

**Grazing Potential Assessment for the  
development of a 400 MW Solar  
Photovoltaic (PV) facility and associated  
infrastructure (Phase 3) on the Remainder  
of Farm Goede Hoop 26C, Portion 3 of Farm  
Goede Hoop 26C and other properties,  
between De Aar & Hanover, Emthanjeni  
Local Municipality, Pixley Ka Seme District  
Municipality, Northern Cape Province,  
South Africa.**

**Soventix Project 2022**



*by  
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## EXECUTIVE SUMMARY

Soil based ecological units have been delineated by Van den Berg for several portions of farms within the Hanover District. Potential grazing capacity, as a broader concept, is a guideline of the grazing potential within the study area, but in the context of dryer years, or of higher rainfall years, a variation in grazing potential is envisaged. Specific guidelines at each of the ecological units represented at the study area are provided, each with a variation envisaged, potential grazing capacity ranging from dry to wetter conditions.

It is important to be cautious and to state that the grazing capacity cannot stand alone as a single guideline – it goes hand in hand with the grazing strategy being followed. The grazing capacity estimated should be adapted as soon as dryer conditions return, or when higher rainfall conditions are experienced. Adaptive management should therefore be kept in mind. As grazing capacity strongly relates to rainfall, other factors are important drivers as well, e.g., the geology, soils, and veld condition, which is a function of historical and recent grazing management.

The potential grazing capacity from the first year of veld condition assessments (2017) related to the dryer conditions experienced at that time. The grazing capacity from the 2017 study (De Wet, 2017) is more conservative than the current grazing capacity, estimated in 2022, affected by recent higher rainfall compared to the months before the 2017 study. As there has already been a variation of grazing capacity to allow for rainfall built into potential grazing capacity (De Wet, 2017) the range of the potential grazing capacity for the 2022 study area could be linked to the spatial representation of potential grazing capacity illustrated spatially in the 2017 grazing capacity map. The potential grazing capacity was estimated from using the Veld Condition Index method, (Du Toit, 1997). The results from the grass layer (*excluding bossies*) are presented in the report within ecological categories of “Increasers” and “Decreasers” (from Tainton, 1999). Veld condition assessments in 2022 also *included the contribution of bossies* (Trollope et al, 1990, in Esler et al (2010) as both components should be considered in the context of an area where the brittleness in the environment is high. In such brittle environments unplanned withdrawal of areas from grazing will result in rapid degradation, deterioration and soil erosion.

Veld condition at the study area is characterised by a dominant Karoo-bossie component, an abundance of bare ground and a sparse grass component. Stocking rates for sheep under the last few years of relative dry years correlated well to guidelines provided by the Department of Agriculture. The more recent higher rainfall would have undoubtedly affected grazing capacity in a positive way. Further improvement in grazing capacity can be envisaged if specific grazing management guidelines, as provided in this report, are followed. Long term annual monitoring is recommended, for it will provide a range of fluctuations envisaged in veld condition and grazing capacity and will improve our understanding of the potential grazing capacity, and therefore also on how to achieve rainfall linked best practice management.

## 1. INTRODUCTION

### 1.1. Terms of Reference

Enviropulse CC (Francois de Wet) and Topveld CC (De Villiers Arnoldi) was tasked to provide:

- Grazing potential within the study area, which provides guidelines for development on the distribution of sensitive areas, based on information from soil mapping and classification by Van den Berg & Botha (2022) and
- Grazing management guidelines, based on veld condition.

### 1.2. Study Area – Soventix Proposed Solar Installation

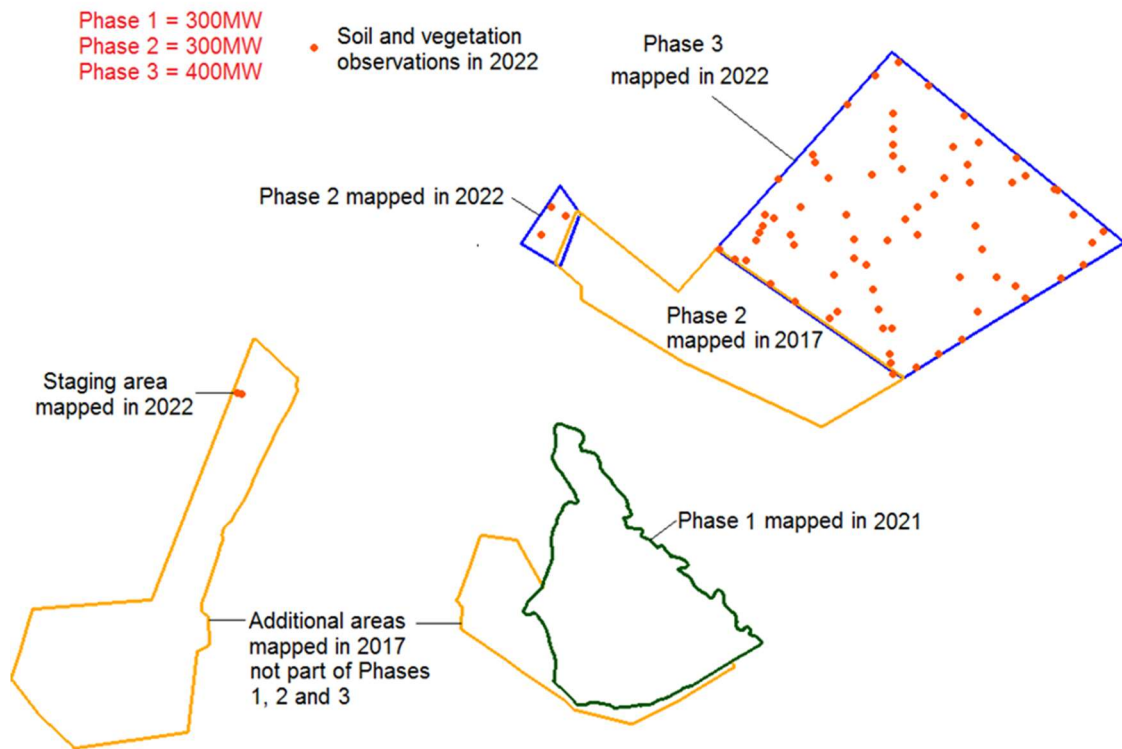
#### Location

The study area is in the Northern Cape, approximately 32 km from De Aar and 22 km from Hanover, directly northeast of the N10 highway.

Three potential development footprints of approximately same size, minimum of 450 ha each, were illustrated as three alternative development areas in the soil report of IRIS International (Van den Berg, 2017). Some of these areas form part of Phase 1 and Phase 2. In 2021 additional assessment and mapping was done to cover the full footprint of Phase 1 (now approved).

On these a total of 12 ecological units were delineated. Bottomlands with ephemeral drainage lines were noted then, but in April 2022 a vegetation survey on that part was conducted for the first time. The Figure below illustrates the three areas mapped in 2017 in relation to Phase 1, 2 and 3, the staging area and the extension of Phase 2. The Figure also indicates in addition to the areas mapped in 2017 the area mapped in 2021 (Phase 1) and the areas mapped in 2022.

Vegetation surveys in 2022 focussed on the 400MW Phase 3 footprint area. One survey point, however, is within an extension of the 300MW Phase 2 footprint area. The illustration below was done by IRIS International (Van den Berg and Botha, 2022).



## Geology and Soils

From the soil initial study of the Soventix SA Solar PV project at various study areas by Van den Berg (2017), as shown by the above map, followed by soil surveys in 2021 and 2022 (Van den Berg and Botha, 2022) the following information has become available.

A total of 12 ecological units have been identified, based on geology, soil texture and depth. These were:

1. Class 1. Sandstone outcrops,
2. Class 2. Dolerite outcrops,
3. Class 3. Very shallow yellow brown loamy soils,
4. Class 4. Very shallow yellow brown clayey soils,
5. Class 5. Very shallow red loamy soils,
6. Class 6. Very shallow red clayey soils,
7. Class 7. Shallow to medium deep yellow brown loamy soils,
8. Class 8. Shallow to medium deep yellow brown clayey soils,
9. Class 9. Shallow to medium deep red loamy soils,
10. Class 10. Shallow to medium deep red clayey soils,
11. Class 11. Structured shallow soils.
12. Class 12. Structured medium deep soils.

It must be noted that the Bottomlands with ephemeral drainage lines did not form part of the previous two studies (2017 and 2021) but this ecological unit is included in the 2022 study. So, another ecological unit is now also applicable, i.e.: 13. Bottomlands with ephemeral drainage lines.

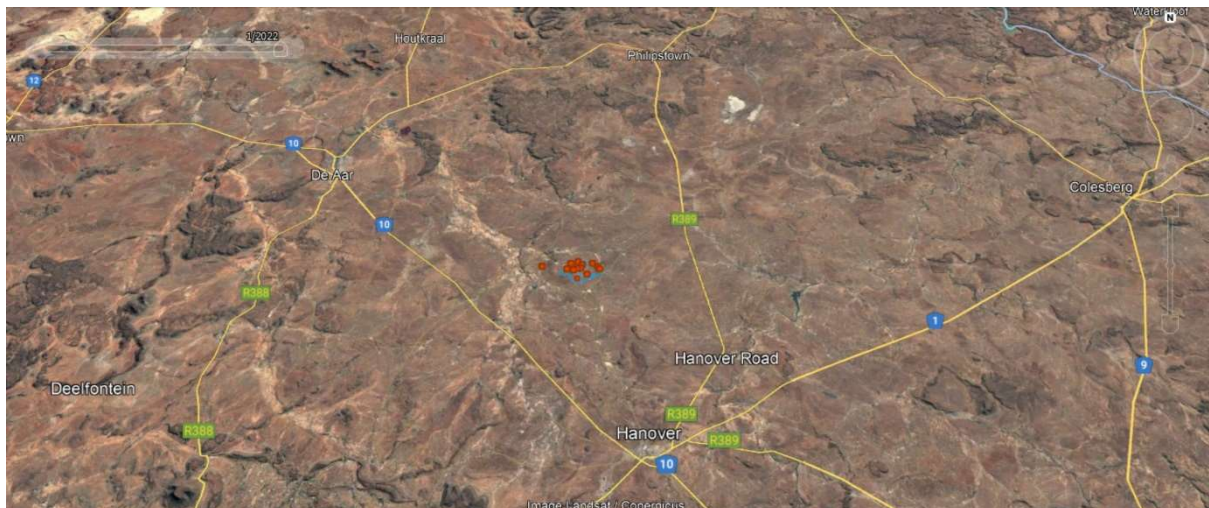
## Vegetation and Veld Condition

The vegetation at the study area (Phase 2 and 3) is classified as Northern Upper Karoo - Vegetation unit NKu 3, Mucina and Rutherford (2006). According to Acocks (1988) it is in Veld Type 36, i.e., False Upper Karoo. This is described as flat and gently sloping plains, interspersed with hills and rocky areas, with grasses such as *Aristida* and *Eragrostis* species that dominate.

Five easily recognisable veld condition states (Trollope et al, 1990 in Esler, 2010) are described for the Karoo – severely degraded, poor, intermediate, good and excellent (Esler *et al*, 2010). In the 2017 and 2021 studies the two extreme states, i.e., severely poor, and excellent, have been under-represented.

## 2. METHODS

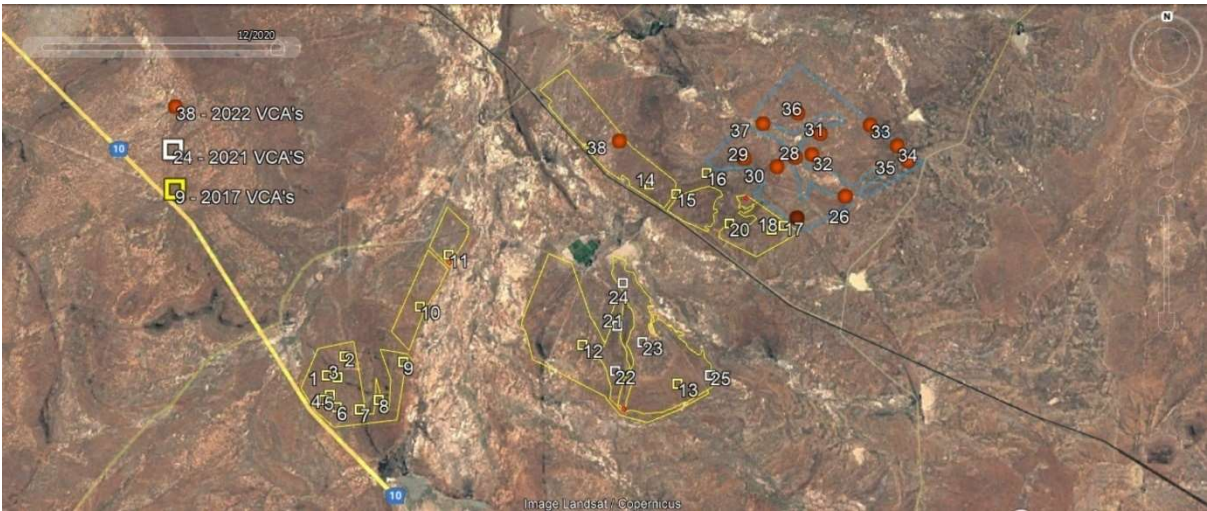
A total of 13 fixed points (illustrated as red bullet points) were stratified within the study area for the evaluation for grass composition and grass basal cover (as reflected from point to tuft distance). These veld condition assessment sites were envisaged to represent the general variation with veld condition, which are stratified to be within the 400MW Phase 3 project, except for one point, Site 38, that is within the 300MW Phase 2 project. This stratification was for the purpose of providing grazing management guidelines.



Locality of the 2022 veld condition assessment points (zoomed out, in red) north of Hanover and southeast of De Aar, Northern Cape, SA.



Distribution of 2022 veld condition assessments (Sites 26-37) within the 400MW Phase 3 project.  
Site 38 is within the 300MW Phase 2 project.



Distribution of veld condition assessment points as illustrated in 2017 and 2021 reports, now covering three different years:

The south-western part of the map represents assessments in 2017 (Sites 1-20) and 2021 (Sites 21-25).

The north-eastern side of the map represent adjacent assessments of 2022 (Sites 26-38).

**Note:** Precise delineation and amendments of the three phases has since been updated, as provided in the figure inserted at Par 1.1 above of this report.

Soil classification by Van den Berg & Botha (2022) followed the Taxonomic Classification System, to soil form level, for each grazing assessment (MacVicar CN (ed.) (1991)).

Point sampling followed the method of Du Toit (1997) of all plant species along 50-meter lines. Bossie density assessments were within plots of 50m x 2m. Line transects formed the basis to document species lists of grasses and bossies, frequency abundance of perennial grasses and bossies and the bossie canopy cover (%). Total counts of density were within the 100m<sup>2</sup> area at each site. The grazing index value and veld condition index was determined. Grazing capacity relied on information from the veld condition index method. Annual and perennial grass tuft distance observations formed the basis of estimation of basal cover.

Sampling for grass composition, tuft distances and species richness were at one-meter intervals (nearest perennial tuft distance to monitoring rod).

A photo of the veld at each veld condition assessment point is available representing the condition at each assessment (See appended site reports).

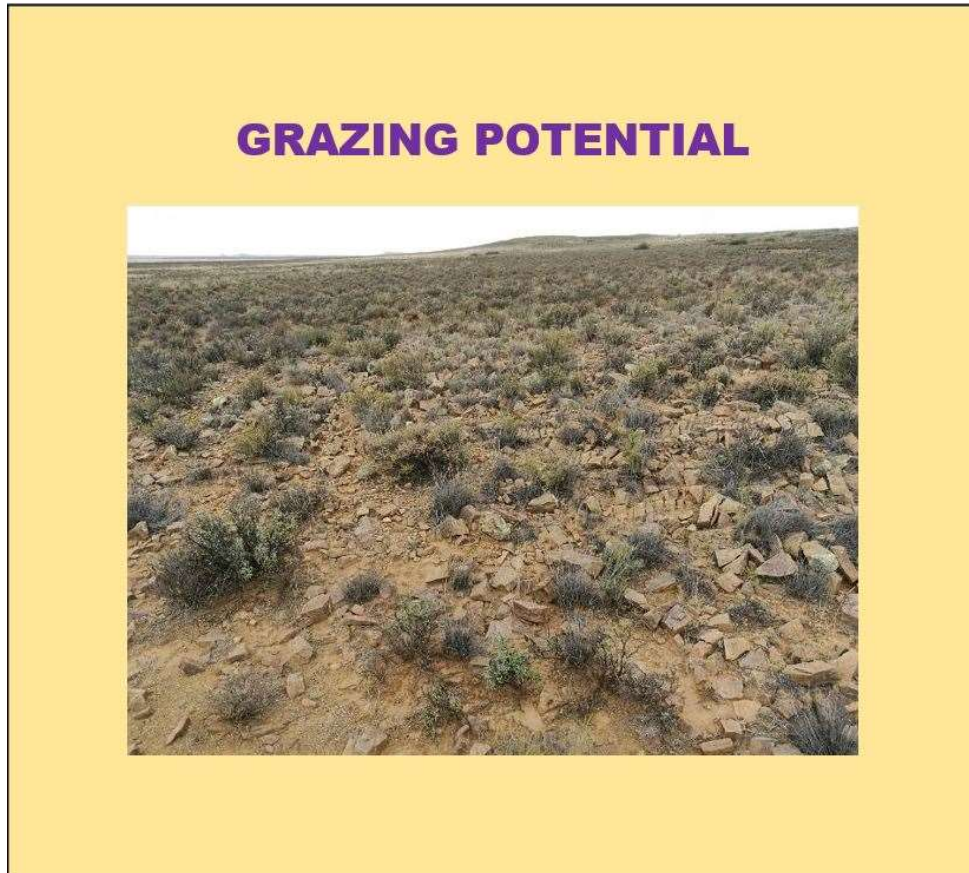
It illustrates the condition at the monitoring point at the time when the survey was conducted for each of the 13 survey points.

The detailed results are available in the appended tables, showing frequency abundance and density of the non-grass component and the proportions of grass species in the survey within Decreasers and Increaser categories (Tainton, 1988 and Tainton, 1999), as well as on a degradation axis of the Integrated System of Plant Dynamics (Bosch and Booysen, 1992). The grazing gradient on the ISPD axis will be valuable for longer term monitoring purposes, to reflect future trends in veld condition. Veld condition trends include the composition and abundance of the grass layer component, as well as that of the bossie component. ISPD Grazing models had been refined since the previous assessments in 2017.

Management and veld condition will over time therefore be linked by following the trends on an ISPD grazing gradient (or degradation axis) (Bosch (1989) and Bosch and Gaugh (1991).

### 3. RESULTS AND DISCUSSION

#### 3.1. Grazing Potential



Rainfall is not only the only factor affecting vegetation quantity and composition (Esler et al, 2010). Large fluctuations in veld condition and therefore also in grazing capacity can be expected over years. Differences in grazing capacity have been observed also on a spatial level within the study area. Even within similar topography and soil conditions the veld condition would be envisaged to differ within the same veld condition assessment of January 2017.

Results from De Wet (2017) and Van den Berg (2017) were studied and applied to obtain ecological and grazing units\*. The 2022 information from geology, soils and land terrain have been applied to the baseline study in 2017. Grazing management guidelines will therefore consider the soil as an important basis. Rainfall drives species dynamics and veld condition, and it is important and has been considered.

Geology and land terrain position, together with soil depth and texture affect grazing potential.



The following follows directly from the soil map which is now available for the study area (Van den Berg, 2017):

For **grazing potential** purposes, the landscape at the study area represents five main ecological zones., i.e.:

- GRAZING UNIT I: (Sites 21, 29 & 30). Medium deep soils at lower parts of the catena, including soils with lime present (i.e., Hutton, Oakleaf, Gamoep, Addo, Augrabies soils. It also includes Valsrivier soils).
- GRAZING UNIT II: (Assessed in 2017): Shallow to slightly deeper structured soils (i.e., unit dominated by Swartland soils). Unfortunately, no surveys were done in 2022 representing this specific grazing unit.
- GRAZING UNIT III: (Sites 27, 30, 33, 35, 36 & 38). Shallow soils (i.e., Mispah and Glenrosa soils).
- GRAZING UNIT IV: (Sites 26 & 33). Koppies of sandstone and dolerite. (i.e., outcrops and Mispah soils).
- GRAZING UNIT V: (Sites 28 & 37). Bottomlands with ephemeral drainage lines.

