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Karoo Hoogland Rural Spatial Development Framework/Land Development Plan 2010 –  
Executive Summary

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The Rural Spatial Development Framework/Land Development Plan for Karoo Hoogland Municipality prepared in terms of the Northern Cape Planning and Development Act, 1998 (Act 7 of 1998) is hereby approved by Karoo Hoogland Council in terms of:

Council Resolution \_\_\_\_\_ dated \_\_\_\_\_

\_\_\_\_\_  
(duly authorised representative of Municipality)

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## **1 Introduction**

A Spatial Development Framework (SDF) is a tool to achieve the desired spatial form of the municipality. In other words, the SDF gives spatial effect to multi-sectoral projects identified in the IDP and assists the municipality in coordinating the implementation of the various sector plans. Therefore, the SDF cannot operate in isolation but is directly linked to the Integrated Development Plan (IDP).

This report provides an executive summary of the Karoo Hoogland Spatial Development Framework/Land Development Plan 2010 and forms an integral part of the SDF.

The executive summary focuses on the actual spatial strategies, projects and implementation thereof, although it also contains a brief overview of the municipal area and its current reality.

The SDF consists of four (4) phases. Phase 1 considers the historical growth of the regions and towns of the Karoo Hoogland Municipality leading up to the current spatial interpretation of its Integrated Development Plan. Phase 2 focuses on an interpretation of the policies and strategic frameworks within which the municipality can align and achieve its developmental goals. Phase 2 also analyses the spatial environment. Phase 3 considers the desired spatial pattern of Karoo Hoogland and the social, geographic and economic context in which it can best be developed. Phase 4 defines the spatial goals and objectives of the municipality, the spatial strategies available to it and, out of this, to develop a strategic development concept. This has formed the basis for a set of implementable projects, which should contribute to the achievement of the overall spatial goals and objectives.

## **2 Background to Karoo Hoogland Municipality**

Karoo Hoogland Municipality is one of six local municipalities falling under the Namakwa District of the Northern Cape Province. The population of the Karoo Hoogland was estimated at 10 420 in 2007. The majority of the population (77.3%) resides in urban areas while the balance (22.7%) are in rural areas.

Karoo Hoogland is a relatively large municipality in geographic terms, but has a corresponding low population density of 2.8 people per square kilometer. The municipality has experienced a steady decline in population and number of households over the ten-year period from 1996-2007, with the population declining by 14% over that period and households decreasing by 8.8%. This has largely been attributed to the lack of economic opportunities in the region and the drift of the population to areas where they have better prospects of finding a job.

The main towns that fall within Karoo Hoogland include:

**Williston (3 072 people)**

Williston was established in 1845 as a mission station. It was first known as Amandelboom but renamed Williston in 1919. The town is largely populated by the agricultural community and supports approximately 90 occupied farms. It includes a few small businesses, four educational facilities ranging from pre-school to secondary school level, a police station, medical clinic and mobile medical unit, several churches and sports clubs.

Williston does not have the same advantages as the other towns in terms of their association with the Sutherland Telescope, and is further disconnected from the rest of the municipality by the lack of tarred roads reaching it from the south.

**Fraserburg (2 642 people, 100km south east of Williston)**

Fraserburg was established in 1851 as an agricultural centre for the surrounding sheep farming community. Its facilities include a number of co-operatives and small businesses, four educational facilities that range from pre-school to secondary school level, a police station and medical clinic with a mobile medical unit, churches and sports clubs. Fraserburg is also promoted as a tourism destination and offers visitors the viewing of dinosaur footprints and fossils.

Fraserburg, like Williston, has an interesting settlement history, which makes the town more attractive from an architectural standpoint, but it is also far from the main cities, presenting a sense of serenity and a feeling of “getting away from the crowds.” It borrows from its sister city, Sutherland, the offering of dark skies and sparkling lights. Unfortunately, however, Fraserburg is a town that must be a destination on its own, as it does not feature on any main or even secondary route to any place of consequence.

