Spatial Dev. Framework

CONTENTS

1. INTRODUCTION

1.1 The Mandate

Municipalities are required to compile Spatial Development Frameworks (SDFs) as core components of their IDPs as prescribed by the Local Government: Municipal Systems Act, 200 (Act 32 of 2000). According to the Draft Land Use Management Bill (July 2001) all local municipalities within the area of the district municipality must align their SDF's in accordance with the framework of integrated development planning referred to in Section 27 of the Municipal Systems Act.

To act in accordance with the Municipal Systems Act and to fulfil its role in spatial planning, Pixley ka Seme District municipality appointed Africon in July 2006 to compile a Spatial Development Framework for the District and local municipalities.

1.2 The Role and Purpose of a SDF

The role and purpose of the SDF are:

1. to guide spatial planning, land development and land use management in the local municipal area, and
2. to give strategic direction in terms of investment in the local municipal area.

The purpose of this document is:

- To translate the SDF into a more detailed and geographically specific land use management tool.
- To consolidate, update and review existing spatial planning and development management mechanisms.
- To guide the preparation of more detailed local area plans, precinct plans and land use schemes.
- To provide a more concrete spatial and land use guideline policy for use by municipal and other infrastructure service providers in planning and delivering their services.
- To provide direction and guidance to private sector and community investors with respect to the levels, locations, types and forms of investment that need to be made, and that will be supported by the Local Municipality.

1.3 The Critical Elements of a Spatial Development Framework

The critical elements of a SDF should be a written document and a map(s) which indicate the following:

- Give effect to the principles contained in Chapter 1 of the Development Facilitation Act, 1995 (Act No 67 of 1995).
- Preferential and focus areas for certain types of land uses.
- The location of projects identified as part of the integrated development planning process.
- Reflect the spatial objectives and strategies contained in the IDP.
- Indicate the desired direction of urban expansion and the most appropriate use of vacant land where appropriate and desirable.
- A business plan for implementation of the spatial development framework.

In a rural context it will be necessary also to deal specifically with:

- natural resource management issues,
- land rights and tenure arrangements,
- land capability,
- subdivision and consolidation of farms, and
- the protection of prime agricultural land

The SDF is a legally binding document and should therefore be very specific and indicate the appropriate level of detail.

1.4 Legislation applicable to spatial planning

Government has adopted new legislation and policies, which allows for a more flexible, participative planning methodology. The key legislative and policy elements of this new approach to spatial planning are derived from:

- Section 26(e) of the **Municipal Systems Act**, 2000 (Act 32 of 2000)
- Chapter IV of the **Development Facilitation Act** (DFA) Act 67 of 1995
- Chapters 3 and 4 of the **Draft Land Use Management Bill** (July 2001)

- **The White Paper on Spatial Planning and Land Use Management**, March 2001
- **The Northern Cape Planning and Development Act**, Act 7 (Act 7 of 1998)
- **The Physical Planning Act**, Act 125 of 1991

Other legislation applicable to spatial planning:

- The Conservation of Agricultural Resources Act (Act 43 of 19830
- The Environment Conservation Act (No 73 of 1989)
- The National Environment Management Bio-Diversity Act (No 10 of 2004)
- The National Heritage Resources Act (No 25 of 1999)
- The National Environment Management Act (NEMA – No 107 of 1998)
- The National Water Act (No 36 of 1998)

1.5 Alignment with other development planning initiatives and strategies

- The National Spatial Development Perspective (NSDP – March 2003)
- The Northern Cape Provincial Growth and Development Strategy (PGDS – January 2005)
- The Provincial Spatial Development Strategy (PSDS)
- The Pixley ka Seme District Growth and Development Strategy (Draft - November 2006).
- The Pixley Ka Seme District Municipality IDP and SDF.
- The Siyathemba Municipal IDP.

1.6 The Process followed to compile this document

A set of maps, indicating the current state of the region, has been developed. A workshop was held on the 17th of November 2006 in De Aar. During the workshop potential development areas were identified by stakeholders and government departments and these were incorporated into the final plan.

The local municipality's standards, norms and values for management of the environmental resources and features were listed and displayed on maps of the area. Areas of high-risk for development activities were also indicated on the maps, therefore providing a guideline for development within the local municipal areas. The main spatial and land issues of each town were then indicated on a spatial development guideline map.

Finally the Spatial Development Framework of Siyathemba Municipality aim to focus on potential areas where development is most likely to occur. It therefore identifies development nodes and corridors which need to receive priority for future development.

2. GUIDING SPATIAL PLANNING AND DEVELOPMENT FOR SIYATHEMBA LOCAL MUNICIPALITY

This Chapter will focus on guiding spatial planning and development for the local municipality within the Pixley region.

1.7 Source of base information

The information and data used to compile this section were obtained from ENPAT2000, Enviro-Info 2001 that was developed by the Department of Environmental Affairs and Tourism.

1.8 Methodology

This guideline document can be used for development planning since it indicates the environment's potential for development.

The local municipality's standards, norms and values for the management of environmental resources and features are listed and displayed by the map of the area. Pre-conditions or limitations are defined for development activities that may have potential harmful impacts on the environment. Examples of impacts are: destruction of geological

formations due to mining, reduction in water quality due to agricultural fertilisation, or transformation of grassland biome due to overgrazing.

High-risk developments for a particular feature are also indicated. Examples of high-risk developments and the associated impacts may be: high-density residential development in a wetland area which is likely to destroy the wetland, informal industrial development on degraded land that may cause additional erosion, and feedlots near a stream corridor that may reduce water quality downstream.

1.9 Development impacts on the environment of various development activities

The type of development activities hereby listed and the impact thereof on the environment can be used as a guideline for all the towns in the Pixley ka Seme district.

A. RESIDENTIAL

Formal Residential

Type:

- Low density (plot sizes > 1500m2),
- Formal, normal density (plot sizes 500m2 - 1500m2),
- Formal, medium density (shared plots, single & double storey),
- High density (multi storey units in complex)

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Scenic impact.
- Pollution of air.
- Flooding may occur in floodplains due to construction being too close to the stream or river edge.
- Water quality most adversely influenced by organic and microbiological pollution due to human activities.
- Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

Informal Residential

Type:

- Low density urban,
- Informal, high density urban,
- Informal, low density rural,
- Informal, high density rural

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Scenic impact.
- Depletion and degradation of soils may lead to unproductive soils.
- Decrease of water infiltration and increase the water run-off (flood potential).
- Pollution of air.
- Flooding may occur in floodplains.
- Water quality most adversely influenced by organic and microbiological pollution due to human activities.
- Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

B. BUSINESS

Commercial

Type:

- Free Trade Zones.
- Trade Zones.
- Shopping Centres.
- CBD
- Commercial Grain Silos

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Scenic impact.
- Pollution of air.
- Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

Fuel Stations

Type:

- Petrol/Diesel Filling Stations,
- Fuel Storage Facilities,
- Fuel Refineries,

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- These materials may be toxic to fauna and flora and may also induce genetic changes between generations. May lead to pollution caused by emission of by-products.
- Pollution of air.
- The possibility of leakage/ spillage may pollute the soil, surface and groundwater.

Advertisement

Type:

- All advertisement.
- Posters and other general signs.
- Signs on buildings, structures and premises.
- Signs for the tourist and traveler.
- Mobile signs,
- Billboards and other high impact free standing structures

Type:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Scenic impact.

C. TRANSPORT

Parking, Related Structures & Facilities

Type:

- Parking lot,
- Taxi rank,
- Bus or heavy vehicle depot,
- Filling station,
- Vehicle service facility,
- Traffic control centre,
- Dirt road with high traffic loads,
- Dirt road with low traffic loads.

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Roads and other tourism related structures may cause fragmentation of large populations (especially of cryptic animals) and behavioural changes induced by tourism activity.
- May lead to pollution caused by emission of by-products.
- Pollution of air.

Airports

Public and private landing strips.

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Cause increase mortality in birds of prey if incorrectly designed. Scenic impact. May lead to pollution caused by emission of by-products.
- Pollution of air. The possibility of leakage/ spillage may pollute the soil, surface and groundwater.
- Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

D. AGRICULTURE/FARMING

Crop Farming Agriculture

Type:

- Irrigated agriculture (all farm sizes),
- Mono-culture agriculture, large (more than 1000ha),
- Mono-culture agriculture, medium (250ha - 1000ha),
- Mono-culture agriculture, small (less than 250ha),
- Mono-culture agriculture, subsistence. Rain-fed crops.