	GRAZING UNITS	GRAZING CAPACITY RANGE	2022 GRAZING CAPACITY	MEDIAN GRAZING CAPACITY
1.	G.U. I (Soils at lower part of catena)	5-25 ha/LSU	13.1 ha/LSU	15 ha/LSU
2.	G.U. II (Structured / Swartland soils)	10-30 ha/LSU	Not assessed	20 ha/LSU
3.	GRAZING UNIT III (Shallow soils)	15-55 ha/LSU	18.6 ha/LSU	35 ha/LSU
4.	GRAZING UNIT IV (Koppies)	20-90 ha/LSU	19.8 ha/LSU	55 ha/LSU
5.	GRAZING UNIT V (Bottomlands with ephemeral drainage lines)	10-25 ha/LSU	16.9 LSU	17 ha/LSU

Note: The **mean** (average) grazing capacity, as illustrated by the “2022 Grazing Capacity” in the table above, is found by adding all the grazing capacity figures in the data set (in this case the grazing unit) and dividing it by the number of sites assessed (in the grazing unit). The **median** is the middle value from a data set sorted from smallest to greatest.

The “Grazing Capacity Range” in the table above provides extreme limits in potential grazing capacity based on rainfall variability. In the long term these limits must be refined from more quantitative data.

In the baseline data set of 2017 the range was determined for each of the grazing units, using guidelines from the Department of Agriculture and subjective knowledge (personal experience and consulting to neighbouring farmers).

A general guide on stocking rate from the Department of Agriculture is provided and was taken into account (see figures with info on grazing capacity provided on p.17 and p.21 in this report).

The grazing capacity range is based on **mean** values, determined from veld condition data from that below average rainfall year, but projected then already in 2017, to make provision for better rainfall years.

- 10 ha/LSU was used as a variation from the mean with Grazing Unit I;
- 20 ha/LSU for Units II and III and
- 30 for Grazing Unit IV.
- Grazing Unit V had been provided an almost similar projection in range as estimated for Grazing Unit II after 2022 field data was sampled.

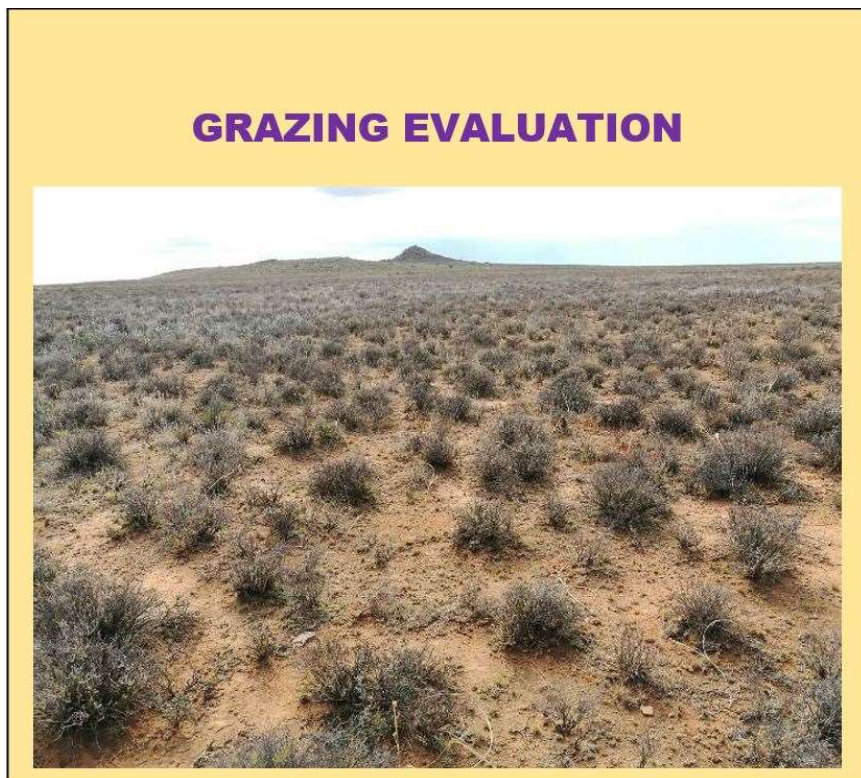
Median grazing capacity values have been applied to the ecological units, or broader patterns delineated on the maps from Van den Berg (2017) that considers geology, soils, and landscape position. These are:

- Grazing Unit I, with medium deep soil at lower parts of the catena, has a median grazing capacity of 15 ha/LSU.
- Grazing Unit II, with shallow to slightly deeper structured soils, has a median grazing capacity of 20 ha/LSU.
- Grazing Unit III, with shallow soils has a median grazing capacity of 35 ha/LSU.

- Grazing Unit IV, of the koppies of sandstone and dolerite, has a median grazing capacity of 55 ha/LSU. The mean grazing capacity for this grazing unit is slightly below the proposed minimum range, which suggest adaption on the range may be required in near future, but that said, the recent rains were of the highest recorded in a long time.
- Grazing Unit V, Bottomlands with ephemeral drainage lines, has a median grazing capacity of 17 ha/LSU.
- Bottomlands with ephemeral drainage lines have been included with the 2022 grazing evaluation. Two sites (Sites 28 & 37 represented by Valsrivier and Tukulu soils, ranging between 10 and 25 ha/LSU.)

A large variation in veld condition is observed within the above-mentioned grazing units. The number of veld condition assessment points do not cover all the variation envisaged within a given time. A spatial illustration of veld condition within the grazing management units is therefore not possible. Although the classification within the five grazing management units considers soil form and terrain, it may include sampling points outside the classification (a rare deviation), with sub-dominant soils classified and lumped into the grazing units. ISPD-models (illustrated within the appended Site Reports) are more specific to include data sets of similar soils. It follows the ecological units more strictly though.

### 3.2. Grazing Evaluation



#### **Bossies and grasses:**

The results of the findings for specific points or sites are available in the appended site reports, which have photos taken from the assessment point and Google Earth images. The detailed info of the vegetation (grass and bossies) is available on appended tables, reflecting grass and Karoo plant composition and cover. Grazing capacity and management recommendations are included.

The veld condition index values obtained from the results were overlain on Landsat images for the study area. The veld condition index zones have been illustrated on the appended on a map in 2017 into three classes, i.e., “Good” (median range 185-238), “intermediate” (median range 105-187) and “poor” (median range 66-147), with a classification reflecting good, intermediate, and poor values relative to the results of the 2017 assessment, not relative to the potential. However, two more veld condition states, severely degraded (median range less than 66) and excellent (median range more than 238) have not yet been included but is now included in the 2022 study.

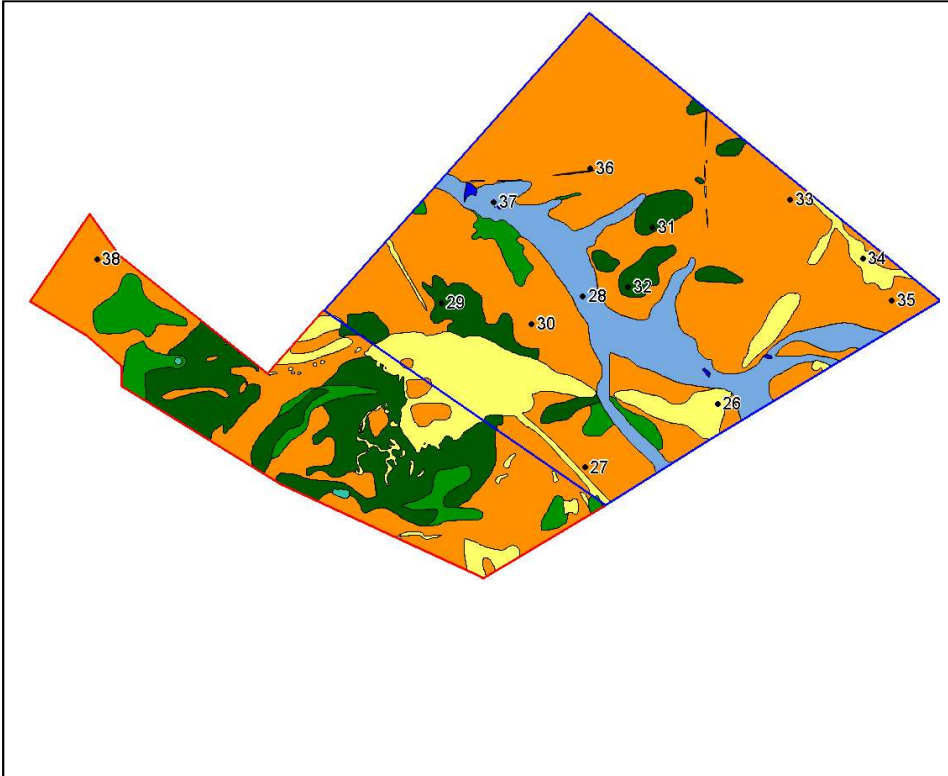
It must be born in mind that veld condition reflects both rainfall and current management (and other factors discussed above). Veld condition classes from Trollope (1990) and Tainton (1988) are compared to the Ecological Index (Du Toit, 1997). The methods from Trollope / Tainton exclude the bossie component, but the ecological index *includes* the bossie component, as an important factor with forage availability and is therefore applied to the grazing units.

Site number	Ecological Index	Ecological Index range (Du Toit, 1997)	Trollope et al (1990)	Tainton (1988)
26.	266.2	>238 = Excellent	Intermediate	Overgrazed
27.	201.4	185-238 = Good	Intermediate	Overgrazed
28.	229.8	185-238 = Good	Intermediate	Overgrazed
29.	174.2	105-187 = Intermediate	Poor	Overgrazed
30.	334.6	>238 = Excellent	Intermediate	Overgrazed
31.	221.1	185-238 = Good	Intermediate	Overgrazed
32.	205.4	185-238 = Good	Intermediate	Overgrazed
33.	236.9	>238 = Excellent	Intermediate	Overgrazed
34.	136.9	66-147 = Poor	Poor	Overgrazed
35.	234.0	>238 = Excellent	Intermediate	Overgrazed
36.	198.5	185-238 = Good	Poor	Overgrazed
37.	195.9	185-238 = Good	Poor	Overgrazed
38.	103.6	66-147 = Poor	Severely degraded	Severely overgrazed

No.	VELD CONDITION Zone	Grazing Units 2022 & Ecological Index	Ecological Index Range	Median Ecological Index
1.	EXCELLENT	Most of G.U.3 (Phase 3)	>238	254.0
2.	GOOD	G.U. 1 and 3 (Phase 3)	185-238	211.5
3.	INTERMEDIATE	Grazing Unit 1 (Phase 3)	105-187	146.5
4.	POOR	G.U. 3 (Phase 2) G.U. 4 (Phase 3)	66-147	106.9
5.	SEVERELY DEGRADED	None	<66	32.5

The results from April 2022 reflect veld conditions reflected relative better conditions than what were observed in 2017, mostly from the lush vegetation and an abundance of flowering plants observed in April 2022, which were due to good rains received. Bare ground, however, was still present (but annual grasses started to fill these bare ground areas). The grass species richness was still low. Veld condition should include bossies, but without the bossie contribution, the veld condition of the grass layer itself is mostly intermediate at the best, although poor and severely degraded conditions have been observed.

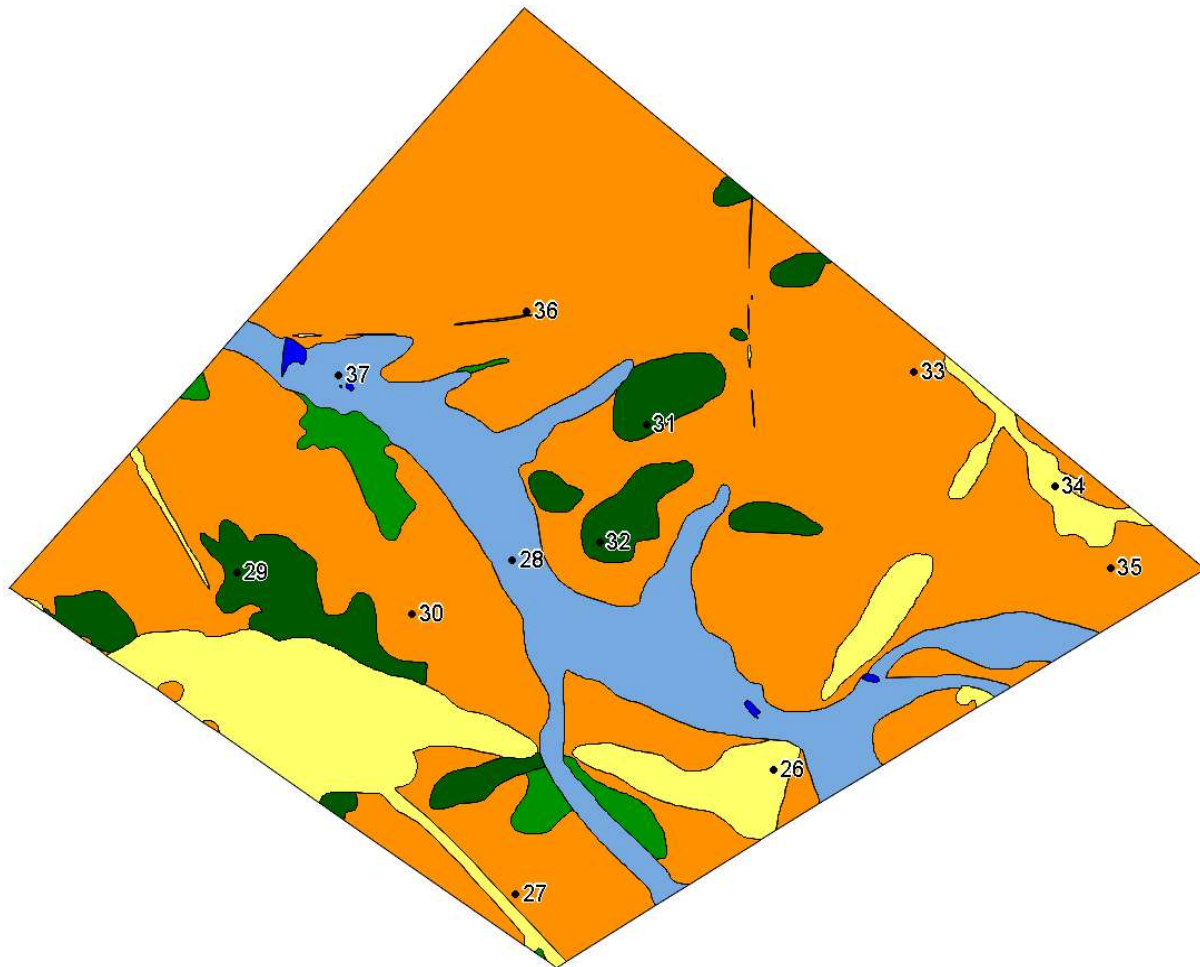
**Grazing units**, as prepared by Van den Berg and Botha (2022) are spatially illustrated within Phase 2 and 3 development areas on the map below. The Phase 3 area is delineated by the blue boundary and the Phase 2 area by the red delineation. VCA sites are indicated as black dots.



**Legend**

COLOUR	NO	GRAZING UNITS
Dark Green	1	G.U. I (Soils at lower part of catena)
Medium Green	2	G.U. II (Structured / Swartland soils)
Orange	3	GRAZING UNIT III (Shallow soils)
Yellow	4	GRAZING UNIT IV (Koppies)
Light Blue	5	GRAZING UNIT V (Bottomlands with ephemeral drainage lines)
Teal	6	Permanent wetland - artificial
Dark Blue	7	Water

The map below shows only the grazing units of the Phase 3 area. VCA sites are indicated as black dots. The map below was also distributed inside an A0 map composition together with the other A0 maps from the soils report. The updated grazing units of Phase 2 (the inclusion of the extension area) and the Phase 3 grazing units were distributed with the GIS data of the soils report (Van den Berg & Botha (2022)).



**Legend**

COLOUR	NO	GRAZING UNITS
Dark Green	1	G.U. I (Soils at lower part of catena)
Light Green	2	G.U. II (Structured / Swartland soils)
Orange	3	GRAZING UNIT III (Shallow soils)
Yellow	4	GRAZING UNIT IV (Koppies)
Blue	5	GRAZING UNIT V (Bottomlands with ephemeral drainage lines)
Light Blue	6	Permanent wetland - artificial
Dark Blue	7	Water

**Area calculation of map units for Phase 2.**

NO	GRAZING UNITS	GRAZING CAPACITY RANGE	2022 GRAZING CAPACITY	%	AREA (ha)
1	G.U. I (Soils at lower part of catena)	5-25 ha/LSU	13.1 ha/LSU	32.9	180.2
2	G.U. II (Structured / Swartland soils)	10-30 ha/LSU	Not assessed	12.3	67.5
3	GRAZING UNIT III (Shallow soils)	15-55 ha/LSU	18.6 ha/LSU	44.8	245.4
4	GRAZING UNIT IV (Koppies)	20-90 ha/LSU	19.8 ha/LSU	9.8	53.7
5	GRAZING UNIT V (Bottomlands with ephemeral drainage lines)	10-25 ha/LSU	16.9 LSU	0.0	0.0
6	Permanent wetland			0.2	1.2
7	Water			0.0	0.0
	<b>Total</b>			100.0	<b>548.0</b>

**Area calculation of map units for Phase 3.**

NO	GRAZING UNITS	GRAZING CAPACITY RANGE	2022 GRAZING CAPACITY	%	AREA (ha)
1	G.U. I (Soils at lower part of catena)	5-25 ha/LSU	13.1 ha/LSU	6.7	79.1
2	G.U. II (Structured / Swartland soils)	10-30 ha/LSU	Not assessed	2.2	25.7
3	GRAZING UNIT III (Shallow soils)	15-55 ha/LSU	18.6 ha/LSU	65.9	774.9
4	GRAZING UNIT IV (Koppies)	20-90 ha/LSU	19.8 ha/LSU	11.4	134.0
5	GRAZING UNIT V (Bottomlands with ephemeral drainage lines)	10-25 ha/LSU	16.9 LSU	13.6	160.2
6	Permanent wetland			0.0	0.0
7	Water			0.1	1.6
	<b>Total</b>			100.0	<b>1175.5</b>

### **Bossies (excluding grasses):**

Information on the abundance and density of all species over all the 13 sites. The information derived was relative measures, i.e., abundance of any individual species expressed as a percentage of the total number of species present in the community. In the assessment of frequency, the sampling of abundance of species focussed on the individual of species counted, instead of noting their presence or absence.

