Bitou Municipality

Proposed development to address food security and protect biodiversity

Exclusive country restaurant, organic vegetable garden and nursery

Farm SG code C0390000000003040002, North of the N2 crossing Keurbooms River.

Plettenberg Bay
Western Cape

Hi my name is Carbon Flower. I am a Second Life Avatar representing the Qarbon Qampus Virtual World. Today we will be doing a real world assessment for a development. My Role is that of an organic farm development officer for Bitou, Western Cape. I will be evaluating an exclusive country restaurant, organic vegetable garden and nursery in the Pletteberg Bay, Bitou municipality.
Carbon flower Exclusive country restaurant
A self sufficient restaurant and nursery!

What is the carbon flower restaurant and why is it different?.

The development will comprise 7 Hectares on the lower section of the farm with 5000 square meters of restaurant and retail buildings and 6 Hectares of garden nursery, 50% of which will be under shade cloth. The site is located close to the N2 which provides easy access for visitors.

The restaurant aims to be as self-sufficient as possible by growing their own organic vegetables on site. By using only natural and organic methods to grow the vegetables, the garden will have little to no impact on the indigenous flora and fauna occurring within and surrounding the site. The garden will also provide jobs for the locals and educate them on organic micro-farming methods which they could use as well.

The nursery will sell a range plants indigenous to the area. This will also provide jobs to the locals who will be educated by a horticulturist on the methods used to grow bulbs such as fynbos. By only selling indigenous plants the nursery will avoid the invasion of any invasive species into the surrounding areas.
A potential property for the location of the Carbon Flower restaurant, organic garden and nursery has been identified in Plettenberg Bay which is the primary town of the Bitou local municipality. Plettenberg Park Hotel and Spa is an exclusive and unique hotel found in the heart of the South African Garden Route and is minutes away from Plettenberg Bay. There are many tourist attraction in Plettenberg Bay such as the largest seagull breeding colonies along the South African coast at the mouth of the Keurbooms River. Other attractions include a recent wine estate and many wildlife experiences.
Use of Plettenberg Bay climate summary to determine if the organic garden will thrive under local climate conditions.

The climate of Plettenberg Bay is warm and temperate. There is significant rainfall throughout the year. Even during the driest month (February) Plettenberg Bay still receives a lot of rainfall. The average annual temperature is 16.6°C and approximately 912 mm of precipitation falls annually.

http://en.climate-data.org/location/9058/
Organic vegetable garden

Exclusive restaurant

Nursery
Bitou Municipality
Profile

Description
Bitou Municipality is commonly known as the “Jewel of the Garden Route”. It incorporates the former Outeniqua District Council and Plettenberg Bay. Bitou municipality is situated within the Eden District in the Western Cape province of South Africa. The Garden Route has a Mediterranean type climate and is one of the richest rainfall areas. The forests lying at the foot of the Oteniqua and Tsitsikama mountains are the opening to the indigenous treasure of Plettenberg Bay. The indigenous forests are a unique mixture of Cape Fynbos and temperate forest and offers world-renowned hiking trails and exciting opportunities to see the last remaining forest elephants of South Africa.

General statistics
Area: 992 km²
Total Population: 2011: 49 162

Summary of Bitou Integrated Development Plan IDP
Due to Bitou municipality being located close to the sea and the N2 and it’s rich vegetation, the implementation of an Environmental Management Plan to accompany the IDP is very critical. The 2012/2017 IDP for Bitou does not include this plan. The community has however proposed a wetlands project which is aimed at preserving the wetlands as well as its biodiversity.

There is conservation that needs to take place along the Indian ocean and the Keurbooms river. Provincial government will assist with the development of Air Quality and the Environmental and Management Plan. Land reform and food security is priority 2 under the National priorities.
Bitou Municipality
Transformation and protection

Total area: 74031.1ha

Landscape transformation
23% of the municipal area has been altered to a state where not natural habitat remains.

Protected areas
Formal land-based protected areas
7 reserves covering 50812 ha (51.2%)

Marine Protected Areas (MPA's)
2 adjacent to municipality
Bitou municipality

Vegetation types – original extent

**Main vegetation types (>9% of municipal area)**
- Tsitsikamma Sandstone Fynbos 44.45%
- South Outeniqua Sandstone Fynbos 23.39%
- Southern Afrotemperate Forest 19.62%
- Garden Route Shale Fynbos 9.11%

