwater intrusion into freshwater systems, and potential damage to infrastructure and coastal ecosystems are significant risks.

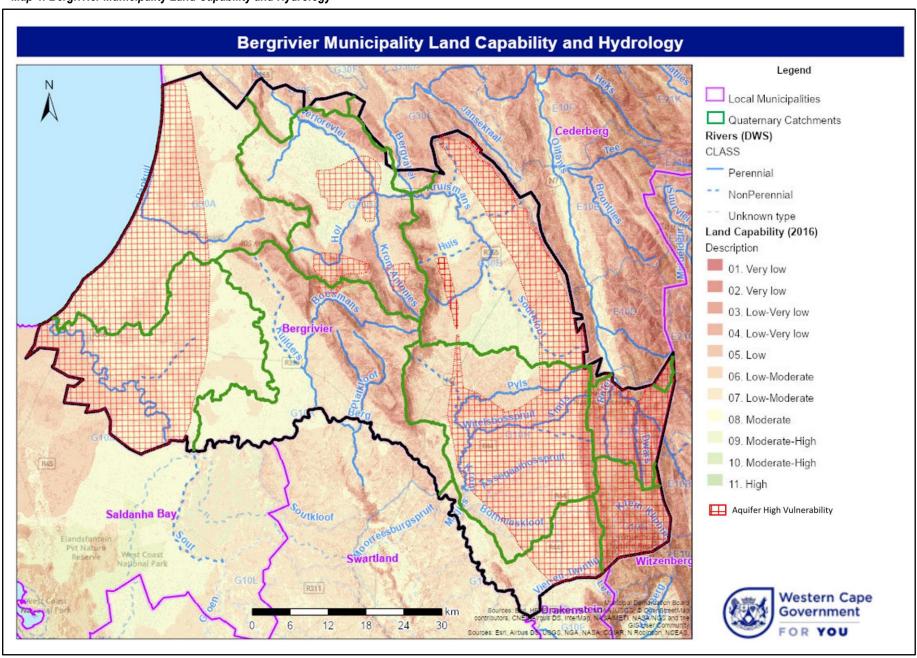
Investing in water management strategies such as water conservation measures. Promoting climate-smart agricultural practices such as drought-resistant crops, improved irrigation techniques. Implementing coastal protection measures, such as the restoration of natural dune systems. The Bergrivier Municipality has the potential to develop renewable energy projects, such as solar and wind farms, contributing to a low-carbon future.

Alternative energy sources: Bergrivier Municipality receives abundant sunshine throughout the year, making solar energy a viable option. The strong winds in the region, particularly the South-Easter, create favorable conditions for harnessing wind energy. Bergrivier Municipality has a significant agricultural sector, which generates various types of biomass waste such as crop residues, animal manure, and organic waste. These can be utilized to produce biogas through anaerobic digestion or biomass pellets for heating and electricity generation.

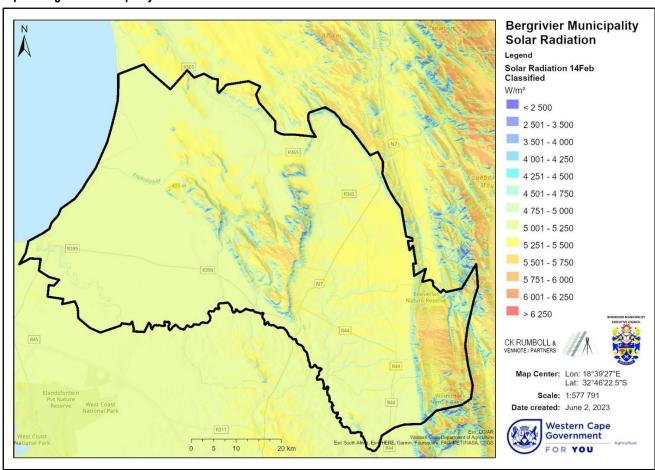
Map 3: Bergrivier Municipality Soil Types and Depth



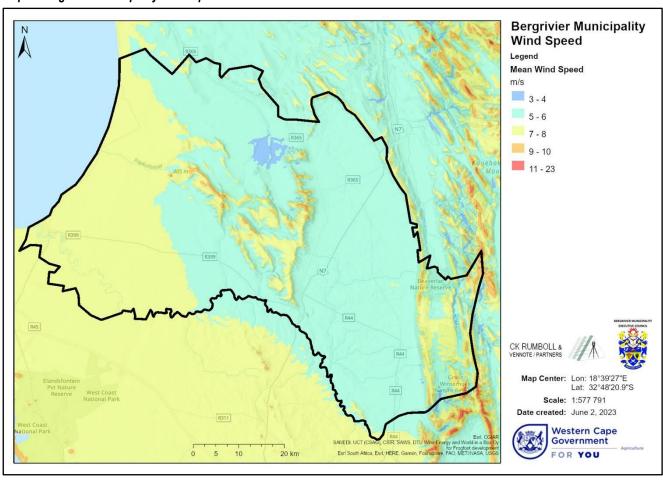
Map 4: Bergrivier Municipality Land Capability and Hydrology



Map 5: Bergrivier Municipality Solar Radiation



Map 6: Bergrivier Municipality Wind Speed



Topography:

The topography of the Bergrivier Municipality is characterized by mountainous areas, valleys, plains, and coastal zones. According to Norberg-Schulz's (1980)), there are two landscape character types:

Classic landscapes established by two prominent mountain ranges: the Olifants River Mountains (1500m above sea level) and the Piketberg Mountain (800m above sea level). Additionally, other notable mountain ranges, such as the Koue Bokkeveld Mountains, Witzenberg Mountains, and Cederberg Mountains, lie just outside the municipal area.

Cosmic landscapes made up of valleys and low-lying areas found adjacent to rivers or along the coast. The coastal zone along the Atlantic Ocean on West Coast exhibits a unique topography influenced by processes such as wave action, tides, and coastal erosion.

Hydrology:

The Berg River Catchment covers approximately 9000 km² and is divided into 12 smaller catchments, ranging in size from 125 to 2 000 km² from their headwaters. The catchments within Bergrivier Municipality, located within 200 km of the headwaters are found in the drier western parts of the catchment and typically feature low-density drainage channels with sandy deposits as their foundation. The river flows northwards for 285 km, ultimately draining into St Helena Bay on the west coast of South Africa. Most of the catchment area is relatively flat, except for the uppermost regions.

The Verlorenvlei sub-catchment include the Kruismans, a surface water tributary and the Krom Antonies, a groundwater tributary. The hydrogeology of the sub-catchment includes Malmesbury shale formations (MG; Klipheuwel, Mooresberg, Porterville, Piketberg), Table Mountain Group formations (Peninsula, Piekenierskloof) and Quaternary sediments. The pie-charts illustrated the Verlorenvlei reserve flow contributions of Kruismans, Bergvallei, Krom Antonies and Hol as well as flow component separation into surface runoff, interflow, primary aguifer flow and secondary aguifer flow (RG2).

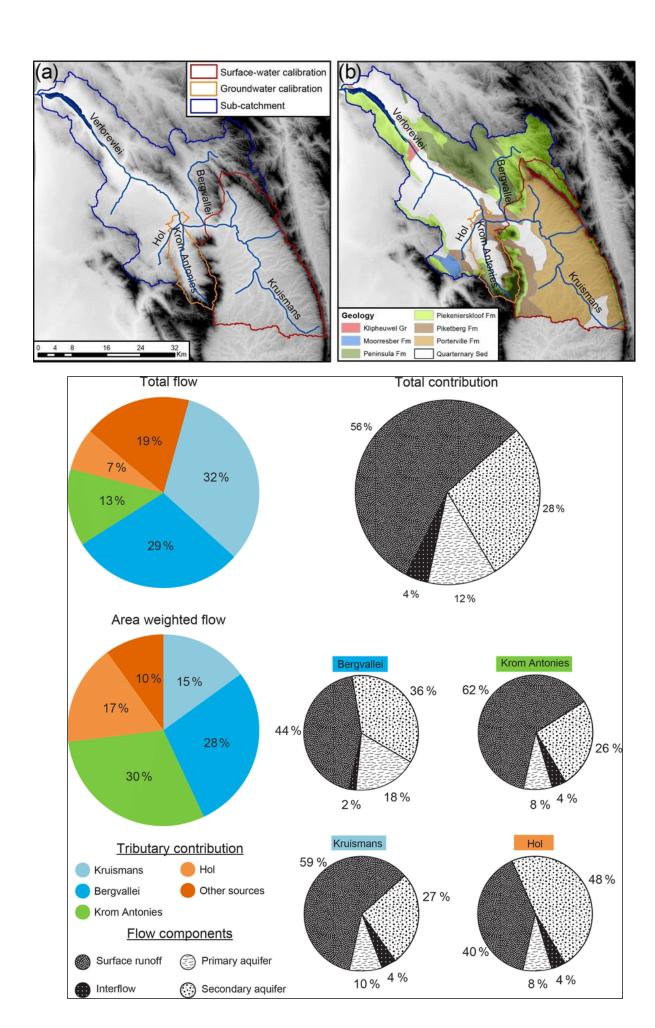
The sandy coastline and estuarine environment in the Bergrivier Municipality are subject to dynamic coastal processes of erosion and deposition.

SANBI: NFEPA (2007), <u>class the status</u> of primary rivers, the Berg-, Papkuils-, and Verlorenvlei Rivers that supply the Water Management Area, as critically endangered. These surface water sources include significant wetlands, marshes, swamps, and estuaries of which the Berg, Verloren and Papkuils. are protected.

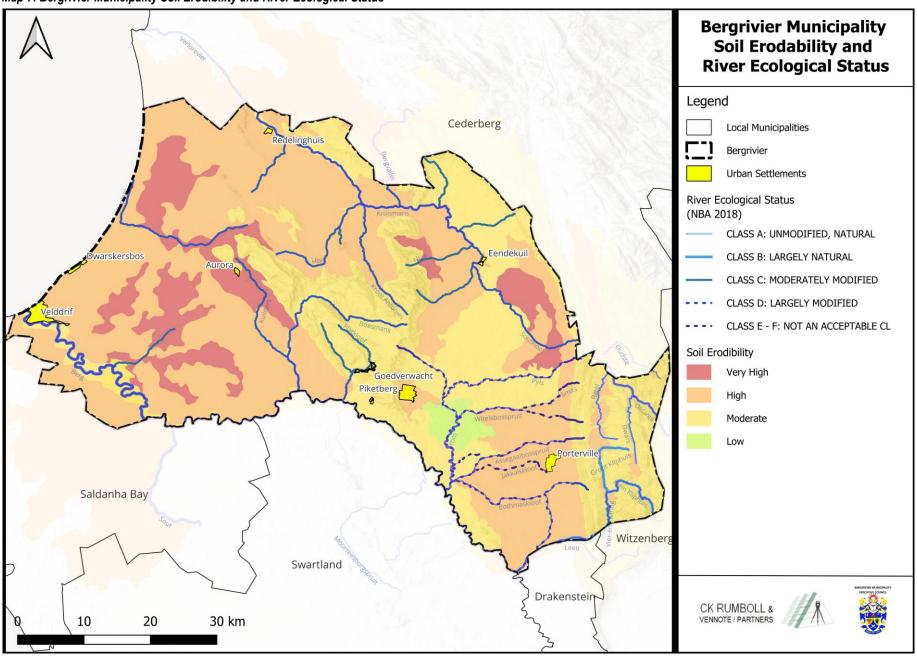
<u>Dams</u>. The Misverstand Dam is the only artificial water body regulating water supply, provide irrigation for agriculture and offer recreational opportunities.

<u>Groundwater resources</u> form an integral part of the hydrological system in the municipal area. Aquifers or underground water-bearing formations store and supply groundwater of which the Krom Antonies is the most significant supplying the Verlorenvlei River. Wells and boreholes are utilized to for domestic, agricultural (live stock), and industrial purposes.

The Berg and Verlorenvlei rivers serve as the <u>primary irrigation water source</u> for the municipal area. The water in both rivers and smaller rivers contain a considerable number of dissolved salts. Despite the salt content, the water can still be used for irrigation due to the depth of the sandy soils.



Map 7: Bergrivier Municipality Soil Erodibility and River Ecological Status



Biodiversity:

Biodiversity in the Bergrivier Municipality is characterized by the wide array of plant and animal species (including mammals, birds, reptiles, amphibians, insects, and invertebrates), as well as the genetic diversity and ecological interactions present within the region. The municipality falls within the Cape Floristic Region, which is recognized as the richest non-tropical biodiversity hotspot globally. The biodiversity within the Bergrivier Municipality provides essential ecosystem services that benefit human well-being.

Conservation of habitats are particularly important for these species as they may be vulnerable to habitat loss, climate change, and other threats. These habitats include:

- Formal Protected Areas,
- Mountain ecosystems at Winterhoek Wilderness Area.
- Coastal seashore and dune Strandveld.
- Rocherpan Nature Reserve coastal wetlands,
- The lowlands towards the coast,
- Estuarine, wetland and salt pan habitats.

Notable nature reserves:

- Groot Winterhoek Wilderness Area,
- Velddrif Bird Island Nature Reserve,
- Rocherpan Nature Reserve,
- Danielshoogte Private Nature Reserve,
- Banghoek Private Nature Reserve,
- Portion 6 of Farm No 109, Dwarskersbos,
- The Moutonshoek Protected Environment (MPE).

Vegetation:

Vegetation in the Bergrivier Municipal area is diverse and influenced by the region's climate, topography, and soil conditions. The municipality encompasses various vegetation types, ranging from fynbos and renosterveld to coastal shrubs, grasslands, and forests.

Fynbos consists of small, evergreen shrubs, such as proteas, ericas, and restios, adapted to the Mediterranean climate of the area, but requires conservation efforts due to its vulnerability to habitat loss and invasive species.

Renosterveld is a threatened vegetation type that is present in the Bergrivier Municipal area. Due to agricultural expansion and urban development, very little of the remnants of this veld type is left, making its conservation and protection crucial for maintaining biodiversity.

Coastal shrubs, such as the coastal sagebrush and beach grasses, are commonly found at the coastal areas.

Grasslands are open areas covered by grasses for grazing animals and are important for livestock farming. Many grassland ecosystems have been converted to agricultural or urban land uses, leading to the loss of their biodiversity and ecological functions.

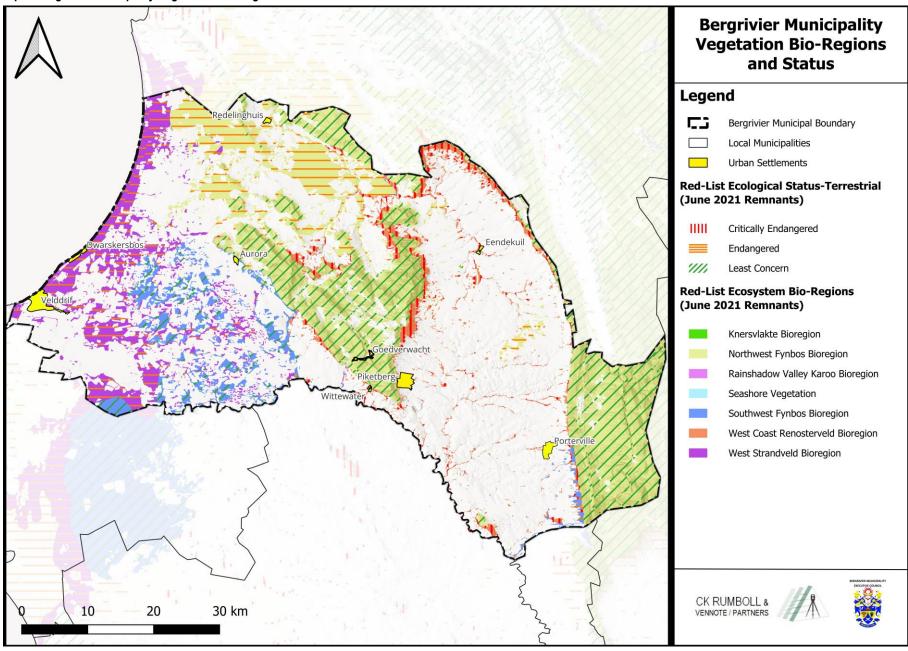
Mining:

In some parts of the municipality, forests or woodland areas may exist, featuring a mix of indigenous tree species. Mining plays a significant role in Bergrivier Municipality's economy and provides employment opportunities. Mineral occurrences and mining activities include limestone, slaked lime, shell deposits, construction materials, salt production, tungsten, molybdenum, lignite, industrial sand, and more. These minerals and resources are extracted for various purposes such as cement manufacturing, construction, and industrial applications.

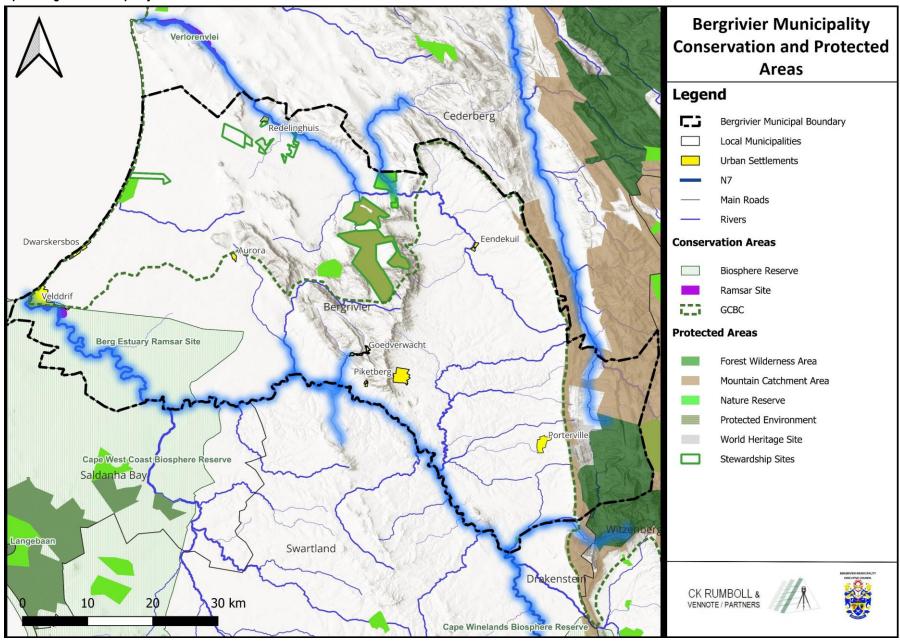
There are several mines and mineral processing operations, including:

- De Hoek Mine and PPC Cement Manufacturing Plant,
- Dwarskersbos Shell Deposits,
- Small Borrow Pits/Quarries,
- Salt Production at Velddrif and north of Laaiplek and Dwarskersbos,
- Moutonshoek Valley.
- Sand Mining in the sandveld,
- Lignite Reserves near Aurora,
- Industrial Sand (hill-wash sand), previously mined approximately 11km northwest of Piketberg.

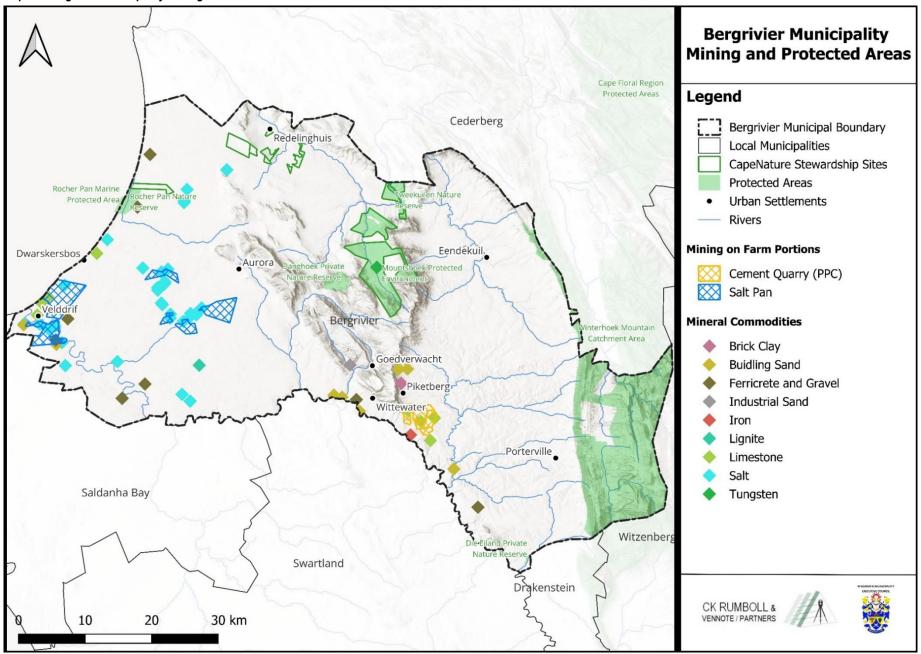
Map 8: Bergrivier Municipality Vegetation Bio-Regions and Status



Map 9: Bergrivier Municipality Conservation and Protected Areas



Map 10: Bergrivier Municipality Mining and Protected Areas



Agriculture:

% Arable land:

A total of 96 120 ha (30%) is cultivated either as dry land (full field or strip cultivation) or irrigated. A variety of crops such as citrus, pome and stone fruits, grapes, wheat, barley, oats, potatoes, and vegetables are cultivated. Livestock farming includes cattle, sheep, and goats for meat and dairy production.

The agricultural potential in the Bergrivier municipal area is closely tied to prevailing agro-climatic conditions such as soil type, elevation, and rainfall and water available for irrigation. These conditions are also important for food security. Implementation of the SmartAgri plan assists to ensure the future adaptability and resilience of the agricultural sector.

Agri-processing and agriculture are Bergrivier Municipality's major economic activities and employer. Substantial volumes of cultivated produce are dried as dried fruit and rooibos tea. Agriculture, Foresting & Fishing contributes 23,2% to the Bergrivier Municipality GDPR along with 50.4% to employment. Since 2019, agriculture has shed jobs and the number of commercial farming entities are decreasing.

Small scale farming or subsistence farming is limited.

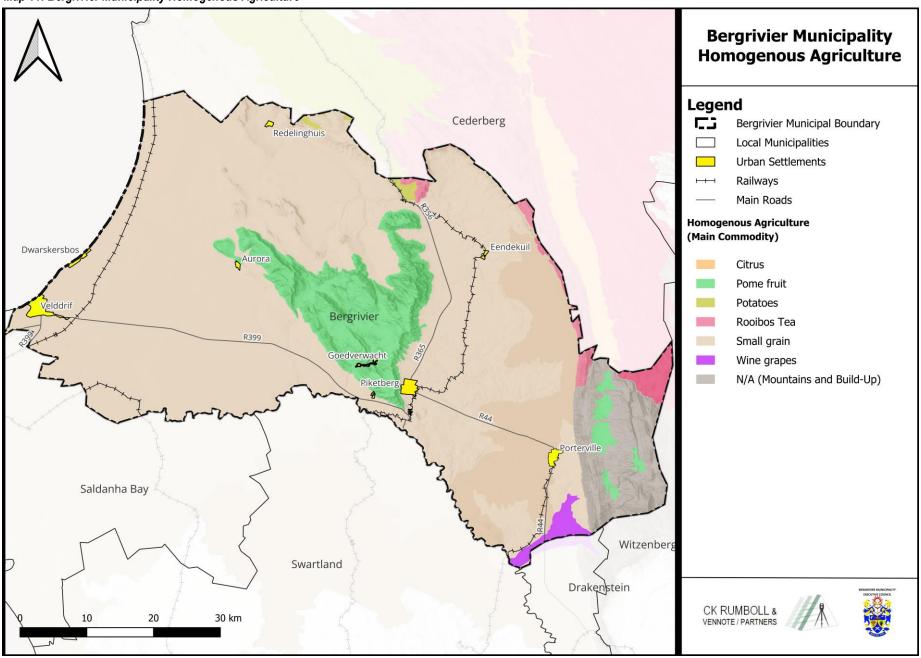
Tourism:

The agricultural landscape together with the magnificent scenery including the coastline, estuaries and mountain ranges, form the basis of its vibrant tourism industry.

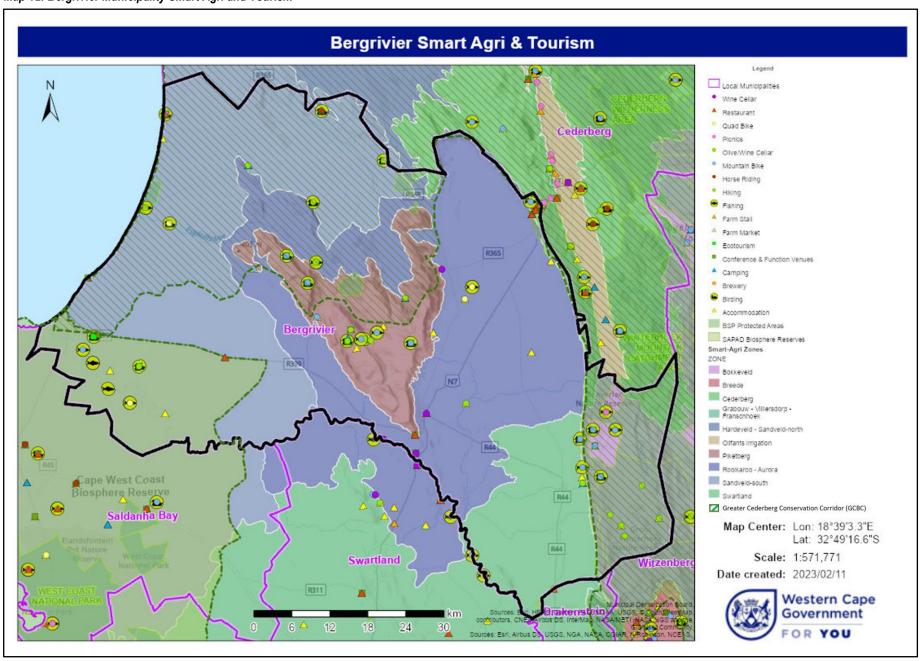
In 2007, Western Cape had the highest income from agritourism of R45.7 million which is 25% of the total of R181.5 million in the country (WC Department of Agriculture, 2018). Agri-tourism serves as an economic diversification strategy and a vehicle to promote rural development including preserving local culture, maintaining biodiversity and other environmental assets and growing the agricultural industry.

Bergrivier Municipality has its own international Cape Camino walking trail whilst Velddrif, Dwarskersbos and Aurora serving as holiday and weekend destinations.

Map 11: Bergrivier Municipality Homogenous Agriculture



Map 12: Bergrivier Municipality Smart Agri and Tourism



	Biophysical Directives
Geology & Soils:	Protect areas with high land capability, on the eastern plain between Olifantsrivier- / Grootwinter- / Witsenberg and Piketberg ranges as well as along the Berg and Verlorenvlei rivers, on the eastern foothills of Piketberg mountian, Op-die-Berg and Groot Winterhoek Wilderness area
	Require mitigation for areas highly susceptible to erosion with or without development be contemplated (rural areas, as along the Papkuils River and settlements).
Climate: Rainfall & Wind:	Control and maintain water quality in catchment areas. Require mitigation with or without development be contemplated to secure water quality.
	Provide guidelines for the development of alternative energy facilities.
	Balance food security and energy generation.
Topography:	Promote alternative energy options: Wind, Sun, Hydrology (including Hydrogen generation). Protect landscape character (landscape heritage).
	Protect and maintain Ecological Infrastructure: Mountains and mountain ranges: Piket, Skurwe, Groot, Plat, Driefontein, Keurbos, Olifants, Kouebokkeveld, Grootwinterhoek en Witzenberge.
Hydrology:	Protect and maintain Ecological Infrastructure: Water Management Areas (Government Water Control Area) and Rivers within WMA: Berg (Boesmans, Kuilders and Platkloof at Goedverwacht) and upper-Verlorenvlei (Krom Antonies, Holkruismans en Kruismans), Papkuils (feeding into Rocherpan), Bergvallei (across Cederberg and Bergrivier Municipalities) and Vier-en-Twintig Rivers (at the border with Drakenstein) and Pyls, Smits, Witelsbosspruit and Krom Rivers across the eastern grainfields plain and the (Dwars, Ratel, feeding into the Oliphants Rivers).
	Control areas that are susceptible to alien invasion.
	For Berg -, Upper Olifants and Upper-Verlorenvlei Rivers: - Enhance river corridors (rural and urban) ecologically and socially Facilitate impact of irrigation on salinity of tidal river mouths/ estuaries Preserve fresh water sources and water quality (ground and surface water). Protect Atlantic Ocean as resources and Preserve Marine and Coastal environments and resources.
Biodiversity:	Confirm SPCs and support and strengthen the biodiversity and conservation status of the area. Expand and maintain protected and threatened ecosystems areas, not limited to, but particularly around mountains. Promote conservation corridors to enhance natural resources and formal and proposed areas.
	Promote a system of corridors to counter climate change. Facilitate competing uses within biophysical environments e.g. renewable energy, agriculture, mining and conservation.
Mining:	Mitigate between sand mining and conservation whilst capitalising on long term mines (30 years) (e.g. PPC cement).
Agriculture:	Secure arable land requirements for food security. (±96 120 ha arable land). Protect both extensive and intensive agricultural cultivation (irrigation or not) and different types of cultivation (orchards, strip, full field etc) (as part of the rural landscape). Mitigate agricultural practices trends and resultant impacts i.e. netting. Promote Mitigation programmes such as Smart Agri.
Agri-Tourism:	Promote Agri-tourism to enhance agriculture and conservation (economic diversification).

Demography

According to the Mid-Year Population Estimates (MYPE), 2022, population growth trends for the 5 years and next 20 years are tabulated below: The population and households were projected to be 75 484 and 18 497 respectively 2022.

Group (%)	Age	2022	2023	2027	2028	2032	2033	2037	2042
Children (%)	0-14	25,5	25,4	25,3	25,1	24,7	24,7	24,8	24,8
Youth (%)	15-24	14,6	14,3	13,1	12,9	12,4	12,2	11,4	11,4
Working age (%)	25 59	51,6	51,0	52,2	52,4	53,0	53,2	53,8	53,8
Aged (%)	60+	14,8	14,7	15,2	15,4	15,9	16,0	16,2	6,1
All	Total	75 484	76 735	82 100	83 528	88 616	89 923	96 945	105 277
Households		17 171	17 542	19 195	19 616	21 509	21 981	23 831	26 994
Household size		3,9	3,8	3,7	3,7	4,1 3,9			3,9
Annual Growth Ra	ate	1.6 % (20	22-2026)		1,7%	1.4%			1,8%

In 20 years (2042) there will be 105 277 (±30 000 more than in 2022) <u>people</u> in the Bergrivier municipal area and 26 994 households (±10 000 more than in 2022) of 4 (3,9) persons per household.

The annual average population growth rate, decreased to from 1,6% in 2022 to 1.4% per annum projected in 2037.

The <u>migration rate</u> according to the 2016 Community Survey is that 91% of the population is born in the Western Cape, 3% originates from the Eastern Cape, 2% from Northern Cape, 1% from Gauteng and Free State and 1% from the Southern African Development Community.

<u>Household size</u> decreases from 3.9 in 2023 to 3.7 in 2028 and reestablishes to 3.9 in 2042. The number of households increases by 2 023 and the number of people by 6 616 during the MSDF cycle ending 2027.

In 2023, slightly more than half (69%) of the Bergrivier Municipality's population is between 15 and 64 years of age, a cohort that represents the <u>labour force</u>. In 2023 the male to female ratio is nearly equal: 52 females: 48.0 males.

Bergrivier Municipality's <u>population comprise</u> of a quarter of population being children (scholars), nearly an eighth (13%) being youth (students), slightly more than half being of working age and leaving the remaining eight percent of the people being the elderly. Whilst the Bergrivier Municipality's population increases, as a percentage of the total population the working age population (>1%) increases whilst the children, youth and aged decrease (<1%) over the 20-year period. The <u>dependency</u> ratio fluctuates by 1% around 45%, until 2037.

In 2022, 39% of <u>household heads</u> were female and it is projected that females being heads of households will increase to 44% by 2031 (MYPE, 2022). Only twenty (20) heads of households were younger than 18 years, compared to the West Coast and Western Cape where 189 and 4 877 heads of households were younger than 18 years. Of the child headed households, all have women as their head. Ninety four percent (94%) of children 14 years and younger has both biological parents (StatsSA, 2016).

The majority (76%) of the population in Bergriver is Coloured, followed by Whites (19%) and Black Africans (4%).

Table: Race Distribution, Bergrivier Municipality. [discrepancy equals people unclassified]

	Black African		Coloured		Indian/Asian		White		Total
	N	%	N	%	N	%	N	%	+ other
2016	2 699	4	51 280	76	0	0	12 820	19	67 474
2011	6 809	11	43 947	71	0	0	10 522	17	61 897

The average population density in the Municipality is projected to increase from around 17.1 people per km² in 2022 to 22 people per km² in 2037.

According 2022 SEP, the majority of the Bergrivier Municipality's population was between 15 and 64 years of age, a cohort that represents the labour force.

Age	0-14	15-64	65+	Total
2023	19 322	52 206	4 236	75 764
% of Total	25.5%	68.9%	5.6%	100%

Urban Rural Population & Settlement Classification Settlements in the Bergrivier municipal area classified according to their populations ('000) have:

- Piketberg and Velddrif/Laaiplek (population between 10 000 15 000) and Porterville (population between 5 000 10 000) as villages (population between 5 000 25 000),
- Eendekuil, Goedverwacht and Wittewater (population between 1 000 5 000) and Dwarskersbos, De Lust, Aurora and Redelinghuis (population ≤1 000) as remote villages (population ≤5 000).

Town	Aurora	Dwarskersbos	Eendekuil	Goedverwacht	Piketberg
Population,	748	869	1 983	2 563	16 076
2023	Porterville	Redelinghuis	Velddrif	Wittewater	
	9 135	756	14 272	1099	

In the next 20 years the classification of none of the settlements will change and Piketberg, Velddrif/ Laaiplek and Porterville will stay a village (5 000 – 25 000) whilst Piketberg will still serve as regional service centre.

Nearly fourty percent (39%) of the population resides in rural areas.

Health

In 2021/22, Bergrivier municipal area had the following Health Facilities:

- 3 public primary healthcare clinics (PHC),
- 5 satellite clinics and 3 mobile clinics.
- 2 district hospitals,
- 10 ART clinics/treatment sites and 8 TB treatment clinics are part of the facilities listed above (IDP 2022-2027).

Bergrivier Municipality has one and a half thousand (1 418) registered patients receiving antiretroviral treatment (ART), representing 10.7 per cent of the patients receiving ART in the West Coast District. The total registered patients receiving ART increased by 41 between 2019/20 and 2020/21 whilst new ART patients decreased from 170 in 2019/20 to 146 in 2020/21.

Child Health Care:

The immunization rate in the Bergrivier municipal area decreased marginally, from 65% in 2020/21 to 60.8 % in 2021/22. The proportion of malnourished children under five years, worsened from 0.5 (per 100 000 people) in 2020/21 to 0.7. The low-birth-weight indicator (less than 2 500g) presented a slight improvement, from 15.1 % in 2020/21 to 14.9 % in 2021/22. The neonatal mortality rate (per 1 000 live births) registered a more significant improvement, from 14.3 in 2020/21 to 6.5 in 2021/22.

Female Health:

Maternal health appears stable with zero deaths per 100 000 live births recorded in 2021/22 (maternal mortality rate of zero), same as the previous year. For the period 2020/21 to 2021/22, the delivery rate to women under 20 years increased from 16.0 to 19.0 %, maintaining the highest rate in the West Coast District. The termination of pregnancy rate remained unchanged at 0.3 %.

Safety

Provision of Emergency services i.e. fire stations and police stations in all Langeberg settlements comply with the norms: There is 1 fire station in Piketberg and 1 police station in Piketberg, Laaiplek, Porterville, Eendekuil and Redelinhuis.

There are also other emergency services offered including Fire and Rescue and Protection Services.

Crime cases are on the increase between 2020/2021 and 2021/2022:

<u>Murder</u> from 11 to 17; <u>Sexual Offences</u> totalled 64; <u>Drug-related crimes</u> cases increased from 757 to 805; <u>Driving under the influence</u> cases remained the same at 128 and <u>Residential burglaries</u> from 324 to 215.

Within Bergrivier Municipality, Velddrif is a hotspot. Bergrivier Municipality does form part of the Regional Socio-Economic Programme (RSEP) and Violence Prevention through Urban Upgrading (VPUU) Programme. RSEP focus on urban, social and spatial upgrading and safe and sustainable neighbourhoods (preventing crime and violence) in previously disadvantaged urban areas in the Western Cape. A total of R7.5m in grant funding was allocated to Bergrivier Municipality, while the municipality co-funded an additional R2.1m for projects. All of the projects have been completed (except for the lighting project in Velddrif).

Piketberg gained an Active box, a three-storey multifunctional community building, Calendula Street has been extended linking to the central business district. And an outdoor gym was constructed.

Porterville gained a walkway from Monte Bertha to Porterville CBD and related ablution facilities and informal trading stalls.

Velddrif gained a paved pedestrian walkway between Laaiplek's CBD and Noordhoek. The Noordhoek lighting and along walkway will be upgraded.

Education

A quarter, 25,4%, of the Langeberg population is younger than 15 years, representing pre-school and school-going age. The are, according to the Western Cape Education Department, 2023, 25 schools serving 9 802 learners (Western Cape Government):

Туре	Number Of Schools	Public/Private	Enrolment 2023
Combined School	3	Public	1727
Intermediate School	4	Public	2 774
Primary School	14	Public	3537
Secondary School	1	Public	1 627
Combined School	1	Independent	74
Primary School	1	Independent	12
Primary School	1	Independent	51
Total	25		9802

To ensure access to education, some of the fee-paying schools became no-fee schools, representing 65% of schools in the area. The number of schools with libraries decreasing from 12 in 2018 to 10 in 2019, and then to 8 in 2020.

Early childhood development services include home visits, playgrounds, toy libraries and centres and there is a total of 22 ECD centres. Over twenty (23) educational institution (registered ECD preschools accommodate 6 children and more children aged 0-6 years) is registered. Facilities having 6 children and less register as a play-schools and are excluded. Where not enrollment figures were available, an estimation of 30 children enrolled per facility resulted in \pm 870 (\pm 14%) of children enrolled in 2023 out of a likely 6 108 children between 0-4 years.

Settlement	Aurora	Dwarskersbos	Eendekuil	Goedverwacht	Piketberg	Sub-total
No. of children, 2023	±30		±30	±30	86+±150	326
ECD services, 2023	1	0	1	1	7	10
0 (1)				10000		
Settlement	Porterville	Redelinghuis	Velddrif	Wittewater	Rural	Total
No. of children, 2023	71+ ±210	±30	Velddrif 204	±30	Rural	l otal 870

Slightly more than ninety per cent (91,4%) of children between 5-17 years of aged attended school in 2016. 9% of children in this cohort does not attend school which is higher than the provincial rate (93%). Sixteen percent (16% or 493) of children between age 15 and 17 are in the labour force.

Area's matric pass rate dropped sharply from 85.7 % (2018) to 77.6 % (2019) and remained unchanged in 2020 at 77.6 % which was the lowest rate in the West Coast District.

The percentage of the population aged 20 years and older (as per StatsSA 2016), and their educational status is as follows:

Skills levels	No or incomplete primary school	Completed primary or incomplete secondary schooling and are semi-skilled	Complete secondary schooling or a tertiary qualification	Total
Percentage, 2016	20,2%	42,4%	37.5%	100%
Number of people 20 years and older, 2023	10 364	21 761	19 245	51 337
Formal Employment Skills level contribution	Unskilled	Semi-skilled	Skilled	
Jobs/ Employment 2020	11 962 (55,2%)	6 571 (30,3%)	3 155 (14,5%)	21 688

The overall picture in skills development in Bergrivier Municipality is discouraging as 55.5 % (62,6%) of the population is considered "low-skilled". (IDP, 2022-2027).

Economy

Bergrivier Municipality's economy was valued at R4.810 billion (current prices). Major Contributors to Bergrivier Municipality's economy (GDPR) in 2020 (SEP, 2022):

Sector	Broad Sector	Contribution	Percentage
Agriculture, Fishing & Forestry	Primary	R1.39 billion	28,9%
Manufacturing	Secondary	R0.88 billion	18,4%
Finance, insurance, real estate & business	Tertiary	R0.66 million	13,8%
Wholesale and retail trade, catering and accommodation	Tertiary	R0.58 billion	12,1%
General Government	Tertiary	R0.47 billion	9,8%

For the period 2016 – 2020, the economy of Bergrivier Municipality realized an average annual growth rate of 0.3%. The tertiary sector increased at an annual rate of 0.2%. Financial sector contributed 13.8% and the Trade sector contributed 12.1% and was the key tertiary sector growth drivers. Agricultural sector, the largest contributor to GDPR in Bergrivier Municipality, increased by 2.1% annually during the period of review. The growth marked the recovery from the effects of Covid 19 restrictions had on economic activity.

Agri-Industrial and industrial development (manufacturing) is no longer only driven by local export agriculture but by insecurity within the sector and inaccessibility of infrastructure in South Africa. Access to infrastructure such as ports and airports resulted in intensification of agriculture and agri-industry in Bergrivier Municipality. Though manufacturing has high economic value, it is energy and water dependent. Bergrivier Municipality has limited access to water but need to fast track reliable alternative energy generation.

Sectors that are high contributors and highly competitive are Manufacturing, Finance, Insurance and Real Estate and Wholesale and Retail Trade whilst sectors that are high contributors but less competitive are Agriculture, Fishing and Forestry, Community, Social and personal services and Transport, Storage and Communication.

Sectors in the Bergrivier Municipality that are both highest contributors to the economy and to employment are: Agriculture, Wholesale & retail Trade, catering and accommodation, Manufacturing, Finance, insurance, real estate and business services and Agriculture. The high contributing sectors to both the economy and employment in Western Cape similar to those in Bergrivier Municipality include Finance, insurance, real estate and business services, Wholesale & retail trade, catering and accommodation and Manufacturing.

Economic vs Employment Sector Contributors:

Rank	1	2	3	4	5
Employment	Agriculture	Trade & Accom	Community & Social	Manufacturing	Finance & Real Estate
Economy	Agriculture	Manufacturing	Finance & Real Estate	Trade & Accom	Government

Bergrivier municipal area's unemployment rate of 5.4 % in 2020 was the lowest in the West Coast District.

Nearly half (48,9%) of the population are in the low-income category and the remaining half (44,9%) in the middle-income group, leaving only 6,1% of the population in the high-income category (Community Survey, 2016).

Economic Sector Employment contributors in 2019, and in order of highest job contributors respectively, were:

Sector	Broad Sector	Jobs	Percentage
Agriculture, forestry and fishing	Primary	13 714	49.9%
Wholesale and retail trade, catering and accommodation	Tertiary	3 644	13.3%
Community, social & personal services	Tertiary	3 489	12.7%
Manufacturing	Secondary	2 261	8.2%
Finance, insurance, real estate and business services	Tertiary	1 883	6.9%

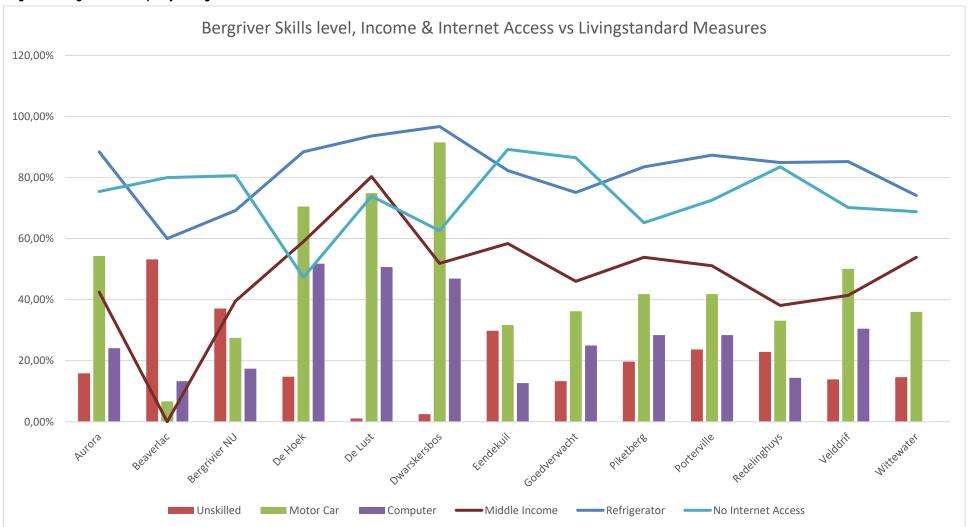
Ninety one percent (91%) of employment opportunities are generated by five sectors out of ten (10) sectors whilst three sectors contribute more than three quarters (75,9%) of the employment opportunities. Two of these sectors, Wholesale and retail, catering and accommodation and Finance insurance, real estate and business services, add high value to products and services and contribute significantly to employment opportunities. Manufacturing also adding value but is a smaller contributor to employment.

A total of 26 904 workers of which 22 096 (82.0%) are in the formal sector and 4 835 (18.0%) are in the informal sector is estimated to be employed in 2021. Fifty-six (56%) of the workforce (20 – 64) were employed in 2021.

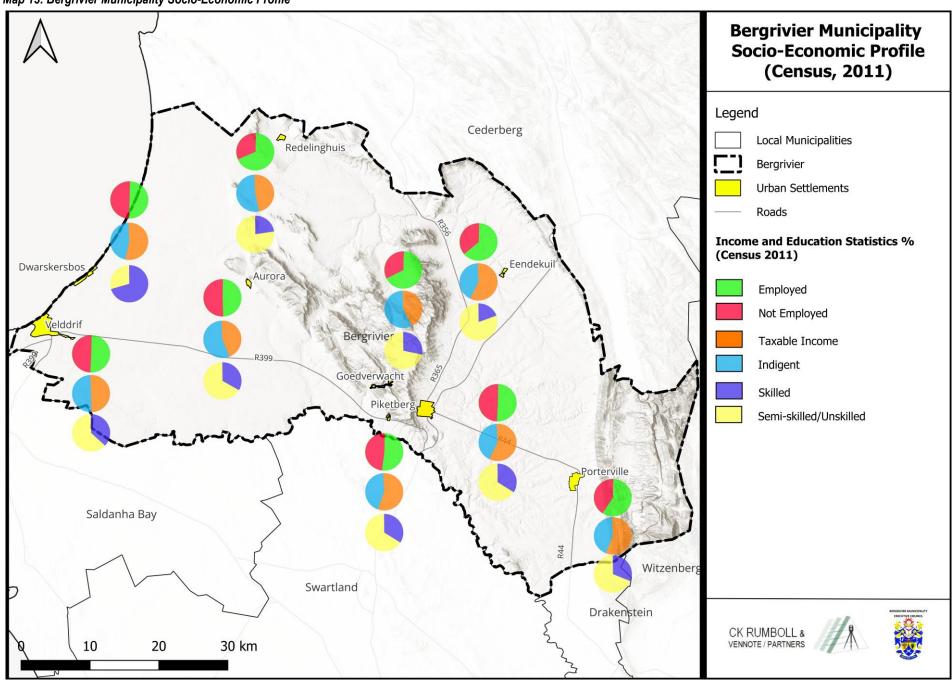
In 2020 most of the formally employed were low-skilled (54,7%) and semi-skilled (29.2%) whilst the demand for semi-skilled employees has increased insignificantly.

Unemployment rates in 2020 was 7.7% (incl. people looking for work and not finding employment, excluding people that want to work but do not actively seek employment) in the Bergrivier Municipality; 16% in the West Coast District and 18,9% in the Western Cape. (SEP, 2022).

Figure 4: Bergrivier Municipality Living Standard Measures



Map 13: Bergrivier Municipality Socio-Economic Profile



Bergrivier Municipality Economic Overview.

Dergitvier	Municipality Economic Overview.					
١ ١	Western Cape (2022) and Bergrivier Munic	ipality (2020) economic (GDP) contributors:	Western Cape (2022) and Bergrivier Municipality economic sector performance			
	Competitivenes	ss vs Production	profile:			
	•			Value Added relative to E	mployment:	
	Weste	rn Cape		Western Cape		
High	High competitiveness, low output. Competitors. Construction, 3.5%. Agriculture, Fishing & Forestry, 4.2%.	High competitiveness, high output. Performers. Finance, insurance, real estate & business, 32% Manufacturing (including agri-processing), 14% Wholesale, Retail, 14% incl. Catering &	High	High value Low employment. Transport & Communication (4.2%) Construction (6%). Electricity & Water (0.3%).	High value, high employment. Wholesale & Retail (21%). Manufacturing (12%). Finance, Insurance, real estate & business (22%).	
Competitiveness	Low competitiveness, low output. Weak sectors. Electricity & Water, 1.8%. Community, social, personal services, 11%. Mining & Quarrying, <0.1%.	accommodation. Low competitiveness, high output. Internal focus. General Government 10%. Transport, Communication & Storage: 9%.	Value Added	Low value, low employment Mining &Quarrying (0.2%) Private households (4,8%) Agriculture, Fishing & Forestry (8%)	Lew value, high employment. General Government (22%). Community, social & Personal Services.	
Low	Low Output (WC GDP contrib	utions 2022) High	Low	Low Empl	oyment High	
Competitiveness	High competitiveness, low output Competitors Construction, 2,5% or R0.1 billion Mining & Quarrying, 0.7% or R0.03 billion. Low competitiveness, low output. Weak sectors. General Government, 9.8% or R0.47 billion, tertiary sector. Community, social, personal services, 8.9% or R0.4 billion.	High competitiveness, high output Performers. Manufacturing (including agri-processing), 18.4% or R0.88 billion, secondary sector Finance, insurance, real estate & business, 13.8% or R0,66 million. Wholesale, Retail, 12.1% or R0.58 billion, tertiary sector. Low competitiveness, high output. Internal focus. Agriculture, Fishing & Forestry, 28.9% or R1.39 billion, primary sector. Transport, Storage and communication 3.6% or R0.2 billion, tertiary sector.	High Nalue Added	Manufacturing (8,2%). Transport & Communication (1,5%) Construction (2,5%). Mining & Quarrying (0,1%). General government (4,8%). Low value, low employment. Electricity & Water (0.2%).	High value, high employment. Wholesale & Retail (13,3%). Finance, Insurance real estate & business (6,9%) Low value, high employment. Agriculture, Fishing & Forestry (49,9%). Community, social & Personal service (12,7%).	
	Electricity & Water 1.3% or R0.06 billion.	1 1 1 2000) III I				
Low	Low Output (GDP c	ontribution 2020) High				

Property Market			s increased due to the popularity of the unreket trends for the period 2014 to 2023 fo	ique and tranquil lifestyle and its proximity reach settlement follow:
patterns, growth	Settlement	Ave Sales Price: 2020-2023	Trend since 2020 to 2023	Reasons
pressures & Land Reform	Aurora	R0.37 million	A steady increase in prices (32 %), between the 2020 to 2022 period, followed by an annual average price decrease of 4% since 2022, resulted in market stability.	Buyers interested in larger plots of land or historic properties. Limited number of properties have caused a decrease in demand.
	Piketberg	R0.53 million	Average sales price increased by 9.67% since 2020 reflecting steady growth. Demand for residential properties, particularly family homes and smaller plots steadily increasing.	An attractive option for investors and first- time homebuyers in the west coast as an alternative location to towns such as Moorreesburg and Citrusdal.
	Porterville	R0.84 million	Property prices have steadily increased (8.25%) until 2021, as demand for residential properties increased. Average sales price has seen a steady decline of 10.81% since 2022.	The steady decrease in prices has shifted the property market in favour of buyers as the settlement's popularity has increased.
Velddrif/ R0.3 - R1.2 million			Average price has increased by 15.4% since 2020 particularly in Velddrif and 13% in Laaiplek since 2022.	Proximity to the coast and Berg River estuary attracts buyers looking for waterfront properties and recreational opportunities. A strong demand for both permanent residences and holiday homes exists.
	Redelinghuis	R0.3 million	Property prices have remained steady, reflecting the niche market and limited supply of available properties.	Property market is relatively small, with a limited number of properties changing hands.

Annual Sale and Listing Trends (Property24, 2023)

Piketberg:



Aurora:



Porterville:



Velddrif:



Laaiplek:



Redelinghuis:



Socio-Economic Directives

Demography

Despite population grow all settlements will keep their hierarchical category during the MSDF 5-year: Villages (5 000 – 25 000) and remote villages (<.5000).

The total population increase with approximately ±30 000 people and 26 994 households (±10 000 more than in 2022) of 4 (3,9) persons per household. Whilst the Bergrivier Municipality's population increases and, as a percentage of the total population, the cohorts working age population increases with 3%, youth with 1% as does the aged (with slightly more than 1%) whilst the cohort children decreases with nearly 1%.

In 2023, the majority (67%) of the Bergrivier Municipality's population was between 15 and 64 years of age, a cohort that represents the labour force. Bergrivier Municipality had an average proportion of children aged 0–14 years (25.4%) in 2016 and the remaining 8.8% of the population are the elderly.

In 2023, more than half (50%) of the Bergrivier Municipality's population is between 15 and 60 years of age, a cohort that represents the <u>labour force</u>. Bergrivier Municipality's <u>population comprise</u> of a quarter of population being children (scholars) and (13%) being youth (students). Whilst the Bergrivier Municipality's population increases, as a percentage of the total population the working age population (>1%) increases whilst the children, youth and aged decrease (<1%) over the 20-year period.

Provide for social amenities and economic spaces required by growth trends in child -, working - and elderly populations (for example more schools, skills centres and amenities:

- A quarter, 25%, of the Bergrivier Municipality's population is younger than 15 years, representing pre-school and school-going age whilst there is an undersupply of Grade R classes and 13% are youth (15 – 24 years of age) whilst there is a need for skills training centres.:
- Porterville requires a primary school.

Plan and design living spaces (settlement and rural) driven by proximity and demanded (required) by family trends (female heads of households) and provide for such living space at social housing sites. Provision of amenities at settlement and regional level should be driven by proximity. Accommodate family trends such in social housing precincts in Piketberg and Velddrif.

Urban Rural Population & Settlement Classification

Capitalise on settlement classification according based on population ('000) and future population resulting in hierarchy changes. (CSIR classification: Cities (350 001+), Large towns/ regional service centre (100 000 – 350 000), Medium towns/ regional service centre (60 000 – 100 000), Small towns/ Regional service centers (population between 25 000 – 60 000), Villages (population between 5 000 – 25 000) and Remote village/ Hamlets (population \leq 5 000).

Promote investment and infrastructure development particularly for settlement like Piketberg and Velddrif that are likely to experience a change in hierarchy soon after the 20-year cycle.

Health

Provision of all Health and Emergency services i.e. clinics and satellite in settlements and remote villages to comply with the <u>CSIR norms for mobile clinics</u>: 1 multifunctional mobile 5 000 persons of 1 250 dwellings.

Lobby provision for different health trends such as HIV/ AIDs, Female health, child health and mental health, driven by proximity of existing facilities and agglomeration of future facilities.

Demand for health care as a result of climate change likely to increase due to water quality, stress because of change in domestic patterns and heat exhaustion. Use existing facilities but extent operational time and add an additional daily shift.

Spatial provision for amenities or programmes to assist with decreasing delivery rate of women under 20 years of age, malnutrition rate for children, low birth weight of children.

Provide structured neighbourhood spaces (per 0.5 ha persons 1 000 people/ 250 households) to promote youth development and family programmes.

Encourage and provide spatially for food gardens and small-scale farming and related programmes.

Safety

Provide spatially for safety and for disaster infrastructure gaps informed by demarcated target reach according to norms of fire and police stations and any other emergency and safety services and identify gaps

Provision of community safety programmes at hotspots and within their spheres of influence.

Education

Bergrivier Municipality had a quarter proportion of children aged 0–14 years (25,4%) in 2023, representing pre-school and school-going age.

Spatially provide for all educational facilities in settlements and remote villages according to CSIR norms and in particular for: 1 primary school or grade R per 1 000 learners (1.9 ha/ 1 000 or less; 0.9 ha sport field included), 1 secondary school per 2 500 learners and creches are variable (0.02 ha / 100 children).

Provide educational and social learning spaces indoors and outdoors to address learning and learner trends: enrolment, retention, matric pass rate.

Provide for after school education and training and further education and training facilities. Drive for increase in:

- Increasing Learner enrolment with 2% (currently 46%).
- Average learner retention with 10% and in the long term the drop-out rate is less than 2%.
- Matric pass rate with 5%.
- Population aged 20 years and older match the skills demand in the workplace:
 - o no or incomplete primary school education vs low skilled jobs.
 - o primary or incomplete secondary schooling and semi-skilled vs semi-skilled jobs.
 - o complete secondary schooling or a tertiary qualification vs skilled jobs.

Provide spatially for outdoor training and education.

Provide spatially for access to google scholar.

Economy

Economic Sector Employment Contributors enhance:

- Spatial provision for formal and informal industry and business should be provided, and particularly in Piketberg. Porterville. Velddrif and Eemdekuil.
- Promoting business agglomeration and establish a catalytic environment where road infrastructure allows, either at settlement or at intersections.
- Prepare focus area plans to facilitate and mitigate contrasting uses and in particular Conservation and Settlement Making (Velddrif and Redelinghuys), Mining (Overall) and Agriculture (Overall), within the biophysical environment as well as Transport, Sport and Agricultural Uses.

Promote the agricultural sector defining the character of Bergrivier Municipality, the breadbasket of the Western Cape.

Sectors that are high contributors in the Western Cape but lack in Bergrivier municipal area should be spatially encouraged to establish in the Bergrivier Municipality:

- Specific economic sectors, Communication, Catering and Accommodation (as part of wholesale and retail), Transport Storage and Communication, Energy (renewable), to be specifically promoted within settlement and rural spaces to absorb social and employment trends.
- On-site Training and skills centres promoting specific economic sectors to be promoted.

Providing for agglomeration of existing well performing sectors to strengthen these sectors.

As half of the working age population work, provide for the balance that are economically non-active to become economically active and promote home occupation and small business.

Provide for social support where required by the economically active population with no income.

Provide overall for income generation spaces to decrease the unemployment rate in the Bergrivier Municipality.

Hierarchy and Role of Settlements

Piketberg functions as a sub-regional node within the broader West Coast area and provides primary agricultural services to the surrounding farms and towns. It is the main settlement of the Bergrivier Municipality and is seen to have medium growth potential.

Velddrif/Laaiplek, which includes Port Owen and Noordhoek, is classified as a coastal town characterised by an economic landscape that recently changed from processing fish to agricultural products and to a more service-based tourism town.

Porterville is a settlement at the foot of the Olifants River Mountains, considered a central and established settlement with a solid base in the agricultural sector with distinct administrative functions situated in a mixed farming region.

Eendekuil functions as a lower-order agricultural centre.

Dwarskersbos is a linear coastal town approximately 10 kilometres north of Velddrif.

Redelinghuis is situated in the picturesque Verlorenvlei valley, halfway en-route to the coast from Piketberg. Aurora is a rural settlement located in the Sandveld region - renowned for potato production.

Settlement Densities

As per previous SDFs

Settlement	Gross du/ha	Net du/ha	Settlement	Gross du/ha	Net du/ha
Velddrif/ Laaiplek	5.1	10.5	Eendekuil	4.8	18
Dwarskersbos	5.8	13.1	Piketberg	5.9	13, 8
Redelinghuis	4.3	10.8	Porterville	5.6	14.3
Aurora	4	7.1	Provincial norm		25

Transportati on

Road and Rail Network:

The main road system in the Bergrivier Municipality consists of a National road (the N7, running in a north to south direction), and Provincial roads (R44, R27, R399, R365, R366 and MR527) linking the various towns with each other.

The movement of freight within and through the municipal area largely occurs along the N7, with major origin and destination points being the Greater Cape Metro, the Northern Cape and Namibia.

Municipal roads required or upgrades required include:

Priority	Project	Priority Ten Year Plan	Length	Cost (Millions)
1	Velddrif – Church Lane	Upgrade Church Lane	2300m	R 16.1
2	Velddrif Main Road	Upgrade Voortrekker Road	6600m	R 46.2
3	Piketberg Main Road	Upgrade Long Street	2000m	R 14
4	Porterville Main Road	Upgrade Voortrekker Street	1500m	R 10.5
5	Piketberg Industrial Area	New Industrial area road	2100m	R 14.7

A freight railway line (Transnet Freight Rail, TRF) runs from Bellville via Kalbaskraal to Bitterfontein in the north. There are several stations within the Bergrivier municipal area that form part of the TFR network i.e. De Hoek, Piketberg, Burgers, Pools, Eendekuil, Droeryskloof and Het Kruis. Interviews with stakeholders suggest that rail freight has declined, and that road freight has increased steadily over a period of time.

Ports and Maritime Transport:

Velddrif has a small port at Laaiplek, which is mostly used for fishing and recreational purposes.

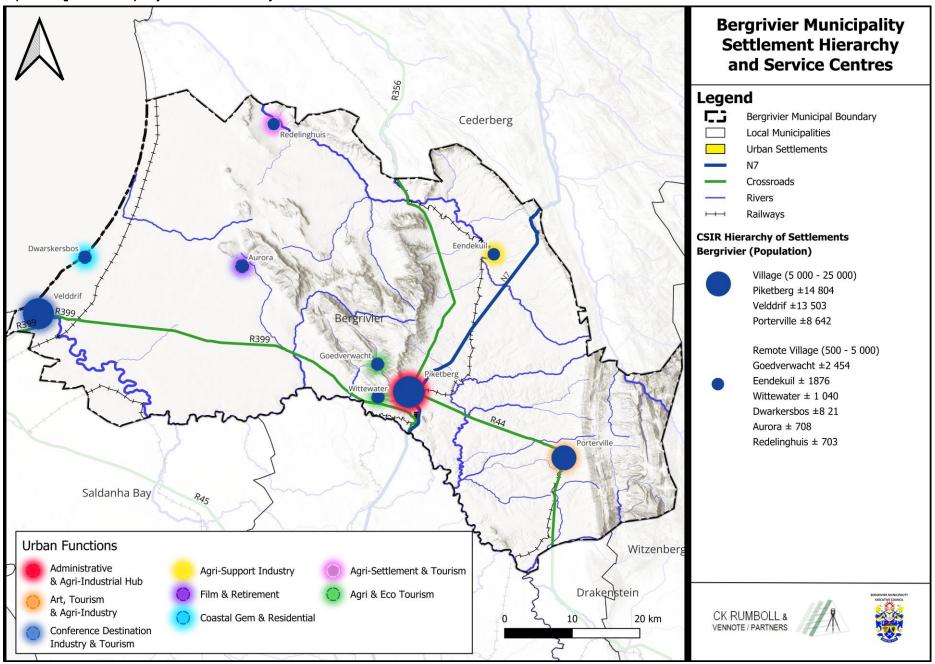
Air Transport:

There are no commercial airports within the municipal area.

Public Transport:

Mini-bus taxis are the dominant mode of public transport in the Bergrivier municipal area, primarily due to the flexibility of the mini-bus taxi industry to adapt to the various passenger demands in each town. The highest demand for taxis is registered on Friday afternoons and Saturday mornings, especially at the end of the month. 26 public transport routes have been identified in the Bergrivier municipal area. Most of the identified routes provide public transport needs mainly for farm workers to access local settlement centres from surrounding farms within the municipal area.

Map 14: Bergrivier Municipality Settlement Hierarchy and Service Centres



Waste

Bergrivier Municipality has no licenced waste disposal sites.

All the domestic waste in the towns is collected on a weekly basis with all the towns also provided with recycling bins located at easily accessible points for paper, plastic and glass. Bergrivier Municipality removes urban household waste of 100.0% Households at least once a week.

According to the Integrated Waste Management Plan (IWMP, 2019), ±10 300 tons of waste was generated in 2018 The settlements generated the following tonnage in 2018:

Prior ity	Ten Year Plan & Project	Additional Capacity	Total Capacity	Unit	Cost Estimates (Millions)	Popopulatio n (2018)	Tons/ annum (2018)
1	Dwarskersbos Drop-off	30	30	M³	R 4	739	194
2	Redelinghuis Drop-off	30	30	M³	R 4		
3	Eendekuil Drop-off	30	30	M³	R 4	1 690	412
4	Redelinghuis WDF,	Closure and rehabilitation of landfill site			R 4	636	139
5	Aurora WDF	Closure and landfill site				636	143
6	Porterville WDF incl Voorberg Correctional Services, Beaverlac, Great Winterhoek Forest Reserve	Closure and rehabilitation of landfill site			R 35	8 732	2 287
7	Piketberg WDF incl. De Hoek Mine	Closure and landfill site	Closure and rehabilitation of landfill site			13 700	3 555
-	Velddrif incl Laaiplek, Port Owen, Admiral Island					12 168	2 825
-	Goedverwacht					2 188	507
-	Wittewater					941	226
	Total 2018					41 431	10 289
	Estimated 2023						11 048
	Estimated 2027						11 693

Drop-offs to be constructed in the following towns: Redelinghuis, Dwarskersbos and Eendekuil.

Sewerage

Sanitation: upgrading of sewerage system for better quality of service; 100% of households serviced by municipality have access to sanitation. 78% Households, serviced by the municipality, have access to flush toilets connected to a sewerage system or network. 22% Households have access to flush toilets connected to a septic tank.

The sewerage volumes in 2014 are tabulated below:

(2014 Water Demand, 2014) Potential, assuming all stands occupied

Sewerage system:	Septic Tanks	Water Borne	Water use (kl/d)	NRW est. (kl/d)	AADD (kl/d)	Actual, for all occupied erven (kl/d)	Potential present PDDWF, @ full occupation of all erven (kl/d)	
Eendekuil	65%	35%	469	52	521	105	204	
Piketberg	0%	100%	2 078	519	2 597	1309	1 980	
Porterville	100%	100%	2 321	410	2 731	736	911	
Velddrif	40%	60%	3 959	990	4 949	170	1 933	
Redelinghuis	100%	0%				based on %	based on	
Aurora	100%	0%				of actual	theoretical	
Dwarskersbos	30%	70%				AADD AADD		
Sewerage system						WWTP Drainage Area (Present and future potential PDDWF's)		
						2319	5 028	

Although no cost has been provided, the master plan implementation will increase the total sewer system capacity of the towns within Bergrivier Municipality from its present Peak Daily Dry Weather Flow (PDDWF) of \pm 7 370 k ℓ /d to the future PDDWF of \pm 10 000 k ℓ /d (SWP, 2014).

Electricity

For 96.4% of households, electricity is the main energy resources used for lighting as per 2022 Socio-Economic Profile of Bergrivier Municipality. The Municipality is responsible for the distribution of electricity in all urban areas except for Goedverwacht, Wittewater and De Hoek which are private towns. The Municipality only distributes electricity to a small portion of Eendekuil where the low-cost houses are situated (162 households). ESKOM distributes electricity to the areas not serviced by the Municipality.

Future NMD for ea	ach Point of Sup		Electrical Distribution				
High Growth			Realistic Growth	า	Network Plan, 2015 to 2025		
Point of Supply	2011	2025	2011	2025			
Velddrif*	7438 kVA	9300 kVA	7438 kVA	8200 kVA	R 6.5m		
Piketberg	5891 kVA	8300 kVA	5891 kVA	7300 kVA	R 1.6m.		
Porterville	4094 kVA	4800 kVA	4094 kVA	4400 kVA	R 0.7m		
*NOTE: Over Hea reached in 2028. F 2035		Total	R 8.8m				

The IDP 2022-2027 put the cost estimation of upgrading electrical infrastructure in the municipal supply area at ±R22.5 million.

Water

Water Resources in Bergrivier Municipality are:

- The Berg River, the main water source for irrigation purposes.
- Mountain streams, which feed into retention dams.
- Bore holes for livestock and domestic use.
- Water Schemes and Reservoirs.