The abundant species are, in order of *abundance*:

	<b>Bossies (Name of the plant species)</b>
1	<i>Pentzia incana</i> Ankerkaroo
2	<i>Pentzia globosa</i> Vaalkaroo
3	<i>Eriocephalus ericoides</i> Kapokbos
4	<i>Pteronia cf glauca</i> Geelboegekaro
5	<i>Felicia muricata</i> Bloublommetjie
6	<i>Phymaspermum parvifolium</i> Witheuningkaroo
7	<i>Ruschia intricata</i> ( <i>Eberlanzia ferox</i> ) Doringvygie
8	<i>Eriocephalus spinescens</i> Doringkapok
9	<i>Caroxylon tuberculatum</i> ( <i>Salsola tuberculata</i> ) Blomkoolganna
10	<i>Asparagus glauca</i> Bloukatdoring
11	<i>Oedera humilis</i> ( <i>Rosenia humilis</i> ) Perdekaroo
12	<i>Amphiglossa triflora</i> ( <i>Pterothrix spinescens</i> ) Voeltjie-kan-nie-sit-nie
13	<i>Roepera incrustata</i> Witkriedoring
14	<i>Moraea pallida</i> Yellow Tulp / Geel Tulp
15	<i>Euryops asparagoides</i> Bultdraaibos
16	<i>Lycium cinereum</i> Kriedoring
17	<i>Gorteria alienata</i> ( <i>Hirpicium alienatum</i> ) Haarbossie
18	<i>Selago geniculata</i> Persaar
19	<i>Berkheya spinosa</i> Vlaktedissel
20	<i>Lycium sp.</i>
21	<i>Helichrysum lucillioides</i> Kerriebos
22	Unidentified (Vygie species)
23	<i>Monsonia salmoniflora</i> Boesmanskers
24	<i>Pteronia sordida</i> Swartboegoe
25	<i>Boophane disticha</i> (Gifbol)
26	<i>Phaeoptilum spinosum</i> Brosdoring
27	Unidentified species (Bossie 1)

The species below are listed in order of high, to low *density*:

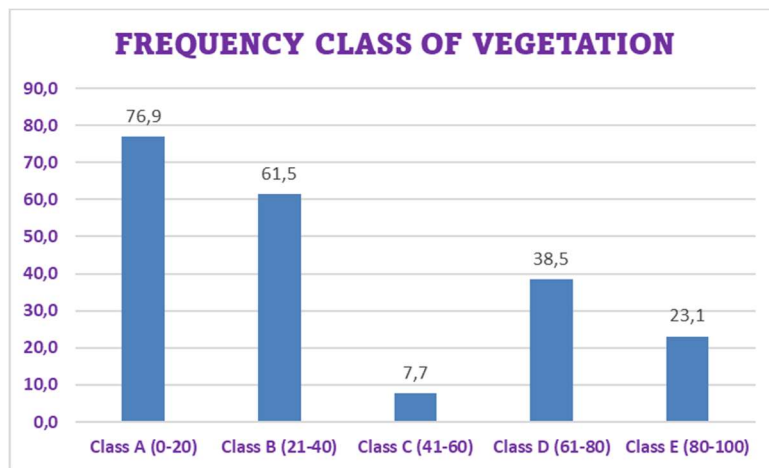
	<b>Bossies (Name of the plant species)</b>
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3	<i>Ruschia intricata</i> ( <i>Eberlanzia ferox</i> ) Doringvygie
4	<i>Felicia muricata</i> Bloublommetjie
5	<i>Phymaspermum parvifolium</i> Witheuningkaroo
6	<i>Pentzia globosa</i> Vaalkaroo
7	<i>Eriocephalus spinescens</i> Doringkapok
8	<i>Asparagus glauca</i> Bloukatdoring
9	<i>Pteronia cf glauca</i> Geelboegekaro
10	<i>Caroxylon tuberculatum</i> ( <i>Salsola tuberculata</i> ) Blomkoolganna
11	<i>Roepera incrustata</i> Witkriedoring
12	<i>Moraea pallida</i> Yellow Tulp / Geel Tulp
13	<i>Oedera humilis</i> ( <i>Rosenia humilis</i> ) Perdekaroo
14	<i>Selago geniculata</i> Persaar
15	<i>Euryops asparagoides</i> Bultdraaibos
16	<i>Berkheya spinosa</i> Vlaktedissel
17	<i>Amphiglossa triflora</i> ( <i>Pterothrix spinescens</i> ) Voeltjie-kan-nie-sit-nie
18	<i>Lycium cinereum</i> Kriedoring
19	<i>Gorteria alienata</i> ( <i>Hirpicium alienatum</i> ) Haarbossie
20	<i>Helichrysum lucillioides</i> Kerriebos
21	Unidentified (Vygie species)
22	<i>Lycium sp.</i>
23	<i>Pteronia sordida</i> Swartboegoe
24	<i>Monsonia salmoniflora</i> Boesmanskers
25	<i>Boophane disticha</i> (Gifbol)
26	<i>Phaeoptilum spinosum</i> Brosdoring
27	Unidentified species (Bossie 1)

Raunkier's Test for heterogeneity: The results from study show that vegetation is not heterogeneous in nature from the class frequency pattern suggested by Raunkier\*. It does not fit the formula of Raunkier. See frequency classes of bossie vegetation, as illustrated below:

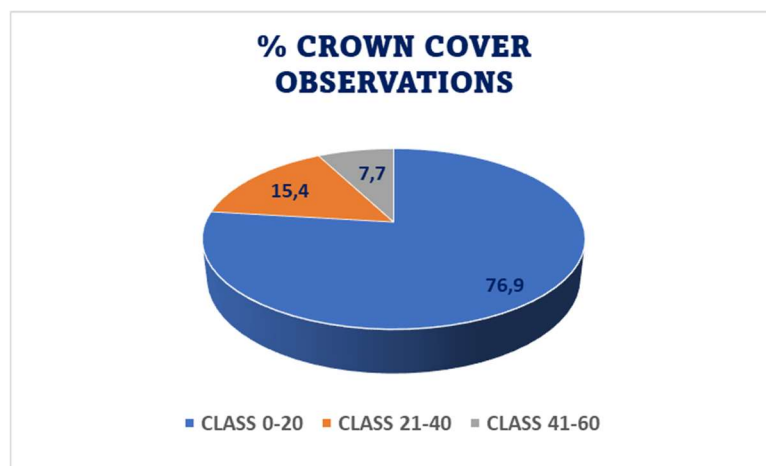
\* Raunkier's value: Frequency class A = 53%; Frequency class B = 14%; Frequency class C = 9%; Frequency class D = 8% and Frequency class E = 16% (from Fatima, 2017).

With Raunkier's Formula  $A > B > C < D < E$ .

Class values		2022	Raunkier's value
A	Class A (0-20)	76,9	53
B	Class B (21-40)	61,5	14
C	Class C (41-60)	7,7	9
D	Class D (61-80)	38,5	8
E	Class E (80-100)	23,1	16



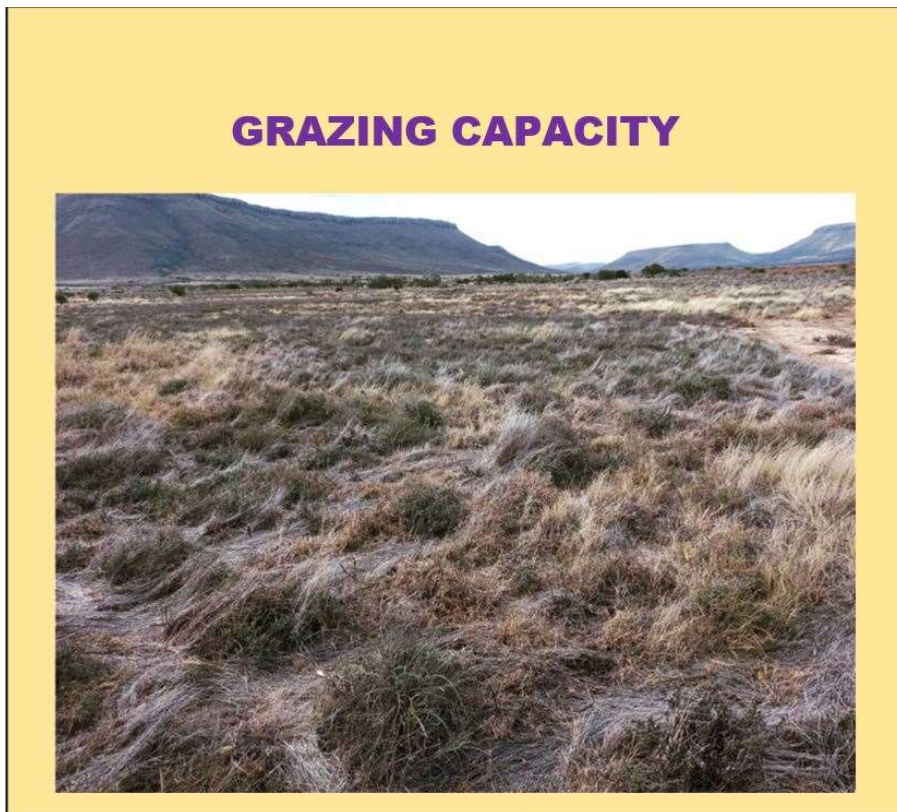
**Crown Cover:**



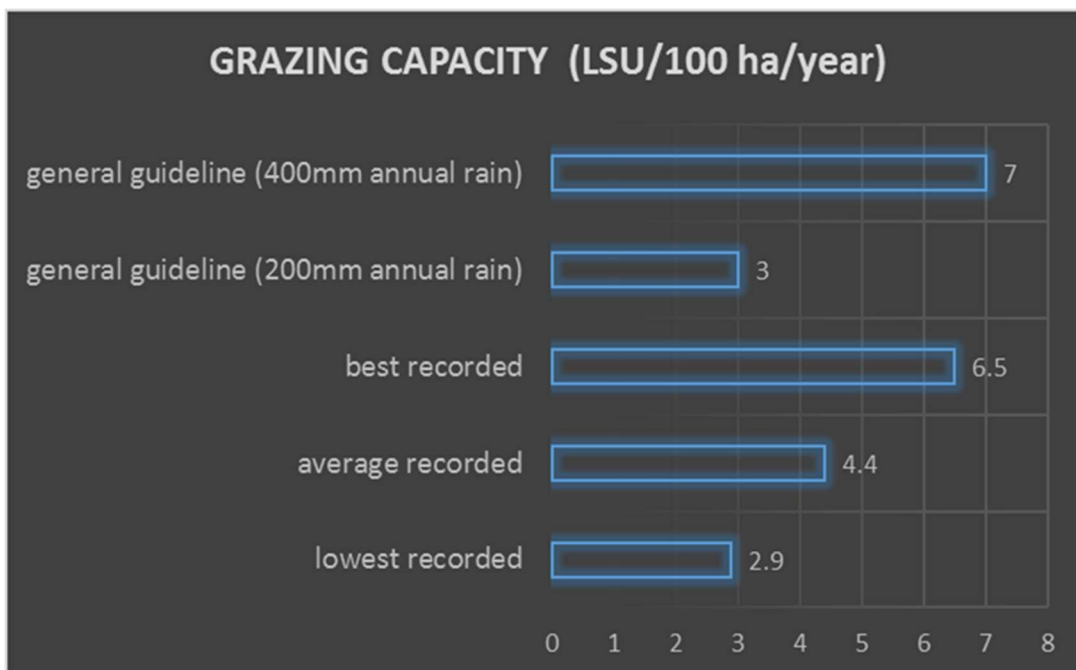
76.9% of the observations of vegetation crown cover recorded were within the percentage cover class below 20% cover. 15.4% of the of observations were in crown cover of 21-40%. A smaller percentage of observations were within the 41-60% crown cover class.



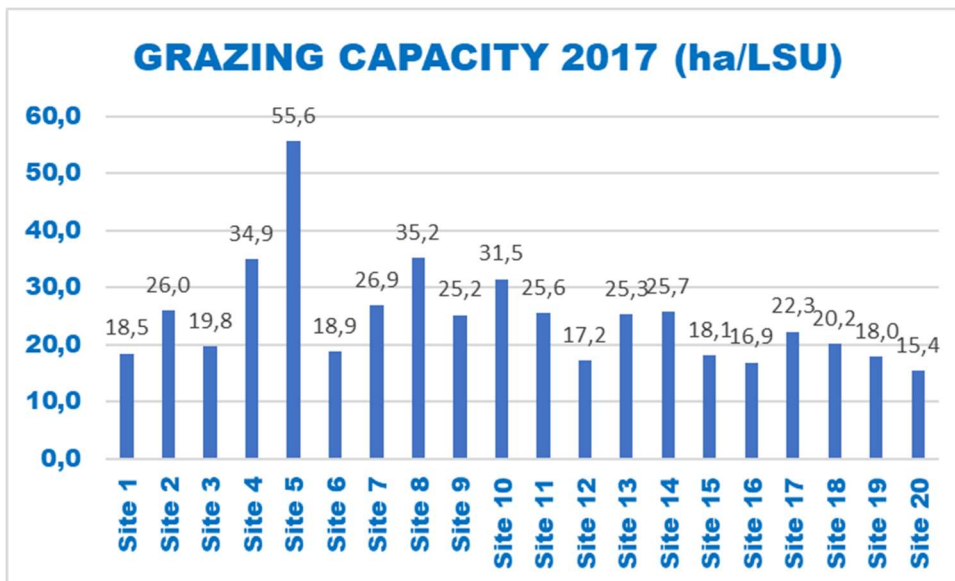
### 3.3. Grazing Capacity



Current grazing capacity is expressed as LSU/100ha/year below. It is based on the results from the evaluation of an earlier study on the general area (on the farm Goedehoop (De Bad) of this study area (De Wet, 2017).

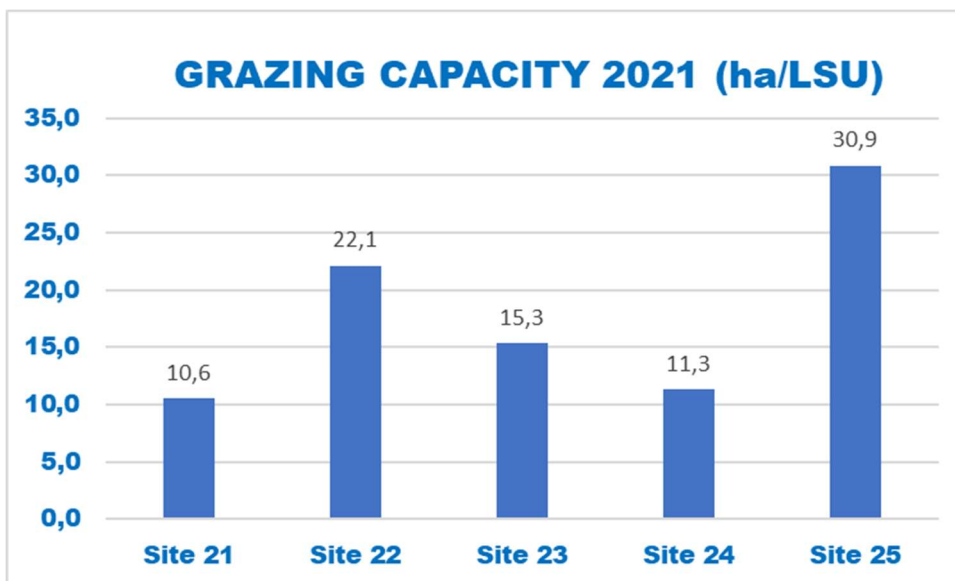


**2017 Grazing Capacity (this is applicable to the three areas - see the overall study area illustration):**



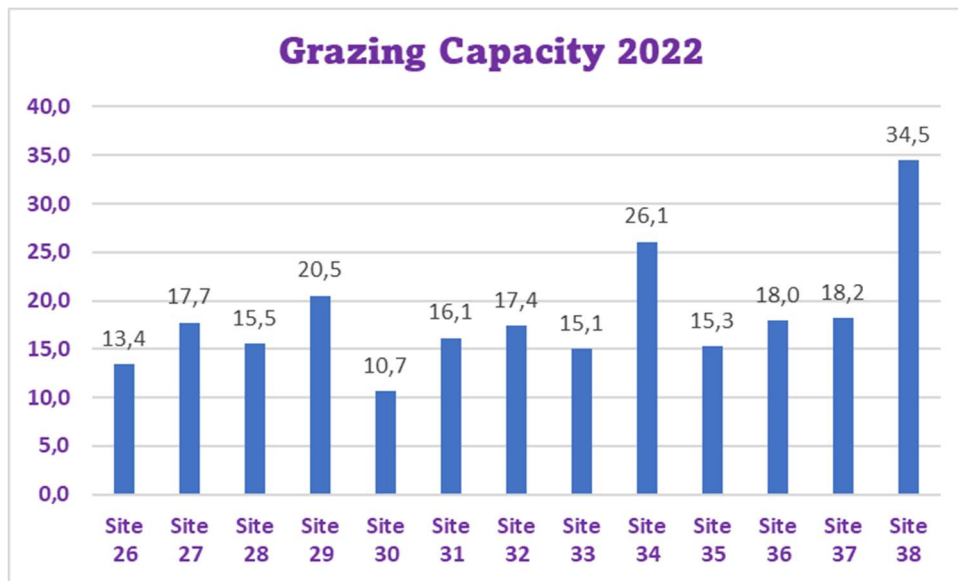
A grazing capacity illustrated above applies to below-average rainfall conditions in 2017. The grazing capacity related to between 15 and 17 ha/LSU at better veld conditions, or an average of just less than 23 ha/LSU over all veld conditions in the study area in 2017.

**2021 Grazing Capacity (this is applicable to the Phase 1 area):**



The grazing capacity for 2021 varied between 10.6 and 30.9 ha/LSU. The average grazing capacity for the area studied in 2021 was 18.04 ha/LSU. It was an improvement compared to the 2017 assessments. It must be noted that rainfall was significantly higher in 2020 and 2021 compared to 2017.

**2022 Grazing Capacity** (Phase 3 – Sites 26-37); (Phase 2 – Site 38):

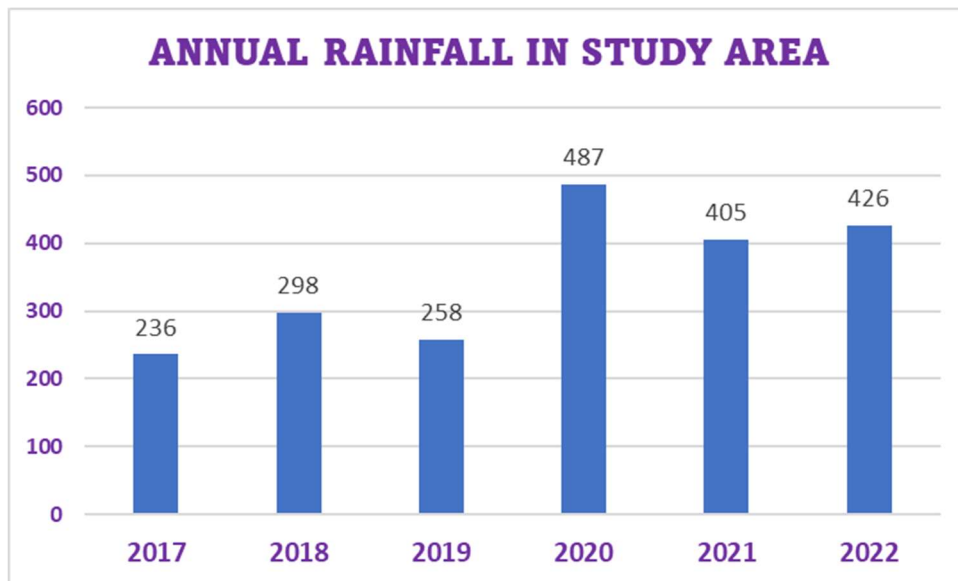


The average grazing capacity for the 13 assessments of the area studied in 2022 is 18 (17.6) ha/LSU.

Within the Grazing Units, more specifically in 2022, the average grazing capacity is

- 13.1 ha/LSU at Lower parts of the catena at Grazing Unit 1,
- 18.6 ha/LSU at Shallow soils of slopes at Grazing Unit 3,
- 19.8 ha/LSU at Koppies, represented by Grazing Unit 4 and
- 16.9 ha/LSU at the Bottomlands with ephemeral drainage lines, represented by Grazing Unit 5.

## Rainfall in study period (2017-2022)



Rainfall figures above reflect precipitation for the larger study area over the period 2017-2022 for May previous year to April current year. These have been made available by Mr Willem Retief, from the farm De Bad (Goedehoop).

The study in 2022 represent an area adjacent to the area studied in 2017 and is based on vegetation responses from higher rainfall received within this area.

However, under drier conditions the following quantitative information would be applicable:

A grazing capacity as reflected for below average rainfall conditions in 2017, was between 15 and 17 ha/LSU at better veld conditions, or an average of just less than 23 ha/LSU over all veld conditions in the study area in 2017. This is slightly less conservative than recommended by Department of Agriculture, for a stocking rate correlating to a grazing capacity of 28 ha/LSU would have been applicable.

A potential grazing capacity for the general area within all the areas assessed (Phase 1, 2 and 3): If sheep were the only grazers animal included in the estimation of stocking rates, it would have translated (for drought conditions) into less than 20 sheep on 100ha, or an average of approximately 4 LSU/100ha, i.e., applicable for below average rainfall conditions (i.e., 250mm per annum).

The stocking rates for sheep proposed in 2017 corresponded well (although being slightly less conservative) with the guidelines (from Esler et al, 2010) recommended by the Department of Agriculture. See figure below.

**DEPARTMENT OF AGRICULTURE  
RECOMMENDATIONS OF STOCKING RATES**  
(Average annual rainfall (mm) x-axis; LSU/100ha y-axis)



A rainfall of 426mm in 2022 allows for a 56.5% increase in the stocking rate (6.2 LSU/100ha/Year) since 2017, but it must be kept in mind the comparison is not of the same survey points (2017 study in adjacent part of the farm Goedhoop (De Bad)).

### 3.4. Grazing management recommendations



Sheep currently mostly utilizes the grazing. However, all grazers present on the study area should be included when the current grazing capacity is applied.

Regenerative grazing management is strongly recommended. This will improve the grass basal cover, improve the water cycle, ensure organic accumulation on soil surface that will enhance the mineral cycle and improve the water holding capacity of the soil, ensure minimal temperature fluctuations in the soil and improve the grass composition and forage production potential of the grass layer. The controlled impact of hooves will ensure improvement of the Carbon cycle, also from trampling grasses in moribund state ("taller unpalatable, woody grasses, with vertical growth form and unfavourable structure for grazers will become beneficial to cover bare ground through ultra-high density grazing strategies.