**Other vegetation types (< 9% of municipal area)**
- Cape Coastal Lagoons 0.14%
- Cape Estuarine Salt Marshes 0.32%
- Cape Lowland Alluvial Vegetation 0.13%
- Cape Lowland Freshwater Wetlands 0.06%
- Cape Seashore Vegetation 0.13%
- Eastern Coastal Shale Band Vegetation 0.8%
- Knysna Sand Fynbos 1.14%
- Langkloof Shale Renosterveld 0.6%
- Southern Coastal Forest 0.03%
Bitou Municipality
Nationally listed threatened ecosystems

Percentage of municipal area now covered by threatened ecosystem shown

**Critically Endangered (EC)**
- Cape Lowland Alluvial Vegetation 0.11%
- Knysna Sand Fynbos 0.29%
- Langkloof Shale Renosterveld 0.6%

**Vulnerable (VU)**
- Eastern Coastal Shale Band Vegetation 0.6%
- Garden Route Shale Fynbos 4.78%

**Endangered (EN)**
There are no endangered ecosystems in Bitou Municipality
Bitou Municipality
Nationally listed threatened ecosystems

Map showing the original extent of the ecosystems which are now threatened
Bitou District Conservation Plan Assessment
Assessment location and Conservation Plan

Assessment location

The map to the left shows the assessment area which was run for the identified potential location of the exclusive country restaurant, organic vegetable garden and nursery North of the intersection of the N2 with the Keurbooms river in Plettenberg Bay.

Assessment results

The assessment report is a compilation of data of various spatial biodiversity data sets and planning production. These are:

1. National terrestrial or aquatic spatial data sets and protected area boundaries and

2. The most relevant Biodiversity Conservation Plan BCP for the municipality in which the assessment is located. In the case the most relevant SCB is the Bitou District Conservation Plan.
Threatened Ecosystems

Section 1.1.1 of the report lists one national threatened ecosystems which occur with the assessment area. Although this information is extracted from the original extents of these ecosystems both the SCP results discussed below and examination of imagery confirm that natural vegetation may well exists within the area of the assessment. If this is the case it is vulnerable VU. The ecosystems in question are:

1. Garden Route Shale Fynbos FFb 9

Note: The results for the National vegetation types section 1.1.2 confirms that the only vegetation type (ecosystems) which may occur is the one VU ecosystem.

Soils

The soil classes encountered (section 1.1.4) are probably associated with the one ecosystem. Further investigation into their properties revealed that

1. Association of Classes 13 and 16: Undifferentiated shallow soils and land classes.

Indigenous Forest Patches

There were no indigenous forest patches (section 1.1.3)
National Fresh Water Priority Areas (NFEPA)

Wetlands
No wetlands occur in the analysis area (section 1.2.1).

Rivers Units Sub-quaternary catchments
The analysis area intersected two Sub-quaternary catchments of the Keurbooms river (section 1.2.2) with a NFEPA status of FEPA (freshwater ecosystem priority area).

Protected Areas (NBA 20011)
The analysis area intersected no formal protected area (Section 1.3).

Note: The analysis area was not located in one of the focus areas for Protected Area.
Bitou District Conservation Plan Assessment
CBAs and ESAs

In the Bitou District Conservation Plan a lookup layer is provided which divides the area of the plan into units each of which gives biodiversity feature information responsible for the classification of the unit’s CBA map category CBA, ESA or PA. The analysis area intersected 10 such units (section 2). In the report each unit is listed separately rather than in a table due to the amount and complexity of information it contains.

**Critically Endangered ecosystems (CBAs)**

Most of the analysis area intersected with lookup layer units which were classified as Critical Biodiversity Areas 4 on natural and 4 on degraded land, 8 units on total. The biodiversity features responsible for this classification indicated potential occurrence of both endangered species and national threatened ecosystems. These units corresponds with the one vulnerable ecosystems which were listed above. For this reason an EIA (Environmental Impact Assessment) needs to be done on the area prior to development.

**Ecological Support Areas (ESAs)**

The analysis area intersected two CBA map lookup layer units which were classed as ESA or important for maintaining ecological processes and may be transformed from natural to farmland.

**Protected Areas (PAs)**

The analysis area intersected no CBA map lookup layer units which were classed as Protected Area.
The shallow sandy soils will accommodate vegetation (vegetables) with shallow root systems. The land will not be able to support plants or vegetables with large underground root systems such as root vegetables for example potatoes and carrots.

Due to the fact that the proposed area covers a CBA as well an ESA an EIA (Environmental Impact Assessment) needs to be done on the area in order to determine whether any of the developments will affect the natural vegetation (Garden Route Shale Fynbos) which is vulnerable.

The favorable climate of Plettenberg Bay supports the farming of organic vegetables due to the annual rainfall it receives and its warm and temperate conditions.
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