Bulk Water Infrastructure AADD (kL/d)							
Reservoir	Туре	Capacity (kL)	Total	Actual Present	Potentia I Future	Future develop ment	Total
Aurora	Reservoirs	300kl; 100kl	400kl	279	383	204	587
Duranakanahaa	Reservoirs	450kl	660kl	537	1 115	318	1 433
Dwarskersbos	Pressure Tower	210kl					
Eendekuil	Reservoirs	450kl	450kl	396	521	283	804
Goedverwagcht	Reservoirs	150kl (R1A); 136kl (R1B), 204kl (R2), 136kl (R3)	626kl	384/ 960	1 133	201	1 334
Piketberg	Reservoirs 206msl;230msl; 287msl; 315msl; 215msl; 315msl; booster, BP tank, fontein	3 300kl; 2 400kl	5 700kl	2 232	2 771	1 704	4 475
Porterville Monte Bertha	Rerservoirs	3 250kl; 500kl; 235kl	3 985kl	474	521	1 295	4 026
Porterville				2000	2 210		
Redelinghuis Combined	Reservoirs	190kl; 250kl	440kl	466	925	84	1 009
Velddrif	Reservoirs	2 000kl; 3 000kl	5 000kl	2 876			
	Pressure Towers	250kl (Pt1); 250kl (Pt2)		683 Lp; 588 Nh; 479 Po; 811 Vd	1 356 738 912 972	3 118	7 096

Wittewater	Reservoirs	50kl (R1); 50kl (R2); 50kl (R3); 350kl (R4)	500kl	144/ 360	425	67	492
Total				10 076			21 082

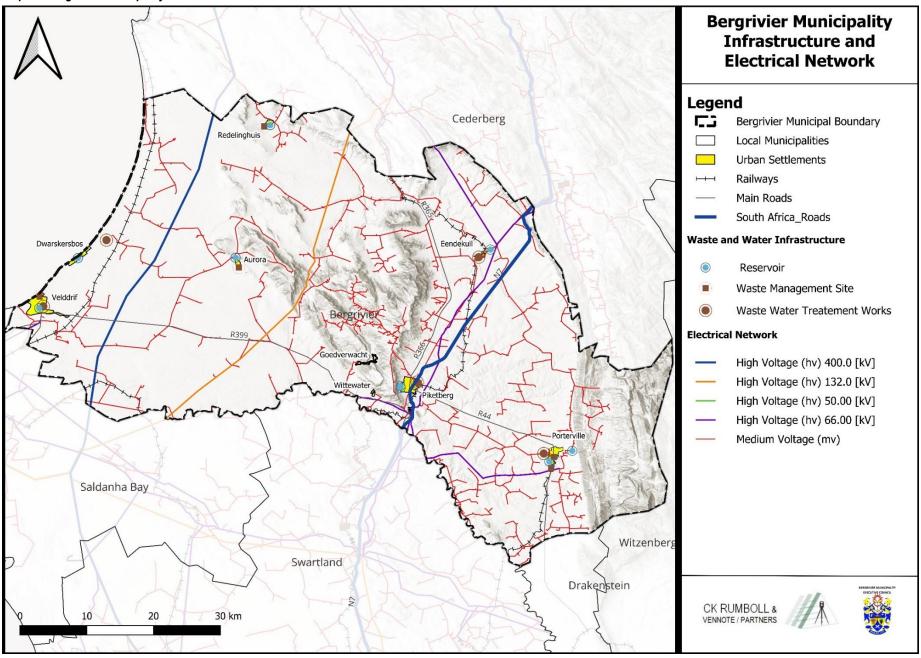
An additional AADD of 11 006 kl/d capacity is required. Although no cost has been provided, the master plan implementation will increase the Municipal system capacity from its present Annual Average Daily Demand (AADD) of 7 700 kl/d to the future AADD of 17 800 kl/d (WMP, 2014).

Cemeteries

Each settlement has one or more cemeteries as per the table below. There is a need for cemetery expansion or additional cemeteries across the municipal area.

Settlement	Number	Location of Cemeteries
Aurora	1	Begraasplaas no 1 – Located at southern end of town, Hoofstraat
Dwarskersbos	1	Located on the southern periphery of town
Eendekuil	2	Located (East) next to Community Hall Located (North) R65
Goedverwacht	1	The cemetery is found in a central area, west of the river and north of Church Street.
Piketberg	4	Jewish Cemetery - Die Trek Street 1 – Existing Cemetery: Carel Cillier Street 2 – Existing Cemetery Riemvasmaak 3 – New Cemetery across N7
Porterville	2	Existing Cemetery (All erven located adjacent to each other) Jakkalskloofpad Next to R44
Redelinghuis	2	Located at Eastern side of town in Kerkstraat Located at Western side of town next to Engelbrecht Street
Velddrif	3	Smith Begraafplaas - Located next to Smit Sports fields in Iris Avenue Noordhoek Begraafplaas - located next to Noordhoek Primary School NG Kerk Begrafplaas – NG Kerk Velddrif
Wittewater	1	The cemetery is located on the larger farm to the left of the entry road to Wittewater – there is adequate room for expansion.

Map 15: Bergrivier Municipality Infrastructure and Electrical Network



Amenities:

See matrix to follow for a comprehensive overview.

In general amenities comply to the norms. Porterville requires a primary school. Overall, there is a need for Grade R classes and skills training facilities in Piketberg and Velddrif. An open auditorium is required in Porterville and Velddrif. Soft surface sports fields (Cricket) are required in Porterville, Eendekuil, Redelinghuis and Aurora and golf training in Porterville. Educare facilities, after school care or learning laboratories and libraries should be encouraged.

Cemetery capacity is required in most settlements. Ongoing maintenance is required and where applicable a fencing programme should be implemented

Table 2: Social Amenities required in settlements with the Bergrivier municipal area

			Existing amenities & 2023 population				Required Amenities as per 2037 population									
	Village: 5 000 -25 000		16076	14272	9135	1983	868	748	743	20272	17997	11519	2501	1094	944	937
Life Balance	Nk = not known, Req = require, Not Required = NR	Norm	Piketberg	Velddrif	Porterville	Eendekuil	Dwarskersbos	Aurora	Redelinghuis	Piketberg	Velddrif	Porterville	Eendekuil	Dwarskersbos	Aurora	Redelinghuis
2	District Hospital (L1) (DH), Specialized (S)	NR	1DH	VreB	1DH	Pik	VreB	Pik/ VreB	Pik	0	0	0	0	0	0	0
Health & Emergency	Primary Health Clinic or Satelite (S) or Mobile (M)	1/5 000 - 7 000	18	1S	0	0	0	0	0	0	Up	0	S	0	S	S
Services	Fire Station, Municipal (M) or District (DM), Fire Bakkie (B)	Firebakkie (B)	1	DM	DM	DM	DM	DM	DM	0	М	В	Pik	DM	DM	DM
	Police Station	Variable	1	1	1	1	Vel	Vel	1	0	0	0	0	0	S	0
	Further Education and Training	NR	0	0	0	0	0	0	0	S	VreB	0	0	0	0	0
	Secondary School	1/12500	2	2	1	0	0	1	0	0	0	0	0	0	0	0
	Primary School	7 000	2	2	1	1	1	1	1	0	0	1	0	0	0	0
Education	ABET (A) /SkillsTraining (S)	Variable	0	0	0	0	0	0	0				S	0		S
	Special Education	nC	0	0	0	0	0	0	0	Inc	Inc	Inc	Inc	Inc	Inc	Inc
	Grade R Class at Primary School	1/1000	1	2	2	1	1	1	1	15	12	8	1	0	0	0
	Crèche / Early Childhood Development	1/2 400 - 3 000:	7	3	8	1	0	1	1	4	3	5	1	0	1	1
	Local/Neighbourhood Park (includes play equipment for children)	1 000	5	2	2	1	0	1	1	1	1	0	1	1	0	0
	Urban Gym (RSEP)	Not Required	2	1	0	0	0	0	0	0	1	1	0	0	0	0
Recreation	Grassed Surface (2 football fields equivalent) with or without seats	1/15000	2	1	1	1	0	1	1	0	0	0	0	0	0	0
Facilities	Athletics/Cricket Stadium (grassed field/ athletics track,stand 3000/ seats)	Criketfield	2	1	1 com	0	0	0	0	0	0	1	1	0	1	1
	Combi-court surface (x2; x4) / Level surface playing field	x2: 15 000; x1: 3000	2	1	2	0	0	1	0	0	0	0	0	0	0	0
	Community Pool (25m to 33m)	1/10000	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Library, Local (L), Mobile (M), Special categories i.e. disabled (MS)	1/5 000 - 20 000	2	2	2	0	0	0	0	0	0	0	М	0	М	М
Cultural	Museum - medium/small	Variable	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	Performing Arts Centre	Not Required	0	0	0	0	0	0	0	0	1Aud	1Aud	0	0	0	0

Human Settlement and Tenure

Waiting list, backlog and projects implemented:

The greatest need for housing exists in Piketberg (backlog of 2 307), Porterville, and Velddrif.

GAP housing is needed in Piketberg, Velddrif, Porterville, Redelinghuis, Goedverwacht, Eendekuil, Aurora and Wittewater. Simultaneously, Piketberg, as well as Velddrif and Porterville, are prioritized to provide GAP housing.

A comparison of the current verified housing backlog (demand) per typology as per the Bergrivier Municipality waiting lists for May 2023 with the 2018-2028 pipeline (supply) is tabulated below:

May 2023	Housing Backl	Housing Backlog:				Back	Implemente
Waiting List	RDP R0 – R 3500	Subsidized R 3 501 – R22 000	GAP R 22 001+	Total	2018 - 2028	Yarders	d by 2023
Aurora	76	12	0	88	67	15	
Eendekuil	218	55	0	273	229	58	45
Goedverwacht	15	10	1	26	23	n.a.	
Piketberg	1760	554	4	2318	1977	602	177
Porterville	1022	289	13	1324	1117	321	171
Redelinghuis	187	67	0	254	249	53	
Velddrif	893	185	6	1084	1314	787	
Wittewater	10	2	0	12	13	n.a.	
Totals	4 184	1 174	24	5 379		1 872	393

There is one UISP project in Velddrif.

Land Requirements:

Heritage

Several noteworthy and protected buildings are situated in Piketberg.

The Goedverwacht and Wittewater settlements also have considerable historical, architectural, aesthetic and social value. Notably some buildings, the historic graveyard and some trees in Goedverwacht and the rows of Sandveld Langhuise in Wittewater. Redelinghuis in the Sandveld region on the Verlorenvlei River is known as the Potato Capital of the Sandveld. The Langhuis is regarded as a unique representation of a distinctive vernacular architectural style developed from the first permanent buildings erected in the late 1800s.

It is also the area where Rooibos grows in its natural state. Aurora has high heritage value in terms of its distinct settlement qualities and surviving historic fabric as well as its association with early astronomical research (the nearby Arc of Meridian beacon is a Provincial Heritage Site).

In the rural areas there are some historic farmyards of which Kruispad, the summer and hunting farm of Simon van der Stel is one example.

Municipal Expenditure and Investment

Bergrivier Municipality received a total Western Cape Government Infrastructure Budget (WCG) allocation of R76.4million. Bergrivier Municipality allocated a total R56,187 million.

Spending on Social Infrastructure and development:

In 2021/22 Bergrivier Municipality received R76.4 million from the (WCG) infrastructure budget towards social infrastructure: Transport and public works received R73 million, Human Settlements R1.4 million and Health R2 million. Bergrivier Municipality complemented social infrastructure expenditure with an R7.785 million (18.2 per cent) allocation from their capital budget for social services (R1,465 million or 2,6%) and sport & recreation (R5,555 or 9,9%) and public safety (R0,765 or 1,4%).

Bergrivier Municipality complemented economic infrastructure spending with R13,244 million including R13,074 million towards road transport and R0,17 million towards planning and development.

Spending on Economic Infrastructure:

Economic infrastructure promotes economic activity. Spending on economic enabling infrastructure aids Economic growth and development and enabling higher Per Capita incomes. The WCG 2020/21 allocation included Transport and Public Works Provincial (Road transport infrastructure): R73 million (95.5 per cent).

The Municipality contributed R13.074 million (23.3 per cent of capital expenditure) towards road transport.

Spending on Trading Services:

The Municipality's infrastructure budget of R30.143 million (53.5 per cent) is allocated towards the provision of basic services (access to water, electricity, sanitation and refuse removal). The bulk of the spending



on trading services have been allocated towards water management (R3.497 million (11.6 per cent), Electricity (R4.710 million or 15.6 per cent) and wastewater management (R20,232 million or 67 per cent) and waste management (R1.704 million or 5.7 per cent).

Municipal income and expenditure:

Total revenue increased by R56,197,433 to an amount of R527,673,933 for the 2023/24 financial year when compared to the 2022/2023 3rd adjustments budget. Total operating expenditure for the 2023/2024 financial year has been appropriated at R540,375,275 and translates into a budgeted surplus of R37,169,267 after capital contributions.

Impact of growth and housing on municipal resources

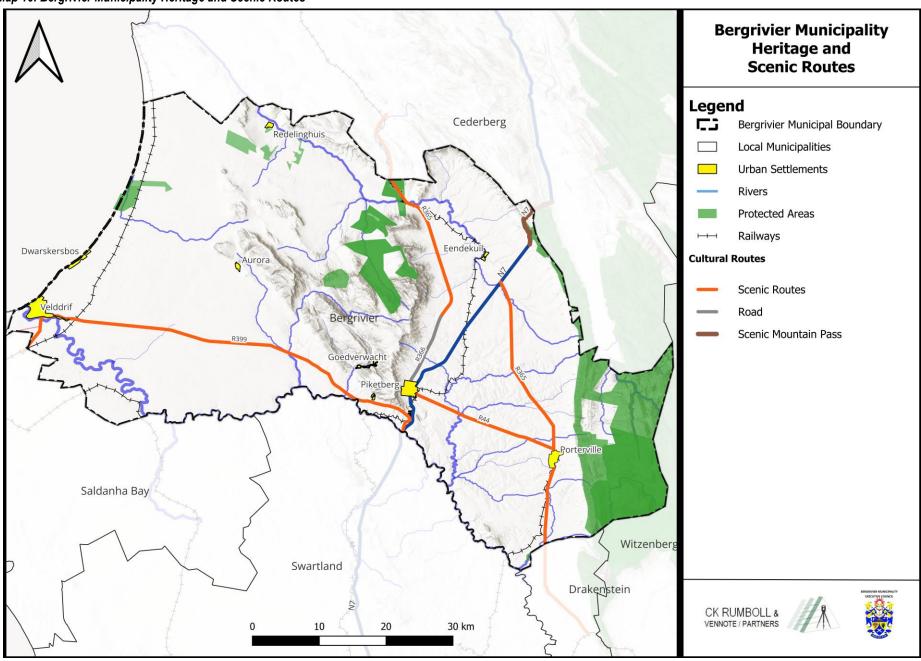
- The current rates base can no longer support the cost of services, especially considering the
 ageing infrastructure and the cost necessary in upgrading and refurbishment of service delivery
 infrastructure vehicles and equipment,
- Faces similar challenges with regard to water supply as it did with electricity, since demand growth outstrips supply,
- Growth in housing, results in growth in waste generation, which put further strain on solid waste removal services.
- It is of utmost importance to factor these cost factors into the true cost of services to continue delivering high quality services to all communities,
- All role-players would need to collectively contribute to ensure not only the financial sustainability of the municipality, but also the economic progression of its citizenry.

Arrears for rates and services

- It is doubtful whether inroads will be made in the collection of arrears debt over the short term as the current economic circumstances are not supportive of the debt collection efforts.

No additional cash flow from arrears debt is anticipated over the short term.

Map 16: Bergrivier Municipality Heritage and Scenic Routes



Hierarchy and Role of Settlements

Focus areas emerge from the hierarchy and role (connectivity) of settlements.

<u>Piketberg, Eendekuil, De Hoek, Wittewater, Goedverwacht and Redelinghuis</u> (Administrative and regional service centre for agri-value chain and processing): An intensive agriculture corridors including Verlorenvlei, Moutonshoek, Piket Boberg and the Eastern Foothills knits these settlements together to provide supportive infrastructure for the agriculture value chain and its intensification. Residential, rural and agri-tourism roles will be enhanced in Goedverwacht, Piketberg and Redelinghuis, whilst agri-industry and – services roles will be advanced in Piketberg and Eendekuil.

Velddrif and Dwarskersbos (Innovation and growth cluster):

Connects Saldanha IDZ and Cape Town. Roles as coastal holiday or residential town will grow. Alternative green energy generation, freight, conferencing and tourism can be enhanced. Connects conservation along the coast whilst balancing access to the ocean as an amenity for aqua sports and recreation. As freight routes R27 and R399 carry some supportive infrastructure to the transport industry.

Porterville (Arts and sports hub):

As there is strong good quality water, magnificent dawns and dusks and an active agri-industry and an operational railway connection to the Riebeeck Valley, there is an opportunity to promote arts, sport and conservation whilst agri-industry and its value chaing can be enhanced.

From a Grow Potential perspective, Piketberg, Velddrif and Porterville have a medium growth potential as does Aurora and Eendekui. Spatial provision for economic and industrial development should be made including space for innovation and training provision for training.

Roads & Transportation modes

Road Network and connectivity: Capitalise on opportunities high speed north south connectors such as N7 and R27 and inland connectors (R399) from the R44 and N7 to the coast create: N7 and R27 intersections and links inland and to other high-speed roads (N1 and N2) should enhance Bergrivier Municipality's role within the agrivalue chain of the West Coast District.

Public Transport modes, service frequency and routes limit mobility as most people travel on foot. Provide for non-motorized transport: well-maintained routes, shelter and transport of purchased goods Enhance transport facilities used by private providers such as taxi ranks and bus stops. Encourage services to transport purchased goods within settlements and provide dedicated parking for such vehicles inclose cproximity of the shop

Link lower order settlements to higher order settlements with NMT routes (Dwarskerbos and Velddrif; De Hoek and Piketberg).

Lobby to keep operating rail for tourism purposes travelling from Riebeek Valley to Porterville and back, intact.

Public Transport infrastructure:

Ensure dedicated parking for taxis <u>in central business area</u> on Saturday mornings and end of month when there is the highest demand for these services. Upgrade and establish taxi ranks in Piketberg, Porterville and Velddrif. Promote bus shelters.

Maintain <u>commercial bus services stops at Winkelshoek to enhance routes</u> accessibility to Bergrivier municipal commuters.

Routes and more frequent trips outside municipal area is required.

Facilitate shopping support services around grocery and related shops in Piketberg and Porterville.

Regional and district transport nodes to be established at Piketberg, Porterville and Velddrif.

The current capacity of the road transport network and the proposed networks as per the Master Plan accommodates the current population and capacity to accommodate growth and densification needs to be assessed.

Storm Water

Road and Storm Water <u>Infrastructure upgrades are required</u> in all settlement but following dirt road surfaces should be maintained as to not change the rural character of these settlement: Aurora, Redelinghuis and in the old part of Velddrif.

Reuse of storm water for irrigation of parks.

Waste

<u>For Households and businesses</u>: Provide recycling igloo spaces/ waste separation and collection spaces in settlements.

Re-use waste water at municipal level.		Provide garden waste to private composting plants and building rubble to infill projects.
Re-use waste water at municipal level. Electricity Households and businesses: Encourage green building technology and power generation.		Provide spatially for agri-processing and Industrial waste on site, close to site and establish waste re-use plants.
Households and businesses: Encourage green building technology and power generation.	Sewerage	Provide for oxidation dam upgrades in Velddrif as a priority.
Bulk: Establish Municipal and Private Renewable energy plants. Water Households: Assure provision according to norms: 25 litres of water per person per day, with water not to carried for distances longer than 200 m from the source to the home (UISP projects). Bulk: Promote alternative water generation (desalination and recycling). Grey water from Waste Water treatment plants used for irrigation purposes on open Spaces and agriculture. Calculated land requirements (need), demand (waiting list) and provision (pipeline) are mapped. Pipeling provision should indicate proximity to amenities, business and work. Promote different housing typologies in all settlements. Provision of amenities in Bergrivier Municipality complies partially with compulsory and discretionary norms. Pleating provision where norms are not met. Promote the preservation of worthy buildings and trees and concentration of buildings such as Piketberg, Auroing Porterville and Velddrif. Promote zones to protect historic buildings and to relax parking requirements and to promote pedestrian traff These zones can develop as destinations (see also precinct plans for Porterville, Piketberg and Velddrif). Preserve the following West Coast Heritage Themes: 1. West Coast paleontological fossil record. 2. Pre-colonial archaeology and early inhabitants of the area, early pastoralist sites. 3. Early colonial history and settlements; agriculture in well-watered fertile valleys and foothills late C17th early called the colonial production between settlers and with indigenous peoples; displacement of San a Khoekhoe. 5. Cultivation and agricultural production; history of farming and associated secondary industries. 6. Slavery and labour; Farm yard and agricultural production to mid C19th; sites of slavery. 7. Religion; C19th Church towns. 8. Routes and Transport, mountain passes- Piekenierskloof; early cattle and wagon routes, outspans; Railw development in C19th, associated stations and development. 9. Military History; VOC outposts; southern-mos	Electricity	
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Expenditure and childhood development centres (and Grade R), non-motorised transport routes and public transport infrastructuand skills development (and educational) facilities.	Expenditure and	Municipal multi-year capital budget source sufficient funds to address infrastructure needs including early childhood development centres (and Grade R), non-motorised transport routes and public transport infrastructure
Secure sufficient funds on maintenance of basic tradable services.	Investment	Secure sufficient funds on maintenance of basic tradable services.
Enable economic activity based on access to water, electricity, sanitation and refuse removal.		Enable economic activity based on access to water, electricity, sanitation and refuse removal.
Secure funds for social infrastructure and particular sports facilities and neighbourhood open spaces (soft surfac fields.		Secure funds for social infrastructure and particular sports facilities and neighbourhood open spaces (soft surfaces fields.
Secure funds for economic infrastructure and services.		Secure funds for economic infrastructure and services.
Pursue alternative revenue sources from resources such as renewable energy.		Pursue alternative revenue sources from resources such as renewable energy.
Recommended future spending should focus on early childhood development and youth hubs.		

2.2 Municipal, Provincial & Regional MSDF and Sector Plan Analysis and Directives

2.2.1 2018 MSDF Review

The review of the MSDF 2018 establishes to what extent the MSDF achieved its goals as a framework to guide development and land use within Bergrivier Municipality.

Spatial vison and concept:

The MSDF's 2018 Spatial vison and concept has materialised and concepts, requiring technical evaluation, will stay on the agenda on the new MSDF until evaluated.

Bioregional Planning:

The SPC Planning based on bioregional planning has proved to be a sound basis for the MSDF. The cross-reference to the WC Rural Development Guidelines, 2019 provided detail and ensures a level of consistency across municipal boundaries for adjoining local authorities.

Urban Edges:

The urban edges have proved to be reliable and well-informed by levels of development, and have ensured that development remains compact, and sustainable in terms of the Municipality's primary mandate of efficient service delivery.

Strategic Sites and Residential proposals:

The 2018 MSDF identified a number of "Strategic Sites" to accommodate urban growth, with the focus on the provision of land for subsidized residential development. Some SSs are in the process of being developed and the land use rights have been obtained.

Currently in progress with development of the following residential areas and SSs as per MSDF 2018 are the implementation of the subsidized housing projects in Piketberg, Porterville and Eendekuil.

All the residential areas have not been developed as bulk services need to be upgraded and the MSDF 2024 -2029 needs to make provision for future development areas for both a 5-year cycle and 20-year cycle Residential areas and SSs not developed as yet must be carried over into the new MSDF, and prioritised.

To ensure ongoing safety and security within the municipal area, the RSEP programme was implemented in Velddrif, Piketberg and Porterville.

Education:

The 2018 MSDF identified suitable sites for the provision of additional school sites which were required. However, implementation has not followed planning. Since the MSDF 2018, with an identification of the need for Secondary, and Primary schools and a FET college, no public-school sites have been developed. Where schools are over-crowded and needs intervention, the Municipality should continuously lobby with the Western Cape Department of Education, and particularly their planning division.

Precinct Plan & Nodes:

The 2019 MSDF identified the development of the Piketberg, Porterville and Velddrif precinct plan and the Velddrif historic precinct plan. These approved precinct plans must be incorporated into the new MSDF and the support of National and Provincial Treasury for the precinct plans must be used to leverage funds for their implementation.

Economic development:

As industrial zoned land in Piketberg is fully developed or committed, the remaining municipal land should be earmarked for industrial development.

Given the freight routes (N7, R44 and R399) as per WCDMSDF, there is a need for truck stops around Porterville and Velddrif.

There is also a need for farm worker pick-up points.

Achievement of project goals as per MSDF 2019:

Of the 43 identified projects, only some have been achieved in the last 5 years, as per the list projects included as Annexure 3.

The evaluation of 2018 MSDF highlights Major Priorities for the next SDF cycle: land for housing, economic development, industry and schools.

The following sector plans or strategies, Local Economic Development Plan, Disaster Management Plan and Human Settlement Plan, provide spatial and development directives inclusive of:

- Enabling policy;
- Accelerating the economy;
- Growing tourism (longer stays, average spend increase, number of visitors);
- Focus on capital investment supportive of the tourism industry;
- Create job and business opportunities as tourism sector strengthen and grows;
- Rural communities to socially benefit from tourism sector economy;
- Enhance conservation; and
- Integrate Disaster Risk Management into the strategic, operational planning and project implementation of all line functions and role players within Bergrivier municipality.

2.2.2 Sector Plan, WCPSDF, WCDMSDF and Greater Saldanha EMF Spatial Analysis and Directives

The West Coast District includes Cederberg, Matzikama, Saldanha and Swartland.

The WCDMSDF, 2023 sets objectives to achieve: a) equal access to opportunities, protection and benefits,

b) restrict ecological footprint, c) align growth with infrastructure provision and d) safe high-quality living environments. (Coordinate the effective use of resources (financial, human & natural)).

The strategic location of the Saldanha Bay harbour in the district and its potential to be a key catalyst for development and economic growth in the district.

In terms of Built environment:

Settlement pattern mainly determined by coastline and Saldanha Bay Harbour, and the N7 road. Saldanha Bay – Vredenburg area is the nucleus of development and activity in the district. Malmesbury along the N7 is a major town for the region. Piketberg is a service centre. All other settlements are seen as small towns. Movement along the N7 is of vital importance for development.

Infrastructure:

Water resources in the district are under pressure and new water sources need to be identified and established.

Transport:

Transport can be considered as being potentially the most significant and important indicator that will determine the success of existing and future development in the West Coast District.

The West Coast District has a number of significant landmarks, most of which correspond to the 'edges': Atlantic Ocean to the west and mountains to the east. These district landmarks are the Saldanha Bay Harbour, Mountains, the Olifants, Berg and Verlorenvlei river.

Proposal for sustainable water supply includes:

Other alternatives, which require further assessment, may include rain water harvesting and ground water extraction. Promote water wise measures by means of a dedicated campaign.

Improving water quality of the Berg and Olifants Rivers as per Sustainable Water Management Plan (DEADP, 2018). Coordinate the effective use of resources (financial, human & natural).

Urban densities are to be increased to 25 du/ha before allowing expansion to urban edges. Land development incentives are given as a possible means of encouraging densification in desired locations.

Urban densification should take cognisance of ecological and heritage concerns.

Regional directives derived from the Greater Saldanha Environmental Management Framework follow:

The West Coast is known as a water scarce area, with rainfall averaging 300 mm per year. Probably the most important water resource in the area is the Berg River. Groundwater plays a lesser but still significant role as a water supply source. The Berg River catchment is a significant source of water on a regional level. The Berg River is an important for source for the irrigation of crops.

Berg River Water Management Area is of vital importance for the conservation of aquatic ecosystems. The Berg River Estuary plays a vital role in providing habitat, shelter and breeding areas for a range of fish species. This is especially important for the fish industry in the area.

Climate change projections and possible impacts have various repercussions for planning within the Greater Saldanha area.

The West Coast is a water scarce region, with limited surface water resources. The main sources are the Berg River and groundwater from Langebaan Road Aquifer System. Desalination is seen as an option for water supply but the understanding of environmental impacts in the local context is limited.

The natural characteristics of the area are seen as an important asset, particularly for the tourism industry. Protected areas such as the WCNP, Langebaan Lagoon and the Berg River Estuary provide natural areas that serve as important tourist destinations.

In the social context, cultural history contributes to sense of place for local communities.

Directives for and from the Local Economic Development Strategy were derived from the competitive advantages and disadvantages listed below (IDP) 2022-2027:

	LED Strategy
Advantages	Disadvantages
	General
 Agriculture. Tourism which also contributes to retirement. N7 feet and wheels are a major advantage that should be utilized to benefit the local economy. R27 (end of West Coast Road) feet and wheels (Velddrift) are of major advantage. The local retail is growing fast. Bergrivier Municipality has a developmental mindset. 	 Limit marketing of attractions. Provincial roads are in an inadequate condition. Variation in the quality of school education. Limited skills and training, including business skills training. Limited activities for the youth. Racism persists in many areas which implies a lack of social cohesion. Gatekeeping in private and public sector stifles/wastes opportunities for growth. Limited affordable business property. Limited investment in town beautification is required. Limited rental housing. Slow internet connectivity and weak cell phone reception in some areas. Difficulty accessing DTI grants is stifling business opportunities. Agricultural Sector
Cood quality of graps in table grapes who	

- Good quality of crops in table grapes, wheat, rooibos, berries, fruits are yielded.
- Well established business for export markets (fruit farmers and cooling facilities).
- Farmers are well-organized and up-to-date.
- Well-developed agro-processing ventures exist.
- New opportunities exist in rooibos cultivation and processing.
- Space and water available to expand high-value crops (grapes & berries).
- Agri-tourism creates new opportunities and funding streams.

- High import tax on agriculture equipment and machinery (to be confirmed).
- Trend of reduction in farmers due to economies of scale.
- Agro-processing does not create room for small & emerging players.
- Over spraying of pesticides may have a negative environmental impact and economic consequences.

Inland Tourism

- Numerous natural resources and attractions creating things to do – 22 waterfalls, Beaverlac, mountain biking, hiking, 4x4s.
- Beautiful landscapes and vistas which change over seasons.
- Roads allow for access to the top of mountains.
- World-class paragliding multi-site venue.
- Safe and affordable quality of life for retirement community access to hospitals.
- Potential for wedding tourism.
- Multiple heritage sites.
- Experience the country life only 1.5 hours from Cape Town with agro-processing (breweries, wineries, farmers markets).
- Eco-tourism Berg Estuary, Verlorenvlei, Rocherpan.
- Bo-Berg farm experience.

- Room for improved strategy around marketing the tourism sector.
- Very little cross-marketing and sharing of things to do.
- Anchor attractions need upgrading and better facilities for the public.
- Signage is inadequate and delayed by red tape treasures stay hidden.
- Society still divided by race.
- Unnecessary petty rivalry in tourism and amongst businesses.
- Short-term thinking about tourism, e.g. farmers not opening farms for cycling routes
- More public information.
- Not yet targeting mountain biking market.
- Need stronger focus on preserving what we have

Coastal tourism

- Authentic fishing village experience.
- Safe and affordable quality of life.
- Good for retirement, with hospital proximity.
- Variety of birds and opportunities for photography.
- Good, safe beach at Dwarskersbos.
- Numerous heritage assets.
- Wedding tourism potential.
- · Niche sailing market.
- Housing rental opportunities: holiday houses for IDZ staff.
- Room for improved strategy around marketing the tourism sector – very little cross-marketing and sharing of things to do.
- Anchor attractions need upgrading and better public facilities.
- Limited signage treasures hidden from passers-by.
- Poor customer service in retail and service sector.
- Poor attitude towards tourism by some community members.
- Limited skills to unlock value in the area.

Bergrivier Disaster Management Plan (2016) - Climate Change

The Disaster Management Act is a legal instrument that provides coherent and transparent information that aims to reduce, minimise and prevent disasters through risk assessment and mitigation strategies. The Disaster Management Plan (DMP) gives priority to development measures that reduce the vulnerability of disaster-prone areas, communities, agriculture and infrastructure. It also promotes disaster management training and community awareness to reduce the vulnerability of communities at risk.

Development Priorities include:

- **i. Disaster Management Plan:** The municipality is currently in the process of revising the risk assessment of the municipality. The Disaster Management Plan will be revised during the 2023/24 financial year.
- ii. Implement Community and Rural Safety Plan: Implementation of the Community and Rural Safety Plan initiatives is ongoing.
- iii. Fire -By-law: The Municipality's Fire By-law will be revised during the 2022/23 financial year.

Bergrivier Human Settlement Plan, 2018

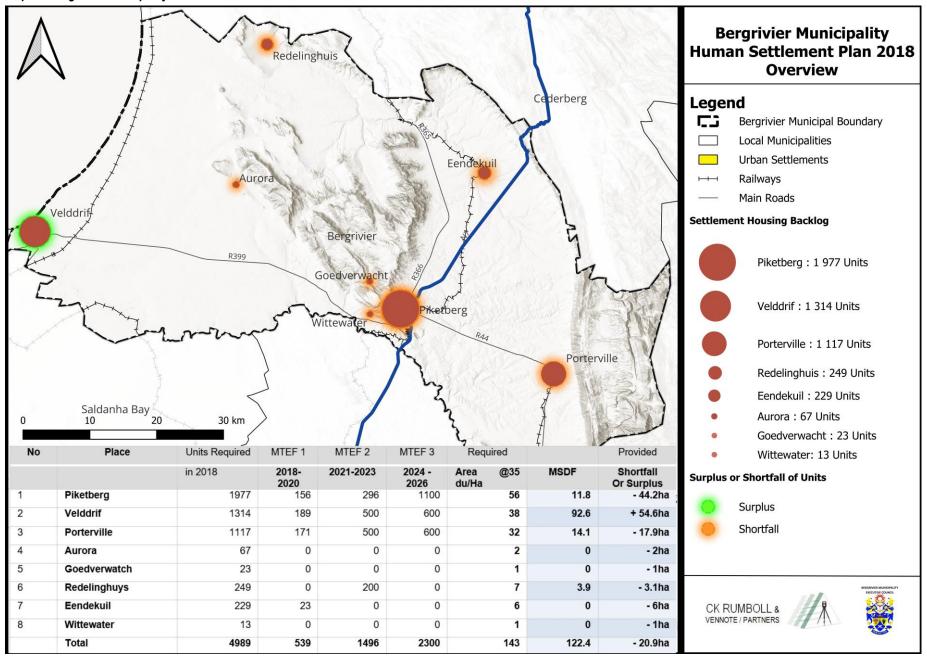
Minimum plot sizes of 120 m² (at 40 units per ha) for BNG units, 120 to 195m² for GAP units and 500m² for high income is proposed.

Based on the hierarchical role and function of the various towns, Piketberg, Porterville and Velddrif were identified as settlements for further growth in terms of housing, social and economic investment. As for the remaining settlements, growth should be limited. The focus for housing development should be on Piketberg, Porterville and Velddrif.

The table below provides a summative overview of the state of housing provision planned within the Bergrivier Municipality.

No	Place	Nr of Units		MTEF 1			MTEF 2			MTEF 3		Required	Prov	vided
		Required	2018	2019	2020	2021	2022	2023	2024	2025	2026	Area	MSDF	Shortfall
		(in 2018)										@35 du/Ha	Area	Or Surplus
1	Piketberg	1977	0	0	156	46	50	200	300	400	400	56	11.8	- 44.2ha
2	Velddrif	1314	0	89	100	100	200	200	200	200	200	38	92.6	+ 54.6ha
3	Porterville	1117	0	0	171	100	200	200	200	200	200	32	14.1	- 17.9ha
4	Aurora	67	0	0	0	0	0	0	0	0	0	2	0	- 2ha
5	Goedverwatch	23	0	0	0	0	0	0	0	0	0	1	0	- 1ha
6	Redelinghuis	249	0	0	0	0	100	100	0	0	0	7	3.9	- 3.1ha
7	Eendekuil	229	0	23	0	0	0	0	0	0	0	6	0	- 6ha
8	Wittewater	13	0	0	0	0	0	0	0	0	0	1	0	- 1ha
	Total	4989	0	112	427	246	550	700	700	800	800	143	122.4	- 20.9ha

Map 17: Bergrivier Municipality Human Settlement Plan 2018 Overview

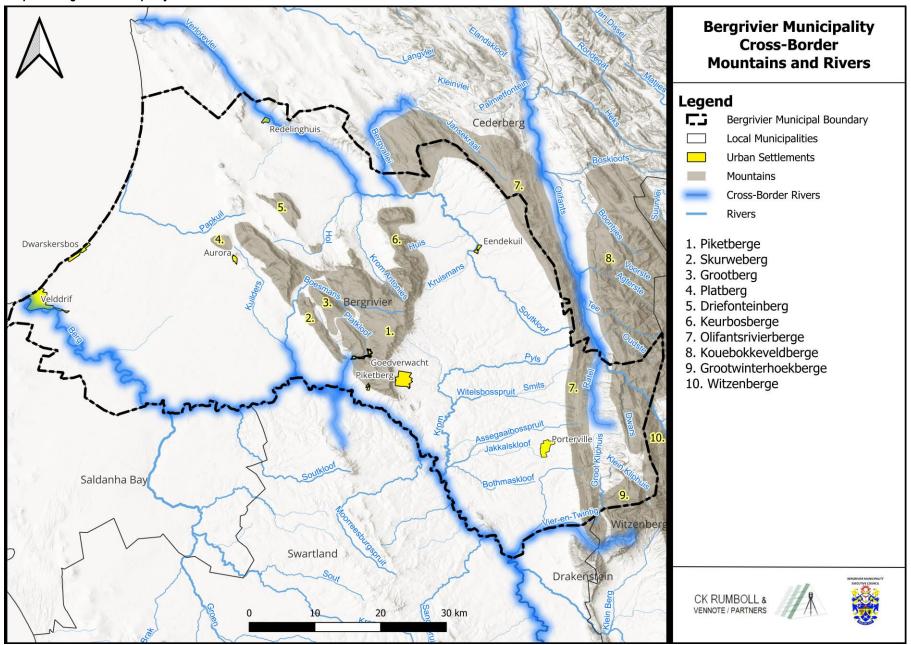


2.3 Spatial Analysis and Neighbouring Municipal Resources

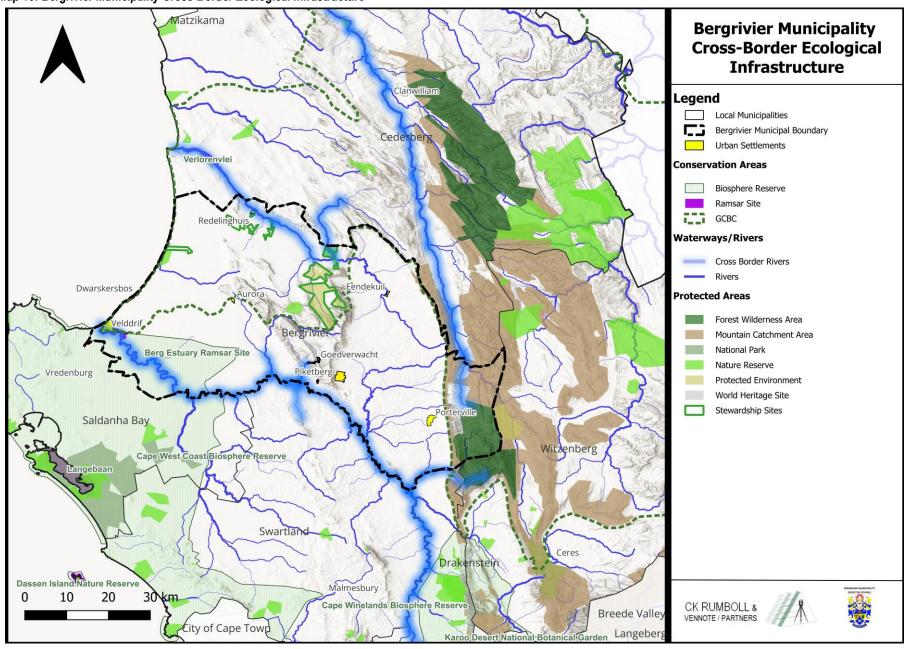
Five local municipalities abut Bergrivier Municipality, namely the Cederberg, Witzenberg, Drakenstein, Swartland, and Saldanha Bay Local Municipality.

Municipality	Cederberg	Witzenberg	Drakenstein	Swartland	Saldanha Bay
Shared boundary	Entire northern boundary	Eastern boundary	Short section of southern boundary	Southern Boundary	Section of South Western- boundary
 Mountain Ranges: a) Conservation corridors extends along the boundaries. b) protect lower slopes and minimize visual and ecological intrusion. 	 North and north eastern boundary: Olifantsrivier Mountains. 	- North-east: Witzenberge and Grootwinterhoekberge Mountains.	- South East: Olifantsrivier Mountain.	None	None
Rivers Enhance biodiversity conservation and wilderness tourism opportunities. Provide for local recreation need.	VerlorenvleiBergvalleyRatelOlifants river	Leeu RiverOlifants River	- Kleinberg River	SandbergspruitMatjies RiverBerg River	Soutkloof RiverSout River
Conservation & Proclaimed conservation areas Maintain conservation status of mutual Nature Reserves. Promote extension of reserves into a continuous biodiversity corridor through stewardship conservancies on private farms. Protect indigenous and listed alien woodlots and mature trees.	 Regional CBA Network/Climate Change Corridors. Verlorenvlei RAMSAR site. Winterhoek Mountain Catchment Area. Beaverlac Nature Reserve. 	 Grootwinterhoek Wilderness Area and Nature Reserve Koue Bokkeveld Mountain Catchment Area. 	- Grootwinterhoek Nature Reserve	- Regional CBA Network/Climate Change	 Cape West Coast Biosphere Reserve. Berg River Estuary RAMSAR site. Regional CBA Network/Climate Change

Map 18: Bergrivier Municipality Cross-Border Mountains and Rivers

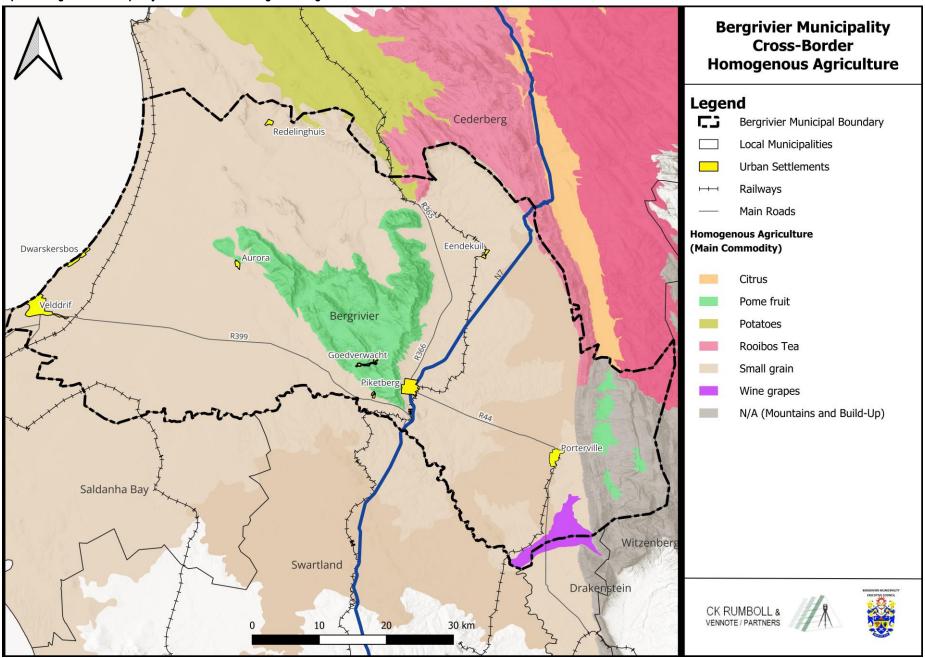


Map 19: Bergrivier Municipality Cross-Border Ecological Infrastructure

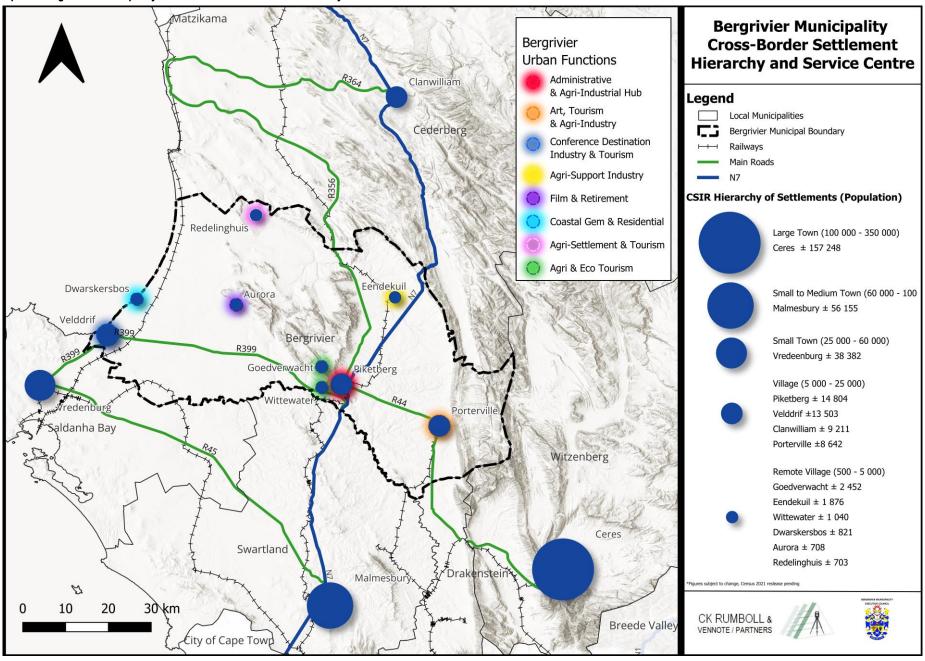


Cross Border Analysis Continued	Cederberg	Witzenberg	Drakenstein	Swartland	Saldanha Bay
Transport Network Direct development in rural areas to urban settlements with opportunity to grow economy e.g. tourism in Velddrif (Estuary) Aurora, Goedverwacht, Wittewater, Piketberg and Porterville (Mountain Reserves) Promote tourism routes e.g. R62.	 R366 linking with Elands Bay. R365 linking with Leipoldville. R393 linking with Citrusdal. Impact of increasing heavy vehicle haulage on route along the coast past Dwarskersbos and through Velddrif. 	Impact of influx/migration into Ceres and Tulbagh areas (R44/R46 link).	- R44 Saron - Gouda link. Link to Saron and Gouda and implications of proximity of Porterville as a service centre.	 N7 corridor. R399 linking with Moorreesburg. 	 R27 linking with the R45. R399 linking with Vredenburg, Saldanha and IDZ.
Agriculture Protect river systems and catchments. Protect conservation of natural vegetation.	- Intensive farming of citrus and extensive farming of Rooibos Tea	- Intensive fruit and berry farming.	- Mixed and intensive grape and wine farming.	- Small grain farming.	- Mixed and small grain farming.
Settlement status	Clanwilliam is a village (between 5 000 and 25 000) with a population of ±9 489 people.	Ceres is a large town (between 100 000 and 350 000) with a population of ± 157 248 people.	Paarl is a large town (between 100 000 to 350 000) and a has a population of ±247 840 people.	Malmesbury is a small town (between 25 000 and 60 000) with a population of \pm 56 155 people.	Vredenburg a small town (between 25 000 and 60 000) with a population of ± 38.382 people.

Map 20: Bergrivier Municipality Cross-Border Homogenous Agriculture



Map 21: Bergrivier Municipality Cross-Border Settlement Hierarchy and Service Centre



CHAPTER 3: Land Demand, Supply and Settlement Development Guidelines

SPLUMA requires that the future demand and need for housing and related social and infrastructure services be considered and addressed as part of the SDF to allow for effective and sustainable planning in settlements.

3.1 Land Required

For each urban area the **need and demand for land** within the short term (5 years) and long term (15-20 year) timeframes has to be considered in the spatial proposals. The need for housing equals the population projections as 5-year intervals over the next 20 years. The demand for housing equals the municipal waiting list with the pipeline as the list of priorities.

3.1.1 Household Growth Projections

The projected need was established using the Midyear Population Estimates, 2022 and projecting the household (hh) growth of Bergrivier Municipality as per the table below.

Table 3: Bergrivier Municipality Household Growth per 5-year cycle (MYPE 2022)5

Settlement	2022 Pop	2027 Pop	Add Pop	Add HH 2027	2032 Pop	Add Pop	Add HH 2032	2037 Pop	Add Pop	Add HH 2037	2042 Pop	Add Pop	Add HH 2042	20 year Add Pop	20 Year Add HH
Aurora	705	767	62	16	827	61	16	905	78	21	983	78	21	278	75
Dwarskersbos	817	889	72	19	959	71	19	1 049	90	24	1 140	90	24	322	87
Eendekuil	1 866	2 029	164	43	2 190	161	44	2 396	206	56	2 602	206	56	736	198
Goedverwacht	2 413	2 625	212	55	2 833	208	56	3 100	266	72	3 366	266	72	953	256
Piketberg	14 725	16 016	1 291	338	17 287	1 271	344	18 912	1 625	439	20 537	1 625	439	5 812	1 560
De Hoek	402	438	35	9	472	35	9	517	44	12	561	44	12	159	43
Porterville	8 606	9 360	754	197	10 103	743	201	11 053	950	257	12 003	950	257	3 397	912
Beaverlac	72	78	6	2	84	6	2	92	8	2	100	8	2	28	8
De Lust	834	907	73	19	979	72	19	1 071	92	25	1 163	92	25	329	88
Redelinghuis	700	761	61	16	822	60	16	899	77	21	976	77	21	276	74
Velddrif	13 435	14 613	1 177	308	15 772	1 160	313	17 255	1 482	401	18 738	1 483	401	5 303	1 423
Wittewater	1 034	1 125	91	24	1 214	89	24	1 328	114	31	1 442	114	31	408	110
Rural	29 874	32 492	2 618	685	35 071	2 579	697	38 368	3 296	891	41 665	3 297	891	11 791	3 164
Total	75 484	82 100	6 616	1 732	88 616	6 516	1 761	96 945	8 329	2 251	105 277	8 331	2 252	29 792	7 996

The projections reveal that in 20-years period, the households in the Bergrivier Municipality, are going to increase by nearly eight thousand (7 996 or 40,5%) households compared to the 19 760 households in 2022.

The projected household growth and income, split into indigent and taxable, was used to calculate the additional land to be provided for in this SDF cycle. Erven of 120 to 195m² for GAP units and 500m² for high income were used as the norm to calculate the netto land requirements.

⁵ Calculated with a total average of a 4-person household

Table 4: 5-year household projections per taxable category and netto land requirements

Additional House	holds & La	and (ha)		2	027		2032			2037			2042				Additional 20 Year Total						
Settlement	Waiting list Land Required (ha)	House	eholds	Land (h	na)	House	eholds	Land (h	na)	House	holds	Land (I	ha)	House	holds	Land (I	na)	House	holds	Land (h	na)	Total add land per settlement incl Wlist	
A	(IIa)	Ind	Tax	Ind	Tax	Ind	Tax	Ind	Tax	Ind	Tax	Ind	Tax	Ind	Tax	Ind	Tax	Ind	Tax	Ind	Tax		
Aurora	88	1,5	9	14	0,14	0,62	9	14	0,15	0,63	12	18	0,19	0,80	12	18	0,19	0,80	41	63	0,66	2,86	5,02
Dwarskersbos	0	0	8	11	0,12	0,50	8	11	0,13	0,51	10	14	0,16	0,65	10	14	0,16	0,65	35	51	0,57	2,30	2,87
Eendekuil	273	4,9	17	26	0,27	1,16	17	26	0,28	1,18	22	33	0,35	1,51	22	34	0,35	1,51	79	119	1,26	5,35	11,51
Goedverwacht	26	0,5	28	27	0,45	1,21	29	27	0,46	1,23	37	35	0,59	1,57	37	35	0,59	1,57	131	124	2,10	5,59	8,19
Piketberg	2318	42,2	130	208	2,08	9,35	132	211	2,12	9,51	169	270	2,71	12,15	169	270	2,71	12,16	601	959	9,61	43,17	94,98
De Hoek			2	8	0,03	0,34	2	8	0,03	0,34	2	10	0,04	0,44	2	10	0,04	0,44	8	35	0,13	1,56	1,69
Porterville	1324	24,2	82	116	1,30	5,21	83	118	1,33	5,29	106	150	1,70	6,77	106	150	1,70	6,77	376	534	6,02	24,04	54,26
Beaverlac			2	0	0,02	0,00	2	0	0,03	0,00	2	0	0,03	0,01	2	0	0,03	0,01	7	0	0,11	0,02	0,13
De Lust			0	19	0,01	0,84	0	19	0,01	0,86	0	24	0,01	1,10	0	24	0,01	1,10	2	87	0,03	3,90	3,92
Redelinghuis	254	4,7	9	7	0,15	0,31	9	7	0,15	0,32	12	9	0,19	0,40	12	9	0,19	0,40	42	32	0,67	1,44	6,81
Velddrif	1084	19,2	159	148	2,54	6,67	162	151	2,59	6,78	207	193	3,31	8,67	207	193	3,31	8,67	734	685	11,75	30,80	61,75
Wittewater	12	0,2	10	13	0,17	0,60	11	14	0,17	0,61	14	17	0,22	0,78	14	17	0,22	0,78	48	61	0,77	2,76	3,73
Rural	0	0	385	300	6,16	13,51	392	305	6,27	13,74	501	390	8,01	17,56	501	390	8,01	17,56	1778	1386	28,45	62,37	90,83
Total	5 375	97,3	841	896	13,32	39,70	855	911	13,69	40,37	1082	1147	17,49	51,61	1082	1147	17,50	51,62	3860	4101	62,00	183,30	345,70

3.1.2 Housing Demand

The projected demand was established as 5 379 opportunities as per municipal waiting lists, June 2023. The biggest demand for subsidized (RDP/Indigent) as well as GAP and social housing exists in Piketberg, Porterville and Velddrif.

Table 5: Waiting list per income group (Municipality, July 2023)

Settlement	R0 - R3500 RDP/indigent	R3501-R22000 GAP	>R22000 Affordable	TOTAL
Aurora	76	12	0	88
Eendekuil	218	55	0	273
Goedverwacht	15	10	1	26
Piketberg	1760	554	4	2318
Porterville	1022	289	13	1324
Redelinghuis	187	67	0	254
Velddrif	893	185	6	1084
Wittewater	10	2	0	12
Ander	0	0	0	0
TOTAL	4181	1174	24	5379

The <u>need for affordable, GAP and social housing</u> is the highest in Piketberg and Porterville with 1 174 GAP opportunities and 24 Affordable opportunities on the waiting list (July 2023).

There is a substantial demand for holiday and medium and higher income housing and housing for retirees in the coastal towns of Velddrif, Dwarskersbos and Aurora which are popular destinations for weekends and holidays. There is also a high demand for agri-worker housing in Redelinghuis and Eendekuil.

Social housing should be provided as the female-headed households and constituted a third (31,5% of 16,275 households) of the total households in 2011.

More sixty per cent (60,9%) of households in 2016 in Bergrivier Municipality own their dwellings, whilst a fifth (20%) rented theirs from private individuals. In addition, Bergrivier Municipality has a total of 1 872 backyard dwellers (2023). Formal dwellings have increased from 79.4% in 2021 to 81.2% in 2022. (SEP 2021 and 2022).

The table below indicates Bergrivier Municipality waiting list as well as the total land required.

Table 6: Bergrivier Municipality housing waiting list and land requirements

Town/Settlement	RDP (0-R3500)	@160 m ² equals ha	R3501- R22000	@250 m ² , equals ha	>R22000	450m²	TOTAL	Total ha Required	Provided SDF2018
Aurora	76	1,1	12	0,3	0	0,0	88	1,5	29,7
Eendekuil	218	3,5	55	1,4	0	0,0	273	4,9	9,1
Goedverwacht	15	0,2	10	0,3	1	0,0	26	0,5	-
Piketberg	1760	28,2	554	13,9	4	0,2	2318	42,2	93,4
Porterville	1022	16,4	289	7,2	13	0,6	1324	24,2	267,2
Redelinghuis	187	3.0	67	1,7	0	0,0	254	4,7	16,8
Velddrif	893	14,3	185	4,6	6	0,3	1084	19,2	132,2
Wittewater	10	0,2	2	0,1	0	0,0	12	0,2	-
Other	0	0,0	0	0,0	0	0,0	0	0,0	-
TOTAL	4181	66,9 ha	1174	29,4 ha	24	1,1 ha	5379	97,3 ha	548,4

3.1.3 Bulk Infrastructure Capacity

The availability of bulk infrastructure and services contributes to the economy and future development in settlements within Bergrivier Municipality.

The need for water treatment works (WTWS) infrastructure is very high in Eendekuil, whilst upgrading of WTWs is required in Velddrif, Aurora, and Dwarskersbos.

The need for wastewater treatment works (WWTWs) is very high in Velddrif, while upgrading of WWTWs is needed in Piketberg, Dwarskerbos and Eendekuil with an entirely new sewer system being required in both Redelinghuis and Aurora.

The need for increased electrical capacity, is high in Velddrif and Dwarskersbos while upgrades are required in Porterville and Piketberg. Promotion and establishment of green/renewable projects for Bergrivier Municipality are encouraged in all settlements.

Improved storage for potable water is required in Piketberg, Eendekuil, and Dwarskersbos while upgrading of existing storage infrastructure is required in Porterville.

Table 7: Bergrivier Municipality Infrastructure Status Quo Summary

W	Settlement	Water Source	WTW	WWTW		Electricity	Storage		
4	Piketberg								
1 & 2	Porterville								
7	Velddrif								
5	Eendekuil								
5	Redelinghuis			Septic Tanks					
6	Aurora			Septic Tanks					
6	Dwarskersbos								
Colour	Upgrading neede	ed		Abbreviation	Word	d			
Red	before 2028			W	Ward	ds			
Yellow	between 2028 –	2033		WTW	Water Treatment Works				
Green	after 2033			WWTW	Wastewater Treatment Works				

The provision of bulk services as per Master Plans considered the housing backlog and housing need projections. The following threats, strengths and weaknesses related to infrastructure were identified.

 Opportunities Catalytic projects enabling the provision of infrastructure. 	ThreatsExpensive potable water.Loadshedding.
Strengths Infrastructure/ Roads R399, R365, R366 and N7.	 Weaknesses Upgrade of infrastructure - future development. Housing backlog Low levels of income & dependency on Municipal support.

Directives for bulk services:

Effective management and use of water as a scarce natural resource requires an overarching approach to water demand and the provision of adequate bulk water infrastructure in Bergrivier Municipality to adequately plan for the impact of future droughts and climate change conditions. The following directives apply:

- 1) Ensure that a base level of services is available for all residents in the municipality including those households qualifying for indigent grants.
- 2) Where possible implement GAP housing schemes as part of subsidy projects so as to help crosssubsidise the required infrastructure projects.
- 3) For low density settlements promote sustainable use of natural resources and reduce dependency on conventional grid services. The following solutions are proposed:
 - Promote the use of solar hot water projects;
 - Promote use of solar water heaters; PV panels; grey water recycling; waste separation at source; and passive building design to minimize energy, solid waste and water demand;
 - Encourage rainwater harvesting and grey water recycling.
- 4) Determine the bulk infrastructure required in the Bergrivier Municipality over the next 20 years considering the growth rate, densification strategy and needs of the community.
- 5) Determine the most suitable locations for bulk infrastructure facilities to allow the delivery of services at an acceptable cost.
- 6) Use non-renewable resources in a responsible manner not exceeding predetermined limits.
- 7) Provide environmentally friendly infrastructure and services in rural areas (improved quality of life of people living in the rural areas and effective environmental sustainability).
- 8) Investigate alternative water resources in Bergrivier Municipality to plan for future drought conditions.

The above directives applicable for the effective management and use of electricity that requires an overarching approach to demand and the provision of renewable energy and related infrastructure in the Bergrivier Municipality to adequately plan for the impact of future disruptions and climate change conditions.

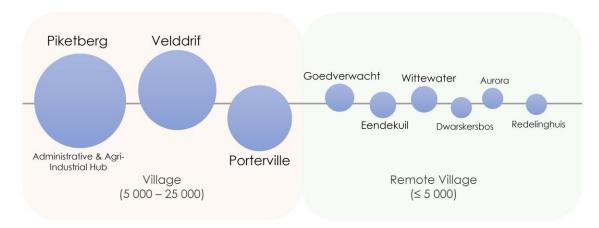
3.2 Land Supply

Land supply is accommodated by the settlement proposals and are informed by considerations such as settlement function or economic basis and form of intensification, densification, restructuring and integration. An overview of the form and function of settlements in Bergrivier Municipality follows.

Towns	Piketberg	Velddrif	Porterville	Aurora	Eendekuil, Redelinghuis	Dwarskersbos
Settlement Status	Main sub regional village	Sub Regional village	Village	Remote rural Villages	Remote rural Villages.	Remote coastal village.
Economic Base	Agricultural Service Centre and rural living	Rural residential on coast along estuary & tourism destination.	Agricultural Service Centre.	Rural living	Agri residential.	Residential.
Opportunity generation	Administrative Hub Support Agri-processing.	Aqa & eco-tourism, "niche products", Conferencing.	Rural residential, ecotourism, conservation (cultural & natural).	Kaleidoscope of cultural heritage, flowers & agriculture	Agri-residential, Agri & eco-tourism, "niche products".	Coastal tourism, Conferencing,
Convenient & equal access	N7 & Railway; proximity to Cape Town and Namibia.	Proximity to Cape Town. Regional connection between interior and coast (proposed IDZ).	Proximity to inland areas including Ceres.	Remote yet accessible R399	Remote yet accessible via R365.	Proximity to Cape Town
Resource Frugal Minimum Erf Sizes	450m ² & 120m ² . Density Norm: 5.9 Du/ha.	450m² and 120m² 5.1 Du/ha.	450m² and 120m². 5.6 Du/ha.	450m² - 1000m², 120 m². 4 Du/ha.	450m² (- 1000m² Water erven), 120m². 4.8 Du/ha, 4.3 Du/ha	450m². 5.8 Du/ha.
	Subsidized, Rental & GAP housing.	Subsidized, Rental & GAP housing.	Subsidized & GAP housing.	Subsidized	Subsidized & GAP housing.	Holiday Housing.
Institution frugal Functional & Social Integration:	Social & commercial services along activity streets. Develop community sports facilities as per precinct plan. Safe pedestrian & cycle route along Main Road, Centrally along activity streets.	Cluster social & commercial services in center between Noordhoek, Velddrif and Laaiplek. Establish a central community sports facility around Smith sportsground. Improve mobility between precincts	Create a central node with social infrastructure across hospital.	Support activity street uses.	Improve social infrastructure in central location.	Provide social infrastructure for retired community.
Choice: variety & diversity: Functional Integration	Mixed uses across CBD and secondary CBDs and along activity streets.	Mixed used across CBD and secondary CBDs, along activity streets and link roads.	Mixed used across CBD and secondary CBDs, uses along activity streets.	Mixed uses along activity streets.	Mixed uses along activity streets.	Mixed uses along activity streets.
Quality of place/ Timeless	Grid layout in the historic core around Piketberg High School and Dutch Reform Church	Grid layout in historic areas. Kaleidoscope of cultural heritage, history, fishing, art and flowers, conservation	Grid layout.	Grid layout	Grid layouts.	Linear layout along coast line.
Aesthetically appealing (Sensory qualities) Social Integration:	Social Integration: Central plain at old Show grounds.	Social Integration: Open space network along Berg River and Atlantic Ocean and salt march adjacent to Noordhoek.	Central plain at municipal offices and main road.	Show Grounds and Sports field	Upper-Verlorenvlei, Kruimans and Soutkloof River open space system extended into rural surroundings.	Open space system linking coastline & main land natural vegetation areas.
Resilience: withstand stress, survive, adapt, bounce back	Sufficient energy and civil services to accommodate interruption.	Sufficient energy and civil services to accommodate interruption.	Sufficient energy and civil services to accommodate interruption.	Sufficient energy and civil services to accommodate interruption.	Sufficient energy and civil services to accommodate interruption.	Sufficient energy and civil services to accommodate interruption.

3.2.1 Settlement Function

The classification of settlements in Bergrivier Municipality according to their populations ('000) range from Piketberg, being a sub-regional service centre and Piketberg, Velddrif and Porterville being villages and all the remaining settlements being a remote village.



The Western Cape Growth Potential Study (2014) determined the settlement and socio-economic status of settlements in the Western Cape outside of the Cape Town metropolitan area along with their growth potential and investment directives. The study identifies the growth potential of the Bergrivier municipal area as Medium (46) in relation to the Western Cape. At a settlement level Porterville has a high growth potential whilst Velddrif, Piketberg, Dwarskersbos and Eendekuil have a medium growth potential. Aurora, Redelinghuis have low growth potential.

Index	Piketberg	Porterville	Velddrif	Aurora	Eendekuil	Redelinghuis
Human Capital	Low	High	Medium	High	Medium	Low
Economic	Medium	Medium	Medium	Medium	High	Medium
Physical	Medium	Medium	High	High	Medium	Low
Infrastructure	Medium	Medium	Medium	Medium	Medium	Low
Institutional	Medium	Medium	High	High	High	High
Composite Growth Potential	Medium	Medium	Medium	Medium	Medium	Medium

Though the composite growth potential is Medium, the socio-economic needs are Medium in Piketberg and Porterville, Low in Velddrif and very low in Aurora, Dwarskersbos, Eendekuil and Redelinghuis.

Socio	Socio-economic needs include Household services, Education level, Housing need & Economic characteristics									
_		Very Low	Low	Medium	High	Very high				
ntia	Very low									
Potential	Low	Aurora, Redelinghuis								
£	Medium	Dwarskersbos, Eendekuil	Velddrif	Piketberg						
Grow	High			Porterville						
	Very High									

As the majority (65%) of the Bergrivier Municipality's population is between 15 and 60 years of age (labour force) and children aged 0 – 14 years represent a quarter (25.4%) of the population in 2023, Smart City outcomes should be promoted in *Piketberg, Porterville and Velddrif*.

The economic basis of settlements, and hence settlement status, was used to generate overall development proposals (opportunity generation). The requirements for Industrial and Business zoned land and for amenities are tabulated below:

Table 8: Land requirement according to household growth

	Land (ha) requirement according to household growth															
	Waiting 2027			2032 2037				2042			20 Year Total					
Main Town	Res	Total	Bus	Ind	Tot	Bus	Ind	Tot	Bus	Ind	Tot	Bus	Ind	Total	Bus	Ind
Aurora	88	0,76	0,05	0,27	0,77	0,05	0,27	0,99	0,07	0,35	0,19	0,01	0,07	90,71	6,35	31,75
Eendekuil	273	0,62	0,04	0,22	0,63	0,04	0,22	0,81	0,06	0,28	0,16	0,01	0,06	275,22	19,27	96,33
Goedverwacht	26	1,43	0,10	0,50	1,46	0,10	0,51	1,86	0,13	0,65	0,35	0,02	0,12	31,10	2,18	10,89
Piketberg	2318	1,67	0,12	0,58	1,69	0,12	0,59	2,16	0,15	0,76	0,59	0,04	0,21	2324,11	162,69	813,44
Porterville	1324	11,43	0,80	4,00	11,62	0,81	4,07	14,86	1,04	5,20	2,71	0,19	0,95	1364,62	95,52	477,62
Redelinghuis	254	0,37	0,03	0,13	0,37	0,03	0,13	0,48	0,03	0,17	0,04	0,00	0,01	255,25	17,87	89,34
Velddrif	1084	6,51	0,46	2,28	6,62	0,46	2,32	8,46	0,59	2,96	1,70	0,12	0,59	1107,29	77,51	387,55
Wittewater	12	0,03	0,00	0,01	0,03	0,00	0,01	0,04	0,00	0,01	0,03	0,00	0,01	12,13	0,85	4,25
Total Urban	5367	22,79	1,60	7,99	23,20	1,62	8,12	29,66	2,08	10,38	5,76	0,40	2,02	5460,44	382,23	1911,16
		19,67	1,38	6,89	20,00	1,40	7,00	25,57	1,79	8,95	25,58	1,79	8,95	90,83	6,36	31,79
Total, whole municipal area	5367	42,46	2,97	14,87	43,21	3,02	15,12	55,23	3,87	19,33	31,34	2,19	10,97	5551,27	388,59	1942,94

3.2.2 Settlement Form

Densification, intensification, restructuring and integration shape settlement form.

<u>Densification</u> ensures optimal use of land (smart growth) and efficient use of infrastructure and services and thus containing urban sprawl and prioritising infill, intensification and redevelopment within settlements.

To protect the unique character of settlements, densification targets should be set for each settlement, mindful of transport infrastructure, biodiversity, heritage resources, open spaces, flood lines, services capacity and the existing densities as per WCDSDF, 2020:

Table 9: Densities of settlements within Bergrivier Municipality

Town	Gross du/ha	Net du/ha	Town	Gross du/ha	Net du/ha
Aurora	4	7.1	Porterville	5.6	14.3
Dwarskersbos	5.8	13.1	Redelinghuis	4.3	10.8
Eendekuil	4.8	18	Velddrif/ Laaiplek	5.1	10.5
Piketberg	5.9	13, 8	Provincial norm	6.85	25

Densification is strongly promoted in new housing developments and existing precincts in Piketberg, Porterville, Velddrif, Dwarskersbos, Redelinghuis and Eendekuil whilst densification in the Aurora is cautiously promoted.