Mixed Agriculture

Type:

- Mixed agriculture (livestock & crops),
- large (more than 1000ha),
- medium (250ha - 1000ha),
- small (less than 250ha),
- subsistence,
- Communal Grazing system

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Non-selective overgrazing and trampling causes the replacement of late successional grasses with less nutritional, early pioneer grasses, the loss of herbaceous annuals, exposure of bare soil and subsequent erosion.
- Area is homogenised and ecosystem functioning on cultivated land is essentially simplified to production of bio-mass.
- Depletion and degradation of soils may lead to unproductive soils.

Animal Husbandry

Type:

- Cattle farming,
- Cattle, large (more than 1000ha),
- Cattle, medium (250ha - 1000ha),
- Cattle, small (less than 250ha),
- Cattle, high density feeding lots,
- Dairy Farming,
- Poultry farming,
- Ostrich farm,
- Sheep farming,
- Sheep large (more than 1000ha),
- Sheep medium (250ha - 1000ha),
- Sheep small (less than 250ha)
- Pig farm,
- Crocodile farm,
- All goats farming and Mixed grazing /browsers (goats, sheep &/or cattle).

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Non-selective overgrazing and trampling causes the replacement of late successional grasses with less nutritional, early pioneer grasses, the loss of herbaceous annuals, exposure of bare soil and subsequent erosion.
- High density cattle farming leads to total destruction of indigenous vegetation that may result in subsequent erosion. The deposition of abnormal amounts of manure increase soil acidity and prohibits recovery of indigenous species for prolonged periods.
- Water quality most adversely influenced by organic and microbiological pollution due to animal wastes or activities.

Forestry

Type:

- Large scale forestry,
- Small scale commercial forestry (less than 10ha),
- Subsistence forestry (firewood etc.)

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Scenic impact. Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

Aquaculture

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species. Area is homogenised and ecosystem functioning on cultivated land is essentially simplified to production of bio-mass.
- Water quality most adversely influenced by either organic and microbiological wastes due to the raising of animals or the use of inorganic fertilisers or pesticides during the cultivation of crops.

Nurseries

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Area is homogenised and ecosystem functioning on cultivated land is essentially simplified to production of bio-mass.
- Depletion and degradation of soils may lead to unproductive soils.
- Water quality most adversely influenced by either organic and microbiological wastes due to the raising of animals or the use of inorganic fertilisers or pesticides during the cultivation of crops.

E. TOURISM

Game & Hunting Lodges

Type:

- Game & hunting lodges,
- Eco-lodge (low impact facilities in a natural environment)

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Selective hunting of target species alters genetic constitution of natural populations; non-target species may be affected by management practices that favour increased population numbers of charismatic and hunted species.
- Trail and disruption caused by vehicles may functionally fragment populations especially insofar small-bodied, less mobile or cryptic species are concerned.
- Scenic impact.

Game Farming

Type:

- Game farming, large (more than 4000ha),
- Game, medium (600ha - 1000ha),
- Game, small (less than 600ha)

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Selective hunting of target species alters genetic constitution of natural populations; non-target species may be affected by management practices that favour increased population numbers of charismatic and hunted species.
- Trail and disruption caused by vehicles may functionally fragment populations especially insofar small-bodied, less mobile or cryptic species are concerned.

Leisure & Tourism

Type:

- Hotel - large (more than 100 rooms),
- Hotel - medium (30 - 100 rooms),
- Hotel - small (less than 30 rooms),
- Guest house,
- Resort - detached units in a rural or natural setting outside urban areas,
- Caravan Park / Site,
- Casino,
- Golf Course

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Trail and disruption caused by vehicles may functionally fragment populations especially insofar small-bodied, less mobile or cryptic species are concerned.

Conservation

Type:

- All conservation area,
- National park,
- Provincial nature reserve,
- Regulated natural area,
- Natural heritage site,
- National monument,
- Local authority conservation area,
- Private nature reserve,
- Urban open space area.

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Trail and disruption caused by vehicles may functionally fragment populations especially insofar small-bodied, less mobile or cryptic species are concerned.

F. INDUSTRIAL

Industrial

Type:

- Heavy industrial - metal smelting, chemical processing, assembly plants, other,
- Medium industrial - chemical processing, other,
- Light industrial,
- Workshop,
- Agricultural processing plants on agricultural land.

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences
- Cause increase mortality in birds of prey if incorrectly designed.
- Scenic impact.
- These materials may be toxic to fauna and flora and may also induce genetic changes between generations. May lead to pollution caused by emission of by-products.
- Pollution of air.
- The possibility of leakage/ spillage may pollute the soil, surface and groundwater.

- Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

Hazardous Materials handling, and manufacturing

Type:

- Hazardous materials transportation route,
- Hazardous materials handling facility,
- Hazardous materials processing facility,
- Hazardous materials storage facility,
- Hazardous materials manufacturing facility

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Radioactive elements are carcinogenic and cause genetic mutations between generations. May lead to pollution caused by emission of by-products.
- Pollution of air.
- The possibility of leakage/ spillage may pollute the soil, surface and groundwater.
- Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

G. MINING

Mining

Type:

- Open cast mine,
- Open cast mine with drag line,
- Underground mine,
- Sand works,
- Clay quarry associated with brickworks,
- Other clay quarries,
- Gravel quarry for road fill,
- Rock quarry for construction aggregate,
- Rock quarry for blocks or slabs of rock,
- Salt works

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Exposure of bare rock and soil causing erosion and microclimatic changes that adversely affects re-colonisation.
- Scenic impact.
- May lead to pollution caused by emission of by-products.
- Pollution of air.
- Overall very high impact on vegetation that usually result in the complete or partial destruction of both the vegetation and the top layers of soil often further exacerbated by inadequate rehabilitation.

H. INFRASTRUCTURE

Pipelines, Cable Networks

Type:

- Pipeline for the transportation of hazardous substances including petroleum products,
- Water bulk supply pipelines,
- Cable networks,
- Telephone lines and associated structures,
- Industrial cable way and associated structures,
- Tourism cable way and associated structures

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Prevention of natural floods leads to the alternation of natural flow of rivers that may cause deposition of silt that shallows river bed and may have consequences for aquatic species that are dependent on deep or fast flowing water.
- Scenic impact.

Power Stations Alternative Power

Type:

- Electricity generation facilities,
- Coal powered stations,
- Hydro electricity generators,
- Wind electricity generators (commercial only),
- Bio-electricity generators (commercial only)

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.

- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Scenic impact. May lead to pollution caused by emission of by-products.
- Pollution of air

Railways, Related Structures & Facilities

Type:

- Railway structures,
- Railway lines,
- Stations,
- Shunt yards & workshops,
- Railway bridges

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Roads and other tourism related structures may cause fragmentation of large populations (especially of cryptic animals) and behavioural changes induced by tourism activity.
- Prevention of natural floods leads to the alternation of natural flow of rivers that may cause deposition of silt that shallows river bed and may have consequences for aquatic species that are dependent on deep or fast flowing water.
- Scenic impact.
- May lead to pollution caused by emission of by-products.
- Pollution of air

Roads

Type:

- Roads,
- Double carriageway highway,
- Tarred road with 120km/h speed limit,
- Tarred road with 80km/h speed limit,
- Tarred roads with speed limits below 80km/h

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Fragmentation of natural area, subdividing large populations by causing a barrier that is extremely difficult to cross, with genetic consequences.
- Roads and other tourism related structures may cause fragmentation of large populations (especially of cryptic animals) and behavioural changes induced by tourism activity.
- Prevention of natural floods leads to the alternation of natural flow of rivers that may cause deposition of silt that shallows river bed and may have consequences for aquatic species that are dependent on deep or fast flowing water.
- Scenic impact.
- May lead to pollution caused by emission of by-products.
- Pollution of air

Towers and masts, Conveyors

Type:

- Microwave towers (telecommunications),
- Radio transmission towers and masts,
- Cellular phone network masts,
- Wireless loop telecommunication masts,
- Radar masts,
- Reception dishes and structures,
- Industrial conveyor - long distance (>1km),
- Industrial conveyor - short distance (<1km),
- Industrial conveyor - on site

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Cause increase mortality in birds of prey if incorrectly designed.
- Scenic impact.

Trails

Type:

- 4x4Trail,
- Motorbike Trail,
- Equestrian Trail,
- Hiking Trail

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Trail and disruption caused by vehicles may functionally fragment populations especially insofar small-bodied, less mobile or cryptic species are concerned.
- Scenic impact.