Grazing management should be including the strict use of holistic management grazing charts, where the number of animal days per camp are estimated, based on the grazing capacity at each camp. Removal of sheep at the critical time, before end of winter should be included in the grazing management to prevent deterioration in animal condition and to allow time to reassess herd composition, based on the productivity from the past months. Overgrazing or continuous grazing in areas should be prevented by planned resting. Time management per camp is essential.

In addition to removing grazers when available forage reserves become low, towards the end of winter, it is also recommended to include resting of camps for periods up to 12 months, at a frequency of once every four years. This will assist to improve recovery of forage reserves and allow for grass seeding and establishment of Decreaser grasses, which

will result in an improvement in grass production potential. Sound management will improve the grass and bossie components with important forage species.

This recommendation applies to all the camps. Planned resting should be carefully controlled while monitoring veld condition. It is especially important not to let any area be excluded from grazing as this will inevitably result in degradation in veld condition and in soil erosion.

MANAGEMENT CHALLENGES	IMPACT ENVISAGED	ASSOCIATED MITIGATION & NOTES
Well managed areas	Minimal negative impacts - Grass in Phase 2 stage.	Minimal. Use regenerative grazing management plans – implement scheduled grazing days and strategic removal of grazers **.
All veld conditions	Various	Apply annual monitoring of veld condition and veld condition trends, estimate current grazing capacity and adapt grazing management accordingly.
Under grazing	Phase 3 growth stage* (Woody / unpalatable grass).	Ultra-high density grazing & kraaling at selected areas, followed by controlled recovery periods.
Under grazing	Absence/ low organic material layer on soil surface due to* relative tall grass structure.	Ultra-high density grazing & kraaling at selected areas, followed by controlled recovery periods.
Under grazing	Shading effect from* relative tall unpalatable grass (Phase 3 grass growth stage).	Ultra-high density grazing & kraaling at selected areas, followed by controlled recovery periods.
Under grazing	Poor grass basal cover (deterioration from under grazing).	Ultra-high density grazing & kraaling at selected areas, followed by controlled recovery periods.
Under grazing	Sheet erosion (onset of poor veld condition) from larger perennial tuft distances from* a dominance of vegetation in Phase 3 growth stage.	Regenerative grazing.
Over/under grazing	Donga erosion (severely degraded) – mismanagement from passive management/ overprotection (incl. poor time control with overgrazing).	Fix increased origin/ water run-off at upper slopes, where drainage starts & apply kraaling (i.e., short duration trampling & over-night occupancy/patches allow depositions of manure & grass seed).
Under grazing	Desertification (severely degraded).	Kraaling (Short duration trampling & over-night occupancy of patches to allow depositions/manure and grass seed).
	Soil capped/ hard surface layer.	Kraaling (Short duration trampling & over-night occupancy of patches to allow depositions/manure and grass seed).

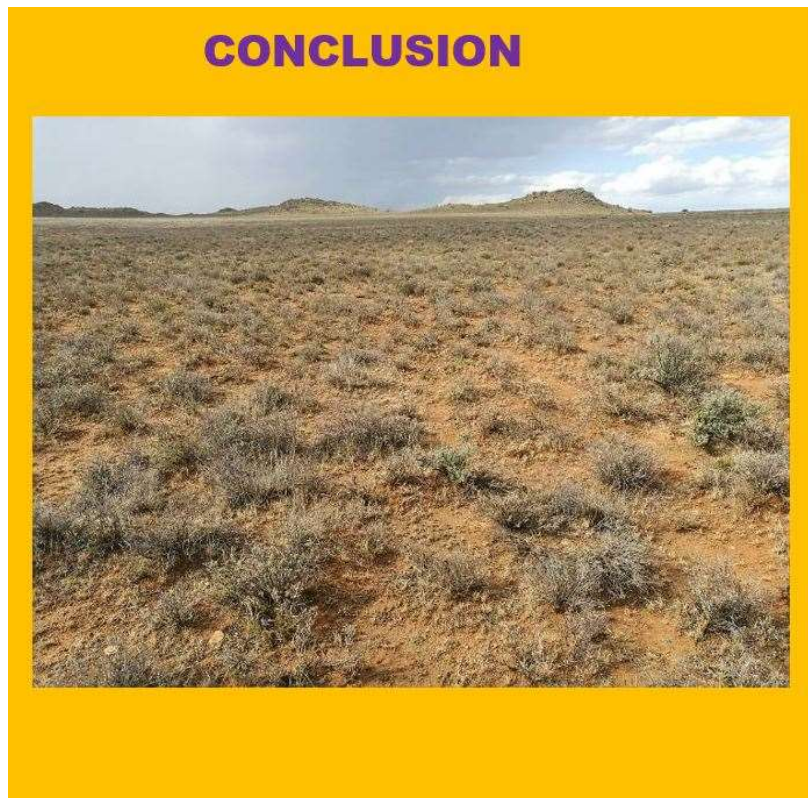
Overgrazing	Grass in Phase 1 growth stage – very low grass cover and dominance of bossies. A change in grass species composition to a dominance of annual grasses envisaged.	Improve time control with grazing by shortening grazing period whilst allowing for relative high stocking rates, followed by controlled recovering periods.
	Decrease/ forage production by relative low abundance of perennial grasses.	Improve time control with grazing by shortening grazing period whilst allowing for relative high stocking rates, followed by controlled recovering periods.
	Minimal organic material on soil surface.	Improve time control with grazing by shortening grazing period, whilst allowing for relative high stocking rates, followed by controlled recovering periods.
	Poor grass basal cover/ erosion.	Improve time control with grazing by shortening grazing period whilst allowing for relative high stocking rates, followed by controlled recovering periods.
	Abundance non-grass component increase: bossies / weedy forbs.	In addition to above (time control), apply UHDG (kraaling & trampling) followed by controlled rest.

\*\* More information available from grazing management courses at the **Herding Academy**, Graaf-Reinet

(Roland Kroon & Johan Bouwer – Roland +27 82 883 2710 / Johan +27 82 776 0257).



### 3.5. Conclusion



1. The grazing capacity and veld condition based grazing management guidelines are provided, applicable to the boundaries within the 2022 study area.
2. From the two studies, i.e., therefore within the period 2017 (covering most of Phase 2) to 2022 (Phase 3 and the extension area of Phase 2), there could be a quest to make a comparison in veld condition over this time and to make the conclusion that there has been improvement in the grazing capacity. However, this can strictly speaking not be done - unless the same areas are compared in 2017 and in 2022, which was not done, for reasons highlighted below.
  - It is essential to note that the 2017 grazing assessments reflected drought conditions (rainfall below- average recorded; *pers. comm* Willem Retief, landowner) and the points where the grazing capacity had been assessed differ from the points where the grazing capacity was assessed in 2022 (although, just one point of the 2017 survey falls in the Phase 2 area). It did therefore not include the Phase 3 area in 2017, which then were evaluated later, in 2022.
  - Similarly, the 2022 grazing assessments did not cover the same area which was covered in 2017 and the veld condition reflected in 2022 a response of the vegetation on higher rainfall compared to the 2017 assessments (rainfall figures of 2017 to 2022 provided in this report).
3. A reasonable and very general conclusion could be made that the grazing capacity improved when the rainfall improved, but then again, there is no linear correlation that would enable one to generalize or to merely extrapolate due to soils and the different response of vegetation envisaged to rainfall (and grazing) on different soils. E.g.:
  - On deeper clayey soils (e.g., veld underlain by Pedocutanic clays, i.e., the Swartland soil form) resilience of the veld could be higher (if there had not already been topsoil erosion), so it is envisaged that the recovery in veld condition and improved grazing capacity with the application of rest and under higher rainfall conditions would be faster.
  - On shallow and sandy loam soils (i.e., shallow rocky soils) the recovery is envisaged to be slower, and the resilience is therefore not expected to be as good as that of the deeper clayey soils. It is therefore essential to

follow management guidelines in this report, to prevent loss in vegetation cover (grass basal cover) and consequently accelerated soil erosion.

4. When using geology and soils over the whole study area, regardless the before-mentioned points, representing the average grazing capacity for the study area, the following very general guidelines would apply to:

zones., i.e.:

- GRAZING UNIT I = Medium deep soils at lower parts of the catena, including soils with lime present (i.e., Hutton, Oakleaf, Gamoep, Addo, Augrabies soils. It also includes Valsrivier soils). The average (mean) grazing capacity was 13.1 ha/LSU and varied between 5.8 ha/LSU to 17.4 ha/LSU (three points assessed in 2022).
- GRAZING UNIT II = Shallow to slightly deeper structured soils (i.e., unit dominated by Swartland soils). Unfortunately, no surveys were done in 2022 representing this specific grazing unit. From 2017 it was concluded that the grazing capacity varies between 10 and 30 LSU/ha.
- GRAZING UNIT III = Shallow soils (i.e., Mispah and Glenrosa soils). The average grazing capacity was 18.55 ha/LSU and varied between 10.7 ha/LSU to 34.5 ha/LSU (six points assessed in 2022).
- GRAZING UNIT IV = Koppies of sandstone and dolerite. (i.e., outcrops and Mispah soils). The average grazing capacity was 19.75 ha/LSU and varied between 13.4 ha/LSU to 26.1 ha/LSU (two points assessed in 2022; three points were assessed in 2017, with a much larger variation in drought, that ranged up to 90 ha/LSU).
- GRAZING UNIT V = Bottomlands with ephemeral drainage lines. The grazing capacity was 16.9 ha/LSU (two points assessed in 2022).

### Agricultural Compliance

From a grassland ecological perspective, the opinion is that the current planned development (and the cumulative effect of 30km from other PV-projects), will not have a significant impact on the determined potential grazing potential, reflected from the baseline study in 2017 and not from the current grazing capacity reflected from the 2022 study. This opinion comes with an important condition, that the above-mentioned guidelines are applied. Furthermore, if the management guidelines are not followed in this report, it is envisaged that further deterioration in grass basal cover will occur, associated with increased bare ground and accelerated soil erosion, and it is envisaged that the potential impact from the planned development would then also need to be considered and be mitigated for. The effects of enhanced soil erosion in the case of rangeland mismanagement and the effects of increased runoff and sediment load downstream, in relation with other PV developments within 30km downstream, are quantified in the soil report (Van den Berg and Botha, 2022).

No significantly negative impact on the grazing potential and production potential of forage is envisaged from the sun panels itself. This includes development at all the phases (i.e., Phase 2 and 3) if the presence of structures won't exclude grazing and active grazing management.

In the context of the development being in the Karoo, which is known to be in a brittle environment, the exclusion from grazing by grazers (i.e., unplanned resting or the removal of sheep and cattle) will result in desertification, for it will have a negative effect on grass basal cover, which would result in erosion, with a subsequent loss in grass production, grass species richness and plant diversity.

Please note:

It is known that the total exclusion of grazers in such environments will be detrimental to maintaining important ecological processes such as the energy cycle, mineral cycle, and water cycle.

Mismanagement through selective grazing and uncontrolled grazing and resting will affect Agricultural potential negative though.

There are examples of veld improvement and the restoration of degraded veld under holistic or regenerative grazing under the following management, where high stocking densities are applied within short periods, followed by planned rest (under time control).

The following recommendations are made:

- 1. The grazing management should therefore be allowed with the solar Photovoltaic facility construction at all the camps affected through this development.*
- 2. With the construction and preparation to erect the solar panels, special care should be to maintain current vegetation undisturbed, as far as possible, i.e., not to disturb the topsoil surface due to erosion risk and to maintain vegetation cover as far as possible. This recommendation applies to all phase developments.*
- 3. Follow-up grazing assessments and annual monitoring of veld condition is recommended to record veld condition and grazing capacity under different rainfall conditions.*

#### **4. ACKNOWLEDGEMENTS**

A special word of thanks to

Willem and Esmarie Retief, the owners of the farm De Bad (Goedehoop), Hanover - for accommodation and assistance with logistics during fieldwork, as well as for the provision of rainfall information.

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Roland Kroon and Johan Bouwer, from the Herding Academy at Graaf-Reinet – for illustrating the implementation of regenerative grazing relative to arid and brittle environments present in the context of grazing management in the Karoo.

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## **APPENDIX A**

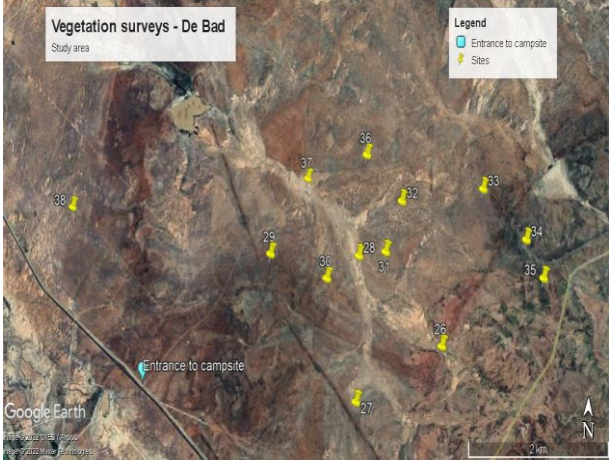


### **Site Reports**

(summary from veld condition tables below, including photo of terrain, position on Google Earth image, veld condition and forage quality as projected on a degradation axis (ISPD-model)).



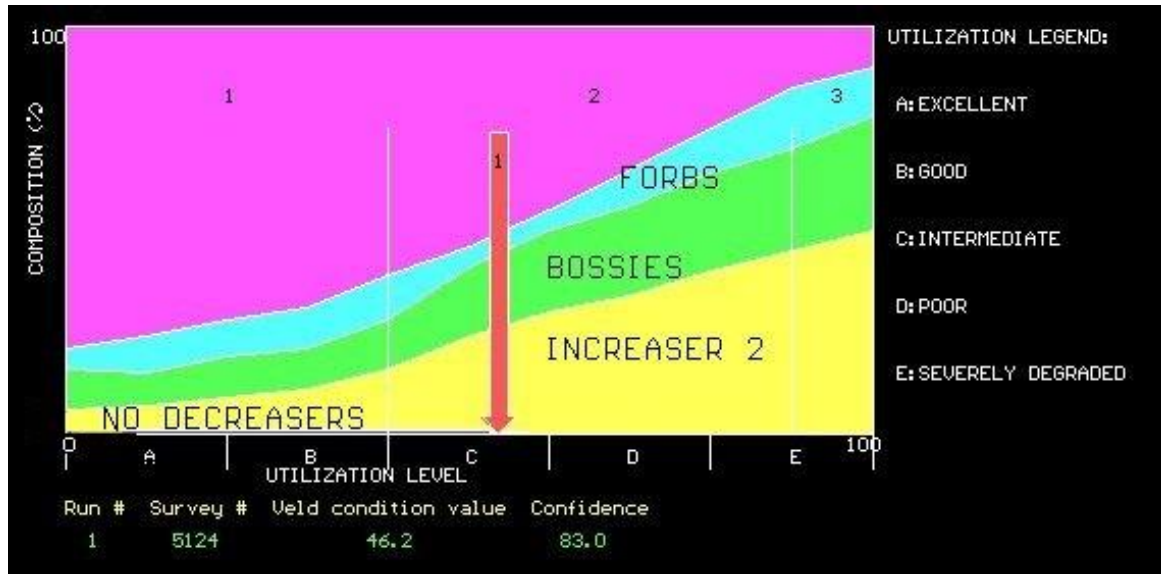
**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)

 <p style="text-align: center;">GOOGLE IMAGE OF THE FOCUS AREA</p>	 <p style="text-align: center;">GOOGLE IMAGE OF THE SITE 30° 50' 37,8" 24° 22' 10,8"</p>	
<b>AREA</b>	De Bad - Soventix	 <p style="text-align: center;">10/04/2022</p>
<b>AREA NUMBER</b> <b>GRAZING UNIT NUMBER</b>	Phase 3 GU-4	
<b>SITE NUMBER</b>	Site 26	
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Dolerite - Glenrosa	
<b>DATE VISITED</b>	10/04/2022	
<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	5 species (7 incl. <1% species) = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis lehmanniana</i> (Lehmann's Love Grass) – 76%</li> <li>• <i>Aristida adscensionis</i> (Eenjarige steekgras) – 16%</li> <li>• <i>Aristida diffusa</i> (Iron Grass) – 6%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	5.9 cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Geelboegoekaroo (25%) & Ankerkaroo (17%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	13 species (15 incl. <1% species) = Low	
<b>VELD CONDITION (according to Trollope, <i>et.al.</i> 1990)</b>	INTERMEDIATE	
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.02 / 266.2 (EXCELLENT)	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	13.4 ha/LSU	

**MANAGEMENT RECOMMENDATION**

**APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS**



**ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.**

**LITERATURE**

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**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

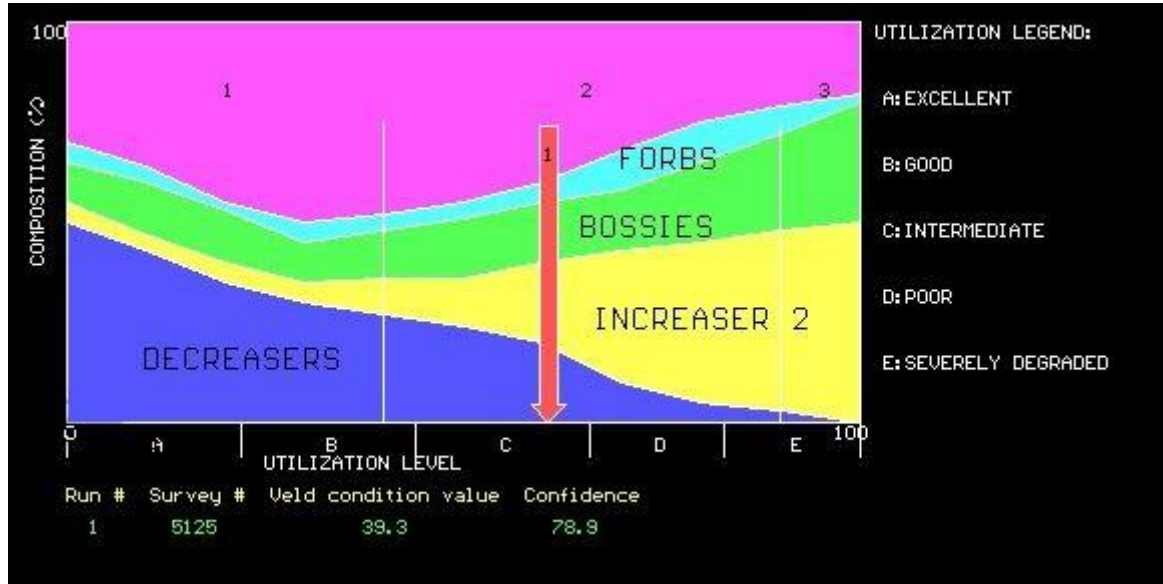


GOOGLE IMAGE OF THE SITE  
30° 50' 58,6"  
24° 21' 24,7"

<b>AREA</b>	De Bad - Soventix	
<b>AREA NUMBER</b>	Phase 3	
<b>GRAZING UNIT NUMBER</b>	GU-3	
<b>SITE NUMBER</b>	Site 27	
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Shale/Dolerite - Mispah	
<b>DATE VISITED</b>	10/04/2022	
<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	3 species = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Enneapogon desvauxii</i> (Kalkgras) – 35%</li> <li>• <i>Aristida adscensionis</i> (Eenjarige Steekgras) – 8%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 9%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	6.5 cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (45%) & Kapokbos (12%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	10 species (13 incl. <1% species) = Low	
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	INTERMEDIATE	
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	3.97 / 201.4 (GOOD)	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	17.7 ha/LSU	

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.



ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.

**LITERATURE**

**BOSCH, O. J. H. and GAUGH, H. 1991.** The use of degradation gradients for the assessment and ecological interpretation of range condition. *Tydskrif Weidingsveren. S. Afr.* (1991), 8. (4). Pp 138-146.

**DU TOIT, P. C. V. 1997.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

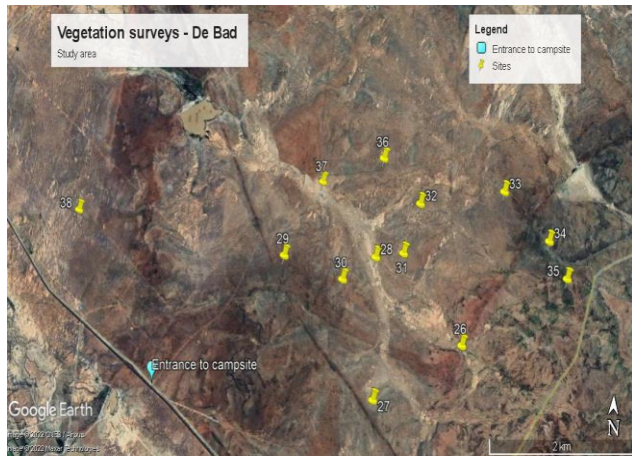
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.