**Sutherland (3 648 people, 142km south of Williston)**

Sutherland is favoured as a strategic node due to the existence of the Southern African Large Telescope (SALT), which is the largest single optical telescope in the southern hemisphere. The region was selected because of its clear and dark night skies, due to its remote and arid location. Its altitude of over 1400 metres above sea level also makes it one of the coldest areas in the country, with winter snow a frequent occurrence. Both of these attributes make Sutherland an attractive tourist destination and have resulted in more tourism opportunities than in other areas.

The town supports a number of small businesses, three educational facilities ranging from pre-school to secondary school level, a medical unit, a police station, churches and sports clubs.

The area surrounding Sutherland is characterised by typical Karoo vegetation, which includes various protected species.

### **3 Institutional context**

There are three key perspectives underlying the institutional analysis of Karoo Hoogland:

- The need to develop the economy for the benefit of its residents and to alleviate the societal problems, such as substance abuse and problems among youth, as well as to provide it with its basic needs;
- The need to manage the resources of the area in order that these are sustainable for future generations that may choose to stay there; and
- The need to protect natural resources, which if over-exploited, may result in damage to other biospheres and irreversibly upset the ecology of the environment.

In order to test the compatibility of the Karoo Hoogland Municipality's execution and/or adoption of its Rural Spatial Development Framework, there are a number of policies, legislation and planning documents that should either be used as guides or, by law, must be followed. For example, the region falls within a corridor of importance and should receive development assistance to enhance this route, but it is also a region that requires stabilisation of its resource base to serve the existing population and to provide for the best possible basic services, given the limited resources. While finance for development is limited, areas like Karoo Hoogland should take advantage of those institutional support mechanisms that it can access on its own merits. The Provincial Growth and Development Strategy (PGDS) suggests that the private sector, and to a limited extent, the donor community, should be lobbied to bring development funds to these marginalised areas.

The harmonisation of the IDP's, PGDS's and the National Spatial Development Perspective (NSDP) is specifically raised so that a more workable and effective planning system is established. It goes so far as to suggest that the provincial government will engage with local and national government to ensure the harmonisation and alignment of the NCPGDS with the IDP's, the NSDP and various sector planning initiatives of national government. In so doing, the provincial government not only recognises its obligation towards co-operative approaches to governance, but it also believes that this approach will result in improved growth and development programmes.

Other important initiatives for this municipality include the SKA (Square Kilometer Array), SKEP (Succulent Karoo Ecosystem Program) and Namakwa Biodiversity Sector Plan.

The district's and the local municipality's LED and IDP strategies were developed within the ambit of the overriding legislation and took into account the planning and development policies meant to govern the processes by which they were formed.

The district municipalities that hold responsibility for the development of the constituent local municipalities, however, need to play a strong role in facilitating access to the CRDP. As and when budgets are in place and allocations to rural municipalities are determined, districts such as Namakwa will need to be ready with proposed plans and projects that can utilise the funds according to the approved activities and desired outcomes.

The Department of Rural Development and Land Reform will act as an initiator, facilitator and coordinator and catalyst in rural development interventions. Inter-departmental collaboration (resources, coordination, and project management) at all spheres of government is essential for the successful implementation of the CRDP. Projects must be undertaken in a manner consistent with the integrated development plans, provincial growth and development strategies, area-based plans and other planning frameworks. Projects must be undertaken within a participatory community-based planning approach. Projects must be packaged and coordinated at provincial level in consultation with local level structures.

The **Northern Cape Provincial Growth and Development Strategy (PGDS)** highlights a hierarchy of growth and no-growth centres. The hierarchy includes:

*Established Growth Centres*, which are regarded as major established growth centres located in the Kimberley-Postmasburg sub-region and which are likely to remain the main-economic driving force in the province for the foreseeable future.

*Emerging Growth Centres* are primarily those areas around Upington and where agriculture and mining have been the sources of new economic growth.

*Stagnating Small Towns* which are mainly in the Karoo and Namakwa Districts where the erosion of the economic base of the area has resulted in severe contraction of the local economies.