Waste sites, Sewage treatment

Type:

- Household waste landfill,
- Class 2 waste landfill,
- Class 1 waste landfill,
- Waste indicator,
- Radioactive waste site,
- Sewage disposal structures,
- Sewage treatment plants,
- Sewage pipelines (MAIN)

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Prevention of natural floods leads to the alternation of natural flow of rivers that may cause deposition of silt that shallows river bed and may have consequences for aquatic species that are dependent on deep or fast flowing water.
- These materials may be toxic to fauna and flora and may also induce genetic changes between generations.
- May lead to pollution caused by emission of by-products.
- Pollution of air.
- The possibility of leakage/ spillage may pollute the soil, surface and groundwater.

Water storage

Type:

- Water storage and supply structures as well as structures affecting the flow of water in rivers,
- Bulk water supply/storage dam,
- Farm dam,
- Inter catchments water transfer scheme,
- Reservoirs for public water supply,
- Levees,
- Weirs

Impact:

- Destroy indigenous biodiversity; in gardens indigenous flora are substituted with exotic species.
- Prevention of natural floods leads to the alternation of natural flow of rivers that may cause deposition of silt that shallows river bed and may have consequences for aquatic species that are dependent on deep or fast flowing water.
- Scenic impact.

1.10 Guidelines for settlement planning and design

1.10.1 Guideline planning for residential development

For settlements to be flexible over time, the layout must be able to accommodate mixed and changing land uses. it is necessary to plan for future/expected developments that will impact on the settlement like a major urban centre or railway station.

When undertaking land subdivision one needs to provide a certain number of larger erven to accommodate various public facilities.

To enhance the land and energy resource efficiency of a layout the following design factors should be considered:

- Maximize the number of solar-oriented lots,
- Maximize the number of lots,
- Minimize the slope of roadways and lots, and
- Minimize total costs of on-site infrastructure.

Block size

- In areas of low car ownership, fairly short blocks of approximately 100m in length are most appropriate.
- Intervals of between 30 to 40m are necessary, in order to provide for adequate driver visibility and safe clearance.

Land utilization

In order to assess the efficiency of land utilization within the proposed block subdivision, Behrens and Watson (1996) have identified the following methods to access layout efficiency:

- **Network length: area ratio.**
  This ratio measures the length of road network in relation to the area served.

In general, the lower the value of the ratio the more efficient the network.
A suggested target is 150-230m/ha.

- **Network length: dwelling unit ration.**
  This ratio measures the length of road network relative to the number of dwellings within a given area. In general, the lower the value of the ratio the more efficient the network.
  The suggested target value is 5-10m/du.

- **Frontage: depth ration.**
  This ratio measures the width of an erf relative to length. In general, the greater the ratio (i.e. the shorter the erf frontage) the more efficient the layout. Narrower erf frontages and reducing plot sizes effectively reduces the network length per erf and increases erf densities.
  Suggested target value is between 1:5 and1:3.

- **Residential density.**
  Appropriate densities are specific to a range of social, economic and environmental factors.
  A gross density of over 50 du/ha is likely to be appropriate in most developing urban areas of SA.
  According to the Department of Housing and Local Government a minimum erf size for residential development was determined as **240m²**.[1]

- **Land utilization index.**
  The index, or land use budget, identifies the proportional use of land. Land uses are conventionally broken down in to residential, commercial, industrial, public facilities, public amenities and movement. Appropriate proportions of land uses, particularly commercial, industrial and public amenity uses, are context specific.
  As a rule of thumb, at the local area layout scale, residential, commercial and industrial uses should take up ± 55% of land, public facilities and amenities ± 25%, and movement less than 20%.

1.10.2 Guideline planning for public facilities

Public facilities are defined as those basic services which cannot be supplied directly to the individual dwelling unit and as a result are utilised away from the individual residential dwelling unit within the public environment.

Public facilities satisfy specific individual or community needs - including safety and security, communication, recreation, sport, education, health, public administration, religious, cultural and social. Public facilities, as the name implies, are generally regarded as the responsibility of government, whether central, regional or local, and more often than not are provided by government institutions. However, public facilities are also provided privately, when the government-provided services are perceived to be inadequate.

When planning for public facilities for residential settlements it is necessary to analyse the site and target population in order to determine the type of public facilities required for a specific development.

In order to determine what facilities are required by the target community, one need to evaluate what facilities exist in the surrounding areas, whether these facilities are operating at full capacity, and whether they will be adequate to serve the needs of the proposed new living environment.

It is necessary to have a complete profile of the population for which the public facilities are intended, in order to determine what facilities that community requires. An incomplete population profile can result in facilities which are inappropriate (i.e. the provision of a crèche in an area where the population is ageing).
One needs to determine the following:

- Age and gender profile (gender ratios, household age structure and size).
- One needs to determine what age group and gender one will be serving, in order to determine what types of facility will be required (i.e. an ageing population will require access to health facilities, as opposed to educational facilities).
- Income profile (household expenditure and income).
- The level of public facility provided.

- Community priorities.

1.10.3 Quantitative guidelines – SOFT OPEN SPACES

Parks

- Location:
  Larger parks should be located in areas with no or limited access to natural amenities. They should be fairly evenly distributed throughout a settlement, and where possible, connected by parkways.
  Smaller parks can be located within easy walking distance (i.e. ±300m) of workers situated within busy commercial and industrial centres in order to create contrasting spaces of relief within predominantly residential areas, so as to create easily surveilled child-play spaces, and within school clusters, which create safe, shared playtime spaces.
- Access:
  As smaller parks are likely to be used on a daily basis by children, elderly people and workers, and are accessed by foot, they should be located within 300 m to 700 m of users. The maximum time spent walking to a smaller park should therefore be approximately 10min.
- Size and Dimensions:
  The area and dimensions of smaller parks also vary according to the functions they are intended to perform. Smaller parks should, however, be small enough to maintain a sense of intimacy, and enable easy visibility and recognition (i.e. 25m maximum). Such parks should therefore be between 450m² and 1 000m² in size, with widths of between 15m and 25m, and lengths of between 30m and 40m.

Sport fields

- Location:
  Larger competitive sportsfields should be located within clusters of schools and close to private sports clubs, in order to facilitate the sharing of amenities between different user groups and to avoid under-utilisation. Schools can have allocated times of use during the day, while sports clubs can use the amenities mainly during the evening.
  Competitive sportsfields should be located close to public transport services, in order to facilitate the access of visiting teams.
- Access:
  Sportsfields can be located on low-lying land adjacent to water courses and incorporated into parkways, in order to act as part of the major stormwater management system in the event of severe storms.
  School sportsfields should be located within easy walking distance (i.e. ± 300m) of school buildings - with primary schools requiring closer locations than secondary schools, and should be located within 500m to 1 500m of other user groups (e.g. sports clubs).

Play spaces

- Location:
  Wherever possible, playspaces should be incorporated with other public open spaces (for reasons of multifunctionality).
  Playspaces can be located within clusters of primary schools and close to pre-school and day-care facilities, in order to facilitate the shared use of these amenities as safe and stimulating play-time areas.
  Playspaces can be located within parks, relatively close to entrance points (but away from busy perimeter roads) and traversing pathways, so that they are areas of greatest public surveillance and safety.
- Access:
  Playspaces should be located within easy walking distance (i.e. ±300m) of primary school buildings and crèches, and should be located within 500m to 1 500m of other users. As playspaces sometimes serve children from surroundings areas, maximum distances will occasionally be greater than maximum walking distances (i.e. ±500m or 10min.).
- Size and Dimensions:
  The area and dimensions of a playspace vary according to the nature of the play equipment (e.g. whether or not small animals are kept within the space), and whether or not the playspace is part of a larger soft

open space. Playspaces should however be small enough to enable easy supervision and recognition (i.e. ±25m maximum). Playspaces should therefore be between 450m² and 1 000 m² in size, with widths of between 15m and 25m, and lengths of between 30m and 40m.
It should be kept in mind that the size and surface of playspaces could have an impact on their use, especially in areas where sufficient resources are not available to keep them in a state conducive to play activities. The result could be that smaller play spaces are used for rubbish dumping, parking, etc. It might prove to be more suitable in some instances to develop these as hard open spaces to allow for various games requiring a hard surface.