**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

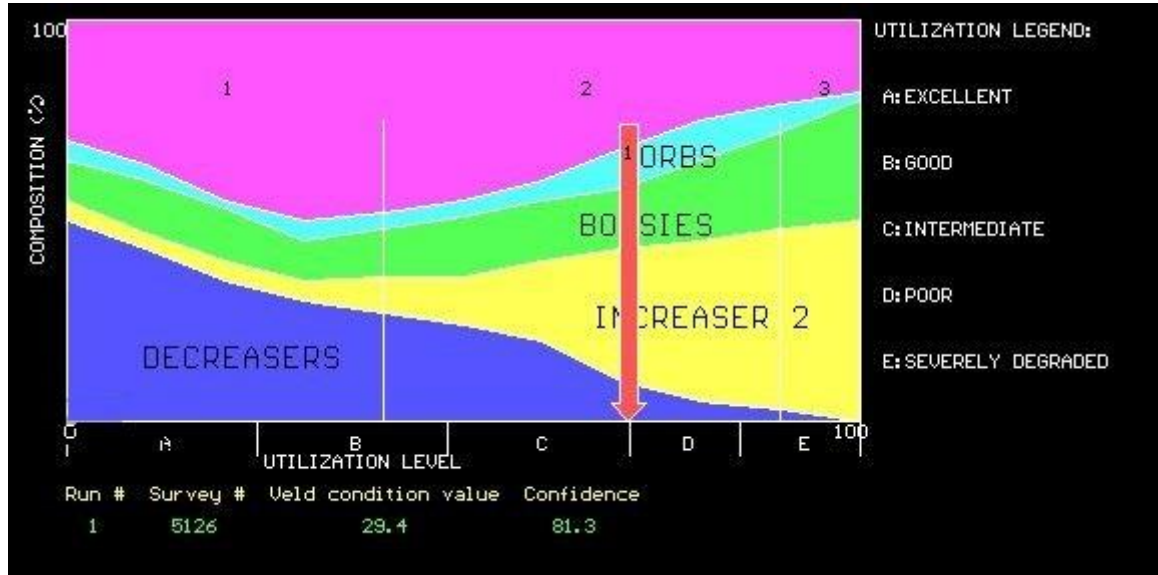


GOOGLE IMAGE OF THE SITE  
30° 50' 08,5"  
24° 21' 24,1"

<b>AREA</b>	De Bad - Soventix	<p style="text-align: center;">09/04/2022</p>
<b>AREA NUMBER</b>	Phase 3	
<b>GRAZING UNIT NUMBER</b>	GU-1	
<b>SITE NUMBER</b>	Site 28	
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale Valsrivier	
<b>DATE VISITED</b>	09/04/2022	
<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	9 species = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 34%</li> <li>• <i>Sporobolus discosporus</i> (Disc Dropseed) – 22%</li> <li>• <i>Cynodon hirsutus</i> (Cynodon) – 21%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	8.8 cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Blomkoolganna (16%) & Ankerkaroo, Bloukatbos (12% each)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	20 species (22 incl. <1% species) = Low	
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	INTERMEDIATE	
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.28 / 229.8 (GOOD)	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	15.5 ha/LSU	

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.



ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.

**LITERATURE**

**BOSCH, O. J. H. and GAUGH, H. 1991.** The use of degradation gradients for the assessment and ecological interpretation of range condition. Tydskrif Weidingsveren. S. Afr. (1991), 8. (4). Pp 138-146.

**DU TOIT, P. C. V. 1997.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science*. Pp 337-340.

**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

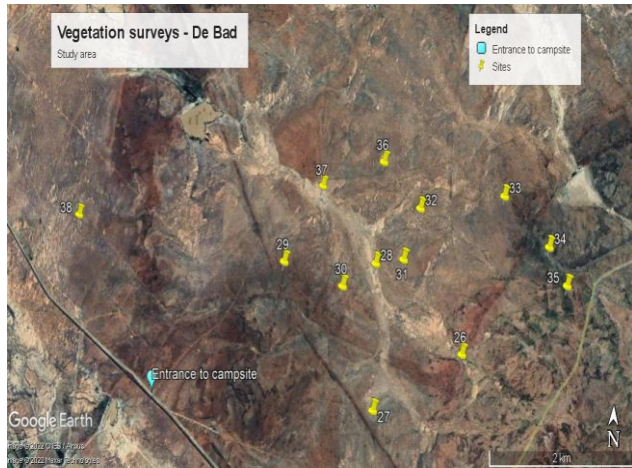
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.



**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

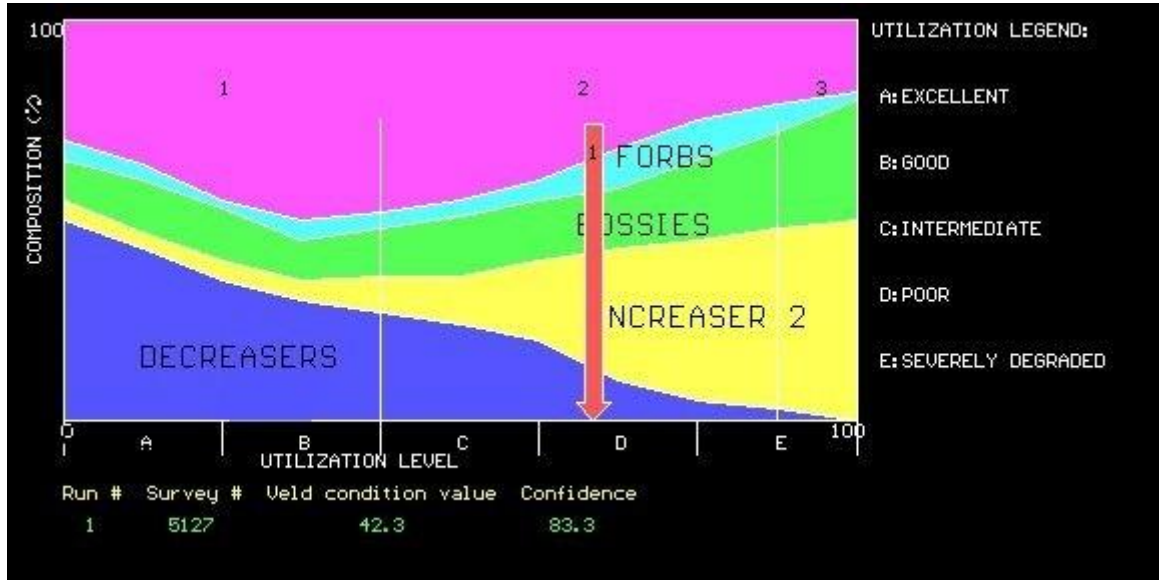


GOOGLE IMAGE OF THE SITE  
30° 50' 09,9"  
24° 20' 35,0"

<b>AREA</b>	De Bad - Soventix	<p style="text-align: center;">09/04/2022</p>
<b>AREA NUMBER</b>	Phase 3	
<b>GRAZING UNIT NUMBER</b>	GU-1	
<b>SITE NUMBER</b>	Site 29	
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Oakleaf	
<b>DATE VISITED</b>	09/04/2022	
<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	6 species (7 incl. <1% species) = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis lehmanniana</i> (Lehmann's Love Grass) – 32%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 29%</li> <li>• <i>Aristida congesta congesta</i> (Cat's tail three-awn) – 23%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	7.4 cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	31 - 50%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Witheuningkaroo (64%) & Doringvygie (31%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	18 species (20 incl. <1% species) = Low	
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	POOR	
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.30 / 174.2 (INTERMEDIATE)	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	20.5 ha/LSU	

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.

**LITERATURE**

**BOSCH, O. J. H. and GAUGH, H. 1991.** The use of degradation gradients for the assessment and ecological interpretation of range condition. *Tydskrif Weidingsveren. S. Afr.* (1991), 8. (4). Pp 138-146.

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**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

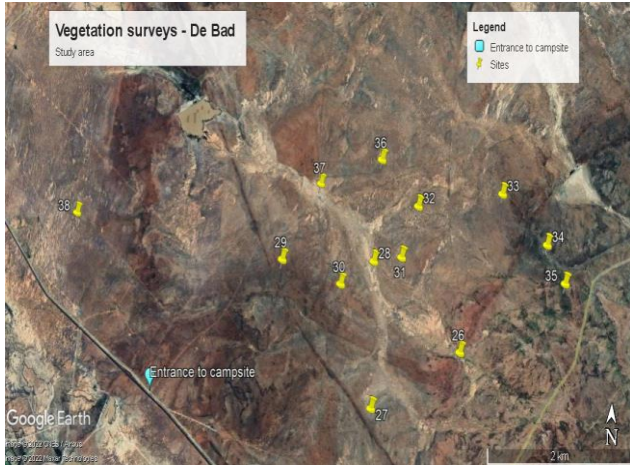
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

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**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

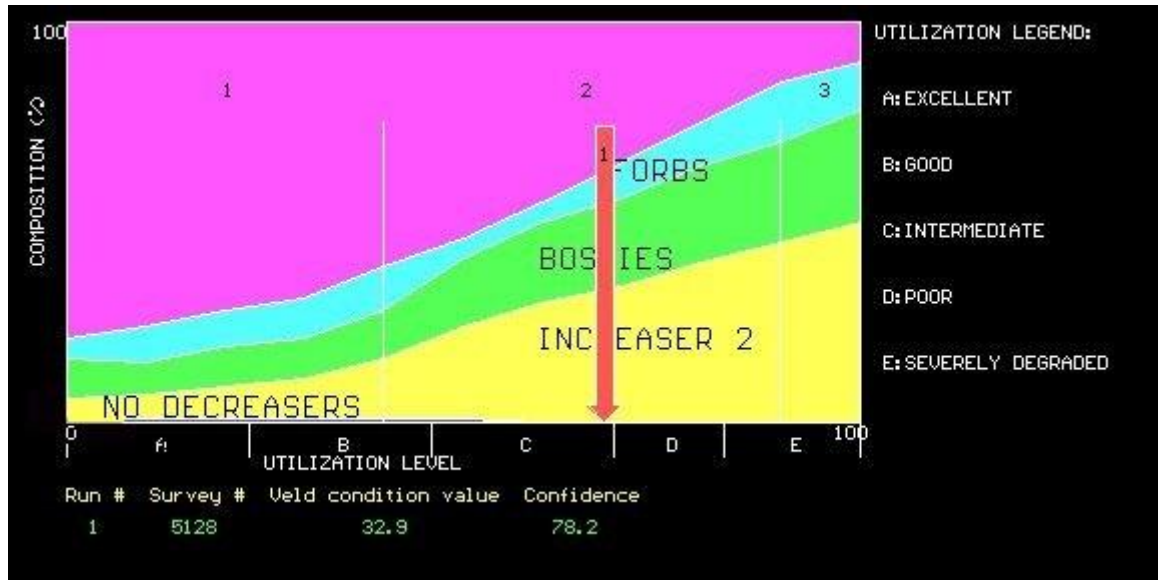


GOOGLE IMAGE OF THE SITE  
30° 50' 17,1"  
24° 21' 06,7"

<b>AREA</b>	De Bad - Soventix	<p style="text-align: center;">09/04/2022</p>
<b>AREA NUMBER</b> <b>GRAZING UNIT NUMBER</b>	Phase 3 GU-4	
<b>SITE NUMBER</b>	Site 30	
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Sandsteen - Mispah	
<b>DATE VISITED</b>	09/04/2022	
<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	7 species = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Aristida adscensionis</i> (Eenjarige steekgras) – 54%</li> <li>• <i>Eragrostis lehmanniana</i> (Lehmann's Love Grass) – 21%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 15%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	5.9 cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21 - 30%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Kapokbos (52%) + Ankerkaroo & Doringkapok (21% each)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	18 species (22 incl. <1% species) = Low	
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	INTERMEDIATE	
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	3.13 / 334.6 (EXCELLENT)	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	10.7 ha/LSU	

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.

**LITERATURE**

**BOSCH, O. J. H. and GAUGH, H. 1991.** The use of degradation gradients for the assessment and ecological interpretation of range condition. *Tydskrif Weidingsveren. S. Afr.* (1991), 8. (4). Pp 138-146.

**DU TOIT, P. C. V. 1997.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

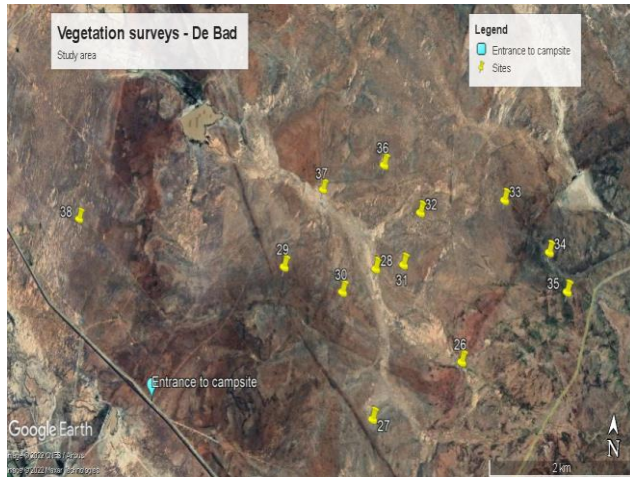
**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.





**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
30° 50' 06,5"  
24° 21' 38,9"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	Phase 3
<b>GRAZING UNIT NUMBER</b>	GU-1
<b>SITE NUMBER</b>	Site 31
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Etosha
<b>DATE VISITED</b>	09/04/2022

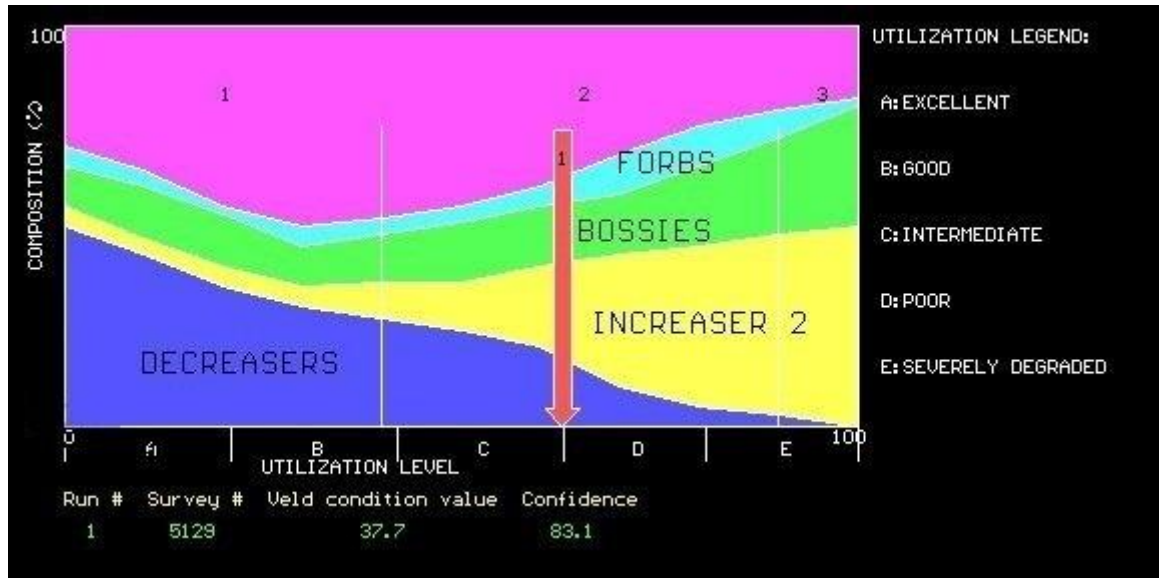


09/04/2022

<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	10 species = Low (Medium)
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Aristida adscensionis</i> (Eenjarige Steekgras) – 31%</li> <li>• <i>Eragrostis obtusa</i> (Dew Gras) – 23%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 18%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	6.0 cm = Low
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (67%) & Kapokbos (40%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	18 species (21 incl. <1% species) = Low
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	INTERMEDIATE
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.24 / 221.1 (GOOD)
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	16.1 ha/LSU

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



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**LITERATURE**

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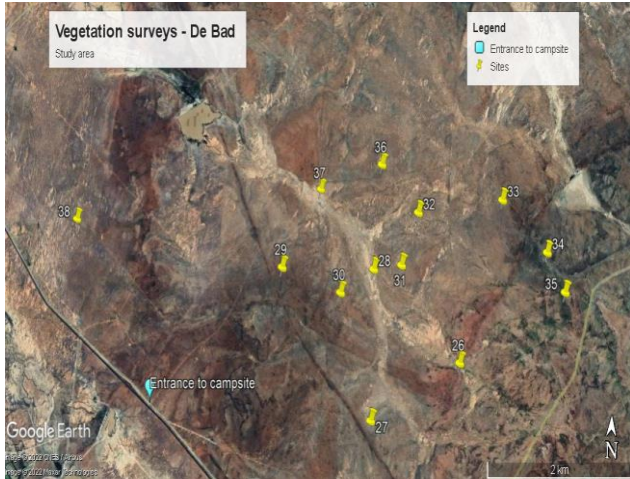
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**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
30° 49' 48,2"  
24° 21' 47,3"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	Phase 3
<b>GRAZING UNIT NUMBER</b>	GU-1
<b>SITE NUMBER</b>	Site 32
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Etosha
<b>DATE VISITED</b>	10/04/2022

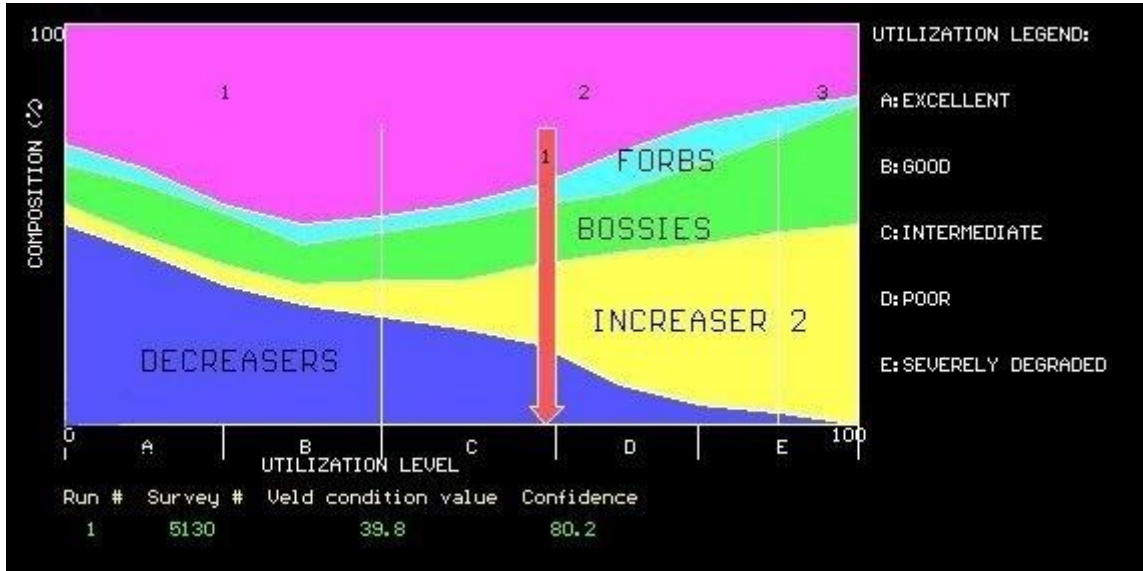


10/04/2022

<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	7 species (8 incl. <1% species) = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Cynodon hirsutus</i> (Cynodon) – 27%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 15%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 14%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	5.6 cm = Low
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21 - 30%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (50%) & Bloublommetjie (27%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	20 species (22 incl. <1% species) = Low
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	INTERMEDIATE
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.67 / 205.4 (GOOD)
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	17.4 ha/LSU

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.