*Land Reform Areas* which have resulted from land restitution and land re-distribution cases that have been settled where people have moved back onto ancestral and other land. In addition, land tenure and ownership arrangements have changed in the former Act 9 areas. In most cases, this has led to the need to provide services in previously under or non-serviced areas. From a spatial development perspective the locality of these areas will be a critical determinant of their future viability.

*Development Corridors and Special Resource Areas.* Within the province, the PGDS identifies four discernible development/transport corridors. First, is the corridor from Springbok through Upington to Kimberley (and the Free State and Gauteng), which links the major economic centres in the province. The second corridor links Namibia to Upington, passing through De Aar to the Eastern Cape. The third corridor links Gauteng through the North West province to

Kimberley and Cape Town. A fourth corridor links Cape Town through Springbok in Namaqualand to Namibia and potentially Angola. While these corridors are regarded as vital lifelines from a transport perspective, the PGDS regards each area as having relatively high economic development potential, which it feels could benefit the region enormously in terms of their proximity to established related transport infrastructure, e.g., airports and rail lines.

In the case of the Karoo Hoogland Municipality, its main towns lie on no real important corridors, other than the minor one leading from Calvinia to Carnarvon. In order to develop an integrated approach to the municipal area, it may be worth considering connecting roads that may lead to a tourism strategy linked to the mutual histories of the towns; on the other hand, it may be that the municipal area is too disconnected to attempt such an association and better to have different development approach to each town.

The Sutherland development potential is large compared to the other towns, given the existence of the telescope and related activities. For towns like Williston and Fraserburg, to fund development, the province suggests that alternative sources may be available through other means, which through aligned and strategic approaches should result in funding not directly available from the province. The PGDS does however note that the major portion of national government transfers to the province takes the form of an “equitable share,” which provinces may use at their discretion in accordance with their constitutional obligations. Thus, Karoo Hoogland may still want to petition the province to redirect funds to its area to promote development.

Local municipalities like Karoo Hoogland should look to other revenue generating activities to supplement its income. Since the existing population in the municipal area is primarily poor and under-resourced, this alternative source of income would probably be best raised from outside.

### **Square Kilometer Array Project (SKA)**

The Karoo Array Telescope (MeerKAT) project involves the construction of a world-class radio telescope, which is being built by the Department of Science and Technology and the National Research Foundation near the towns of Carnarvon and Williston. The construction of the proposed SKA is expected to cost approximately 1.5 billion Euros should it be awarded to South Africa in 2012. The operations and maintenance of a large telescope normally costs about 10% of the capital costs per year. This means the international SKA consortium, if approved, will be spending approximately 100 to 150 million Euro per year on the telescope. It is expected that a significant portion of the capital, operations and maintenance costs would be spent in the host country, *but not necessarily in Karoo Hoogland.*

South Africa's Astronomy Geographic Advantage Act (2007) declares the entire Northern Cape Province, with the exception of the Sol Plaatje Municipality (Kimberley) as an astronomy advantage area. Within that an area of 12.5 million hectares is the main protected area - or

radio astronomy reserve - for the SKA. This area is also referred to as the Karoo Central Astronomy Advantage Area.

Hosting the SKA in South Africa will boost the development of high level skills and cutting edge technology infrastructure in Africa, and will also attract expertise and collaborative projects to the continent. By contrast, however, the limitations for development in terms of the area declared an advantage area could have long-term implications for the region.

## **4 Spatial Development Realities**

### **4.1 Spatial Limitations**

The following issues and opportunities are evident from the spatial analysis:

- Karoo Hoogland is removed from economic centres and metropolises such as Cape Town, Johannesburg and Pretoria.
- Expected water shortage due to climate change in an already water scarce area requires smarter settlement planning and resource management techniques.
- Karoo Hoogland has limited mining potential, other than the uranium deposits located along the southern boundary and central between Williston and Fraserburg.
- Spatial initiatives need to plan for a population characterised by a high unemployment level, low household income, high dependency ratio, a fairly young age structure and few tertiary qualified people.
- There is also a backlog of service delivery associated with housing and health, all of which impact on the region's social fabric, which is regarded as worrisome due to the high rate of substance abuse and the number of troubling youth issues.
- The distance between towns and the state of roads is a frustration to local residents as well as to tourists and investors that visit the municipality.
- The legacy of apartheid is evident in the towns of Karoo Hoogland indicating a visible separation between advantaged and disadvantaged areas.
- Karoo Hoogland suffers from poor infrastructure and the lack of good tarred roads, which inhibits local economic development.