1.10.4 Quantitative guidelines – EDUCATIONAL FACILITIES

Crèches

- Location:
  These are community-specific facilities which should be within walking distance of residential units.
  Facilities can be clustered with pre-primary schools, primary schools, community centres, etc. (This does, however, result in the externalisation of facilities beyond individual residential settlements).
- Access:
  Should be accessible by pedestrian pathways without having to cross major streets.
  Where streets are crossed these should be minor streets.
  Maximum travel time: 10 minutes (whether by foot or vehicle).
  A maximum walking distance of 750m.
- Size and Dimensions:
  Minimum size for facility: 130m²
  50m² per 45 children served.
  Minimum area per playlot: 20 - 30m².
  One third of the total area should be used for circulation, administrative and ancillary uses.
- Use capacities and thresholds
  Estimated minimum population: 5 000.

Primary school

- Location
  Should be located within easy reach of the local areas which it is intended to serve. As a result it needs to be located close to, but not necessarily along, a public transport route.
  Primary schools can be combined with a number of other facilities to form a cluster (i.e. a high school, community hall, playground, park, etc.)
- Access
  Should ideally be accessible by foot, bicycle and vehicle.
  Maximum travel time: 20min (whether by foot, bicycle or by vehicle).
  Maximum walking distance: 1.5km
- Size and Dimensions
  The minimum size of a primary school site is estimated at 2.4ha (Buildings: 1.4ha, Recreational space: 1ha)
- Use capacities and thresholds
  Estimated minimum population: 3000 – 4000.

High School

- Location
  Situated on a major transport route with public transport stops.
- Access
  Maximum travel time: 30minutes
  Maximum walking distance: 2.25km
- Size and Dimensions:
  Minimum size of a high school is ±4.6ha (Buildings: 2.6ha, Recreational space: 2ha)
- Use capacities and thresholds
  Estimated minimum population: 6 000 – 10 000.

Tertiary facilities & Adult learning centres

- Location
  Regional facilities located along major transport route with public transport stops.
  Regional scale of facility means that it would be planned for in terms of a development framework and not when designing specific living environments.

1.10.5 Quantitative guidelines – HEALTH FACILITIES

Mobile clinic

- Location
  Mobile facilities which move from community to community, therefore no fixed location.
- Access
  Must be accessible by foot.
  Maximum walking distance: 1km
- Size and Dimensions:
  These are self contained units. Space is, however, required to park and operate the clinic: this can be done form a local park, community centre, church, etc.
- Use capacities and thresholds
  Population: 5 000.

Clinic

- Location
  Should be accessible to the greatest number of people and as such should be located close to public transport stops.
  The facility needs to be located along a major route.
- Access
  Minimum walking distance: 2km
  Where not possible for the facility to be placed within walking distance, it must be easily reached via public transport, with a maximum walk of 5 minutes from the public transport stop to the facility.
  Maximum travel time of 30 minutes.
- Size and Dimensions:
  Size of the clinic will depend on the number of people served.
  The following guidelines are suggested: 0.1 ha per 5 000 people, 0.2 ha per 10 000 people, 0.5 ha per 20 000 people, 1 ha per 40 000 people, 1.5 ha per 60 – 80 000 people.
- Use capacities and thresholds
  Estimated minimum of 5 000 people.

Hospitals

- Location
  Regional facilities located along major transport routes in close proximity to public transport stops.
  Regional scale of facility means that it would be planned for in terms of a development framework and not when designing specific living environments.

1.10.6 Quantitative guidelines – CULTURAL FACILITIES

Libraries

- Location
  Should be easily accessible, preferably on main traffic and transportation routes.
  Libraries can be combined with a number of other facilities to form a convenient cluster, i.e. schools, community centres, etc.
- Access
  Should be within walking distance: 1.5 km – 2.25 km
  Or within 5 minutes walking distance of a public transport stop: maximum travel time 20 – 30 minutes.
- Size and Dimensions:
  Size of library will depend upon the population being served.
  Suggested minimum size: 130m².
- Use capacities and thresholds
  Can serve populations of 5 000 to 50 000.

Community centres

- Location
  A community centre provides a variety of services to a number of residential communities, as such, it should be easily accessible to these communities, preferably on a main thoroughfare in close proximity to public transport stops.
- Access
  Should be within walking distance: 1.5 km – 2.25 km
  Or within 5 minutes walking distance of a public transport stop: maximum travel time 20 – 30 minutes.
- Size and Dimensions:
  Estimated minimum size: 5 000m².
- Use capacities and thresholds
  A minimum population of about 10 000 people.

Religious centres (churches)

- Location
  The location will depend on the community being served and the

existing facilities in the area surrounding the site.

- Access
  Should be within walking distance: 1.5 km
  Maximum travel time by foot or public transport or vehicle: 20 minutes.
- Size and Dimensions:
  There is no common uniform agreement as to the adequate size of a church site.
  The size can therefore range from 150m² to 3 000 m².
- Use capacities and thresholds
  It is estimated that approximately 2 000 people are required to support a single church.

Cemeteries

- Location
  Cemeteries are not considered as a land use which is compatible with residential land use and, as a result, they are not dealt with in the Guideline for Human Settlement Planning and Design (the Red Book).
  However, the location of a cemetery will depend on the availability of vacant land, geology of the areas, the hydrogeology and the topography of the area.
  It is important to zone a suitable area for a cemetery, thereby ensuring that the site is complying with geotechnical, water and environmental regulations.
- Access
  Maximum travel time by foot or public transport or vehicle: 15 - 60 minutes.
- Size and Dimensions:
  The calculations for determining the size of the cemetery can be based on the formula developed by the former RGN, CSIR, the private sector and the University of Potchefstroom (North West University) and University of Pretoria.
  This formula takes the following into account: The total population of the town/area that the cemetery is planned for calculated over a realistic time period and for which the growth rate is known.

Magistrate's court

- This is a provincial facility and courts are planned and provided for by the provincial administration.

Municipal offices/pay points

- Location
  These facilities require high levels of exposure and must be easily accessible b public transport.
- Access
  Should be accessible by public transport.
  Maximum travel time: 30 minutes.
- Size and Dimensions:
  The minimum size for municipal offices is 3 000 m².
- Use capacities and thresholds
  A minimum population of 50 000 people.

Post offices

- Location
  Should be located along activity routes within easy walking distance of public transport stops.
- Access
  Where possible, communities should be able to access the port office on foot.
  The maximum travel time per foot/vehicle: 30 – 40 minutes.
- Size and Dimensions:
  The minimum recommended size is 500m².
- Use capacities and thresholds
  Estimated minimum population: 11 000 people.

Police stations

- Location
  Community police stations should be located central to all the communities which they are required to serve and should be on a main thoroughfare, so that emergency vehicles can be easily dispatched to adjoining communities.
- Access
  Should be within walking distance: 1.5 km
  Maximum travel time: 20 minutes.
- Size and Dimensions:
  Varies between 0,1ha – 1ha, depending on the type of facility provided.
- Use capacities and thresholds
  Estimated minimum population: 25 000.

