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A VEGETATION SURVEY OF EXTENSION 27, MOSSEL BAY

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1. INTRODUCTION

A proposal is being prepared for the development of Extension 27 at Mossel Bay. In order to ensure that the proposal takes the environmental aspects of the site into consideration, it is necessary to assess the natural environment of the site to provide input into the development of a layout plan and to ensure the long term viability of any sensitive natural features. The aim of this survey is to study the natural vegetation of the site to identify sensitive areas and to provide botanical information which can be incorporated into the planning process.

2. BRIEF

The brief for this survey was as follows:

1. to survey and map the vegetation of the property with respect to its conservation worthiness and the likely occurrence of endemic and/or rare plants,
2. to map and assess the extent of alien vegetation infestation with respect to potential rehabilitation of such areas,
3. to make recommendations with respect to the control and management of alien vegetation.
4. to provide a map showing sensitivity of different areas within the study site.

3. STUDY AREA AND TOPOGRAPHY

Extension 27 is situated just west of the Mossel Bay Golf Course approximately 4km west of Cape St. Blaize and extends from approximately the 90m contour (approximately 200m from the coastline) inland to Santos Haven retirement village. (Figure 1).

Figure 1. The locality of the study area in relation to Mossel Bay showing the approximate boundaries.

Topographically the region consists of cliffs along the coast which drop sharply to the sea, behind these cliffs the land slopes relatively steeply upwards. It is on the upper slopes that development is being considered.

4. VEGETATION

The majority of the study area has been burnt just over a year ago. This has resulted in only a very young vegetation being present on large areas of the site. As a result of this some of the slower germinating, naturally occurring species such as some of the Proteaceae were not present on much of the site. Assumptions are therefore made as to the overall vegetation types of the area based on the species present, aerial photographs, comparisons with adjacent areas just outside the study area, soil types, as well as the patches of unburnt vegetation which still exist on the site.

The area can be divided into three vegetation types: viz. Limestone Fynbos, Coastal Thicket and Fynbos on deep neutral sands (Figure 2). A list of species collected in the different vegetation types during the site visit is included in appendix 1. This is not a complete list of species of the study area since it was not possible within the brief or time frame of this survey to compile a full species list for the area and since many of the slower germinating species were not found so soon after the fire. The list is however relatively comprehensive and inferences can be drawn regarding the sensitivity of the different areas.

4.1. Limestone Fynbos.

This vegetation type is conservation worthy. Heydenrych (1994) describes limestone fynbos as "an important, unique, rich, rare, useful and fascinating vegetation type which is threatened by a number of activities and is not adequately conserved in nature reserves". The majority of limestone fynbos occurs between Gansbaai and Gouritz river in the southern cape. The limestone fynbos of the study area therefore represents some of the easternmost communities of this vegetation type. There are two large patches of limestone fynbos in the study area (Figure 2). These patches extend up to the cliff tops in places especially the western patch which is extensive.

The limestone vegetation in the study area is not extremely species rich but it does harbour four limestone endemic species (*Berkheya coriaceae, Hermannia trifoliata, Ficinia truncata* and *Acmadenia heterophylla*) (Figure 3). It is also possible that a rare species *Thamnochortus muirii* occurs in the limestone patches in the study area (Hilton-Taylor pers. comm.) but no *Thamnochortus* species were identified during this survey. In his extensive study of the limestone fynbos, Heydenrych (1994) only found *Acmadenia heterophylla* between the Soetanysberg and De Hoop nature reserve. This area, therefore, is likely to represent the easternmost locality of this species. *Centella* sp. nov. (cf. *capensis*) has not yet been described but it is expected that it is a rare limestone endemic.