Restructuring of towns, achieved through *functional integration* should consider:

- Implement the "within walking distance" principle (walking distance norm: 20 minutes/1 kilometre) for at least 50% of all social amenities or facilities. In older, established areas, integration of infrastructure can be achieved through the rezoning of residential erven within these communities. The same applies for the provision of secondary business nodes in subsidized precincts;
- Where infrastructure and services are present, support densification and reinforcement (mixed use);
- Within settlements in Bergrivier Municipality, most communities are located within a 20-minute walking distance from the commercial and social infrastructure;
- Economic assets can be used as leverage to regenerate, revitalise and restructure settlements;
- Promoting mix uses, a key component for achieving improved levels of settlement liveability, also counter the spatial patterns created by apartheid;

Restructuring of towns can be achieved through *socio* economic integration:

- Position social services and infrastructure centrally for sharing by various communities, for example
 sports fields, market squares, open space networks, such as rivers and natural areas, including social spaces like picnic areas;
- Provide a variety of housing types, especially around the centre of town and, if required, upgrade or
 replace infrastructure. Encourage different income (social gradient) and property values between
 adjacent areas. Thus, provide residential opportunities that is market driven and affordable to a
 section of society whose income is below the neighbourhood's median or average household
 income. The typology is aimed at first time home owners, young professionals, couples, retirees;

 Identify Integration Zones and Social Housing Restructuring Zones in settlements, as these zones will support convenient and equal access as promoted by several WCPSDF policies.

<u>Urban Edges:</u>

Acknowledging the spatial importance afforded to urban edges to guide and control orderly development of the built environment, the existing urban edges as approved in the Bergrivier Municipal Spatial Development Framework 2018 were revised according to the growth potential and requirements of each town. These proposed urban edges for the 2024-2029 Bergrivier Municipal Spatial Development Framework provide the demarcated urban areas for the next five (5) to twenty (20) years. Urban development for the next five (5) years should therefore be contained within these demarcated areas.

In order to support spatial sustainability in accordance with the planning principles as advocated in SPLUMA and LUPA, a compact urban form is supported. For the proposed urban edges of the settlement in Bergrivier Municipality, consideration was given to the protection of high value agricultural land, slopes and vistas and compact urban form, as well as provision of opportunities for spatial integration (Velddrif, Piketberg, Porterville and Eendekuil) whilst simultaneously providing for additional land to address future urban growth.

Where urban edges have to be revised for the 5-year and 20-year period, it should be conducted within the framework of national, provincial, and relevant Langeberg municipal guidelines. The revision should take into account the economic and social development as well as the environmental sustainability of the Langeberg region (SPLUMA, 2013).

The directives below shall apply:

- Give sufficient protection to land requiring protection, inter alia, high value agricultural land currently under cultivation;
- Encourage contraction (a compact urban form) rather than expansion of urban settlements to promote non-motorised transport modes and spatial integration where appropriate;
- Provide sufficient land for development to satisfy the needs of the area for about the next 20 years, given the current growth rate and the availability of under- or unutilized vacant land;
- Include municipal vacant land as part of the Land Supply. Hence, a vacant land audit should inform the Human Settlement Plan.

3.2.2.1 Amenities and land required

Social and functional integration is achieved by intensifying development along main activity routes including the provision of amenities. The following amenities are lacking in settlements within Bergrivier Municipality:

A broad overview of amenities and services in the Bergrivier Municipality and those identified as lacking follows:

Health and Emergency services:

Provision of Health and Emergency services i.e. clinics and satellite clinics in Eendekuil and Aurora and remote villages comply with the norms.

Provision of Emergency services i.e. fire stations and police stations in all settlements within Bergrivier Municipality comply with the norms. As per the norm, there are no police service points in Dwarskersbos and Aurora however, these settlements make use of the police station in Velddrif.

Education:

- There is an undersupply of Grade R classes and sufficient supply of crèches. 5 Grade-R classes are required.
- Porterville requires one additional primary school.
- There is a need for a skills training centre in Porterville.

Cultural facilities:

There is a need to provide performance space (open auditorium and art centres) in Porterville and Velddrif. Although larger settlements such as Piketberg, Velddrif and Porterville comply with the compulsory norms for Libraries there is a need for mobile library services in smaller towns such as Eendekuil, Aurora and Redelinghuis.

Civic:

A need exists for a Thusong centre in Piketberg and Velddrif, and for services offered by home affairs and Department of Labour in Piketberg.

Social Services:

A need to improve access to ICT exists in all settlements as well as a need for a Home or the Aged and Sassa office exists in Piketberg. There is a need for a multi-purpose safe house and trauma centres in Porterville and Velddrif.

Recreation Facilities:

There is a need for cricket fields in at Porterville, Redelinghuis and Eendekuil Aurora.

There is a need for a park with equipment for children in Piketberg, Velddrif, Dwarskersbos and Eendekuil.

The extent of land required for amenities that are lacking in settlements in the Bergrivier Municipality should be determined.

3.2.3 Land Supply proposals

At a municipal and regional level, the following is recommended to improve the walkability and accessibility of settlements in the Bergrivier Municipality to proximate social amenities and make it more accessible:

- a) Integrate recreation facilities into the open space network within settlements and between settlements.
- b) Land use parameters for social amenities should be customised and include the relaxation of parking parameters where more than half of the users are walking to reach such an amenity.
- c) Land use parameters for businesses in historical core areas should be relaxed to encourage walking.
- d) Land use parameters for business, industry and service industry include storage.

CHAPTER 4: Issues, Vision and Goals

This chapter provides an overview of Strengths, Weaknesses, Opportunities and Threats. It spells out the Spatial Vision for the Bergrivier Municipality and set Goals to achieve its desirable spatial form.

4.1 The Bergrivier Municipality Priorities

As per the Bergrivier IDP, 2022-2027, the priorities are:

- Sound Financial Management
- Expenditure/ Supply Chain Management / Assets
- Financial sustainability (Income / Debtors / Credit Control / Enquiries)
- Budget / Reporting / Financial Statements
- Systems / Property Valuation and Rates (IDP 2023 pg 203)

4.2 Strengths, Weaknesses, Opportunities and Threats

The following table provides a SWOT analysis of the biophysical, social and economic and built environments (as per the Status Quo report). The relevant municipal departments and ward councilors participated in the SWOT analysis.

OPPORTUNITIES THREATS

- Access value chains:
 - IDZ, Saldanha: R27 links to Saldanha Bay.
 - Access to Cape Town: N7 provides easy access to ports (air and sea), linking Namibia and Southern Africa.
- Access to information driving future economic development.
- Governance and regulation (SPLUMA): SPLUMA: Municipality governs development and investment to enable economic growth.
- · World economy.
- World nature conservation initiatives.
- Alternative and green energy
- Tourism (Cape Camino, Paragliding World Championships, Fauna and Flora: Rare Birdlife)

- Economic Globalization: Machination and technology require less but skilled labour.
- Climate change: Causes changes to precipitation, seasons, micro-climates and habitat stability, this therefore impacts negatively on the region, economy, natural resources and social sector.
- Exporting scarce resources.
- Urbanization: Population increased Influx of seasonal workers requiring houses and migration from cities to towns specifically Dwarskerbsos and Velddrif).
- A high percentage of households are dependent on state subsidized housing: challenge to create compact liveable urban environments, frugal resource and finance utilization and to sustain service delivery
- Expensive Potable Water: Coastal Towns: Not sufficient water sources. Desalination was introduced. Maintenance of plant is expensive and energy requirements are high prohibiting operation.
- Unsustainable use of groundwater for irrigation (intensive agriculture: potato and fruit farming).
- Insufficient & unreliable electricity provision
- Poverty and Unemployment.

STRENGTHS

- Settlements: Growth towns/ Service Centers
 (Piketberg regional, Eendekuil, & Redelinghuis–
 agricultural, agri-Village & agri-processing, Velddrif –
 Tourism, alternative energy and freight).
- Water Sources/ Courses: Berg River, Misverstand Dam

Natural Resources generating tourism:

- Mountains & Hills: Piketberg & Winterhoek Mounrain ranges
- Diversity in agriculture: Unique produce i.e. Rooibos tea
- International Sport and Recreation: (Cape Camino, Paragliding World Championships, Fauna and Flora: Rare Birdlife)
- Natural coastal belt (West Coast).

Economy:

- Infrastructure: Roads (N7, R399, R27, R44 R366, R365).
- Highest contributors:
 - To Employment Agriculture, Trade and accommodation and Community, social and personal services.
 - To GDP- Agriculture, Manufacturing and Finance, insurance, real estate & business services.
- Precinct Plans (Piketberg, Porterville, Velddrif &, Velddrif Heritage Precinct Plan)

WEAKNESSES

- Maintenance of infrastructure and provide for future development including state subsidized housing.
- Zoned land and Shelter:
- Require 150ha over the next 5 years and 346ha over the next 20 years (till 2042).
- Housing backlog in 2023: 5 379 households.
- Need for industrial land within settlements. Need for agriindustrial land within and outside settlements.
- Low levels of income/ Poverty
- 1 920 indigent households (in 2021) and increased dependency on municipal support and resources.
- Gini Coefficient (income inequality): 0.60 (income generated is mainly received by less than half of the households in the Bergrivier Municipality
- Dependency ratio: 45% or 1:0.8 (number of working age population (aged 15 to 64) to dependents (aged zero to 14 and over 65)) (SEP, 2022).
- Human Development Index (SEP, 2022)): 0.55, lower than WC:
 0.74. Dependency on subsidies.
- School dropouts and matric pass rate 79,6% (SEP, 2022)

4.3 Conceptual Proposal

From the SWOT analysis of the Bergrivier Municipality it can be concluded that the dual N7 is a powerful North South connector as is the R399 to the Saldanha Bay IDZ. Both connectors present a variety of economic opportunities within the conservation worthy agricultural and natural landscape, intersecting Piketberg as administrative capital and pivoting around Velddrif as economic growth point.

Within settlements, the following transitions are important:

From To **Built Environment** Fragmented communities destroy the unique character Rejuvenate and grow settlements to be liveable and diverse and quality of life in settlements and rural settlements as it and enable the population to be economically mobile. Promote complementing architecture and prohibit caused: Unsympathetic architecture and structure. removal of trees 20years+. Wide roads and excessive black tar surfaces. Soften main roads in settlements and calm traffic. Promote pedestrian and cycling pathways (NMT). Conflict between pedestrians and motorcars. Commercial ribbon development and an overload of Develop a code for where and how to display billboards, billboards. guard natural gateways and prohibit signage and Security gates, telephone poles, masts and satellite advertisements along water side of developments. dishes. Reticulate services underground (communication) Loss of continuous open spaces. instead of above ground. Minimal landscaping (and being reinforced by day Protect the agricultural and conservation landscape. zero and by solar installations when trees are Promote open spaces as part of an OS networks. removed). Encourage landscaping and tree lanes and require each land unit being created to plant two trees. Absence of Non-Motorised Transport (NMT) and inadequate street furniture and pedestrian walkway Prepare for climate change and as topography inform provision. development. Settlement urban edges were delineated for 5- and 20-Intensify land uses within settlement edges in accordance year horizons whilst low densities prevailed. with IZS. Density norms were determined for each town. A Promote rejuvenation of settlement whilst keeping precinct densification rate was determined and infill development is character including infill development, increased floor factor encouraged in order for settlements to achieve its 50and where subdivisions or renewal development can occur. year's density parameters. Implemented precinct plans. A vacant land audit to identified developable land within Enhance economic mobility and sustainable settlements. NMT and adequate and well-maintained walkways provided the urban areas are required. **Socio Economic** Although there are excellent primary and secondary Ensure there are accessible opportunities for educational schools, only half of the population is semi-skilled or progression for example FET college, skills schools and skilled. university satellites. Promote crèches and preschools and provide for safe multidisciplinary schools. Supportive and high-quality community health care are Quality health care is requested by the community. delivered across the municipal area Despite low skills level, the workforces are stable. Provide for skills training. Promote entrepreneurial spaces and skills. **Biophysical Environment** Extensive and intensive agriculture remove most natural Protect agricultural land and include conservation vegetation. Landscapes determines the status of assets and includes Enhance landscapes and utilise assets as tourist Agricultural landscape, Wilderness landscape, Waterways destinations. and connectors, Cultural-historical landscape, Connector Support expansion of conservation initiatives routes and Corridors, social Foci and Community facilities and activities.

4.4 Spatial Vision and Strategy

The vision of Bergrivier Municipality is:

"Bergrivier: a prosperous community where all want to a live, work, learn and play in a dignified manner." Or in Afrikaans "Bergrivier: 'n vooruitstrewende gemeenskap waar almal wil leef, werk, leer en speel op 'n menswaardige manier".

The **mission** of Bergrivier Municipality is:

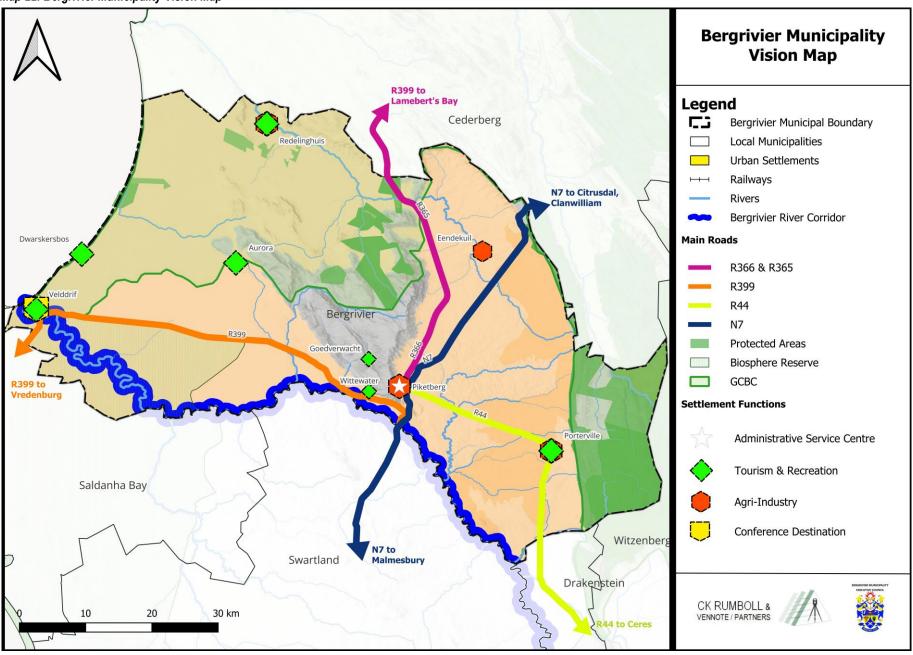
"Commitment to sustainable development and the delivery of services that are responsive to the developmental needs of all communities in Bergrivier Municipality." (IDP)

Core Values

The core values of Bergrivier Municipality are:

- We are all part of Bergrivier Municipality;
- We strive to render good service to ensure that all people can live together in a dignified manner;
- We are unashamedly pro-poor;
- We are ethical;
- We believe in good relationships;
- We believe in close innovative partnerships;
- We believe in social and economic development of the area;
- We are disciplined;
- We care about our work and our colleagues; and
- We serve with pride. (IDP)

Map 22: Bergrivier Municipality Vision Map



4.5 Spatial Objectives

The spatial objectives of the SDF will be informed by the IDP's strategic objectives and the vision of Bergrivier Municipality:

IDP Strategic Goal and Objectives

Strengthen financial sustainability:

- To budget strategically
- Entrench the Long-Term Financial Plan in the planning, implementation and management of the organisation
- Diversify revenue and ensure value for money services
- Ensure sustainable financial risk and asset management
- Diversify by sourcing grant funding to support projects, programmes and initiatives of Council
- Ensure transparency in financial management by ensuring that all financial records are accurate, reliable and timely

Ensure good Governance

- Create an efficient, effective, economic and accountable administration.
- Provide a transparent and corruption free municipality.
- Accountable leadership supported by professional and skilled administration.
- Communicate effectively with the public
- A customer centred approach to everything.

Sustainable service delivery:

- Develop and provide bulk infrastructure within the climate change risks.
- Maintain existing bulk infrastructure and services.
- Develop, manage and regulate the built environment.
- Source alternative sources of energy in the context of national electricity provision.
- Conserve and manage the natural environment and mitigate the impacts of climate change.

<u>Facilitate an enabling environment for a diversified economy and growth to alleviate poverty.</u>

- Improve the regulatory environment for ease of doing business.
- Promote tourism.
- Alleviate poverty through job creation in municipal driven projects and programmes.
- Ensure all policies and systems in Bergrivier Municipality support poverty alleviation.
- Attract investment through catalytic infrastructure.

Attract investment through catalytic infrastructure.

- To promote healthy lifestyles through the provision of sport, recreational and other
- facilities and opportunities.
- Promote continued partnerships for youth development.
- Promote a safe environment for all who live in Bergrivier Municipal Area.
- Develop a Master Plan for "Smart Cities" in Bergrivier Municipal Area.

MSDF Strategic Objectives & Strategies

<u>Objective 1: Protect ecological and agricultural integrity [Biophysical or Natural Environment].</u>

- 1.1 Protect food & water security & apply bioregional classification.
- 1.2 Grow conservation potential and formalise conservation of CBAs and apply river management.
- 1.3 Protect and preserve sensitive habitats and enhancing Ecosystem services.

Objective 2: Protect and grow place identity (sense of place) and cultural integrity [Built Environment].

- 2.1 Protect heritage resources, scenic resources & place identity.
- 2.2 Grow cultural potential.
- 2.3 Grow economy (landscape & conservation, tourism & new markets and economic sectors) & stimulate sector diversification.

Objective 3: Sustain material, physical and social well-being.

- 3.1 Protect safety and security.
- 3.2 Protect fundamental community resources (air, water & energy).
- 3.3 Provide (change) social infrastructure and services (as per norm) to facilitate smart growth.
- 3.4 Manage risk & disaster (man-made and natural).

<u>Objective 4: Proximate convenient and equal access [Economic Environment].</u>

- 4.1 Provide (change) sustainable infrastructure and services (smart growth).
- 4.2 Provide for zoned land for residential and industrial development and education.
- 5.1 Protect economic vibrancy.

<u>Objective 5: Proximate convenient and equal access [Economic Environment].</u>

- 5.1 Protect economic vibrancy.
- 5.2 Provide (change) sustainable infrastructure and services (smart growth).
- 5.3 Provide zoned land for residential and industrial development and education.

Objective 6: Grow (& unlock) economic prosperity [Economic Environment].

- 6.1 Grow economy &stimulate sector diversification & product development.
- 6.2 Strengthen mobility and economic links (investor confidence).
- 6.3 Develop product and trade advantages (export value chain & agriindustry corridors) and competitive advantage

CHAPTER 5: Settlement Proposals

To support spatial sustainability, in accordance with the planning principles as advocated in SPLUMA and

5.1 Guidelines for achieving compact settlements

Densification:

• Densification ensures optimal use of land and efficient use of infrastructure and services;

LUPA, a compact urban form is supported. The following guidelines direct a compact urban form:

- Smart growth and containing urban sprawl within settlements can be achieved through infill, intensification and densification targets;
- Densification targets for Bergrivier Municipality, mindful of transport infrastructure, biodiversity, heritage resources, open spaces, flood lines, services capacity and existing densities are in the table below:

Table 10: Proposed densification targets for settlements within Bergrivier Municipality

Gross Densities	2012	'12 Net	2027	2032	Gross Densities	2012	'12	2027	2031
Aurora	4	7.1	6	8	Porterville	5.6	14.3	7	9
Dwarskersbos	5.8	13.1	9	11	Redelinghuis	4.3	10.8	6	8
Eendekuil	4.8	18	8	10	Velddrif/ Laaiplek	5.1	10.5	7	9
Piketberg	5.9	13, 8	8	10					

Intensification:

Densification and intensification along corridors and linkages should consider:

- Sensitive infill and redevelop of major arterial axes in clearly defined precincts;
- Delineate corridors to concentrate activities along and to promote development on both sides of activity streets;
- Sensitively development around and of heritage buildings;
- Enhancing street character through landscaping and guiding the architecture of new developments;
- Encouraging a multiple level of entry into the economic market and enhance job creation through mixed and compatible land uses;
- Promoting the uniting of structures or land uses (corridors, nodes and linkages) between town and township;
- Encouraging supportive densification patterns based on infrastructure capacity and upgrade capacity in corridors.
- Clustering together a hierarchy of three levels of urban nodes, containing business and community facilities, to ensure that larger investments, for higher order facilities, will be enjoyed by the greatest number of people:
 - Tertiary: Hospitals, courts, multi-purpose centres, regional or metropolitan transport interchanges, museums and indoor sports complexes;

- Secondary: High schools, day care centres, hospitals, libraries, sports and community halls and sports fields;
- o Primary: Primary schools, crèches, clinics, bus and mini-bus taxi stops.
- Developing nodes to concentrate the business therein and, where growth is required, nodes should be encouraged to grow, along corridors, towards each other. Node and corridor development prioritise the implementation of the needed infrastructure, in a strategic and orderly manner, and provide the best opportunity for successful development.

Restructuring and Integration:

The land requirement standards for the provision of amenities, are:

- 1 crèche / 5 000 persons 0.08 ha
- 1 primary school/ 3 000 4 000 persons of 1 000 dwellings 2.8 ha
- 1 secondary school/ 6 000 10 000 persons of 2 500 dwellings 2.6 ha
- 1 library/ 10 000 persons of 2 500 dwellings 0.1 ha
- 1 church / 1 000 persons 0.015 0.3 ha
- 1 mobile clinic / 5 000 persons of 1 250 dwellings
- 1 community hall/ 10 000 persons/ 2 500 dwellings 0.2 ha
- 1 police station/ 25 000 persons/ 6 250 dwellings 0.1 ha

Integration and interface:

Intensification as prime instruments for promoting integration between towns and townships should consider to:

- Locate activities (residential, transport, work, recreation, etc.) within walking distance;
- Locate most frequented activities in the most central / accessible localities, e.g. industrial and commercial;
- Do not, as a general rule, target Human Settlement schemes exclusively at a single income group, usually Subsidy or Site and Service, and always include at least a GAP housing and top structure subsidy component;
- Arrange housing, for the various income groups, according to the socio-economic gradient principle, with the higher end of the market closest to the main thoroughfare;
- Use all well-located vacant land:
- Locate all future residential areas within walking distance of urban centres, where space permits;
- Give residents freehold tenure immediately, i.e. title deeds, so that shack upgrading will commence as soon as possible;
- Social and functional integration is achieved by intensifying development along main activity routes and including mixed use (a combination of commercial, residential and low impact service industries).

Open Space Systems:

Open Spaces as amenities should:

- Link symbolic elements (statues) or public facilities (library, clinic, etc.) to open spaces in relation to their importance and character;
- Create open space systems that integrate the elements of a settlement to contribute to a meaningful urban structure. This can be done by:
 - Providing connectivity between open spaces;
 - Establishing linkages between open spaces;
 - Surrounding the open space system with public buildings;
 - Continuity of special activities or functions along major routes/ linkages.
- Create visual recognition and surveillance along open spaces and public routes through:
 - Locating buildings around open spaces and streets so that sufficient enclosure is created;
 - Ensuring the appropriate heights of buildings;
 - Locating the highest buildings to the southern side of the open space, with lower buildings or trees on the northern side.
- Permit markets at highly accessible locations, in terms of the movement network and urban structure, to ensure the greatest viability possible. These locations could be modal interchanges and intersections;
- Accommodate a variety of users in and uses along streets by the following:
 - Concentrate intensive activities along major vehicular and public transport routes;
 - Locate the majority of public buildings and increase densities along these routes;
 - Locate buildings closer, rather than further, from the streets to increase pedestrian activity, a sense of enclosure and surveillance.
- Create appropriate road cross-section widths that can provide for vehicle traffic, parking, pedestrian movement, cycling and landscaping;
- Protect mobility function of routes: Arterial Management Plans to be developed, where applicable to DTPW Roads Branch approval;
- Promote access (penetration) and encourage economic activity by orientating the short side of blocks to major streets, wherever possible;
- Plan for adequate solar exposure of buildings. Orientate roof pitches of buildings in such a way that roof solar panels maximise continuous direct access to the sun;
- Consider the heritage value, elements of vernacular architecture and, where possible, retain these
 important elements when entertaining proposals for the development of buildings. Similarly, the
 historical characteristics of existing buildings should be considered to be integrated, where
 practical, into the design and construction of close by new buildings;
- Encourage the use of local materials in the construction of new buildings;
- Encourage appropriate water-wise landscaping;

- Encourage a pleasant gateway experience into settlements and ensure that the main streets of urban areas are appropriately landscaped;
- Effectively design an interface between public and private domains so as to define public spaces;
- Sensitively and naturally landscape gateways to announce settlement entrances. Encourage landscaping along activity streets.

5.2 Guidelines for Liveable Settlement Directives

To limit the extent of land required, the following guidelines for Connectors and Settlement Densities direct settlement Form and Function:

Roads:

- Porterville, Dwarskerbos, Velddrif, Eendekuil: Introduce speed calming & greening of route. Introduce landscaping/ tree lanes, street furniture and sufficient lighting. Provide for multi-purpose crossings, specifically in Porterville between U Save and SPAR. Deproclaim Main road in Velddrif:
- Improve Mobility;
- All settlements: Develop guidelines for commercial facades, advertising signs and information signs: Main Road to have a rural character.

Gateways:

 All settlements: Enhance and announce town entrances and gateways: plant trees and landscape entrances or keep natural and avoid signs.

Activity Streets & Corridors:

- Concentrate higher order social amenities and mixed-use development along activity streets;
- o Provide for public transport, Non-Motorised Transport and pedestrian mobility;
- o Provide for a taxi rank/bus stop next to CBD.

• Rail:

- Alternative for freight & passengers;
- o Porterville: Tourism rail route between Riebeek Valley and Porterville.

Pedestrian & Cycling:

- Develop trails and routes in settlements linked to natural conservation areas or farmland;
- Piketberg, Porterville, Velddrif, Eendekuil and Dwarskerbos: Provide for safe pedestrian walkways between residential areas.

5.3 Management priorities: Built Environment and Service Areas

General management priorities include:

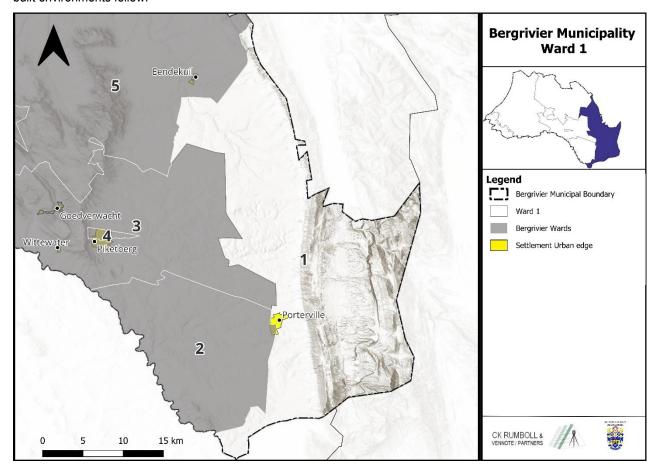
Management Priority	Priority Focus Area
Improvement and rehabilitation.	Improve and rehabilitate all town and service areas, especially after construction, and afterwards during operational run time.
Conservation and preservation.	Keep and save town and service zones.
Environmental Impact Assessment Requirements.	All urban uses and service zones that may have an impact on the environment and as identified by legislation must be subject to environmental impact assessment.
Monitoring and management aspects.	All assembly and management actions are determined and must be implemented according to the standards, permit requirements, environmental management plans as applicable.

A General Environmental Impact Management Framework is outlined below:

	Types of development									
Development Types	That should not occur	That may have significant impact	That have no significant impact	Related environmental management policies and guidelines						
Energy Zones	Any development except energy generating infrastructure.	Any development except energy generating infrastructure.	Energy generating infrastructure.	Environmental Impact Assessment and Guidelines. Provincial Spatial Development Framework for						
Sewage Works	Any development except sewage infrastructure.	Any development except sewerage infrastructure.	Sewerage infrastructure.	the Western Cape Province. All legislation with an environmental aspect and						
Wastewater sites and Buffer areas	Any development except waste landfill infrastructure.	Any development except waste landfill infrastructure.	Wastewater infrastructure. Wastewater recycling and reclamation facilities.	corresponding regulations, policies and guidelines.						
Industrial Areas	Any non-industrial developments.	Any non-industrial developments.	All industrial related infrastructure.	Environmental Impact Assessment and Guidelines.						
Commercial Areas	Any non- commercial developments.	Any non-commercial developments.	All commercially related infrastructure.	Provincial Spatial Development Framework for the Western Cape Province. All legislation with an environmental aspect and corresponding regulations, policies and guidelines.						
Infrastructure servitudes	Any development that conflicts with the inherent right as contained in servitude.	Any development that conflicts with the inherent right as contained in servitude.	Any development that does not conflict with the inherent right as contained in servitude.	Environmental Impact Assessment and Guidelines. Provincial Spatial Development Framework for the Western Cape Province. All legislation with an environmental aspect and corresponding regulations, policies and guidelines.						

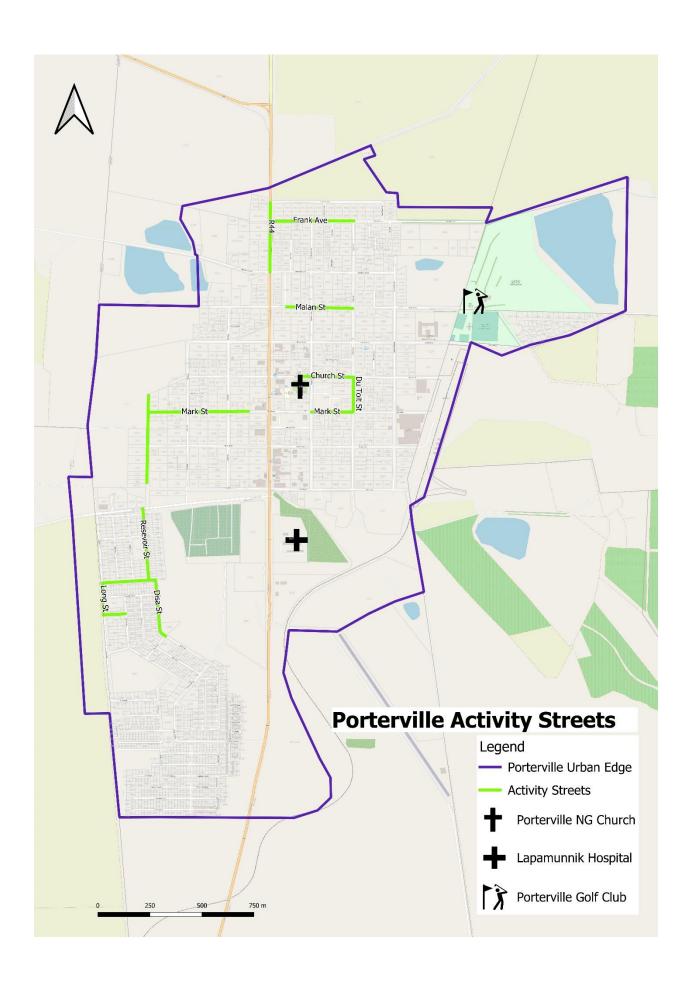
5.4 Wards 1 & 2: Porterville

Porterville is located in Wards 1 and 2, the most eastern wards of Bergrivier Municipality. Porterville nestle at the foot of the Olifants River Mountains and has a solid mixed agricultural base. It is home to magnificent sunsets, paragliding and the arts. Development directives for the settlement's biophysical, socio-economic and built environments follow:



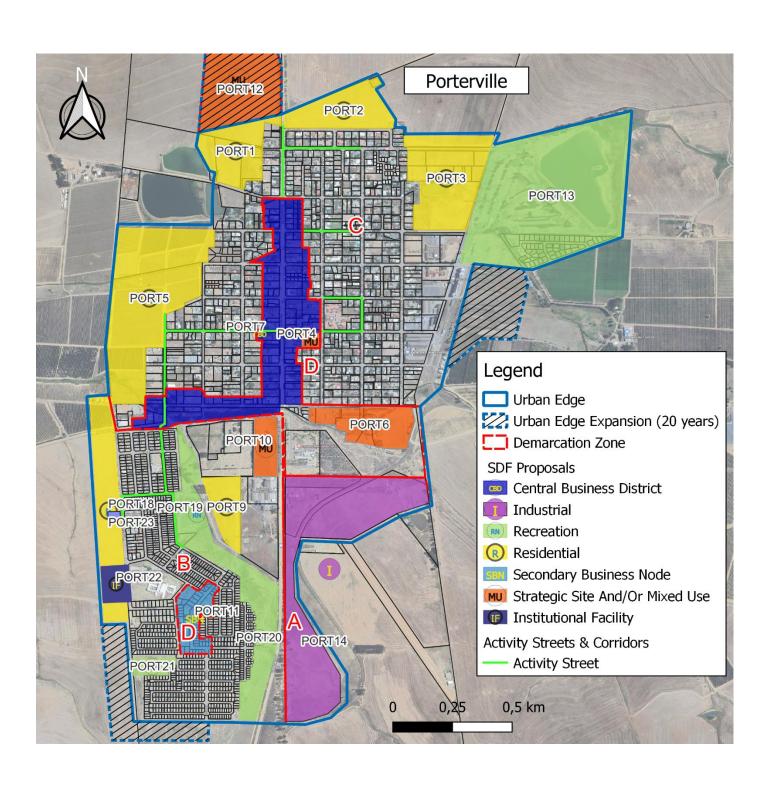
Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC U	TILITIES						- v			
	Elements	No.	Proposals							
Protect	Water:	1	Protect water Olifants Mou surplus water is split betwe	Protect water storage capacity: 3 Reservoirs (3985 kℓ) Water from three fountains in Olifants Mountains east of the town, Water is piped to the water purification works, surplus water is pumped into the Porterville dam (North-East of the town.) Water supply is split between town (municipality) and farmers and 23/48's is going to the municipality and 25/48's to the farmers.						
		2	Maintain WWT plant.							
		3	Maintain thre	e reservoirs v	vith a total cap	acity of 3985	5 kℓ.			
	Bulk Electricity and Reticulation:	4	Maintain bulk	k electrical sup	oply and reticu	ılation infrast	ructure.			
	Roads and Storm water:	5	Maintain road	ds and storm	water infrastru	ıcture.				
	Waste:	6	Maintain tran landfill sites.	nsfer stations f	or domestic w	aste remova	I and transport to regional licensed			
	Safety and Risk	7	Support mair	ntenance of W	CDM Disaste	r Manageme	nt unit including Fire Station.			
	Management Services:	8	Maintain Poli							
Change	<u>Future Demand</u> :	9	Secure adequate land for future bulk infrastructure expansion: reservoirs, overhead power lines, future roads and a water pipelines.							
	Water:	10	Extend water provision to all properties.							
		11	Manage and reduce future water demand as per population projections below							
			2025	2030	2035	2040				
			9 582	10 344	11 028	11 638				
	Bulk Electricity and	12		nage adequate street lightning.						
	Reticulation:	13	Upgrade electrical bulk by 2025.							
	Roads and Storm water:	14	Maintain gravel roads.							
		15	Manage transfer stations.							
	Safety and Risk	16	Implement river maintenance programme.							
	Management Services:	17	Promote & si energy.	upport sustain	able use of re	sources – e.	g. water harvesting, alternative			
Develop	Future Demand:	18	Ensure adeq	uate capacity	of bulk infrast	ructure to su	pport industrial expansion.			
	Water:	19		er storage fac						
	Waste Water:	20					t & limited future demands.			
	Bulk Electricity and Reticulation:	21	Replace obs	olete electrica	l infrastructure	Э.				
	Roads and Storm water:	22	Upgrade storm water system in Main Road as per IDP.							
	Waste:	23		omposting pla						
Safety and Risk Management Services: 23 Establish a composting plant. Address potential impacts of climate change.										



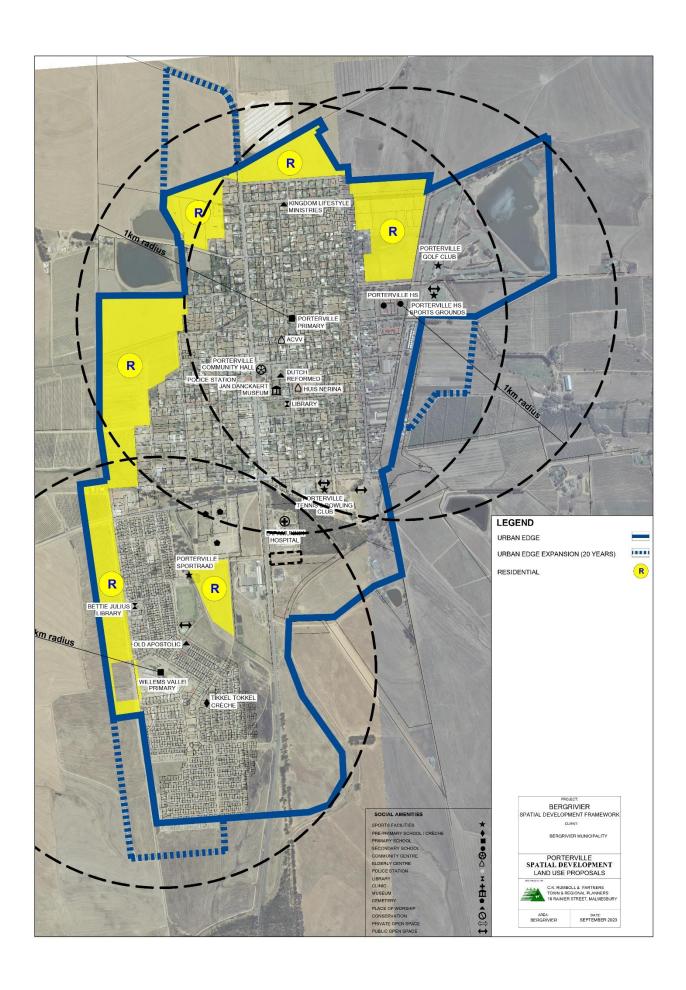
Objective 2: Proximate convenient and equal access

CONNEC			Toximate convenient and equal access
	Elements	No.	Proposals
Protect	Main Roads:	25	R44, main movement network and link to Piketberg (N7), Wellington (N1) and Worcester (N1).
	Roads:	26	R365 connector to Dasklip Pass (Farms on Winterhoek Mountains).
Activity Streets & Corridors:		27	 Petro Street. Portion of Lang Street (Corner of Pedro Street to corner Jakaranda Street). Portion of Disa Street (From the corner of Eland Street till Hoog Street). Reservoir Street.
	Rail:	28	Operational freight rail connection.
Change	Main Roads:	29	Implement Porterville CBD Precinct Plan and particular proposals made for main roads.
	Roads:	30	Adress congestion on R44 at grain silos.
	Activity Corridors & Streets:	31	Strengthen Main & Long Streets' intersection.
		32	Develop commercial activities along roads parallel to and along Voortrekker Street.
Pedestrian and cycle routes:	33	Build safe pedestrian walkways & bicycle routes along Voortrekker Road, Jakkalskloof and Basson Streets.	
		34	Improve disabled access.
		35	Provide pedestrian and cycle routes in southern industrial precinct.
Develop	Main Road & Roads:	36	Implement precinct plan: Protect and enhance existing heritage assets and resources along Voortrekker Street. Establish an activity spine that connects northern Porterville with Monte Bertha.
			Support the development of a range of nodes attractions and destinations along the activity spine. Improve the Voortrekker Street commercial corridor by connecting the precinct's destinations with a high-quality, people-oriented public realm.
		37	Voortrekker Road Corridor Improvements
	Rail:	38	Establish a dedicated Arts train service which connects Riebeek Kasteel and Porterville (Similar to the Elgin Railway Tourism Train).
	Pedestrian and cycle routes:	39	Formalize and develop pedestrian walkways and bicycle routes in Spruitjie Park and its connection to the business precinct and the hospital.
		40	Develop a pedestrian route along provincial road at industrial area.



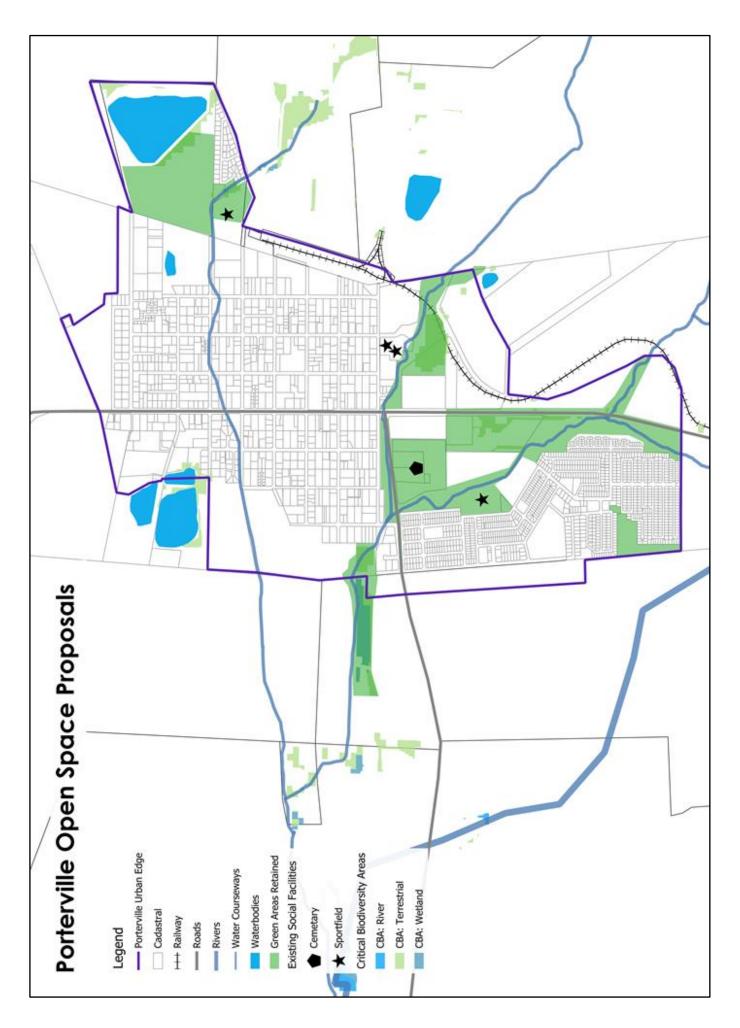
Objective 1: Grow economic prosperity and facilitate economic sector growth and Objective 4: Protect and grow place identity and cultural integrity

SPACE, E	BUILT		
	Elements	No.	Proposals
Protect	Heritage & Tourism:	41	The town was laid out in 1863 on Pomona's farm, previously owned by Willems Vallei. The town was established in 1863 and named after William Porter, who served as Attorney General of the Cape
	Tourioni.		Colony from 1839 to 1866.
		42	Traditional grid pattern (urban structure).
		43	Unique agricultural character as amidst the wheat fields of the Western Cape.
		44	Keep commercial buildings, services, signage and colours aligned with the rural agricultural character.
	Residential:	45	Urban Structure consisting of:
			- Hight density areas in south western precinct;
			- Industry and agri-industry in south eastern precinct;
			- Central Business District (CBD);
			- Medium to Low-density areas in northern precinct;
	_		- Infill Development.
	Commercial	46	Protect and intensify CBD along main road from Park to Basson Street. (PORT7).
	& Industrial:	47	Main industrial area, south east of town.
		48	Significance as agricultural service center supporting agricultural services and other unrelated light industries.
Develop	Heritage &	49	Support tourism-related uses in the town to diversify the economy and create more opportunities.
	Tourism:	50	Improve information about heritage assets.
		51	Improve roadside signage and buildings in sensitive landscapes.
		52	Address loss of, and impact on cultural & heritage resources.
		53	Control alterations and demolitions of buildings older than 60 years.
		54	Conserve graded buildings, areas and features.
	Residential:	55	Develop higher residential density in and around CBD ("cupcake" principle).
	_	56	Promote mixed use, including residential in CBD.
		57	Provide different housing types to accommodate a wider market and support densification.
			- High density areas in south western precinct (PORT18, PORT5);
			Medium to Low-density areas in northern precinct (PORT2);Infill Development (PORT9).
	Commercial	58	Diversify agri-industry and agri-tourism sector.
	& Industrial:	59	Establish affordable & integrated commercial properties in Monte Berta.
	<u></u>	60	Establish and strengthen small secondary business node.
		61	Support establishment of house shops along activity streets and home occupation in residential areas.
		62	Promote town as the west coast Arts Capital.
		63	Promote landscape features of the area as part of the tourism attraction.
	-	64	Utilize heritage assets as tourism attractions. Acknowledge heritage resources' significance & need for protection.
	-	65	Government residential developments, supported by Human Settlement programmes, will be supported.
		66	Provide for GAP housing extension (Site to be determined).
		67	Increase density by 2027.
	-	68	Provide 128 ha developable land over next 20 years, as projected from the MYPE, 2022, excluding amenities and the housing waiting list.
		69	Intensify the Primary Business District.
		70	Support agri-processing industries to allow value added products close to the source.
		71	Allow agricultural related industries.
		72	Develop a composting facility.
		73	Improve access ownership of commercial and industrial land.
		74	Develop a light agri-industrial node around BKB Silos.
		75	Support the expansion of Industry and agri-industry in south eastern precinct (PORT14).
	[76	Promote Agri processing.
		77	Promote the farming of Citrus and Berries.



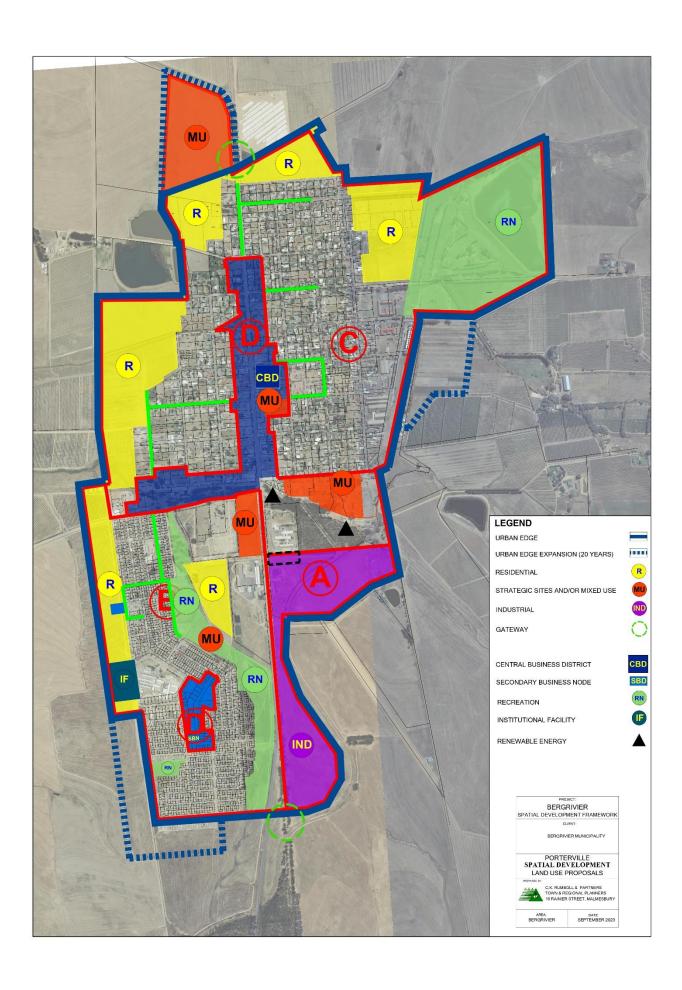
Objective 3: Sustain material, physical and social wellbeing

PUBLIC II	UBLIC INSTITUTIONS								
	Elements	No.	Proposals						
Protect	Social Infrastructure &	78	Protect social services and infrastructure to create safe living environments.						
	Services:	79	Protect good infrastructure: sport facilities & well-known secondary education facility.						
Change	Social Infrastructure &	80	Locate community facilities (library, sport grounds and museum) in a central area.						
	Services:	81	Align provision of social infrastructure to norms to enhance safety.						
		82	Promote multi-functional use and provide effective and functional recreational areas (e.g. children's play parks, day camping and picnic facilities).						
		83	Allow for adequate expansion of cemeteries.						
		84	Provision of a new school or the upgrading of existing one (To include grades up to grade 12).						
		85	Strengthen community spaces.						
Develop	Social Infrastructure & Services:	86	Promote & support adequate primary health & education facilities: crèches, secondary/tertiary facilities (agricultural skills focus).						
		87	Expand & integrate sports facilities: Develop a cricket field.						
		88	Develop a Market Plein Public Square for recreation and commercial purposes.						
		89	Develop the open space between Park Street and Monte Bertha into a formal park.						
		90	Redevelop Community Services Precinct (Sports grounds, tennis courts, Bowling Club and Show grounds).						
		91	Intensify and Diversify Monte Berta CBD.						
		92	Upgrading of CBD (provision of ATMs).						
		93	Provision of a Sports Academy.						
		94	Strengthening of ITC.						



Objective 5: Protect ecological and agricultural integrity

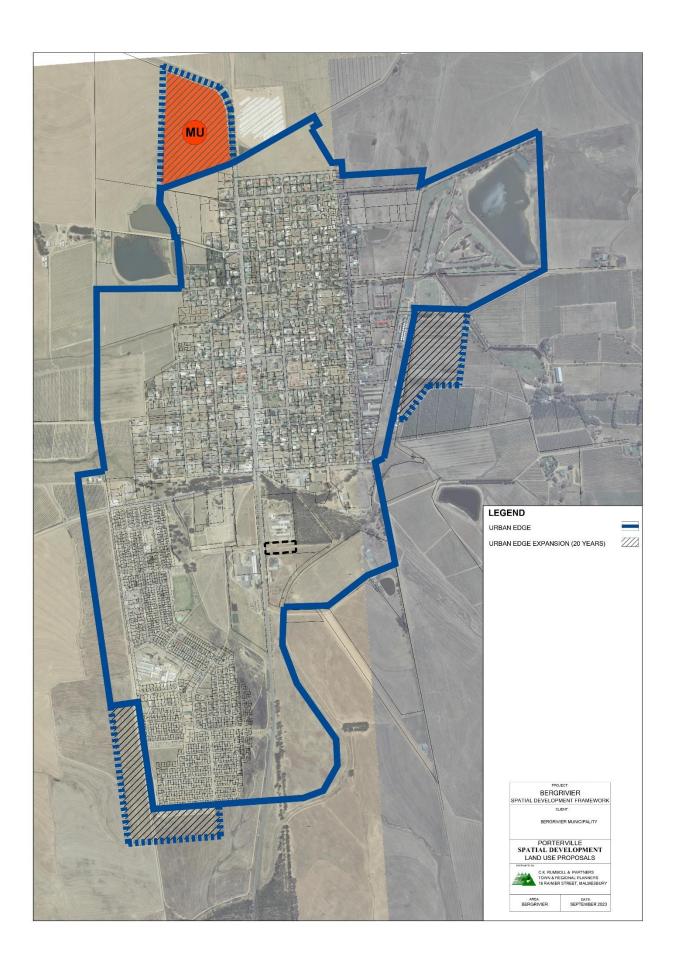
SPACE, N	IATURAL		
	Elements	No.	Proposals
Protect	Natural and Conservation:	95	Scenic routes and vistas onto wheat fields and Winterhoek Mountains.
	Waterways:	96	Maintain channeled streams and keep free from pollution.
		97	Limit motorized activity around dam.
	<u>Vegetation:</u>	98	Maintain natural vegetation as part of open space system to protect Uniflora Disa (small sulphur yellow Disa colony)
Change	Natural and Conservation:	99	Prepare for potential threat of climate change on natural environment and production potential.
		100	Improve visual character of higher density residential, and in particular subsidised housing developments, though planting of trees along streets & developing functional open space areas.
		101	Support interactive development along open spaces where developments face the open space networks.
	Public & Private Open	102	Provide street furniture & landscape central town.
	Space:	103	Beautify main town access points.
		104	Develop market place on the corner of Mark and Voortrekker Street.
		105	Link open space system to spruitjies park.
Develop	Natural and Conservation:	106	Maintain setback lines along river systems (limit potential impacts and improve safety).
		107	Develop hiking trails, mountain bike trails and alternative uses for events facilities and venues.
		108	Green main activity routes.
	Public & Private Open	109	Link open spaces Create and protect open space areas inside and adjacent to urban area
	Space:		(allow for movement between habitat areas along Jakkalskloof River, natural areas in and
			around Porterville and to the Winterhoek Mountains).
		110	Develop recreational areas around dam as well as in Monte Berta.
	Gateways:	111	Northern gateway: Maintain existing soft natural tree laned gateway.



DEVELOPMENT ZONES AND PROPOSALS FOR PORTERVILLE

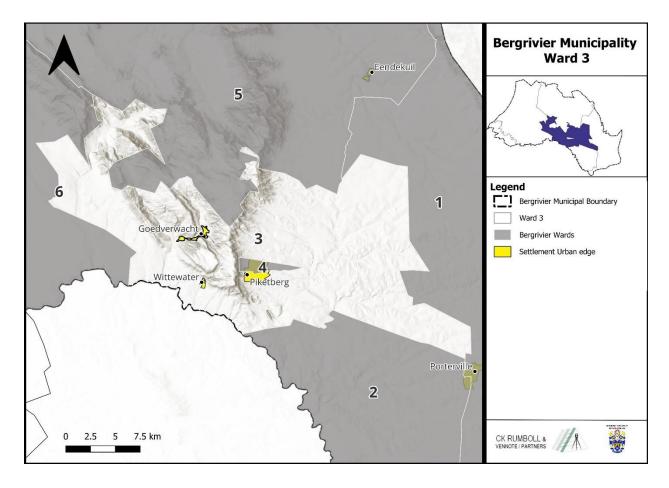
The table in this section describes development zones identified in Porterville and lists development options for each zone. The table has to be read in conjunction with Development Zone plans for Porterville.

	PORTERVILLE LAND USE ZONES	Low Density Residential	Medium Density Residential	High Density Residential	Secondary Education	Place of Instruction	Professional Services	Business	Secondary Business	Place of Worship	Guest houses/Lodge	Authority	Sport/Recreational Facilities	Light Industrial / Service Trade & Industries	Institution
Α	Zone A is earmarked for industrial use with the possibility of future expansion.				Х	Х	Х	Х	Х	Х		Х	Х	Χ	Х
В	Zone B contains a high-density residential area with supportive amenities. Provides an opportunity for residential expansion and mixed-use developments at identified nodes.		X	X	Х	Х	Х	X 3,4	X 1,3	х	Х	Х	Х	X 2,3	Х
С	Zone C is a medium to low density		Х	X 1	Х	Х	Х		X1	Х	Х	Х	Х	X 2,3	Х
D	Zone D has been identified as the town's CBD and allows for future business expansion. Strengthen the area as the			Х	Х	Х	Х	X	Х	Х	Х	Х	Х	X 2	Х
	Business Uses e.g. shop, supermarket, restaurant, offices, service station. Place of Instruction e.g. Schools, places of instruction. Professional Uses e.g. offices like doctors, dentists, attorneys, architechts, engineers and town planners. Secondary Business Uses e.g. neigbourhood bussines uses such as house shops, small offices and home occupation. House taverns only to be allowed along activity streets in residential areas on discretion of the Municipality. Secondary Educational Uses e.g. Crèches/day care.						s, small								



5.5 Ward 3: Wittewater and Goedverwacht

Wittewater and Goedverwacht were established by the Moravian Church on the farm. These rural villages provide access to rural living and small-scale agriculture. In 1996, the Moravian Church and the-then Department of Land Affairs signed the so-called Genadendal Accord, which committed the Church and the state to work together towards achieving land tenure reform and security of tenure for the residents of these villages.



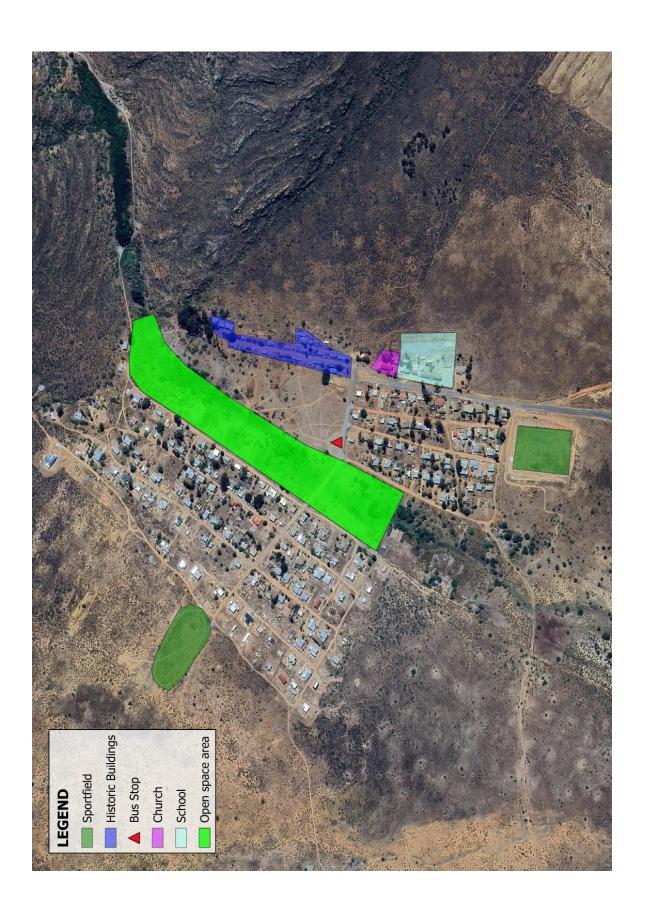
5.5.1 Wittewater

Wittewater is a remote rural village located against the backdrop of the southern foot slopes of the Piketberg Mountains, just off the R399. Wittewater village is surrounded by the larger farm of approximately 676 hectares, owned the Moravian Church, providing an opportunity to practice small or commercial scale agricultural activities. Small scale agriculture includes vegetable cultivation along the river and rearing pigs. As the village is under private governance, services provided by Bergrivier Municipality are limited. Development directives for the settlement's biophysical, socio-economic and built environments follow:

Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC U	TILITIES									
	Elements	No.	Proposals							
Protect	Water:	1	Water sourced from boreholes at Broodkraal.							
		2	Maintain four re	servoirs with a to	otal capacity of 5	00 kl.				
	Sewerage and Sanitation:	3	Dwellings make	use of onsite se	werage systems).				
	Electricity:	4	Eskom provides	electricity & reti	culation.					
	Waste:	5	Domestic waste	is removed wee	kly & transporte	d to Highland lar	ndfill, Malmesbury.			
Change	Water:	6	Maintain tributa	ries from the Job	skloof and Wate	rvalkloof.				
		7	Access water so	ources on Brood	kraal. (Install reti	culation infrastru	ıcture).			
		8		ality and supply o						
		9		ing of rain water nent area to pres		as more water d	uring winter.			
		10		duce future wate		population proje	ections below.			
			2025	2035	2045	2050				
			1 153	1 326	1 463	1 523				
	Sewerage and Sanitation:	11	Provide alternative sewer management system.							
	-	12		ure installation of on groundwater			t houses to limit			
		13		Improve the electricity provision including alternative energy to all homes in						
	Future demand	14		e land for future are roads and a		re expansion: re	servoirs, overhead			
	Safety and Risk Management Services:	15	Support sustain		use of natural re		alternative methods			
Develop	Water:	16		alternative water						
•	Sewerage and Sanitation:	17		ms will need to l		disposed of at th	e sewerage			
	Electricity:	18	Support the dev	elopment of alte	rnative energy s	ources.				

CONNEC	ΓΙVΙΤΥ		
	Elements	No.	Proposals
Protect	Roads:	19	Maintain gravel access road connecting to R399, and internal gravel roads to keep rural character.
Change	Roads:	20	Improve mobility of local community to access economic opportunities in neighbouring settlements.
		21	Improve the design of internal dirt roads to accommodate stormwater runoff.
	Pedestrian Routes	22	Support safe pedestrian routes along activity streets to improve connectivity in town.
Develop	Roads:	23	Support development along activity street.
	Pedestrian/Cycle	24	Provide a formal pedestrian route:
	Routes		 Through the older sections of town (where the houses have been renovated) as part of a historical tourism route.
			 From Wittewater to the main road (R399). Improve shoulders along main activity road for the development of formal pedestrian route.

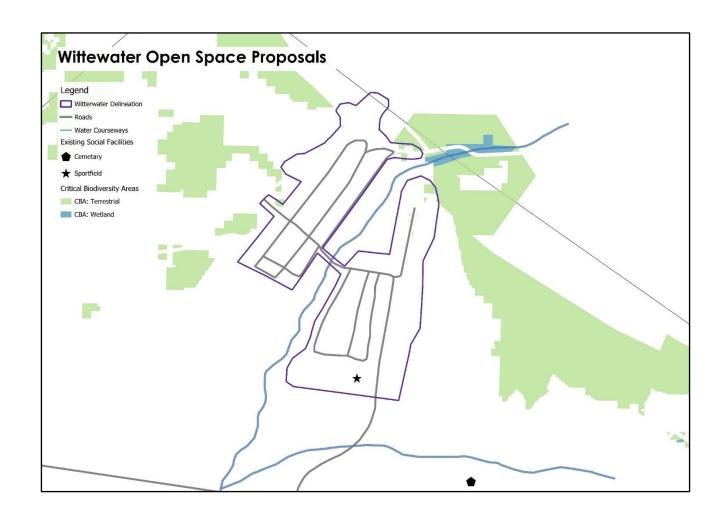


Objective 1: Grow economic prosperity and facilitate economic sector growth and Objective 4: Protect and grow place identity and cultural integrity

SPACE, E	BUILT		
	Elements	No.	Proposals
Protect	Tourism:	25	Protect and maintain existing community hall and tourist facility.
	Residential:	26	Protect rural residential characteristics of the town.
	Industrial/ Commercial:	27	Contain commercial opportunities: Support development of mixed and
			commercial uses along identified activity street.
Change	Tourism:	28	Develop strategy to manage wildlife (Baboons).
		29	Support the development of a formal walking trail in Wittewater. Local people
			should be employed as trail guides.
	Residential:	30	Support the establishment of individual ownership for residential purposes.
			Support security of tenure to agricultural land. Individual ownership supported by
			the Genadendal Accord as signed by the Moravian Church.
		31	Delineate a village edge to contain growth.
		32	Investigate the potential for provision of individual property rights to residents in
			accordance with the Genadendal Accord.
	<u>Agriculture</u>	33	Contain livestock farming in the village area and next to the river system to limit
			land use conflict and health risks to the community.
	Industrial/ Commercial:	34	Support development of a neighbourhood commercial node.
Develop	Tourism:	35	Support small scale tourist opportunities. (Camping Area).
	Residential:	36	Establish a subdivisional area. (Agree to by the Moravian Church council).
		37	Support establishment of tourism accommodation.
	Industrial/ Commercial:	38	Support development along activity street.

Objective 3: Sustain material, physical and social wellbeing

	on journe or outstand materially projection and obtain from only						
PUBLIC IN	PUBLIC INSTITUTIONS						
	Elements	No.	Proposals				
Protect	<u>Education</u>	39	Support the Primary School and its role in the agricultural community and it's immediate surroundings.				
	Transport	40	Strengthen the public area around the formalised bus stop and parking area in the centre of town.				
Change	<u>Transport</u>	41	Make better use of the established formal bus stop in Wittewater by supporting the improvement of public transport between Wittewater and larger centres in the Bergrivier municipal area.				
Develop	Education	42	Develop facilities for early childhood development. Support development of a multi-purpose community centre.				
		44	Development of a new sport field.				



Objective 5: Protect ecological and agricultural integrity

SPACE, N	IATURAL				
	Elements	No.	Proposals		
Protect	Natural conservation / Conservation	45	Protect surrounding landscape and delineate a development line along the feet of Piket and Skurwe mountains.		
		46 Maintain an open space network along the tributaries from the Jobskloof and Watervalkloof.			
		47	Development style and settlement design to keep to rural character.		
Develop	Natural conservation:	48	Establish tree lanes along the activity street to act as a link to the open space areas and identified footpaths (desire lines).		
	Public & Private Open Spaces:	49	Support the development of an active open space area to the north of the bus stop next to the river.		

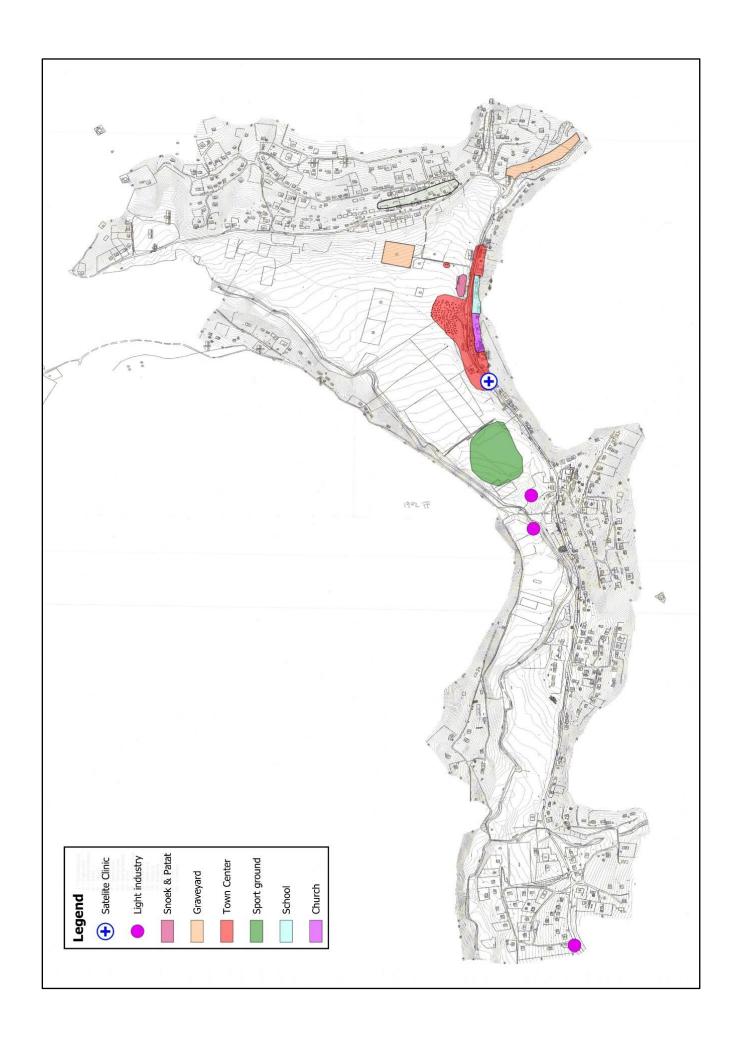
5.5.2 Goedverwacht

Goedverwacht, established as a Moravian Mission Station in 1889, is nestled amongst the Piketberg Mountains along the Rietriver. The mission station was established on farms Goedverwacht 146, Wolfkloof 141 and Ezelsfontein 147, owned by the Moravian Church and providing opportunity to practice small or commercial scale agricultural activities. Small scale agriculture includes vegetable cultivation, and particularly "soet patat" along the river and rearing small livestock. As the village is under private governance, services provided by Bergrivier Municipality are limited. Limited social and commercial services available. Development directives for the settlement's biophysical, socio-economic and built environments follow:

Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC U		0.011	economic pro	oponly and h	aomiato ocon	יייייייייייייייייייייייייייייייייייייי					
	Elements	No.	Proposals								
Protect	Water:	1	Piped potable water area available to the majority of the houses in Goedverwacht e direct connection to the houses, connection to the tap on the erf or from communal								
		2		Maintain four reservoirs with a total capacity of 626 kl.							
	Sewerage and Sanitation:	3					nd septic tanks.				
	Electricity:	4	•	supplied by Esk es from the local		al Overseers bo	ars which is responsible for the				
	Waste:	5				ontractor that was Refuse site in I	s appointed by the Moravian Malmesbury.				
Change	Water:	6	Improve the qu	ality and supply	of water resour	ces in the villag	e.				
		7	Continued main	ntenance and ex	pansion of wat	er provision syst	tem to allow water provision to all				
			homes, also homes located against steeper slopes.								
		8	Support the harvesting of rainwater from roofs.								
		9	Protection of river system to ensure quality of water used for farming and drinking.								
		10	Manage and reduce future water demand as per population projections below.								
			2025	2035	2045	2050					
			2 688	3 039	3 412	3 552					
	Sewerage and Sanitation:	11		ture installation ndwater and rive		ewerage system	s at houses to limit potential				
	Electricity	12	Improve the ele	ectricity provision	n to all homes i	n Goedverwacht	through agreement with Eskom.				
		13	13 Ensure that Eskom provide the necessary pensioners support and compassionate funding they do in other urban areas to alleviate the service cost in the community.								
	Future Demand	14	Secure adequate land for future bulk infrastructure expansion: reservoirs, overhead power lines, future roads and a water pipelines.								
Develop	Water:	15	Promote water	harvesting and	re-use.						
	Sewerage and Sanitation:	16	Promote alterna	ative sewerage	management si	uch as package	plants.				
	Electricity:	17	Encourage Alte	rnative energy	use.						