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**LITERATURE**

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**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

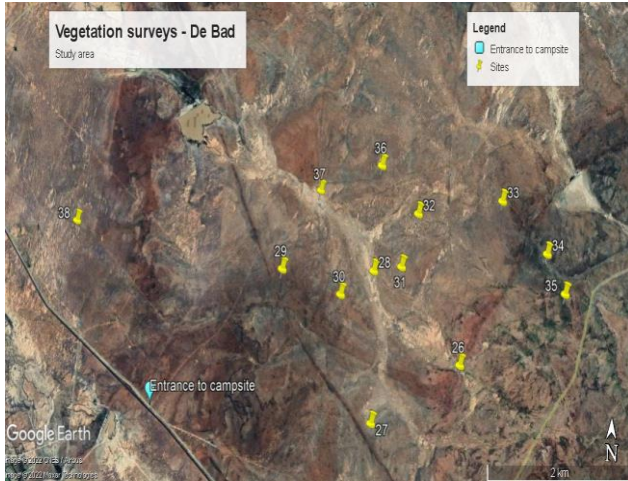
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.



**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

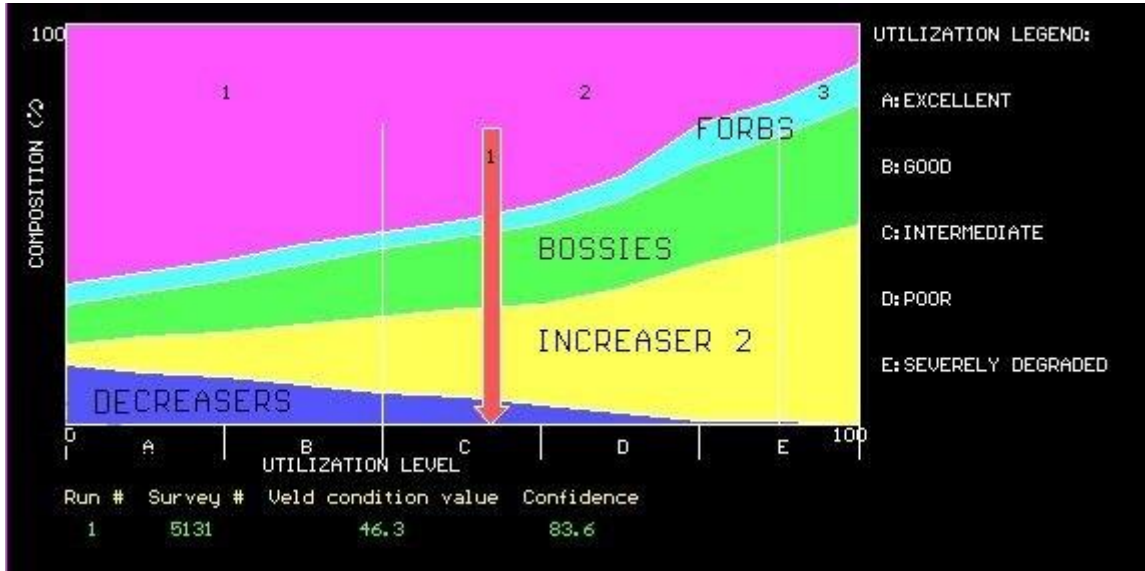


GOOGLE IMAGE OF THE SITE  
30° 49' 42,0"  
24° 22' 32,5"

<b>AREA</b>	De Bad - Soventix	<p style="text-align: center;">11/04/2022</p>
<b>AREA NUMBER</b>	Phase 3	
<b>GRAZING UNIT NUMBER</b>	GU-3	
<b>SITE NUMBER</b>	Site 33	
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Shale/Dolerite - Mispah	
<b>DATE VISITED</b>	11/04/2022	
<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	6 species = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis lehmanniana</i> (Lehmann's Love Grass) – 46%</li> <li>• <i>Aristida adscensionis</i> (Eenjarige Steekgras) – 18%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 14%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	5.6 cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	< 10%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (48%) & Kapokbos (6%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	16 species (17 incl. <1% species) = Low	
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	INTERMEDIATE	
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.09 / 236.9 (EXCELLENT)	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	15.1 ha/LSU	

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.

**LITERATURE**

**BOSCH, O. J. H. and GAUGH, H. 1991.** The use of degradation gradients for the assessment and ecological interpretation of range condition. *Tydskrif Weidingsveren. S. Afr.* (1991), 8. (4). Pp 138-146.

**DU TOIT, P. C. V. 1997.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

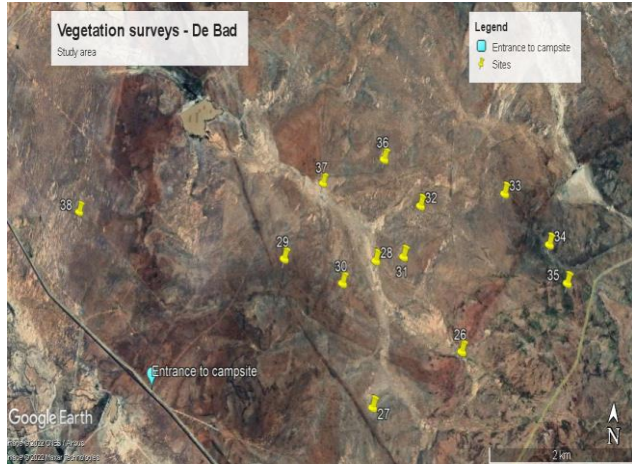
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.



**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE

30° 49' 59,0"  
24° 22' 56,4"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b> <b>GRAZING UNIT NUMBER</b>	Phase 3 GU-3
<b>SITE NUMBER</b>	Site 34
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Sandsteen -
<b>DATE VISITED</b>	11/04/2022

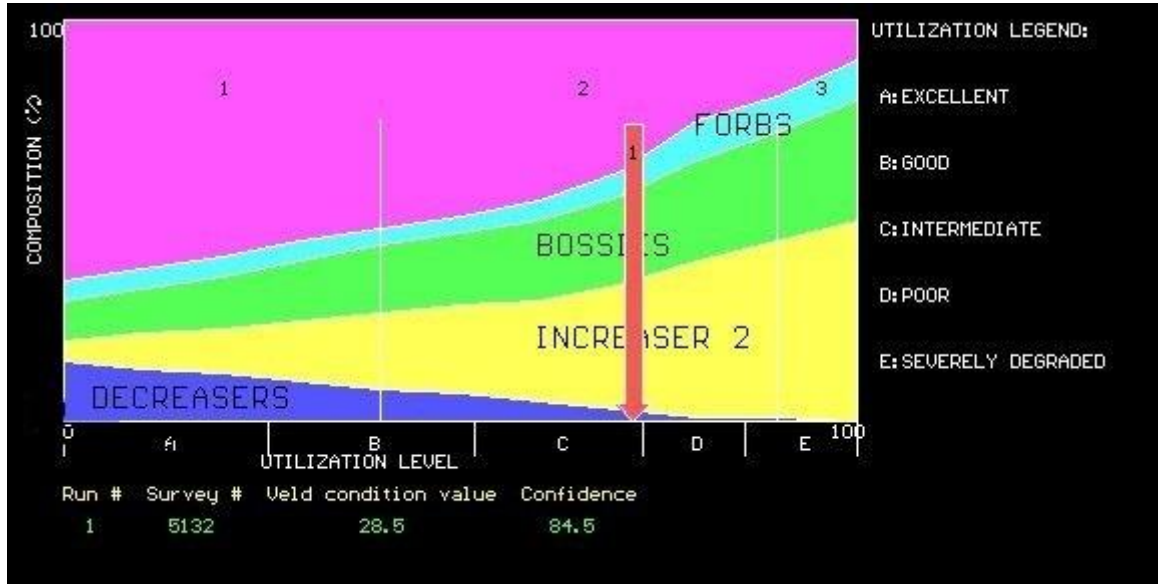


11/04/2022

<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	7 species = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Aristida adscensionis</i> (Eenjarige Steekgras) – 66%</li> <li>• <i>Enneapogon desvauxii</i> (Kalkgras) – 14%</li> <li>• <i>Cynodon hirsutus</i> (Cynodon) – 7%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	4.9 cm = Low
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21 - 30%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Kapokbos (56%) & Ankerkaroo (7%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	12 species (12 incl. <1% species) = Low
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	POOR
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	3.70 / 136.9 (POOR)
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	26.1 ha/LSU

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.

**LITERATURE**

**BOSCH, O. J. H. and GAUGH, H. 1991.** The use of degradation gradients for the assessment and ecological interpretation of range condition. Tydskrif Weidingsveren. S. Afr. (1991), 8. (4). Pp 138-146.

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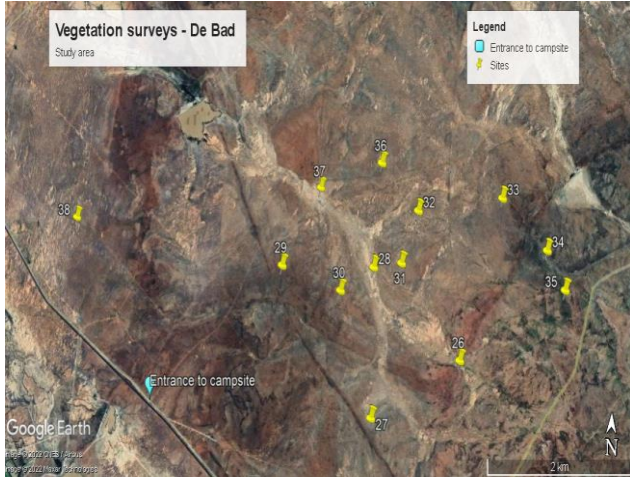
**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.





**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
30° 50' 12,0"  
24° 23' 06,0"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	Phase 3
<b>GRAZING UNIT NUMBER</b>	GU-3
<b>SITE NUMBER</b>	Site 35
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Mispah
<b>DATE VISITED</b>	11/04/2022

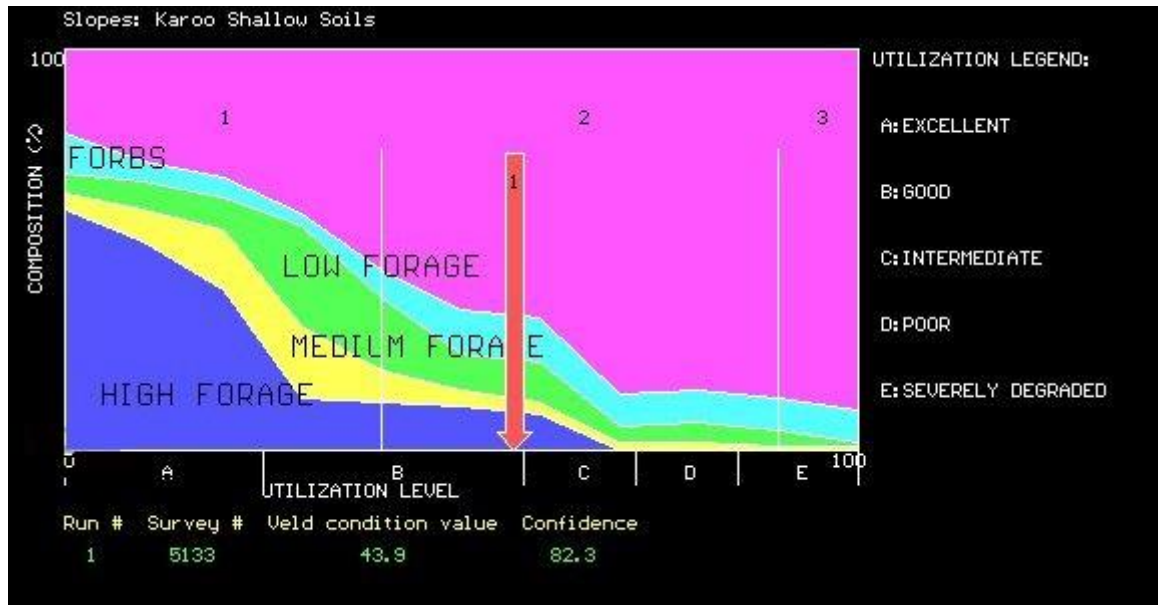


11/04/2022

<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	6 species (11 incl. <1% species) = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis lehmanniana</i> (Lehmann's Love Grass) – 69%</li> <li>• <i>Cynodon hirsutus</i> (Cynodon) – 24%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 4%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	6.4 cm = Low
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21 - 30%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringvygie (36%) & Ankerkaroo (26%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	15 species (22 incl. <1% species) = Low
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	INTERMEDIATE
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.13 / 234.0 (EXCELLENT)
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	15.3 ha/LSU

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



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**LITERATURE**

**BOSCH, O. J. H. and GAUGH, H. 1991.** The use of degradation gradients for the assessment and ecological interpretation of range condition. *Tydskrif Weidingsveren. S. Afr.* (1991), 8. (4). Pp 138-146.

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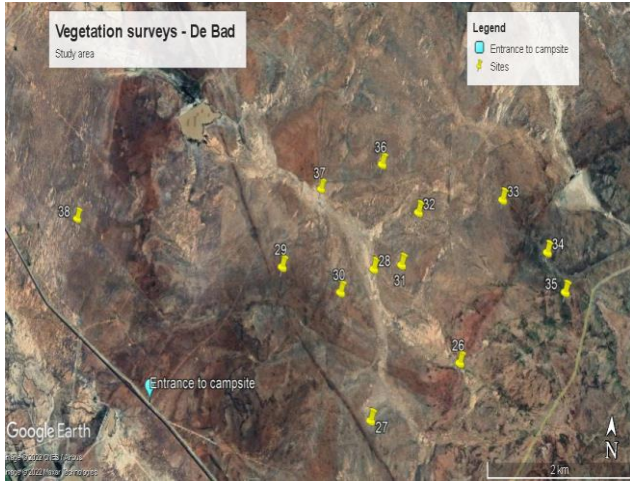
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

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**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE

30° 49' 32,4"  
24° 21' 27,0"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	Phase 3
<b>GRAZING UNIT NUMBER</b>	GU-4
<b>SITE NUMBER</b>	Site 36
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Dolerite - Mispah
<b>DATE VISITED</b>	11/04/2022

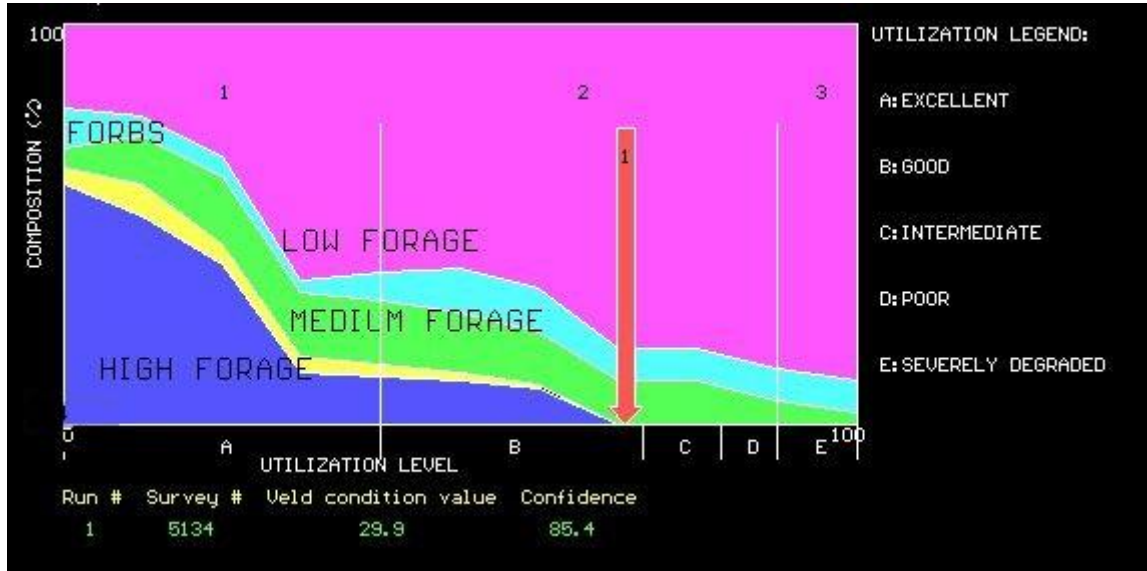


11/04/2022

<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	8 species (9 incl. <1% species) = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 24%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 24%</li> <li>• <i>Enneapogon desvauxii</i> (Kalkgras) – 21%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	4.3 cm = Low
<b>VEGETATION CROWN COVER (% Soil covered)</b>	31 - 50%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringkapok (17%) & Kapokbos (10%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	14 species (15 incl. <1% species) = Low
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	POOR
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.39 / 198.5 (GOOD)
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	18.0 ha/LSU

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



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**LITERATURE**

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**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

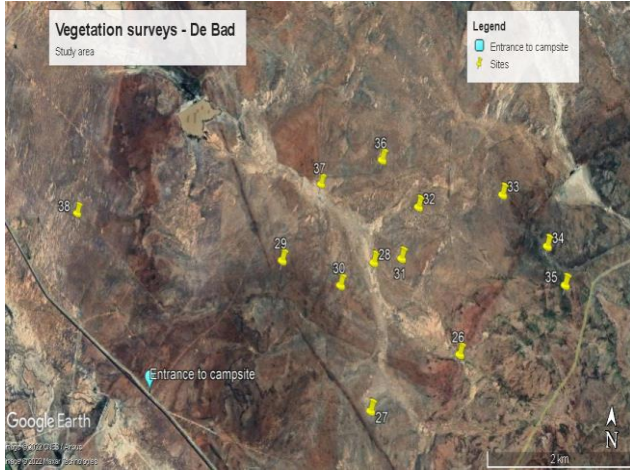
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.

**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.



**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
30° 49' 42,0"  
24° 20' 54,3"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b> <b>GRAZING UNIT NUMBER</b>	Phase 3 GU-5
<b>SITE NUMBER</b>	Site 37
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Tukulu
<b>DATE VISITED</b>	12/04/2022

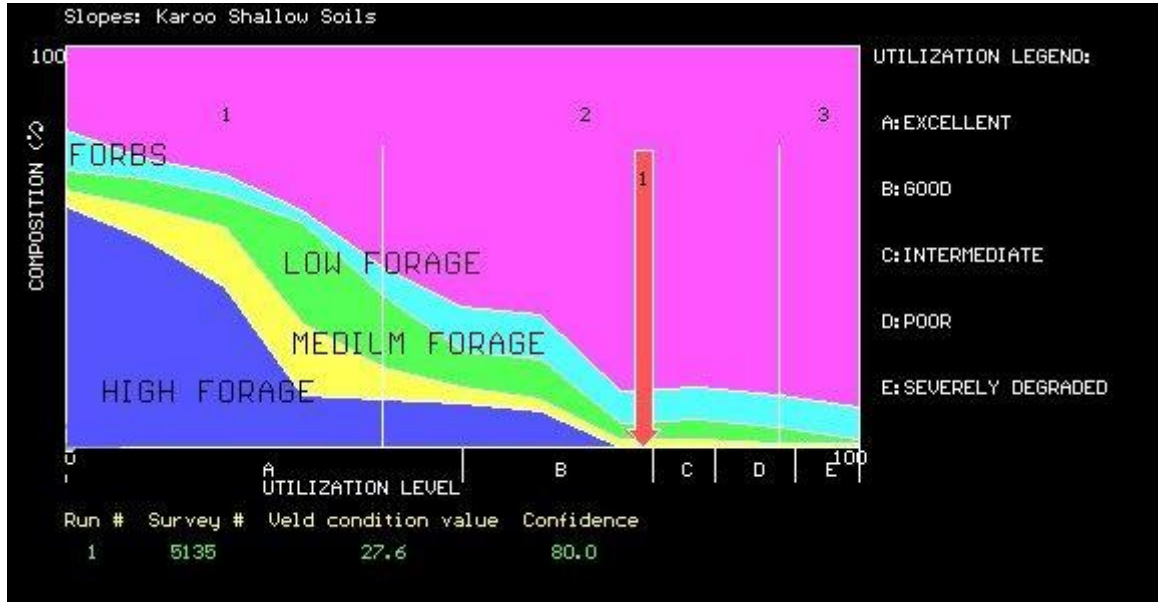


12/04/2022

<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	5 species (7 incl. <1% species) = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis sp.</i> (Eragrostis) – 59%</li> <li>• <i>Cynodon hirsutus</i> (Cynodon) – 34%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 5%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	4.2 cm = Low
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (57%) & Geeltulp (13%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	10 species (14 incl. <1% species) = Low
<b>VELD CONDITION (according to Trollope, <i>et.al.</i> 1990)</b>	POOR
<b>VELD CONDITION (according to Tainton, 1988)</b>	OVERGRAZED
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	2.57 / 195.9 (GOOD)
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	18.2 ha/LSU

**MANAGEMENT RECOMMENDATION**

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



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**LITERATURE**

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**DU TOIT, P. C. V. 1997.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science*. Pp 337-340.