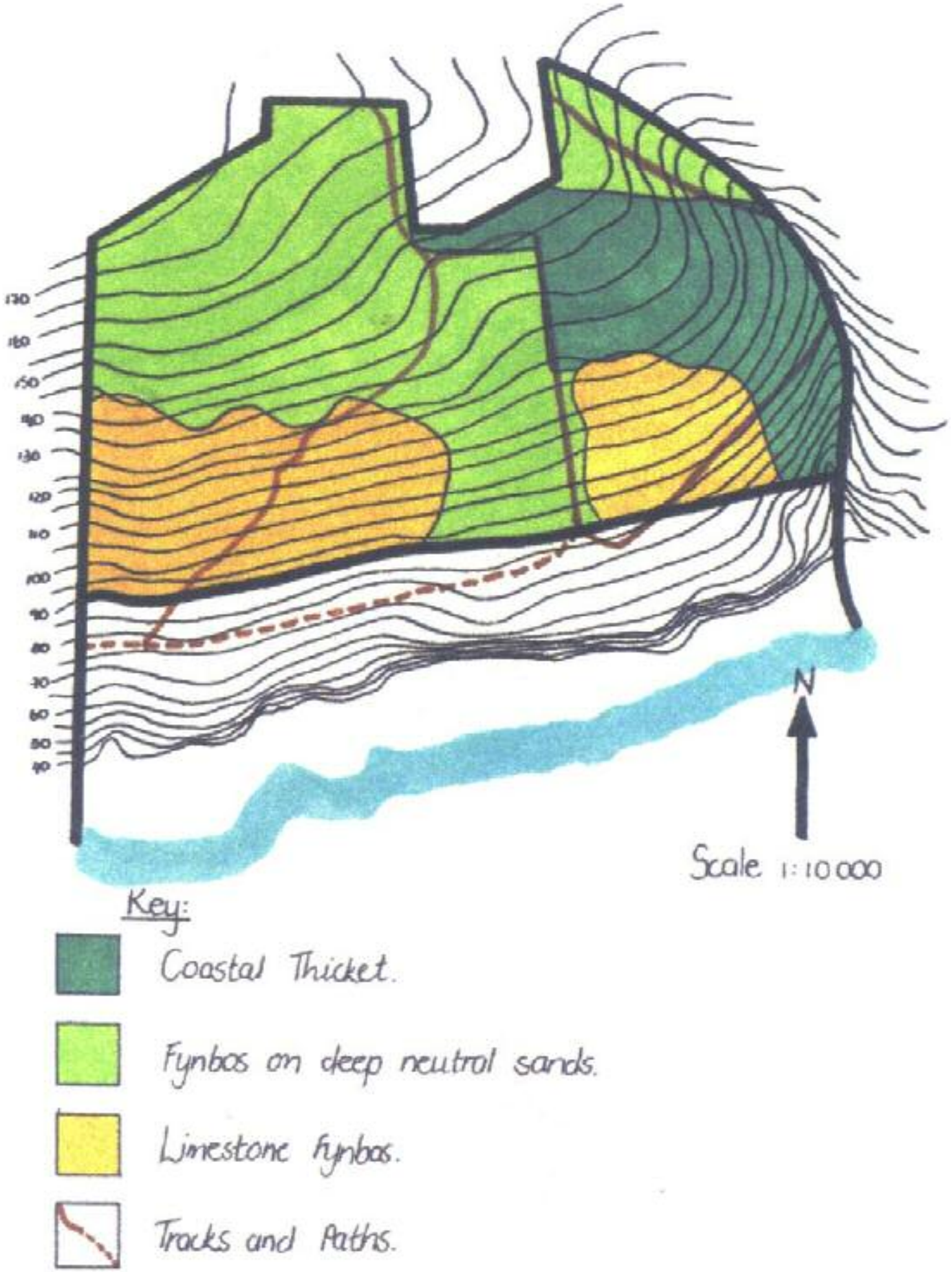

Figure 2. The vegetation of extension 27, Mossel Bay

Figure 3. An example of the limestone fynbos which occurs in the study area.

Figure 4. An example of the coastal thicket which occurs in the study area.

Adenocline paucifolia and *Hermannia trifoliata* are listed in the red Data Book as not threatened meaning that they are not necessarily common but that they are no longer as threatened as previously thought.

Due to the fact that the limestone fynbos vegetation of the study area represents some of the easternmost limestone communities and since limestone fynbos itself is a threatened vegetation type the patches of this vegetation type in the study areas should be conserved.

4.2. Coastal Thicket.

In the study area this vegetation type is restricted to the eastern areas extending into the valley on the eastern boundary (Figure 2). This thicket vegetation extends down the valley to the coastline in front of the study area. In general the thicket vegetation on the site is similar to that which is found all along the coastline in this region (Figure 4). Based on its present distribution and frequency of occurrence in the Southern Cape region, however, this vegetation type has been allocated a high conservation priority by the CSIR (1991). The vegetation type is, therefore, conservation worthy.

A Red Data species, *Cyphia dentariaefolia* var. *dentariaefolia*, which is insufficiently known and which has only been collected in the Mossel Bay area was identified on the site. No other rare species were found during this survey. *Sideroxylon inerme* (milkwood) was found scattered throughout the thicket areas. These trees are protected under the Forestry Act (122 of 1984) and may not be disturbed without the required permits from Cape Nature Conservation.

A large portion of thicket vegetation was burnt during the fire but it is likely that this will recover over time.