CONNEC	TIVITY							
	Elements	No.	Proposals					
Protect	Roads:	18	Maintain access road connecting to R399, and internal gravel roads to keep rural character.					
Change	Roads:	19	Improve mobility of local community to access economic opportunities in neighbouring settlements.					
		20	Improve the design of internal dirt roads to accommodate stormwater runoff.					
	Pedestrian Routes	21	Support safe pedestrian routes along activity streets to improve connectivity in town.					
Develop	Roads:	22	Support development along activity street.					
	Pedestrian/Cycle Routes	23	Provide a formal pedestrian route: - Through the older sections of town as part of a historical tourism route. - From Goedverwacht to the main road (R399). Improve shoulders along main activity road for the development of formal pedestrian route.					

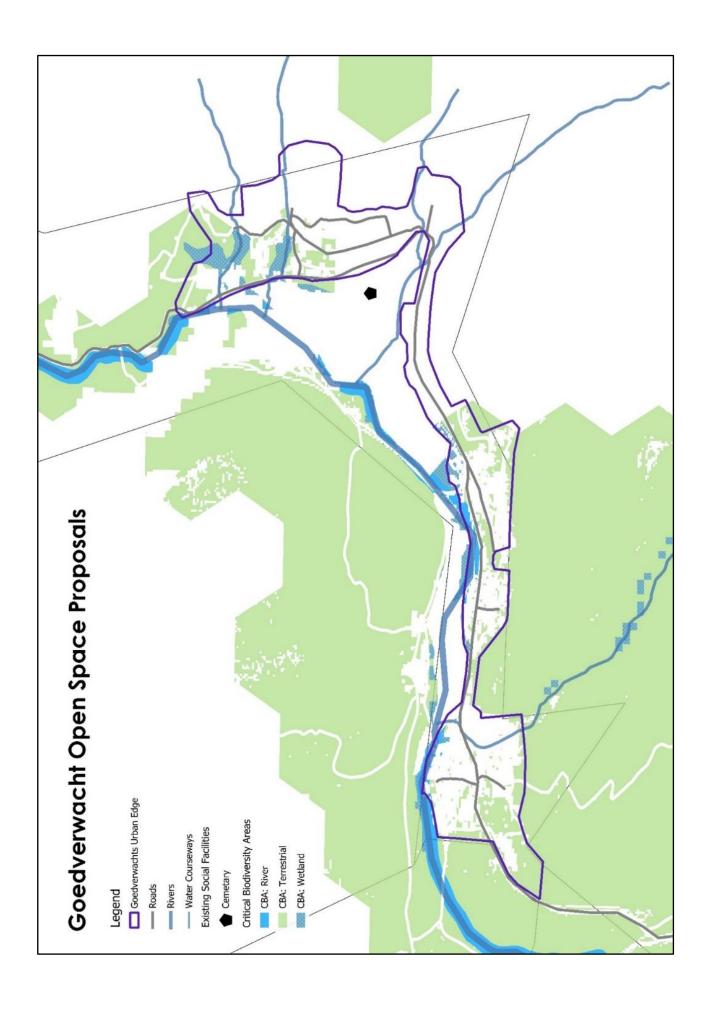


Objective 1: Grow economic prosperity and facilitate economic sector growth and Objective 4: Protect and grow place identity and cultural integrity

SPACE, B	UILT						
	Elements	No.	Proposals				
Protect	Tourism:	24	Protect and promote the annual Snoek and Patat Fees.				
	Residential:	25	Limit livestock farming in the village area and next to the river system to limit potential land use conflict and health risks to the community. Identify areas outside of the village for livestock farming.				
	Commercial:	26	Limited commercial opportunities exist.				
Change	Tourism:	27	Improve visual quality of the town and beautify to support rural character.				
		28	Support the development of a small scale holiday resort on the northern periphery of the village to provide economical opportunities and job creation in the village of Goedverwacht.				
		29	Support the development of eco tourism facilities such as bird watching facilities along the river.				
		30	Support the development of an Arts and Crafts centre (as an extension of the coffee shop or at the community hall) to support tourism as well as skills development and job creation in the village.				
		31	Identify specific projects that can form part of applications for funding by the registered Goedverwacht Tourism Development Forum.				
	Residential:	32	Support the provision of individual ownership to residents in Goedverwacht as well as improvised access to farm for farming purposes. Individual ownership to community supported by the Genadendal Accord that was signed by the Moravian Church.				
		33	Investigate the potential for provision of individual property rights to residents.				
	Commercial:	34	Support commercial development for local needs and to support local needs.				
Develop	Tourism:	35	Support small-scale tourist opportunities.				
		36	The development of formal footpaths in the village to be used by local community as well as tourist as part of a local hiking trail through town exploring Goedverwacht on foot and stopping on route at various local inhabitants where various activities can be seen and experienced.				
	Residential:	37	Support the contained growth of the village within the proposed village edge				
	Commercial:	38	Support development of mixed and commercial uses along identified activity street (Church Street precinct).				
		39	Develop tourist related commercial facilities along Church Street (Art & Craft facilities for local residents).				

Objective 3: Sustain material, physical and social wellbeing

PUBLIC II	PUBLIC INSTITUTIONS								
	Elements	No.	Proposals						
Protect	Social Infrastructure & Services:	40	Support the important role that the Primary School plays in the education of children for the surrounding farm workers.						
Change	Social Infrastructure & Services:	41	Develop facilities for early childhood development.						
Develop	Social Infrastructure & Services:	42	Provide a skills development centre for arts and crafts to support economic viability of community.						
		43	Support the development of a multipurpose centre within a central public node that will provide programmes for the children, the youth as well as pensioners.						

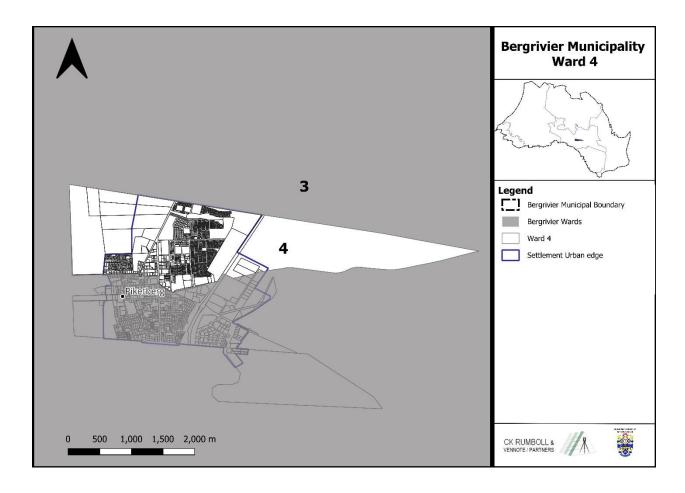


Objective 5: Protect ecological and agricultural integrity

SPACE, N	NATURAL		
	Elements	No.	Proposals
Protect	Natural conservation:	44	Agricultural opportunity for the farming of vegetables.
		45	Maintain an open space network along the river with no offensive development and uses in this area as well as the removal of alien vegetation in along the banks of the river.
		46	Support the 32 meter setback lines for development along river banks.
		47	Protect areas surrounding the Riet River (limit intensive livestock farming in community gardens and along river banks) to ensure the protection of water quality in river to protect the residents livelihoods since they are dependent on the water for drinking and farming.
	Public & Private Open	48	Strengthen the public areas around the central sport field and area next to the river to the north of the Church.
	Vegetation	49	Support the removal of alien vegetation along the banks of rivers.
Change	Public & Private Open	50	Support the maintenance and further development of existing hiking trails on the Goedverwacht farm as an extension of the open space network in the village and as part of the tourism activities in town to support job creation (local community to provide guides).
Develop	Natural conservation:	51	Internal development to consider the existing surrounding character and rural landscape.

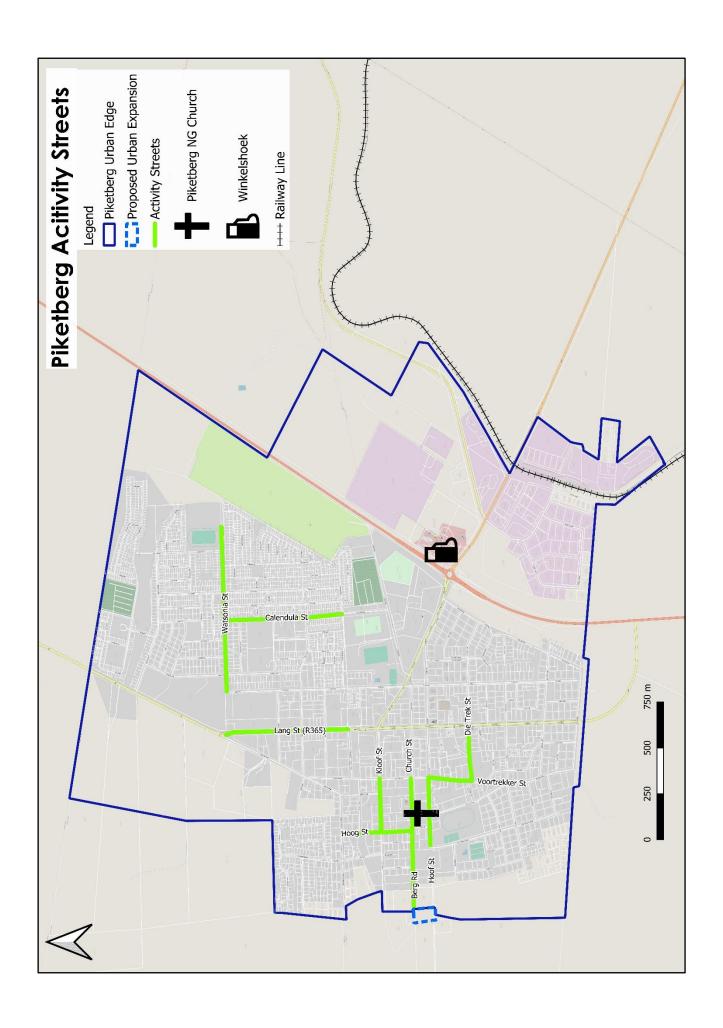
5.6 Wards 3 & 4 Piketberg

Piketberg is located in Wards 3 and 4, serving as a sub-regional hub within the wider West Coast region. Piketberg plays a vital role in delivering essential agricultural services to the neighboring farms and towns. As the principal town within the Bergrivier Municipality, Piketberg is identified as having moderate growth prospects. Development directives for the settlement's biophysical, socio-economic and built environments follow:

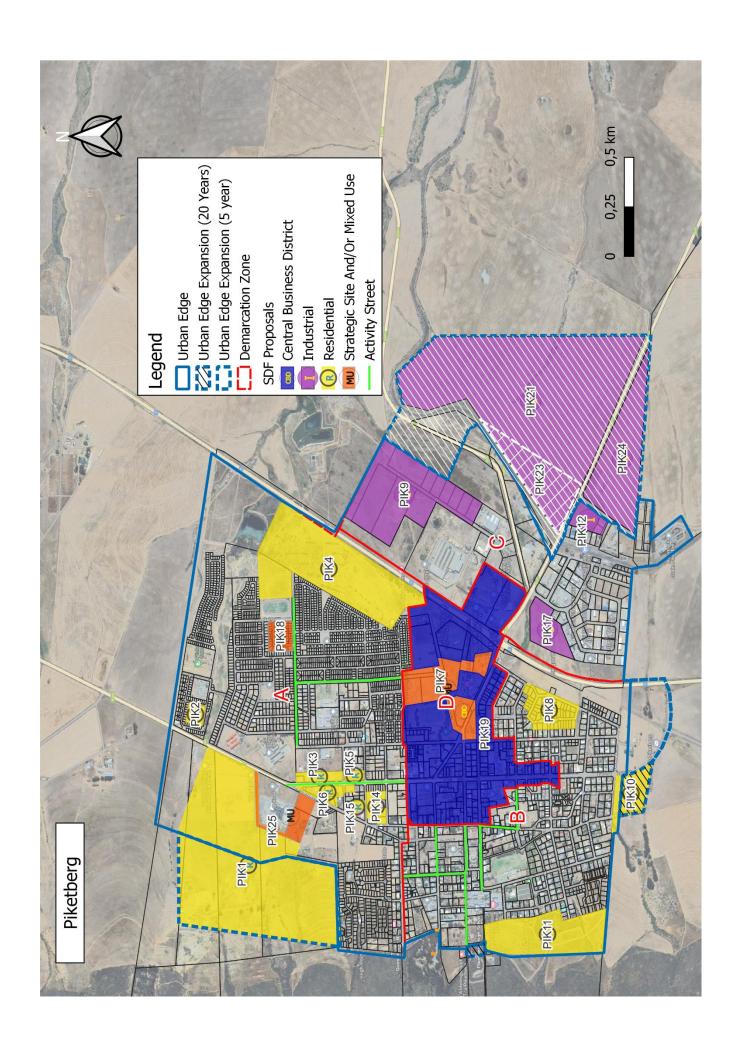


Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC U	ITILITIES				, ,		<u> </u>					
	Elements	No.	Proposals									
Protect	Future Demand:	1	Current capacity of bulk infrastructure.									
	Water:	2	Protect four	Protect fountain on Farm Magdelena and extraction from Berg River.								
		3	Maintain tw	Maintain two reservoirs with a total capacity of 5 700 kℓ.								
	Waste Water:	4	Maintain wa	aterborne se	ewerage sys	tem.						
	Electricity:	5	Maintain su	bstation and	d distributior	n network at	De Hoek.					
	Waste:	6	Maintain tra	ınsfer statio	n.							
		7	Reduce was	ste to minim	nize delivery	to Highland	s waste site.					
	Safety:	8					ding rural towns.					
Change	Future Demand:	9					wth proposals.					
		10					ture expansion: reservoirs, overhead power lines,					
				uture roads and a water pipelines.								
		11					e impact on landscape qualities.					
		12	Upgrading reservoirs by 2028. (IDP)									
		13		Manage and reduce future water demand as per population projections below.								
			2025	2035	2045	2050						
			16 415	18 895	20 858	21 720						
	Waste Water:	14	Upgrading i	needed betv	ween 2028 -	- 2033 (IDP)						
	Electricity:	15	Upgrading i	needed betv	ween 2028 -	- 2033 (IDP)						
		16	Support use	e of alternat	ive energy.							
	Stormwater:	17	Maintain sto	ormwater ne	etwork.							
	Waste:	18	Consider po	otential area	for compos	sting facility i	n or close to eastern precinct.					
Develop	Future Demand:	mand: 19 Identify and provide land for bulk infrastructure for reservoirs, overhead power lines,										
			and water p	•								
	Water:	20	Implement	maintenanc	e and upgra	de programi	me for rivers and spring.					
		21	Support use	e of alternat	ive sources	e.g. water h	arvesting (in tanks).					
	Electricity:	22	Develop an	alternative	energy facil	ity.						

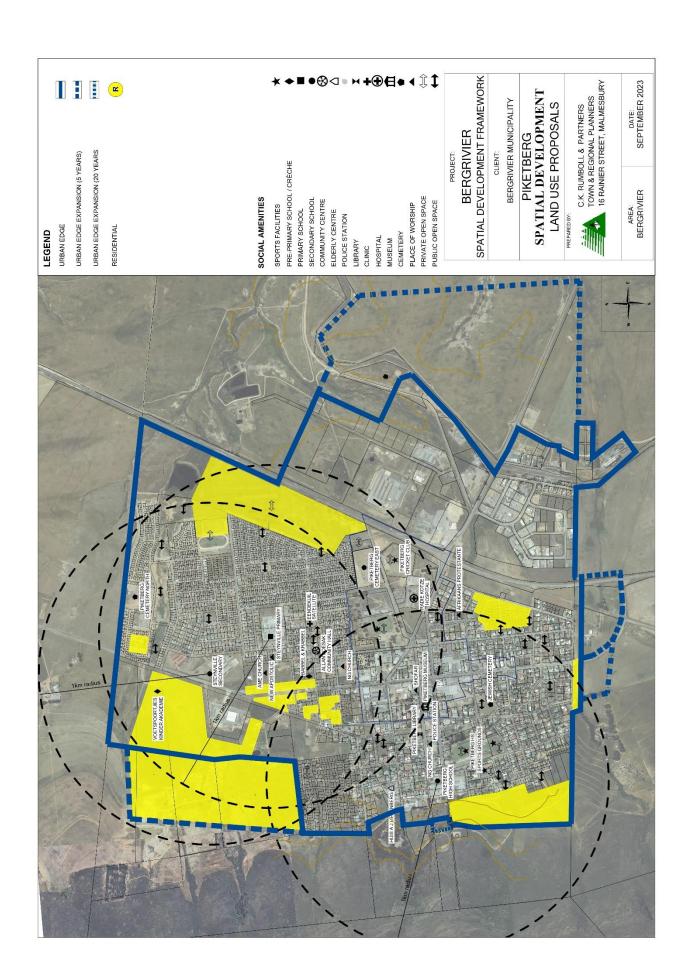


CONNECT	TIVITY		Objective 2. Proximate convenient and equal access
	Elements	No.	Proposals
Protect	Roads:	22	Protect main access routes which include: - N7; - R365 connecting with the R44 and R36; - R399 at De Hoek.
		23	Strengthen corridor which provides access to Cape Town, Northern Cape and Namibia.
	Activity Streets & Corridors:	24	 A portion of Watsonia Street (From the corner of Loop Street); Calendula Street (From Corner of Loop Street till Gouseblom Strret); A portion of Lang Street; A portion of Hoof Street (From corner of Buitengracht Street till Corner of Kloof Street); Berg Street; Kerk Street; A portion of Die Trek Street (From the corner of Lang Street till the corner of Voortrekker Street).
	Rail:	25	Protect rail connection: Cape Town to Bitterfontein.
Change	Activity Streets & Corridors:	26	Create a defined and articulated 'gateway' entrance into Piketberg from the N7: Plant trees and provide street furniture.
		27	Create a clear and connected movement system integrating existing amenities and new residential development (PPP).
		28	close the section of Sarel Cilliers Street at the intersection of Kloof and Loop Straat in front of the Rhino Park sports complex (PPP).
		29	Extend Watsonia Straat to intersect with Lang Straat (PPP).
		30	Upgrading of Long Street (PPP).
		31	Reduce road carriageway in CBD to 2 lanes (i.e. 1 lane in each direction, except for the section of road in front of the shopping centres, which will remain 4 lanes) (PPP).
		32	Support and concentrate higher order development and mixed uses along activity corridors and streets.
		33	Promote pedestrian friendly activity routes and corridors.
	<u>Rail</u>	34	Upgrade train station – Piketberg/ Cape Town route (Industrial area).
	Pedestrian and	35	Improve accessibility for the disabled.
	Cycle Routes:	36	Convert the obsolete road lanes and parking bays into a combination of pedestrian sidewalks and parking (PPP).
		37	Implement public realm upgrades, including widening and paving sidewalks (PPP).
		38	Provide cycle routes along main activity corridors and routes.
Develop	Roads:	39	Maintain and upgrade internal road network and street lighting in Piketberg.
		40	Create a new street along the western edge of the hospital (PPP)
		41	Liaise with Provincial and National roads to participate in road network upgrades.
		42	Landscape the industrial interface with N7.
		43	Facilitate pedestrian crossings on N7 as part of upgrade (improve user-friendly of pedestrian crossings).
	Activity Streets	44	Introduce roundabouts along Voortrekker Way.
	& Corridors:	45	Create a formalised pedestrian route from Gousblom Staat to a safe NMT crossing of the N7 (PPP).
		46	Create visually complex edges to the N7 at the entrance to Piketberg to help slow down traffic for NMT crossings (PPP).
	Pedestrian and Cycle Routes:	47	Include new tree planting (including planter boxes), new seating, lighting and new shading elements (PPP).
		48	No pedestrian link between residential & industrial area. Pedestrian bridge over N7.
		49	Develop tourism/recreational/ multi-use cycle and bike trails and pedestrian walkways.



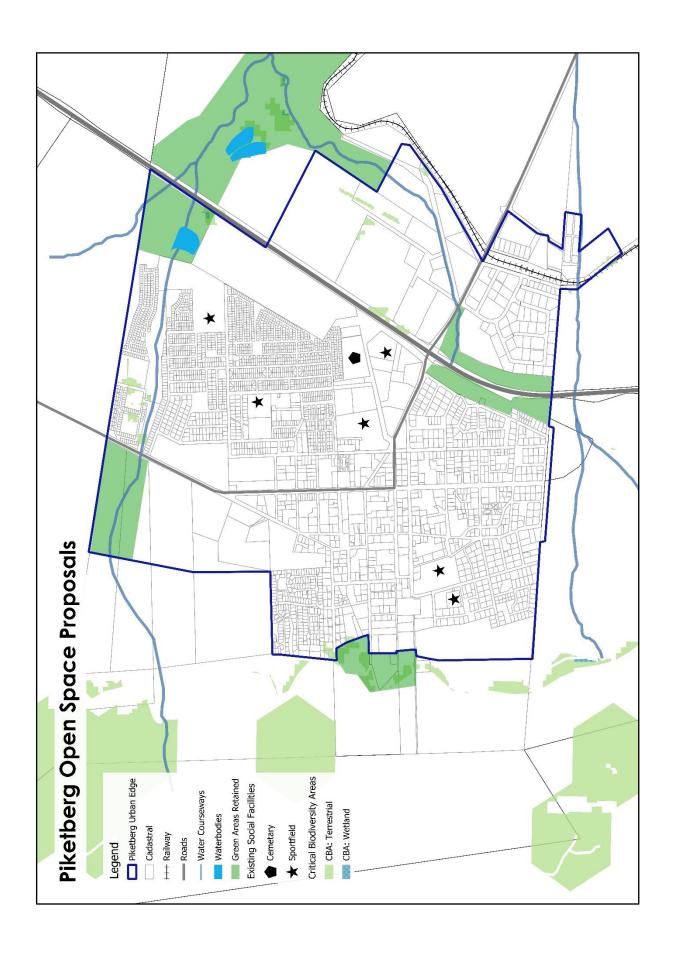
Objective 1: Grow economic prosperity and facilitate economic sector growth and Objective 4: Protect and grow place identity and cultural integrity

SPACE, B	BUILT		
	Elements	No.	Proposals
Protect	Heritage & Tourism:	50	Promote Piketberg's origin known as "Piquetberg" which refers to the former military guard post stationed on the mountain between 1672 and 1676. In 1835 the town was initiated on farm Grootfontein and served as a historical church settlement.
		51	Protect CBD located along portions of Lang Straat and Hoof Straat, accommodating mixed use activity.
		52	Enhance Piketberg as administrative seat of the Bergrivier Municipality and it's complimentary central location.
		53	Protect Piketberg's accessibility along the N7 national route to the Northern Cape and Namibia and it's link to the R27 (West Coast Road), R44 and alternative modes of transport (railway).
		54	Keep commercial buildings, services, signage and colours aligned with the rural agricultural character at heritage rich areas and gateways with the exception of the central gateway.
	Commercial:	55	Promote role as regional service center and associated administrative, commercial and industrial functions and services which attracts growth.
		56	Protect CBD Precinct with mechanisms to support business development, informal trading and mixed-use opportunities.
		57	Establish a commercial node along Watsonia Street.
		58	Support diversification of town's economic base.
		59	Enhance proximity to Cape Town Markets and location on major routes to Saldanha IDZ and the north.
		60	Piketberg has a high development potential.
Change	Heritage & Tourism:	61	Protect heritage buildings (graded and ungraded), areas & features & control alterations or demolition of heritage buildings.
		62	Develop non-formal heritage zones.
		63	Develop aesthetic guidelines for development in these areas.
		64	Support the development of high-standard accommodation opportunities.
	Residential:	65	Diversify housing delivery by providing housing through various mechanisms and designs (Cater for different densities, typologies and markets).
		66	Develop non-formal Restructuring Zones in identified areas for social housing.
		67	Promoted and provide for housing for retirees.
		68	Provide adequate land for private and public residential development.
		69	Support higher density residential developments (flats) within CBD.
		70	Support renewal in the CBD and encourage mixed uses that includes a residential component.
	Commercial:	71	Renew and enhance the visual appeal of Piketberg central area to be more visitor-friendly and vibrant (PPP).
		72	Support the development of home occupation in residential areas.
		73	Create affordable commercial properties and integrate commercial areas in previously disadvantaged neighborhoods.
		74	Enhance Central Business District (CBD) (PIK19).
	Industrial:	75	Provide adequate land for industrial development and service industries, including variety e.g. manufacturing, processing, warehousing, etc.
		76	Promote agri-processing and other agricultural related industries supporting the agricultural sector and value adding close to the source, limiting the production footprint.
Develop	Heritage &	77	Compile guidelines for development in non-formal heritage overlay zone.
	Tourism:	78	Support historical routes in town and improve signage.
	Danisla atiala	79	Protect historic buildings minimizing potential negative impact of densification and infill development.
	Residential:	80	Provide land for GAP housing and first time buyers (different typologies).
		0.4	Develop areas according to available infrastructure capacity.
		81	 Hight density areas in north eastern precinct (PIK4); Medium to Low-density areas in north western precinct (PIK1);
			- Infill Development (PIK5, PIK3, PIK6, PIK14, PIK8 & PIK15).
	Commercial:	82	The implementation and expansion of the RSEP Programme within the Integration Zone along Church Street.
	<u>commordiai:</u>	83	Develop innovative neighbourhood business nodes along activity routes that allow people access to the commercial
		84	sector. Support these nodes with relevant transport services e.g. taxi/bus stops.
	Industrial		Capitalise on regional service centre function.
	Industrial:	85 86	Encourage development of industrial area with the aim of skills development. (SDF 2019-2024).
		86 87	Support development of Industrial/mixed-use development and commercial uses. Offer investment incentives (lever fees for services and rates) for industrial development.
		88	Offer investment incentives (lower fees for services and rates) for industrial development. Support the expansion of industrial area (PIK9, PIK17, PIK12, PIK10, PIK19, PIK21, PIK23 & PIK24).
		00	Oupport the expansion of industrial area (1 IN3, FIN17, FIN12, FIN10, FIN13, FIN21, FIN23 & FIN24).



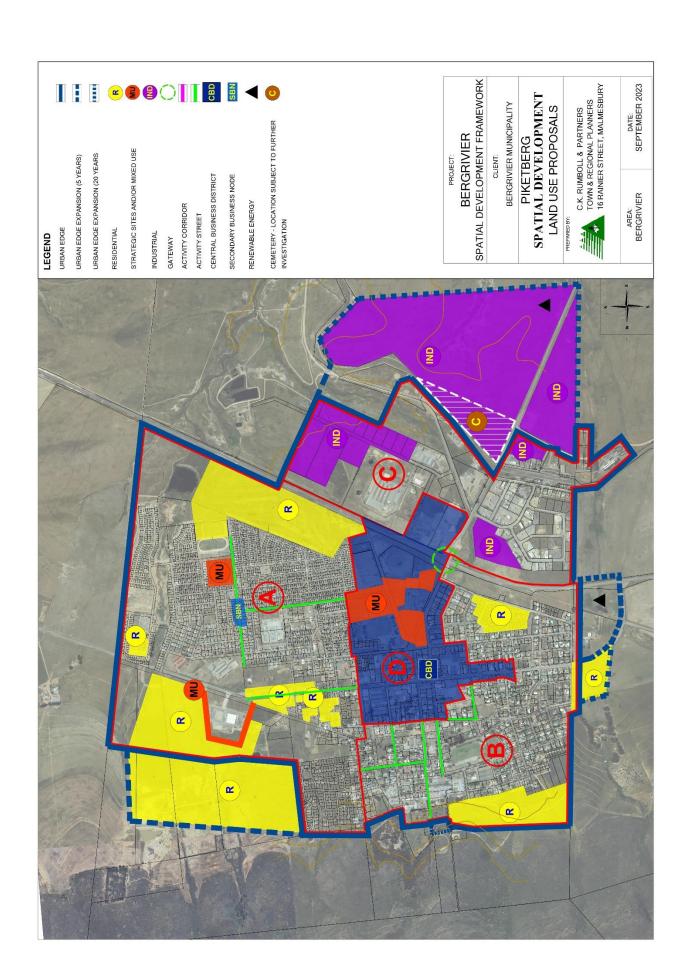
Objective 3: Sustain material, physical and social wellbeing

PUBLIC I	NSTITUTIONS		
	Elements	No.	Proposals
Protect	Community	87	Community orientated and accessible projects in the communities are limited.
	facilities:	88	Maintain Pietie Fredericks Youth Centre (SDF 2019-2024).
		89	Education facilities with a focus on crèches and secondary/tertiary facilities.
Change	<u>Community</u>	90	Identify areas for future social infrastructure within easy access of communities.
	facilities:	91	Create social nodes and related community uses particularly in previously disadvantaged areas.
		92	Develop neighbourhood community gardens to support food security.
		93	Develop areas for small and emerging farmers.
		94	Encourage social uses including schools, hospitals, kindergartens and guest houses, supportive of residential uses, in eastern neighborhood precinct.
		95	Encourage sharing of sport facilities amongst schools and with the community.
		96	Develop multi-use Open Space Networks and recreational areas.
Develop	Community facilities:	97	Develop and formalize recreational areas along the Diep River to enhance multi-use of open space river corridor.
		98	Provide social infrastructure particularly previously disadvantaged and higher-density communities.
		99	Develop a youth cafe (SDF 2019-2024).
		100	Develop a dog park at Fontein Park.
		101	Promote community gardens and create partnerships for food security.
		102	Upgrade existing sport facilities.
		103	Develop a skills center.
		104	Develop a sports academy.



Objective 5: Protect ecological and agricultural integrity

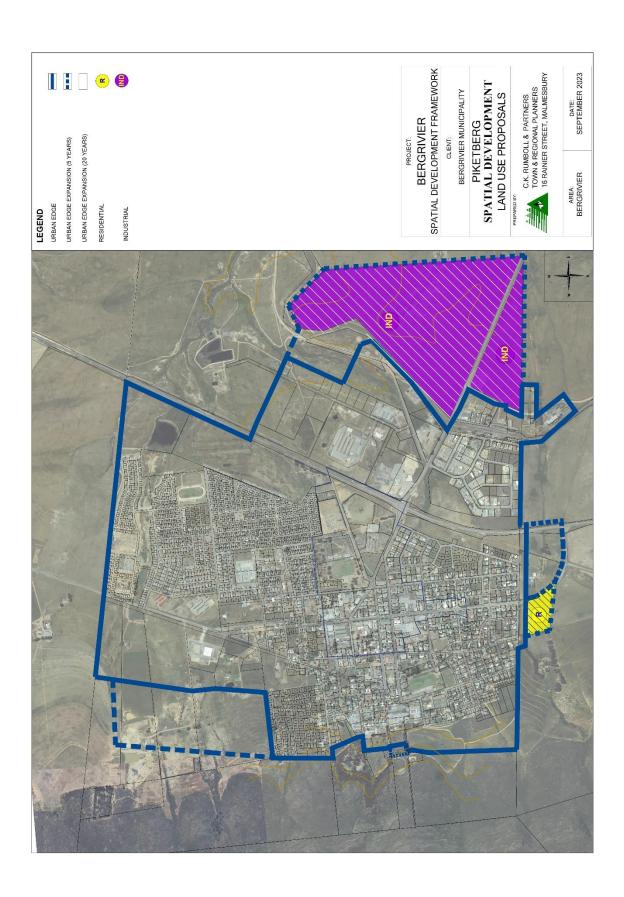
SPACE, N		01.70	. I Totect ecological and agricultural integrity
•	Elements	No.	Proposals
Protect	Nature and Conservation:	106	Protect mountain slopes (No development on slopes steeper than 1-4).
			Protect Agricultural landscape surrounding urban footprint.
	Public & Private Open Space:	108	Protect historic spring as a public open space (insert street name).
Change	Nature and Conservation:	109	Determine a development (including agricultural activities) line along the slopes of The Piketberg.
		110	Integrate biodiversity considerations into municipal planning, policies and by-laws (IDP).
		111	Eradicate alien and invasive species that are impacting negatively on Bergrivier Municipality's biodiversity.
		112	Conserve freshwater aquatic ecosystems through sustainable use and management of water resources.
		113	Reduce the impact of waste and pollution on biodiversity.
		114	Engage actively and implement measures to facilitate private conservation of Bergrivier Municipality's biodiversity.
			Facilitate international conservation status for the Berg Estuary through active participation on the BEMF (IDP).
		116	Involve local communities and businesses in open space network development and maintenance to ensure sustainability.
		117	Require tree planting to become part of (planning and budget) the subsidized housing project.
	Public & Private Open Space:	118	Support multi-functional use of open spaces and multi-functional use.
Develop	Nature and Conservation:	119	Create an Open Space multi-use network maintaining relevant setbacks and flood lines. Uses should include walking, jogging, cycling, biking and horse-riding and outdoors gym.
		120	Continue clearing alien vegetation and prevent erosion.
		121	Develop the capacity of Bergrivier Municipality to effectively manage its biodiversity and broader environmental issues (IDP).
		122	Green main activity routes and plant trees.
			Endorse and support, river rehabilitation and conservation practices.
		124	Create public playgrounds and recreational facilities (picnic areas, chairs and tables along river bank).
	Public & Private Open Space:	125	Beautify central town including provision of street furniture, landscaping and create public squares.
	Gateways:	126	Plant tree lanes to enhance Piketberg's formal gateway and additional gateway.



DEVELOPMENT ZONES AND PROPOSALS FOR PIKETBERG

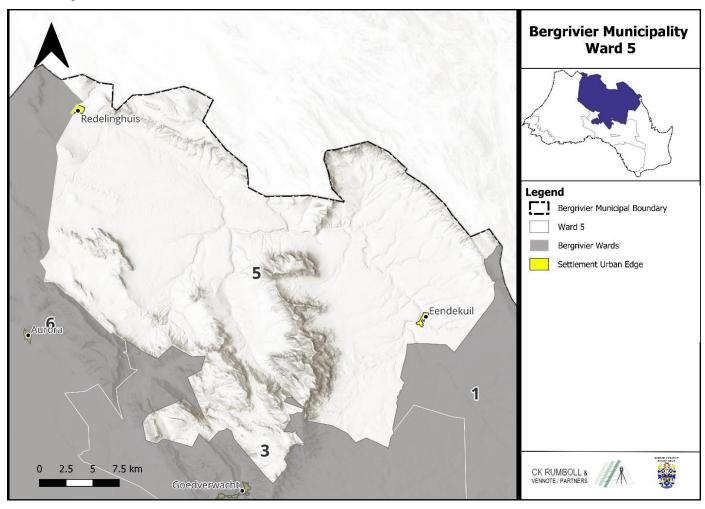
The table in this section describes development zones identified in Piketberg and lists development options for each zone. The table has to be read in conjunction with Development Zone plans for Piketberg.

	PIKETBERG LAND USE ZONES	Low Density Residential	Medium Density Residential	High Density Residential	Secondary Education	Place of Instruction	Professional Uses	Business	Secondary Business	Place of Worship	Guest houses/Lodge	Authority	Sport/Recreational Facilities	Light Industrial / Service Trade & Industries	Institution
A	Zone A is a high to medium density residential area with supporting amenities. The area mainly provides opportunities for residential development. Allow for various mixed uses within the identified mixed use precinct.	X	X	X	X	X	Х	X 3	X 1,3	X	X	X	X		Х
В	Zone B is a low to medium density residential area with supporting amenities and a secondary business node. The area provides opportunities for infill mixed density residential uses and other supporting social facilities.	X	X	X 1	X	X	X		X1	X	X	X	X		Х
С	Zone C is an industrial precinct and allows for limited industrial expansion.				Χ	Χ	Χ	Χ	Χ	Χ		Χ	Χ	Χ	Χ
D	Zone D has been identified as the town's CBD and allows for future business expansion. Strengthen the area as the business core of the town and allow for various mixed uses within the identified mixed use precinct.	X	Х	X	X	Х	X	X	Х	X	X	X	X	X 2	х
(2	(1) Along activity streets (2) Service trades (3) At identified Mixed Use Precincts			Business Uses e.g. shop, supermarket, restaurant, offices, service station. Place of Instruction e.g. Schools, places of instruction. Professional Uses e.g. offices like doctors, dentists, attorneys, architechts, engineers and town planners. Secondary Business Uses e.g. neigbourhood bussines uses such as house shops, small offices and home occupation. House taverns only to be allowed along activity streets in residential areas on discretion of the Municipality. Secondary Educational Uses e.g. Crèches/day care.							shops,				



5.7 Ward 5: Eendekuil and Redelinghuis

Ward 5, the north eastern ward of Bergivier borders the Cederberg and is home to Eendekuil and Redelinghuis.



5.7.1 Eendekuil

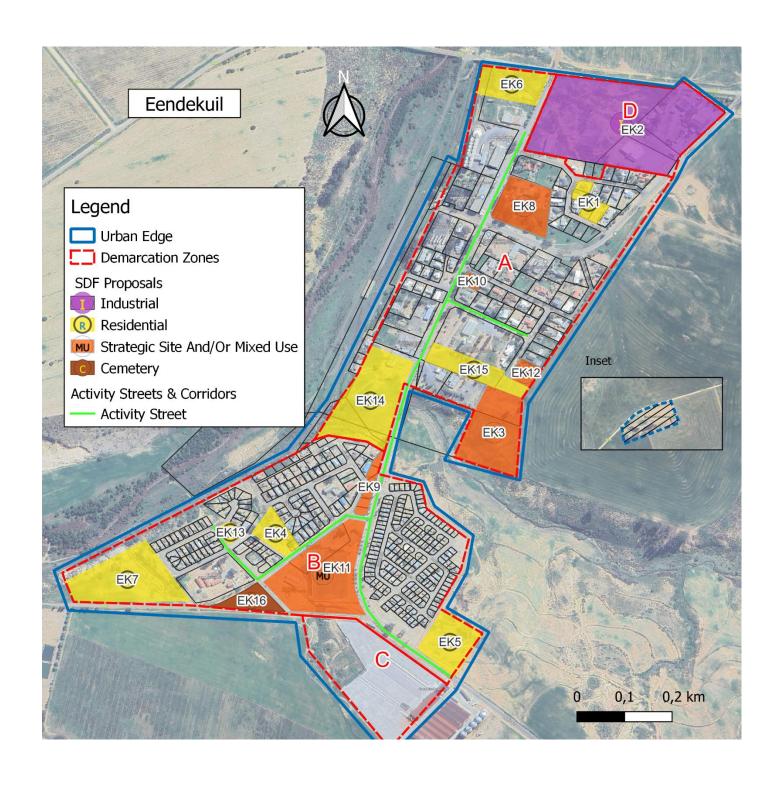
Situated 30 km north of Piketberg, Eendekuil functions as a lower-order agricultural center and agriresidential settlement providing social infrastructure for both the settlement and surrounding agricultural
areas. Agri-processing and value addition are key drivers presently and for the future. Development
directives for the settlement's biophysical, socio-economic and built environments follow:

Objective 1: Grow economic prosperity and facilitate economic sector growth

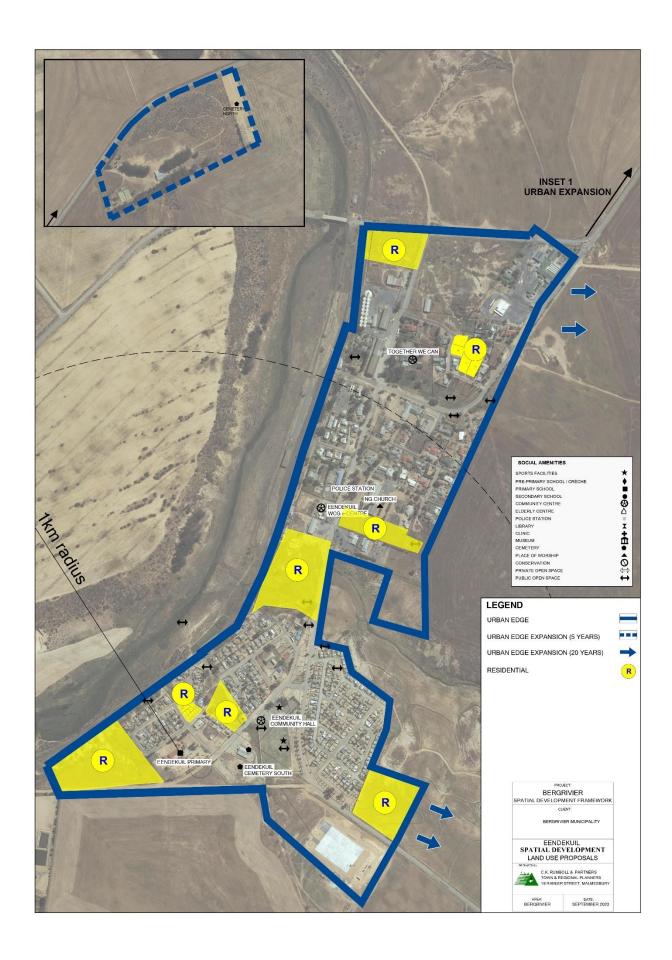
PUBLIC U	TILITIES											
	Elements	No.	Proposals									
Protect	Water:	1	Maintain rese	ervoir with	a total capa	city of 450 k	ℓ.					
	Waste Water:	2	Maintain Een	Maintain Eendekuil waterborne system.								
	Electricity:	3	Maintain sub	Maintain substation.								
	<u>Waste</u>	4	Maintain was	te transfer	station.							
	Storm water:	5	Maintain and									
Change	Future Demand:	6			<u> </u>		vth proposals.					
		7					ualities (minimize impact).					
		8		Secure adequate land for future bulk infrastructure expansion: reservoirs, overhead power lines, future roads and a water pipelines.								
	Water:	9	Manage and reduce future water demand as per population projections below.									
			2025	2035	2045	2050	' ' ' '					
			2 080	2 394	2 642	2 751						
		10	Upgrading ne	Upgrading needed between 2028 – 2033 (IDP).								
	Waste Water:	11	Upgrading ne	eded betv	veen 2028 -	- 2033 (IDP)						
		12	Promote the	generation	of alternati	ve energy (s	solar).					
		13	Upgrading ne	eded after	r 2033 (IDP)).						
	Storm water:	14	Formalize sto		_							
Develop	Future Demand:	15					ualities (minimize impact).					
	Water:	16	Provide addit			orage capaci	ty.					
		17	Upgrade wat									
	Electricity:	18	Upgrading ne									
	Safety & Risk	19				d promote a	Iternative energy, water wise developments and					
	Management:		harvesting of	rainwater.								

	Obje	cuve .	z: Proximate convenient and equal access				
CONNEC	TIVITY						
	Elements	No.	Proposals				
Protect Roads:		20	Maintain main access roads:				
			Northern access via N7 connecting to the R365:				
			Southern access via Main road.				
		21	Protect character of Eedekuil as road connects to the surrounding agricultural area.				
	Activity Streets & Corridors	22	Promote the planting of tree lanes along streets.				
		23	- Main Road;				
			 Portion of Maas Street (From corner of Parma Street till corner of Kloof Street); 				
			- Kloof Street;				
			- Church Street.				
Change	<u>Roads</u>	24	De proclamate road main road section from North to South entrance of settlement.				
	Activity Streets & Corridors:		Support intensification and development of mixed and commercial uses along identified				
			activity streets, i.e. Main road.				
		26	Plant tree lanes along activity streets.				
		27	Promote intensification (mixed use and desnification).				
		28	Concentrate development of higher order uses along activity streets.				
		29	Facilitate development opportunities for local entrepreneurs along activity streets.				
		30	Develop guidelines for commercial facades, advertising signs and information signs to				
			align and enhance local character and historical setting.				
	Pedestrian and Bicycle Routes:	31	Provide adequate street lighting.				
		32	Establish a pedestrian and NMT route along main road.				
		33	Formalize open space network within settlement and links to surrounding natural areas.				
		34	Ensure two safe pedestrian crossings between western and eastern precincts.				
Develop	Activity Streets & Corridors:	35	Establish and promote agri-industry.				
	Pedestrian and Bicycle Routes:	36	Improve accessibility of sidewalks, road crossings and pedestrian walkways for disabled				
	·		I .				



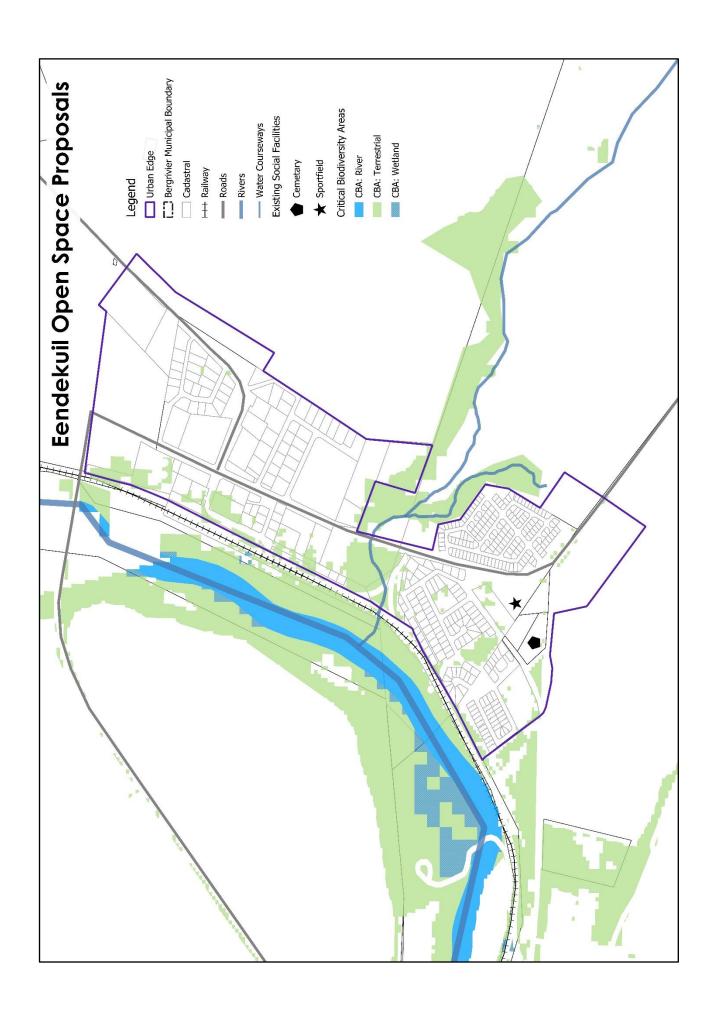


SPACE, B			o 111 rotott and grow place lacinary and canara mognly
	Elements	No.	Proposals
Protect	Heritage and Tourism	37	Protect Rail Station and develop a heritage precinct.
	Commercial	38	Keep commercial buildings, services, signage and colours aligned with the rural agri-village character.
Change	<u>Heritage</u>	39	Ensure new developments and sturctures are sympathetic to local agri-village character.
		40	Rail Station. Heritage Precinct.
	Residential:	41	Expand town through integrated development, residential and agri-village mainly, with open space corridors.
		42	Encourage infill development, intensification and renewal along activity streets.
		43	Promote the agri-village character of the settlement, in all developments including agri-worker housing.
		44	Support densification through subdivision, infill development, renewal and restructuring in accordance with zone proposals.
		45	Promote small scale agriculture on the periphery including security of tenure e.g notarial ties to residential erven within the settlement.
	Commercial:	46	Encourage commercial development on a neighborhood scale.
		47	Pormote agri-industry related infrastructure and signage aligned with agri-village character.
		48	Promote intensification of commercial activities along activity streets.
		49	Create integrated neighbourhood commercial nodes (primary and secondary).
		50	Encourage Home Occupation in residential areas.
		51	Expand and support agri-tourism and agri-events.
		52	Enhance settlement capacity to offer recreational agricultural related events (marathons, mountain bike races).
	<u>Industrial</u>	53	Promote agri-processing and other agricultural related industries (value adding at source).
		54	Promote smaller scale agri-processing industries to allow value adding of products close to source.
		55	Support the expansion and intensification of the industrial area (EK2).
Develop	Residential:	56	Diversify housing typologies.
		57	Provide housing for retirees.
		58	Rural Development Housing Pilot Project.
		59	Promote development of medium density residential areas in south eastern precinct (EK5).
		60	Promote infill development in south western precinct (EK4 and EK13) and north eastern precinct (EK1).
		61	Promote medium to low density residential development in south western precinct (EK7, EK6 & EK14).
		62	Support mixed use development in northern precinct (EK8), north eastern precinct (EK12 & EK3) and southern precinct (EK9 & EK11).
	Commercial:	63	Provide for a local produce market: A dedicated space where local farmers and urban agricultural gardens can sell local produce.
		64	Develop the rail station as a tourist and agri-events destination.
		65	Promote smaller scale agri-processing industries to allow value adding of products close to source.
		66	Develop neighbourhood business node.



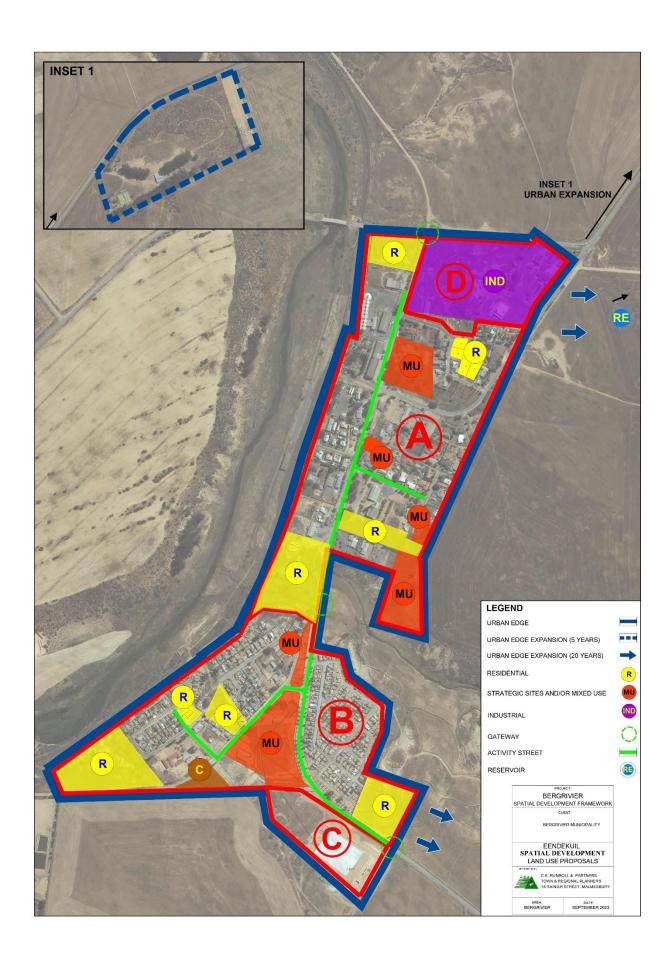
Objective 3: Sustain material, physical and social wellbeing

PUBLIC IN	STITUTIONS	•	
	Elements	No.	Proposals
Protect	<u>Social</u>	67	Promote social infrastructure and job opportunities are within walking distance of residents.
	Infrastructure & Services	68	Support equestrian activities e.g Gymkhana and endurance.
Change	<u>Social</u>	69	Use social/public facilities for various festive occasions.
	Infrastructure &	70	Establish required social infrastructure and services such as health care and educaton.
	<u>Services</u>	71	Support establishment of crèches and other education facilities in residential areas.
		72	Support and encourage for institutional facilities for rehabilitation and recovery.
Develop	<u>Social</u>	73	Establish a multi-purpose community facility linked to skills centre and training.
	Infrastructure &	74	Promote planting of tree-lanes along streets and open spaces.
	Services	75	Formalize expansion of cemetery/establish new cemetery.
		76	Create an three open spaces and provide play park equipment.
		77	Cultural Park: Develop the watercourse central space into a cultural park with both active and passive recreational opportunities such as hiking, play areas, performance areas and sites for picnic to encourage social interaction and enjoy the connection with nature. (SDF 2019-2024)
		78	Promote Eendekuil as final destination for Hang gliders
		79	Youth and Skills Centre



Objective 5: Protect ecological and agricultural integrity

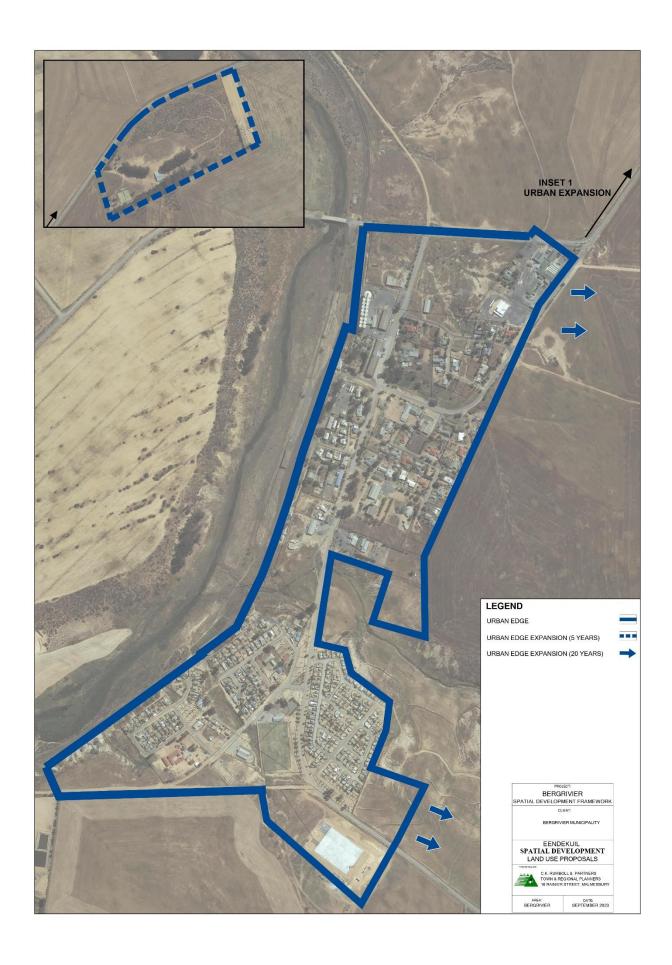
SPACE, N	IATURAL		
	Elements	No.	Proposals
Protect	Nature and Conservation:	80	Conserve and maintain the Kruismans river and tributary corridors.
	Public & Private Open Spaces:	81	Maintain public cemetries.
Change	Nature and Conservation:	82	Enhance recreational uses in the natural areas in and around the settlement.
		83	Promote interactive development interfaces and further develop an open space network.
	Public & Private Open Spaces:	84	Link open space network and recreational areas and cemetry to establish a continuous open space system.
		85	Develop & strengthen public areas to support pedestrian movement and economic activity.
Develop	Nature and Conservation:	86	Link trees lanes along streets to open space network.
	Public & Private Open Spaces:	87	Plant tree's along river bank to promote recreational spaces.
	<u>Gateways:</u>	88	Create soft gateways on Main Road and plant tree lanes.



DEVELOPMENT ZONES AND PROPOSALS FOR EENDEKUIL

The table in this section describes development zones identified in Eendekuil and lists development options for each zone. The table has to be read in conjunction with Development Zone plans for Eendekuil.

	EENDEKUIL LAND USE ZONES		Medium Density Residential	High Density Residential	Secondary Instruction	Place of Education	Professional Services	Business	Secondary Business	Place of Worship	Guest houses/Lodge	Authority	Sport/Recreational Facilities	Light Industrial/Service Trade & Industries	Institution
A	Zone A is low density residential area with supporting amenities. Zone A provides for limited residential development as well as mixed use development. Areas identified for small scale agriculture/community garden.	Х	X	X 1,3	Х	X	X	X 3	X 1,3	Х	Х	X	X	X 2,3	X
В	Zone B is a medium density residential area with supporting amenities. This Zone provides opportunities for residential development as well as mixed use development.	Х	X	X 1,3	Х	X	X	X 3	X 1,3	Х	Х	X	X	X 2,3	Х
С	Zone C represents The Cape Rooibos Agricultural Industry site.													Χ	
D	Zone D, has been identified as an industrial precinct with the possibility of future expansion.				X	X	X	Χ	X	Х		X	X	X	Х
	(1) Along activity streets and at nodes (2) Only service trades. (3) At identified Mixed Use Precincts		e of Infession plant on dar es and dential	ners. y Busin	on e.g. s e.g. ess U occup n disc	ses e. ation.	ools, pools, poo	olaces doctors gbourl e tave Munic	of instrus, dentise the dentities the dentise the dent	uction. sts, att ussines y to b	orneys	s, arch	nitecht as ho	n. s, enginee use shops activity str	s, small

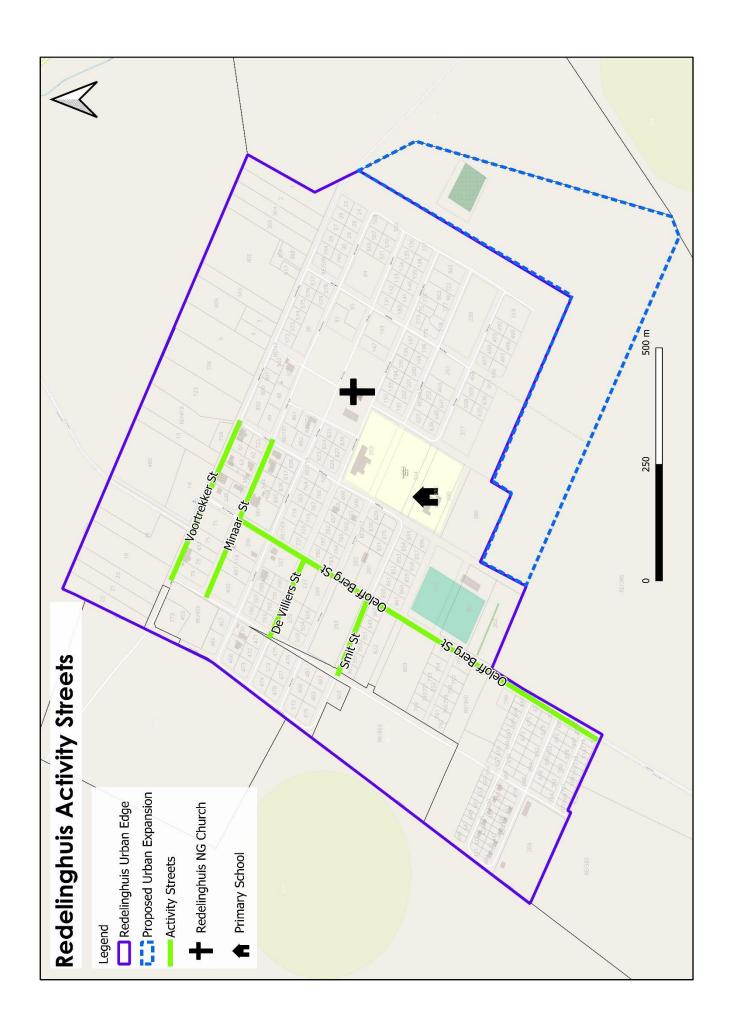


5.7.2 Redelinghuis

Redelinghuis is situated in the picturesque Verlorenvlei valley located halfway en-route to the coast from Piketberg. Redelinghuis functions as a agri-residential village which provides supporting social infrastructure for the settlement and the surrounding agricultural areas. Development directives for the settlement's biophysical, socio-economic and built environments follow:

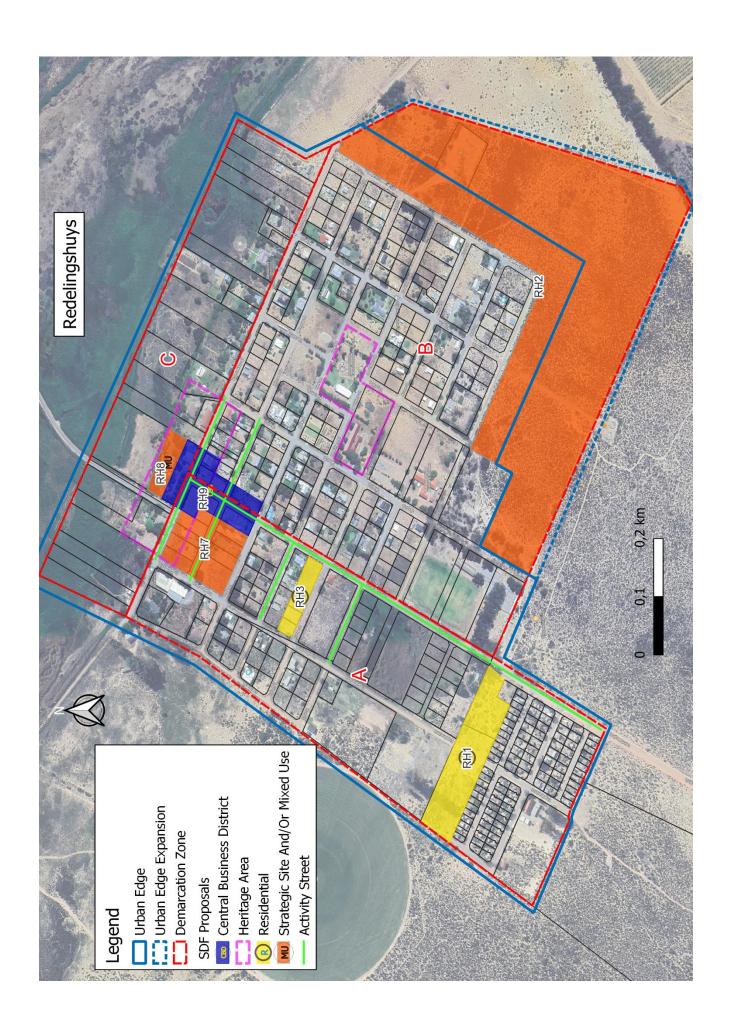
Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC U	TILITIES												
	Elements	No.	Proposals										
Protect	Water:	1	Purification i future develo	Maintain two reservoirs with a total capacity of 440 kl.on the southern side of town. Purification is done at the reservoirs and the current capacity is adequate also to cater for future development.									
		2		Maintain two reservoirs with a total capacity of 440 kℓ.									
	Waste Water:	3		Maintain soak away and a septic tank system.									
	Electricity:	4			ternative energy (s	olar).							
	Waste:	5	Maintain wa	ste transfer statio	n.								
	Safety & Risk Management Services:	6	Protect natu	ral vegitation link	s and surrounding	S.							
Change	Future Demand:	7		uate land for fut roads and a wate		ure expansion: r	eservoirs, overhead power						
	Water:	8	Upgrade of reservoir needed after 2033.										
		9	Encourage water harvesting.										
		10	Manage and reduce future water demand as per population projections below.										
			2025	2035	2045	2050							
			779	897	989	1 030							
	Waste Water:	11	Encourage r	eplacement of se	eptic tanks.								
		12	Upgrading n	eeded after 2033	(IDP).								
	Electricity:	13	Provide ade	quate street light	ing.								
		14	Upgrading n	eeded after 2033	B (IDP).								
	Storm water:	15	Maintain gra	vel roads to facil	iteit storm water m	anagement.							
	Waste:	16	Promotr re-c	ycling and re-us	е.								
	Safety & Risk Management	17	Protect reed	beds and natura	al vegitation.								
	Services:												
Develop	Future Demand:	18			e with landscape o	ualities (minimiz	e impact).						
	Water:	19	Fix/replace r	eservoirs which	are leaking.								
	Electricity:	20	Upgrade obs	solete electrical i	nfrastructure.								
	Storm water:	21	Upgrade sto	rm water system									

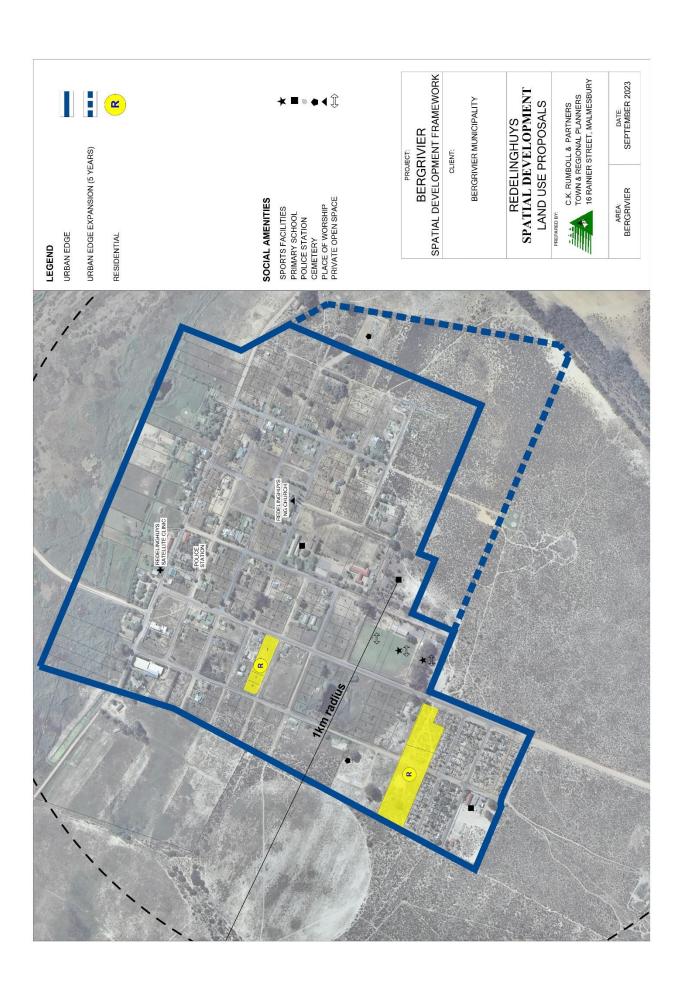


Objective 2: Proximate convenient and equal access

CONNECT	TIVITY							
	Elements	No.	Proposals					
Protect	Roads:	22	Protect character of Redelinghuis as a gravel road connect to the rural landscape: Aurora to the south and Piketberg to the east.					
		23	Maintain and protect gravel roads within Redelinghuis.					
		24	Protect natural gateway (Reed beds along gravel road and bridge) between R365 and the settlement.					
	Activity Streets & Corridors:	25	Enhance appearance of town entrances through tree planting, street furniture and pedestrian walkways.					
		26	Oelof Berg Street. A Portion of Voortrekker Street (From corner of Englebrecht Street till corner of Skool Street). A portion of Minnaar Street (From corner of Englebrecht Street till Oeloff Berg Street). A portion of De Villiers Street (From corner of Englebrecht Street till Oeloff Berg Street).					
Change	Roads:	27	Plant tree lanes along activity streets.					
	Activity Streets & Corridors:	28	Increase safety.					
		29	Promote intensification (mixed use and desnification).					
		30	Concentrate development of higher order uses along activity streets.					
		31	Facilitate development opportunities for local entrepreneurs along activity streets.					
	Pedestrian and Bicycle	32	Improve accessibility of sidewalks, road crossings and pedestrian walkways for disabled.					
	routes:	33	Enhance settlement capacity to offer recreational sport events (marathons, mountain bike races).					
	Activity Streets & Corridors:	34	Develop guidelines for commercial facades, advertising signs and information signs to align and enhance local character and historical setting.					
		35	Introduce speed calming e.g. raised pedestrian crossings around intersections.					
		36	Provide disabled parking.					
	Pedestrian and Bicycle	37	Develop integrated pedestrian and cycle routes (Open Space Network).					
	<u>routes</u> :	38	Develop hiking pathways in and aound the nature reserve and along the Verlorenvlei.					