**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

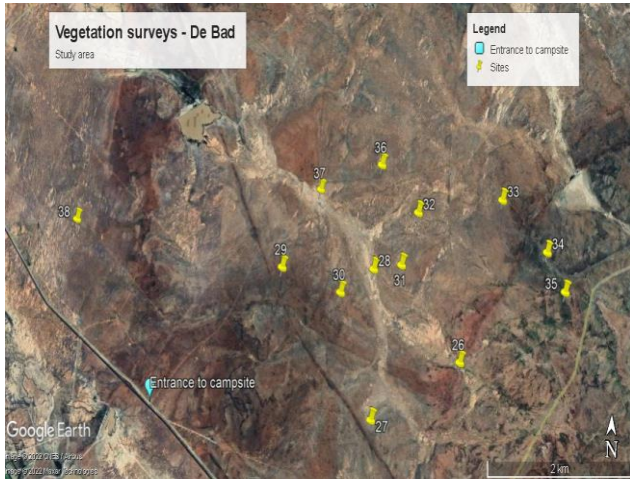
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**TROLLOPE, W S W, TROLLOPE, L.A. & BOSCH, O J H., 1990.** Veld and pasture management terminology in southern Africa. *J. Grassld. Soc. South Afr.* 7,1:52-61. Pretoria.



**TOPVELD**

## VELD CONDITION ASSESSMENT SITE REPORT – 2022 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
30° 49' 57,7"  
24° 18' 42,8"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	Phase 3
<b>GRAZING UNIT NUMBER</b>	GU-3
<b>SITE NUMBER</b>	Site 38
<b>VELD TYPE – ACOCKS</b>	VT 36 - False Upper Karoo
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 3 - Northern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Mispah
<b>DATE VISITED</b>	12/04/2022

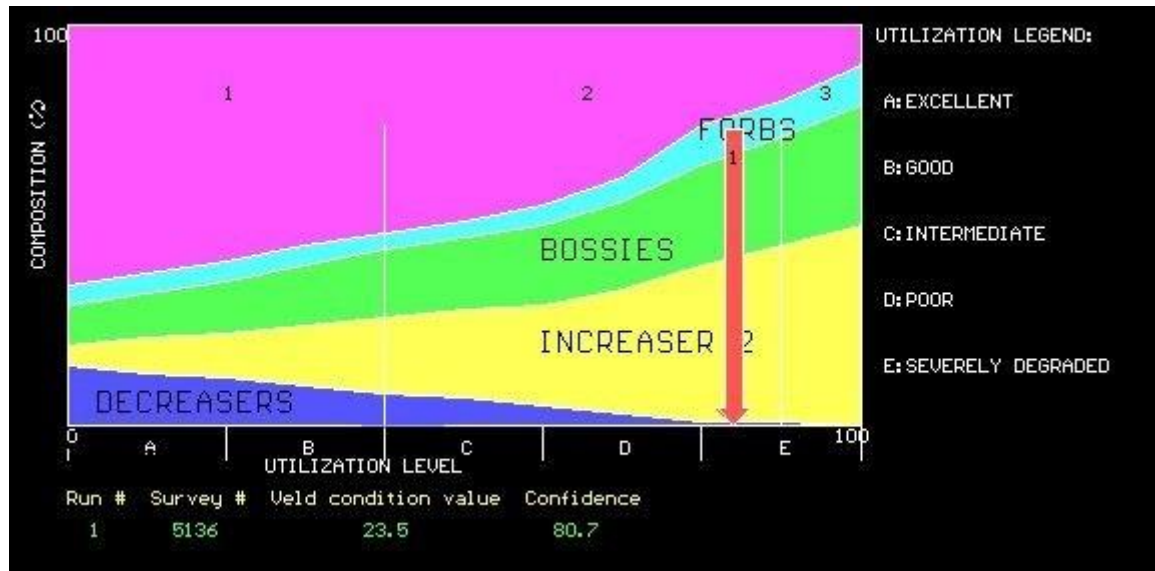


12/04/2022

<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	4 species (4 incl. <1% species) = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE) (% on total grasses)</b>	<ul style="list-style-type: none"> <li>• <i>Aristida adscensionis</i> (Eenjarige Steekgras) –</li> <li>• Bare ground – 80%</li> <li>• <i>Enneapogon desvauxii</i> (Kalkgras) – 13%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	15.1 cm = Low
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (25%) & Bloukatbos (7%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 2500 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	15 species (16 incl. <1% species) = Low
<b>VELD CONDITION (according to Trollope, et.al. 1990)</b>	SEVERELY DEGRADED
<b>VELD CONDITION (according to Tainton, 1988)</b>	SEVERELY OVERGRAZED
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL / ECOLOGICAL INDEX</b>	4.57 / 103.6 (POOR)
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	34.5 ha/LSU

## MANAGEMENT RECOMMENDATION

APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS



ISPD FIGURE – POSITION OF RED VERTICAL ARROW ILLUSTRATES THE CONDITION ON A DEGRADATION AXIS AND THE DIRECTION OF THE TREND CAN BE OBSERVED FROM FOLLOWING THE ORDER OF THE ASSESSMENTS (i.e. Run 1 = Year 1, Run 2 = Year 2 etc.). THIS IS BASELINE DATA, NOT TREND CAN BE ESTABLISHED YET.

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## **APPENDIX B**

### **Tables**

(Detailed information on grass species and bossie frequency abundance and crown densities of bossies and classification of species within ecological categories of Decreasers and Increases. It also includes grass tuft distances, bossie density, grass phytomass, veld condition, grazing capacity and management recommendations as provided in the Site Reports).

DE BAD - SOVENTIX								FOOTSLOPE (Convex) 3,1							
SITE - 26 (GRAZING UNIT 4)								Shale dominant DOLERITE incl.)							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								SITE - 26							
PHYTOMASS / FUEL LOAD (in kg/ha)								Excl. Sedges & Forbs							
CO-ORDINATES: South								April 2022							
East								5,9							
DIRECTION OF TRANSECT								1901							
HEIGHT ABOVE SEA LEVEL (m)								30° 50' 37,8"							
SOIL FORM (Macvicar, 1991)								24° 22' 10,8"							
VELD TYPE (Mucina & Rutherford, 2006)								275°							
								1 276m							
								Glenrosa							
								Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic		
DECREASERS								% on Grand Total							
No Decreaser species recorded								0							
<b>SUBTOTAL (Decreaser category):</b>								<b>0</b>							
INCREASERS I															
No Increaser I species recorded								0							
<b>SUBTOTAL (Increaser I category):</b>								<b>0</b>							
INCREASERS II															
<i>Aristida adscensionis</i> Eerjarige Steekgras		1,08			*							9			
<i>Aristida congesta subsp. congesta</i> Cat's tail Three-awn		3,36	**									1			
<i>Aristida diffusa</i> Iron Grass		3,18	***									3			
<i>Enneapogon desvauxii</i> Kalkgras		2,07		**								1			
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass		3,24	***									43			
<i>Eragrostis obtusa</i> Dev Grass / Douvatgras		2,94	***									**			
<i>Eragrostis sp.</i> Eragrostis		1,5		**								**			
Bare Ground								0							
<b>SUBTOTAL (Increaser II category):</b>								<b>57</b>							
<b>TOTAL (Grasses):</b>								<b>57</b>							
SHRUBS (BOSSIES)								COVER							
								Dominant bossies contribution to cover (%)						60	
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Eriosephalus spinescens</i> Doringkapok		2,12		**							0,1	1			
<i>Felicia mucicata</i> Bloublommietjie		1,5		**							0,5	9			
<i>Gorteria alienata (Hirpicium alienatum)</i> Haarbossie		3,16	****								0,5	2			
<i>Pentzia incana</i> Ankerkaro		2,88	***								3	10			
<i>Phymaspermum parvifolium</i> Witheuningkaro		3,38	****								0,3	2			
<i>Pteronia cf glauca</i> Geelboegoekaroo		1,89			*						6	14			
<i>Ruschia intricata (Eberlanzia ferax)</i> Doringvygie		1,54		**							2	5			
Unidentified (Vygie species)		1,5			*						0,01	1			
<b>TOTAL (Shrubs / Bossies):</b>								<b>43</b>							
<b>TOTAL (Grasses + Shrubs / Bossies)</b>								<b>100</b>							
** Less than 1% of species recorded at site															

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)								FOOTSLOPE (Convex) 3,1	
								SITE - 26	
								Excl. Sedges & Forbs	
								April 2022	
Categories								%	
Decreaser species								0	
Increaser I species								0	
Increaser II species								57	
Unidentified species								0	
Bare Ground								0	
Shrubs /Bossies								43	
<b>Total</b>								<b>100</b>	
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>								<b>INTERMEDIATE / OVERGRAZED</b>	
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently									
Increaser I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies									
Increaser II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies									

SUMMARY								FOOTSLOPE (Convex) 3,1	
								SITE - 26	
								ISPD 5124	
								April 2022	
Tuft distance (cm)								5,9	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)								Medium	
Fuel load (4 tons per ha = threshold for burning)								1901	
Fuel load potential								Low	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)								5 (7)	
Grass Species Richness (High is = >15 spp, Low< 10 species)								Low	
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)								8 (8)	
Bossie Species Richness (High is = >15 spp, Low< 10 species)								Low	
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)								13 (15)	
Plant Species Richness (High is = >60 spp, Low< 20 species)								Low	
Dominant Bossie cover (% soil covered)								12,41% (within range of 11 - 20%)	
Dominant species contributing to crown cover (%)								These species contributed in total 88.6% to bossie crown cover recorded: 'Geelboegoekaroo (48.3% of total), Ankerkaro (24.2% of total), and Doringvygie16.1% of total.	
Number of palatable grasses								3	
Palatability (potential) %								42,9	
Good grazing grasses %								43,2	
Forage value (Grasses only)								High	
Veld Condition Index Total								2,02	
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)								20,12	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%								46,2	
ISPD Veld Condition Assessment								INTERMEDIATE	
Notes									
<b>Management Recommendation</b>								APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.	

DE BAD - SOVENTIX							FOOTSLOPE (Convex) 3,1							
SITE - 27 (GRAZING UNIT 1)							SITE - 27							
							Excl. Sedges & Forbs							
							April 2022							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							6,5							
PHYTOMASS / FUEL LOAD (in kg/ha)							973							
CO-ORDINATES: South							30° 50' 58,6"							
East							24° 21' 24,7"							
DIRECTION OF TRANSECT							138°							
HEIGHT ABOVE SEA LEVEL (m)							1 280m							
SOIL FORM (Macvicar, 1991)							Mispah							
VELD TYPE (Mucina & Rutherford, 2006)							Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)							Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic		
<b>DECREASERS</b>														
No Decreaser species recorded											<b>% on Grand Total</b>			
<b>SUBTOTAL (Decreaser category):</b>											<b>0</b>			
<b>INCREASERS I</b>														
No Increaser I species recorded											<b>% on Grand Total</b>			
<b>SUBTOTAL (Increaser I category):</b>											<b>0</b>			
<b>INCREASERS II</b>														
<i>Aristida adscensionis</i> Enjarige Steekgras							1,08			*			9	
<i>Aristida congesta subsp. congesta</i> Cat's tail Three-awn									**				**	
<i>Enneapogon desvauxii</i> Kalkgras							2,07		**				35	
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass							3,24	***					3	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras							2,94	***					**	
<i>Eragrostis sp.</i> Eragrostis							1,5		**				**	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass							0,84			**			8	
Bare Ground											0			
<b>SUBTOTAL (Increaser II category):</b>											<b>56</b>			
<b>TOTAL (Grasses):</b>											<b>56</b>			
SHRUBS (BOSSIES)							COVER							
							Dominant bossies contribution to cover (%)							
							65							
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)							Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Amphiglossa triflora</i> (Pterothrix spinescens) Voeltjie-kan-nie-sit-nie							1,31		**				0,02	1
<i>Erioccephalus ericoides</i> Kapokbos							2,43	***					3	7
<i>Erioccephalus spinescens</i> Doringkapok							2,12		**				2	6
<i>Helichrysum lucilloides</i> Kerriebos							0,94			*			0,01	1
<i>Pentzia incana</i> Ankerkaroo							2,88	***					8,5	25
<i>Roepera incrustata</i> Witkriedoring							1,5			*			0,2	1
<i>Ruschia intricata</i> (Eberlanzia ferox) Doringvygie							1,54		**				0,5	4
<b>TOTAL (Shrubs / Bossies):</b>											<b>44</b>			
<b>TOTAL (Grasses + Shrubs / Bossies)</b>											<b>100</b>			
** Less than 1% of species recorded at site														

**Table 2.2: Trends in grass and shrub species composition, from Table 2.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		FOOTSLOPE (Convex)	
		SITE - 27	
		Excl. Sedges & Forbs	
		April 2022	
Categories		%	
Decreaser species		0	
Increaser I species		0	
Increaser II species		56	
Unidentified species		0	
Bare Ground		0	
Shrubs /Bossies		44	
<b>Total</b>		<b>100</b>	
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>		<b>INTERMEDIATE / OVERGRAZED</b>	
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently			
Increaser I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies			
Increaser II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies			

**Table 2.3: Summary.**

SUMMARY		FOOTSLOPE (Convex)	
		SITE - 27	
		ISPD 5125	
		April 2022	
Tuft distance (cm)		6,5	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		Medium	
Fuel load (4 tons per ha = threshold for burning)		973	
Fuel load potential		Low	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		4 (7)	
Grass Species Richness (High is = >15 spp, Low< 10 species)		Low	
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)		6 (6)	
Bossie Species Richness (High is = >15 spp, Low< 10 species)		Low	
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)		10 (13)	
Plant Species Richness (High is = >60 spp, Low< 20 species)		Low	
Dominant Bossie cover (% soil covered)		14,23% (within range of 11 - 20%)	
Dominant species contributing to crown cover (%)		These species contributed in total 94,9% to bossie crown cover recorded: 'Ankerkaroo (59,8% of total), Kapokbos (21,1% of total), and Doringkapok 14.1% of total.	
Number of palatable grasses		2	
Palatability (potential) %		28,6	
Good grazing grasses %		3	
Forage value (Grasses only)		Low	
Veld Condition Index Total		3,97	
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		28,31	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		39,3	
ISPD Veld Condition Assessment		<b>INTERMEDIATE</b>	
Notes			
<b>Management Recommendation</b>		<b>APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.</b>	

DE BAD - SOVENTIX								FOOTSLOPE (Convex) 5							
SITE - 28 (GRAZING UNIT 1)								SITE - 28							
								Excl. Sedges & Forbs							
								April 2022							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								8,8							
PHYTOMASS / FUEL LOAD (in kg/ha)								1450							
CO-ORDINATES: South								30° 50' 08,5"							
East								24° 21' 24,1"							
DIRECTION OF TRANSECT								008°							
HEIGHT ABOVE SEA LEVEL (m)								1 262m							
SOIL FORM (Macvicar, 1991)								Valsrivier							
VELD TYPE (Mucina & Rutherford, 2006)								Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic	% on Grand Total	
<b>DECREASERS</b>															
<i>Panicum cobratum</i> (Small Buffalo Grass / Witbuffelsgras)								5,22	***					1	
<i>Sporobolus fimbriatus</i> Bushveld Dropseed / Bosveldfynsaadgras								7,03	****					**	
<b>SUBTOTAL (Decreaser category):</b>								<b>1</b>							
<b>INCREASERS I</b>															
No Increaser I species recorded								0							
<b>SUBTOTAL (Increaser I category):</b>								<b>0</b>							
<i>Aristida adscensionis</i> Eenjarige Steekgras								1,08			*			1	
<i>Chloris virgata</i> Feather-top Chloris / Kwassgras								0,78					*	3	
<i>Cynodon hirsutus</i> Cynodon								1,5					**	12	
<i>Eragrostis chloromelas</i> Curly-leaf Lovegrass / Fynkruidblaar-Eragrostis								3,24		**				1	
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass								3,24	***					1	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras								2,94	***					19	
<i>Eragrostis sp.</i> Eragrostis								1,5		**				2	
<i>Sporobolus discosporus</i> Disc Dropseed / Oortjiesgras								3,47	***					12	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass								0,84			**			1	
Bare Ground								4							
<b>SUBTOTAL (Increaser II category):</b>								<b>55</b>							
<b>TOTAL (Grasses):</b>								<b>56</b>							
SHRUBS (BOSSIES)								COVER							
								Dominant bossies contribution to cover (%)						65	
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Asparagus glauca</i> Bloukatdoring								1		**				1	7
<i>Caroxylon tuberculatum</i> (Salsola tuberculata) Blomkoolganna								3,5	***					2	9
<i>Eriosephalus ericoides</i> Kapokbos								2,43	***					2	6
<i>Felicia muricata</i> Bloublommietjie								1,5		**				0,5	4
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp								0,5				*		0,01	1
<i>Pentzia globosa</i> Vaalkaroo								4,8	***					0,5	2
<i>Pentzia incana</i> Ankerkaroo								2,88	***					2	7
<i>Phymasperrum parvifolium</i> Witheuningkaroo								3,38	****					0,01	1
<i>Roepera incrustata</i> Witkriedoring								1,5			*			5	6
<i>Ruschia intricata</i> (Eberlanzia ferox) Doringvygie								1,54		**				3	3
<i>Sesuvium geniculata</i> Persaar								1,5						0,01	**
<b>TOTAL (Shrubs / Bossies):</b>								<b>44</b>							
<b>TOTAL (Grasses + Shrubs / Bossies)</b>								<b>100</b>							
** Less than 1% of species recorded at site															

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)								FOOTSLOPE (Convex)	
								SITE - 28	
								Excl. Sedges & Forbs	
								April 2022	
Categories								%	
Decreaser species								1	
Increaser I species								0	
Increaser II species								51	
Unidentified species								0	
Bare Ground								4	
Shrubs /Bossies								44	
<b>Total</b>								<b>100</b>	
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>								<b>INTERMEDIATE / OVERGRAZED</b>	
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when Increaser I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies Increaser II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies									

SUMMARY								FOOTSLOPE (Convex)	
								SITE - 28	
								ISPD 5126	
								April 2022	
Tuft distance (cm)								8,8	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)								Medium	
Fuel load (4 tons per ha = threshold for burning)								1450	
Fuel load potential								Low	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)								10 (11)	
Grass Species Richness (High is = >15 spp, Low< 10 species)								Low	
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)								10 (11)	
Bossie Species Richness (High is = >15 spp, Low< 10 species)								Medium (Low)	
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)								20 (22)	
Plant Species Richness (High is = >60 spp, Low< 20 species)								Low (Medium)	
Dominant Bossie cover (% soil covered)								15,03% (within range of 11 - 20%)	
Dominant species contributing to crown cover (%)								These species contributed in total 93.2% to bossie crown cover recorded: Witkriedoring (33.3% of total), Doringvygie (20.0% of total), and Blomkoolganna, Ankerkaroo, and Kapokbos 13.3% of total each.	
Number of palatable grasses								3	
Palatability (potential) %								33,3	
Good grazing grasses %								32,5	
Forage value (Grasses only)								30	
Veld Condition Index Total								2,28	
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)								16,25	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%								29,4	
ISPD Veld Condition Assessment								INTERMEDIATE	
Notes									
Management Recommendation								APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMELY REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.	