Karoo Hoogland lies in a uniquely difficult development position. It is remote, has insufficient resources to adequately provide basic services to its existing population, while at the same time

the surrounding environment holds little potential for development other than tourism and agriculture.

## 4.2 Spatial Opportunities

- The municipality consists largely of non-arable, low potential grazing land ideally suited for sheep farming. Small patches of soils highly suited to arable agriculture occur along the R353 and around Fraserburg; soils of intermediate suitability for arable agriculture are located in the northern part of the municipality.
- Karoo Hoogland has a unique environment in terms of its biodiversity (plants species endemic to the area) and landscape (wide open spaces, lack of air pollution and cloudless nights, ideal for sky watching) that attracts tourists and nature lovers.
- The Bokkeveld-Hantam-Roggeveld geographic region traverses the municipality in the south western part. This is an important conservation area consisting of various critical biodiversity areas and holds to eco-tourism potential.
- Large farm portions owned by the municipality are made available to emerging farmers. These areas need to be well managed to ensure sustainable communities, i.e., impose grazing management guidelines, capacity building programmes, settlement densities and the provision of services and business support.
- The PGDS recognises Sutherland as a development node of importance. It is favoured as a strategic node due to the existence of the Southern African Large Telescope (SALT), which is the largest single optical telescope in the southern hemisphere. Its altitude of over 1 400 metres above sea level also makes it one of the coldest areas in the country, with winter snow a frequent occurrence. Both of these attributes make Sutherland an attractive tourist destination with tourism development opportunities.

## 5 Spatial Goals and Objectives

Karoo Hoogland Municipality needs to organise and manage its people, resources and infrastructure in such a manner as to ensure a safe, healthy, sustainable and economically viable environment.

The spatial vision describes what Karoo Hoogland Municipality wants to achieve with the physical environment in the long term. The vision must therefore be based on a desired, yet realistic future state.

## 5.1 Spatial Goal

“To optimally develop our inherent economic opportunities such as our natural beauty and clear night skies, to protect and utilise our rich and diverse natural and cultural heritage for the enjoyment of all and to develop sustainable settlements where residents can lead enriched, healthy and convenient lives”.

## 5.2 Spatial objectives and strategies

Three (3) spatial objectives were identified, each complimented by a set of spatial strategies. The spatial strategies indicate how the objectives can be achieved through a series of interventions that capitalise on the opportunities within the municipality:

Table 1: Spatial Objectives and Strategies – Exploit Economic Opportunities

<b>Spatial Objective:</b>	<b>Exploit economic opportunities</b>	
<b>Spatial Strategies</b>	1	Strengthen mobility & economic links between Sutherland, Fraserburg and Willison
	2	Development of cross border Tourism Corridors
	3	Promote development of Sutherland astronomy tourism hub
	4	Support sustainable mining exploration
	5	Promote renewable energy generation

Table 2: Spatial Objectives and Strategies – Create Sustainable Urban and Rural Settlements

<b>Spatial Objective:</b>	<b>Create sustainable urban and rural settlements</b>	
<b>Spatial Strategies</b>	6	Strengthen hierarchy of activity nodes
	7	Eradicate basic services backlogs
	8	Conservation of ground water as raw water supply

Table 3: Spatial Objectives and Strategies – Protect the Natural and Built Environment

<b>Spatial Objective:</b>	<b>Protect the natural and built environment</b>	
<b>Spatial Strategies</b>	8	Conservation of natural environment
	9	Protection of heritage features

## 6 Macro Strategic Development Concept

### 6.1 Activity Nodes

Although the three towns have more or less the same population size and provide similar services and functions to their surrounding areas, Sutherland is identified as an astronomy hub that should focus on tourism. Sutherland is strategically located in proximity to the N1 and the Cape Town metropole.