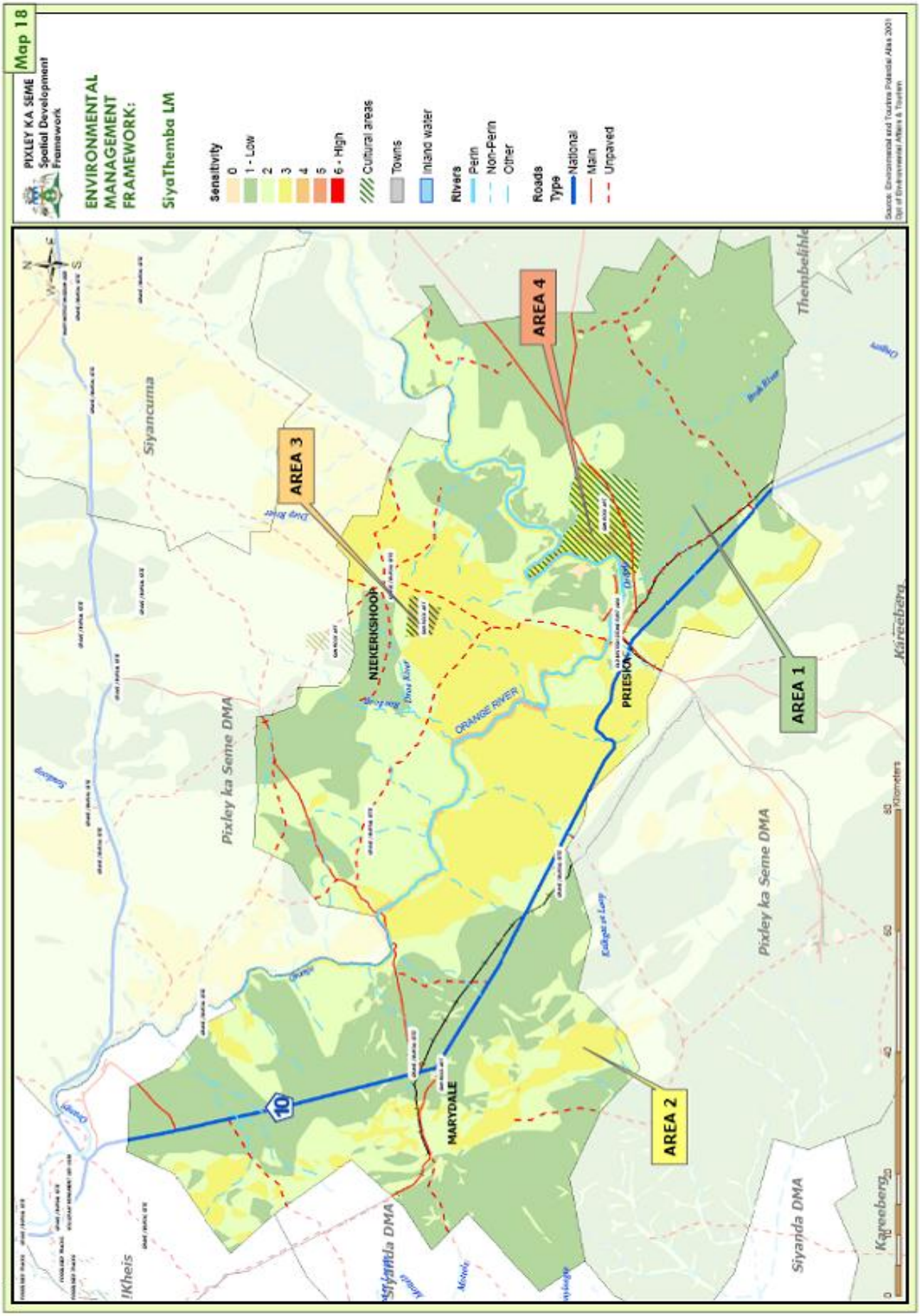
Old age homes

- Are generally provided by the private sector, based on need and demand.

Fire stations

- Location
  Fire stations distribute emergency vehicles to the area and as a result, they should be located on higher-order multifunctional routes that intersect with primary or regional distributors.
- Size and Dimensions:
  Average erf size: 1,2ha.
- Use capacities and thresholds
  Estimated minimum population: 60 000

Map 1 - Siyathemba Local Municipality



1.10.7 Environmental management framework (EMF) for the SiyaThemba Local Municipal Area

EMF applicable to **AREA 1** indicated on Map 1.

Acocks Veld Types : ORANGE RIVER BROKEN VELD

1) Vegetation management.

- Vegetation clearing must be avoided under all circumstances. Where unavoidable, measures must be implemented to avoid loss of topsoil through uncontrolled run-off.
- Grazing must be managed to ensure maximum yield of flowering plants.
- Ploughing must be managed to ensure the minimum disturbance to the grass biome.
- Fire management plans must be completed and approved by the relevant provincial conservation authority before the development / activity may proceed.
- Off-road vehicles should be restricted to low impact tolerant areas.
- The clearing of grassland for the production of monoculture crops (including commercial tree plantations) should be prohibited unless the relevant provincial nature conservation authority approves an environmental impact assessment and prescribe appropriate and effective mitigation measures that may also include compensative investment.

Geology : TILLITE

1) Geology - Stability.

- Geological stability for structures must be assessed and the results must be incorporated in design solutions.

Land Cover : SHRUBLAND / FYNBOS

1) Key Vegetation Community e.g. Fynbos.

- The introduction of the Argentine Ant (destroy fynbos seeds) must be prevented through the introduction of approved and effective measures.
- The rehabilitation and self-regeneration potential of the vegetation is low.
- Disturbance must be restricted to the absolute minimum. Key vegetation community.
- The area contains a key vegetation community with special value for bio-diversity and nature conservation.
- Adopt appropriate and effective preventative and/or mitigation measures.

Land Use : VACANT / UNSPECIFIED

1) Heritage - Bio-physical Conservation, Botanical Gardens, Natural Features, or private game reserves.

- The area must be managed in a way that retains or improves the ecological functions.
- Natural habitat corridors and streams must be maintained to ensure the natural function of these resources, and stream corridors must not be channeled.
- The impact of the development on landscape elements, such as bird watching areas, natural features, cultural features, distinctive landscapes, etc which have value for tourism must be assessed and effective preventative and mitigation measures must be adopted.
- Urban open spaces must be developed and maintained for the benefit of the local residents, visitors, and especially the local wildlife, such as bird populations, small mammals, etc.

Slope Analysis : 0 - 9%

1) Slopes.

- No development should be allowed on slopes that exceed the ability of the geology and the soils to retain its structure and the development upon it.
- Ridges and cliffs are of scenic value and the aesthetic quality to these must be maintained.

Soil Description : Glenrosa and/or Mispah forms (other soils may occur), lime generally present.

1) Water Quality.

- Soil erosion is caused mainly during rain storms due to a lack of vegetation cover.
- A management plan for storm water and on site pollution control must be compiled and implemented to acceptable ecological standards, and to the satisfaction of the relevant provincial authority or the local authority.
- Water runoff from barren ground, roads, paving areas, and built structures must be properly managed to prevent soil erosion and water pollution.

2) Soils.

- Effective measures to prevent wind erosion of soil must be adopted.
- Erosion removes the topsoil and in severe cases the subsoil of an area where uncontrolled and concentrated water flows over areas devoid of vegetation.
- To prevent erosion, ensure that a vegetation cover is maintained on the area.
- Once erosion has started, stop it by installing gabions or other methods to break the velocity of the water and dissipate the stream into smaller streams.
- Erosion and the loss of topsoil due to wind are detrimental process and must be avoided by retaining a vegetation cover on the land.
- The nature of the soil requires specialist assessment to determine appropriate construction guidelines in respect of foundations and other structural elements that may be affected by the soil.

EMF applicable to **AREA 2** indicated on Map 1.

Acocks Veld Types : ARID KAROO AND DESERT FALSE GRASSVELD

1) Vegetation management.

- Vegetation clearing must be avoided under all circumstances. Where unavoidable, measures must be implemented to avoid loss of topsoil through uncontrolled run-off.
- Grazing must be managed to ensure maximum yield of flowering plants.
- Ploughing must be managed to ensure the minimum disturbance to the grass biome.
- Fire management plans must be completed and approved by the relevant provincial conservation authority before the development / activity may proceed.
- Off-road vehicles should be restricted to low impact tolerant areas.
- The clearing of grassland for the production of monoculture crops (including commercial tree plantations) should be prohibited unless the relevant provincial nature conservation authority approves an environmental impact assessment and prescribe appropriate and effective mitigation measures that may also include compensative investment.

Geology : TILLITE

Land Cover : SHRUBLAND / FYNBOS

Land Use : VACANT / UNSPECIFIED

Slope Analysis : 0 - 9%

EMF applicable to **AREA 3 & 4** indicated on Map 1.

Cultural Sites : SAN ROCK ART

1) Heritage - Cultural.

- The impact of the development on the landscape elements which are important for culture orientated tourism must be assessed and effective preventative and mitigation measures must be adopted.
- Heritage sites, such as Bushman rock paintings, must be managed according to the South African Heritage Resource Agency's guidelines.
- Other structures such as bridges, buildings, museums, natural features, and other culturally significant features, must be managed in a sustainable manner.

1.10.8 Spatial Overview of the towns in the SiyaThemba Local Municipality

MARYDALE

The main spatial and/or land issues influencing the future spatial patterns and development of the town include:

- Marydale is identified as a **rural service centres** that will complement the satellite towns in the remote areas for the purpose of the even distribution of services and to promote the creation of employment opportunities;
- Lack of recreational facilities and infrastructure;
- The shortage of especially lower income housing units;
- Access to land by emerging farmers;
- More direct benefit from the major transport route (N10);
- Gravel and some tarred roads in the townships are in a poor condition and need to be upgraded;
- Densification, redevelopment or infill planning of residential areas between Zwelitsha and Marydale town;
- Inadequate public transportation system;
- Provision of sites for businesses, social services and open space areas;
- Formalisation of land and the securing of tenure;
- Lack of capacity at local municipal level; and
- Sustainable management of land.