SPACE, B	UILT		
	Elements	No.	Proposals
Protect	Heritage & Tourism:	39	Protect unique features of settlement including conservation, layout, gravel roads : Delineate a Heritage Overlay Eco Zone.
		40	Water erven along Velorenvlei river and link to Verlorenvlei RAMSAR site.
		41	Grid layout comprising of lower density erven and single residential dwellings with no particular architectual style and link with Redelinghuis Nature Reserve and agricultural area.
		42	Character comprising of lower density erven as per grid layout, placement on the riverbank, gravel roads and link to conservation area and agriculture.
		43	Control the demolition and alteration of heritage buildings.
	Residential	44	Promote single residential as dominant land use.
	Commercial:	45	Keep commercial buildings, services, signage and colours aligned with the agri-village, eco-systems conservation character.
Change	Heritage &	46	Promote eco, conservation tourism and events in Redelinghuis.
J	Tourism:	47	Pormote tourism and tourism related infrastructure and signage.
		48	Beautify gateways: Keep northern gateway across the Verlorenvlei, natural. Keep eastern and western gateways natural or plant tree clusters. Keep Southern gateway natural with a definite link to the conservation and agricultural area.
		49	Ensure new developments and sturctures are sympathetic to heritage buildings and the local character is protected.
	Residential:	50	Encourage infill development, intensification and renewal along activity streets.
		51	Promote the agri-village character of the settlement, in all developments including agri-worker housing.
		52	Support densification through subdivision, infill development, renewal and restructuring in accordance with zone proposals.
		53	Promote small scale agriculture on the periphery including security of tenure e.g notorial ties to residential erven within the setItIment.
	Commercial:	54	Promote intensification of commercial activities along activity streets.
		55	Support Home Occupation in residential areas.
		56	Create integrated commercial areas in previously disadvantaged neighbourhoods.
		57	Support Urban Agriculture, small sclae agriculture and promote a regular local market.
		58	Enhance the CBD (RH9).
	Industrial:	59	Support the expansion and intensification of the industrial area.
		60	Promote smaller scale agri-processing industries to allow value adding of products close to source.
Develop	Heritage &	61	Support agri-tourism based development.
·	Tourism:	62	Establish an agri and conservation skills development centre (Linked to multi-purpose community centre and services).
		63	Support accommodation facilities for tourist in rural and urban areas.
		67	Provide a variety of housing topologies.
		65	Support residential development on RE/382 (development constraints: privately owned and possibly valuable agricultural land).
		67	Promote infill residential development (RH1 & RH3).
		68	Promote mixed use in northern and south eastern precincts (RH8, RH7 & RH12).
	Commercial:	69	Develop neighbourhood business node.
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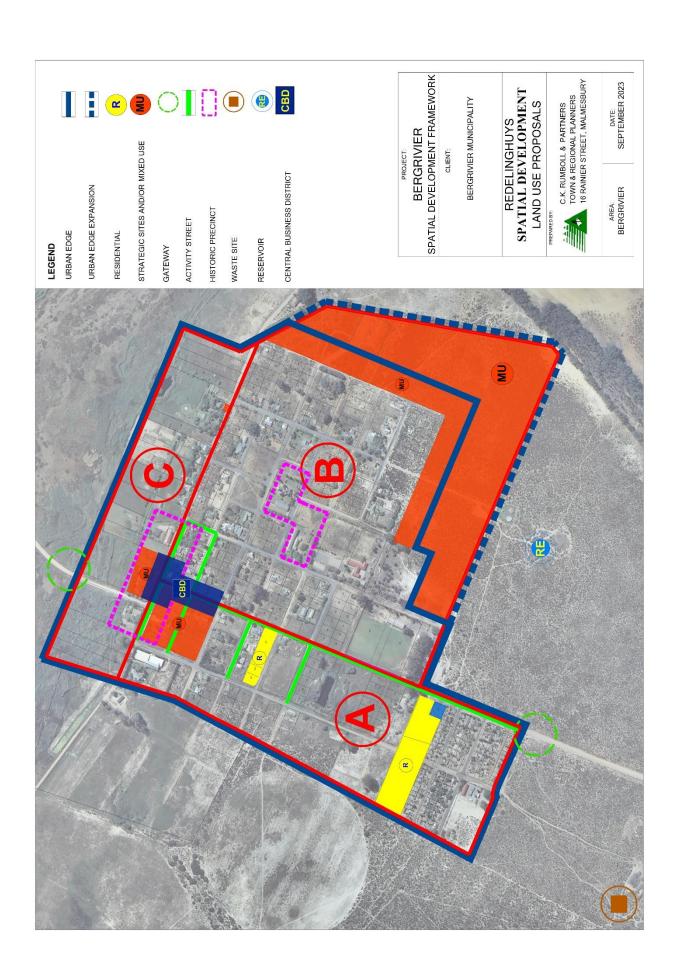


Objective 3: Sustain material, physical and social wellbeing

PUBLIC IN	PUBLIC INSTITUTIONS							
	Elements	No.	Proposals					
Change	Social Infrastructure &	70	Establish required social infrastructure and services such as health care and educaton.					
	Services:	71	Support establishment of crèches and other education facilities in residential areas.					
Develop Social Infrastructure & 72			Promote planting of tree-lanes.					
	Services:	73	Formalize expansion of cemetery.					
		74	Establish a multi-purpose community facility linked to skills centre and training.					
		75	Create an open spcae and provide play park equipment.					
		76	Provide street furniture particularly seating along activity street in CBD (A portion of Voortrekker street).					

Objective 5: Protect ecological and agricultural integrity

SPACE, N	ATURAL		, ,					
	Elements	No.	Proposals					
Protect	Nature & Conservation:	77	See built space, residential proposals: Protect.					
		78	Protect mature trees and tree clusters (including Eucalyptus) 20 years and older.					
		79	Enhance a conservation management plan to preserve the declared RAMSAR sites.					
	Public & Private Open Space:	80	Maintain public cemetries.					
		81	Formalize conservation area and provide walkways.					
Change	Nature & Conservation:	82	Expand Redelinghuis Nature Reserve.					
		83	Promote and maintain historic precincts.					
		84	Promote interactive development interfaces along Verlorenvlei open space network.					
		85	Develop & strengthen public areas to support pedestrian movement and economic activity.					
		86	Link open space network and recreational areas.					
Develop	Nature & Conservation:	87	Protect reed beds in Verlorenvlei.					
		88	Support protection (formally and and earmarked as CBA's) of natural vegitation around settlement.					
	Public & Private Open Space:	89	Develop multi-purpose sports ground precinct.					
	Gateways:	90	A formal gateway with a low farmyard wall and some landscaping at the northern gateway Voortrekker Road intersection.					



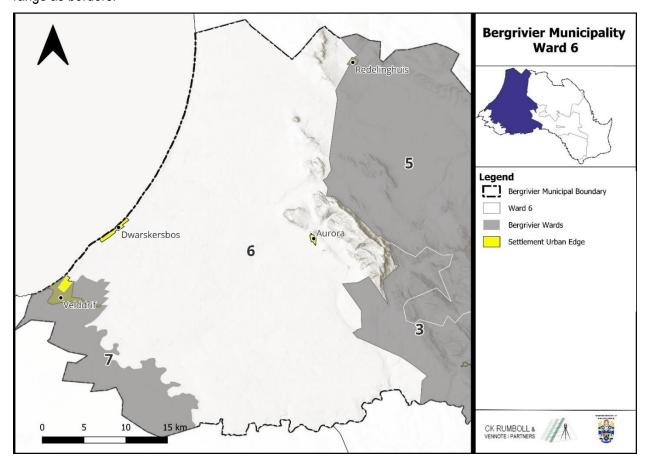
DEVELOPMENT ZONES AND PROPOSALS FOR REDELINGHUIS

The table in this section describes development zones identified in Redelinghuis and lists development options for each zone. The table has to be read in conjunction with Development Zone plans for Redelinghuis.

	REDELINGHUIS LAND USE ZONES	Low Density Residential	Medium Density Residential	High Density Residential	Secondary Education	Place of Instruction	Professional Services	Business	Secondary Business	Place of Worship	Guest houses/Lodge	Authority	Sport/Recreational Facilities	Light Industrial/Service Trade & Industries	Institution
A	Zone A is a medium to high density residential area with supportive amenities. Provides for infill opportunities for residential development as well as mixed use development. Area identified for small scale agriculture/community gardens.	Х	Х	X 1,3	Х	Х	Х	X 3	X 1,3	Х	Х	X	X	X 2,3	X
В	Zone B is a low density residential area with supporting institutional services. Areas identified for small scale agriculture/community gardens.	Х	Х	X1	Х	Х	Х		X 1	Х	Х	X	X		х
С	Zone has a low density residential character and provides for limited mixed use development.	Х	Х		Х	Х	Х	X 3	X 1,3	Х	Х	X	X		х
	(1) Along activity streets (2) Only service trades (3) At identified Mixed Use Precincts		town pondar of the standard of	olanners y Busin	on e.g. s e.g. ness l home al area	Jses o occupas on	ools, pes like e.g. no pation discre	olaces docto eigbou . Hou tion o	of instrurs, dent urhood to se tave f the Mu	uction. ists, a oussin rns or nicipa	ttorne es us	ys, ard	chitecl	on. nts, engin house sh along act	iops,

5.8 Ward 6: Aurora and Dwarskersbos

Ward 6 is home to the Sandveld plain and has the West Coast, Berg River and Piket and Skurwe mountain range as borders.

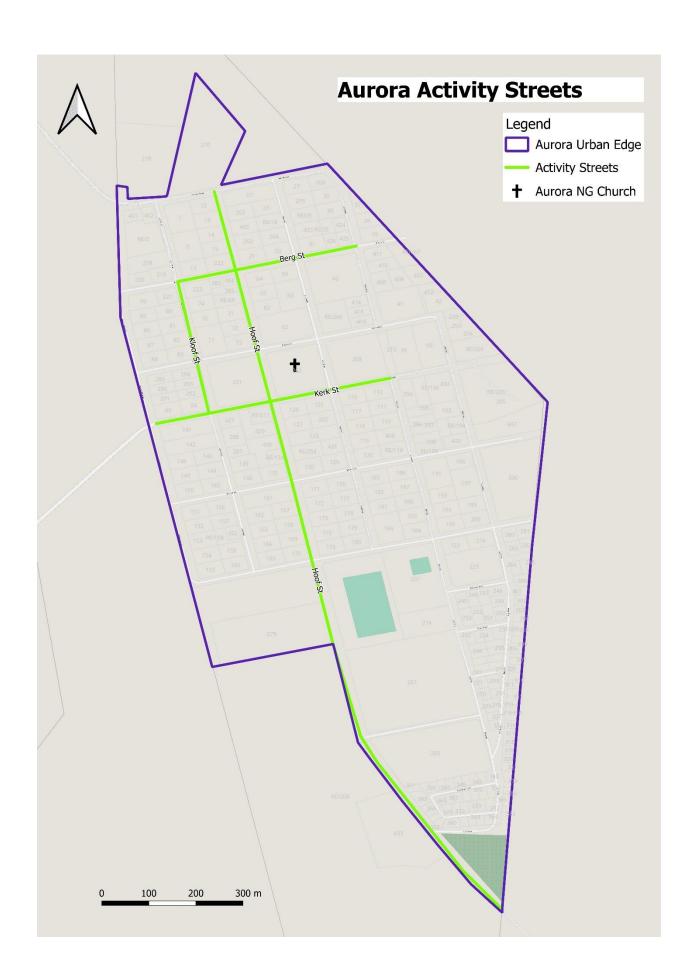


5.8.1 Aurora

Aurora is a rural Sandveld settlement providing residence to those working from home, weekend residents, retirees and farm workers from the surrounding areas. It serves as a film site. Development directives for the settlement's biophysical, socio-economic and built environments follow:

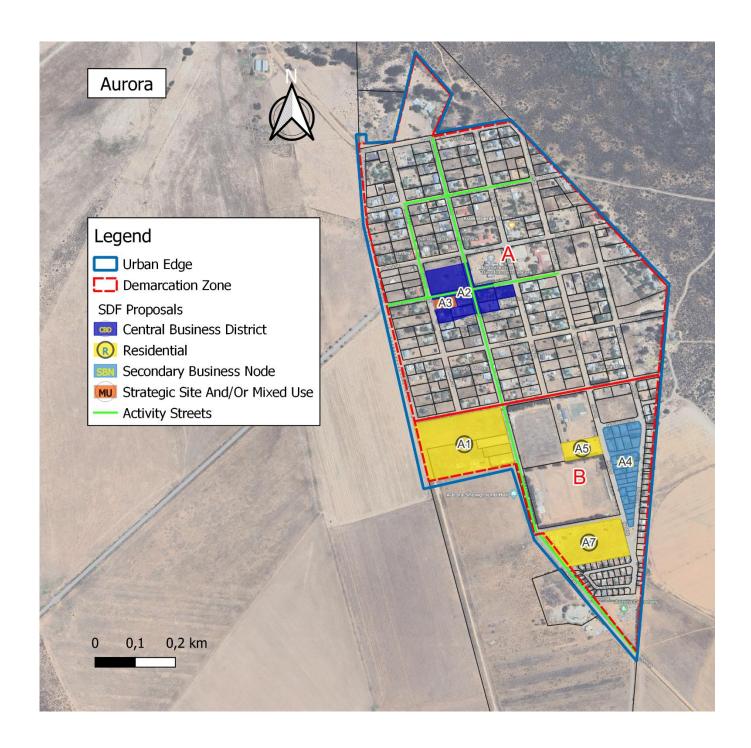
Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC U	ITILITIES			,			Ţ.				
	Elements	No.	Proposals								
Protect	Water:	1	Protect five Plant.	Protect five boreholes and reticulation by gravitation to the Water Treatment Plant.							
		2	Maintain tw	o reservoirs	with a total	capacity of	400 kℓ.				
	Sewerage and Sanitation:	3	Use soak a	ways and s	eptic tanks.						
	Electricity:	4	Maintain el	ectrical supp	oly.						
		5	Support ge	neration of a	alternative e	nergy (exisit	ng solar facility).				
	Waste:	6	Maintain tra	ansfer statio	n and delive	ry of waste	at Velddrif waste site.				
Change	<u>Future Demand</u> :	7	Secure adequate land for future bulk infrastructure expansion: reservoirs, overhead power lines, future roads and a water pipelines.								
		8	Upgrading	•							
		9	Manage ar	d reduce fu	ture water de	emand as pe	er population projections below.				
			2025	2035	2045	2050					
			784	901	993	1033					
	Electricity:	10	Ensure ade	equate stree	t lighting.						
	Safety and Risk Management	11	Develop a	police statio	n.						
	Services:										
Develop	Future Demand:	12	Encourage	rainwater h	arvesting in	domestic wa	ater tanks.				
	Sewerage and Sanitation:	13	Build a nev	sewerage	system.						
	Electricity:	14	Develop al	ternative en	ergy sources	S					

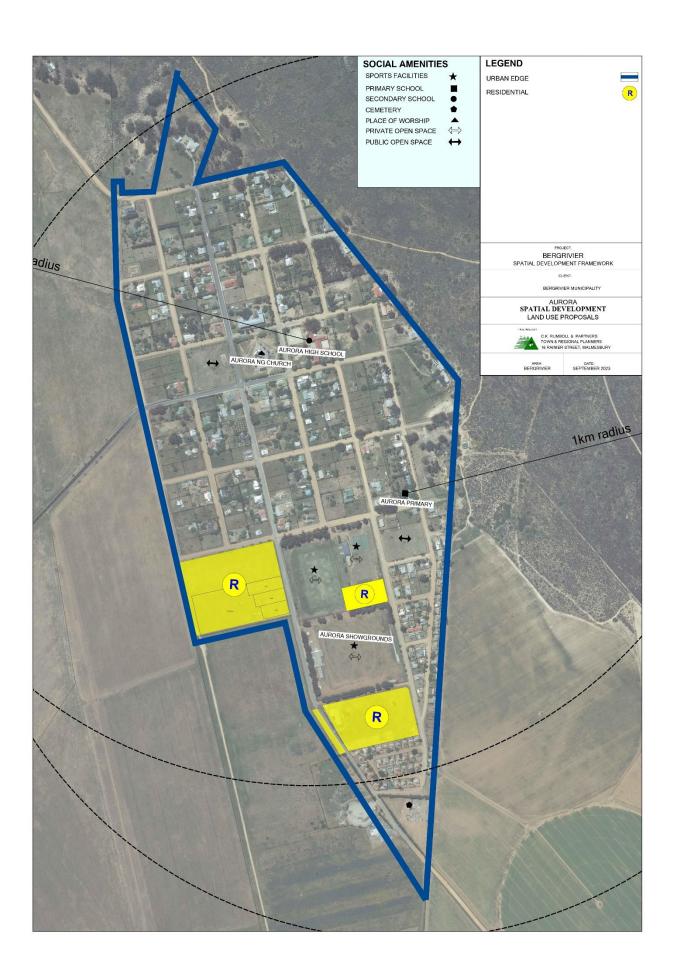


Objective 2: Proximate convenient and equal access

CONNEC	TIVITY		
	Elements	No.	Proposals
Protect	Roads:	15	Maintain Aurora's connection via MR 529 to Piketberg and Redelinhuis.
		16	Maintain gravel roads to keep rural character.
	Activity Corridors & Streets:	17	Hoof Straat. A Portion of Kerk Street (From cordner of Buitengracht Street till corner of Hoog Street). A portion of Kloof Street (From corner of Kerk Street till corner of Berg Street). A portion of Berg Street (From corner of).
Change	Roads:	18	Promote the planting of tree lanes along streets.
	Activity Corridors & Streets:	19	Support mixed use including commercial opportunities along activity streets.
	Pedestrian / cycle routes:	20	Establish a pedestrian and NMT route along main road and connection to recreational facilities as well as linking to surrounding natural areas.
Develop	Roads:	21	Provide supporting infrastructure to improve mobility of community and tourists.
	Pedestrian / cycle routes:	22	Provide safe, landscaped walkways and routes throughout the town for pedestrians and implement traffic calming measures along the main road to create a more pedestrian friendly environment.



SPACE, E	Elements	No.	Proposals
Protect	Heritage &	23	Protect surrounding landscape and delineate a development line along the feet of Platberg.
	Tourism:	24	Protect traditional grid pattern surrounding the church and central plain as focal point.
		25	Protect unique features of settlement including sandveld surroundings layout, gravel roads.
		26	Grid layout comprising of large and lower density erven, gravel roads and links to sandveld agricultural area.
		27	Control the demolition and alteration of heritage buildings and protect graded buildings, areas, streets and features.
		28	Keep commercial buildings, services, signage and colours aligned with the residential rural character.
	Residential:	29	Protect urban form with lower density residential erven in the central and northern section of town and higher density residential uses on the southeastern section of the town.
		30	Promote single residential as dominant land use.
	Commercial:	31	Keep business node/ ribbon located along main road in the character of Sandveld low density residential settlement.
		32	Commercial intensification along activity streets.
Change	Heritage &	33	Promote settlement as film setting.
	Tourism:	34	Require all businesses to keep signage and facades aligned with character of settlement.
	Residential:	35	Encourage use of residential dwellings for home occupation as limited business platforms such as home occupation.
	Commercial:	36	Support home occupation and tourism uses in residential area.
		37	Enhance CBD (A2).
Develop	Heritage &	38	Promote Aurora and surrounding rural area as a tourism attraction.
	Tourism:	39	Promote a non-formal heritage zone and compile guidelines for future development.
		40	Focus investment on tourism and rural living.
		41	Accommodate growth by internal subdivision of larger erven in line with character of town.
	Residential:	42	Collaborate with Farm Enterprises to provide agri worker housing within settlement.
		43	Provide an opportunity for future residential expansion on Farm RE/208.
		44	Promote residential development in southern (A7 and A5) and south western (A1) precinct of the settlement.
		45	Promote mixed used development (A3).
	Commercial	46	Operate a local and small-scale agricultural market.
		47	Intensify activities around showgrounds.

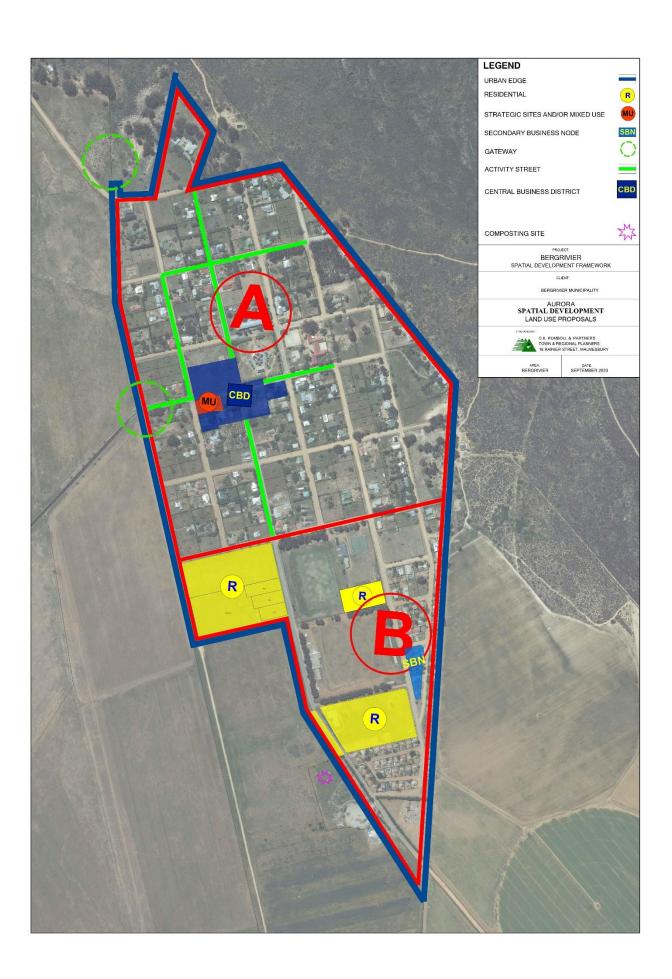


Objective 3: Sustain material, physical and social wellbeing

PUBLIC II	NSTITUTIONS		
	Elements	No.	Proposals
Protect	Social Infrastructure & Services:	48	Provide skills development in agri-tourism industry to amplify economic opportunities.
Change	Social Infrastructure & Services:	49	Establish required social infrastructure and services such as health care and educaton.
		50	Support establishment of crèches and other education facilities in residential areas.
		51	Develop facilities for early childhood development and education.
		52	Allow expanded use of school sport grounds by community.
		53	Facilitate expansion of the private cemetery.
Develop	Social Infrastructure & Services:	54	Promote planting of tree-lanes.
		55	Establish a multi-purpose community facility linked to skills centre and training.
		56	Develop community gardens and play park equipment.
		57	Provide for small scale agriculture outside urban edge.
		58	Develop a high school.
		59	Develop a petrol station.

Objective 5: Protect ecological and agricultural integrity

SPACE, N	SPACE, NATURAL							
	Elements	No.	Proposals					
Protect	Natural conservation:	60	Protect link between north of settlement and Platberg.					
	Public & Private Open Spaces:	61	Market Square: Upgrade the town plein area with landscaping and public seating.					
		62	Promote community gardens as part of youth programs in school.					
Change	Natural conservation:	63	Maintain and conserve the stream on northern periphery of town.					
	Public & Private Open Spaces:	64	Promote sports activities and events on open spaces (Showgrounds and Sports field).					
Develop	Natural conservation:	65	Promote and maintain historic precincts.					
		66	Develop & strengthen public areas to support pedestrian movement and economic activity.					
		67	Link open space network and recreational areas.					
		68	Promote and maintain historic precincts.					
		69	Plant trees along routes to create a link between open spaces.					
	Public & Private Open Spaces:	70	Upgrade central market square.					
		71	Develop and market hiking and mountain bike trails in natural areas around the settlement promote link with nature.					
	Gateways:	72	Develop a natural gateway in a form of planted tree lanes.					



DEVELOPMENT ZONES AND PROPOSALS FOR AURORA

The table in this section describes development zones identified in Aurora and lists development options for each zone. The table has to be read in conjunction with Development Zone plans for Aurora.

	AURORA LAND USE ZONES	Low Density Residential	Medium Density Residential	High Density Residential	Secondary Education	Place of Instruction	Professional Services	Business	Secondary Business	Place of Worship	Guest houses/Lodge	Authority	Sport/Recreational Facilities	Light Industrial/Service Trade & Industries	Institution
A	Zone A is a low-density residential area with supporting amenities. Areas identified for small scale agriculture/community gardens and a mixed-use precinct.	Х	X	X 1	X	X	X	X 3	X1	Х	X	X	Х		X
В	Zone B is a low to medium density residential area with areas allowing expansion. Strengthen secondary business nodes.	Х	Х	Х	X	X	X	X 2	X 1,2	Х	Х	Х	Х		Х
	(1) Along activity streets(2) At existing/identified nodes(3) At identified Mixed Use Precincts	Place Prof and Second sman street	e of Infession town pondar ondar town in officets in in	nstructional United Including Includ	ction of ses e.ers. siness d hon ontial a	e.g. Sog. offi Uses ne occureas of	chools ces likes s e.g. cupation disc	s, plac ke doo neigb on. Ho cretion	ourhood	truction ntists, buss erns of Municip	in. attorn ines u only to pality.	eys, a	archite uch as	tion. chts, eno s house d along	shops,

5.8.2 Dwarskersbos

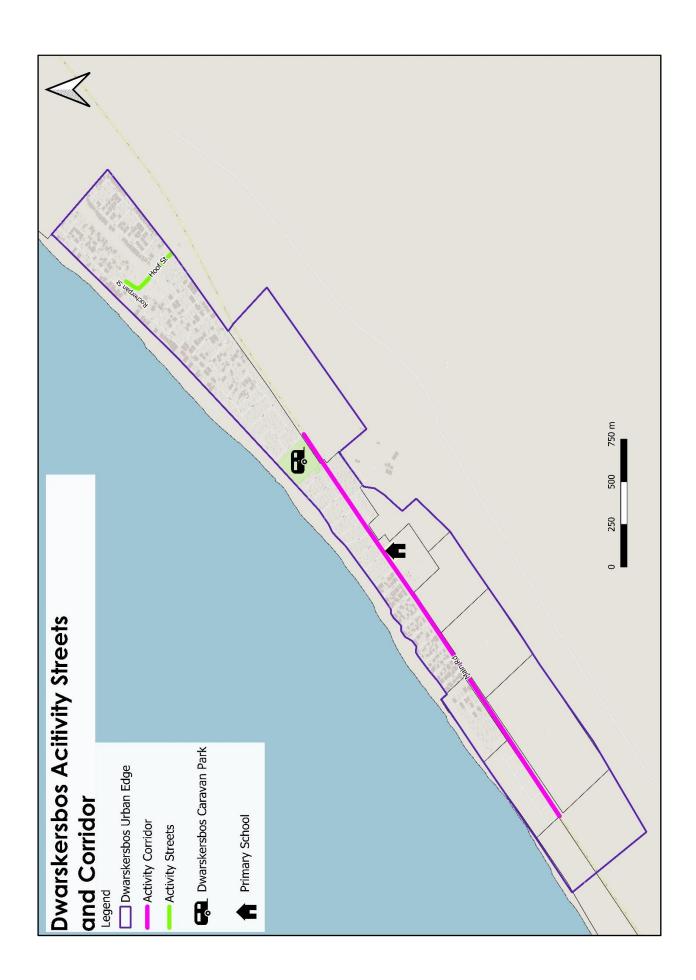
Dwarskersbos is a linear coastal settlement approximately 10 kilometres north of Velddrif and referred to as the "jewel of the West Coast". Its pristine and unspoiled beaches and overwhelmingly residential character make it a popular holiday destination. Development directives for the settlement's biophysical, socioeconomic and built environments follow:

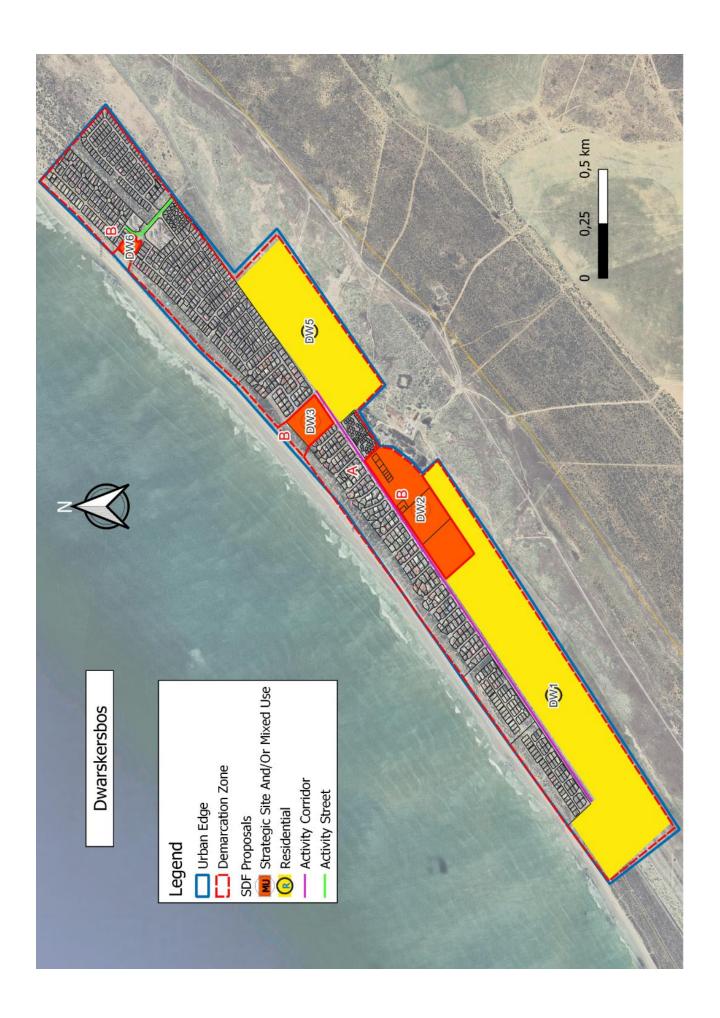
Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC UTILITIES													
	Elements	No.	Proposals	Proposals									
Protect	Water:	1	Water source	ed from the	WCDM pip	eline also fe	eding Velddrif/Laaiplek to the south.						
		2	Maintain tw	o reservoirs	and water to	ower with a	total capacity of 660 kl.						
		3	Maintain ad	Maintain adequate street lightning.									
	Waste:	4	Maintain ele	ectrical supp	ly line.								
Change	Future demand:	5	Avoid place	ment of ser	vice infrastru	ıcture in cor	nservation worthy areas.						
		6		ecure adequate land for future bulk infrastructure expansion: reservoirs, overhead power lines, iture roads and a water pipelines.									
		7	Support ext	Support extension and development of communication infrastructure.									
		8	B Upgrading of reservoirs needed between 2028 – 2033.										
		9	Manage an	d reduce fut	ure water de	emand as pe	er population projections below.						
			2025	2035	2045	2050							
			449	518	573	597							
	Electricity:	10	Upgrading needed before 2028.										
	Waste Water:	11	Upgrading r	needed befo	re 2028.								
	Storm water:	12	Formalize s	torm water	system.								
	Waste:	13	Promote red	cycling and	re-use.								
Develop	Water:	14	Water harve	esting and g	rey water us	e.							
	Electricity:	15	Promote the	use of Alte	rnative Ene	rgy.							
	Waste Water:												

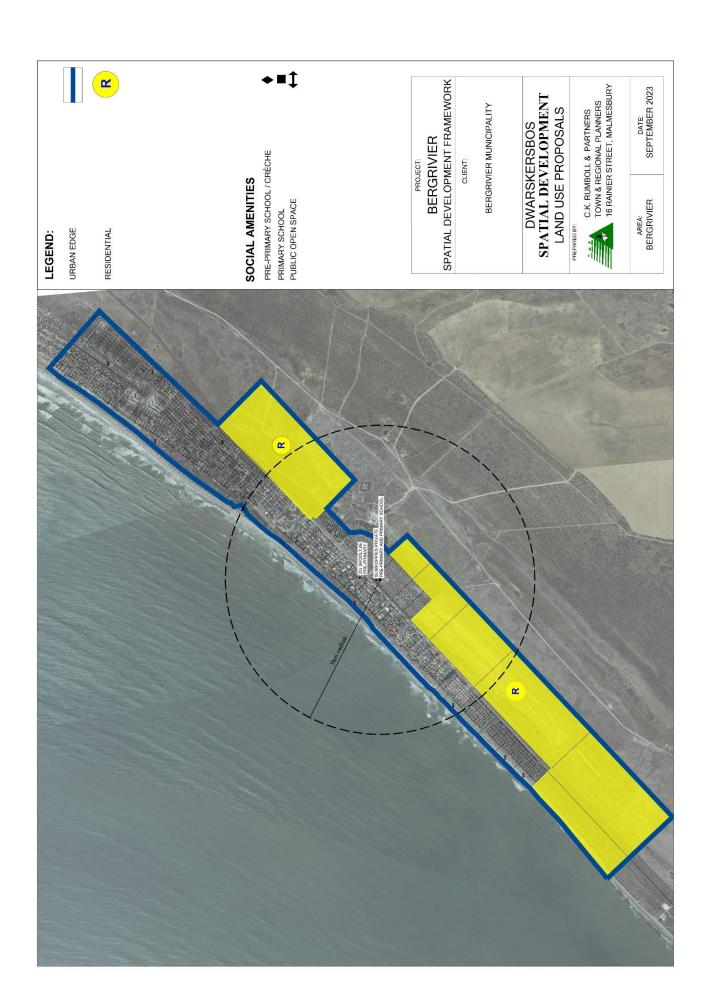
Objective 2: Proximate convenient and equal access

CONNEC	CONNECTIVITY								
	Elements	No.	Proposals						
Protect	Roads:	17	Maintain access road through Dwarskersbos.						
		18	Maintain gravel roads within Dwarskersbos.						
	Activity streets:	19	Promote activity street along business precinct and camp site.						
	Pedestrian / cycle routes:	20	Provide accessible, surfaced, shaded and adequately lit and safe pedestrian walkways and cycle paths.						
		21	Ensure access for disabled people in accordance with national standards.						
	<u>Gateway</u>	22	Protect natural gateway.						
Develop	Roads:	23	Formalise parking areas (provide paving/hard surfaces, identify parking spaces) along beach and coastal areas.						
		24	Provide adequate public parking, including parking for the disabled.						
	Activity streets:	25	Activity Street: Hoof Street.						
			Activity Corridor: A portion of main road (South West from corner of Roos Street till).						
	Pedestrian / cycle routes:	26	Formalise shared use walkways and trails in nature conservation areas (public open spaces) and along coastline (recreational "nature walk").						
		27	Establish boardwalk between settlement and sea along coastline of settlement that provide a safe pedestrian and safe NMT route.						
		28	Provide for pedestrian crossing at business node.						
		29	Implement traffic calming measures along the main road.						



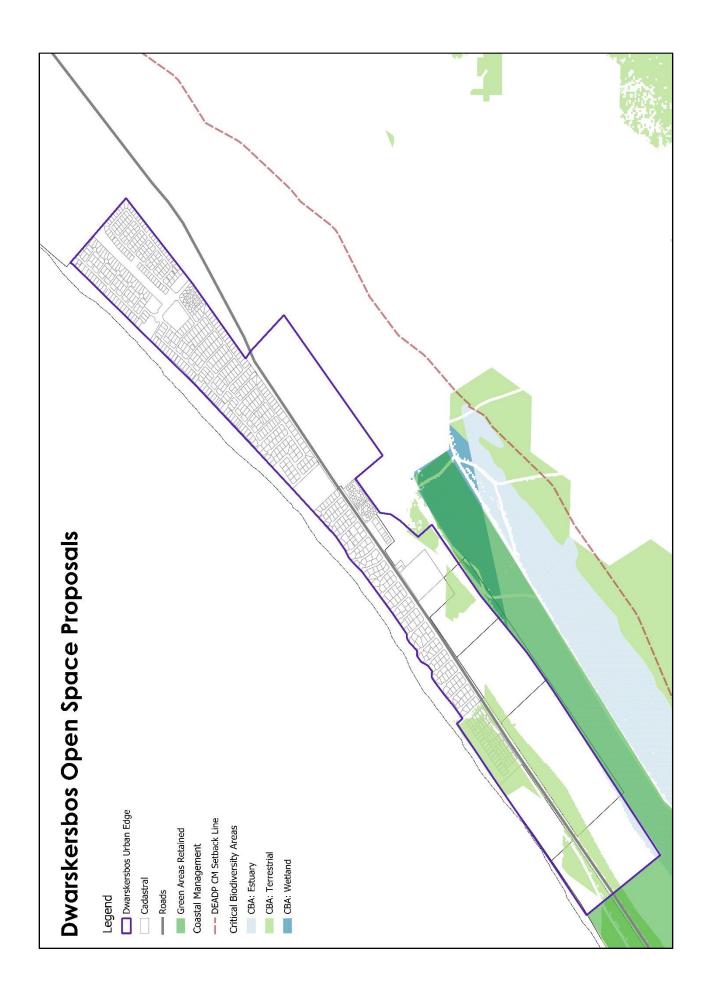


SPACE, E	Elements	No.	Proposals
Protect	Heritage and	30	Protect coastal and holiday character within an eco and conservation environment true to the name of the
	Tourism:		settlement derived from "Kersbos" which is a part of the endemic vegetation.
		31	Keep commercial buildings, services, signage and colours aligned with the eco-system and conservation
			character.
	Tourism:	32	Protect settlement function as a coastal holiday village which provides mainly residential uses (low density
			in the south west and high density to the north east) for local inhabitants, retirees and national and
			international visitors.
	Residential:	33	Dwarskersbos's development footprint follows the coastline and its urban form is mostly linear with access
			from a regional main road.
		34	Maintain residential land use supported by a limited commercial node.
	Commercial:	35	Keep business node contained.
Change	Heritage and	36	Support development of tourism related infrastructure.
	Tourism:	37	Maintain caravan park and holiday chalets.
	Tourism:	38	Promote Dwarskersbos as a conrance destination.
	Residential:	39	Densify in accordance with zone proposals through:
			- Subdivision (sectional title);
			- Infill development;
			- Renewal and restructuring.
		40	Promote residential development north east (DW5) and south west (DW1) of the settlement.
		41	Promote mixed use developments at DW, DW3 and DW6.
		42	Sectional title subdivision of existing houses on single residential erven.
		43	Support the development of home occupation/professional services in residential areas.
		44	Support secondary business uses based on the tourism industry including temporary use of homes over
			holiday periods and offering small function venues.
Develop	Heritage and	45	Develop accommodation options in surrounding rural area.
	Tourism:	46	Develop educational hiking trails in nature reserves (Farm Dwarskersbos).
		47	Develop a LUMS overlay zone for erven along the coast to allow for limited tourism related uses additional
			to primary residential use rights e.g. wedding/party venues, photo/advertising shoots and film production,
			temporary use of dwellings for exhibition and sale of products.
	Residential:	48	Require private development to include different housing topologies.
		49	Develop an old age home and other retirement developments and facilities.
	Commercial:	50	Promote the use of home occupation.



Objective 3: Sustain material, physical and social well-being

PUBLIC I	PUBLIC INSTITUTIONS						
	Elements	No.	Proposals				
Protect	Community facilities:	51	Supporting community facilities include a preschool, community hall and public open spaces.				
Change	Community facilities:	52	Maintain beach as important public amenity.				
		53	Encourage and support a service centre for the aged.				
		54 Maintain former school site for future educational needs.					
		55	Encourage short term community and holiday activities during holiday season.				



Objective 5: Protect ecological and agricultural integrity

SPACE, N	IATURAL		
	Elements	No.	Proposals
Protect	Public and Private Space:	56	Protect links to critical bio-diversity surroundings and nature reserves.
	Nature & Conservation:	57	Adhere to coastal management line on vacant erven.
Change	Public and Private Space:	58	Improve mobility between settlement footprint and beach dunes: Develop a pedestrian and NMT route.
	Nature & Conservation:	59	Protect beach and beach dunes as public amenity.
Develop	Public and Private Space:	60	Develop a non-intrusive pedestrian and NMT gravel route.
	Nature & Conservation:	61	Develop management plans for conservation areas.
		62	Identify archaeological sites and develop management plan to protect the sites.
		63	Remove alien vegetation and rehabilitate open space area.
		64	Design interactive development interfaces along open space network.
		65	Prohibit development in high conservation worthy areas and exclude areas from urban edge.
		66	Celebrate the coastline with an active pathway that has minimal impact on the dunes and creates awareness of the sensitivity of the coast through information boards and displays.
	<u>Gateways:</u>	67	Keep gateways natural.



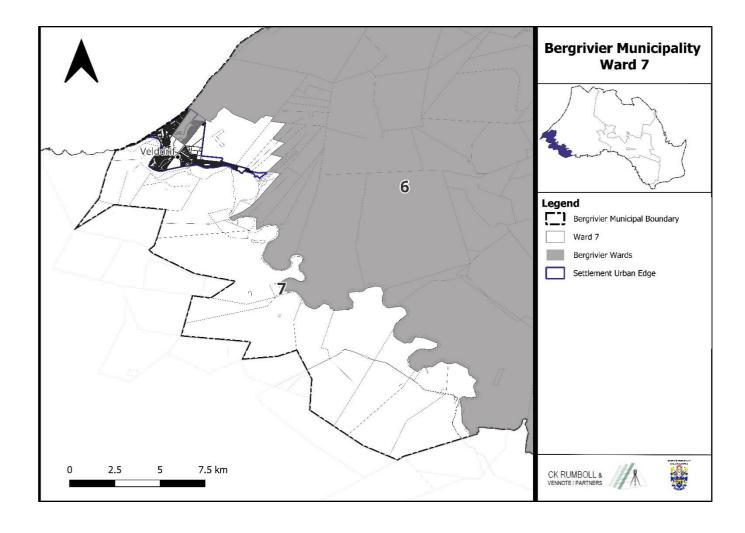
DEVELOPMENT ZONES AND PROPOSALS FOR DWARSKERSBOS

The table in this section describes development zones identified in Dwarskersbos and lists development options for each zone. The table has to be read in conjunction with Development Zone plans for Dwarskersbos.

DWARSKERSBOS LAND USE ZONES			Medium Density Residential	High Density Residential	Secondary Education	Place of Instruction	Professional Services	Business	Secondary Business	Place of Worship	Guest houses/Lodge	Authority	Sport/Recreational Facilities	Light Industrial / Service Trade & Industries	Institution
A	Zone A is a low to medium residential area with limited supporting amenities. Opportunity for new residential development.	Х	X	X 1	X	X	X		X 1	Х	X	X	X		Х
В	Zone B represents a mixed use development			Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X 2	Х
	Along activity streets Only service trades	Place Prof engi Seco sma stree	e of Infession neers ondar Il officets in I	nstruction nate of the nate of	ction of Jses own plants own plan	e.g. Seeg. S	chools offices s. e.g. i upation on disc	s, plac s like neigbo n. Ho cretion	es of i doct ourhoo	instructors, and bus averns averns	ction. dentis sines only icipali	ts, at	ttorney	station. ys, arch as house ed along	shops,

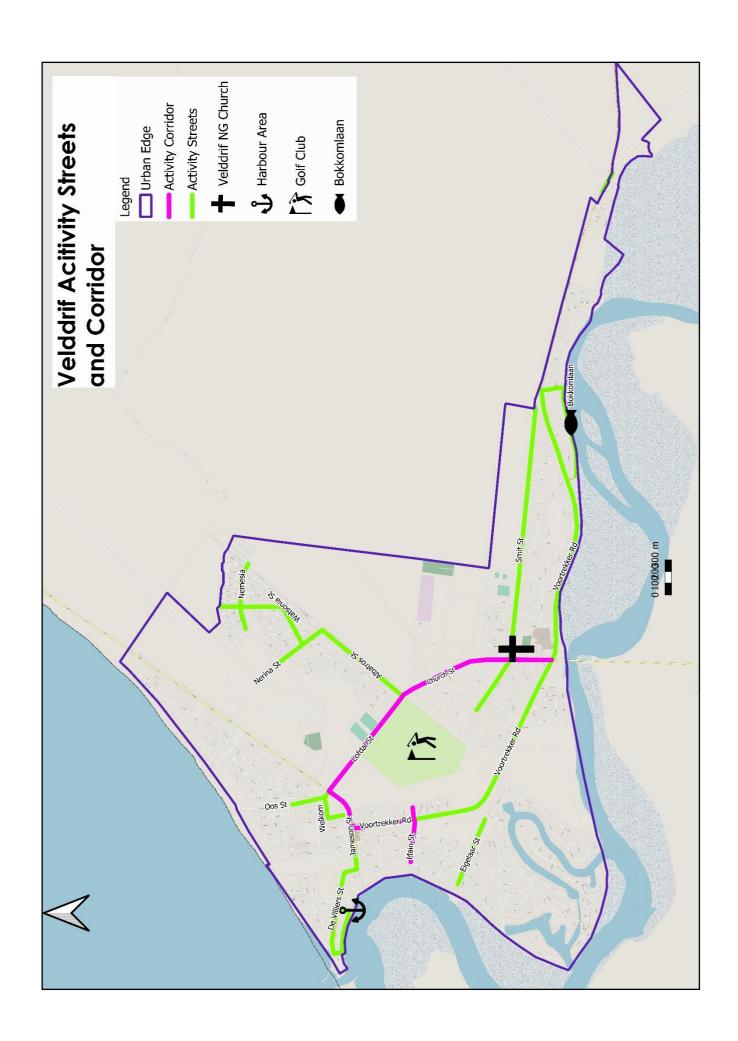
5.9 Ward 7: Velddrif/Laaiplek

Velddrif including Laaiplek, Noordhoek and Port Owen is characterised by an economic landscape that changed from fish processing to processing other agricultural produce. Its location on the northern bank of the pristine Berg River estuary, having RAMSAR status, and along the Atlantic Ocean, surrounding cultivated farmlands makes it ideal being a retirement and work from home hub. Development directives for the settlement's biophysical, socio-economic and built environments follow:



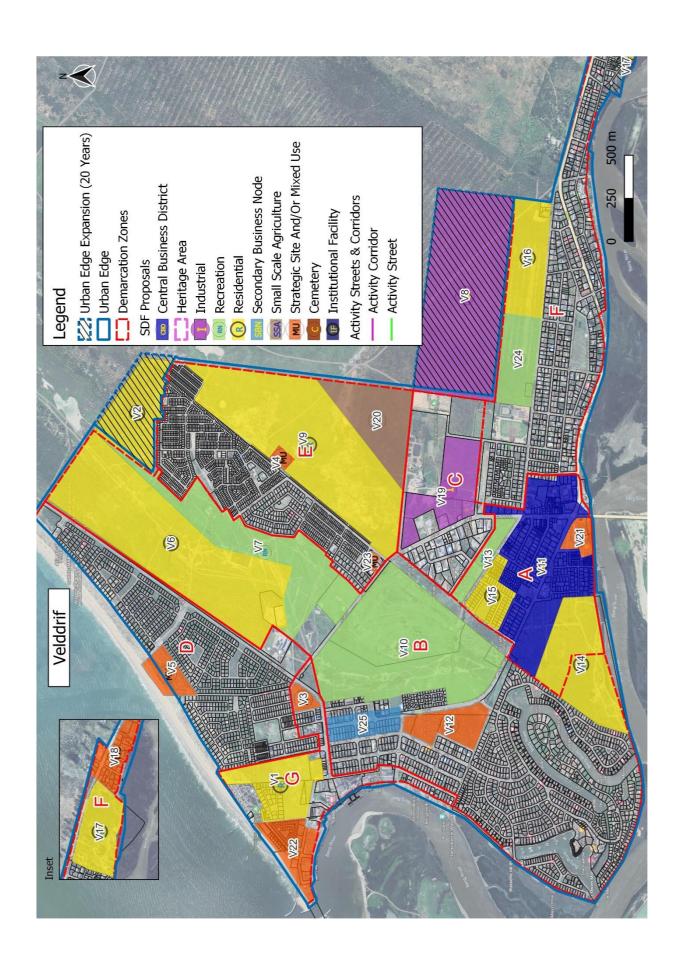
Objective 1: Grow economic prosperity and facilitate economic sector growth

PUBLIC U					ponty and rac		- J							
	Elements	No.	Proposals											
Protect	Water:	1	Water is supp	olied to the set	tlement via the	WCDM pipeline	over the Carinus Bridge from withoogte.							
		2	Maintain two	reservoirs and	two water towe	ers with a total c	apacity of 5 500 kt.							
		3	Formalise sto	orm water char	nnels in Noordh	oek directing sto	orm water to feed into retention pond.							
	Waste:	4	Reduce wast	e transported	from the two tra	nsfer stations at	Piketberg and Velddrif to Highlands							
					sit for the remaining settlements.									
		5					n, Noordhoek and new development areas							
							listoric) residential areas.							
	<u>Safety:</u>	6		laintain use of National Sea Rescue Institute stations such as St Helena's Station 44 and										
				angebaan's Station 4 (neighbouring coastal settlements).										
		7	Maintain and	promote adeq	uate street light	tning.								
Change	Future demand:	8	Avoid placem	nent of service	infrastructure in	conservation w	vorthy areas.							
		9	Support exte	nsion and deve	elopment of con	nmunication infr	astructure.							
		10	Develop area	s in accordan	ce with availabil	ity and capacity	of infrastructure and services.							
		11	Secure adeq	uate land for fu	uture bulk infras	tructure expans	ion: reservoirs, overhead power lines,							
				uture roads and a water pipelines.										
	Water:	12	Expand water provision to all properties.											
		13	Manage and reduce future water demand as per population projections below.											
			2025	2035	2045	2050								
			14 968	17 223	19 004	19 787								
		14		Promote establishment of desalinisation plant.										
	Electricity:	15			ete electrical infr									
		16		<u> </u>	alternative ener	gy (Solar and hy	/drogen).							
		17		eeded before 2										
	Storm water:	18			ting storm water									
	Waste:	19					rves as transfer site.							
Develop	Future demand:	20			ith infrastructure									
		21					tial & industrial growth.							
		22		as for expansion	on of bulk infrast	ructure and alig	n with SDF proposals to minimize impact on							
			landscape.											
		23	Expand WW											
	Water:	24			ources and pron	note use of alte	rnative energy, water wise developments &							
	-	0=	water harves		1000 (IDD)									
	Electricity:	25		eded before 2										
	Waste Water:	26				-	nent at Velddrif.							
	Storm water:	27	Rent an addi	tional truck to p	pump sewerage	during holiday	seasons.							



Objective 2: Proximate convenient and equal access

COMME	TIV/ITV		Objective 2: Proximate convenient and equal access
CONNEC		No	Pronocale
Drotoot			
Protect	Roads Activity streets:	No. 28 29	 Proposals Maintain gravel and tar roads. A portion of De Villiers Street, from the corner of Mossel Street to Jameson Street. The whole of Mossel Street. A portion of Jameson Street, from the corner of River Street to the corner of Voortrekker Road (R399). A portion of Voortrekker Road, from the corner of Jameson Street to the corner of Vye Street. The whole of Bokkom Avenue, From the corner of Waterkant Street to the corner of Vye Street. The whole of Vye Street, from the corner of Bokkom Avenue to Voortrekker Road. A portion of Smit Street, from the corner of Voortrekker Road to the corner of Protea Avenue. Eigelaar Street, between the corner of Corbett Street until its end past Rivier Street. The whole of Welkom Street, between the corner of Protea Street and corner of Main Road. A portion of Oos Street, between the corner of Welkom Street and the corner of Nerina Street. A portion of Albatros Steet, between the corner of Lofdal/Church Street and the corner of Nerina Street. The whole of Watsonia Street, from the corner of Albatros Street until its end past Neptune Street. The whole of Watsonia Street, from the southern T-junction with Nerina Street until the northern T-junction with Nerina Street until Nerina Street. A portion of Nemesia Street, between the corner of Nerina Street and the corner of Vieiblom Street. A portion of Main Street, between the corner of Rivier Street and the corner of Voortrekker Road (R399). A portion of Jameson Street, between the corner of Voortrekker Road and the corner of Van Zyl Street. A portion of Main Road, between the corner of Main Road and the corner of Albatros Street. A portion of Lofdal Street, between the corner of Main Road and the corner of Albatros Street.
Change	Roads:	30	A portion of Church Street, between the corner of Albatros Street and the corner of Voortrekker Road (R399). Support upgrade of southern access and bridge widening across the Berg River which connects to Cone Town and Saldanha Bay. As well as the upgrade of Church Street and Lofdal Street.
		31	Cape Town and Saldanha Bay. As well as the upgrade of Church Street and Lofdal Street. Optimize the decommissioning of Voortrekker Road.
	Activity streets:	32	Develop a centralised taxi/bus stop with relevant infrastructure and an all-weather shelter for commuters in central business district area in both Velddrif and Laaiplek.
	Pedestrian / cycle routes:	33	Promote walkability and NMT use along R399 within Velddrif: Provide accessible, surfaced, shaded and adequately lit and safe pedestrian walkways and NMT paths.
		34	Promote walkability, pedestrian and NMT presence along portions of Voortrekker Road: Between Jamesson Street and Hoof Street and Smedag and the Carinus Bridge.
		35	Extend Albatros Street as a formal pedestrian walkway and NMT route which are landscaped and well-lit to connect with Voortrekker Street (VPP).
	5	36	Ensure access for disabled people in accordance with national standards.
Develop	Roads:	37	Develop road between Main Road and White City (Noordhoek) for emergency vehicles.
		38	A pedestrian link to Waterkant Street, and to Voortrekker Street is indicated at a midpoint adjacent to the existing slipway (SDF 2019-2023).
		39	Capitalize on evolving transport infrastructure and improved transport linkages, dictating accessibility and development patterns of the Saldanha-Northern Cape Development Corridor (one of 18 National Infrastructure Plan (SIP"s) (SDF 2019-2023).
	Pedestrian / cycle routes:	40	Formalise shared-use walkways, trails and pedestrian/ cycle route in nature conservation areas (public open spaces) and along coastline (recreational "nature walk").
		41	Formalize pedestrian walkway with a harden surfaces between Noordhoek Primary and the corner of Marcon and Crystal Street in Noordhoek.
		42	Coastal Upgrades and Promenade: Development of Coastal Boardwalks and the upgrading of Pelikaan Park, Stywelyne (VPP).
		43	Formalise walkways between Noordhoek and Laaiplek with recreational spaces in between (VPP).
	Gateways	44	Beautify settlement accesses: Plant tree lanes or tree clusters and/or landscaping and/or keep natural.



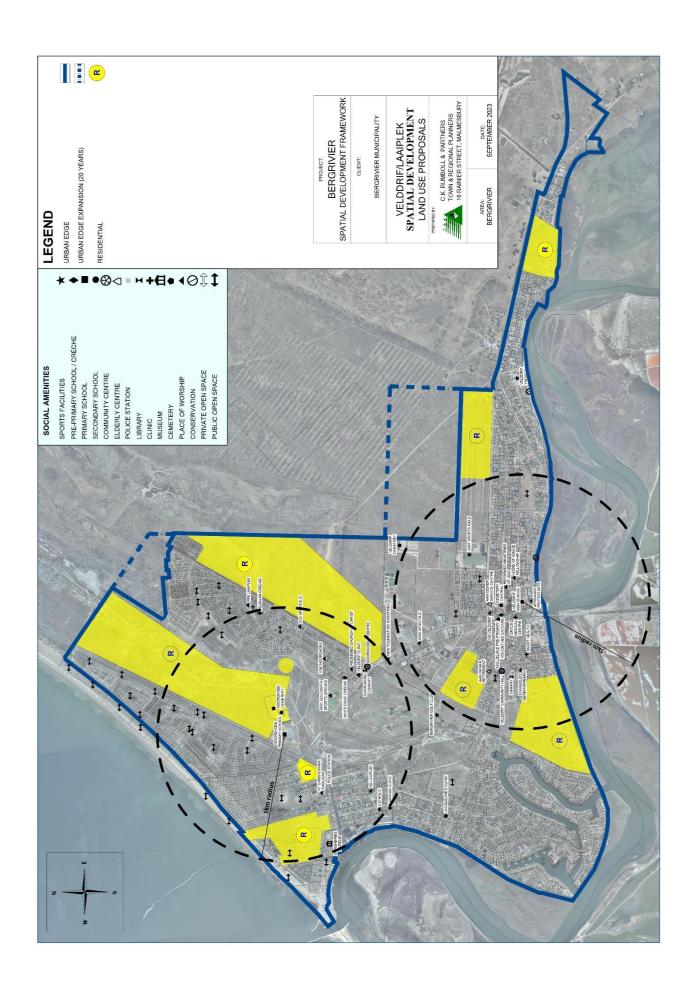
Objective 1: Grow economic prosperity and facilitate economic sector growth and Objective 4: Protect and grow place identity and cultural integrity

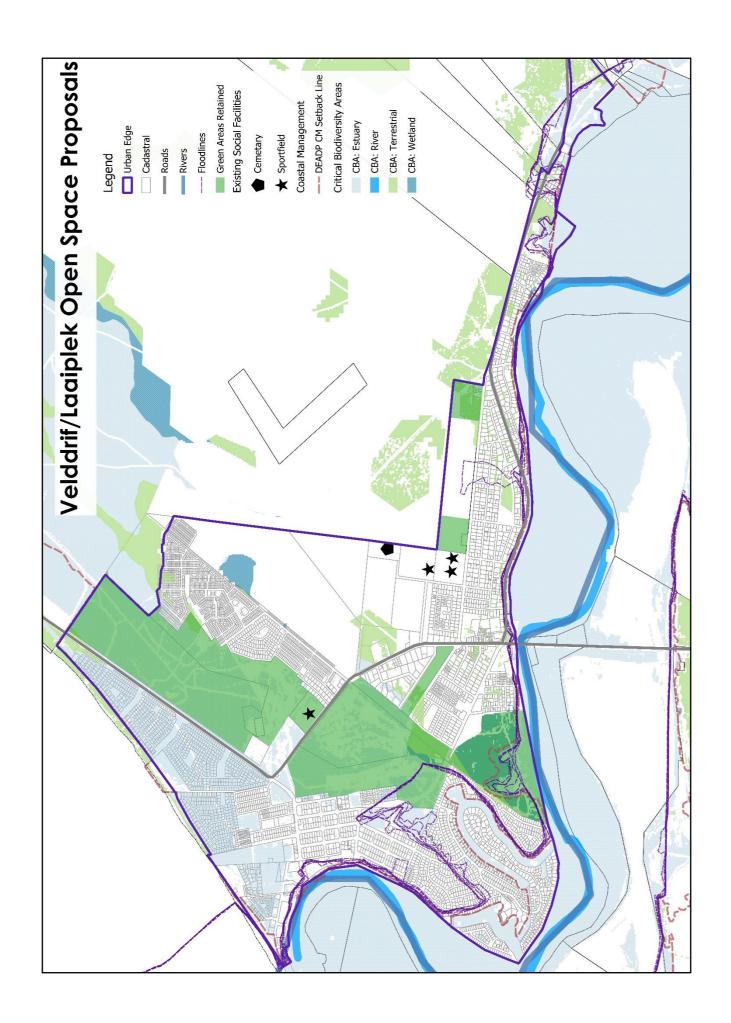
SPACE, BU	ILT		good of the record and grow place facility and called integrity
	Elements	No.	Proposals
Protect	Heritage and Tourism:	45	When a local farmer took his stock through a drift in the field to find grazing across the river and the name Velddrif is derived from that. In 1899 a pont or ferry was built to cross the Berg River. This all contributes to the heritage of the Carinus Bridge.
	Tourism:	46	Enhance Crayfish/Food route along the West Coast.
		47	Protect fishing related infrastructure such as wooded jetties and pole frameworks where Bokkoms is dried.
		48	Maintain holiday resorts at Port Owen (Private), Pelican Park and Stywe Lyne (Municipal).
		49	Promote annual Berg Canoe marathon and related festivities.
		50	Promote bird watching as BRE is an important bird habitat and home to around 30 000 birds, including up to 80 species endemic to the Cape coast.
		51	Protect natural vegetation to optimize veld flowers as tourism attraction in Spring.
		52	Celebrate and strengthen Bokkomlaan and artisanal fishing.
		53	Keep commercial buildings, services, signage and colours aligned with the fishing village character at all gateways and heritage rich areas.
	Residential:	54	Protect traditional grid pattern with the focal point of the settlement being the river and the harbour where the river flows into the sea.
		55	The dominant land use remains single residential dwellings.
		56	The town has a segregated urban form with lower density residential erven along the river and ocean front and higher density residential uses to the northeast of the town.
	Commercial /Industrial:	57	Protect commercial and industrial uses including fish processing in harbor and fish processing uses in Bokkomlaan.
Change	Heritage and Tourism:	58	Support sensitive development of and improve tourism related infrastructure including local tourism kiosk, tourism signs and facilities (guesthouses, restaurants and venues).
		59	Support sensitive development of coastal recreational facilities and services (fishing trips, canoeing, etc.).
		60	Maintain and refurbish the caravan park.
		61	Promote land use that optimize Velddrif as retirement, holiday and tourism destination while building its economic core.
		62	Protect heritage buildings. Control demolition and extension of heritage buildings.
		63	Create a threshold condition a point of entry and exit, and to define the space and boundaries of the space known as Bokkomlaan (BCMP).
		64	Diverse Neighbourhood Nodes: Diversify the neighbourhood of Noordhoek through encouraging mixed use activities and reconfiguring current community nodes to create internal public squares (VPP).
	Tourism:	66	Encourage tourism related investment and small-scale industrial / commercial activities (VPP).
	Residential:	67	Protect the historic settlement character whilst densification by means of infill development and willingness of owners to subdivide is supported.
		68	Creating an entire new vibrant character in newly developed precincts and precincts to be developed.
		69	Spatially allow for adequate areas for provision of different residential types.
		70	Develop group housing and flats with appearances of single homes.
		71	Densify in accordance with zone proposals through: - Subdivision (sectional title); - Infill development; - Renewal and restructuring.
		72	Support the development of home occupation/professional services in residential areas.
		73	Encourage business and small businesses uses along activity streets.
		74	Support secondary tourism and tourism related business along the coast line/beach front such as temporary use of homes over holiday periods for exhibiting and selling products, small function venues, shooting advertisements and films, etc.
		75	Support infill development (V15, V1, V17 & V3).
		76	Support residential development (V1, V6, V14 V9, V16 & V17).
			Support mixed use residential development (V12, V21, V22 V18 & V5).
	In death (CC)	77	,
	Industrial:	78 79	Allow development of limited-service industries. Enhance infrastructure to support specific uses and activities for example yachting to benefit from industrial
		80	agglomeration in the IDZ (Saldanha-Northern Cape Development Corridor) (SDF 2019-2023). Support light industry and industrial uses along Lofdal and Church roads.
		00	oupport light industry and industrial uses along Loldal and Ondroll 1040s.

Heritage and	81	Develop accommodation options in the urban and surrounding rural area.
Tourism:	82	Develop a tourism strategy.
	83	Develop educational hiking trails in natural veld areas.
	84	Develop a LUMS overlay zone for erven along the coast to allow for limited tourism related uses additional
		to primary residential use rights e.g. wedding/party venues, photo/advertising shoots and film production,
		temporary use of dwellings for exhibition and sale of products.
Tourism:	85	Develop tourism related uses within the Harbour area.
Residential:	86	Provide low to medium residential opportunities that is market driven, provided by private developers,
		affordable to a section of society whose income is below the neighbourhood's median or average household
		income. Examples would include, but is not limited to, smaller erven and houses, apartments, group and
		town housing and also retirement village facilities. The typology is aimed at first time home owners, young
		professionals, couples, retirees, etc.
	87	Increase density in and around the CBD and along activity streets and encourage renewal.
	88	Require private development to include different housing topologies.
	89	Develop an old age home and other retirement developments and facilities.
Commercial:	90	Develop a LUMS Overlay Zone for alternative uses of dwellings along beachfront e.g. for film shoots.
	Tourism: Tourism: Residential:	82 83 84

Objective 3: Sustain material, physical and social well-being

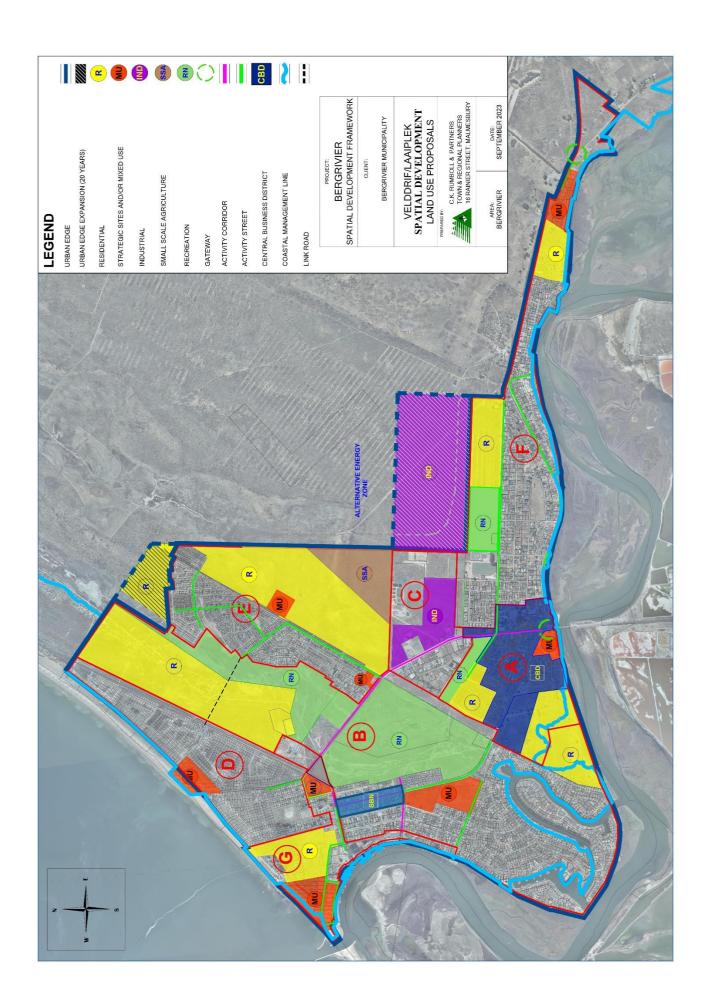
PUBLIC II	NSTITUTIONS									
	Elements	No.	Proposals							
Protect	Community facilities:	91	Maintain all community facilities including a clinic, primary and high schools, libraries, cemeteries, community halls, resorts and a golf course.							
Change	Community	unity 92 Support and enhance the existing public node.								
	facilities:	93	Maintain the main beach as public amenity.							
		94	Continue to expand and maintain the public footpath network and increase maintenance budget.							
Develop	<u>Community</u>	95	Provide for additional sports facilities, for example, a driving range.							
	facilities:	96	Provide a service centre for the aged and the youth.							
		97	Support the provision of adequate primary health facilities.							
		98	Develop educational and social facilities on vacant school site. Promote the establishment of a Community College: Skills development, technical campus, catering school (WCG owned site).							
	99 Support the promotion of community orientated services (crèches) in residential areas.									
		100	Develop a high school.							
		101	Develop a community swimming pool.							





Objective 5: Protect ecological and agricultural integrity

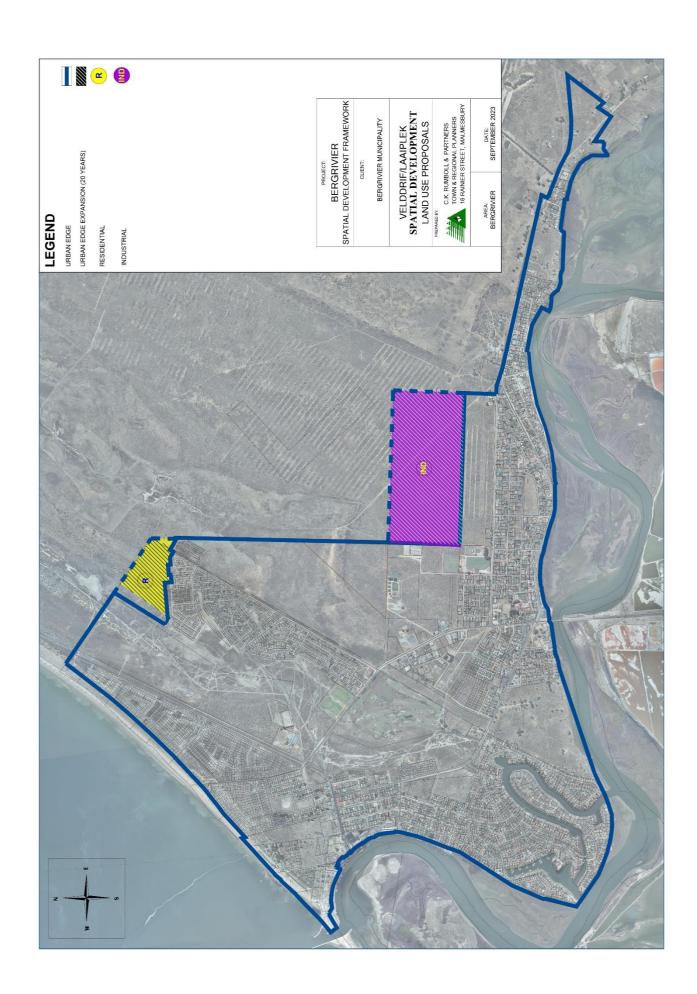
SPACE, N	NATURAL		otive o. I rotest ecological and agricultaral integrity
	Elements	No.	Proposals
Protect	Public and Private Space:	102	Enhance conservation and protection of the natural environment in particular the Estuary and Coastline (SDF 2019-2024).
		103	Manage potable water demand.
		104	Protect fishing stock (as natural resource) yet promote artisanal as an alternative to extensive agriculture on medium potential soil.
	Nature & Conservation:	105	Support the protection of Berg River Estuary character: No advertisements, signage, inscriptions, neon and flashing lighting allowed along the river and sea frontage of the settlement footprint and a short section of the southern entrance road north of Carinus bridge up to first intersection. Nameboards equal in size of a numberplate are allowed on buildings along the waterfront.
Change	Public and Private 10 Space:		Ensure greenfields developments provide urban landscape to connect to natural vegetation corridors.
		107	Be prepared for floods, damage to infrastructure, extreme heat, rise in sea level, drought, inadequate flow regimes and hyper salinity, declining quality and quantity of water and manage climate change.
		108	Redesign of the circle area in front of Laaiplek Hotel into a public square with seating and landscaping, where locals can enjoy lunch and tourists can walk through towards the museum along the harbor promenade.
		109	Protect wetlands and access green spaces for recreational activities via pedestrian boardwalks.
	Nature & Conservation:	110	Develop and maintain multi-use use trails as open space corridors, natural habitat links and recreational facilities (hiking and mountain bike trails and alternative uses such as events facilities and venues).
		111	Provide formal boardwalk walkways across the dunes to beach.
		112	Require all greenfields developments to zone land to expand natural corridors.
		113	Provide recreational facilities (play parks, picnic areas, outdoor gym equipment, etc.).
		114	Enhance public node in northern precinct (corner of Buitekant & Dolphin Streets).
Develop	Public and Private Space:	115	Should any archaeological sites be located it should be protected or dealt with according to the Heritage Resources Act.
	Nature &	116	Remove alien invasive vegetation and rehabilitate open space areas.
	Conservation:	117	Keep interfaces interactive along open space network.
		118	Prohibit development in high conservation worthy areas.