Williston is strategically located on the R63 road and is identified as the administration centre of Karoo Hoogland. Further growth and development of Williston will significantly depend on the realisation of the SKA project. The development of Fraserburg depends on the possibility of uranium mining in the area and the improvement of road access.

The aim should be to attract private and public investments to these nodes to increase economic and social opportunities, to aggressively market the cultural-historical importance of these towns and to provide an effective service to the surrounding rural areas and to tourists.

These nodes need to form the focus areas to which catalyst development projects are directed providing for sustainable communities involving:

- Urban renewal initiatives and economic regeneration;
- Human resources development;
- Neighbourhood development;
- The upgrading and restructuring of engineering and social infrastructure;
- Urban management; and
- Transportation and roads.

The characteristics of the different nodes and interventions required are illustrated in the following table:

Table 4: Characteristics of different nodes and interventions required

Classification	Characteristics	Interventions
<b>Astronomy centre</b>		
Sutherland	<ul style="list-style-type: none"> <li>• Strategically located in proximity to the N1 and Cape Town</li> <li>• Prominent tourist destination (observatories)</li> <li>• Provide basic level of services and functions</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on tourism by providing sufficient tourist facilities and accommodation</li> <li>• Restrict noxious developments in terms of light and air pollution</li> </ul>

Classification	Characteristics	Interventions
	<ul style="list-style-type: none"> <li>Significant heritage in terms of architectural buildings</li> </ul>	<ul style="list-style-type: none"> <li>Attract private and public investments</li> <li>Protect the heritage significance of Sutherland</li> <li>Promote urban renewal strategies</li> <li>Increase economic and social opportunities</li> <li>Focus development within urban edge</li> </ul>
<b>Administrative centre</b>		
Williston	<ul style="list-style-type: none"> <li>Function as the administrative centre of Karoo Hoogland</li> <li>Good access via road and rail transport (not operational)</li> <li>Provide basic level of services and goods</li> </ul>	<ul style="list-style-type: none"> <li>Improve the provision of basic engineering services</li> <li>Encourage tourism development</li> <li>Restrict further growth and development within urban edge</li> <li>Improve main road sections through town</li> </ul>
<b>Heritage centre</b>		
Fraserburg	<ul style="list-style-type: none"> <li>The historic core of town has high architectural value</li> <li>The paleo surface is near Fraserburg.</li> </ul>	<ul style="list-style-type: none"> <li>Protect the heritage significance of Fraserburg</li> <li>Encourage tourism development</li> <li>Restrict growth and development within urban edge</li> <li>Improve main road sections through town</li> </ul>

## 6.2 Tourism Nodes

Opportunities exist for tourism facilities and should be developed as such. Each of the three towns offers unique tourism attractions, namely:

- The town of **Sutherland** is the home of the South African Large Telescope (SALT) which makes it popular to star gazers and astronomers. SALT is situated ±15 km out of town on the R356 road to Fraserburg. Sufficient accommodation facilities need to be provided to tourists visiting Sutherland.

- **Fraserburg** is home to the spectacular paleo surface and attracts archeologists and those intrigued by dinosaurs and prehistoric life. The paleo surface is situated on the farm Gansfontein, approximately 5km out of town. The paleo surface needs to be protected and marketed as a tourist destination.
- The town of **Williston** has heritage significance and is known for the corbelled houses located in the region, the “tombstone route” linking the farms of Koega, Oest and Dassiekloof and the Meerkat site to the north east.

### 6.3 Transportation Corridor

The identified transport corridors include:

- **Calvinia-Williston-Carnarvon** corridor consisting of the R63 tar road and railway link between Carnarvon, Williston, Calvinia and to the N7. This is an important transportation corridor linking Gauteng to the West Coast and will become an even more frequently used road once the section between Carnarvon and Vosburg has been tarred.
- **Sutherland-Matjiesfontein-N1** corridor consisting of the R354 tar road linking Sutherland with the N1 highway via Matjiesfontein, which is the main link between Karoo Hoogland and Cape Town.