4.3. Fynbos On Deep Sands

A large portion of the study area consists of deep neutral sands which are likely to have been covered by fynbos vegetation before the fire but which will also have recently been invaded by *Acacia cyclops* (rooikrans). The extent of the invasion by rooikrans is difficult to judge so soon after the fire but from an assessment of the presence of rooikrans seedlings it seems that the areas which were the most significantly invaded were those higher up the slopes of the study area. The lower parts of the study area are likely to be less invaded by rooikrans.

This vegetation type extends through the middle of the study area down to the cliff tops at the coast.

A large number of species were present during this survey indicating that this vegetation type was the most diverse of those in the study area. *Protea lanceolata* which is listed in the Red Data Book as Vulnerable was present on the site as well as *Sutera aethiopica* which is listed in the Red Data Book as Not Threatened.

4.4. Alien Vegetation.

Since the area has recently been burnt it is difficult to assess the extent of alien vegetation invasion of the study area. The two main invasive species found on the site were *Acacia cyclops* (rooikrans) and *A. saligna* (Port Jackson) with rooikrans being by far the most common invader in the area. It is likely that large parts of the area are heavily invaded with rooikrans and it is possible that the species diversity in these areas is significantly reduced. An important point regarding the alien invasion of the area is however that the density of the alien plants in the area will increase significantly after the fire unless control measures are implemented as a matter of urgency.

Extrapolating from adjacent areas it is likely that the least invaded natural vegetation patches on the study site would be the limestone fynbos and it is likely that the rooikrans has not yet significantly affected the species composition of this vegetation type. With an alien clearing programme the limestone fynbos can be conserved.

Rooikrans invasion is limited in the thicket areas and has not yet significantly affected the vegetation as a whole. The majority of the thicket vegetation towards the retirement village has only scattered rooikrans present in it. Invasion of this vegetation type by mainly rooikrans increases towards the eastern boundary of the study area.

Rooikrans invasion of the Fynbos on Deep Neutral Sands is likely to be extensive in the study area. As mentioned previously it is also likely that the rooikrans invasion is most severe in the upper portions of the study area.

5. ALIEN VEGETATION CONTROL

Approximately one year ago a fire swept through the study area stimulating the large soil stored seed bank of rooikrans and Port Jackson to germinate. It is essential that active management of the area be implemented as soon as possible since the invasive plants like rooikrans will now be present in greater numbers causing excessive competition for the natural vegetation.

The area which needs to be controlled is large and seedlings, especially of rooikrans, are already becoming well established. Appendix 2 is a report on the methods of clearing rooikrans. Since there are large areas where seedlings of rooikrans are relatively dense the most effective method of clearing these areas may be to use Garlon poison. This should be sprayed on using back pack sprayers since the poison can be applied more specifically using this method.

Patches where the rooikrans is dense with limited other indigenous species present could be sprayed with Garlon while areas of mixed indigenous and alien species should be hand pulled.

6. DEVELOPMENT AND THE NATURAL VEGETATION

Much of the vegetation in the study area is sensitive and conservation worthy, the most conservation worthy vegetation being the limestone fynbos. It is essential, if development is to occur here, that as far as possible the limestone areas are protected and that large representative examples of the other vegetation types are preserved. In order to achieve this, development should be concentrated as high up the slopes as possible in the deep neutral sands where the rooikrans invasion is likely to be the most significant. Development should be nodal and large corridors of vegetation should be preserved between the nodes to ensure linkages between the different vegetation types and between patches of similar vegetation.

Disturbance outside any nodes should be severely restricted and development of any nodes should be subject to strict guidelines in order to minimise potential damage to the surrounding natural vegetation.

7. MANAGEMENT PLAN

It is important that a management plan be established for the entire area, especially if development is to take place there. In order to ensure the minimum damage to the natural environment during construction of any development, it is essential that a management plan be drawn up for the development phase of any project as well as for the general management of the natural environment after development is completed.

The management plan should include aspects such as limits to the size of the area to be disturbed during construction and the monitoring and limitation of excessive disturbance to the natural environment during the construction. The alignment of any roads in the area which may traverse natural areas should be done in consultation with environmental consultants to ensure as little damage to the environment as possible.

Further aspects that would need to be addressed would be fire management as well as alien vegetation control and utilisation control.

8. ENVIRONMENTAL AUDIT

An environmental auditing system should be established if development is to occur on the site, whereby during the development phase an environmental consultant regularly visits the site (e.g. once every 3 months until all development is completed) and, once development is completed, at least once a year for two years. This would help to ensure that the conditions of approval are being adhered to and that management guidelines are being correctly implemented. After the two year period the audit should be carried out every five years to ensure that the management plan is being adhered to, but, more importantly, to reassess and refine the management plan as circumstances change. These audits should be handed to the local authority for scrutiny on completion.

Compiled by:

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