TOURISM
Existing Activities and Attractions:

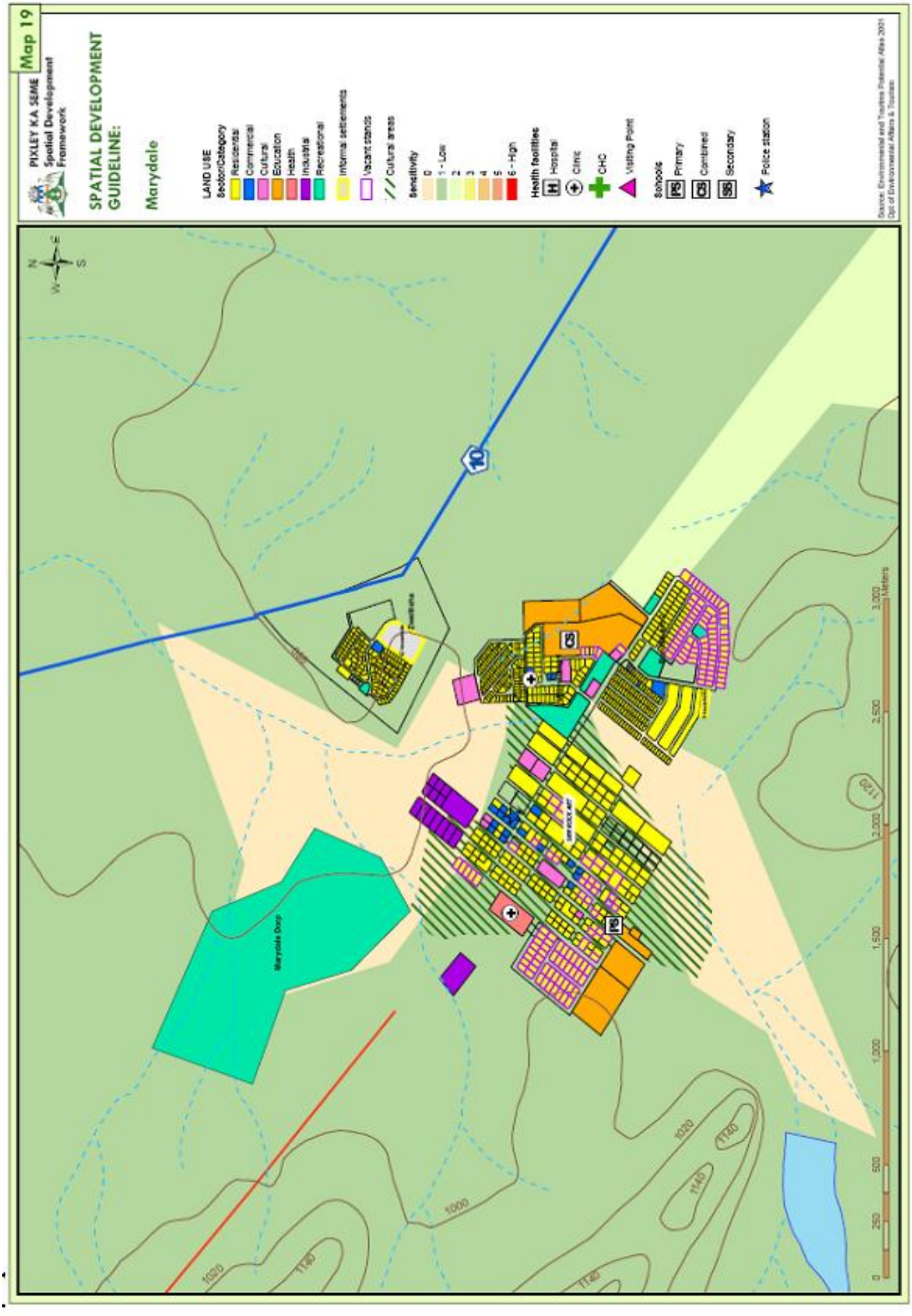
- Boegoeberg dam
- Kokerboom Forest

1.10.9 Proposed Development Projects/Initiatives

HOUSING

- Siyathemba needs an additional 33ha of land for new housing (±5ha for Marydale) [2].

Map 2 – Spatial Development Guidelines for Marydale



NIEKERKSHOOP

The main spatial and/or land issues influencing the future spatial patterns and development of the town include:

- Niekerkshoop is identified as a **rural service centres** that will complement the satellite towns in the remote areas for the purpose of the even distribution of services and to promote the creation of employment opportunities;
- Lack of recreational facilities and infrastructure;
- The shortage of especially lower income housing units;
- Access to land by emerging farmers;
- Gravel and some tarred roads in the townships are in a poor condition and need to be upgraded;
- Densification, redevelopment or infill planning of residential areas;
- Inadequate public transportation system;
- Provision of sites for businesses, social services and open space areas;
- Formalisation of land and the securing of tenure;
- Lack of capacity at local municipal level; and
- Sustainable management of land.

WATER AND SANITATION

- Except for the water deficiency, occurrence of pollution has been found in the groundwater.
- Water shortage is experienced.

1.10.10 Proposed Development Projects/Initiatives

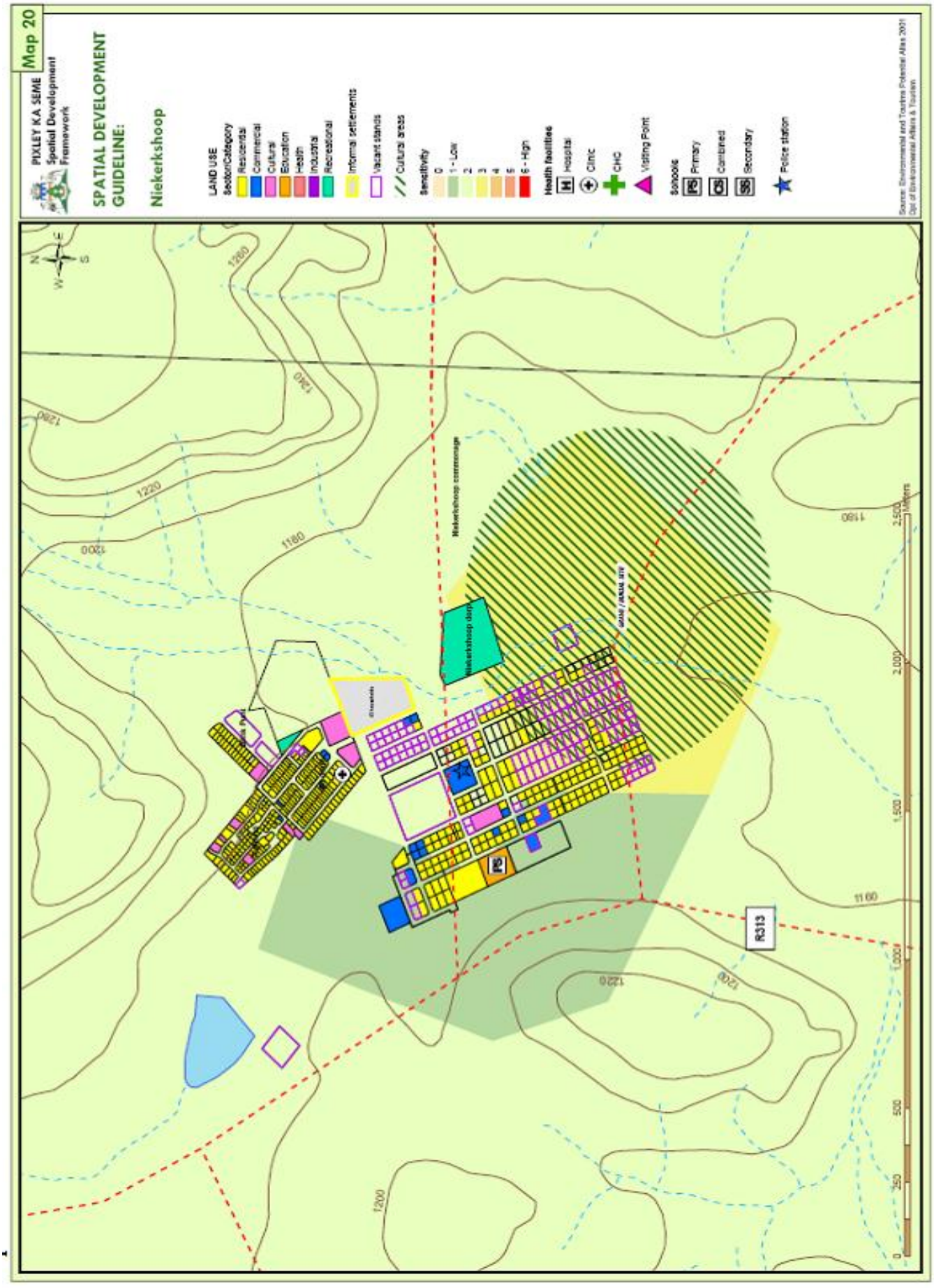
WATER AND SANITATION

- A feasibility study to address the water shortage in Niekerkshoop.