Corridor development in Karoo Hoogland does not necessarily imply that development is supported along these transportation corridors, but rather that these routes should function as regional linkages, with the focus on transport mobility. Development should rather focus within the urban edges of identified towns.

North-south integration between the two corridors is recommended through improved road linkages between:

- Sutherland and Calvinia;
- Sutherland and Fraserburg and Fraserburg and Williston; and
- Sutherland and Williston.

### 6.4 Tourism Corridors

The following tourism routes have been identified:

- Sutherland-Calvinia-Nieuwoudtville is identified as an eco-tourism corridor.

- Sutherland-Fraserburg-Williston is identified as the Highlands Tourism Corridor – it is essential that the unique features of the different towns be combined into one strategy. For example edu-tourism should focus on the geology and paleontology at Fraserburg, astronomy and biodiversity at Sutherland and radiology and cultural tourism at Williston.
- “Walking with Ancestors” is an important tourism initiative and enjoys high priority.

Tourism corridors should focus on supporting the hospitality and tourism industry along it. The tourism of Karoo Hoogland should be promoted and marketed through a well-developed tourism strategy. Such a strategy should focus on the inherent tourism potential of the three towns, tourism attractions in their surrounds and proper tourism routes linking these tourist attractions.

More importantly for this strategy to succeed is that the roads be improved between the towns, proper signage be erected on the roads and that sufficient infrastructure be developed in the towns, i.e., tourist accommodation, restaurants, internet facilities, etc.

**Refer to Land Use Management Guidelines in Phase 4**

## 6.5 Environmental Conservation

The environmental conservation zone should include all ecologically sensitive natural open spaces with conservation value, i.e., mountain ranges, proclaimed nature reserves, conservancies, river environments, wetlands, biodiversity corridors, etc.

The following areas form part of the environmental conservation zone:

- The Bokkeveld-Hantam-Roggeveld corridor including the Bokkeveld-, Hantam-, Roggeberge, Kamsberg and Basterberge forming a continuous ecological unit that is situated in the southern part of the municipality. This corridor also includes the Tankwa National Park to the north.
- Mountainous areas along the southern boundary stretching from Kamsberg to the Nuweveldberge, linking with the Karoo National Park to the south east.
- Major river systems include the Vis-, Riet-, Sout- and Sak Rivers, which flow periodically every few years. Rivers and associated riparian vegetation form important biodiversity corridors and should therefore be protected from human settlement.
- The wetlands in the northern part of the municipality that links with the Sak River.
- A biodiversity corridor linking mountainous areas between Williston and the Meerkat/SKA Site, continuing into Kareeberg Local Municipality.
- Fraserburg and surrounding area due to distribution of Riverine Rabbits.

**Refer to Land Use Management Guidelines in Phase 4**

## 6.6 Agriculture

The larger extent of Karoo Hoogland consists of agricultural land with low potential grazing mainly used for sheep and game farming. There is an increasing interest in commercial game farming, hunting safaris and holiday farms in the municipal area.

Only 1.5% of soils are highly suitable for arable agriculture, where climate permits. Possibilities for small-scale intensive irrigation farming exist on the banks of the Sak, Riet, Sout, Brak and Damfontein Rivers.

**Refer to Land Use Management Guidelines in Phase 4**

## 6.7 Mining Development

The mining industry in Karoo Hoogland could become an employer in years to come, considering the huge uranium deposits. Possibilities of uranium mining have been identified, mainly in the southern part of the municipality:

- South east (Damfontein se River) and south west of Fraserburg (Klein Riet River)
- South east of Sutherland, close to Salpeterskop and on the banks of the Riet River

Other mining opportunities include:

- Copper and silver are found on Klein Witkraal op Kapgat 724, Klein Kookfontein 137, Droogfoots Fontein 356 and Arbeiders Fontein 150.
- Calcite is found on the farms Annex Kransfontein 721 and Arbeiders Fontein 150.
- Aggregate and building material is found on the farms Brassefontein 371 and Wit Klip 372.