DEVELOPMENT ZONES ANROPOSALS FOR VELDDRIF

The table in this section describes development zones identified in Velddrif and lists development options for each zone. The table has to be read in conjunction with Development Zone plans for Velddrif.

	VELDDRIF LAND USE ZONES	Low Density Residential	Medium Density Residential	High Density Residential	Secondary Education	Place of Instruction	Professional Services	Business	Secondary Business	Place of Worship	Guest houses/Lodge	Authority	Sport/Recreational Facilities	Light Industrial / Service Trade & Industries	Institution
A	Zone A has been identified as the town's CBD and allows for future business expansion. Strengthen the area as the business core of the town and allow for various mixed uses within the identified mixed use precinct.	Х	X	Х	Х	Χ	Х	Х	Х	Х	Χ	Χ	Χ	X 2	X
В	Zone B is a low to medium density residential area with supporting amenities and recreational uses. Allow for various mixed uses within the identified mixed use precinct.	X	X	X 1,3	Х	X	Х	X 3	X 1,3	X	Х	X	X		X
С	Zone C, has been identified as an industrial precinct with the possibility of future expansion.				Χ	Χ	Х	Х	Χ	Х		Χ	Χ	Х	Х
D	Zone D has a medium density residential character. Allow for various mixed uses within the identified mixed use precinct.	Х	Х	X 1,3	Х	X	Х	X 3	X 1,3	Х	X	Х	X		Х
Е	Zone E is a medium to high density residential area and provides an opportunity for residential expansion. Area identified for small scale agriculture/community garden.	Х	Х	Х	Х	Х	х		X 1,3	Х	Х	Х	Х	X 3	Х
F	Zone F is a medium to low density residential area. Provides opportunities for residential and recreational development.	Х	Х	X 1	Х	Х	Х		X 1	Х	Х	Х	Х	X 2,3	Х
G	Zone G contains a historic medium-density residential area with supporting amenities, and has potential for tourism development. Allow for various mixed uses within the identified mixed use precinct.	Х	Х	X 1,3	Х	Х	х	X 3	Х	Х	Х	Х	Х	Х	х
	(1) Along activity streets/corridors(2) Service trades(3) At identified Mixed Use Precincts	Place Prof and Sec sma stree	e of Infession town pondar officets in r	olanners y Busin	on e.g. s e.g. less U home al area	Jses occupas on	ools, pes like e.g. no pation discre	olaces docto eigbou . Hou	of instruction of ins	uction. ists, a oussin rns or nicipa	ttorne es us	ys, ar	chitecl	on. hts, engin house sh along ac	ops,



Description of proposed la	and uses in the identified Development Zones of the towns in the Bergrivier Municipality
Proposed land uses	Description
Low density Residential uses	Residential densities of up to 15 units per hectare within the Single Residential Zone I, and General Residential Zone I* zoning can be accommodated within these zones.
Medium density Residential	Residential densities of up to 20 to 50 units per hectare within the General Residential Zones II and
uses	III* can be accommodated within these zones.
High density Residential uses	Residential densities of above 50 units per hectare can be accommodated within these zones with
riigii delibity Residentiai dees	proposed zonings Single Residential Zone II and General Residential Zone IV, V and VI*.
Secondary Educational uses	Allow for educational uses such as Crèches, After Care facilities and Day Care Centres.
Place of Instruction	Allow for places of education (crèches, schools, colleges, universities, technical institutes, public
	art gallery, research institutions, public library, museums, or a place of instruction in sport where the main objective is instruction rather than participation of the public as competitors or spectators, a conference facility or other centre of education and includes associated hostels.
Professional Use	Means that kind of use which is normally and reasonably associated with professionals such as
	doctors, dentists, attorneys, architects, engineers and town planners, where services rendered, are separate from trading are one of the distinguishing factors as accommodated under Business Zones 1 and 2*.
Business Uses	Business uses that include business premises, restaurants, shops, supermarket, offices, service trade and other uses as included under Business Zone I (at CBDs), Business Zones II, III, IV and V and VI* (where designated)
Secondary Business Uses	Allow for low intensity commercial and mixed uses to provide for the needs of the local
	neighbourhood in terms of consumer goods and personal services. This includes consent uses like House taverns and House shops. House Taverns will only be allowed at the discretion of the Municipality. Other uses include low impact uses under Business Zones II, III and IV*. These types of uses should be limited and must be able to integrate with surrounding residential areas without negatively impacting these areas.
Place of Worship	Means a church, synagogue, mosque, temple, chapel or other place for practising a faith or religion, and includes any building, including ancillary uses associated therewith, such as religious leaders' residence, office, function hall or place of religious instruction and a crèche as allowed under Community Zone II*, but does not include a funeral parlour, cemetery of crematorium.
Institution	Premises used as or intended to be used as a social, health or welfare facilities, or for the administration thereof and includes a hospital, clinic, pharmacy, home for the aged, retired, indigent or handicapped, social facility such as a counselling centre, orphanage and rehabilitation centre; and includes ancillary accommodation, administrative, health care, training and support services and facilities that are allowed for as a primary use under the Community Zone III* as well as allowed for as a consent use under Business Zone IV*, Community Zones I* and II*. Does not include a correctional facility.
Guest Houses	means a dwelling house, second dwelling or additional dwelling unit which is used for the purpose of supplying lodging and meals to transient guests for compensation, in an establishment which exceeds the restrictions of a bed and breakfast establishment (more than 2 guest rooms or 4 guests), and includes business meetings or training sessions by and for guests on the property for up to 12 persons. Does not include agricultural workers' accommodation. As allowed for as a consent use under Single Residential Zone I* and as a primary use under Agricultural Zones I and II*.
Authority	A use which is practiced by or on behalf of a public authority and that cannot be classified or defined under other uses in this zoning scheme, and includes a use practiced by the national government, including a military center or installation, police station or correctional facility; the provincial government, including a road station or road camp; the Municipality, including a fire service or a municipal depot with related uses, including limited accommodation for staff who are required to be on standby for emergencies; or a foreign government including an embassy or consulate, but does not include a dwelling house when the dominant use is for living accommodation of foreign diplomatic personnel. Uses as allowed under Authority Zone.
Sport/Recreational Facilities	Allow for sport facilities and other related recreational and tourism facilities like show grounds, picnic and camping areas.
Industrial/Service Trade and	Allow for development of industries, service industries and service trade related uses, with the
Industries	different types of industries considering the context and locality in the urban areas. Certain commercial uses including shops, restaurants, places of assembly, adult entertainment as well as funeral parlours and places of worship that are allowed for under these zones in accordance with the zoning scheme.
* The proposed zonings are a	ccording to the Bergrivier Municipal Land Use Planning By-law 2020 or as may be amended in future. The

^{*} The proposed zonings are according to the Bergrivier Municipal Land Use Planning By-law 2020 or as may be amended in future. The proposed zonings only provide an indication of the zonings that can be allowed within the zones. Any land use application within the development zones area will still be subject to other regulations that are applicable to the specific areas and within the zoning scheme.

CHAPTER 6: Rural and Regional Cross-Border Proposals & Environmental Management and Climate Mitigation Framework

Being part of the West Coast region stretching from Atlantis in the south to Papendorp in the north, and the Cape Fold Mountains being the inland border, the Bergrivier Municipality is home to five bio-regions that can be distinguished according to the natural environment and economy or value (as per the matrix below). The bio-regions are:

- Coastal Sandveld region,
- Berg River Estuary Sandveld region,
- Piketberg Porterville Grain Growing region,
- Verlorenvlei to Piket Boberg

 (a), Piket Boberg to Berg River
 (b) and Vier-en-twintig Riviere
 to and including Winterhoek
 Mountains and Wilderness
 Area (c).

Value	Landscapes	Wilderness: Coastal and Dunes	Wilderness: Mountains	Waterways and Connections	Connection Routes and Corridors	Agricultural Landscape	Social Focus and Community	Cultural and historical, and Routes
Express Sense of Place/ Place Ma	king	Χ	Χ	Χ			Χ	Χ
Provide ecosystem serv	ices	Χ	Χ	Χ				
Counter Climate Change (Conserve nat vegetation and hab		Χ	X					
Tourism attraction (routes & social ameni	ties)	Χ	Χ	Χ		Χ		Χ
Economic resources and opportun	ities				Χ			Χ
Access and Mobility (connect				Χ				
Food sec					Χ			
Employment Genera	ation					Χ		Χ
Safety and sec	urity						Χ	

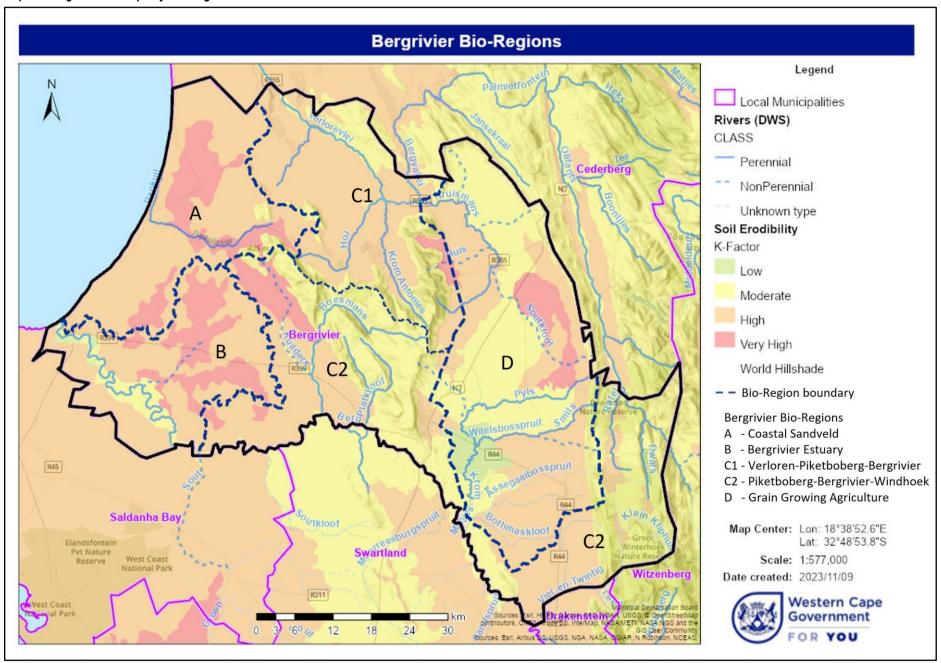
Natural and agricultural landscapes express Bergrivier Municipality's rural character and values to its inhabitants and visitors.

Different landscape character types, based on the elevation of the landscape, are identifiable (Norberg-Schulz's (1980)):

- Cosmic: does not contain individual places, but forms a continuous neutral ground: Grain growing region of Porterville and Piketberg and Sandveld, Berg River Estuary and Coast;
- Classic: clearly defined mountains and hills, imaginable spaces such as valleys and basins:
 - (a) Verlorenvlei, across to Piket Boberg,
 - (b) Piket Boberg across to Berg River and Vier-en-twintig Riviere to and including Winterhoek Mountains and Wilderness Area.

The table to follow provides an overview of the five regions:

Map 23: Bergrivier Municipality Bio-Regions



	COASTAL SANDVELD CORRIDOR (A)	BERG RIVER ESTUARY SANDVELD (B)	GRAIN GROWING AGRICULTURAL AREA (D)	VERLORENVLEI PIKET BOBERG AREA (C)	PIKET BOBERG, BERG RIVER & WINTERHOEK WILDERNESS AREA (C2)
Altitude (m)	0 – 300	0 – 100	<100 – 600	<100 – 1 000	<100 − 1 500
Population distribution	Dwarskersbos: Aurora: Total urban:	Velddrif:	Porterville: Piketberg: Eendekuil:	Redelinghuis:	Goedverwacht: Wittewater
Agriculture (Primary Economy)	Mixed farming (small grain and some potatoes), sheep & fishing.	Mixed farming (small grain and some potatoes), sheep & fishing.	Small grain, rooibos and some vineyards.	Citrus and table grapes, potatoes.	Citrus, deciduous (pone, berries) fruit, potatoes.
Mining (Primary Economy)	Salt and shells.	Salt.	None.	Tungston deposits.	Lime and Sand.
Bio-diversity	Coastal fynbos: Dune strandveld, Seashore vegetation, sand fynbos, Salt Pans.	Sand fynbos, seashore vegetation, estuarine salt marshes.	Succulent shrubland, Silcrete Renosterveld, Sandstone fynbos, Vernal Pools.	Sandstone Fynbos, Sand fynbos.	Sandstone Fynbos, Sand fynbos, Shale Renosterveldt, Alluvium fynbos.
Secondary Economy		Fish processing.	Agri-processing.	Agri-Processing.	Agri-processing.
Tertiary Economy	Eco-Tourism, Alternative Energy.	Eco-Tourism.	Agri-Tourism. Alternative Energy.	Agri-Tourism.	Eco-Tourism. Alternative Energy.
Renewable energy potential	Relatively medium wind speed. Medium levels of solar radiation.	Partially relatively medium wind speed. Medium levels of solar radiation.	Relatively low wind speed. Medium levels of solar radiation.	Relatively low wind speed. Medium levels of solar radiation.	Relatively low wind speeds. Medium levels of solar radiation.
Hydrology	Papkuils River – moderately modified.	Berg River and Berg River Estuary – moderately modified.	Generally not at an accepted class.	Verlorenvlei River – moderately modified.	Berg River – moderately modified, Oliphants unmodified, Vier-en-twintig rivier, Largely Natural.
Landscape character	Romantic.	Romantic.	Cosmic.	Classical.	Classical.

6.1 Development Proposals for the Cederberg: Rural and Regional

Detailed rural development proposals include national and provincial projects and investments by state-owned entities⁶. These projects include the upgrading of the Carinus bridge and provincial road (R399) at Velddrif (Department of Transport and Public Works), farmer production support units at Piketberg (Department of Land Reform and Rural Development) and subsidized housing in Piketberg, Porterville and Eendekuil (Department of Human Settlements) and housing in Wittewater and Goedverwacht (Department of Rural Development and Land Reform) and served as informants for the development proposals to follow.

Fresh- and Saltwater Bodies and ecological infrastructure:

- Delineate Flood lines in Porterville, Redelinhuis, Velddrif and Dwarskersbos as flooding and coastal erosion are risks;
- Promote open space corridors, allowing social amenities along rivers and tributaries within Goedverwacht, Wittewater, Piketberg, Eendekuil and Porterville. These open space networks have to connect to the rural surroundings for example Platkloof river in Goedverwacht, a tributary through Wittewater, tributaries through Piketberg feeding into the Pyls river, tributaries through Eendekuil feeding into the Kruismans river, tributaries through Porterville feeding into the Jakkalskloof river;
- Invest in ecological infrastructure and:
 - Promote the restoration of moderately and largely modified rivers and tributaries across
 Bergrivier Municipality;
 - Adhere to delineated during-wet-season buffer of at least 500m or 100m around wetlands, estuaries, salt marshes and 32m around rivers and drainage water courses. (GN 509, National Water Act, water use);
 - No permanent structures may be erected within the 1:50 year flood line;
 - Salt marshes must be left untouched;
 - Restore and maintain existing and historical connections between wetlands, drainage ports and rivers/streams and groundwater (and directed by groundwater connections).
- Promote supportive infrastructure and enhance water sports and recreation on freshwater bodies such as the Misverstand and Porterville dams as well as along the Atlantic coastline;
 - Preserve rural character around dams and water bodies and at sea;
 - Enhance the use of rivers and dams for recreation aligned with the relevant Bergrivier Municipal by-laws;
 - Capitalize on sports events as commercial opportunities, e.g., Berg River Canoe Marathon, Misverstand Dam and Berg River skiing, fishing at Porterville dam, Berg River Estuary and along the Atlantic coast.
- Provide for establishing alternative water resources e.g. desalination plant at Laaiplek in the Coastal settlements in Bergrivier Municipality i.e. Velddrif and Dwarskerbos to alleviate water shortages and particularly during droughts;

⁶SOE and Government Agencies: Section 12(1)(h) of SPLUMA

- Protect especially upper Oliphants and upper Verlorenvlei and Krom Antonies water catchment areas;
- Adhere to the Berg River Estuary Usage Zone regulating use within the Berg River;
- Compile a water resources zoning plan for development in and around dams or any water features;
- Protect natural landscapes, delineate development lines around marshes or water sponges or floodplains and coastline.

Landfill sites and cemeteries:

- Promote local rather than regional cemeteries;
- Investigate two regional cemeteries (west and east) after settlement cemetery expansion;
- Provide for waste locally by implementing a Waste Management Strategy focussing on avoid and reduce, re-use and recycle, recover and treat before disposing waste to the regional waste sites;
- Investigate locations for transfer stations along major routes and at large farming operations;
- Promote recycling of domestic and garden waste separately in all settlements and specifically in Piketberg, Velddrif and Porterville where compositing facilities can be established on unused municipal land;
- Implementation of waste to energy program;
- Rehabilitation of closed waste disposal sites at Piketberg and Porterville;
- Transfer stations to be constructed in Redelinghuis, Dwarskersbos and Eendekuil.

Agriculture:

- Delineate and protect intensive and extensive agricultural productive land to secure food production.
 <u>Preserve the agricultural character and landscape of the Bergrivier municipal area particularly along the Berg (Boesmans, Kuilders and Platkloof at Goedverwacht) and upper-Verlorenvlei (Krom Antonies, Holkruismans en Kruismans), Papkuils (feeding into Rocherpan), Bergvallei (across Cederberg and Bergrivier Municipalities) and Vier-en-Twintig Rivers (at the border with Drakenstein Municipality) and Pyls, Smits, Witelsbosspruit and Krom Rivers across the eastern grainfields plain and the (Dwars, Ratel, feeding into the Oliphants Rivers);

 </u>
- Support the development of an <u>Intensive Rural Development</u> (production and agri-industry) Triangle along the R44 between Voorberg Prison (Blikhuis, Porterville), Saron (Gouda) and the Berg and Vieren-Twintig Rivers confluence and corridors along the R366 between Piketberg and Eendekuil along the foot of Piket Mountains as well as along the upper-Verlorenvlei (along the R365) from Het Kruis to Redelinghuis;
- Promote the production of <u>niche products</u> on-farm (value adding) and investigate the production of new agricultural-related and complementary products e.g.stream aqua culture along the Berg and upper Verlorenvlei rivers and in farm dams;
- Promote and provide for tourism-related activities on farms and along waterways (main rivers) and water sources (tributaries) such as the Berg, Platkloof at Goedverwacht, and upper-Verlorenvlei, Papkuils, Vier-en-Twintig Rivers, Papkuils (Rocherpan) and the Oliphants Rivers e.g. farm stays,

- leisure accommodation and resort development, agri-processing, tastings, restaurants, farm stalls, wineries and private nature reserves;
- Protect agricultural cultivation connecting across municipal borders to <u>keep homogeneous</u> <u>agricultural areas intact</u>: Rooibos tea cultivation (towards Piekenierkloof, Cederberg Municipality), conservation and potato and citrus cultivation on the northern boundary adjacent to Cederberg Municipality (upper-Verlorenvlei Rivers) and along the Berg River, and cultivating pome fruit, berries and flowers on the south eastern boundary on Winterhoek mountains (Witzenberg Municipality) adjacent to Cederberg, Witzenberg and Drakenstein Municipalities, vineyards and mixed farming along the foothills of the Piketberg Mountains, growing small grain in the south adjacent to Swartland Municipality and mixed farming in the south west (Bergrivier Municipality) adjacent to Saldanha Municipality.

Fisheries (and ocean):

- Support licenced net fishing at Estuary Mouth and in Atlantic Ocean and white mussel harvesting between Draaihoek and Dwarkersbos;
- Upgrade harbour precinct and Carinus bridge precinct at Velddirf and enhance maintenance of existing permanent and less permanent fishing infrastructure to keep sense of place;
- Protect natural landscapes, delineate development lines around mountains and koppies and in marshes or a water sponge or in a floodplain;
- Prepare for coastal erosion, particularly at Velddrif and Dwarskersbos;
- Support production opportunities that underpin the Doringbaai, Lamberts Bay and Elands Bay Aqua
 FPSUs and the proposed Doringbaai Aqua-Hub:
 - Line fish (snoek, etc) given an optimistic outlook for such fisheries;
 - Net fish, mainly being harders targeted by beach-seine fisheries as a supplementary income for commercial fishing boat crews or fish processing factory workers during the off-season;
 - White mussel, with harvesting areas within the FPSU catchment areas including the following coastal areas; Doring Bay to Lamberts Bay, Elands Bay to Kreefbaai, Draaihoek to Dwarskersbos;
 - Seaweed harvesting including Beach-cast kelps (for plant growth stimulants), Gracilaria (for agar), fresh harvested kelps (macroalgae feed);
 - Marine species including octopus, red-bait and swimming crabs.

Agri-tourism:

- On farms especially along the Berg, upper-Verlorenvlei, Papkuils and Platkloof Rivers in the surrounding mountains ranges such as the Olifants (Winterhoek) and Platkloof (Goedverwacht);
- Along exsiting routes and destinations within the West Coast District Municipal jurisdiction, incorporating the areas of Swartland, Cederberg, Matzikama and Bergrivier Municipalities;
 - The West Coast Way "Berg Route" which starts in Velddrif and follows a course through Laaiplek, Port Owen, Dwarskersbos, Rocherpan Nature Reserve, Elands Bay, Aurora, Redelinghuis and Verlorenvlei, the Piekenierskloof Mountain Resort, Citrusdal, Eendekuil,

Porterville, Piketberg, Wittewater and Goedverwacht – covering an area that stretches from the Berg River to the start of the Cederberg Mountains.

- And establish new tourism routes and destinations combined with art, sport and food:
 - Sport and Art on the wheat fields along the R44 from Plketberg to Porterville to Saron (Gouda in the south) and from Porterville to N7 (unknown road);
 - Conservation Route R366, from Piketberg along upper-Verlorenvlei to Redelinghuis and and from Velddrif over Draaihoek (on route to Elands Bay);
 - Intensive agricultural cultivation route around Piket Boberg and around Winterhoek Wilderness Mountains;
 - Outdoor Sport and Recreation routes including hiking and mountain biking, bird watching, wild flower viewing, horse trails, fishing and water sport in and around the Piketberg Mountain Conservation Corridor, Berg River Corridor and the Coastal Corridor;
 - Cultural Heritage Route is one such a route amongst villages of Aurora, Redelinghuis, Wittewater, Goedverwacht and Piketberg.
- Redevelop the railway stations at Porterville, Piketberg and Eendekuil and siding infrastructure including grain silos and water storage facilities: Sidings on the Piketberg line: Moravia, DeHoek, Piketberg, Burgers, Pools, Droëryskloof, Het Kruis and Sidings on the Porterville line: Halfmanshof, Blikhuis and Kleindrif:
- Promote the establishment of tourism and freight-supportive infrastructure and/ or nodes at intersections and along R399 (between Piketberg and Velddrif) and R44 (Piketberg, Porterville and Saron (Gouda), Drakenstein Municipality);
- Attract more retirees and working people (for whom remote working is an option due to improved technology and connectivity) who want to live in a more tranquil rural settlement environment to settle in Bergrivier municipal area (improved rates and taxes).

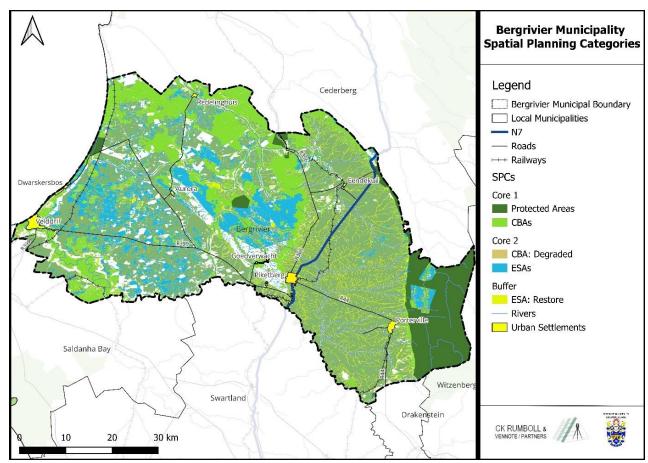
Mining:

- Identify all mineral and geological sources suitable for mining and determine its viability (based on financial viability [i.e. quality of the sand or resource] versus environmental degrading [aesthetic value, tourism, conservation, deciduous fruit, citrus, potatoes, rooibos tea and intensive agricultural land uses]. Develop guidelines for these areas to prohibit mining work against tourism. Mitigate existing impacts, effective rehabilitation and alternative transportation to dispatch products;
- Caution mining activities which is not viable and are counterproductive to the character of the area such as region 2, 3, 5 as well as particularly sand mining;
- Protect sensitive environments (visual, agricultural resources, natural, cultural) from the potential impact of mining. Give careful consideration to mining applications that will have the potential to impact directly, cumulatively or indirectly or in the long term, on the existing aesthetic value, tourism, agricultural industry and intensive agricultural land uses;
- Caution generation of dust that cause colouration of the landscape;
- Caution mining and non-compliance to rehabilitate to prevent high visual impact and cumulative impact on scenic landscapes;

- Where mines exist, provide opportunities for the growth (which can create additional employment opportunities and are labour intensive), of mining related industries, mineral beneficiation and the provision of support services to the mining sector;
- Enhance mining and economic activity where long life mines like PPC cement at De Hoek is established on condition that all mitigation measure are implemented/ applied.

Conservation:

- Promote the Sandveld Environmental Management Framework (EMF) addressing the cumulative impact on ecological degradation and biodiversity loss;
- Promote conservation plans for and protect sensitive habitats including upper-Verlorenvlei, Berg River Estuary;
- Promote application of spatial planning categories, to facilitate decision making in development applications;
 - Core Areas (Winterhoek Wilderness Area, Banhoek Nature Reserve, Berg River Estuary, Coastline, Public and Private Nature reserves i.e. Rocherpan);
 - Buffer Areas (Along Olifantsrivier Mountains, Groot Winterhoek Mountains, Piket, Skurwe and Platberg Cluster);
 - Intensive Agricultural areas (Sandveld grain growing and grazing area, Piketberg Porterville grain growing area, Rooikaroo grain growing area, Mixed farming area (Vier-en-Twintig Riviere)).



- Promote the establishment of Cederberg Conservancy and West Coast Conservation Corridor to serve simultaneously as a climate change corridor and:
 - Provide for ecological links to support connectivity between habitat areas and establish from the Cederberg to the coast a landscape and buffer area;
 - Support the formalization of Open Space Networks and Conservation Corridors in urban and rural areas to protect natural habitat areas.
- Protect and promote conservation of coastal ecosystems (estuaries, sandy beaches and dune systems, dune groves and fynbos);
 - Strandveld dune thicket and dune fynbos: Corridors of at least 20m width of natural vegetation must be retained in dune fynbos as well as dune thicket, to allow movement of birds and animals between undisturbed and continuous habitats. And Avoid development that disturbs connections between valley roughs and dune thickets.
 - Lowland fynbos ecosystems (sand fynbos and limestone fynbos): Corridors of sandfynbos must be at least 300m wide.to protect limestone fynbos types are slow growing and vulnerable and must be protected.
 - Mediterranean and mountain fynbos ecosystems (alluvial fynbos, granite, ferrous, conglomerate and silkretefynbos, grass fynbos and sandstone fynbos): Orchards and indigenous plantations (proteas, buchu) must not be closer than 2km from where such plants naturally occur.
 - Renosterveld ecosystems (coastal renosterveld and interior renosterveld): Ideally a buffer of at least 30m must be left between all development, especially agricultural land and core renosterveld conservation areas.
- Support farm owners to develop agri-villages where erven will become worker-owned for example in Eendekluil. The agri-villages can either be on farms or on municipal land in settlements. Funding is available for either. Enrol farmworkers on housing waiting list.

Netting, tunnels and agricultural industry and public utilities.

Netting, tunnels and agricultural industry:

The erection and location of poly tunnels and agricultural shade netting or/ and the establishment of an agricultural industry on a farm of 2000 m² and more in extent should address concerns of adverse impacts on visual, cultural and heritage amenities and the Municipality may require repositioning, screening and any other measures which may address negative adverse impacts whilst taking cognisance of the importance of agriculture and food security.

The decommissioning of poly tunnels and agricultural shade netting is required. The conversion of agriindustrial buildings for a different purpose instead of demolishing of such infrastructure should address concerns of adverse impacts on intensity of surrounding use (traffic, movement, noise) character (sense of place) and cultural and heritage amenities.

An adverse impact on surrounding properties, in respect of, but not limited to, noise, traffic congestion, pollution, emissions or the gathering of large numbers of people, or the presence of people hindering agriculture e.g. during spraying season, nor may the tourist activities have an adverse impact on any *bona fide* agricultural activities on the farm itself or on neighbouring properties.

Fences:

Fences comprising of only wire or steel palisade (painted charcoal, black or dark green), not exceeding 2,1m are allowed. No masonry wall exceeding 1 meter and no brick piers shall be permitted in wire or steel palisade fences and only the entrance gate structure maybe of solid brick structures in moderation.

Public Utilities:

- Promote communication corridors and zones, improved communication networks and promote access to information & technology including access to internet prioritizing rural areas;
- Support the establishment and sensitive location of communication network facilities/ data centres / telecommunication towers in rural areas and on farms;
- Provide for adequate bulk infrastructure and the location thereof according the change directives above;
- Encourage keeping and maintaining water trucks on farms and conservation areas for fire-fighting.

Alternative energy generation and social amenities:

- Prepare and be ready for wild fires likely in the mountain areas such as Piket Boberg and Winterhoek
 Mountains: Delineate firebreak buffers around settlements for example Piketberg;
- Delineate alternative energy zones and promote energy generation facilities in viable zones only.
 Overall viability of energy source to be confirmed by specialist studies; Broadly: Wind at western area (from Piketberg Mountains towards the coast) of the Bergrivier municipal area, solar overall, and around settlements provide for future urban expansion, hydrogen along the coast;
- Promote Solar Energy as the Bergrivier municipal area has high solar radiation and particularly regions 1 and 6 as the topography is conducive for the establishment of such facilities, yet with great sensitivity around the visual impact in protected and conservation areas;
- Promote Wind Energy particularly in wards 6 and 7 and Hydrogen along the coast;
- Caution the establishment of commercial solar and wind farms in and around environmentally and visual sensitive areas, and especially not in the Winterhoek Wilderness Area and Piket Boberg Area.
 Do not support solar farms on visible slopes as it increases visibility and has potentially a negative visual impact. Do not support hydrogen plants or any other alternative energy plant in front of the setback line or within any required buffer to the coast;
- Promote Wind Energy particularly west of Piketberg Mountains, solar overall and Hydrogen along the coast;
- Limit potential air pollution sources in the Bergrivier municipal area, including but not limited to, biomass (veld fires), domestic fuel-burning mainly wood and paraffin within settlements, vehicle and generator tailpipe emissions from petrol and diesel and waste treatment and disposal sites and develop an Air Quality Management Plan;
- Promote the use of rail as alternative transport (freight agriculture and mining) and introduce passenger rail (commuters & tourists) through West Coast (to Porterville and to Piketberg and from Belville to Bitterfontain (inter municipal route));
- Promote nodes at N7 intersections and where SANRAL criteria allow nodes:
 - Nodes to blend in with surrounding agricultural landscape.
 - Nodes to focus on tourism and agricultural development and support services.

- Public Transport on N7: Determine the viability of a reliable interregional public transport service along the N7 between Citrusdal, Piketberg and Moorreesburg to increase mobility within the West Coast District (Clanwilliam and Malmesbury) and to the Metropole.
- Safeguard intersection nodes through making developments visible.

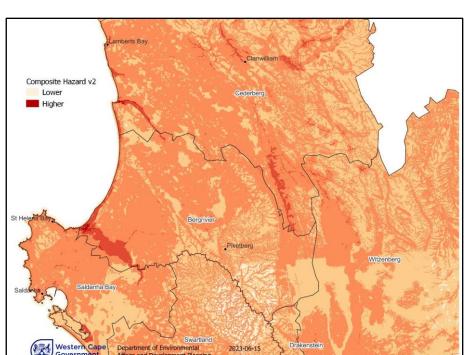
Support the development of transport nodes along the N7, R44, R365 - R366 and R399 and improve mobility between rural and urban areas. Nodes and associated infrastructure (farm stalls, service stations) along transport corridors should be sensitive to the agricultural landscape (R365 – R366, R399, R44 and N7) and should blend into the environment.

Promote access to education at all levels from preschool to tertiary by providing for such facilities in settlements and on farms, enhancing the mobility of community members and providing social amenities according to CSIR standards.

6.2 Regional and Rural Proposals & Climate Change

The rural spatial framework focuses on its natural resources: Water, Soil (Land), Minerals, Vegetation – Fauna - Ecosystems, Air - Wind, Sun and Connectors (the only man-made resource). The framework considers *Natural Disasters*, *Opportunities* and *Risks* for each natural resource.

The combination of the impact on the environment or environmental threats and the vulnerability of the Bergrivier Community measured as governance and municipal management is illustrated in the map below:



Map 24: Vulnerability to environmental threats in Bergrivier Municipality (combining socio-economic and governance indicators)

Overall, the Bergrivier municipal area is evaluated to be at a lower risk given its natural resources and its governance.

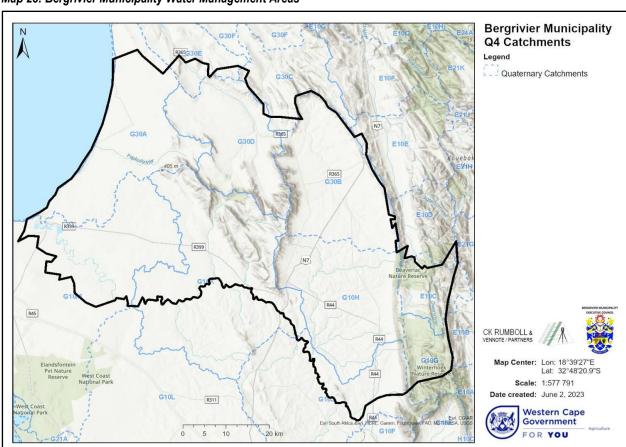
6.2.1 Water/ Hydrology

6.2.1.1 Natural Resource: Surface (Rivers), Ground Water and the Ocean

<u>Surface</u> and <u>underground water</u> and the ocean constitute the natural resource. Bergrivier Municipality is home to several rivers and boreholes as its water sources.

Primary rivers in the Bergrivier municipal area are: Berg (tributaries: Boesmans, Kuilders and Platkloof at Goedverwacht) and Verlorenvlei (upper) (tributaries: Krom Antonies, Holkruismans en Kruismans), Papkuils (feeding into Rocherpan), and Vier-en-Twintig Rivers (at the southern border with Drakenstein). Minor rivers are Bergvallei (across Cederberg and Bergrivier Municipalities) and Pyls, Smits, Witelsbosspruit and Krom Rivers across the eastern wheatfield plain and the Oliphants Rivers (tributaries: Dwars and Ratel rivers).

The department of Water Affairs delineated <u>Water Management Area</u> as illustrated by the map below. The Berg River Catchment covers approximately 9 000km² and is divided into 12 smaller catchments. The Berg River originates in Franschhoek mountains and flows northward for 285km, ultimately draining into St Helena Bay at Velddrif. The quaternary water catchment areas in the Bergrivier Municipality are the Olifants-Doorn Water Management Area (Eendekuil and Redelinghuis) represented by the Sandveld Area and the Berg River Water Management Area (Dwarkersbos, Velddrif, Aurora, Wittewater, Goedverwacht, Piketberg and Porterville):



Map 25: Bergrivier Municipality Water Management Areas

Wetlands, including marshes, swamps, and estuaries, are present within the Bergrivier municipal area. These waterlogged areas host unique plant and animal communities, acting as important habitats for a variety of species. Wetlands also play crucial roles in water filtration, flood control, and nutrient cycling, contributing to overall ecosystem health such as the Rocherpan and Berg River Estuary.

Dams, such as the Misverstand and Porterville dam and water reservoirs are strategically constructed in the municipality to store and manage water resources. These artificial water bodies regulate water supply, provide irrigation for agriculture, generate hydroelectric power, and offer recreational opportunities. Located strategically, they capture runoff from rivers and rainfall to ensure water availability and support various human activities.

Groundwater resources form an integral part of the hydrological system in the Bergrivier municipal area. Aquifers or underground water-bearing formations store and supply groundwater. Wells and boreholes are utilized to access this valuable resource for domestic, agricultural, and industrial purposes. The availability and quality of groundwater depend on geological formations, recharge rates, and human activities, emphasizing the need for responsible management.

Precipitation is influenced by regional climate patterns. Precipitation in the form of rainfall and fog contributes to the water supply particularly along the Atlantic, while evaporation and transpiration cause water losses.

Regarding water quality, the Berg River serves as the primary irrigation water source for the municipal area. The water in the Berg River and smaller rivers contains a considerable number of dissolved salts. During the winter months, salts from rainfall are leached out of the soil and carried downstream by the river. In summer, the sea influences the lower Berg River, while a consistent flow is maintained by adding water from the Wemmershoek and Voëlvlei dam schemes. Despite the salt content, the water can still be used for irrigation due to the depth of the sandy soils.

Management directives for fresh and salt water sources and water catchment areas include:

Protect:

- Provide for current and future basic human water needs;
- Provide equal access to water:
- Promote the effective and sustainable use of water in the interests of the general public;
- Facilitate social and economic development through access to water;
- Preserve aquatic and associated ecosystems and their biological diversity;
- Effectively manage floods and droughts according to guidelines;
- Protect water catchment areas especially upper Oliphants and upper Verlorenvlei, the Krom Antonies;
- Maintain water catchment areas by especially removing alien vegetation with the exception of heritage trees (trees older than 20 years);
- Reduce and prevent pollution and the degradation of water resources;
- Maintain irrigation schemes for sustainable water use;
- Monitor irrigation from rivers and use of underground water sources;
- Monitor ground water quality and capacity;
- Prohibit the overexploitation of underground water resources and aquifers.

Change:

- Encourage water harvesting and installation of domestic water storage tanks;
- Promote reuse of water and storm water (industrial use, irrigation of golf courses);
- Secure operational and maintenance costs of alternative water provision (facilities and systems);
- Plan for, provide and maintain adequate water resources, water storage capacity and networks;
- Plan for, provide and maintain adequate sanitation capacity according to prescribed standards and expand bulk waste water infrastructure;
- Adhere to the Berg River Estuary Usage Zone regulating use within the Berg River.

Develop:

- Provide for establishing alternative water resources e.g. desalination plant at Laaiplek in the Coastal settlements of Bergrivier Municipality i.e. Velddrif and Dwarskerbos to alleviate water shortages and particularly during droughts;
- Protect especially upper Oliphants and upper Verlorenvlei and Krom Antonies water catchment areas.

An Environmental Management Framework for fresh and saltwater zones is outlined below:

Management Priority	Priority Focus Area		
Improve and rehabilitate	Rehabilitation of flood plains and catchments. Demarcate development buffer areas for rivers and their flood plains and manage and control thereof. Improved storm water management and treatment. Rehabilitation, monitoring and evaluation directed and regulated by an area spenvironmental management plan.		
Conserve and preserve	A 32m wide buffer area alongside estuaries, rivers or dams must be adhered to. No development, except if an environmental impact assessment authorizes it, may occur within dam buffers or on riverbank buffers.		
Environmental Impact Assessment Requirements	All proposed developments covering an area of 50m² and more and within 32m from the banks of a water source, must have been authorised after completing a Basic Environmental Impact Assessment and obtaining an Environmental Approval before development may proceed.		
Monitoring and management aspects	River and dam monitoring must take place within the guidelines of the Department of Water Affairs River Health Programme.		
Research and Education	The river health projects, as managed by the Department of Water Affairs. Education in schools to make youth aware of the value of water resources, flood plains and wetland, and the impact of climate change on water resources and its scarcity. Community awareness campaigns, to especially emphasise water scarcity.		

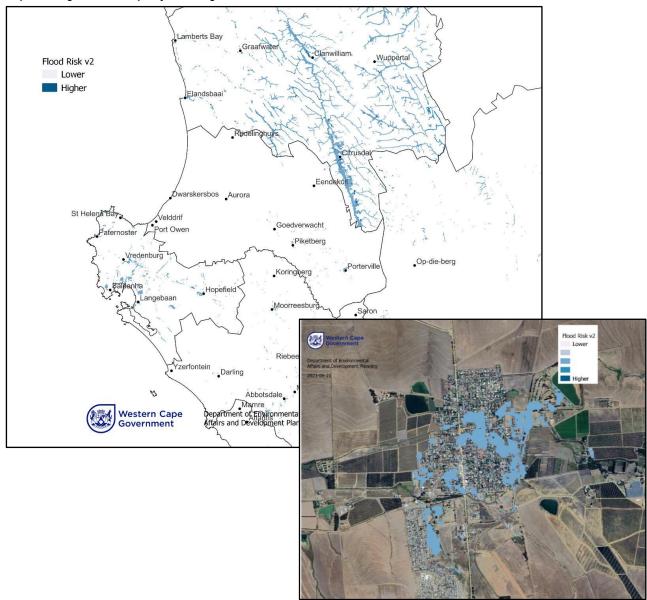
<u>Environmental Impact Management</u> directives for hydrological zones are outlined below:

Types of developments,	Types	Related		
land uses or activities:	That should not occur	That may have significant impact	That have no significant impact	environmental management policies and guidelines
Flood Risk Area 1 Include areas within the 1:50 flood line, where floods are equal to or greater than the every 50-year average.	Any Development.	Residential, commercial; industrial developments; intensive agriculture; waste management areas; storage and handling of harmful substances.	Grazing	Environmental Impact Assessment and Guidelines. Provincial Spatial Development. Framework for the Western Cape Province. All legislation with an environmental aspect and corresponding regulations, policies and guidelines.
Flood Risk Area 2 Include areas within the 1: 100 flood line, where floods are equal to or greater than the every 100-year average. Flood Risk Area 3 The area is exposed to floods not only caused by rivers, but by groundwater or storm water collection and run-off in low-lying areas.	Cemeteries; Industrial Areas; Fuel Storage Facilities; and Intensive Agriculture.	Residential, commercial; industrial developments; intensive agriculture; fuel storage facilities.	Residential development; Expansion of services; mitigation as per environmental impact study and specialist studies.	
Rivers, wetlands and buffer areas The buffer areas are calculated by standardized methodology (refer to Floodplains and Rivers Management Policy): River buffer areas vary between 10 - 40m from the river bank. Vleiland buffer areas differ and can be up to 75m wide, measured from the outer edge of the wetland.	Any Infrastructure Development.	Residential, Commercial and Industrial Developments, Intensive agricultural practices and Fuel storage facilities.	Grazing.	
Highly productive underground water sources The zones include highly productive interrelated, broken down, and a combination of both, underground water sources.	Waste disposal sites.	Intensive agricultural activities, waste management (transfer and recycle) sites, Fuel storage facilities and Industrial areas.	Residential development, Standard, sustainable agricultural practices.	
Average productive underground water source The zones include average productive interrelated, broken and inter granular and broken ground underground water resources.	Waste disposal sites.	Residential, Commercial and Industrial Developments. Intensive agricultural practices, Fuel storage facilities.		

6.2.1.2 Natural Disaster: Droughts, Floods, Coastal Erosion and Flooding

Drought and Flooding are natural disasters enhanced by climate change.

Flooding of the upper-Verlorenvlei river and the Berg River is expected at 50-year intervals. According to the climate change risk and vulnerability map for Bergrivier Municipality, <u>flooding</u> is anticipated in and around Porterville.



Map 26: Bergrivier Municipality Flooding Risk and Flood area in Porterville

Dynamic coastal processes of erosion and deposition cause the sandy coastline and estuarine environment in the Bergrivier Municipality to be subject to flooding. Historically there has been limited development in the high-risk and sensitive coastal and estuarine areas, except for Laaiplek and Velddrif. Recently the increase in the number of buildings in high-risk coastal areas and sea surges highlighted the importance of careful coastal planning and management.

Coastal erosion and flooding risk is expected at Dwarskerbos and in and around Velddrif as shown in the figure below. The risk in estuaries generally ranks higher.

Map 27: Bergrivier Municipality Coastal Erosion and Flooding Risk



Management directives for rivers, estuaries and the coastal line:

Protect:

- Effectively manage floods and droughts according to guidelines;
- Protect natural landscapes and infrastructure, delineate development lines around marshes or water sponges or floodplains and coastline.

Change:

- Maintain existing and related fishing infrastructure to keep sense of place;
- Support licenced net fishing at Estuary Mouth and in Atlantic Ocean and white mussel harvesting between Draaihoek and Dwarkersbos.

Develop:

- Delineate Flood lines in Porterville, Redelinhuys, Velddrif and Dwarskersbos as coastal erosion and flooding is a risk;
- Prepare and allow for coastal erosion in particularly at Velddrif and Dwarskersbos.

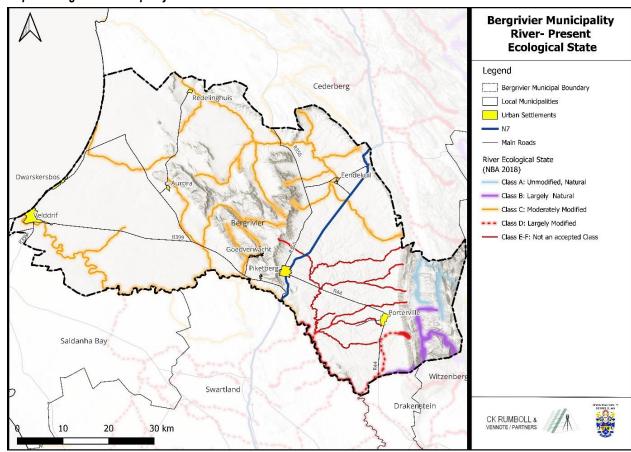
Environmental Impact Management directives for hydrological zones are outlined in 6.2.1.1.

6.2.1.3 Opportunities: Dams, Irrigation, Beaches and Recreation

The main inland water body (dams) is the Misverstand Dam and the Porterville Dam.

Rivers and tributaries act as a spine for a continuous open space network within settlements, which connect to the rural surroundings for example Platkloof river in Goedverwacht, a tributary through Wittewater, tributaries through Piketberg feeding into the Pyls river, tributaries through Eendekuil feeding into the Kruismans river, tributaries through Porterville feeding into the Jakkalskloof river.

Irrigation (Agriculture) causes rivers to be modified. National Freshwater Ecosystem Priority Areas NFEPA (2007), class the Berg, Verlorenvlei (upper) and Papkuil Rivers and tributaries, as largely modified. All the rivers in the south eastern part of Bergrivier Municipality are modified of a not accepted class. Rivers and tributaries in the Winterhoek Wilderness area are natural and unmodified or largely natural.



Map 28: Bergrivier Municipality River Conservation Status

Water source and bodies provide opportunity for recreation. The preservation of the rural character around dams and water bodies proactively enhances the local economy.

Management directives for fresh and saltwater bodies (and the ocean) include:

Change:

- Promote fair management and effective maintenance of the health of both Berg and Oliphants-Doorn catchment areas including all land located within the catchment areas;
- Prevent unsustainable, uncontrolled and unsafe use of water resources;

- Maintain the primary and operational requirements of dams and dam basins or any water resources (e.g. water quality, safety and flood control) and mitigate and manage social and economic impacts;
- Utilize the natural environment around dams and water resources to enhance the cultural environment and support the development of tourism, sport and recreation facilities (fishing, resorts, camping and caravan parks) generating job opportunities;
- Promote supportive infrastructure and enhance water sports and recreation on freshwater bodies such as the Misverstand and Porterville dams as well as along the Atlantic coast line;
 - o Preserve rural character around dams and water bodies and at sea;
 - Enhance use of rivers and dams for recreation aligned with the relevant Bergrivier municipal by-laws;
 - Capitalize on sports events as commercial opportunities, e.g., Berg River Canoe Marathon, Misverstand Dam and Berg River skiing, fishing at Porterville dam, Berg River Estuary and along the Atlantic coast.

Wetlands:

- Allow development only behind wetland demarcation line (established during the wet season);
- Adhere to the statutory 32m or adequate delineated buffers for rivers, wetlands and drainage trenches;
- Restore and maintain existing and historical connections between wetlands, drainage ports and rivers/streams and groundwater (and directed by groundwater connections);
- Connect and conserve small wetland areas and create open space corridors following existing drainage lines;
- Restore ecological services (drainage, filtering, biota and vegetation links) in previously disturbed areas

Rivers:

- Promote the restoration of moderately and largely modified rivers and tributaries across Bergrivier Municipality;
- Maintain and restore, river historical connections wherever possible, as continuous river corridors facilitate movement of animals as well as plants spread across domestic, rural and coastal gradients;
- Promote open space corridors, allowing social amenities along rivers and tributaries within Goedverwacht, Wittewater, Piketberg, Eendekuil and Porterville. These open space networks have to connect to the rural surroundings for example Platkloof river in Goedverwacht, a tributary through Wittewater, tributaries through Piketberg feeding into the Pyls river, tributaries through Eendekuil feeding into the Kruismans river, tributaries through Porterville feeding into the Jakkalskloof river.

Estuaries:

- Adhere to delineated during-wet-season buffer of at least 500m or 100m around wetlands, estuaries, salt marshes or which the width will be determined by scale and type of development, the 1:50 year flood line, the likelihood of soil contamination as well as the vegetation types growing in the buffer strip;
- No permanent structures may be erected within the 1:50 year flood line;
- Salt marshes must be left untouched;
- See also By-law relating to the Bergrivier Estuary Usage Zones (Government Gazette No. 8810, 11 August 2023).

Sandy beaches and dune systems:

- Infrastructure must be placed in such a way as to prevent damage caused by coastal processes.
 Adhere strictly to the precautionary principle should fixed infrastructure be installed under the high watermark;
- Development rehabilitation guidelines must take into account biodiversity and ecosystem requirements and be strictly enforced to protect against the following coastal processes:
 - Impact of successive heavy storms:
 - Coastline movement:
 - Global sea level rise;

- Change of natural coastal processes;
- Any combination of the above.
- Avoid at all cost the removal and fragmentation of indigenous vegetation, in the buffer area, on dunes and on the coast line area.
- Prevent vehicles driving on sandy beaches above the high tide/ water mark or in the dune systems
 including popular swimming beaches, beaches that support sea life, e.g. feeding and breeding
 areas and coastal areas of coastal conservation areas.

Develop:

Compile a water resources zoning plan for development in and around dams or any water features.

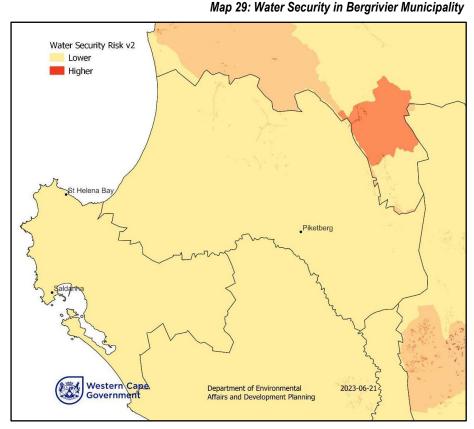
6.2.1.4 Risks: Water Security, Pollution, Cemeteries and Waste Sites

The availability of water for urban consumption is limited as the Western Cape population reached 3.5 million in 1986, the saturation points for the available water sources.

Water and <u>Water Security</u> (Climate Change) is a key factor for socio-economic development, food security and healthy ecosystems, and is vital for reducing the burden of disease and improving the health, welfare and productivity of communities. A deteriorating water catchment system will consequently lead to lower inputs into the water supply systems, and a lower overall water security due to lower natural retention and lower quality of water. Climate change is likely to exasperate mitigation measures to secure water and water quality

According to the climate change risk and vulnerability map (below) for Bergrivier Municipality, <u>water security</u> does not show the severity of the risk, just the relative risk between regions. Although highlighted areas have the highest risk, their risk is relative to other regions, rather than as absolute values.

The vulnerability score is derived by combining the default socio-economic/governance score with a groundwater dependency score obtained from the Ecological Infrastructure Investment Framework (EIIF) project of DEA&DP.



<u>Management directives</u> to guarantee water security and prohibit pollution should development be considered, include:

Protect:

- Assure all development in all phases uphold water quality standards and thresholds;
- Assure of supply levels of all water sources, especially surface water resources and re-evaluate water sources especially where demand is close to the safe, one-in-twenty-year yields;
- Require efficient water use in all development proposals;
- Consider all applicable guidelines, policies and legislation pertaining to freshwater impacts where relevant to proposed developments;
- Pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

Change

- Increase at least 10% additional supply capacity (headroom) when considering the maximum 24hour demand at the highest (peak) demand month of the year;
- Subject proposed developments to proper investigation of the implication on water sources and long-term sustainability;
- Vigorously implement Water Demand Management measures, especially in terms of the following:
 - increased water efficiency;
 - o frequent monitoring of water supply systems; and
 - o conduct regular and adequate system maintenance and repairs.
- Diversify water resources, e.g., surface water, groundwater and wastewater re-use;
- Promote small sewerage treatment package plants and alternative technologies on farms (agrivillages) and in rural settlements.

There is a need for <u>cemeteries</u> to be expanded and particularly in Eendekuil and Piketberg (Bergrivier MSDF, P.67 & town surveys). Keep in mind that a 500m buffer has to be adhere to in accordance to the health legislation. The location, capacity of cemeteries are described in the following table.

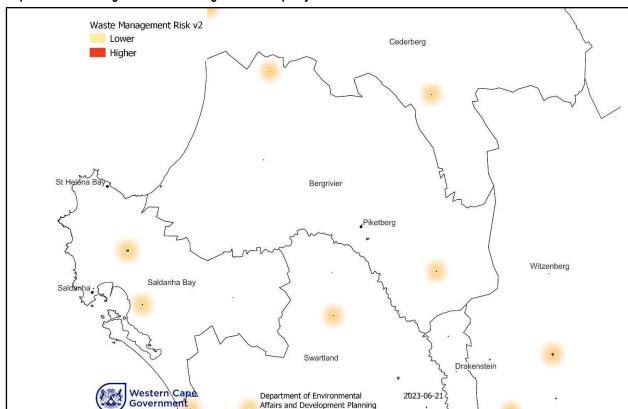
Table 11: Cemeteries

Aurora	1	Hoofstraat cemetery		
Eendekuil	2	 Eendekuil Cemetery, along R365 at agriculutral hall Maas street cemetery 		
Goedverwacht	2	 Central cemetery Historic cemtery. 		
Piketberg	4	 Die Trek Street Jewish cemetery Asblom street northern cemetery Kerk street cemetery (historic) New Cemetery (along railway line) 		
Porterville	2	 Jakkalkloof Steet cemetery Hospital cemetery 		
Redelinghuis	2	 Redelinghuis eastern cemetery Engelbrecht Street, western cemetery 		
Velddrif	3	Smith Sportsfield cemetery, Iris Avenue Noordhoek Cemetery, at Noordhoek Primary School Velddrif Central Cemetery (Dutch Reform Church)		
Wittewater	1	Part of larger farm, east off entry road from R399.		

All <u>landfill sites</u> are closed for dumping of household- and business refuse. Only clean building rubble and garden refuse are accepted which are then used for covering and composting material on the landfill sites. All households (100%) have access to refuse removal services in Bergrivier Municipality. Refuse is taken to refuse transfer stations at Piketberg, Velddrif and Porterville from where it is transported to licensed landfill sites at Malmesbury and Vredenburg in accordance with agreements concluded with the Swartland Municipality and Saldanha Bay Municipality.

On average 11% by mass of the waste generated (excluding green material and building rubble) is recycled to lower transport costs and lower dumping costs. Material Recovery Facilities (MRF's) were established in Velddrif and Piketberg and weigh bridges installed. All waste and recyclables are weighed as required by the National Environmental Management Waste Act, 2008 (Act 59 of 2008), to which the Municipality adheres to, one of a few municipalities that was able to do so. To minimize organic waste, Compost makers (plastic drums) are made available to municipal residents to make their own compost at home (in partnership Heist-op-den-berg, Belgium). Composting bins are supplied for separation of organics at source are supplied. Complementing facilities are a recycling facility at Piketberg and waste offices and compost storing areas in Piketberg, Velddrif and Porterville.

Future waste generation is calculated on 11 693 tons by 2027 given 47 082 people.



Map 30: Waste Management Risk in Bergrivier Municipality

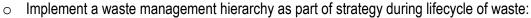
<u>Management directives</u> for water sources and bodies, should development of cemeteries and waste sites be considered whilst climate change has to be mitigated, include:

Change: Cemeteries

- Expand cemeteries per settlement and promote local rather regional cemeteries.
- Investigate two regional cemeteries (west and east) after settlement cemetery expansion

Change: Waste/ Landfill Site

- Continue to deliver waste to the Swartland Highlands and Saldanha municipal waste/ landfill sites;
- Investigate locations for transfer stations along major routes and at large farming operations;
- Promote recycling of domestic and garden waste seperately in all settlements and specifically in Piketberg, Velddrif and Porterville where compositing facilities can be established on unused municipal land;
- Implement a waste to energy programme;
- Rehabilitation of closed waste disposal sites at Piketberg and Porterville and funding needs to be provided to implement the plan submitted to DEADP to ensure that requirements of closure licenses are adhered to;
- Transfer stations to be constructed in Redelinghuis, Dwarskersbos and Eendekuil:
- Protect environmental health & prevent ecological degradation as per norms and standards;
 - implement waste management strategy, control,
 licensing & remediation of contaminated land.



- avoid and reduce waste (on-site: awareness);
- re-use and recycle (recycle igloos, composting & building rubble facilities);
- recover (products from waste);
- treat and dispose.



<u>An Environmental Management Framework</u> for hydrological zones is outlined below:

Management Priority	Priority Focus Area
Improve and rehabilitate	 All intensive farming practices impacting on ground and underground water sources: Intensive feed farming i.e. cattle housing: prohibit storm water pollution; Agricultural poisons: improve blending and taking in spray practices of aircraft and spray equipment; Industrial and service station/ fuel distribution depo practices.
	Storm water management and treatment.
	Rehabilitation of flood plains and catchments. Including demarcation of development buffer areas for rivers and their flood plains and management and control thereof.
	Rehabilitation, monitoring and evaluation directed and regulated by an area specific environmental management plan.
	Facilitate and manage access to the coast for all people fully compliant with the relevant provisions in the Integrated Coastal Management Act (ICMA) and: - Implement the West Coast District Municipality Coastal Access Audit; - Increase awareness of the impact of illegal activities on coastal zone; - Improve conditions of access roads to coastal areas; - Improve communication between local communities and authorities regarding public access within the coastal zone;

- Minimize alienation of land that prohibits coastal access for example aquaculture, mining and residential estates:
- Strengthen and promote tourism opportunities and economic benefits to communities (engage with "working for coast infrastructure programmes);
- Facilitate effective management of Public Launch Sites;
- Manage recreational and commercial events on beaches;
- Ensure Public safety and security.

Improve pollution control, management and monitoring of effluent generating infrastructure and facilities to prevent pollution of the coastal zone and:

- Manage the discharge of effluent, stormwater and other industrial-based pollutants into coastal waters:
- Continue to plan, install, alter, operate, maintain, repair, replace, protect and monitor municipal WWTWs in coastal towns;
- promote effective management of Air Quality;
- ensure effective management of solid waste in the coastal zone;
- encourage the reinstatement of the Blue Flag Beach Programme;
- encourage households to adopt a reduce-reuse-recycle waste management culture;
- Capacitate Bergrivier municipal staff with waste management skills;
- Report pollution events;

Enhance socio-economic development of Coastal Communities and:

- Promotes and support renewable energy projects in WCDM and Bergrivier municipal area:
- Create support for Bergrivier Municipality to generate renewable energy;
- Sustainably develop harbour, fisheries, processing and aquaculture facilities (coastal economy infrastrcuture);
- Promote "Small Harbours" as part of the SDF & Economic Development Framework proposals:
- Develop marine aquaculture;
- Support Small-Scale Fisheries Industry:
- Facilitate coastal tourism development;
- Explore fisheries and aquaculture commodities to support the Doringbaai, Lamberts Bay and Elands Bay Aqua Farmers Production Support Units (FPSUs) and the proposed Doringbaai Aqua-Hub (cross border initiative):
 - Net fish, mainly being harders targeted by beach-seine fisheries, showing resource recovery, with such fishing being traditional to West Coast fisheries, often being supplementary to other fisheries (e.g. rock lobster, line fish) or as a supplementary income for commercial fishing boat crews or fish processing factory workers and the wider community during the off-season (WCD Rural Development Plan, 2017);
 - White mussel, with harvesting areas within the FPSU catchment areas including the following coastal areas; Doring Bay to Lamberts Bay, Elands Bay to Kreefbaai, Draaihoek to Dwarskersbos.

Conserve and preserve

A 32m wide buffer area along river banks and wetlands must be adhered to. No development, except if an environmental impact assessment authorizes it, may occur within river buffers, on riverbanks and within wetlands.

Promote implementation of Estuary Management and apply estuarine management plans as estuaries are heavily impacted and of high value.

- Facilitate the designation of Responsible Managing Authorities (RMA);
- Support the development of Estuarine Management Plans for smaller estuaries in the WCDM:
- Facilitate the implementation of Estuarine Management Plans in the District.

Promote the management and protection of natural resources (terrestrial and marine environment) as aesthetic and economic assets. The vulnerability of marine resources with high integrity subject to a variety of impacts largely resulting from varying levels of human induced pressure, requires effective management:

- Maintain ecosystem integrity and health;

- Assess and effectively manage coastal protected areas;
- Effectively control of invasive alien plants;
- Cooperative management of Protected Areas;
- Monitoring mining activities in the coastal zone;
- Facilitate the coordinated management of Marine Living Resources.

Promote the formal protection and management of a valuable heritage and cultural resource within Bergrivier Municipality.

Environmental Impact Assessment Requirements

All proposed developments covering an area of 50m² and more and within 32m from the banks of a water source, must have completed a Basic Environmental Impact Assessment and have Environmental Approval before development may proceed.

All proposed developments impacting on estuary, terrestrial, marine and heritage environments, must confirm the applicability of the Environmental Management Act before development may take place.

Promote cooperative governance and clarification of institutional arrangements for coastal management and capacity generation.

Monitoring and management aspects

Promote the continuous implementation and updating of the Coastal Management Programme.

River monitoring must take place within the guidelines of the Department of Water Affairs River Health Programme.

Borehole monitoring must take place in all developments that could lead to possible groundwater pollution, e.g., waste landfills, intensive farming practices.

Water quality monitoring is required for all water treatment systems.

Regulated management and monitoring aspects by an Environmental Management Plan.

Coastal Planning and Development to promote responsible coastal planning for the sustainable development of the coastal zone, is achieved by:

- incorporating appropriate spatial principles into the SDF;
- defining and establishing urban edges for all urban nodes in the coastal zone and:
- ensuring that climate change adaptation and mitigation measures are included in the planning processes. Incorporate biodiversity, environmental and climate change policies into town planning processes:
 - Address Coastal Erosion within the coastal zone;
 - Address the development of vacant plots and the low occupancy levels of residential dwellings.
- Ensure rehabilitate the coastal zone.

Ensure and promote responsible coastal planning for sustainable use of coastal zone:

- Incorporating appropriate spatial principles into the CLM SDF;
- defining and establishing urban edges for all urban nodes in the coastal zone and;
- Ensuring that climate change adaptation and mitigation measure are included in the planning processes.

Enhance **Compliance Monitoring and Enforcement Efforts** in the District: Effective implementation and enforcement of various legislation developed to protect coastal and marine resources. Preserve the integrity of these systems are required to prohibit exploitation and degradation of sensitive and risk prone coastal and marine environments as a result of anthropogenic activities:

- Capacitate municipalities to monitor and enforce coastal management objectives;
- Develop Local Authority Environmental Management Inspectorate and Honorary Marine Conservation Capacity;
- Facilitate and encourage public reporting of illegal activities;
- Facilitate the development and enforcement of Municipal by-laws;
- Address the increase in illegal off-road Vehicle activity.

Research and Education

Promote the river health projects, as managed by the Department of Water Affairs.

Develop and Facilitate Awareness, Education, Training, Capacity Building and Information Gathering in the District.

- Facilitate the training of municipal officials on coastal management and informed decision making;
- Support research and development and graduate skills;
- Facilitate public awareness and access to information; and
- Support existing education and awareness projects.
 - Education in schools to make youth aware of the value of water resources, flood plains and wetland, and the impact of climate change on water resources and its scarcity;
 - o Community awareness campaigns, to specially emphasize water scarcity;
 - Instil a sense of custodianship of the coast amongst all coastal communities through education, training and awareness of coastal conservation and management;
 - Conserve and effectively manage natural heritage through awareness and education of the coastline.

Environmental Impact Management directives for hydrological zones is outlined below

Types of developments, land uses or activities					
Rivers, wetlands and buffer areas	That should not occur	That may have significant impact	That have no significant impact	Related policies & guidelines	
Rivers, wetlands and buffer areas The buffer areas are calculated by standardized methodology (refer to Floodplains and Rivers Management Policy): River buffer areas vary between 10 - 40m from the river bank. Vleiland buffer areas differ and can be up to 75m wide, measured from the outer edge of the wetland.	Any Infrastructure Development.	Residential, Commercial and Industrial Developments. Intensive agricultural practices. Fuel storage facilities.	Grazing.	Environmental Impact Assessment and Guidelines. WCPSDF. All legislation with an environmental aspect and corresponding	
Highly Productive Underground Water Sources The zones include highly productive interrelated, broken down, and a combination of both, underground water sources.	Waste disposal sites.	Intensive agricultural activities, waste management (transfer & recycle) sites. Fuel storage facilities. Industrial areas.	Residential development. Normal agricultural activities.	regulations, policies and guidelines.	
Average productive underground water source The zones include average productive interrelated, broken and inter granular and broken ground underground water resources.	Waste disposal sites.	Residential, Commercial and Industrial Developments. Intensive agricultural practices. Fuel storage facilities.	Residential development. Normal agricultural activities.		

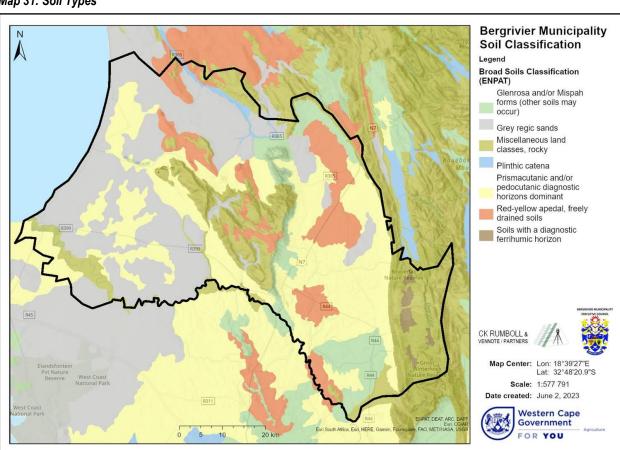
6.2.2 Land/ Soil

6.2.2.1 Natural Resource: Soil Suitability (Agriculture)

Watercourses and mountain ranges like the Skurweberg, Winterhoek, and Piketberg Mountains comprise the topography of Bergrivier Municipality. The geology of these mountains as resistant rock formations that endured erosion and shaped the landscape consist of sandstone, shale, limestone, granite, and basalt, among others. The soil types present are sandy soils, loamy soils, clay soils, and soils derived from weathered shale or sandstone. The distribution and properties of these soils have implications for land use, agricultural practices, and water filtration capabilities.