HOUSING

- Siyathemba needs an additional 33ha of land for new housing (±5ha for Niekerkshoop).

Map 3 - Spatial Development Guidelines for Niekerkshoop



PRIESKA

The main spatial and/or land issues influencing the future spatial patterns and development of the town include:

- Prieska is identified as an **Urban Centre** and should not only be further developed as administrative centres, but should also be promoted through the implementation of urban rehabilitation programmes to stimulate economic growth;
- Mining potential in tigers eye;
- Closing of the Copperton Mine;
- Tourism potential;
- The re-development and Expansion of the Die Bos Resort in Prieska;
- Lack of recreational facilities and infrastructure;
- The shortage of especially lower income housing units;
- Access to land by emerging farmers;
- Gravel and some tarred roads in the townships are in a poor condition and need to be upgraded;
- Inadequate public transportation system;
- Provision of sites for businesses, social services and open space areas;
- Formalisation of land and the securing of tenure;
- Lack of capacity at local municipal level; and
- Sustainable management of land.

TOURISM

Existing Activities and Attractions:

- Die Bos Nature Reserve. Indigenous trees, shrubs and abundant bird life, picnic sports and angling. Suspended bridges cross the Prieska River.
- Fort. On top of Prieska Koppie, built with tiger's eye by the British during the Anglo-Boer War (1899-1902).
- Green Valley Nuts. Cultivation and export of Pistachio Nuts.
- Hiking Trails. The Oranjezicht and T'Keikamspoort hiking trails are 10km south of town in the Doornberge.
- Hunting.
- Khoisan Rock Art. Can be viewed at the farms Kleindoring, Omdraaisvlei, Uitdraai and Wonderdraai.
- Memorial Garden. In town, it contains graves of British soldiens killed during the Anglo-Boer War.
- Prieska Museum.
- Ria Huysamen Aloe Garden. A large array of succulents. The area between Prieska and Vioolsdrif is often called the 'Rock Garden Route'. The halfmens and succulents of the Lithops family are found here.
- Schumann Rock Collection. Includes semi-precious stones and San Stone implements at the municipal office.
- Wonderdraai. A wonderful freak of nature where a horsehoe-shaped island is formed by the flow of the Orange River and makes it seem as if the rivers turns to low uphill.

1.10.11 Proposed Development Projects/Initiatives

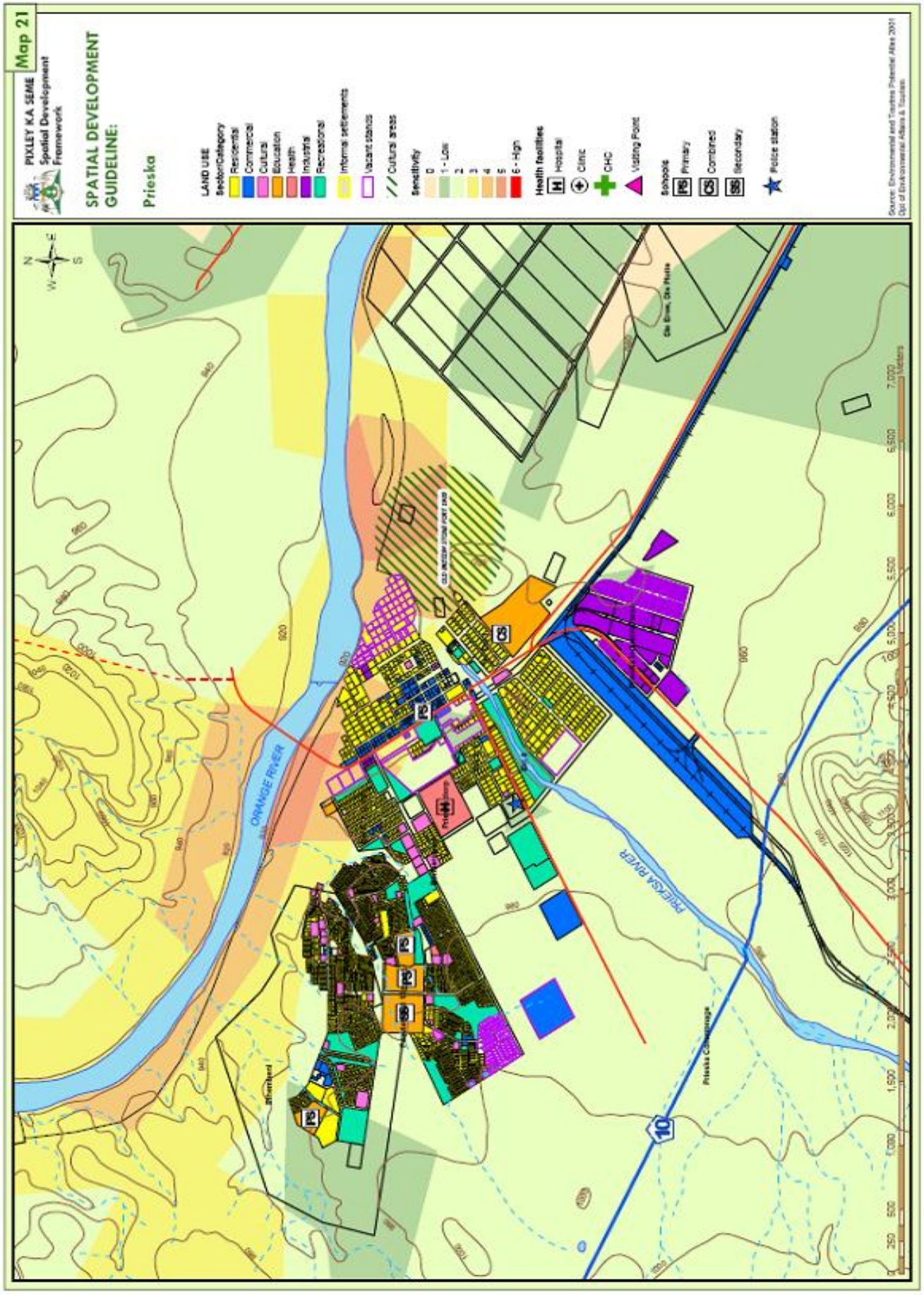
TOURISM

- The re-development and Expansion of the Die Bos Resort in Prieska

HOUSING

- Siyathemba needs an additional 33ha of land for new housing (±23ha for Prieska).

Map 4 - Spatial Development Guidelines for Prieska



3. KEY SPATIAL ISSUES IN THE MUNICIPLA AREA

From the above spatial overview and identified local spatial issues, the following key regional spatial issues were identified as the basis to be address by the spatial development framework.

1.11 Access to land

The issue of access to land relates both to the local authorities as well as individuals and groups. As far as individuals and groups are concerned, the burning issues are access to residential land in urban areas and to agricultural land for emerging farmers.

1.12 Land development

Land Development relates to the availability, preparation and funding of certain key land uses such as sites for housing developments, land for needed social amenities and economic activities. The key issues requiring attention in this regard include: the generation of proper information of projected land development needs, funding, co-operation and local capacity to evaluate development applications.

1.13 Spatial integration

Spatial integration has to focus on both a macro and a micro level. On a macro level there is a need for a more focused development at key nodal points to develop the region strategically within current resource constraints. On a micro level, most town areas are still geographically segregated and direct intervention within former buffer strip areas will be required to integrate communities.

1.14 Sustainable land management

The long-term sustainability of all land development practices will be the key factor in the environmental and economic future of this predominantly agricultural region. Specific attention will have to be given to the building of capacity amongst especially emerging land users and the provision of a management framework to all land users within the district.

1.15 Proper distribution network

The vast distances between the various towns in the district make all communities dependent on the regional distribution roads for social as well as economic functioning. Most of these roads are however in a state of disrepair and especially the routes falling within the corridor areas will have to be upgraded and maintained as a matter of urgency.