**Refer to Land Use Management Guidelines in Phase 4**

## 6.8 !Xam Cultural Landscape

The most northern part of Karoo Hoogland forms part of the !Xam Cultural landscape and is one of the sites in South Africa's Tentative List of World Heritage Sites as provided for by the Guidelines to the World Heritage Convention and the South African World Heritage Convention Act. The boundaries are not yet defined, but will include areas in the north west of the municipality. The future World Heritage site will commemorate the customs and cultural practices of the !Xam San, a now extinct community that once occupied the area known as Bushmanland.

The possible future presence of part of a World Heritage Site in Kareeberg holds much potential for tourism development and will recognise the international importance of the ancestors of a large proportion of the population of the municipal area.

## 6.9 Square Kilometer Array (SKA)

The Karoo Array Telescope (MeerKAT) project involves the construction of a world-class radio telescope, which is being built by the Department of Science and Technology and the National Research Foundation near the towns of Carnarvon and Williston. The construction of the SKA is expected to cost about 1.5 billion Euros.

The Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007) indicates that once an area has been declared an astronomy advantage area, measures for protection from detrimental radio interference will be applied as provided in the regulations. Protection levels shall be enforced on any new radio frequency service operating within specific frequency ranges and existing radio frequency services with the proviso that concessions may be granted.

Karoo Hoogland Municipality is impacted on by all three Karoo Central Radio Astronomy Advantage Areas. The specific implications for development are currently unknown.

## 6.10 Wind farms

Two separate wind farms are proposed (*Refer to Plan A: Karoo Hoogland Macro Strategic Development Concept*):

- **Roggeveld Wind Farm** development is proposed in the Roggeveld Mountains. The facility will utilise wind turbines to generate electricity that will be fed into the Nation Power Grid. The facility will have an energy generation capacity of up to 750MW and will consist of the following:
  - ± 250 wind turbines;
  - Electrical connections;
  - Substation (single storey of approximately 2500m<sup>2</sup> in size);
  - Access roads and site access; and
  - Additional project infrastructure.
- **Suurplaat Wind Energy Facility** lies 50km south east of Sutherland and 41km north of the N1 national road. The study area measures approximately 10 874 hectares. The electricity generated will be fed into the National Power Grid and will consist of 140 wind turbines and associated infrastructure (i.e. substations, access roads and distribution power lines).

### **6.11 Gas exploration**

Gas exploration is currently being investigated in close proximity to Fraserburg. The extent and location of the project is yet to be confirmed.

## **7 Micro Strategic Development Concept**

Micro Strategic Development Concept Plans are prepared for Sutherland, Fraserburg and Williston.

The following spatial proposals will ensure the development of sustainable settlements in Karoo Hoogland:

Table 5: Spatial proposals

Proposal	Definition	Location	Why
<b>Urban edge</b>	The urban growth boundary indicates the interface between urban and rural environments. It therefore indicates the area where urban growth should not be allowed	As indicated on Micro Concept Plans for Fraserburg, Williston, Sutherland	A major spatial problem is uncontrolled, low-density sprawling of settlements into the surrounding rural area. This has a number of disadvantages: <ul style="list-style-type: none"> <li>• It results in a settlement pattern that has neither urban nor rural advantages.</li> <li>• In terms of infrastructure investment it is impossibly expensive to serve.</li> <li>• It could compromise valuable natural environments and high potential agricultural land</li> </ul>
<b>Integration</b>	Integration refers to the interdependence of urban functions and activities resulting from a fine-grained mix of land uses and or income groups	As indicated on Micro Concept Plans for Fraserburg, Williston, Sutherland	The two fundamental objectives of integration are to: <ul style="list-style-type: none"> <li>• Redress past spatial imbalances, and</li> <li>• Improve access to social, economic and recreational opportunities, services and facilities</li> </ul>
<b>Residential Densification</b>	Densification is the process whereby densities, i.e. the number of dwelling units per hectare, increase in a planned and sustainable manner. It can take place by means of: <ul style="list-style-type: none"> <li>• Apartment buildings (flats)</li> <li>• Cluster housing (group housing)</li> <li>• Subdivision and second dwelling</li> </ul>	As indicated on Micro Concept Plans for Fraserburg, Williston, Sutherland	Densification creates more compact environments that improve access to work, services. It also provides for more efficient use of infrastructure
<b>Residential Infill/Extension</b>	Is the process whereby vacant land within the urban edge is used for infill development. It can take place by means of: <ul style="list-style-type: none"> <li>• development of vacant erven that are already surveyed;</li> <li>• “Greenfields” development, being</li> </ul>	As indicated on Micro Concept Plans for Fraserburg, Williston, Sutherland	Infill development creates more compact environments that improve access to work, services. It also provides for more efficient use of infrastructure