<u>Soil depth</u>: in the Bergrivier municipal area varies generally between 450cm – 750cm over most of the area with the exception of soils north and east of Piketberg where soils are deeper than 750cm. South West of Porterville clay appears at a depth of 450 mm. The majority of the Bergrivier municipal area has a soil clay percentage of less than 15%. The eastern side of the Bergrivier municipal area, has a clay percentage of between 15% and < 35%. (Cape farm mapper)

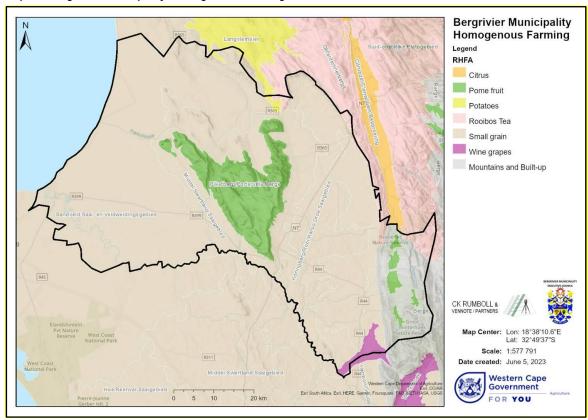
Agricultural activities in the Bergrivier Municipality rely on the suitability and fertility of the soil. Farmers often employ soil conservation techniques like contour plowing and terracing to prevent erosion and maintain soil health. The diverse geology and soil composition present both opportunities and challenges for agricultural productivity and land management practices in the municipality.



Map 31: Soil Types

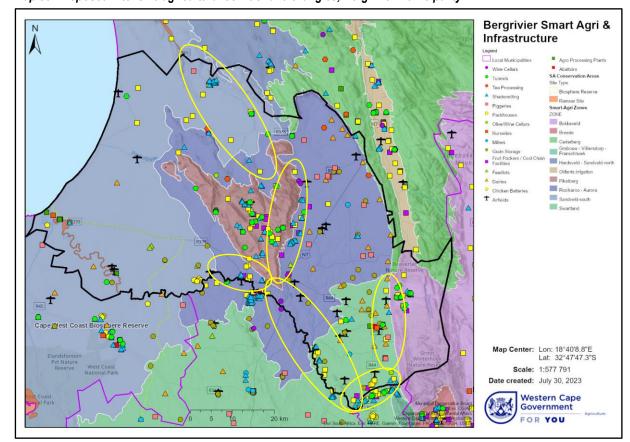
The primary agricultural activities in Bergrivier Municipality include crop cultivation and livestock farming. A variety of crops such as citrus, pome and stone fruits, grapes, wheat, barley, oats, potatoes, and vegetables are cultivated. Livestock farming includes cattle, sheep, and goats for meat and dairy production.

Areas with higher potential for grain production are found south of Porterville and Piketberg, as well as in the Kliphoek-Driefontein-Redelinghuis area. The Piketberg-Porterville valley, along with the Aurora area and upper Verlorevlei area, have lower potential due to climatic risks and lower and unreliable rainfall. The coastal strip has poor agricultural potential.



Map 32: Bergrivier Municipality Homogenous Farming

Agriculture in the Bergrivier municipal area is a diverse sector that contributes significantly to the region's prosperity, food security, employment while embracing sustainable practices.



Map 33: Proposed Intensive agricultural corridor and triangles, Bergrivier Municipality

<u>Management directives</u> for the use of soil and land resources for agricultural cultivation and rearing (natural economic zone) include:

Protect:

- Protect and preserve intensive and extensive agricultural productive land to secure food production.
 Preserve the <u>agricultural character</u> and landscape of the Bergrivier municipal area particularly along
 the Berg (Boesmans, Kuilders and Platkloof at Goedverwacht) and upper-Verlorenvlei (Krom
 Antonies, Holkruismans en Kruismans), Papkuils (feeding into Rocherpan), Bergvallei (across
 Cederberg and Bergrivier Municipalities) and Vier-en-Twintig Rivers (at the border with Drakenstein)
 and Pyls, Smits, Witelsbosspruit and Krom Rivers across the eastern grainfields plain and the (Dwars,
 Ratel, feeding into the Oliphants Rivers);
- Protect agricultural cultivation connecting across municipal borders to keep homogeneous agricultural areas intact: Rooibos tea cultivation (towards Piekenierkloof, Cederberg Municipality), conservation and potato and citrus cultivation on the northern boundary adjacent to Cederberg Municipality (upper-Verlorenvlei Rivers) and along the Berg River, and cultivating pome fruit, berries and flowers on the south eastern boundary on Winterhoek mountains (Witzenberg Municipality) adjacent to Cederberg, Witzenberg and Drakenstein Municipalities, vineyards and mixed farming along the foothills of the Piketberg Mountains, growing small grain in the south adjacent to Swartland Municipality and mixed farming in the south west (Bergrivier Municipality) adjacent to Saldanha Municipality;
- Protect agriculture both extensive agricultural production and intensively irrigated areas along the Berg and upper Verlorenvlei River and other water courses.

Change:

- Protect underground water as limited resources. Encourage dry land cultivation;
- Support different sizes of agricultural entities. (Support both creation of extensive agricultural farms and smaller farm units);

- Promote the delineation of intensive and extensive agricultural land as agriculture is the biggest
 GDP and employment contributor and an important economic, environmental and cultural resource;
- Subdivision of agricultural land for creation of smaller economic-production entities should be guided by current policies of the Department of Agriculture;
- Distinguish between "small farm units" of various sizes and rural living smallholdings;
- Support cultivation and conservation e.g., Biodiversity and Wine Initiative;
- Promote the cultivation and rearing of new agricultural related and complimentary produce e.g. aqua culture farming.

Develop:

- Increased production to participate in value chain;
- Support the development of an Intensive Rural Development (production and agri-industry) Triangle along the R44 between Voorberg Prison (Blikhuis, Porterville), Saron (Gouda) and the Berg and Vieren-Twintig Rivers confluence and corridors along the R366 between Piketberg and Eendekuil along the foot of Piket Mountains as well as along the upper-Verlorenvlei (along the R365);
- Provide for skills development facilities of agricultural workers to develop skills in agriculture, tourism and niche products;
- Support and provide for nodal development in agricultural areas along prominent transport connectors (dual carriageways, regional links) and intersections;
- Maintain the implemented SmartAgri plan by the Western Cape Government focusing on sustainable practices and includes projects related to conservation agriculture, ecological infrastructure restoration, integrated catchment management, energy efficiency, climate-proofing agri-processing, and knowledge systems for climate-smart agricultural extension.

An Environmental Management Framework for soils as economic aid zones is outlined below:

Management priorities: Natural Economic Zones

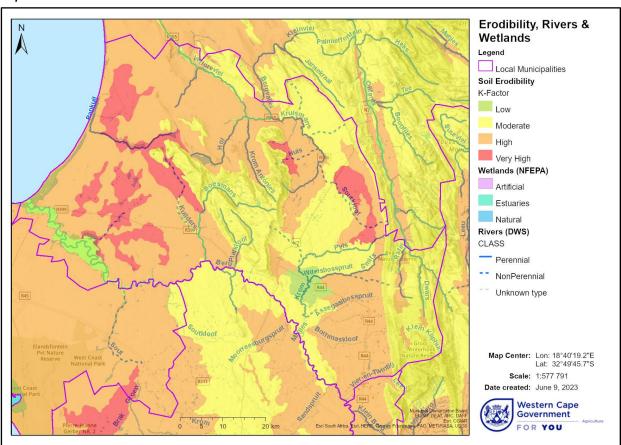
Management Priority	Priority Focus Area		
Improvement and rehabilitation.	High potential agricultural land.		
Conservation and preservation.	High potential agricultural land.		
Environmental Impact Assessment	All infrastructure requiring environmental approval as prescribed in the		
Requirements.	Environmental Impact Assessment Regulations.		
Monitoring and management	All Environmental Approvals' implementation is regulated by an approved		
aspects.	Environmental Management Plan that regulates management and		
	monitoring aspects.		

6.2.2.2 Natural Disaster: Climate change, Produce and farming practice changes

Crop production and animal rearing decrease and ultimately cease. Climate change contributes to prohibit agricultural cultivation and rearing of stock causing traditional crops and production activities to be replaced.

Climate change can enhance soil erodibility. Soil erodibility is more prevalent on the western side of the Bergrivier municipal area than in the east. Erodibility is particularly prevalent along the Papkuil and Kuilders rivers and the plain between these two rivers in the north and the Berg River in the south. And along the eastern side of northern foot of the Piketberg mountain around the Huis River and along the Soutkloof River near the Olifantsrivier Mountains.

Map 34: Soil Erosion and rivers



Though the region's Mediterranean climate provides favourable conditions for agricultural production, the challenges the sector faces, and related to climate variation are:

- Climatic variation and market dynamics in the dominant grain production area between Piketberg and Porterville;
- Water availability and limited land at the small-scale intensive irrigation enterprises at Porterville Mountain, Piket-bo-Berg, and the farms along the Berg River;
- Veld sensitivity, groundwater sustainability, and the risks associated with dry-land cultivation, potato
 production, mixed farming including large-scale irrigation enterprises, in the Aurora coastal belt (strip
 farming), the Kliphoek/fontein-Driefontein-Redelinghuis area (centre-pivot potato production, and
 along the Berg River).

Protect:

 Mitigate and manage climate change within rural areas: Refer to Western Cape Agricultural Sector Climate Change Framework and Implementation Plan (SmartAgri), Western Cape Department of Agriculture.

Change:

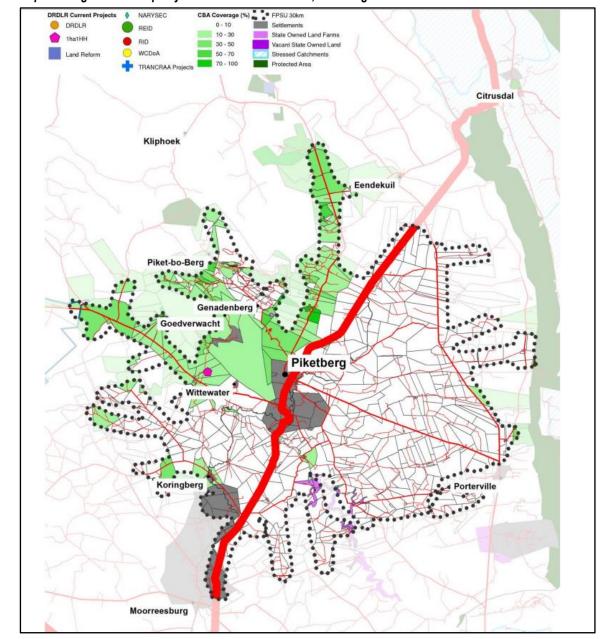
- Effectively manage erosion (water and wind) using conservation agriculture methods, planting of perennial legumes and management of contour lines;
- Maintain fire breaks around farms.

Develop:

Implement Smart-Agri and support continued research into climate change on current crop production
 & sustainable cultivation.

6.2.2.3 Opportunities: Agri-industries and Processing, Land Reform and Agri-tourism

Agri-industrial activities are all related to farming activities in the Bergrivier Municipality.



Map 35: Bergrivier Municipality Farmers Production Unit, Piketberg

Management directives for soil and land resources value chain activities (natural economic zone), include:

Agri-Industries and Processing:

Protect:

Food production value chain and highly productive agricultural land.

Change:

- Provide for and promote agricultural and agricultural related industries: agri-processing (potato processing, wineries, citrus processing, grape and fruit processing), composting, alternative energy generation, communication network facilities;
- Provide for support services to agricultural activities (e.g. repairs);
- Provide for agricultural industries to enhance job opportunities;
- Support alternative transport i.e. rail for mining stock to limit impact on roads and improve economic viability of the railway network: Cape Town over Graafwater to Bitterfontein.

Develop:

- Promote the poduction of niche products on-site (value adding) on the farm: processing new agricultural related and complimentary products and promote their production on farms e.g. bio fuel;
- Encourage labour intensive processing and manufacturing (for small scale agriculture);
- Provide for initiation of commercial activities in which agricultural/ farm workers are involved (e.g. farm stalls and local markets – promote farmers and/or agricultural/ farm workers market);
- Pomote a brand for produce in the Bergrivier municipal area;
- Enhance opportunities to establish new markets at local, regional, provincial and national level;
- Promote growing products and markets of agricultural produce (cultivation of various fruit, citrus, potatoes, rooibos tea and flowers) and by-products. (Current products and current markets i.e., labelling, niche products, bio fuel, develop agricultural service industries, strengthening supply chains, job creation);
- Promote growing and diversifying agricultural sector combining cultivation (citrus, rooibos and potatoes and flower) and conservation area creating new products and new markets i.e., natural resources alternative energy (bio fuel, electricity from wind, sun, water and hydrogen), tourism and conservation (Mediterranean climate and unique landscape features and markets and niche products);
- Support development of commercial infrastructure on farms along routes, including farm stalls and agri-processing, to support transport network and tourism routes;
- Promote the delineation of areas to establish agricultural and Agri-industrial infrastructure outside settlements or in smaller settlements, along the R366 (between Piketberg and Eendekuil) and between the Assegaaibosspruit and Vier-en-twintig River and in other areas where intensive cultivation takes place. Whilst security of tenure for infrastructure have to be ensured, visual impact has to be managed;
- Provide for manufacturing and maintenance of watercraft;
- Upgrade of the Laaiplek Harbour.

Land Reform:

Protect:

Protect the food production value chain.

Change:

 Promote innovative land reform models and allow for various size small farm units and rural living smallholdings.

Develop:

- Settle new and upcoming farmers (small and commercial);
- Support existing land reform projects and identify opportunities for land reform on intensive irrigation areas;
- Create a small-scale agricultural forum for informal farming areas to deliberate development issues and establish development parameters;
- Prepare Piketberg and surrounding area as a potential future Agricultural Farmer Production Support Unit (FPSU) in support of the proposed Vredendal Agri Hub (as per as part of the West Coast District Rural Development Plan);
- Promote innovative land reform models with access to land and water (and Update Land Reform Implementation map);
- Identify suitable land in government and Municipal ownership;
- Promote participation in agriculture for example stream aqua culture along Berg, Oliphants and upper-Verlorenvlei Rivers, in Porterville dam and Farm dams.

Agri-Toursim:

Protect

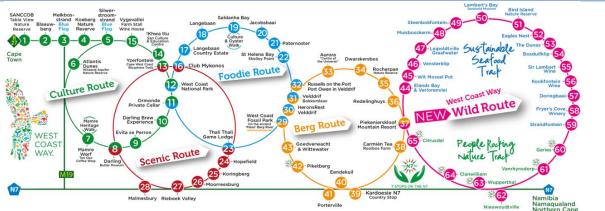
Protect the agricultural landscape as a resource and retain and conserve the rural character.

Change:

- Support crop cultivation and agricultural production creating agricultural landscapes that become tourism attractions;
- Increase the variety of agriculturally related land uses including tourism;
- Support cultivation route in Bergrivier Municipality (wheat, fruit and potatoes) and the development of related infrastructure, facilities and accommodation).

Develop:

- Strengthen value chain and support tourism development on farms;
- Capitalise on the mild Mediterranean climate: October April: Hot dry summers (30°C); May August: Mild wet winters (20°C);
- Provide for Agri-tourism opportunities on Farms especially along the Berg, upper Verlorenvlei,
 Olifants, Papkuils and Platkloof rivers and in the surrounding mountains ranges such as the Olifants (Winterhoek) and Platkloof (Goedverwacht);
- Support tourism related activities on farms and along waterways and water sources such as the Berg, Platkloof at Goedverwacht, and upper-Verlorenvlei, Vier-en-Twintig Rivers, Papkuils (Rocherpan) and the Oliphants Rivers, comprising of farm stays, leisure accommodation and resort development, agri-processing, tastings, restaurants, farm stalls, wineries and private nature reserves:
- Strengthen and promote tourism routes and destinations within the West Coast District Municipal jurisdiction, incorporating the areas of Swartland, Cederberg, Matzikama and Saldanha By.
 - The West Coast Way "Berg Route" which starts in Velddrif and follows a course through Laaiplek, Port Owen, Dwarskersbos, Rocherpan Nature Reserve, Elands Bay, Aurora, Redelinghuis and Verlorenvlei, the Piekenierskloof Mountain Resort, Citrusdal, Eendekuil, Porterville, Piketberg, Wittewater and Goedverwacht – covering an area that stretches from the Berg River to the start of the Cederberg Mountains.



- Promote the development of new tourism routes and destinations:
 - Sport and Art on the wheat fields along the R44 from Plketberg to Porterville to Saron (Gouda in the south) and from Porterville to N7 (unknown road);
 - Conservation Route R366, from Piketberg along upper-Verlorenvlei to Redelinghuis and and from Velddrif over Draaihoek to Verlorenvlei (on route to Elands Bay);
 - Intensive agricultural cultivation route around Piket Boberg and around Winterhoek Wilderness Mountains:
 - Outdoor Sport and Recreation routes including hiking and mountain biking, bird watching, wild flower viewing, horse trails, fishing and water sport in and around the Piketberg Mountain Conservation Corridor, Berg River Corridor and the Coastal Corridor;
 - Cultural Heritage Route is one such a route amongst villages of Aurora, Redelinghuis, Wittewater, Goedverwacht and Piketberg.

- Support the development and establishment of:
 - o Farm stalls and involve more people in the tourism industry;
 - Recreational routes and accommodation facilities;
 - Agri-tourism (harvesting and cooking);
 - Grow Bergrivier Municipality as part of the bigger West Coast region: Birdlife, Biomes, agricultural landscape, small stock farming, fishing and limited wine production;
 - o Strengthen and promote events and festivals to build the agricultural brand:
 - Arts Festival in Porterville:
 - Snoek and Patat festival in Goedverwacht;
 - Farmers markets at Porterville and Piket Boberg;
 - Porterville Agricultural Show.
- Provide for and support land uses to promote tourist facilities and farm stalls and agri-storage;
- Redevelop the railway stations at Porterville, Piketberg and Eendekuil and siding infrastructure including grain silos and water storagefacilities: Sidings on the Piketberg line: Moravia, DeHoek, Piketberg, Burgers, Pools, Droëryskloof, Het Kruis and Sidings on the Porterville line: Halfmanshof, Blikhuis and Kleindrif;
- Promote the establishment of tourism and freight supportive infrastructure and/ or nodes at intersections and along R399 (between Piketberg and Velddrif) and R44 (Piketberg, Porterville and Saron (Gouda), Drakenstein Municipality);
- Attract more retirees and working people (for whom remote working is an option due to improved technology and connectivity) who want to live in a more tranquil rural environment to settle in Bergrivier municipal area (improved rates and taxes).

6.2.2.4 Risks: Food Security and Agricultural Landscape Deterioration

Extensive research is underway by the relevant department and only the impact of securing food production will be dealt with in the MSDF.

Management directives for soil and land resources include:

Protect:

- Promote food security and:
 - Protect agricultural landscapes and food production;
 - Protect water sources and quality.
- Encourage food gardens, community gardens and small-scale agriculture;
- Conserve and protect agricultural resources:
 - Ensure no cultivation of virgin land takes place without the written consent of the Minister of Agriculture;
 - Ensure no land with a slope of more than 20% will be cultivated without written consent of the Minister of Agriculture;
 - o Ensure cultivated land is effectively protected against water and wind erosion;
 - Avoid use of vegetation in a marsh or a water sponge or in a floodplain;
 - Reserve productive agricultural land for agricultural purposes;
 - Preserve the agricultural character of the Bergrivier municipal area particularly along the Berg and upper Verlorenvlei Rivers.

Change:

- Promote locally produced agricultural products (in mass or small scale) to be produce of preference;
- Foster innovative food production and diversification;
- Promote the revitalisation of the rural economy to address poverty and improve access to local economy;
- Promote the maintenance of existing and related fishing infrastructure to keep sense of place;

- Promote aqua culture in Berg, Oliphants and Verlorevlei River or other rivers;
- Promote the Sandveld Environmental Management Framework (EMF) addressing the cumulative impact on ecological degradation and biodiversity loss.

Develop:

- Identify areas with low, medium and high potential agricultural soil close to urban development.
- Promote agricultural units of different sizes providing for intensive cultivation, alternative farming, small holdings and extensive residential holdings.
- Strengthen associations to promote community participation in local development issues and to determine land use-/ zoning guidelines.
- An Intensive Rural Development (production and agri-industry) Triangle along the R44 between Voorberg Prison (Blikhuis, Porterville), Saron (Gouda) and the Berg and Vier-en-Twintig Rivers confluence and corridors along the R366 between Piketberg and Eendekuil along the foot of Piket Mountains as well as along the upper-Verlorenvlei (along the R365).
- Identify potential areas within urban areas to be utilised for community gardens.
- Re-orientate existing agricultural model to allow for the creation of smaller agricultural units in rural areas.

Management directives for ocean resources include:

Protect:

• Protect natural landscapes, delineate development lines around mountains and koppies and in marshes or a water sponge or in a floodplain.

Change:

- Support licenced net fishing at Estuary Mouth and in Atlantic Ocean and white mussel harvesting between Draaihoek and Dwarkersbos;
- Upgrade harbour precinct and Carinus bridge precinct at Velddirf and enhance maintenance of existing permanent and less permanent fishing infrastructure to keep sense of place;
- Prepare for coastal erosion particularly at Velddrif and Dwarskersbos;
- Support production opportunities that underpin the Doringbaai, Lamberts Bay and Elands Bay Aqua FPSUs and the proposed Doringbaai Aqua-Hub:
 - o Line fish (snoek, etc) given an optimistic outlook for such fisheries;
 - Net fish, mainly being harders targeted by beach-seine fisheries as a supplementary income for commercial fishing boat crews or fish processing factory workers during the off-season;
 - White mussel, with harvesting areas within the FPSU catchment areas including the following coastal areas; Doring Bay to Lamberts Bay, Elands Bay to Kreefbaai, Draaihoek to Dwarskersbos;
 - Seaweed harvesting including Beach-cast kelps (for plant growth stimulants), Gracilaria (for agar), fresh harvested kelps (macroalgae feed);
 - Marine species including octopus, red-bait and swimming crabs.

Develop:

Support sustainable harvesting opportunities of the seafood value chain.

Management directives for agricultural zones include:

Netting, tunnels and agricultural industry and public utilities.

Netting, tunnels and agricultural industry:

The erection and location of poly tunnels and agricultural shade netting or/ and the establishment of an agricultural industry on a farm of 2000 m² and more in extent should address concerns of adverse impacts on visual, cultural and heritage amenities and the Municipality may require repositioning, screening and any other measures which may address negative adverse impacts whilst taking cognisance of the importance of agriculture and food security.

The decommissioning of poly tunnels and agricultural shade netting is required. The conversion of Agri-industrial buildings for a different purpose instead of demolishing of such infrastructure instead of demolishing should address again concerns of adverse impacts on intensity of surrounding use (traffic, movement, noise) character (sense of place) and cultural and heritage amenities.

An adverse impact on surrounding properties, in respect of, but not limited to, noise, traffic congestion, pollution, emissions or the gathering of large numbers of people, or the presence of people hindering agriculture e.g., during spraying season, nor may the tourist activities have an adverse impact on any *bona fide* agricultural activities on the farm itself or on neighbouring properties.

Fences

Fences comprising of only wire or steel palisade (painted charcoal, black or dark green), not exceeding 2,1m are allowed. No masonry wall exceeding 1 meter and no brick piers shall be permitted in wire or steel palisade fences and only the entrance gate structure maybe of solid brick structures in moderation.

Public Utilities:

- Promote communication corridors and zones, improved communication networks and promote access to information & technology including access to internet prioritizing rural areas.
- Support the establishment and sensitive location of communication network facilities/ data centres / telecommunication towers in rural areas and on farms.
- Provide for adequate bulk infrastructure and the location thereof according the change directives above.
- Encourage keeping and maintaining water trucks on farms and conservation areas for fire-fighting.

Environmental Impact Management directives for soil and land resources outlined below:

Environment/	Types of dev	Related environmental		
Space	That should not occur	That may have significant impact	That have no significant impact	management policies and guidelines
High potential unique agricultural land	Any development that will not exploit the high agricultural potential and value.	Any development that will not exploit the high agricultural potential of the area.	Any development that will exploit the high agricultural potential of the land.	All guidelines, policies and legislation applicable to the Agricultural Industry.
Agricultural land of significant value	Any development that will not utilize the significant potential and value of the land.	Any development that will not exploit the significant potential of the land.	Any development that will exploit the significant potential of the land.	
Other Agricultural Areas	Uncontrolled development.	Uncontrolled development.	Controlled development.	
Smallholdings and agricultural uses	Non-agricultural oriented activities.	Non-agricultural oriented activities.	Managed agricultural oriented developments.	
Priority Mineral Resource Areas	No development that is in contradiction with mining the mineral resource.	Worker's housing.	Mine oriented infrastructure.	
Infrastructure servitudes	Any development that conflicts with the inherent right as contained in a servitude.	Any development that conflicts with the inherent right as contained in servitude.	Any development that does not conflict with the inherent right as contained in servitude.	Environmental Impact Assessment and Guidelines. WCPSDF. All legislation with an environmental aspect and corresponding regulations, policies and guidelines.

6.2.2.5 Proposals

Agriculture:

- Delineate and protect intensive and extensive agricultural productive land to secure food production.
 Preserve the agricultural character of the Bergrivier municipal area particularly along the Berg and upper Verlorenvlei River;
- Support the development of an Intensive Rural Development Triangle along the R44 between Voorberg Prison (Porterville), Saron (Gouda) and the Berg and Vier-en-Twintig Rivers confluence and corridors along the R366 between Piketberg and Eendekuil along the foot of Piket Mountains as well as along the upper-Verlorenvlei (along the R365);
- Promote the poduction of niche products on-farm (value adding) and investigate the production of new agricultural related and complimentary products e.g.stream aqua culture along the Olifants, upper Verlorenvlei and Berg Rivers, Porterville dam and in farm dams;
- Promote and provide for tourism related activities on farms and along waterways and water sources (such as the Berg, Platkloof at Goedverwacht, and upper-Verlorenvlei, Vier-en-Twintig Rivers, Papkuils (Rocherpan) and the Oliphants Rivers) e.g., Farm stays, leisure accommodation and resort development, Agri-processing, tastings, restaurants, farm stalls, wineries and private nature reserves;
- Promoting the protection of homogeneous farming areas connecting cultivation across municipal borders including rooibos tea cultivation (towards Piekenierkloof, Cederberg Municipality), small grain (south, Swartland Municipality), conservation and mixed agriculture towards the south west (Bergrivier Municipality) and Pome fruit and Berries on Winterhoek mountains (Witzenberg Municipality), potatoes towards the coast, along the Berg and upper Verlorenvlei Rivers and vineyards and mixed farming along the foothills of the Piketberg Mountains;
- Protect intensive and extensive agricultural land to secure food production.

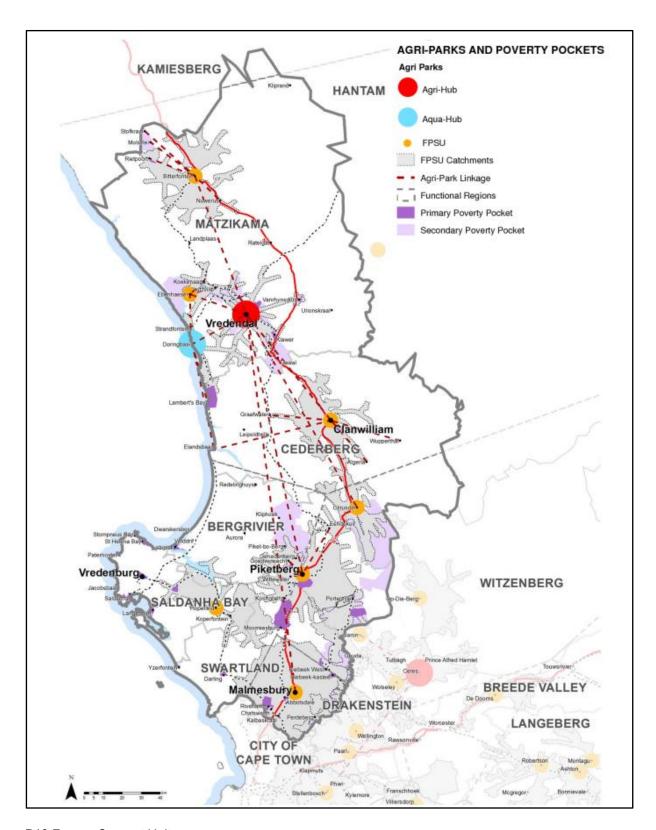
Fisheries (and ocean):

- Support licenced net fishing at Estuary Mouth and in Atlantic Ocean and white mussel harvesting between Draaihoek and Dwarkersbos;
- Upgrade harbour precinct and Carinus bridge precinct at Velddirf and enhance maintenance of existing permanent and less permanent fishing infrastructure to keep sense of place;
- No advertisements, signage, inscriptions, neon and flashing lighting allowed along the river and sea
 frontage of the settlement footprint and a short section of the southern entrance road north of Carinus
 bridge up to first intersection. Nameboards equal in size of a numberplate are allowed on buildings
 along the waterfront.
- Protect natural landscapes, delineate development lines around mountains and koppies and in marshes or a water sponge or in a floodplain;
- Prepare for coastal erosion particularly at Velddrif and Dwarskersbos;
- Support production opportunities that underpin the Doringbaai, Lamberts Bay and Elands Bay Aqua
 FPSUs and the proposed Doringbaai Aqua-Hub:
 - Line fish (snoek, etc) given an optimistic outlook for such fisheries;

- Net fish, mainly being harders targeted by beach-seine fisheries as a supplementary income for commercial fishing boat crews or fish processing factory workers during the off-season;
- White mussel, with harvesting areas within the FPSU catchment areas including the following coastal areas; Doring Bay to Lamberts Bay, Elands Bay to Kreefbaai, Draaihoek to Dwarskersbos;
- Seaweed harvesting including Beach-cast kelps (for plant growth stimulants), Gracilaria (for agar), fresh harvested kelps (macroalgae feed);
- Marine species including octopus, red-bait and swimming crabs.

Agri-tourism:

- Provide for Agri-tourism opportunities on farms especially along the Berg, upper-Verlorenvlei,
 Papkuils and Platkloof Rivers in the surrounding mountains ranges such as the Olifants (Winterhoek) and Platkloof (Goedverwacht);
- Along exsiting routes and destinations within the West Coast District Municipal jurisdiction, incorporating the areas of Swartland, Cederberg, Matzikama and Bergrivier Municipalities.
 - The West Coast Way "Berg Route" which starts in Velddrif and follows a course through Laaiplek, Port Owen, Dwarskersbos, Rocherpan Nature Reserve, Elands Bay, Aurora, Redelinghuis and Verlorenvlei, the Piekenierskloof Mountain Resort, Citrusdal, Eendekuil, Porterville, Piketberg, Wittewater and Goedverwacht – covering an area that stretches from the Berg River to the start of the Cederberg Mountains.
- And establish new tourism routes and destinations combined with art, sport and food:
 - Sport and Art on the wheat fields along the R44 from Piketberg to Porterville to Saron (Gouda in the south) and from Porterville to N7 (unknown road);
 - Conservation Route R366, from Piketberg along upper-Verlorenvlei to Redelinghuis and and from Velddrif over Draaihoek (on route to Elands Bay);
 - Intensive agricultural cultivation route around Piket Boberg and around Winterhoek Wilderness Mountains:
 - Outdoor Sport and Recreation routes including hiking and mountain biking, bird watching, wild flower viewing, horse trails, fishing and water sport in and around the Piketberg Mountain Conservation Corridor, Berg River Corridor and the Coastal Corridor;
 - Cultural Heritage Route is one such a route amongst villages of Aurora, Redelinghuis, Wittewater, Goedverwacht and Piketberg.
- Redevelop the railway stations at Porterville, Piketberg and Eendekuil and siding infrastructure including grain silos and water storage facilities: Sidings on the Piketberg line: Moravia, DeHoek, Piketberg, Burgers, Pools, Droëryskloof, Het Kruis and Sidings on the Porterville line: Halfmanshof, Blikhuis and Kleindrif;
- Promote tourism and freight nodes at intersections and along R399 (between Piketberg and Velddrif) and R44 (Piketberg, Porterville and Saron (Gouda), Drakenstein Municipality);
- Attract more retirees and working people (for whom remote working is an option due to improved technology and connectivity) who want to live in a more tranquil rural environment to settle in Bergrivier municipal area (improved rates and taxes).



P10 Farmer Support Units

6.2.3 Mineral Resources

6.2.3.1 Natural Resource: Minerals

Lime, salt, sand and Tungstan are the main mineral resources in Bergrivier Municipality and are presented as limestone, slaked lime, shell deposits, salt pans, tungsten, molybdenum, lignite, sand, industrial sand, and more. These minerals and resources are extracted for various purposes such as cement manufacturing, construction, and industrial applications. Operational and non-operational mines include:

- 1. De Hoek Mine and PPC Cement Manufacturing Plant where limestone and slaked lime deposits are mined. The limestone is supplied to the PPC cement manufacturing plant.
- 2. Dwarskersbos Shell Deposits, located inland of Dwarskersbos, has shell deposits used in lime production.
- 3. Small Borrow Pits/Quarries overall where sand, gravel, and aggregate are mined to be used in construction and maintenance projects, such as gravel roads.
- 4. Salt Production at inland pans along the coast north of Laaiplek and Dwarskersbos, as well as the west bank of the Berg River at Velddrif.
- 5. Sand Mining in the Sandveld as alluvial and aeolian sand deposits, commonly used for construction purposes, are located here.
- 6. Industrial Sand (hill-wash sand), previously mined approximately 11km northwest of Piketberg, was used as an additive to cement clinkers and in the manufacturing of tile cement. This resource has been replaced with silica slag from Saldanha Steel as a flux in cement manufacturing.

The extraction and processing of these minerals require careful environmental management and adherence to regulatory standards to minimize negative impacts on the environment, resources and surrounding communities. It is recommended that careful consideration should be given to land uses that have the potential to impact directly, cumulatively or indirectly or in the long term, on the existing aesthetic value, conservation value and status, tourism and agricultural industry and intensive agricultural land uses. Further consideration should be given to what **extent linkages between the mining**, manufacturing and transport sectors are enhanced. Cost benefit analysis of the aforementioned should be determined.

In the case of sand mines, consider mining by taking into account the socio-economic impact, the sustainability of the operations and environmental impact, the quality and type of sand, the financial viability, environmental justification and rehabilitation of the mine. The best quality sand, and most generally used in the building industry, is hill wash and colluvial sand. Hill wash and colluvial sand has been moved downslope under the influence of gravity and by surface wash. These processes occur during major storms which cause saturation of the soil followed by surface runoff.

6.2.3.2 Natural Disaster: Earth Quakes and Floods

Unlikely impact on mining in Bergrivier municipal area.

6.2.3.3 Opportunities: Mining related Industry

Opportunities include related industry development and growth and employment creation.

6.2.3.4 Risks: Dust, Colouration and Visual Impact

Risks in the mining industry include:

- Generation of dust that cause colouration of the landscape.
- High visual impact (short and longterm) on the landscape and resources of conservation worthy status.
- Contamination of water sources.
- No compliance to rehabilitate.

Management directives for exploration and mining mineral resources include:

Protect:

- Protect sensitive environments (visual, agricultural resources, natural, cultural). Give careful
 consideration to mining applications, and the potential to impact directly, cumulatively or indirectly or in
 the long term, on aesthetic and visual, tourism and agriculture value and avoid landscape character
 and ecological deterioration:
 - Proof viability (financial and quality and quantity of the resource] of mineral and geological sources has to be weighed up against losses (environmental and ecological degradation, aesthetic and landscape character value, tourism, conservation value and status, agricultural (fruit and citrus orchards, potato and rooibos tea fields) value and status;
 - Analyse cost benefit valued at local, national and international level should guide decisions and generate guidelines for sensitive areas;
 - Require compliance to sustainable environmental norms (minimizing economic, environmental and social impacts);
 - Prevent high visual impact and cummulative impacts on scenic landscapes;
 - Require rehabilitation and repurposing.
- Prohibit mining that conflicts with conservation of resources of international importance;
- Avoid contamination of water sources (in a water scarce municipal area having a long-term impact on the landscape character).

Change:

- Caution mining activities which are not viable (all types but sand mining specifically) and/or are conflicting with and counterproductive to the character and value of the area in wards 1 and 5 and partially wards 2 and 3 excluding a buffer of ±5km from the Berg River;
- Caution and mitigate generation of dust that causes colouration of the landscape;
- Ensure mines provide for adequate storage and mitigation of overburden to limit potential impact of mine dumps (heaps) on rural landscape;
- Persue and ensure continuous rehabilitation and or repurpose of exploration activities or mines during and after operations as per EMPr;
- Persue rehabilitation or repurpose of ceased mines and provide land use directives in the absence of an EMPr;
- Support land use changes required for mining viable natural resources, applying sustainability norms, aligned to environmental norms, mitigating impacts, effective rehabilitation and using alternative transportation;
- Require and allow operational long lifespan mines (e.g. PPC at De Hoek) to provide opportunities for growing mining related industries, mineral beneficiation and mining sector support services (creating employment being labour intensive);

 Develop guidelines and detailed Area Plans for landscapes and uses and sensitive areas to prohibit mining working against tourism. Mitigate existing impacts and manage effective rehabilitation and alternative transportation of mined resources.

Environmental Impact Management directives for mineral zones are outlined below:

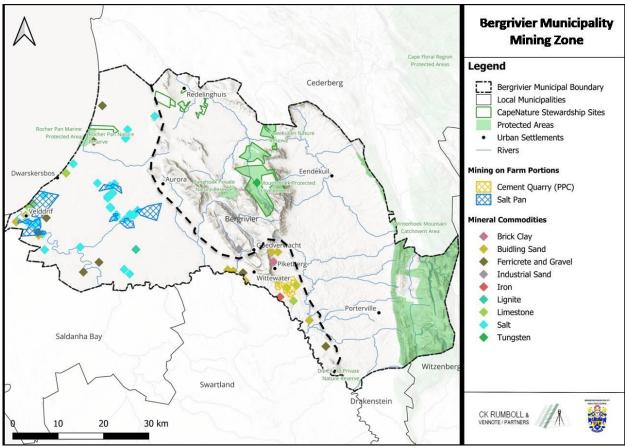
Environment/	Types of de	Related policies and		
Space	That should not occur	That may have significant impact	That have no significant impact	guidelines
Priority Mineral Resource Areas	No development that is in contradiction with mining the mineral resource.	Workers' housing.	Mine related infrastructure.	All guidelines, policies and legislation applicable to the Agriculture and Mineral Industry.

6.2.3.5 Proposals

- Protect sensitive environments (visual, agricultural resources, natural, cultural). Give careful
 consideration to mining applications, and the potential to impact directly, cumulatively or indirectly or
 in the long term, on aesthetic and visual, tourism and agriculture value and avoid landscape
 character and ecological deterioration:
 - Proof viability (financial and quality and quantity of the resource] of mineral and geological sources has to be weighed up against losses (environmental and ecological degradation, aesthetic and landscape character value, tourism, conservation value and status, agricultural (fruit and citrus orchards, potato and rooibos tea fields) value and status.
 - Analyse cost benefit valued at local, national and international level should guide decisions and generate guidelines for sensitive areas.
 - Require compliance to sustainable environmental norms (minimizing economic, environmental and social impacts).
 - Prevent high visual impact and cumulative impacts on scenic landscapes.
 - Require rehabilitation and repurposing.
- Prohibit mining that conflict with conservation of resources of international importance.
- Avoid contamination of water sources (in a water scarce municipal area having a longterm impact on the landscape character).
- Caution mining activities which are not viable (all types but sand mining specifically) and/or are counterproductive to the character and value of the area in wards 1 and 5 and partially wards 2 and 3 excluding a buffer of ±5km from the Berg River.
- Persue rehabilitation or repurpose of ceased mines and provide land use directives in the absence of an EMPr.
- Require and allow operational long lifespan mines (e.g. PPC at De Hoek) to provide opportunities
 for growing mining related industries, mineral beneficiation and mining sector support services
 (creating employment being labour intensive).

 Develop guidelines and detailed Area Plans for landscapes and uses and sensitive areas to prohibit mining working against tourism. Mitigate existing impacts and manage effective rehabilitation and alternative transportation of mined resources.

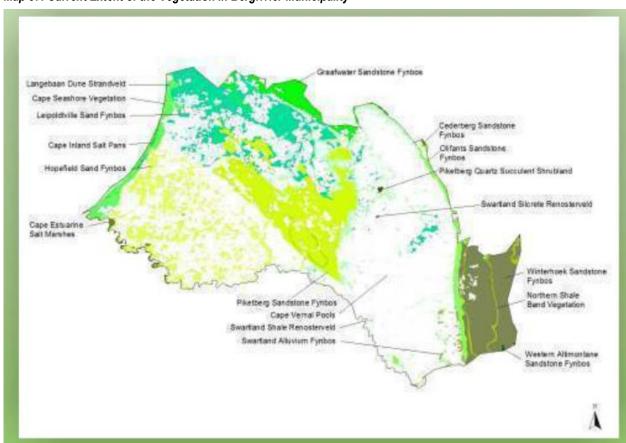
Map 36: Proposed Mining Zone, Bergrivier Municipality



6.2.4 Vegetation, Fauna, Ecosystems

6.2.4.1 Natural Resource: Natural Environment: critical and common fauna and flora and landscapes Vegetation:

Bergrivier Municipality is located within one of the richest biodiversity areas of South Africa and forms part of the Cape Floral Region biome and Include Mashes, Salt Pans, Freshwater Wetlands, Seashore Vegetations, Vernal Pools, Standstone Fynbos, Quartzite Fynbos, Sand, Dune Strandveld, Flats Strandveld, Shale band vegetation, Renosterveld as per the table below: Sensitive habitats include Berg River Estuary, Upper-Verlorenvlei, Upper Oliphants and the Winterhoek Wilderness Area.



Map 37: Current Extent of the Vegetation in Bergrivier Municipality

Bergrivier Vegetation Types

| Condemporary | Conde

Map 38: Bergrivier Municipality Vegetation Types

The following vegetation is under threat and requires conservation to maintain biodiversity and ecological functions:

- Endemic or specialized species, unique to the area or adapted to specific local conditions, vulnerable to habitat loss, climate change, and other threats:
 - Fynbos vegetation has high ecological importance and is vulnerable to habitat loss to invasive species;
 - Renosterveld is threatened due to agricultural expansion and urban development;
 - Coastal shrubs (coastal seashore and dune Strandveld), such as the coastal sagebrush and beach grasses, stabilize dunes and provide habitat for specialized plant and animal species, transformed by settlement making;
 - Estuarine, wetland, and salt pan habitats, impacted by surrounding land use and water abstraction;
 - Mountain ecosystems, least transformed (9%) by settlement making and agriculture;
 - Woodland areas or forest remnants provide habitats for a range of wildlife and contribute to soil conservation, water regulation, and carbon sequestration;
 - Grasslands are important for livestock farming and have been converted to agricultural or urban land uses.

Biodiversity:

A wide array of animal species (including mammals, birds, reptiles, amphibians, insects, and invertebrates rely on the diverse vegetation (as described above) for various purposes, such as food, shelter, and breeding grounds, contributing to the overall biodiversity of the region.

The biodiversity provides essential ecosystem services that benefit human well-being. These services include air and water purification, pollination, soil fertility, climate regulation, and the provision of food and raw materials. Conserving and protecting biodiversity is crucial for maintaining these ecosystem services and ensuring the long-term sustainability of the region. Therefore, the following habitats are protected (See table and maps to follow) and need protection:

- Groot Winterhoek Wilderness Area: Located northeast of Porterville, the Groot Winterhoek
 Wilderness Area features indigenous forests with a variety of tree species, including yellowwoods,
 stinkwoods, and Cape Beech. This Mountain ecosystems also features Winterhoek Sandstone
 Fynbos.
- Rocherpan Nature Reserve: Located north of Dwarskersbos, Rocherpan Nature Reserve spans 930
 hectares and features a coastal wetland and a permanent saltwater pan.and surrounding reed beds.
 It is home to endangered Saldanha Flats Strandveld, Cape Seashore Vegetation and Cape Inland Salt
 Pans all creating a crucial birdlife habitat.
- 3. Other nature reserves include the **Danielshoogte** and **Banghoek Private Nature Reserves**.

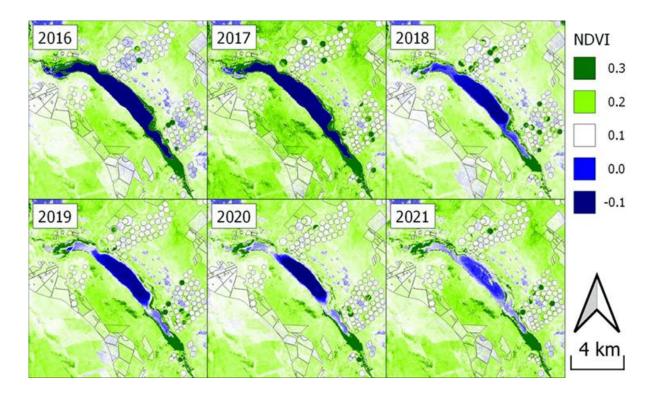
4. Verlorenvlei and Krom Antonies Aquifer (Verlorenvlei sub-catchment area). The 9 000-hectare

Moutonshoek Protected Environment (MPE) the 12 000-hectare and Verlorenvlei Conservancy brings together landowners around the Verlorenvlei estuary committed improving the environmental management of this critical site. The MPE comprises an area of integrated land-use, where agricultural production and biodiversity conservation coexist side by side. MPE protects the Krom Antonies River and its catchment, which acts as the main tributary of the Verlorenvlei wetland system.

The Verlorenvlei Estuary is listed as an Important Bird and Biodiversity Area (IBA), Key Biodiversity Area (KBA) and



a Ramsar site. The future of the Verlorenvlei Estuary and its biodiversity is dependent on the health of this upper water catchment. Low and negative Normalised Difference Vegetation Index (NDVI) values (approximately 0 and lower) are indicative of saturated wetland to open water areas, and are shown in shades of blue (darker blue can be interpreted as deeper water). Verlorenvlei water levels declined noticeably in 2018, despite the wetter than normal conditions in that year as reflected by the NDVI classification of Verlorenvlei and its immediate surrounds for the summer season from 2016-2021.



The Moutonshoek valley also provides a safe haven for a variety of species, including the endangered and endemic Diascia caitliniae flower and the endangered Verlorenvlei redfin fish (Pseudobarbus verloreni), both of which occur nowhere else in the world. The site is also important for the vulnerable Cape leopard (Panthera pardus) and threatened birds species such as the endangered blue crane (Anthropoides paradiseus), African marsh harrier (Circus ranivorus) and black harrier (Circus maurus). It forms part of the Sandveld Corridor within the Greater Cederberg Biodiversity Corridor, a landscape initiative designed to connect protected areas and ensure sound environmental management.

- 5. Portion 6 of Farm Dwarskersbos, No 109 situated in the Bergrivier Municipal area. Biodiversity Agreement between CapeNature and land owner Dwarkersbos Boerdery Trust (Mr Theunis Smit).
- 6. The Moutonshoek Protected Environment (MPE) is South Africa's newest privately protected area, Lying in the mountains of the Moutonshoek valley near Piketberg which is an important catchment for the Velorenvlei on the West Coast.
- Coastal seashore and dune Strandveld.
- 8. The lowlands towards the coast are designated as Critical Biodiversity Areas in the 2017 Western Cape Biodiversity Spatial Plan (WC BSP) as high levels of landscape transformation resulted in loss of most of the lowlands biodiversity.
- 9. Estuarine, wetland, and salt pan habitats: The Berg Estuary is recognized as an Important Bird Area and supports a diverse range of birds, fish, invertebrates, and unique estuarine vegetation. The estuary is ranked as the third-highest conservation importance in South Africa, and has been declared as a RAMSAR conservation site on 1 February 2022 under the Convention on Wetlands of International

Importance. This estuarine system is formed by the convergence of the Berg River with the Atlantic Ocean. Due to its ecological significance, the Groot Berg River Environmental Management Plan, 2021 (Cape Nature) aids protection of important estuary habitats and biota. Hence recreational activities (particularly boating) are controlled and formal conservation areas are proclaimed make use of a zonation plan. A zonation plan addresses numerous conflicting needs and divide the Berg River in zones. These zones along the Estuary are governed by: a) the By-law relating to the Berg River Estuary Usage Zones and – b) the Berg Rivier Estuary Boating Guide.

Map 39: Groot Berg Rivier Estuary Zonation Map

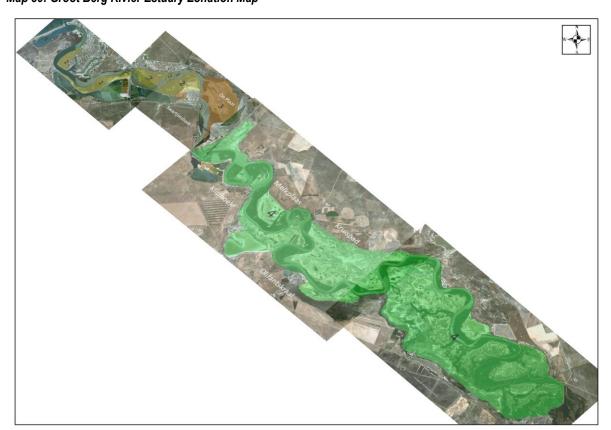
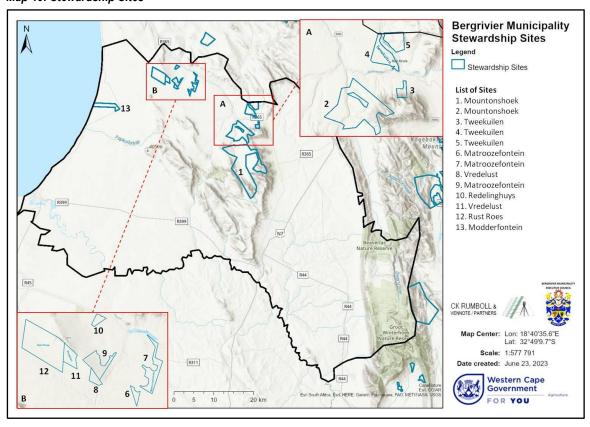


Table 12: Formal and Informal Conservation Areas

Authority	Conservation Area	Extent	Under management of
National	Rocherpan Marine Reserve	896ha	Department of Environmental Affairs and Tourism (DEAT)
Provincial	Rocherpan Nature Reserve	929ha	Cape Nature
	Groot Winterhoek: Wilderness: 19 200ha, Nature reserve, 11 408ha, Cape Floral Region World Heritage Sites, one eight (3 826ha).	30 608ha	Cape Nature
Private	Winterhoek Mountain Catchment Area	15 356	Cape Nature & Private
	Groot Winterhoek proposed conservancy		Cape Nature & Private
	Stalkrans Private Nature Reserve		Private
	Tweekuilen Contract Nature Reserve		Private
Redelinghuis Contract Nature Reserve		62	BRM & Cape Nature
	Rust Roes Contract Nature Reserve		Owner & Cape Nature
Vredelust Biodiversity Agreement		227	Owner & Cape Nature
	Gys se Kraal Nature Heritage Area	650ha	Private

Authority	Conservation Area	Extent	Under management of
	Lower Berg River Conservancy	31 354ha	Lower Berg River Conservation Trust
	Oliphant's River Mountain conservancies		
	Matroosfontein x3 Nature Reserve		Private
	Modderfontein Nature Reserve		Private
	Banghoek Nature Reserve		Private
	Danielshoogte Nature Reserve		Private
	Portion 6 of Farm Dwarskersbos No 109, Biodiversity Agreement		Private
	The Moutonshoek Protected Environment		Private

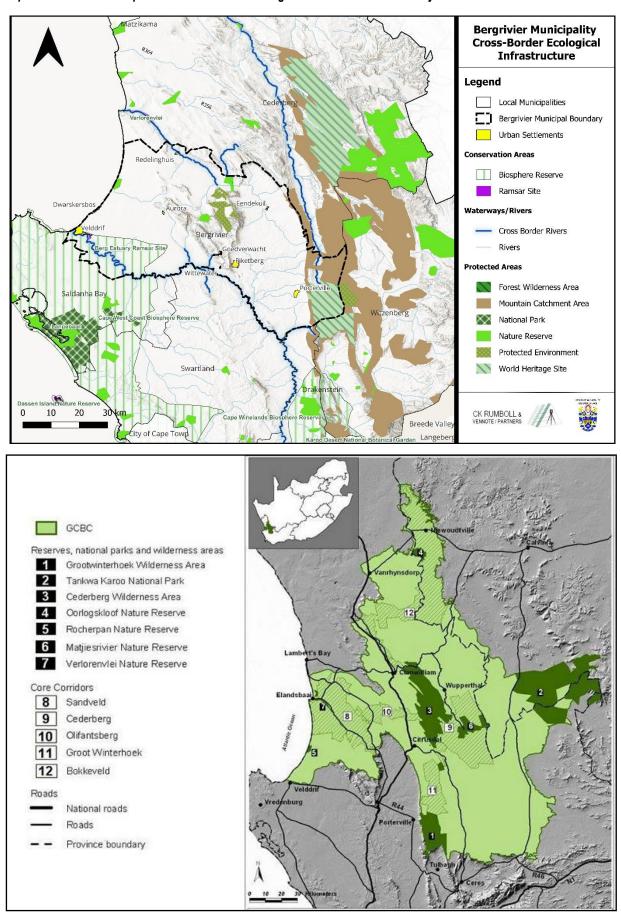
Map 40: Stewardship Sites



These nature reserves provide opportunities for conservation, outdoor recreation, and environmental education. They contribute to the preservation of natural habitats and species diversity, as well as providing spaces for people to connect with nature. Nature reserves prohibits and mitigate threats transforming habitats:

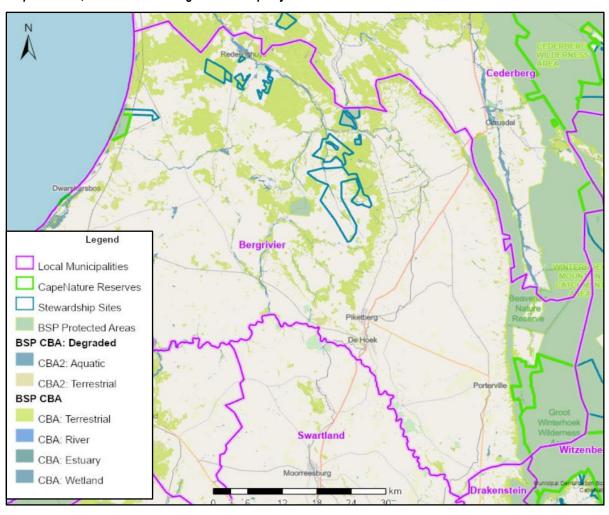
Other conservation initiative such as the Cederberg Conservation and Biodiversity Corridor and the West Coast Biosphere help to mitigate threats.

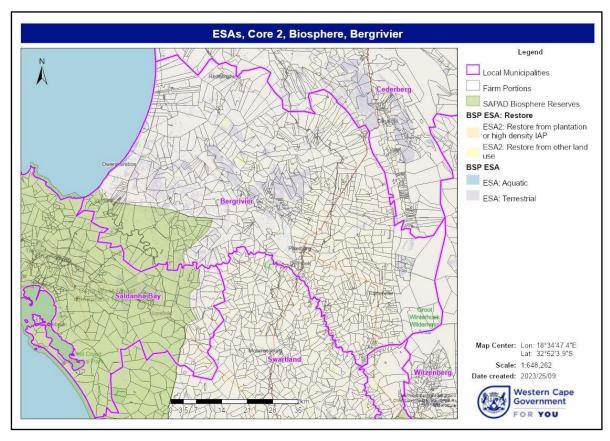
Map 41: West Coast Biosphere and Greater Cederberg Conservation & Biodiversity Corridor.



The spatial planning categories of the SDF is another tool to mitigate threats.

Map 42: CBAs, Core 1 SPC for Bergrivier Municipality.





Protect:

- Protect natural assets and resources as common heritage including biodiversity, topography, soils
 and water resources, geology, hydrology and promote beneficial use of natural resources serving the
 public interest;
- Preserve critical natural capital that provides for continuous income from ecosystem advantages such as biological diversity, mineral resources and clean air and water;
- Ensure that the joint capacity of the biophysical environment is not exceeded;
- Promote and support responsible stewardship of natural resources and:
 - o Avoid or minimize ecosystems disturbance and in case of disturbance, guarantee restoration.
 - Where environmental damage cannot be avoided, require mitigation.
 - o Caution where impacts are unknown and uncertain.
- Allow no development within a flood line;
- Adhere to setback lines in Velddrif and Dwarskersbos, development lines along the Piket-, Skurwe-, Groot-, Plat-, Driefontein- and Keurbos mountain cluster, Olifantsrivier mountains and buffers along all rivers and around wetlands, estuaries and waterbodies and around all cemeteries, waste sites and sewerage works;
- Target the inclusion of remnants of natural vegetation in front of setback lines, behind development lines and withing buffers along mountain feet and the coast to restore ecological services. Where such remnants occur outside these lines and buffers extend the conservation area;
- Ensure all Renosterveld threatened ecosystems and classified as Critically Biodiversity Areas (CBA's) and categorized as Core 1 & 2 areas, are delineated and protected;
- Promote application of spatial planning categories, to protect ecosystems and facilitate objective decision making in development applications:
 - Core Areas (Winterhoek Wilderness Area, Banghoek Nature Reserve, Rocherpan, Coastline, Berg River Estuary, all Public and Private Nature reserves);
 - Buffer Areas along mountain ranges: Olifantsrivier, Koue Bokkeveld Grootwinterhoek, Witsen and Piket including Skurwe-, Groot- and Plat-, Driefontein and Keurbos mountains);
 - Intensive Agricultural areas such as potato cultivation at Redelinghuis and Berg River, fruit and flowers at Piket Boberg, fruit, flowers and berries on the plato between Olifants-Winterhoek-Witzen mountains and along Vier-en-twintig riviere.
- Support the register of Nature Reserves, Private and State owned. Promote the official categorization of all Public and Private Nature Reserve as Core 1 and 2 areas;
- Protect mature eucalyptus trees either as single mature trees or clusters of trees and woodlots;
- Pursue the management of conservation areas in accordance with national norms and standards;
- Development (mining, cultivation or business activities) have to comply with National Environmental Management Act regulations.

Change:

- Delineate setback and development lines and buffers where required;
- Establish open space networks along rivers;
- Pursue threatened fauna and flora species targets;
- Regularly clear alien vegetation;
- Limit internal fences to create natural corridors and areas;
- Minimise waste and mitigate environmental damage in the food production chain;
- Promote the establishment of wild flower and nature reserves.

Develop:

- Promote the establishment of cross border initiatives such as the Cederberg Conservancy, Greater Cederberg Biodiversity Corridor, West Coast Conservation Corridor and West Coast Biosphere and:
 - Provide for ecological links to support connectivity between habitat areas;
 - Mitigate climate change as a main function of these corridors and areas on all four boundaries of the Bergrivier municipal area: the southern boundary, bordering Swartland municipal area, the western boundary or coast line, the northern boundary bordering Cederberg and the eastern boundary bordering Groot Winterhoek and Olifantsrivier mountains;
 - Protect agricultural landscapes in between mountain ranges;
 - o Support the formalization of Conservation Corridors in rural areas to protect natural habitat areas.
- Promote sustainable coastal development (intensification and densification, no expansion), in the
 interests of the current and future generations to obtain a balance between material prosperity, social
 development, cultural values, spiritual fulfillment and ecological integrity.

Management directives for vegetation types and ecosystems include:

Coastal ecosystems (estuaries, sandy beaches and dune systems, dune groves and fynbos) Lowland fynbos ecosystems (sand fynbos and limestone fynbos):

- Protect and promote conservation of coastal ecosystems (estuaries, sandy beaches and dune systems, dune groves and fynbos):
 - a. Strandveld dune thicket and dune fynbos: Corridors of at least 20m width of natural vegetation must be retained in dune fynbos as well as dune thicket, to allow movement of birds and animals between undisturbed and continuous habitats. And Avoid development that disturbs connections between valley roughs and dune thickets;
 - b. Lowland fynbos ecosystems (sand fynbos and limestone fynbos): Corridors of sandfynbos must be at least 300m wide.to protect limestone fynbos types are slow growing and vulnerable and must be protected;
 - c. Mediterranean and mountain fynbos ecosystems (alluvial fynbos, granite, ferrous, conglomerate and silkretefynbos, grass fynbos and sandstone fynbos): Orchards and indigenous plantations (proteas, buchu) must not be closer than 2km from where such plants naturally occur;
 - d. Renosterveld ecosystems (coastal renosterveld and interior renosterveld): Ideally a buffer of at least 30m must be left between all development, especially agricultural land and core renosterveld conservation areas.

Strandveld dune thicket and dune fynbos:

- Avoid development of all rocky reefs and coastal dunes;
- Maintain natural corridors along the coast (north-south) as well as coastal-interior gradients;
- Avoid impacts on wetland areas or river banks;
- Could consider node development in dune fynbos;
- Retain corridors of at least 20m width of natural vegetation in dune fynbos as well as dune thicket, to allow movement of birds and animals between undisturbed and continuous habitats;
- Avoid development that disturbs connections between valley troughs and dune thickets.

Mediterranean and mountain fynbos ecosystems (alluvial fynbos, granite, ferrous, conglomerate and silcrete fynbos, grass fynbos and sandstone fynbos):

- Develop to allow for controlled / uncontrolled fires, with firebreaks as part of development footprint;
- Link fynbos, located in lower-lying areas, to rocky areas and outcrops by natural vegetation corridors;
- Avoid fragmenting ecological corridors;
- Located orchards and indigenous plantations (proteas, buchu) not be closer than 2km from where such plants naturally occur;
- Avoid mountain peaks as location for telecommunications masts, 4x4 routes or roads;
- Develop footpaths carefully and maintain paths regularly to prevent erosion.

Renosterveld ecosystems (coastal renosterveld and interior renosterveld):

- Create buffers, ideally at least 30m between all development, especially agricultural land and core renosterveld conservation areas;
- Prevent further fragmentation of renosterveld and maintain connections between sections. Where possible, connections should be rehabilitated;
- Fence off silcrete, ferric and quartzite portions, but must still allow the free movement of turtles and small buck species.

An Environmental Management Framework for vegetation types and ecosystems are outlined below:

Management priority	Priority focus areas
Improve and rehabilitate	 All management and rehabilitation activities within the biodiversity priority zones, must be set out by the Environmental Management Plans for the identified areas. The following Early Detection and Rapid Response (EDRR) measures must be implemented: Regular surveys of municipal properties must be undertaken to detect any new or emerging listed invasive alien plants; Category 1a species must be reported immediately to the Department of Environment, Forestry and Fisheries and ask for assistance for the control of the species; Emerging or new species must not be allowed to produce seeds or offspring, or start growing vegetatively and must be removed immediately; The invasive alien plant control plan must be updated by including these species and indicate where on the property they were located; Areas that have been cleared must be checked regularly to remove re-sprouting plants or seedlings quickly.
Conserve and preserve	Conservation areas designated as biodiversity priority areas as indicated in the Spatial Development Framework, must be retained and preserved. All other impacts on natural veld must be guided by a bio-diversity assessment and if needed an environmental impact study. The following preventive EDRR measures must be implemented: No listed invasive alien plant species will be planted; Areas bordering onto neighboring properties, particularly along ecological pathways, i.e., river valleys and remnant indigenous vegetation, will be prioritized for control to prevent existing invasive alien plants from spreading beyond the boundaries of the property, and the maintenance of firebreaks; The prevention measures must be communicated to all users of the property (where applicable).
Environmental Impact Assessment Requirements	All proposed impacts that will lead to the clearing of more than 300m² of natural vegetation, where natural vegetation covers more than 75% of the area, must be subjected to an environmental impact assessment and environmental approval must be obtained before the activities may take place. Proposed large scale tourism facilities must be subjected to an environmental assessment and environmental approval must be obtained before the development may take place. The following EDRR measures may require an EIA: Possible pollution caused by fuel and oil when alien plants are manually removed using mechanized tools; The use of herbicides may contaminate sites used for drinking water, for washing and fishing, and can therefore, threaten human and animal health. May kill nontarget plants or species; Any use of chemicals around bio-control agent colonies may adversely affect the potency of this control method; Cannot be used where the bio-control agent would threaten commercial populations of the target species that may exist nearby including community woodlots.
Monitoring and management aspects	All monitoring and management aspects must be set out by a biodiversity environmental management plan, to be drawn up for priority areas.

The National Environmental Management: Biodiversity Act (NEM: BA) and Regulations place an obligation on a person to exercise Duty of Care when controlling invasive alien plants:

- Comply with the permit conditions for permitted species in terms of Section 65(1) and 71(1);
- Take all the required steps to minimize the harm to biodiversity, including sensitive riparian areas;
- Notify the competent authority, in writing, of the listed invasive alien plants that occur on the property;
- Take all the required steps to control and eradicate the listed invasive alien plants on the property and prevent it from spreading.

Where invasive alien plants occur within sensitive riparian and wetland areas, areas with steep slopes and Critical Biodiversity Areas low impact manual (no heavy machinery such as back actors) control methods with limited use of herbicide must be used. The Fertilizer, Farm Feeds, Agricultural and Stock Remedies Act (Act 36 of 1947), governs the use and application of herbicide and includes the following requirements:

- All herbicide applications are to be made under the direct supervision of a registered Pest Control Operator;
- All persons applying herbicide are to be trained in their use;
- Correct Personal Protective Equipment must be worn when applying herbicide (listed on herbicide label);
- Only registered herbicides may be used.

Invasive alien plants increase fuel loads and thereby the risk and intensity of vegetation fires. The landowner must, therefore, put measures in place that prevent the starting and spreading of vegetation fires on the property to neighboring communities and properties:

- Manage invasive alien plant fuel loads by implementing effective invasive control methods and removing (chipping, transport to a legal dumpsite, community firewood etc.) cut biomass;
- Prepare and maintain firebreaks around the property and infrastructure;
- Ensure that the removal of biomass and the preparation of firebreaks do not cause soil erosion

The Municipality must bring invasive alien plants under control through systematic, integrated and appropriate control methods as stipulated in the control plan. Sufficient funding must be allocated to ensure the long-term control of invasive alien plants:

- Mechanical control involves the physical destruction or total removal of plants.
 Mechanical methods are generally appropriate for sparse infestations and for species that do not coppice after cutting and include pulling out plants by hand or manual removal using hand tools;
- Chemical control of invasive alien plants involves the use of herbicides to kill targeted plants. Managers and herbicide operators must have a basic understanding of how herbicides function, as this will guide the correct selection of herbicides for different purposes and plants;
- Biological control, or bio-control, is the introduction of natural enemies to remove
 the plants' competitive advantage (spreading very rapidly due to lack of natural
 enemies, e.g., browsers or pathogens) and reduce population vigor to a level
 comparable to that of the natural vegetation.

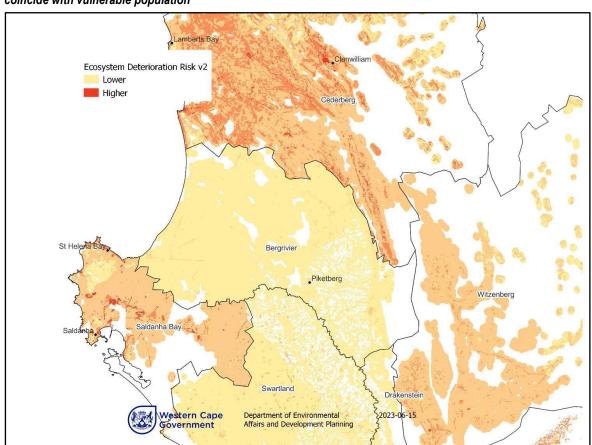
Research and Education

<u>Environmental Impact Management</u> directives for vegetation types and ecosystems are outlined below:

Environments/	Types of dev	Related		
Spaces	That should not occur	That may have significant impact	That have no significant impact	environmental management policies and guidelines
Conservation areas	Developments that are not focused on ecotourism.	Developments that are not focused on ecotourism.	Eco-tourism developments.	Environmental Impact Assessment and Guidelines.
Critical Biodiversity Areas 1	Developments that are not closely focused on eco-tourism.	Developments that are not focused on ecotourism.	Eco-tourism developments.	WCPSDF. All legislation with
Critical Biodiversity Areas 2 (Rehabilitate and irreplaceable areas)	Developments that are not closely focused on eco-tourism.	Any developments that are not focused on ecotourism.	Eco-tourism developments.	an environmental aspect and corresponding regulations, policies
Critical Ecological Support Areas. Other Ecological Support Areas	Developments that are not closely focused on eco-tourism.	Residential Developments, Commercial and Industrial Developments. High intensity agricultural activities.	Services distribution. Limited development after Environmental Impact Assessment has determined the guidelines.	and guidelines.
Other Natural Vegetation Areas	Uncontrolled development.	Residential Developments, Commercial and Industrial Developments. High intensity agricultural activities.	Residential Developments, Commercial and Industrial Developments.	