1.16 Land conservation

Various areas along the Orange River are well suited for tourism and agricultural development alike. These areas are however sensitive to over utilization and pollution and will have to be protected and conserved to ensure long-term benefits thereof.

1.17 Water resource challenges

One of the major challenges facing government is to promote economic growth and job creation, while at the same time providing for social development as a means to addressing the needs of the poor. Economic development requires sustainable bulk water supply. In municipal area several communities are experiencing water problems. Most of these towns rely on groundwater.

4. DEVELOPMENT PRIORITIES

1.18 Development Challenges

The development challenges in the municipal area include:

- Lack of diversification of the region economy;
- Lack of investment in the region;
- Lack of employment opportunities;
- Rising level of poverty;
- Geographically imbalanced settlement structure;
- Lack of skills;
- Lack of entrepreneurship;
- Small number of SMME's active in the region;
- Underutilization of the region natural resources and economic opportunities; and
- Lack of water for irrigation.

1.19 Opportunities and Constraints

1.19.1 Water and Sanitation

- Water supply and sanitation facilities on farms require attention.

1.19.2 Infrastructure

- Need for an adequate public transport system for people who want to undertake long distance trips.
- Good road network and rail network. Maximum economic benefit through the major transport networks.
- Access roads to settlements and Gravel access roads between towns need urgent maintenance and upgrading.
- Feasibility studies are required to investigate the alternatives available in addressing the water shortages.
- Revitalization of the Railway network to promote manufacturing sector in the heavy industries.

1.19.3 Land

- Commonage land key element for land reform
- Compilation of a land audit

1.19.4 Agriculture

- Wool currently processed in the Eastern Cape
- Irrigation along the Orange River. Products leave the district unprocessed.

1.19.5 Tourism

- Orange River
- Game reserves
- Historical sites

1.19.6 Mining

- Tiger's eye in Prieska
    - DGDS – intensify mineral exploration and update knowledge on the region mineral resources.

1.19.7 Housing

- Additional land needed for residential development

1.19.8 Recreation

- The recreational facilities such as soccer pitches, swimming pools, etc. are not well developed in the townships. In some townships there are no sporting facilities.
- Parks in townships are mostly overgrown and unkempt, making these attractive dumping sites.

5. STRUCTURING ELEMENTS

A Spatial Development Framework as indicated earlier needs to be indicative and therefore the need to adopt a set of structuring elements that can give future structure to the municipal area.

The spatial structuring elements that were identified are the following:

Nodes:

These are areas where development (facilities, services and economic opportunities) tends to concentrate.

Development nodes are areas where local economic growth will be promoted. Social and public amenities may also be located within or nearby the development node. The size, scale, nature and form of a node will differ from one another, as a variety of activities will tend to cluster in and around the node. The larger the influence sphere of a node, the more intense the development associated with the node and the greater the density and area that the node will occupy.

The towns / areas identified as development nodes are:
- Prieska
- Marydale

Tourism nodes will offer leisure and tourism products to the consumer**.** The node will attract tourists due to its unique features, historic value or special character and will therefore have an edge over any other node in the district to draw tourists to the region.

Areas / towns identified as tourism nodes are:
1. Prieska
2. Marydale
3. Niekerkshoop
4.Kareeberg

Corridors:
Development corridors are characterized by higher order ribbon-like development along routes that can be classified as movement corridors. These corridors promote economic activity along these routes. However, it is foreseen that the presence of economic activity along these routes will require special attention.

Areas identified as development corridors are:
1. N10
2. N8

Tourism Corridors are scenic routes linking places attracting tourists with one another. These routes will therefore support development focusing on the hospitality and tourism industry along it.

Tourism corridors are:
1. N8
2. R357
3. Orange River

Those areas and towns, which have not been identified as development nodes, will continue to exist as service centres. It is therefore sensible to focus capital investment to favour those nodes where development will more likely be sustained in future. This implies that both public and private initiatives in areas identified as

development nodes should be supported whereas those in areas not identified as development nodes should be re-evaluated and where possible, funding or investment should be channelled to the development node closest to the intended development. In practise this will imply that people will relocate to those towns with growth potential, as jobs will more likely be created in these areas. This will have the effect that a greater need for new residential sites, housing and infrastructure will arise in these areas, thus requiring the allocation of grants for capital investment projects to favour these localities more than those with limited growth potential.

The areas without growth potential should be developed with social services in support of those areas where growth will be experience. It is therefore proposed that attention should be paid to education, health and social infrastructure in these service nodes so that the quality of life of people staying there can be improved.

Conclusion:
The SDF constitutes the land use framework for the municipal area and needs to guide land use management for local municipalities. The SDF of Siyathemba Municipality tries to focus development within the district in those areas where development is most likely to occur. It therefore identifies development nodes and corridors which need to receive priority for future development.

6. SUMMARY OF ACTIVITIES AND PROJECTS FOR THE DISTRICT

The following are identified as specific actions and projects that need to be undertaken in order to provide additional detail in respect of the SDF's proposals.

PROJECT	REASON FOR PROJECT'S IMPORTANCE	RESPONSIBILITY	EST. COST
Infrastructure: Building of a railway line between Douglas and Belmont		Department of Economic Affairs	R35m
The Square Kilometer Array (SKA) & Karoo Array Telescopes (KAT) near Carnarvon.	– Its of global importance and interest – Major infrastructure development and investment – New skill development – Job creation and training in construction, maintenance and high tech – Retaining skilled people – Provide capacity to teach maths and science in schools – Completion date 2020	Department of Science and Technology	R12b
Construction of 2 new schools Douglas and Schmidtsdrift (Batlhaping)		Department Education	R7.7m
Building of clinic in Douglas and Philipstown Construction of new hospital in De Aar Construction of new clinics at Noupoort, Petrusville and Prieska	– Improvement in the health of pregnant women – Reduce maternal morality rate – EMS and patient transport – Develop specialist hospital services – HIV/AIDS: Offering voluntary counseling and testing services to sexually active persons – Coherent care and support to people living with IDA/STI/TB- R10 million dedicated to care givers – Establish an integrated mental health service	Department of Health	R2.6m R150m R1.4m each

PROJECT	REASON FOR PROJECT'S IMPORTANCE	RESPONSIBILITY	EST. COST
Social Services	– Extension of child support grant to age range of 11 – 14 years (CDW's) – Effectiveness of Group Foster Care Homes determined – Monitoring and implementation of the Children's bill – Development of sustainable food security programs – Establish interdepartmental provincial, regional and local FES committees – Old Age grant assistance – Pay point development – Resources allocated for implementation of five integrated, intersectional projects as the main thrust of the provincial integrated social crime prevention program in the 21 provincial crime weight stations (5: 1 De Aar, 1 Sunrise, 1 Colesberg, 1 Hopetown, 1 Douglas) – Project Anti-substance abuse – Project Public Education, Awareness and mobilization towards moral regeneration – Project co-ordination of Criminal Justice System – Project Stop Violence against women & children – Project Safer streets and physical environment	Department Social Services	
Allocation of 2000ha of water rights for OREFS	– Emerging farmers' support through CASP : Waterdaal plot owners, Ebenezer trust, Drieplotte, Tumelo Youth Trust – Implementing of Land care projects: Beesbok; Vosterdam & Strydenburg – 4 Food Security Projects – Starter packs to 20 schools and 10 health centre's/clinics	Department of Agriculture and Land Reform	

PROJECT	REASON FOR PROJECT'S IMPORTANCE	RESPONSIBILITY	EST. COST
Building of 192 housing units in 2005/6 financial year Project consolidate – quick-wins end June 2005 MIG's: – Kareeberg LM – Siyancuma LM – Umsobomvu LM – Emthanjeni LM – Renosterberg LM – Thembelihle LM Bucket eradication		Department Local Government & Housing	 R7,2m R4,2m R5,4m R5,9m R13,1m R22,2m R6.5m
Upgrading of the road from Douglas to Hopetown, from gravel to tarred road Resealing of roads in the Karoo District Upgrading of economic roads		Department of Transport, Roads and Public Works	R10m R30m R8m
Infrastructure: Building of a new Sports facility in Petrusville **Services:** Siydlala Mass participation Programme **Economic Development:** Appointment of 3 Hub co-ordinates		Department of Sports, Arts & Culture	R3.2m R2.4m (allocation for 5 regions) 1800/person/month
Appointment of an activity coordinator			R1200/person/ month/ municipality