Stellenbosch Municipality
Proposed development to address food security and protect biodiversity

- Elsenburg, Stellenbosch, Western Cape, South Africa

Hello my name is Jiggy Snavel, my role is that of a pasteur scientist within an experimental farm within Elsenburg, Stellenbosch and I am looking to build an experimental facility to assess new foods we can grow in the Western Cape given the anticipated impacts of climate change.
DESCRIPTION OF ELSENBURG EXPERIMENTAL FARM

• Elsenburg research farm houses the head office of the Department of Agriculture: Western Cape. Supporting research and extension services are delivered to the whole province.

• Lucerne is the most important pasture and fodder crop in the winter rainfall area of South Africa. Apart from providing high quality feed, it has the highest yield potential of all the legumes cultivated in this area. Lucerne is one of the cornerstones of sustainable intercropping and animal production systems.
Qarbon Campus Experimental Farm
Where will it be located!

[Google Earth image of a location with labels 'Arbeidslus', 'Stellenbosch', 'Harcourt Dam']
Climate Graph (Stellenbosch)
Location Experimental Farm for our Environmental and Sustainability Experimental Farm in this exercise.

Temperature Graph (Stellenbosch)
Second life vs Real life
Stellenbosch Municipality Overview

Stellenbosch Municipality is located in the heart of the Cape Winelands. It is situated about 50 km from Cape Town and is flanked by the N1 and N2 main routes. The municipal area covers approximately 900 km² and has a population of approximately 270 000 people.

The municipality’s area of jurisdiction includes the town of Stellenbosch and stretches past Jamestown to as far as Raithby in the south, to Bottelary, Koelenhof, and Klapmuts to the north, and over the Helshoogte Pass to Pniel, Kylemore, Groendal and Franschhoek in the east.

GENERAL STATISTICS
• 831 square kilometres
• Population: 155,733 (2011)
• Pop density: 187.4/km²

• **Summary of Stellenbosch Integrated Development Plan IDP**

  • The municipal council’s vision for the long term development of the municipality with special emphasis on the municipality’s most critical development and internal transformation needs
  • An assessment of the existing level of development in the municipality, which must include an identification of communities which do not have access to basic municipal services.
  • The council’s development priorities and objectives for its elected term, including its local economic development aims and its internal transformation needs.
  • The council’s development strategies which must be aligned with any National or Provincial sectoral plans and planning requirements binding on the municipality in terms of legislation.
  • A spatial development framework which must include the provision of basic guidelines for a land use management system for the municipality.
  • The council’s operational strategies
  • Applicable disaster management plans
  • A financial plan, which must include a budget projection for at least the next three years.
  • The key performance indicators and performance targets determined in terms of section
  • 41 of the Municipal Systems Act
Stellenbosch, Municipality
Transformation and protection

Total area: 83104.6ha

Land-based protected areas (formal) reserves covering 28601ha (34.4%)
- Areas remaining natural 36958.7ha (44.5%)
- Areas where no natural habitat remains 46145.6ha (55.5%)
Main vegetation types (>10% of municipal area)

- **Boland Granite Fynbos**: 18050.3ha (21.72%)
- **Swartland Granite Renosterveld**: 17073.3ha (20.54%)
- **Kogelberg Sandstone Fynbos**: 16304.4ha (19.62%)
- **Hawequis Sandstone Fynbos**: 9933.4ha (11.95%)
- **Swartland Shale Renosterveld**: 8720.6ha (10.49%)

Other vegetation types (<10% of municipal area)

- **Swartland Alluvium Fynbos**: 7005.7ha (8.43%)
- **Cape Winelands Shale Fynbos**: 3502.2ha (4.21%)
- **Cape Flats Sand Fynbos**: 1594.5ha (1.92%)
- **Western Coastal Shale Band Vegetation**: 612.5ha (0.74%)
- **Swartland Silcrete Renosterveld**: 288.4ha (0.35%)
- **Southern Afrotemperate Forest**: 19.6ha (0.02%)
Stellenbosch Municipality
Nationally listed threatened ecosystems

- **Critically Endangered (CR)**
  - Cape Flats Sand Fynbos: 58.9ha (0.07% of municipality)
  - Kogelberg Sandstone Fynbos: 14903.2ha (17.93% of municipality)
  - Swartland Alluvium Fynbos: 781.6ha (0.94% of municipality)
  - Swartland Granite Renosterveld: 897.5ha (1.08% of municipality)
  - Swartland Shale Renosterveld: 778.2ha (0.94% of municipality)
  - Swartland Silcrete Renosterveld: 34.7ha (0.04% of municipality)

- **Vulnerable (VU)**
  - Boland Granite Fynbos - FFg 2: 7656.2ha (9.21% of municipality)
  - Cape Winelands Shale Fynbos - FFh 5: 1450.4ha (1.75% of municipality)
  - Hawequas Sandstone Fynbos - FFs 10: 9650.2ha (11.61% of municipality)
Stellenbosch Municipality
Nationally listed threatened ecosystems
Threatened Ecosystems

- Section 1.1.1 of the report lists two 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 critically endangered CR. The ecosystems in question are:

1. Swartland Granite Renosterveld FRg 2
2. Swartland Shale Renosterveld FRs 9

Soils

- Soil Class: Imperfectly drained soils, often shallow and often with a plinthic horizon
- Soil Class ID: S8

- Indigenous Forest Patches
- There were no indigenous forest patches (section 1.1.3)
Two wetlands occur within the analysed area one being a natural wetland and the other being an artificial wetland with conditions of z2 and z3.

<table>
<thead>
<tr>
<th>NFEPA condition</th>
<th>Description</th>
<th>% of total wetland area</th>
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</thead>
<tbody>
<tr>
<td>Z2</td>
<td>Majority of the wetland unit is classified as ‘artificial’ in the wetland locality GIS layer</td>
<td>4</td>
</tr>
<tr>
<td>Z3</td>
<td>Percentage natural land cover &lt; 25%</td>
<td>20</td>
</tr>
</tbody>
</table>
Stellenbosh District Conservation Plan
Assessment
CBAs

List of CBA map units

• CBA
  • Habitat condition: Natural
  • Biodiversity feature information: Unit size (Ha): 6.8286 (Ha)

• CBA
  • Habitat condition: Degraded
  • Biodiversity feature information: Unit size: 0.5267 (Ha)

• CBA
  • Habitat condition: No Natural Habitat
  • Biodiversity feature information: Unit size: 11430.6764 (Ha)