Proposal	Definition	Location	Why
	the natural extension of town.		
<b>Mixed use</b>	The mixing of different land uses within a specific location or precinct. Mixed uses can comprise a combination of residential (mostly higher density residential), businesses, offices and community facilities. Mixed uses can either comprise different land uses on different erven but within the same locality or mixed use in the same building	As indicated on Micro Concept Plans for Fraserburg, Williston, Sutherland	Nodes are important urban elements which can be used to restructure areas where activity is dispersed and where there is no sense of place legibility or special focus.
<b>Industrial</b>		As indicated on Micro Concept Plans for Fraserburg, Williston, Sutherland	
<b>Open space/Environmental Conservation</b>		As indicated on Micro Concept Plans for Fraserburg, Williston, Sutherland	
<b>Heritage site</b>		As indicated on Micro Concept Plan for Fraserburg	
<b>Urban agriculture</b>	Small scale agricultural opportunities within these areas i.e. communal food gardens.	As indicated on Micro Concept Plans for Sutherland and Fraserburg	The provision of food security is closely linked to households and settlements.
<b>Cemetery</b>		As indicated on Micro Concept Plan for Fraserburg	
<b>Medical centre</b>		As indicated on Micro Concept Plan for Williston	

## 7.1 Development Phasing

The phasing of residential extension and densification areas are indicated on the Micro Strategic Development Concept Plans for Sutherland, Fraserburg and Williston. In calculating the land identified for residential densification, it is assumed that only 50% of these areas are available for densification purposes.

- Phase A is the land required to eradicate the existing housing backlog.
- Due to the negative growth forecast, no future provision is being made for housing.

Road linkages and road upgrades are prioritised on the Micro Strategic Development Concept Plans for Fraserburg, Williston and Sutherland. It must be stressed, however, that although new road linkages and upgrades are discussed, it should remain a priority of the municipality to maintain all existing roads.

For more information per town and calculation details refer to Phase 3 of the combined report.

## 8 Project Prioritisation

A project prioritisation matrix was used to objectively prioritise the spatial projects identified. Each project is linked to a spatial strategy which in turn links to spatial objectives.

Project prioritisation was done using the following criteria:

- Importance to community
- Cost Implication
- Ease of Implementation
- Pre-requisite for other developments

A weighting was allocated to each criteria according to its importance for the municipality. Projects that provide basic level of services (like subsidised housing projects) are regarded as priority 1 projects irrespective of its rating obtained in the prioritisation matrix.

**(See Annexure E: Project Prioritisation for more detail)**

## 9 Capital Expenditure Framework

All of the above can be summarised in the Capital Expenditure Framework of the municipality which provides the following information per project:

- Spatial Strategy
- Project Priority
- Locality
- Estimated project amount
- Funding Source
- Implementation Priority
- Planning Agency
- Implementation Agency and
- Relevant Sector Plan

**(See Annexure F: Capital Expenditure Framework for more details)**

## **10 Annexure A: Karoo Hoogland Macro Strategic Development Concept**

## **11 Annexure B: Sutherland Micro Strategic Development Concept**

## **12 Annexure C: Fraserburg Micro Strategic Development Concept**

## **13 Annexure D: Williston Micro Strategic Development Concept**

## **14 Annexure E: Project Prioritisation**

## **15 Annexure F: Capital Expenditure Framework**

## **16 Annexure G: Karoo Hoogland Spatial Development Framework Compilation Plan**