6.2.4.2 Natural Disaster: Ecosystem Deterioration

Ecosystems Deterioration, and enhanced by Climate Change, should be avoided. Development cause ecosystem deterioration. The vulnerability of the Bergrivier municipal area is lower than the vulnerability of Saldanha and Cederberg. The future development of the Industrial Development Zone resulted in the compilation of an off-set strategy and the Bergrivier municipal areawas identified as being home to vegetation that can be preserved in exchange to the loss of CBAs given the IDZ being developed.



Map 43: Ecosystems Deterioration Risk in the Western Cape, highlighting areas where compromised natural features coincide with vulnerable population

The Saldanha Strategic Offset Strategy 2020:

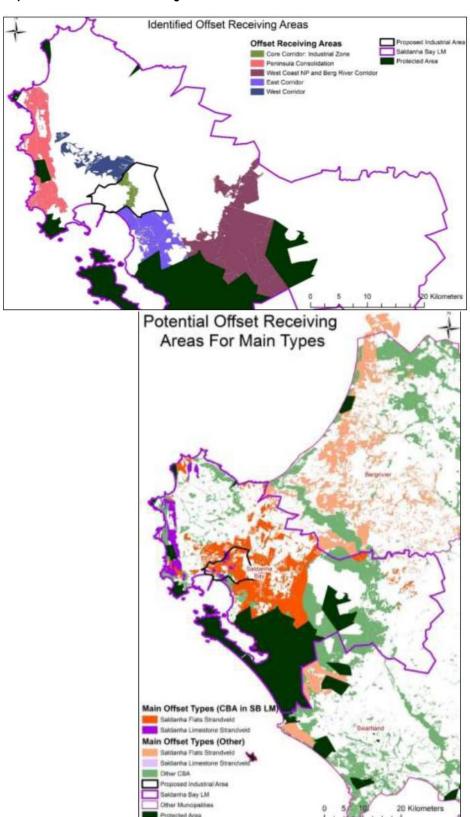
The Saldanha Bay Offset Strategy 2020 was developed in response to the conflict between Critical Biodiversity Areas (CBAs) and the area designated for large scale industrial expansion around the Port of Saldanha, the Saldanha Bay Industrial Development Zone (SBIDZ) highlighted by the Greater Saldanha Environmental Management Framework (EMF).

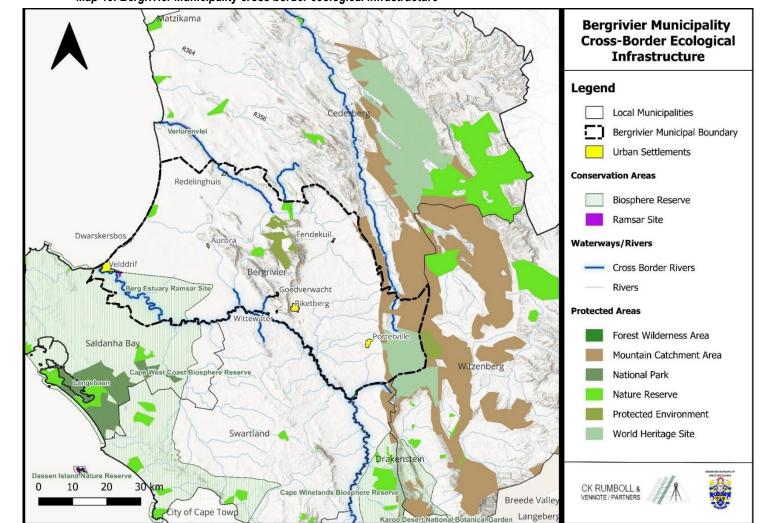
The strategy departs from, should a development within the IDZ not be able to avoid negative impacts (and in particular on biodiversity), a hierarchical approach to impact management in accordance with the National Environmental Management Act, 1998 (NEMA) and the Environmental Impact Assessment (EIA) Regulations, 2017 applies.

Should negative impacts remain after mitigation and remediation, it must be compensated for by offset options. The five primary offset receiving areas identified within Saldanha Bay Municipality include a Core Corridor: Industrial Zone in the Besaansklip Industrial Area; a Peninsula Consolidation of the important biodiversity areas of the Saldanha Peninsula; a West Coast National Park and Berg River Corridor which secures expansion areas around the national park and connectivity inland; and an East Corridor and a West Corridor which secure the remainder of the climate adaptation corridor outside of the proposed Industrial Area. The five primary offset receiving areas were evaluated in terms of their potential to collectively deliver targets for ecosystems and other important biodiversity features.

The map shows the CBA areas in Saldanha Bay Municipality being home to Saldanha Flats Strandveld and Saldanha Limestone Strandveld (in darker colours), as well as the non- CBA intact areas of these types in Saldanha Bay Municipality and in adjacent municipalities (in lighter colours), as well as additional CBA areas consisting of other vegetation types.

Map 44 Identified Offset Receiving Areas





Map 45: Bergrivier Municipality cross border ecological infrastructure

Management directives to prohibit ecosystem deterioration include:

Agriculture and Conservation: Protect:

- Protect critical biodiversity areas and natural habitats and promote ecological corridors and conservancies providing ecological links to support connectivity between habitat areas;
- Promote the conservation of natural, cultivated & domestic (farm yard) landscapes within the Bergrivier municipal area: Protect landscape features including heritage elements, old farmsteads, mature trees and tree lanes, changing of seasons reflected in landscape colour and structure;
- Delineate areas that are erosion pro, enhance rehabilitation and prevent erosion (wind and water) and apply protective preparation methods and planting perennial crops.

Change:

- Establish conservation buffers and or corridors inter alia to mitigate climate change:
 - Along mountains to ensure effective conservation and management of natural vegetation remnants;
 - Along agricultural landscapes:
 - As Open Space Networks in urban linking to rural areas to protect natural habitat areas.
- Refine guidelines (Western Cape Rural Guidelines) to protect and conserve the agricultural landscape;
- Support evolving heritage and enhance cultural and landscape routes and tourism destinations:
- Enhance food security and protect sensitive natural environment and agricultural resources from inappropriate and opportunistic development.

Develop:

- Support promotion of environmental awareness and education;
- Support the application of the Greater Saldanha Bay Environmental Management Framework (as part of this SDF) for Bergrivier Municipality's Southern boundary;
- Promote management and conservation of catchment areas, clearing of alien vegetation, wetland and river management;
- Promote risk and disaster management plans.

<u>Environmental Impact Management</u> directives to prohibit ecosystem deterioration are outlined below:

Management priority	Priority focus areas
Improve and rehabilitate	All management and rehabilitation activities within the biodiversity priority zones, must be set out by the Environmental Management Plans for the identified areas.
Conserve and preserve	Conservation areas designated as biodiversity priority areas as indicated in the Spatial Development Framework, must be retained and preserved. All other impacts on natural veld must be identified and guided by an environmental impact study.
Environmental Impact Assessment Requirements	All proposed impacts that will lead to the clearing of more than 300m² of natural vegetation, where natural vegetation covers more than 75% of the area, must be subjected to an environmental impact assessment and environmental approval must be obtained before the activities may take place. Proposed large scale tourism facilities must be subjected to an environmental assessment and environmental approval must be obtained before the development may take place.
Monitoring and management aspects	All monitoring and management aspects must be set out by a biodiversity environmental management plan, to be drawn up for priority areas.

6.2.4.3 Opportunities: Tourism and Agri-tourism

The natural landscape provides a sense of place that reflects the cultural integrity and heritage of the environment. The Bergrivier municipal area as a conservation and ecotourism area provide a magnitude of opportunities to be a destination and establish tourism routes.

The National Heritage Resources Act, Act 25 of 1999 (NHRA), supports the integration of heritage management and planning functions. Accordingly, and to the provisions of Sections 30 (5) and 31 of this Act, it is the responsibility of the local authority to compile a heritage inventory in its areas of jurisdiction inclusive of heritage resources, landscapes and prominent natural features, which form an important part of the cultural resources and give Bergrivier Municipality its sense of place and forms the basis of tourism.

The Winterhoek Wilderness Area is a Grade I (heritage resources in the national interest) resource as it is a world heritage site. The Bergrivier municipal area is also home to two RAMSAR (Convention of Wetlands under auspices of UNESCO) sites of international interest: the upper-Verlorenvlei and the Berg River Estuary.

Conservation and Agri-Tourism:

Protect:

- Intergrate ecological processes and needs with the needs of communities to ensure the sustainable use
 of resources in and around Mountain areas and along rivers (bioregional planning based on bioregional
 planning principles);
- Combine tourism and conservation. Eco-tourism catering for the local and international tourist market,
 has become a core economic activity on farms. Promote eco-tourism and tourism related land uses,
 especially in the Winterhoek Wilderness Area (Groot Winterhoek Nature Reserve, Waterval Nature
 Reserve and Beaverlac) and Piket Boberg (Banghoek and Stalkrans nature reserves) and other sensitive
 environments:
 - Enhance eco-tourism and related infrastructure in the Wilderness and Reserve Areas, including camping and rock climbing and hiking, day and overnight hikes including the popular and spectacular pools at the national heritage site at Beaverlac.
- Carefully consider the type, mass and scale of proposed eco-tourism and related infrastructure compared
 to the receiving environment. (Western Cape Land Use Planning Guidelines Rural Areas (March 2019);
- Building awareness of conservation and cultivation and stage festivals and events: Strengthen and expand tourism routes, festivals and events: Porterville Arts Festival, Porterville, Agricultural Show Porterville, Annual Paragliding Competition, Annual Berg River Canoe Marathon, Snoek and Patat festival in Goedverwacht, Farmers markets at Porterville and Piket Boberg.

Develop:

- Grow Bergrivier Municipality as part of the bigger West Coast region known for its birdlife, biomes, agricultural landscape, small stock farming, fishing and limited wine production;
- Grow Bergrivier Municipality as part of the bigger West Coast tourism region contributing birdlife Verlorenvlei and Berg River Estuaries, Wildflowers – Aurora, Redelinghuis and Dwarskersbos and along the West Coast:
 - Support tourism routes within West Coast District, between Bergrivier and neighbouring municipalities i.e.: West Coast Berg Route including Elands Bay, upper-Verlorenvlei, Piekenierskloof and Citrusdal:
 - Support Agri- and eco-tourism at all settlements in Bergrivier Municipality;
 - Strengthen and support Agri-tourism on farms and support development of accommodation facilities on farms, niche products, hiking and mountain bike trails, agricultural festivals in the region and farm stalls (involving more people in the tourism industry).
- Redevelop the railway stations at Porterville, Piketberg and Eendekuil and siding infrastructure including grain silos and water storage facilities: Sidings on the Piketberg line: Moravia, DeHoek, Piketberg, Burgers, Pools, Droëryskloof, Het Kruis and Sidings on the Porterville line: Halfmanshof, Blikhuis and Kleindrif;
- Develop open space & river frontage interface guidelines (use of colours, landscaping, lighting, massing and form);
- Support Agri-tourism opportunities on farms, especially along identified rivers: Berg, Platkloof at Goedverwacht, and upper- Verlorenvlei, Vier-en-Twintig Rivers, Papkuils (Rocherpan) and the Oliphants Rivers and in mountains ranges:
 - Promote the secondary right of camping sites, under Agriculture as per the municipal zoning scheme.
- Encourage Film industry uses (business tourism): Capitalise on mild climate: Hot dry summers and mild wet winters;
- Support the development of water resources for sport and recreation and develop guidelines:
 - For resorts along: Berg, Platkloof at Goedverwacht, and upper-Verlorenvlei, Papkuils (Rocherpan), Vier-en-Twintig Rivers and the Oliphants Rivers. Support Agri-tourism opportunities on farms along these Rivers:
 - For and provide picnic areas on and in the water along rivers;

- For recreation and sports events as commercial opportunities e.g. water skiing and create more opportunities or canoeing, river rafting, fishing and water sports;
- For formal public access whilst conserving the pristine coastline and limiting impact on the environment;
- For aqua and marine culture and eco-tourism along the West Coast and at Velddrif and Dwarskersbos.
- Support a tourism strategy being revised regularly that promotes:
 - Links between rural, urban and Agri-tourism opportunities;
 - Effective management and maintenance of all tourist attractions;
 - Investigating new tourism opportunities;
 - Tourism infrastructure (roads, accommodation and services) subject to environmental impact assessment results;
 - Opportunities for local communities, especially unemployed and disadvantaged people, to access to economic opportunities (arts and crafts, local guides, and local food);
 - Socio-economic opportunities generated from natural resources such as the biomes, wildflowers, unique natural vegetation, reserves, conservation areas, historical and cultural heritage and landscapes, unique landscapes, conservation and agriculture (cultivation of potatoes and citrus and table grapes);
 - Alternative and more effective use of conservation areas and heritage resources to allow opportunities for alternative income generation on the farms i.e. festivals;
 - Economic incentives to stimulate growth;
 - o Informal economic activity in rural areas and in the tourism industry;
 - Use of rivers, mountains and other natural features.

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- Links between rural, urban and Agri-tourism opportunities;
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- Economic incentives to stimulate growth;
- Informal economic activity in rural areas and in the tourism industry;
- Use of rivers, mountains and other natural features.

Landscapes:

Change:

- Preserve and promote the character of the Bergrivier municipal area, inclusive of the unique agricultural (citrus, grapes, potatoes and rooibos), heritage and natural environment and landscape (coastlines, rivers, plains and mountains). Map heritage landscapes, zones in settlements, significant farmyards and any other heritage resources in rural areas;
- Promote heritage information boards and prohibit loss of, and deterioration of cultural & heritage resources;
- Promote improved roadside signage and understated entrance gates in sensitive landscapes;
- Promote utilization of heritage resources as multi-purpose assets (i.e. skate boarding) and tourism attractions;
- Promote natural and historic landscape-sensitive and supportive tourism and tourism infrastructure;
- Promote the planting of trees by all households and protect mature trees (20 years and older);
- Promote the:
 - Declaration of local heritage areas;
 - Protection of heritage resources and creation of areas with a fresh or new sense of place through urban design and rejuvenation. Support the restoration of historic spatial patterns and the effective and efficient use of existing infrastructure;
 - Issuing of development and no-development instruction according to the SPCs;
 - o compilation of an inventory of heritage resources (including historic buildings and structures, archaeological resources and heritage landscapes) and heritage overlay zones to the relevant provincial heritage authority for formalization.

Develop:

- Develop understated, unique and where possible natural gateways to settlements. Avoid gateways and gateway precincts to become advertisement spaces;
- Develop supportive infrastructure and spaces for festivals, events and celebrations;
- Maintain historic core areas and support the development of precincts with a fresh or new sense of
 place with appropriate transition buffers between the old and new;
- Limit the impact of development and urban growth on significant landscape features;
- Promote scenic and heritage routes and the development of development and management guidelines.

Develop:

- Support farm owners to develop Agri-villages for agricultural workers on farms or in settlements (on municipal land). These erven should become worker owned: Eendekuil and Redelinghuis is earmarked to become Agri-Villages. Ensure farmworkers are enrolled on housing waiting list;
- Promote urban agriculture: Make land available in urban areas, particularly in Piketberg, Porterville and Velddrif for small scal agriculture and community gardens;
- Harvest storm water to cultivate community gardens;
- Develop design and development parameters to protect settlement patterns and sense of place:
 Conserve historical town centres often determined by the location of drinking water or a church and grid layout pattern;
- Develop interface guidelines (use of colours, landscaping, lighting, massing and form) to manage development along open spaces & river frontages and routes;
- Protect unique character of settlement and within settlements:
 - Protect critical biodiversity areas, ecological corridors and ecosystems;
 - Protect unique natural and manmade landscape features and structures;
 - Protect scenic routes and vistas;
 - Protect heritage features and landscapes and create future heritage landscapes;
 - Preserve the Marine and Coastal environments.

An <u>Environmental Management Framework</u> for capitalizing on the natural environment and zones is outlined below:

Management priority	Priority focus areas: Cultural and Recreation Resource Zone
Improve and rehabilitate	Restore buildings and sites that have heritage value. All management and rehabilitation activities within the biodiversity priority zones within settlements and being part of the open space corridors beyond settlements, must be set out by the Environmental Management Plans for the identified areas.
Conserve and preserve	Manage, rehabilitate and preserve cultural and historical landscapes, graves, monuments, etc. as described under the Heritage and Cultural Law. Conservation areas designated as biodiversity priority areas (CBAs) withing settlements and immediately outside settlement as indicated in MSDF, must be retained and preserved after all impacts had been identified and guided by an environmental impact study.
Environmental Impact Assessment Requirements.	All monitoring and management aspects must be set out by an environmental management plan to be drawn up for biodiverse priority areas. The assessment process will determine what impacts may occur on the cultural-historical aspect. All proposed impacts that will lead to the clearing of more than 300m² of natural vegetation, where natural vegetation covers more than 75% of the area, must be subjected to an environmental impact assessment and environmental approval must be obtained before the activities may take place. Proposed large scale tourism facilities must be subjected to an environmental assessment and environmental approval must be obtained before the development may take place.
Monitoring and management aspects	Specialist studies have to identify monitoring and management aspects. These must be included in the Environmental Management Plan, which will regulate the management and monitoring of all cultural historical areas. All monitoring and management aspects must be set out by a biodiversity environmental management plan, to be drawn up for priority areas.

Environmental Impact Management directives for the cultural and historical environment follow:

Environments/	71			
Spaces	Should not occur	May have significant impact	Have no significant impact	guidelines
Towns	Demolition of historical buildings. Any negative impacts on buildings or sites that have cultural or historical values.	Any development.	Restoration of buildings for offices, guest houses, etc.	Cultural and historical legislation, policies and guidelines.
Landscapes	Uncontrolled, unsightly development.	Uncontrolled, unsightly development.	Limited, low-density development that is not visually apparent and adds value to the environment.	Cultural and historical legislation, policies and guidelines.
Historical areas	Uncontrolled, unsightly development.	Uncontrolled, unsightly development.	Limited, light density development that is not visually apparent and adds value to the environment.	Cultural and historical legislation, policies and guidelines.
Scenic routes	Uncontrolled, unsightly development e.g., wind farms	Uncontrolled, unsightly development.	Limited, light density development that is not visually apparent and adds value to the environment.	Cultural and historical legislation, policies and guidelines.
Structured open spaces & networks	Commercial, Industrial or residential developments.	Commercial, industrial or residential developments.	Limited development.	Environmental Impact Assessment and Guidelines. WCPSDF, All legislation with an environmental aspect and corresponding regulations, policies and guidelines.

6.2.4.4 Risks: Impact of Agricultural, Mining Production and Technology on Natural Vegetation See Saldanha Bay Offset Strategy 2020.

Apply the spatial planning categories.

6.2.5 Air & Wind

6.2.5.1 Natural Resource: Air and Wind

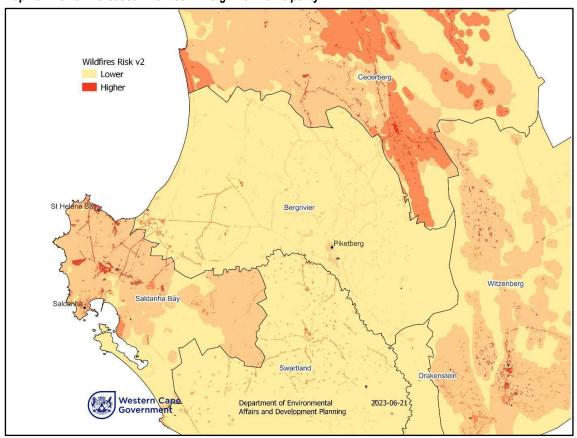
See Chapter 2: Spatial and Sectoral Plan Analysis and MSDF Review.

6.2.5.2 Natural Disaster

Cyclones and Tornados, which are unlikely and tornados whish are rare.

Wild fires are likely in the mountain areas on the Piketberg cluster, Oliphants and Winterhoek.

Map 46: Risk of increased wildfires in Bergrivier Municipality



6.2.5.3 Opportunities: Alternative Energy

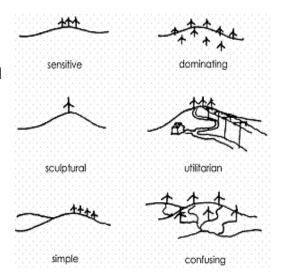
Alternative energy sources mitigate climate change and air quality contributes to good health.

Management directives for air and wind include:

Alternative energy facilities from wind, solar and hydrogen have to:

- Be promoted in viable zones only:
 - Promote Solar Energy as the Bergrivier municipal area has high solar radiation and particularly regions 1 and 6 as the topography is conducive for the establishment of such facilities, yet with great sensitivity around the visual impact in protected and conservation areas;
 - Promote Wind Energy particularly in wards 6 and 7 and Hydrogen along the coast.
- Protect Surface & Groundwater: Design of roads and treatment of runoff from roads and disturbed surfaces, to reduce sedimentation and eliminate erosion. Prohibit potential for erosion and soil types influence caused by road construction and re-vegetation;
- Conduct a detailed vegetation assessment if the proposal is not in an agriculturally disturbed area;
 Assessment should include location and condition of:
 - Extent of disturbed or alien vegetation;
 - Extent of any natural vegetation;

- Indigenous and endemic species;
- Rare and threatened species.
- Consider the following for terrain suitability:
 - Slopes by gradient classes;
 - Rocky areas;
 - Soil type and permeability;
 - Natural watercourses and areas with high water tables, rainfall data;
 - Vegetation.
- Require highly stable underlying geology for heavy wind turbines and consentrated sun facilities:
 Investigate existence of bedrock, subterranean voids and possible seismic activity.
- Consider placement on Slopes given impact on:
 - Wind Potential slopes, up to a certain gradient, orientated towards prevailing wind directions, tend to augment average wind speed;
 - Solar radiation slopes influence placement and various technologies require different placement direction;
 - Visibility wind and solar farms on slopes have increased visibility;
 - Road layout and design slopes to be considered in road layout to reduce erosion potential, of road run-off, rock-fall and landslide potential;
 - Tower foundation/ pedestal design needs to consider falls across the platforms;
 - Soil stabilization steep road verges and cuts require re-vegetation to reduce erosion from run-off.



Location options for wind turbines

6.2.5.4 Risks: Air Quality

Poor air quality compromises people's health (Climate Change Theme 5) and livelihoods - specifically when exposure to atmospheric pollutants leads to respiratory diseases, which indirectly weakens immune systems and reduces optimal functioning. Poor health, in turn, increases vulnerability to the impacts and effects of other, unrelated threats brought about by disasters or economic hardship, such as extreme weather conditions or food shortages.

A map of potential risk, i.e., combining air pollution hazard with vulnerability, is generated by multiplying a vulnerability index with the values from potential emissions factors calculations (Air quality index, see figure below). The map shows how the potential hazard (count of potential emissions source types) and vulnerability interact to generate a picture of the relative risk of experiencing impacts from poor air quality.

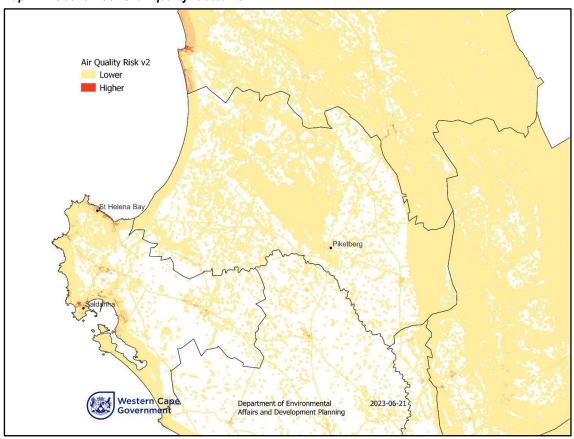
Susceptibility to respiratory infection, on the other hand, is not mapped directly by authorities, but the CSIR has compiled a health index at census enumerator area scale for the purposes of mapping COVID-19 related risk 7 based on a combination of values for:

- Poverty;
- Age;

- Child mortality;
- HIV;
- Life expectancy.

This index is used to highlight where communities are most likely to have high sensitivity to poor air quality from a health risk perspective.

Map 47: Relative index of air quality related risk



Air quality can decrease because of increased temperatures, greenhouse gas emissions and demand for local fuels. Impacts associated with climate change and the failure to implement mitigation measures may result in increased air pollution episodes. Measures to address climate change include increasing the number of monitoring stations in the Western Cape, effective dissemination of air quality information and introducing cleaner fuel programmes for households and transport.

Management directives for air and wind include:

Air Quality and Wind:

Develop:

Where information is available or where emission factors can be applied to quantify emissions, an emissions inventory for air pollution sources has been compiled for the West Coast District Municipality. Potential air pollution sources in the Bergrivier Municipality have been identified as:

 Industrial operations - mainly emissions from small boiler sources and larger industry such as canning factories and lime mining;

- Agricultural activities although not quantified, agricultural activities are considered to be a contributor
 to ambient particulate concentrations. Agriculture is a dominant land-use within the Bergrivier
 Municipality;
- Mining Activities Mining activities, like Port of Saldanha iron ore handling. Pollution sources are mainly surface activities like waste loading and unloading, iron ore loading and unloading, exposed screening plants, waste dumps, stock yards, exposed pit surfaces, transport roads and haul roads;
- Biomass burning (veld fires) also not quantified, owing to the irregular and seasonal nature of this source;
- Domestic fuel burning- mainly wood and paraffin burning in informal settlements. Mostly around larger towns such as Piketberg, Velddrif and Porterville. Note that the Bergrivier Municipality is not one of the largest contributors to domestic fuel burning emissions;
- Vehicle tailpipe emissions from petrol and diesel vehicles along major roads but this is not considered
 to be a significant air pollution source;
- Waste Treatment and Disposal information regarding disposal facilities (landfills and incinerators) has been partially collected;
- Dust from paved and unpaved roads and from iron ore transportation;
- Other fugitive dust sources such as wind erosion of exposed areas;
- Particulate and gaseous emissions from industrial operations, domestic fuel burning and vehicle tailpipe emissions have been quantified for this assessment (See SANS 1929:2005 - Ambient Air Quality - Limits for common pollutants and National Environmental Management: Air Quality Act 39 of 2004).

Develop:

Bergrivier Municipality to:

- Identify priority pollutants (in terms of its by-laws);
- Establish local air quality standards (more stringent);
- Establish local emission standards;
- Appoint Local Air Quality Officer;
- Develop an Air Quality Management Plan (AQMP) as part of their IDPs;
- Monitor ambient air quality;
- Prepare an annual report regarding the implementation of the AQMP.

Environmental Impact Management directives for air quality are outlined below:

Management priority	Priority focus areas
Improve and rehabilitate	Ensure that air pollution is avoided, or where it cannot be altogether avoided, mitigated or minimized in accordance with the Cederberg Air Quality by-law or any other related laws.
Conserve and preserve	Applicable areas to be designated as air quality impact areas in the Spatial Development Framework. Serve as informant of future development in close proximity and guided by an environmental impact study.
Environmental Impact Assessment Requirements	All proposed activities including smoke caused by burning, generated dust, odours and spraying, where emissions exceed intensities as per listed activities in section 21 and 23 of the Air Quality Act, must be subjected to an environmental impact assessment and environmental approval must be obtained before the activities may take place.
	Proposed large scale tourism facilities must be subjected to an environmental assessment and environmental approval must be obtained before the development may take place.
Monitoring and management aspects	All monitoring and management aspects must be set out by regulations of Air Quality by-law or as per environmental management plan, to be drawn up for priority areas: agriculture and mining, utilities (sewerage, waste) and industrial areas (areas of production within settlements).

Adopted goals:

- Improve compliance enforcement and management of air quality;
- Improve awareness with respect to air quality management;
- Improve the current air quality management tools;
- Invest in adequate human and financial recourses to ensure effective implementation and management of air quality;
- Integrate Climate Change and Air Quality Management.

An Environmental Management Framework for air quality is outlined below:

Risks		Types of Deve	lopment	M	onitoring	and manage	ement
	That should		That may have significant impact (and needed mitigation)			spects	
Smoke / Emissions/ Sprays	 Proces Burning was 	activities. ss setups. te and tyres. developments have	Agricultural Activities: Farmland burning. Listed activities. Spraying of pesticides near residential areas.	Passive H2S monitoring Lambert's Bay factory to conducted (smelly). Climate Change: CO2 Emiss Reduction Strategies in WCDM Adopt climate change mitigat to reduce GHG emissions. Th done to build a sustainable carbon economy including but limited to: a reduction in need		ity lacks service inted to nitoring.	
Dust Cover (Staining of building, vehicles and infrastructure) Iron ore dust. Manganese ore dust.	Spillage of p Windblown trucks. Construction From road n Manganese Ship loading Material offlo Material recl	etworks. ore handling. activities. oading.	Agricultural Activities. Open air storage of material. Spillage of particulate matter. Unpaved roads.			missions CDM: tigations This is able low but not need for compact uction in	
Types of developm	Types of developments, land us		call for			nd Uses call	ing for
Duty of Care			y unlawfully, intentionally any act or omission whi ause air pollution.	or	,		
Prohibition of dark premises.	smoke from	No emissions for a	n aggregate period exceeding any continuous period of this	-	Waste	Industry	Agri
and burning of mate	Authorisation of open burning and burning of material.		Apply for prior written authorisation.		Waste		Agri
Spraying of a pesticide, herbicide or other related material.		Spraying of only registered pesticide, herbicide or other related material is allowed.					Agri
Dust emissions.		Adopt best practical environmental option.		c	New develop- ment	Industry	Agri
Emissions caused by tyre burning and burning of rubber and other material for the recovery of metal.			uthorisation (incl. synthetica or insulated products a quipment).		Waste	Industry	
Prohibition of dark compression ignition vehicles.		A compression ignition powered vehicle or power generator that emits dark smoke may not be used.				Industry	

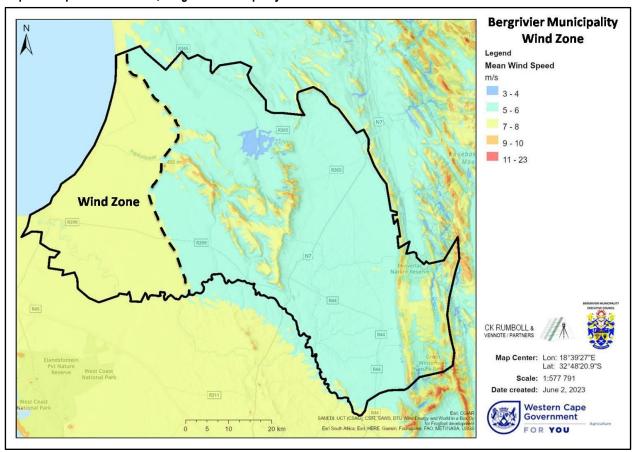
Prohibition of emissions that cause nuisance (conducting sand blasting, shot blasting, grinding, finishing or similar activity which customarily produce emissions of dust).	If harmful to public health or causes a nuisance, take control measures.		Industry	
Prohibition of emissions that cause offensive odours.	Apply control measures when conducting listed and/or controlled emitter activities or non-listed activities that produce emissions of offensive odours.	Utilities	Industry	
Types of developments, land us	os or activitios that call for	Likoly Lan	d Uses calli	na for
Types of developments, family us	ies of activities that can for	duty of car		ilg ioi
Application for atmospheric emission licence.	Undertaking a listed activity, as per section 21 and 23 of the Air Quality Act, only being in possession of an atmospheric emission licence issued by the West Coast District Municipal air quality officer.	_		

6.2.5.5 Proposals

Promote planting of trees and plants that keeps air clean as part of every development.

Promote wind energy in Wards 6 and 7.

Map 48: Proposed Wind Zone, Bergrivier Municipality



6.2.6 Sun

6.2.6.1 Natural Resource: Solar Radiation

See Chapter 2: Spatial and Sectoral Plan Analysis and MSDF Review.

6.2.6.2 Natural Disaster: Heat wavers and Veld fires

Unlikely.

6.2.6.3 Opportunities: Alternative Energy

Management directives for sun include:

Alternative Solar Energy Facilities:

Change:

See management directive for alternative wind energy facilities.

- Promote alternative energy generation facilities in viable zones only:
 - Promote Solar Energy as the Bergrivier municipal area has high solar radiation and particularly regions 1 and 6 as the topography is conducive for the establishment of such facilities, yet with great sensitivity around the visual impact in protected and conservation areas;
 - Promote Wind Energy particularly in wards 6 and 7 and Hydrogen along the coast.
- Provide for solar facilities to cater for future urban expansion. Generate alternative energy for all settlements and in particular Velddrif, Piketberg and Porterville;
- Provide for expansion and upgrading of transmission infrastructure.

6.2.6.4 Risks: Evaporation

Too high or low evaporation.

6.2.6.5 Proposals

Delineate firebreak buffers around towns.

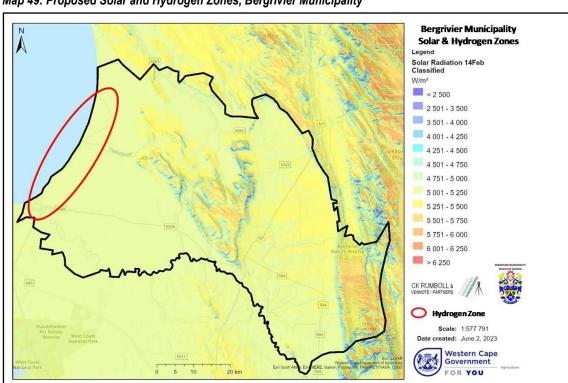
Promote Solar Energy as the Bergrivier municipal area has high solar radiation and particularly regions 1 and 6 as the topography is conducive for the establishment of such facilities, yet with great sensitivity around the visual impact in protected and conservation areas.

Promote Hydrogen along the coast.

Alternative energy generation and social amenities:

- Prepare and be ready for wild fires likely in the mountain areas and delineate firebreak buffers around towns such as Aurora and Piketberg;
- Delineate alternative energy zones and promote energy generation facilities in viable zones only.
 Overall viability of energy source to be confirmed by specialist studies; Broadly: Coast hydrogen, wind west of Piketberge, solar overall and cater for and keep future urban expansion in mind;
- Promote Solar Energy overall in sub-regions that have higher solar radiation, yet with great sensitivity around the visual impact in protected and conservation areas;
- Limit potential air pollution sources in the Bergrivier municipal area including but not limited to biomass (veld fires), domestic fuel-buring mainly wood and paraffin within settlements, vehicle and

- generator tailpipe emissions from petrol and diesel and waste treatment and disposal sites and develop an Air Quality Management Plan;
- Promote use of rail as alternative transport (freight agriculture and mining) and introduce passenger rail (commuters & tourists) through West Coast (Riebeek Kasteel to Porterville (inter municipal route));
- Promote nodes along Provincial and National roads such as the R399, R366 and N7 intersections and where SANRAL criteria allow nodes:
 - Nodes to blend in with surrounding agricultural landscape;
 - Nodes to focus on tourism and agricultural development and support services;
 - Public Transport on N7 (cross border): Determine the viability of a reliable public transport service along the N7 between Clanwilliam and Malmesbury to increase mobility to the West Coast District and to the Metropole;
 - Safeguard intersection nodes through visibility of node development;
 - Protect mobility function of routes: Arterial Management Plans to be developed, where applicable to DTPW Roads Branch approval. (See Annexure 2).
- Support the development of transport nodes along the N7, R399 and R366 and improve mobility between rural and urban areas. Nodes and associated infrastructure (farm stalls, service stations) along transport corridors should be sensitive to the agricultural landscape and should blend into environment;
- Promote access to education at all levels from preschool to tertiary by providing for such facilities,
 enhancing mobility of community members and provide social amenities according to CSIR standards;
- Protect natural landscapes, delineate development lines around mountains and koppies.



Map 49: Proposed Solar and Hydrogen Zones, Bergrivier Municipality

6.2.7 Connectors

6.2.7.1 Man-made Resource: Roads and Rail, Social Amenities

N7, R44 and R27, R399, R366 and R365 and railway.

 R27, R399, R366 and R365 N7 as connector to between Namibia and Cape Town, its markets in the south and access to international markets; R44 from N7 (Porterville) to N1 (Touwsrivier and Worcester) (N7 to Porterville, to Gouda and Ceres (R46) and to Worcester (R43) ultimately to N1)); R44 links R399 (to Velddrif) and R366 (to Cederberg); R27, R399 (Piketberg to Velddrif), R366 (Piketberg to Het Kruis) and R365 (Het Kruis to upper-Verlorenvlei, to Leipoldtville, Lamberts Bay and N7-Clanwilliam, Eendekuil to N7) links to the West Coast, providing access to the Cape Metropolitan area, Saldanha Bay II and neighbouring regions. Public Transport Public transport is limited to the local bus and taxi services operating on some public transport routes. There are a total of 19 public transport routes, which were identified by the Taxi Associating the Cederberg area. 		•
Transport routes. There are a total of 19 public transport routes, which were identified by the Taxi Association in the Cederberg area.	R27, R399, R366 and	 N7 as connector to between Namibia and Cape Town, its markets in the south and access to international markets; R44 from N7 (Porterville) to N1 (Touwsrivier and Worcester) (N7 to Porterville, to Gouda and Ceres (R46) and to Worcester (R43) ultimately to N1)); R44 links R399 (to Velddrif) and R366 (to Cederberg); R27, R399 (Piketberg to Velddrif), R366 (Piketberg to Het Kruis) and R365 (Het Kruis to upper-Verlorenvlei, to Leipoldtville, Lamberts Bay and N7-Clanwilliam, Eendekuil to N7) links to the West Coast, providing access to the Cape Metropolitan area, Saldanha Bay IDZ,
Transport There are no developed intersection nodes		Public transport is limited to the local bus and taxi services operating on some public transport routes. There are a total of 19 public transport routes, which were identified by the Taxi Association in the Cederberg area.
Nodes Nodes	Transport Nodes	There are no developed intersection nodes.
Piketberg, Pools, Eendekuil and Het Kruis and from b) Belville to Wellington link to the PPC li mines in Riebeek Kasteel and to Porterville grain silo where it terminates.	Railways	Rail freight has declined significantly, while road freight has increased exponentially with the N7 as
Airways There are private airstrips and a helicopter landing pad which are used in cases of emergency.	Airways	

6.2.7.2 Disasters: Natural Disasters

Flooding or Earth quakes disrupting connection.

6.2.7.3 Opportunities

Management directives for proposed development and development proposals for connectors include:

Mobility,	Protect:
, ,	
Transport Networks	 Support economic activity (commercial, industrial and agricultural) and maintain and promote maintenance of transport infrastructure.
&	Change:
Economic	Rail:
links	 Promote use of rail as alternative freight transport for agriculture and mining;
	 Introduce or enhance passenger rail (commuters & tourists) through West Coast (Malmesbury over Piketberg to Graafwater (indirect Clanwiliam) and Belville to Bitterfontain (inter municipal route) and Porterville to Riebeek Wes) operated by private rail operators to strengthen economic links & mobility of people; Promote renewal/ upgrading of station buildings as well as grain silos, crop storage facilities and agri-related infrastructure along the line: Porterville, Piketberg, Eendekuil; Support the implementation of special train trips and related infrastructure between Porterville and Riebeek Kasteel.

Road:

- Sensitively develop new transport infrastructure;
- Use connector roads to functionally (easy access) integrate rural and urban areas;
- Protect route mobility function and require proposed development to compile Arterial Management Plans and where applicable to submit plans to DTPW Roads Branch for approval (See Annexure 2).

N7, R44 and R27 R365, R366 and R399

- Enhance major road infrastructure and support the establishment of freight, distribution, agri-tourism and tourism infrastructure and activities:
 - N7 form Namibia to Cape Town;
 - R27 as link between Cape Town and West Coast;
 - R44 from N7 (Porterville) to N1 (Touwsrivier and Worcester) (N7 to Porterville, to Gouda and Ceres (R46) and to Worcester (R43) ultimately to N1));
 - R44 link to R399 (to Velddrif) and R366 (to Cederberg);
 - And any regional road that link main settlement and regions, such as West Coast, Bergrivier Municipality, Boland and Cape Metropole.
- Capitalise on road infrastructure and promote regional, economic and Agri- and fishing tourism links and routes to benefit the Municipal area as a connector between the Cape Metropole (R27), the West Coast (R27, Velddrif and Saldanha), the Northern Cape (N7), R365 (to Cederberg Municipality) and R399 (to Saldanha): R365 (Elands Bay and Lamberts Bay over Leipoldtville), N7 (to Citrusdal and Clanwilliam);
- Establish an Intensive Rural Development (production and agri-industry) triangle along the R44 between Voorberg Prison (Blikhuis, Porterville), Saron (Gouda) and the Berg and Vier-en-Twintig Rivers confluence and corridors along the R366 between Piketberg and Eendekuil along the foot of Piket Mountains as well as along the upper-Verlorenvlei (along R365).

Public Transport

Promote investigating the feasibility and reliability of public transport service along the N7 to facilitate socio-economic development in the region:

- Between Piketberg and Clanwilliam, Citrusdal (north) and Moorreesburg and Malmesbury (south) and to the Metropole;
- Increase the mobility of the local community to access opportunities (work, education, services);
- Move goods to make them accessible to a market;
- Create direct and indirect jobs (West Coast District Municipal Integrated Transport Plan, 2020 - 2024).

Transport Nodes

Promote nodes at intersections and where SANRAL and Department of Transport criteria allow nodes along N7 and along:

- R44 (between N7 and Porterville and Porterville and Gouda);
- R366 (between Piketberg and Het Kruis);
- R365 (Eendekuil to N7 and Het Kruis to Elands and Lamberts Bay); and
- R399 (Piketberg and Velddrif).

Adhere to additional criteria for nodes and associated infrastructure (farm stalls, service stations, transport hubs) are:

- to be sensitive and blend in with surrounding agricultural landscape (transport and freight nodes along dual carriage way, major and minor roads);
- to focus on tourism (general, agri and fishing), agricultural development and support services and transport and freight;
- to be visible to safeguard intersections;
- to improve mobility between rural and urban areas;
- Provide access along Proclaimed Provincial and National Roads in accordance with the WCG DTPW Access Management Guidelines (2020) and SANRAL policies.

Social Amenities:

Change:

- Promote access to education and development for agricultural/ farm workers;
- Promote mobile social services to be provided in rural areas, including mobile clinics, early childhood education facilities, mobile libraries, firefighting, ambulance service, busses and taxis, law enforcement:
- Provide social amenities according to CSIR standards to ensure access to social services;
- Promote improved mobility in rural areas:
 - Where freight routes intersect with settlements, locate pedestrian and NMT routes away from freight route;
 - Along freight routes outside settlement, locate pedestrian and NMT routes at a safe distance or away from freight route.

Develop:

- Promote and lobby for tertiary education facilities in Bergrivier Municipality and support a West Coast College Satellite in Piketberg (in addition to Citrusdal);
- Promote, provide for and support development of early childhood education or preschool facilities, farm schools, and sport facilities on farms, rural areas and in Eendekuil, Redelinghuis and Aurora to ensure easy access to education;
- Establish a skills training facility and short-term accommodation in Eendekuil;
- Enhance public areas or spaces through promoting urban design and landscaping;
- Promote the identification and formalization of public open spaces along specific water courses;
- Promote safe living environments and provision of supportive infrastructure;
- Identify strategic sites to provide for consolidated, centralised social and sport infrastructure in highly accessible nodes i.e., sport complexes combined with community facilities such as a Thusong centre;
- Identify and provide for safe/all-weather bus/taxi stops along main transport network to serve the rural community;
- Upgrade pedestrian routes and provide adequate lighting.

6.2.7.4 Risk

Lack of social services and deterioration Human Development Index.

6.2.7.5 Proposals

Provide social amenities according to CSIR standards to ensure access to social services.

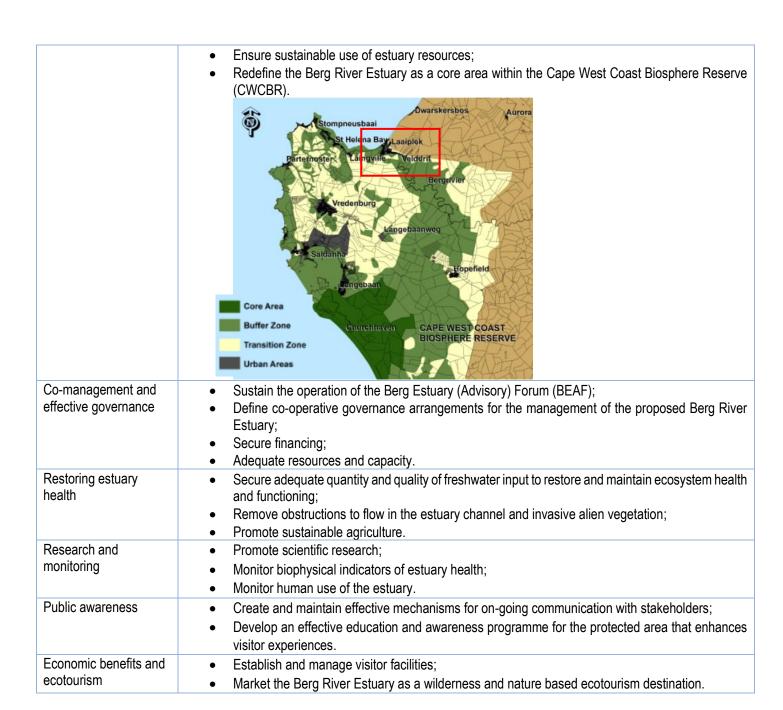
6.2.8 Estuaries

6.2.8.1 Berg River Estuary

Environmental Impact Management: Bergrivier Estuary

Environment/ Spaces	Types of dev	Related environmental	
	That should not occur	That may have significant impact	management policies and guidelines
Along the Berg River from Velddrif until approximately the farm Steenboksfontein (Known as the Berg River Estuary).	Farming, abstraction of water: Abstraction activities for irrigating of crops. Exploitation of important species and their breeding grounds.	Recreational and eco-tourism activities, such as birdwatching. The use of motorised vessels. Pedestrians that do not use established paths and board walks.	

Management Priority Priority Focus Area Berg River Estuary The Berg River estuary is located approximately 130 km north of Cape Town on the West Coast of South Africa. Based on the extent of tidal influence, the estuary is estimated to be 65 km long, although seawater does not penetrate this far upstream; The Berg River estuary is one of 279 functional estuaries in South Africa (Turpie 2004) and one of 4 permanently open estuaries on the west coast (Whitfield 2000). It is the one of the largest estuaries in the country, with a total area of 61 km²; The estuary is one of the most important in the country in terms of its conservation value. The extensive floodplain that surrounds the middle and upper reaches of the system make it unique in the South-Western Cape; Municipal Boundary Figure: Location of Berg River Estuary within Bergrivier Local Municipality. Conservation of Integrate Berg River Estuarine Management Plan into development planning; biodiversity and Fully revised zonation plan (see map 39); wilderness character Formally demarcate the extent of the Coastal Protection Zone (CPZ) and Coastal Management Line (CML) around the Berg River Estuary and establish a Zonation Area that incorporates the lower reaches of estuary upstream to the Hopefield Bridge, zoned in accordance with the presented scheme: Regulate boat traffic by implementing an Estuary Zonation Plan (EZP) to minimise impacts on biodiversity and sense of place; Maintain Ramsar status for the Berg River Estuary (Ramsar status granted 1 February 2022);



6.2.8.2 Rocherpan Marine Protected Area and Nature Reserve

Environmental Impact Management: Rocherpan Marine Protected Area and Nature Reserve

Environment/ Spaces	Types of dev	Related environmental	
	That should not occur	That may have significant impact	management policies and guidelines
Situated along the Altantic Ocean 25km north of Velddrif. It offers protection to diverse marine, freshwater and terrestrial habitats.	Any urban type of development. Exploitation of important species (Fauna and Flora).	Recreational and eco-tourism activities, such as birdwatching. Hikers and visitors that do not use established paths.	

Priority Focus Area Management Priority Rocherpan Nature Rocherpan is a coastal nature reserve teeming with birds and colourful wildflowers; Reserve The reserve, which lies 25km north of Velddrif on the Cape West Coast, consists largely of a seasonal vlei that is usually dry between March and June; Rocherpan was established as a nature reserve (930 hectares in size) in 1966, and the adjacent section of the Atlantic Ocean was declared a marine reserve in 1988 (150 hectares in size); Rocherpan is dominated by the large central vlei (a shallow natural pool of water) and a 4.7km stretch of sandy Atlantic coastline, of which the southern 3km, and the area 500m seaward, constitutes the marine protected area. Legend Marine Protected Area Nature Reserve Conservation of Rocher and his workers closed off the mouth of Papkuils River, forcing it to flow behind the dunes biodiversity and that separate the sandveld from the sea: wilderness character This inadvertently created a perfect habitat for waterbirds, and the local species have thrived ever Along the coast, you'll see the rare and endangered black oystercatcher, the kelp gull and the Cape shoveller: It offers protection to diverse marine, freshwater and terrestrial habitats. Co-management and Rocherpan Marine Protected Area is managed by the National Department for Environmental effective governance Rocherpan Nature reserve is managed by Cape Nature; Secure financing: Adequate resources and capacity. Research and Promote scientific research; monitoring Maintain ecosystem health and functioning; Remove invasive alien vegetation. Public awareness Develop an effective education and awareness programme for the nature reserve area that enhances visitor experiences. Economic benefits and Establish and manage visitor facilities; ecotourism Rocherpan currently has eight eco-cabins available to be booked for accommodation, with the four newest cabins having just opened: Market the Rocherpan Nature reserve as a wilderness and nature based ecotourism destination.

6.2.8.3 Banghoek Private Nature Reserve

Environmental Impact Management: Banghoek Private Nature Reserve

Environment/ Spaces	Types of dev	Related environmental	
	That should not occur	That may have significant impact	management policies and guidelines
Situated in the northern parts of the Piket Mountains. Maintaining pristine areas of fynbos on the West Coast.	Farming, any urban type of development. Exploitation of important species (Fauna and Flora).	Recreational and eco-tourism activities, such as birdwatching. Hikers and visitors that do not use established paths.	

Management Priority	Priority Focus Area
Banghoek Private Nature reserve	 The full registered name of the development is "The Banghoek Private Nature Reserve" registration no 5597/91; Banghoek Private Nature Reserve is a sectional title development comprising maximum of 40 residential units plus the original 4 farm dwellings. It falls under the ambit of the Sectional Titles Act no 95 of 1986 as amended effective 7 October 2016.
Conservation of biodiversity and wilderness character	 Banghoek is one of the few remaining relatively pristine areas of fynbos left on the West Coast; The Reserve is home to several rare and endangered plant species and has a wide diversity of plants in its own right; Banghoek members feel privileged to own and be custodians of this unique floral kingdom.
Co-management and effective governance	 The Trustees of the body corporate will manage the affairs of the Banghoek Private Nature Reserve; Trustees have in 2019 started a programme to contain the spread of the poplar invasion into the reserve area; Secure financing; Adequate resources and capacity.
Research and monitoring	 Promote scientific research; Maintain ecosystem health and functioning; Remove invasive alien vegetation.
Public awareness	Develop an effective education and awareness programme for the nature reserve area that enhances visitor experiences.
Economic benefits and ecotourism	 Establish and manage visitor facilities; Market Banghoek Nature Reserve as a wilderness and nature based ecotourism destination.

6.2.8.4 Groot Winterhoek and surrounding areas

Environmental Impact Management: Groot Winterhoek, Beaverlac

Environment/ Spaces	Types of dev	Related environmental	
	That should not occur	That may have significant impact	management policies and guidelines
Tucked high up in the Olifants River Mountains above Porterville, about 180km north of Cape Town.	Any urban type of development. Exploitation of important species (Fauna and Flora).	Recreational and eco-tourism activities, such as bird- and wildlife-watching, and cooling off in rivers and streams. Hikers and visitors that do not use established paths.	

Management Priority	Priority Focus Area
Groot Winterhoek Wilderness And Beaverlac	 The Groot Winterhoek Wilderness is known for its rugged, wild landscape, with exceptional rock formations carved by the elements; This mountainous area lies about 180km north of Cape Town, near Porterville; As Groot Winterhoek's name suggests, winters are cold and wet. Winter nights are very cold, with temperatures below freezing. Summers are moderate, but hikers should always be prepared for sudden cold and mist; Tucked high up in the Olifants River Mountains above Porterville in the Western Cape in South Africa, Beaverlac offers camping and cabins to maximise your enjoyment of nature; Situated in a secluded 5000 hectare valley surrounded by mountains, Beaverlac is blessed with two rivers, the Ratel (Honey Badger) and the Olifants.
Conservation of biodiversity and wilderness character	 No pets/no firearms/no fires/no picking of flowers or collecting of seeds/no rubbish bins – all refuse must be carried out of the wilderness area/no toilets – all waste and toilet paper must be buried with a spade or trowel/do not use soap or shampoo in the rivers and streams; As a natural heritage site, Grootfontein farm is committed for posterity to the preservation of one of the few remaining wilderness areas; Vegetation consists of a variety of Mountain Fynbos. In summer the Ericas are particularly beautiful and the veld resembles a colourful patchwork; The endemic Ixianthus Retzoides commonly known as River Bells grows along the Ratel River; The area is a sanctuary for several wildlife species and sometimes you can hear the cries of Baboons as they forage in the mountains. Beaverlac's rich diversity of birds includes the majestic Black Eagle, Jackal Buzzard and colourful sunbirds and is truly a paradise for bird lovers; Our rivers are home to Clanwilliam Redfins and the rare Clanwilliam Yellowfish, both protected species; The area hosts several species of which the Rhebok and Klipspringer are most likely to be spotted,
Co-management and effective governance	 unlike the caracal, wild cat and shy leopard; Other species include Grysbokkie, Honey Badger, African Wild Cat, Black Eagle. Beaverlac owned by the Olivier brothers, Grootfontein farm adjoins the Groot Winterhoek Mountain Catchment Area and the Cederberg Leopard Conservation Area and is a successful
Research and monitoring	 example of agri-tourism. Promote scientific research; Maintain ecosystem health and functioning; Remove obstructions to flow in the estuary channel and invasive alien vegetation; Step back in time and visit some of Groot Winterhoek's remarkable examples of San and Khoi rock art. These paintings, found in rocky overhangs and caves, vary between 300 and 6 000 years old; They are an integral part of the wilderness area's value; Rock art is protected by the National Monuments Act (1969) and vandals who deface rock paintings face fines of up to R10 000 and/or two years imprisonment.
Public awareness	 Easy to use trail maps for these hiking trails created by Forge can be downloaded; Due to depleted fish stocks, fishing is no longer allowed in the Olifants, in Beaverlac; It is advisable to book in advance as capacity is limited, which is a means to limit human impact on the area.
Economic benefits and ecotourism	 There's plenty to do in Groot Winterhoek, including various day and overnight hikes, crystal-clear mountain pools and mountain biking; There are numerous options for hiking in the wilderness. Hikes have varying lengths and many provide welcome swimming opportunities; Parts of the greater conservation area, like Sneeugatrivier and the mountain peaks, are true wilderness – showing no traces of human intervention; Market the Groot Winterhoek Wilderness and surrounding areas as a wilderness and nature based ecotourism destination.

CHAPTER 7: Implementation Plan and Capital Expenditure Framework

The Capital Investment Framework (CIF) is defined in the Municipal Systems Act Regulations as all of the infrastructure required in a geographical area of a municipality. This includes infrastructure that will be provided by the municipality, as well as other spheres of government and/or organs of state including State Owned Entities. In terms of the MSA Regulations, every MSDF is required to prepare a CIF.

The Capital Expenditure Framework (CEF) is a requirement of the SPLUMA. DEA&DP guides that the CEF should attempt to include all government spending / investments in infrastructure within the municipal boundaries. Therefor the following should be considered:

The <u>funding envelop</u> is deemed to be that amount of funding that a municipality has available for investment in infrastructure (both capital investments (new / upgrades), as well as maintenance (renewal / servicing) requirements for infrastructure). This amount should be determined through the Long-Term Financial Plan, and it should be determined for a 10-year period. The CEF will need to set out a prioritised capital portfolio of infrastructure projects that fit within the affordability envelop.

Municipal Standard Chart of Accounts (mSCOA) requires municipalities to comply with 7 segments. The CEF touches on 3 of the 7 segments namely, **Project**, **Fund**, and **Regional Indicator**. mSCOA requires all budget line items to be assigned to a geographical area called a **Regional Indicator**. In so doing, the regional segment identifies which geographical areas generates the revenue and which geographical area is deriving benefit from the expenditure. In so doing, the mSCOA enables the municipality to analytically report on progress made in the delivery of services in a fair and equitable manner. The mSCOA also requires all line items to be classified in terms of **Project** whether it be capital project or an operations project. Operational in this sense refers to maintenance, the municipal running costs, infrastructure projects, and no-infrastructure projects.

<u>Functional Areas</u> are areas of similar characteristics and service levels and service requirements, such as low density established suburbs, industrial areas, high density informal areas or central business districts. These areas may correspond to an area sharing the same engineering and utility service requirements and levels of service (or similar upgrading needs). The demarcation of Functional Areas should take the lead from the information in the MSDF as well as infrastructure master plans, which set the drainage areas and parameters for future infrastructure need.

<u>Spatial Categories for investment planning</u> are different spatial areas that will have distinct infrastructure investment needs and desired outcomes, in line with the spatial logic set out on the MSDF. These areas will have different infrastructure planning requirements and spatial planning intent, and hence will require different infrastructure investment approaches or strategies. Ideally, various spatial categories for investment planning

should be defined and mapped in line with the SDF proposals, both at the municipal-wide scale as well as the settlement scale. Thus far, the following types of spatial categories for investment planning have been used, although additional ones can be defined and used to suit the needs of the municipality:

- Priority Investment Areas (sometimes referred to as Priority Development Areas) are areas in
 the municipality that occupy the highest development priority. These areas are the focus of spatial
 targeting of municipal investments and generally require significant or "catalytic" investments to
 upgrade urban space, improve urban functionality or reinforce existing urban assets. They are
 normally the "nodes" or "corridors" represented within the MSDF settlements of the municipality.
- Upgrading areas are those areas in the municipality that do not have the same levels of service as
 established urban areas or suburban areas of the municipality, and hence the levels of service in
 these areas need to be upgraded, in line with what is affordable to the municipality and
 commensurate with what the residents of the area can afford to sustainably pay for though rates or
 service charges.
- Consolidation areas are those areas in the municipality that have an acceptable level of service, in line with their function and the desired spatial strategy of the municipality. The key objective is to maintain these levels of service, with routine maintenance and asset care.
- Densification areas are those spaces in the municipality where the main spatial strategy is to increase their gross dwelling unit density and improve urban efficiencies. As a result of this intent, infrastructure services may need to be upgraded or expanded in order to accommodate an increased density.
- Long term development areas may be identified in the municipality with the explicit intent of
 opening then up for urban development in the medium to long term (between 10 to 20 years into the
 future, but not in the next 5 years). This allows engineering infrastructure planning to be responsive
 to this intent and be undertaken timeously to accommodate the long-term plan for the municipality.

<u>Prioritisation criteria</u>: To aligne the funds need with that received, projects have to be prioritised. The following criteria assists to determine municipal priorities:

PRIORITISATION TOOL FOR INFRASTRUCTURE INVESTMENT				
Project				
SPATIAL STRATEGY PRIORITISATION CRITERIA	Criteria 1: Project Falls within a Municipal Scale: Priority Investment Area as per the MSDF? (Y = 1, N = 0)			
	Criteria 2: Project Falls within a Settlement Scale Priority Investment Area as per the MSDF? (Y = 1, N = 0)			
	Criteria 3: Project Falls within a settlement scale Priority Investment Area, Upgrade Area, Densification Encouragement Area or Informal Settlement Upgrading Area as per the MSDF? (Y = 1, N = 0)			
	Criteria 4: Project directly related to enabling the implementation of a MSDF Spatial Policy or Strategy, such as Spatial Transformation? (Y = 1, N = 0)			
ENGINEERING PRIORITISATION	Criteria 5: Is this addressing a backlog? (Y = 1, N = 0)			
	Criteria 6: Is this project giving effect to services required in terms of a statutory or legal requirement? $(Y = 1, N = 0)$			
	Criteria 7: Will this project unlock new investments, attract new economic activities or generate new rates income for the municipality? (Y = 1, N = 0)			
CRITERIA	Criteria 8: Is the project implementation ready ? (Y = 1, N = 0)			
	Criteria 9: Is this infrastructure a net Asset (YES) or net Liability (NO) for the municipality? $(Y = 1, N = 0)$			
	Criteria 10: Will this infrastructure be revenue generating ? (Y = 1, N = 0)			
FINANCIAL PRIORITISATION CRITERIA	Criteria 11: Will this infrastructure be affordable to the municipality from a capital investment perspective? $(Y = 1, N = 0)$			
	Criteria 12: – Is the project an asset maintenance / renewal / replacement project ? (Y = 1, N = 0)			
	Criteria 13: Will this infrastructure be affordable to the municipality from an operational / maintenance perspective? (Y = 1, N = 0)			

Annexure 1: West Coast Vegetation Types

The following vegetation types in the Saldanha Bay, Bergrivier, Cederberg and Matzikama Municipalities and the percentage of each vegetation type occurring in each municipality can be seen in the table below.

Vegetation Type	Saldanha	Bergrivier	Cederberg	Matzikama
Agter-Sederberg Shrubland			62.88%	
Arid Estuarine Salt Marshes			9.70%	37.49%
Bokkeveld Sandstone Fynbos			16.83%	35.41%
Cape Estuarine Salt Marshes	3.00%	49.55%	8.71%	
Cape Inland Salt Pans	25.01%	9.84%	9.98%	4.41%
Cape Lowland Freshwater Wetlands	1.28%	26.80%	37.15%	1.11%
Cape Seashore Vegetation	2.14%	1.39%	6.07%	1.07%
Cape Vernal Pools	33.97%	61.57%		4.47%
Cederberg Sandstone Fynbos		1.15%	50.34%	
Central Knersvlakte Vygieveld				37.72%
Citrusdal Vygieveld			99.20%	
Doringrivier Quartzite Karoo		0.16%	64.57%	19.70%
Graafwater Sandstone Fynbos		6.59%	89.85%	3.52%
Hopefield Sand Fynbos		34.19%	52.22%	1.19%
Kamiesberg Mountains Shrubland				4.06%
Klawer Sandy Shrubland			1.30%	98.70%
Knersvlakte Dolomite Vygieveld				100%
Knersvlakte Quartz Vygieveld			0.05%	58.66%
Knersvlakte Shale Vygieveld				46.38%
Lamberts Bay Strandveld			71.17%	28.81%
Langebaan Dune Strandveld	27.43%	68.22%	4.35%	
Leipoldtville Sand Fynbos	27.04%	15.22%	6.61%	2.59%
Namaqualand Riviere			0.88%	11.82%
Namaqualand Salt Pans				1.18%
Namaqualand Sand Fynbos			5.39%	24.00%
Namaqualand Spinescent Grassland			0.11%	99.89%
Namaqualand Strandveld				23.63%
Northern Inland Shale Band		8.95%	29.09%	
Vegetation				
Northern Knersvlakte Vygieveld				0.19%
Olifants Sandstone Fynbos		13.97%	75.83%	
Piketberg Quartz Succulent	9.13%	90.87%		
Shrubland				
Piketberg Sandstone Fynbos		100%		
Saldanha Flats Strandveld	51.80%	32.12%	1.73%	
Saldanha Granite Strandveld	91.89%			
Saldanha Limestone Strandveld	86.70%			
Southern Afrotemperate Forest		0.23%	0.52%	
Swartland Alluvium Renosterveld	10.64%	11.58%		
Swartland Shale Renosterveld	3.93%	28.09%	0.12%	

Vegetation Type	Saldanha	Bergrivier	Cederberg	Matzikama
Swartland Silcrete Renosterveld	6.48%	16.12%		
Swartruggens Quartzite Fynbos			31.07%	
Swartruggens Quartzite Karoo			26.26%	
Tanqua Karoo			3.56%	
Tanqua Wash Riviere			0.18%	
VanrhynsdorpGannabosveld			1.98%	82.14%
Vanrhysdorp Shale Renosterveld			0.01%	74.14%
Western Altimontane Sandstone		2.77%		
Fynbos				
Winterhoek Sandstone Fynbos		22.75%	0.01%	

Annexure 2: Proposals Affecting Proclaimed Provincial Road Network

Note: Any proposals affecting the Proclaimed Provincial Road Network are subject to consultation, endorsement and the approval of the Department of Infrastructure (DOI) Transport Infrastructure Branch:

- Softening main roads and traffic calming;
- Amendment of urban edge (impact on road authority boundaries);
- All proposal including land use change and developments adjacent to the Proclaimed Provincial Road Network and adjacent to or within the Proclaimed Provincial Road Network road reserve;
- Non-motorised movement across streets and corridors (safety hazards and risks are inadvertently introduced);
- Provision of access to and from the Proclaimed Provincial Road network is to be assessed and provided in accordance with the WCG DTPW (now DOI) Access Management Guidelines (2020). Access includes farm stall accesses and tourism view or interest points. The provision of direct access and egress, must also consider the impact on the surrounding road network;
- Development of Tourism routes, scenic routes and destinations or Scenic Drive (or similar) Policy to be undertaken in collaboration with and to the approval of the Regional Tourism Liaison Committee (RTLC);
- Corridors (include, but are not limited to scenic, tourism, freight etc) impacting (directly or indirectly)
 on the Proclaimed Provincial Road Network assets. Arterial Management Plans for these corridors
 should be given due consideration;
- Provision of any potential impact, both during construction or operation, on the Proclaimed Provincial Road Network assets;
- Any proposal to expropriate sections of the Proclaimed Provincial Road Network Road Reserve to accommodate development;
- Planning for key bulk infrastructure needs to ensure that appropriate space/provision Is made;
- Maintenance, upgrade and new construction works;
- During the process of providing the required infrastructure to support growth and development;
- Development of a Municipal Roads Master Plan. where proposals impact (directly or indirectly) the Proclaimed Provincial Road Network;
- Preparation of Arterial Management Plans to be undertaken.

Implementation timing and funding of DOI-led Projects is be determined by the DOI Transport Infrastructure Branch in accordance with the relevant Provincial Budget, commonly referred to as Vote 10. The DOI is mandated to provide and protect the Proclaimed.

Annexure 3: MSDF List of Projects

Town		Description	Size	Total	
Piketberg	1	Group of smaller portions in northern	5,6 ha	11,8 ha	Some
		area of town			
	2	Site in Steynville	1 ha		No
	3	Existing municipal residential project in south	5,2 ha		Yes
	4	RSEP			Yes
	5	Connected Neighbourhood Nodes			Yes, partially
	6	Diversify Housing Delivery			No
	7	Industrial Expansion			No
Velddrif/Laaiplek	8	Noordhoek Development	69,9 ha	92,6 ha	Partially
Volumn/Lumpick	9	Vacant properties in Velddrif	7,4 ha	52,0 Hd	No
	10	Development in Laaiplek	15,3 ha		Yes, partially
	11	Pelican Harbour Gateway	10,0114		Yes, Planned
		•			
	12	Coastal Upgrades and Promenade			No
	13	Diverse Neighbourhood Nodes			Yes, partially
	14	New Connections			No
	15	Community College	10.11		No
Porterville	16	Monte Bertha Expansion	10,4 ha	14,1 ha	No
	17	Site south of Cemetery	3,7 ha		Yes
	18	Voortrekker Road Corridor Improvements			Precinct plan developed
	19	Market Plein Public Square			No
	20	Spruitjie Park			No
	21	Community Services Precinct			In process
	22	Monte Bertha CBD Diversification			Partially
Eendekuil	23	Youth and Skills Centre			No
	24	Cultural Park			No
	25	Rural Development Housing Pilot Project			No
	26	Local Produce Market			No
	27	Rail Station Heritage Precinct			No
Dwarskersbos	28	Approved development – cadastrals and	132,46 ha -	NA	Yes
		services of phase 1 already implemented	27% for	10,	1.00
	29	Approved development - longer term phases	housing, 73% for open space and nature reserve		In process
	30	Boardwalk			No
	31	Mixed Use Community Node			No
	32	Coastal Development Management Framework Guidelines and Overlay Zone			No
	33	NMT Network			No
Redelinghuis	34	Infill development on vacant land in southern portion of town	3,9 ha	3,9 ha	No
	35	Cultural Park and Hiking Trail			No
	36	Urban Agriculture and Local Market			No
	37	Farm Worker Housing and Support Initiative			In process
	38	Heritage Overlay Eco Tourism			No
	39	Youth Centre			No
	40	Local Produce Market			No
Aurora	41	Market Square			No
Autora	42	Community Gardens			No
	43	NMT Safe Walkways			No

Annexure 4: Registered interested and affected parties and proposals

Western Cape Department of

Agriculture

Cultural Affairs and Sport

Education

Health

Local Government

Office of the Premier

Provincial Treasury

Social Development

Transport and Public Works

Other

Cape Nature

Private Interested and affected parties

Porterville

Piketberg

Velddrif

Dwarskersbos

Cape Town

Twenty-three (23) private interested and affected parties registered and include individuals, trusts, companies, business chambers and associations, most from the settlements listed above. A contribution was received for Velddrif and has been included on the next page.