DE BAD - SOVENTIX								MIDSLAPE (Convex)						
SITE - 29 (GRAZING UNIT 1)								SITE - 29						
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								Excl. Sedges & Forbs						
PHYTOMASS / FUEL LOAD (in kg/ha)								April 2022						
CO-ORDINATES: South								7.4						
East								2604						
DIRECTION OF TRANSECT								30° 50' 09,9"						
HEIGHT ABOVE SEA LEVEL (m)								24° 20' 35,0"						
SOIL FORM (Macvicar, 1991)								335°						
VELD TYPE (Mucina & Rutherford, 2006)								1 267m						
								Oakleaf						
								Nku 4 - Eastern Upper Karoo						
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic	
DECREASERS														
No Decreaser species recorded														
SUBTOTAL (Decreaser category):													0	
INCREASERS I														
No Increaser I species recorded														
SUBTOTAL (Increaser I category):													0	
INCREASERS II														
<i>Aristida congesta subsp. congesta</i> Cat's tail Three-awn	3,36	**	**										7	
<i>Aristida diffusa</i> Iron Grass	3,18	***											1	
<i>Enneapogon desvauxii</i> Kalkgras	2,07		**										0	
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3,24	***											10	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2,94	***											3	
<i>Sporobolus africanus</i> Ratstail Dropseed / Taaipol	3,47	***											**	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0,84			**									9	
Bare Ground													1	
SUBTOTAL (Increaser II category):													32	
TOTAL (Grasses):													32	
SHRUBS (BOSSIES)														
COVER														
Dominant bossies contribution to cover (%)														
													60	
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)														
	Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)							
<i>Amphiglossa triflora</i> ( <i>Pterothrix spinescens</i> ) Voeltjie-kan-nie-sit-nie	1,31		**				0,5	3						
<i>Berkheya spinosa</i> Vlaktedissel	0,68	***					0,1	1						
<i>Eriocephalus ericoides</i> Kapokbos	2,43	***					4	5						
<i>Eriocephalus spinescens</i> Doringkapok	2,12		**				4	8						
<i>Felicia muricata</i> Bloublommetjie	1,5		**				0,5	4						
<i>Oedera humilis</i> ( <i>Rosenia humilis</i> ) Perdekaroo	1,77		**				0,5	5						
<i>Pentzia globosa</i> Vaalkaroo	4,8	***					2	4						
<i>Pentzia incana</i> Ankerkaroo	2,88	***					3	6						
<i>Phymaspermum parvifolium</i> Witheuningkaroo	3,38	****					8,5	21						
<i>Pteronia sortida</i> Swartboegoe	1,89			*			0,01	0						
<i>Roepera incrustata</i> Wikriedoring	1,5			*			0,5	1						
<i>Ruschia intricata</i> ( <i>Eberlanzia ferox</i> ) Doringvygie	1,54		**				3	10						
<i>Salago geniculata</i> Pearsaar	1,5			*			0,01	**						
TOTAL (Shrubs / Bossies):													68	
TOTAL (Grasses + Shrubs / Bossies)													100	
** Less than 1% of species recorded at site														
Table 4.2: Trends in grass and shrub species composition, from Table 4.1.														
VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)								MIDSLAPE (Convex)						
								SITE - 29						
								Excl. Sedges & Forbs						
								April 2022						
Categories								%						
Decreaser species								0						
Increaser I species								0						
Increaser II species								32						
Unidentified species								0						
Bare Ground								1						
Shrubs/Bossies								68						
Total								100						
Veld Condition (Trollope's Method / Tainton's Method)								POOR / OVERGRAZED						
Legend: Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently														
Increaser I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies														
Increaser II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies														
Table 4.3: Summary.														
SUMMARY								MIDSLAPE (Convex)						
								SITE - 29						
								ISPD 5127						
								April 2022						
Tuft distance (cm)								7.4						
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)								Medium						
Fuel load (4 tons per ha = threshold for burning)								2604						
Fuel load potential								Medium						
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)								6 (7)						
Grass Species Richness (High is = >15 spp, Low< 10 species)								Low						
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)								12 (13)						
Bossie Species Richness (High is = >15 spp, Low< 10 species)								Medium						
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)								18 (20)						
Plant Species Richness (High is = >60 spp, Low< 20 species)								Low (medium)						
Dominant Bossie cover (% soil covered)								26.6% (within range of 21 - 30%)						
Dominant species contributing to crown cover (%)								These species contributed in total 84.5% to bossie crown cover recorded: Witheuningkaroo (31.9% of total), Kapokbos and Doringkapok (each 15.0% of total), and Ankerkaroo and Doringvygie, 11.3% each of total.						
Number of palatable grasses								4						
Palatability (potential) %								57,1						
Good grazing grasses %								14,5						
Forage value (Grasses only)								Low						
Veld Condition Index Total								2,30						
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)								16,45						
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%								42,3						
ISPD Veld Condition Assessment								POOR						
Notes														
Management Recommendation								APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.						

DE BAD - SOVENTIX								FOOTSLOPE (Convex)							
SITE - 30 (GRAZING UNIT 4)								SANDSTEEN							
								SITE - 30							
								Excl. Sedges & Forbs							
								April 2022							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								5,9							
PHYTOMASS / FUEL LOAD (in kg/ha)								2080							
CO-ORDINATES: South								30° 50' 17,1"							
East								24° 21' 06,7"							
DIRECTION OF TRANSECT								246°							
HEIGHT ABOVE SEA LEVEL (m)								1 347m							
SOIL FORM (Macvicar, 1991)								Mispah							
VELD TYPE (Mucina & Rutherford, 2006)								Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic	% on Grand Total	
<b>DECREASERS</b>															
No Decreaser species recorded															
<b>SUBTOTAL (Decreaser category):</b>													0		
<b>INCREASES I</b>															
No Increase I species recorded															
<b>SUBTOTAL (Increase I category):</b>													0		
<b>INCREASES II</b>															
<i>Aristida adscensionis</i> Eenjarige Steekgras								1,08			*			24	
<i>Aristida congesta subsp. congesta</i> Cat's tail Three-awn								3,36	**					**	
<i>Erneapogon desvauxii</i> Kalkgras								2,07		**				1	
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass								3,24	***					9	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras								2,94	***					2	
<i>Eragrostis sp.</i> Eragrostis								1,5		**				0	
<i>Pentameris montana</i>								1,5						0	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass								0,84			**	**		7	
Unidentified species								1,5				**		1	
Bare Ground														1	
<b>SUBTOTAL (Increase II category):</b>													45		
<b>TOTAL (Grasses):</b>													45		
SHRUBS (BOSSIES)								COVER							
								Dominant bossies contribution to cover (%)							
								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<b>SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)</b>															
<i>Asparagus glauca</i> Bloukatdoring								1		**				0,1	0
<i>Berkheya spinosa</i> Vlaktedissel								0,68	***					0,1	0
<i>Erioccephalus ericoides</i> Kapokbos								2,43	***					10	23
<i>Erioccephalus spinescens</i> Doringkapok								2,12		**				3	9
<i>Felicia muricata</i> Bloublommetjie								1,5		**				0,01	**
<i>Helichrysum lucilloides</i> Kerriebos								0,94			*			0,1	1
<i>Lycium cinereum</i> Kriedoring								1,63						0,1	0
<i>Pentzia globosa</i> Vaalkaroo								4,8	***					1	2
<i>Pentzia incana</i> Ankerkaroo								2,88	***					3	9
<i>Pteronia sordida</i> Swartboegoe								1,89			*			0,01	**
<i>Roepera incrustata</i> Wikriedoring								1,5			*			1	3
<i>Ruschia intricata</i> (Eberlanzia ferox) Doringvygie								1,54						3	8
<i>Selago geniculata</i> Persaar								1,5			*			0,1	**
<b>TOTAL (Shrubs / Bossies):</b>													55		
<b>TOTAL (Grasses + Shrubs / Bossies)</b>													100		
** Less than 1% of species recorded at site															
<b>Table 5.2: Trends in grass and shrub species composition, from Table 5.1.</b>															
VELD CONDITION SUMMARY OF TREND (TANTON'S METHOD)								FOOTSLOPE (Convex)							
								SITE - 30							
								Excl. Sedges & Forbs							
								April 2022							
Categories								%							
Decreaser species								0							
Increase I species								0							
Increase II species								44							
Unidentified species								0							
Bare Ground								1							
Shrubs /Bossies								55							
<b>Total</b>								<b>100</b>							
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>								<b>INTERMEDIATE / OVERGRAZED</b>							
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently															
Increase I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies															
Increase II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies															
<b>Table 5.3: Summary.</b>															
SUMMARY								FOOTSLOPE (Convex)							
								SITE - 30							
								ISPD 5128							
								April 2022							
Tuft distance (cm)								5,9							
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)								Medium							
Fuel load (4 tons per ha = threshold for burning)								2080							
Fuel load potential								Medium							
Number of Grass species present per 100 m² (excl. and incl. <1% of species)								8 (9)							
Grass Species Richness (High is = >15 spp, Low< 10 species)								Low							
Number of Bossies species present per 2500 m² (excl. and incl. <1% of species)								10 (13)							
Bossie Species Richness (High is = >15 spp, Low< 10 species)								Low (medium)							
Number of bossies and grass species per 100 m² (excl. and incl. <1% of species)								18 (22)							
Plant Species Richness (High is = >60 spp, Low< 20 species)								Low							
Dominant Bossie cover (% soil covered)								21.4% (within range of 21 - 30%)							
Dominant species contributing to crown cover (%)								These species contributed in total 88,7% to bossie crown cover recorded: Kapokbos (46,7% of total), Ankerkaroo and Doringkapok and Doringvygie (each 14,0% of total).							
Number of palatable grasses								2							
Palatability (potential) %								22,2							
Good grazing grasses %								11,1							
Forage value (Grasses only)								Low							
Veld Condition Index Total								3,13							
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)								22,33							
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%								32,9							
ISPD Veld Condition Assessment								INTERMEDIATE							
Notes															
Management Recommendation								APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.							

DE BAD - SOVENTIX							FOOTSLOPE (Concave)							
SITE - 31 (GRAZING UNIT 1)							SITE - 31							
							Excl. Sedges & Forbs							
							April 2022							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							6,0							
PHYTOMASS / FUEL LOAD (in kg/ha)							2208							
CO-ORDINATES: South							30° 50' 06.5"							
East							24° 21' 38.9"							
DIRECTION OF TRANSECT							078°							
HEIGHT ABOVE SEA LEVEL (m)							1 275m							
SOIL FORM (Macvicar, 1991)							Etosha							
VELD TYPE (Mucina & Rutherford, 2006)							Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)							Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic	% on Grand Total	
<b>DECREASERS</b>														
<i>Panicum coloratum</i> Small Buffalo Grass / Witbuffelsgras							5,22	***					**	
<b>SUBTOTAL (Decreaser category):</b>													<b>0</b>	
<b>INCREASES I</b>														
No Increase I species recorded													0	
<b>SUBTOTAL (Increase I category):</b>													<b>0</b>	
<b>INCREASES II</b>														
<i>Aristida adscensionis</i> Fenjarige Steekgras							1,08			*			9	
<i>Aristida congesta</i> subsp. <i>barbicollis</i> Spreading Three-awn							1,04		**				**	
<i>Chloris virgata</i> Feather-top Chloris / Kwasgras							0,78				*		**	
<i>Enneapogon desvauxii</i> Kalkgras							2,07		**				3	
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass							3,24	***					5	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras							2,94	***					7	
<i>Eragrostis</i> sp. <i>Eragrostis</i>							1,5		**				1	
<i>Microchloa caffra</i> Pincushion Grass							1,24				**		1	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass							0,84			**			6	
Bare Ground													0	
<b>SUBTOTAL (Increase II category):</b>													<b>32</b>	
<b>TOTAL (Grasses):</b>													<b>32</b>	
SHRUBS (BOSSIES)							COVER							
							Dominant bossies contribution to cover (%)					80		
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)							Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Asparagus glauca</i> Bloukatdoring							1		**				3	11
<i>Berkheya spinosa</i> Viaktedissel							0,68	***					0,01	0
<i>Eriocephalus ericoides</i> Kapokbos							2,43	***					20	13
<i>Felicia muricata</i> Bloublometjie													3	9
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp							0,5				*		0,01	0
<i>Pentzia incana</i> Ankerkaro							2,88	***					18	21
<i>Pentzia globosa</i> Vaalkaroo							4,8	***					10	10
<i>Phymaspermum parvifolium</i> Wittheuningkaro							3,38	****					1	2
<i>Roepera incrustata</i> Witkriedoring							3,38	****					0,1	0
<i>Ruschia intricata</i> (Eberlanzia ferox) Doringvygie							1,54						3	2
<i>Selago geniculata</i> Persaar							1,5			*			0,01	0
<b>TOTAL (Shrubs / Bossies):</b>													<b>68</b>	
<b>TOTAL (Grasses + Shrubs / Bossies)</b>													<b>100</b>	
** Less than 1% of species recorded at site														
<b>Table 6.2: Trends in grass and shrub species composition, from Table 6.1.</b>														
VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)							FOOTSLOPE (Concave)							
							SITE - 31							
							Excl. Sedges & Forbs							
							April 2022							
Categories							%							
Decreaser species							0							
Increase I species							0							
Increase II species							32							
Unidentified species							0							
Bare Ground							0							
Shrubs /Bossies							68							
<b>Total</b>							<b>100</b>							
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>							<b>INTERMEDIATE / OVERGRAZED</b>							
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently														
Increase I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies														
Increase II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies														
<b>Table 6.3: Summary.</b>														
SUMMARY							FOOTSLOPE (Concave)							
							SITE - 31							
							ISPD 5129							
							April 2022							
Tuft distance (cm)							6,0							
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)							Medium							
Fuel load (4 tons per ha = threshold for burning)							2208							
Fuel load potential							Medium							
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)							7 (10)							
Grass Species Richness (High is = >15 spp, Low< 10 species)							Low							
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)							11 (11)							
Bossie Species Richness (High is = >15 spp, Low< 10 species)							Low							
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)							18 (21)							
Plant Species Richness (High is = >60 spp, Low< 20 species)							Low							
Dominant Bossie cover (% soil covered)							58.1% (within range of >50%)							
Dominant species contributing to crown cover (%)							These species contributed in total 98.1% to bossie crown cover recorded: Kapokbos (34.4% of total), Ankerkaro (31.0%), Vaalkaroo (17.0% of total), Bloukatdoorn, Bloublometjie and Doringvygie each							
Number of palatable grasses							2							
Palatability (potential) %							22,2							
Good grazing grasses %							12,0							
Forage value (Grasses only)							Low							
Veld Condition Index Total							2,24							
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)							15,96							
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%							37,7							
ISPD Veld Condition Assessment							<b>INTERMEDIATE</b>							
Notes														
<b>Management Recommendation</b>							APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.							

DE BAD - SOVENTIX								PAN ECOTONE (Concave)							
SITE - 32 (GRAZING UNIT 1)								SITE - 32							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								Excl. Sedges & Forbs							
PHYTOMASS / FUEL LOAD (in kg/ha)								April 2022							
CO-ORDINATES: South								5,6							
East								2040							
DIRECTION OF TRANSECT								30° 49' 48,2"							
HEIGHT ABOVE SEA LEVEL (m)								24° 21' 47,3"							
SOIL FORM (Macvicar, 1991)								120°							
VELD TYPE (Mucina & Rutherford, 2006)								1 283m							
								Etosha							
								Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic	% on Grand Total	
<b>DECREASERS</b>															
No Decreaser species recorded								0							
<b>SUBTOTAL (Decreaser category):</b>								0							
<b>INCREASERS I</b>															
No Increase I species recorded								0							
<b>SUBTOTAL (Increase I category):</b>								0							
<b>INCREASERS II</b>															
<i>Aristida adscensionis</i> Eenjarige Steekgras								1,08			*			9	
<i>Chloris virgata</i> Feather-top Chloris / Kwasgras								0,78				*		**	
<i>Cynodon hirsutus</i> Cynodon								2,5				**		14	
<i>Enneapogon desvauxii</i> Kalkgras								2,07		**				0	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras								2,94	***					7	
<i>Oropetium capense</i> Dwarf Grass / Haasgras								1,04		**				3	
<i>Sporobolus discosporus</i> Disc Dropseed / Oortjesgras								3,47	***					2	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass								0,84			**			5	
Bare Ground								2							
<b>SUBTOTAL (Increase II category):</b>								41							
<b>TOTAL (Grasses):</b>								41							
SHRUBS (BOSSIES)								COVER							
								Dominant bossies contribution to cover (%)							80
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Asparagus glauca</i> Bloukatdoring								1		**				0,1	4
<i>Boophaea disticha</i> (Gifbol)								0,68					***	0,01	**
<i>Caroxylon tuberculatum</i> ( <i>Salsola tuberculata</i> ) Blomkoolganna								3,5	***					0,5	3
<i>Erioccephalus ericoides</i> Kapokbos								2,43	***					4	7
<i>Erioccephalus spinescens</i> Doringkapok								2,12		**				0,1	1
<i>Felicia muricata</i> Bloublommetjie								1,5		**				0,1	11
<i>Lycium sp.</i>								1,63		**				0,1	1
<i>Oedera humilis</i> ( <i>Rosenia humilis</i> ) Perdekaroo								1,77		**				0,01	0
<i>Pentzia incana</i> Ankerkaroo								2,88	***					9	21
<i>Phymaspertum parvifolium</i> Witheuningkaroo								3,38	****					1	6
<i>Pteronia cf glauca</i> Geelboegoekaroo								1,89			*			0,01	0
<i>Pteronia sordida</i> Swartboegoe								1,89			*			0,01	0
<i>Ruschia intricata</i> ( <i>Eberlanzia ferrox</i> ) Doringvygie								1,54		**				0,1	2
<i>Selago geniculata</i> Pearsaar								1,5			*			0,01	2
<b>TOTAL (Shrubs / Bossies):</b>								59							
<b>TOTAL (Grasses + Shrubs / Bossies)</b>								100							
** Less than 1% of species recorded at site															
<b>Table 7.2: Trends in grass and shrub species composition, from Table 7.1.</b>															
VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)								PAN ECOTONE (Concave)							
								SITE - 32							
								Excl. Sedges & Forbs							
								April 2022							
Categories								%							
Decreaser species								0							
Increase I species								0							
Increase II species								39							
Unidentified species								0							
Bare Ground								2							
Shrubs /Bossies								59							
<b>Total</b>								<b>100</b>							
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>								<b>INTERMEDIATE / OVERGRAZED</b>							
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently															
Increase I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies															
Increase II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies															
<b>Table 7.3: Summary.</b>															
SUMMARY								PAN ECOTONE (Concave)							
								SITE - 32							
								ISPD 5130							
								April 2022							
Tuft distance (cm)								5,6							
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)								Medium							
Fuel load (4 tons per ha = threshold for burning)								2040							
Fuel load potential								Medium							
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)								7 (8)							
Grass Species Richness (High is = >15 spp, Low< 10 species)								Low							
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)								13 (14)							
Bossie Species Richness (High is = >15 spp, Low< 10 species)								Low							
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)								20 (22)							
Plant Species Richness (High is = >60 spp, Low< 20 species)								Low							
Dominant Bossie cover (% soil covered)								15.1% (within range of 11 - 20%)							
Dominant species contributing to crown cover (%)								These species contributed in total 86.4% to bossie crown cover recorded: Kapokbos (26.6% of total), Ankerkaroo (59.8%).							
Number of palatable grasses								2							
Palatability (potential) %								25,0							
Good grazing grasses %								8,4							
Forage value (Grasses only)								Low							
Veld Condition Index Total								2,67							
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)								19,04							
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%								33,4							
ISPD Veld Condition Assessment								<b>INTERMEDIATE</b>							
Notes															
Management Recommendation								APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.							



DE BAD - SOVENTIX								FOOTSLOPE (Convex)							
SITE - 33 (GRAZING UNIT 3)								SITE - 33							
								Excl. Sedges & Forbs							
								April 2022							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								5,6							
PHYTOMASS / FUEL LOAD (in kg/ha)								2649							
CO-ORDINATES: South								30° 49' 42,0"							
East								24° 22' 32,5"							
DIRECTION OF TRANSECT								339°							
HEIGHT ABOVE SEA LEVEL (m)								1 282m							
SOIL FORM (Macvicar, 1991)								Mispah							
VELD TYPE (Mucina & Rutherford, 2006)								Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic	% on Grand Total	
<b>DECREASERS</b>															
<i>Fingerhithia africana</i> Vingerhoedgras / Thimble grass								2,07		**				3	
<b>SUBTOTAL (Decreaser category):</b>															
3															
<b>INCREASERS I</b>															
No Increase I species recorded															
<b>SUBTOTAL (Increase I category):</b>															
0															
<b>INCREASERS II</b>															
<i>Aristida adscensionis</i> Eenjarige Steekgras								1,08			*			10	
<i>Erneapogon desvauxii</i> (Kalkgras)								2,07		**				5	
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass								3,24	***					26	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras								2,94	***					8	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass								0,84			**			4	
Bare Ground													0		
<b>SUBTOTAL (Increase II category):</b>															
53															
<b>TOTAL (Grasses):</b>															
56															
SHRUBS (BOSSIES)								COVER							
								Dominant bossies contribution to cover (%)						60	
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Asparagus glauca</i> Bloukatdoring								1		**				0,5	3
<i>Berkheya spinosa</i> Vlaktedissel								0,68	***					0,1	1
<i>Boophaea disticha</i> (Gilbol)								0,68					***	0,01	**
<i>Caroxylon tuberculatum</i> (Salsola tuberculata) Blomkoolganna								3,5	***					0,1	1
<i>Erioccephalus ericoides</i> Kapokbos								2,43	***					0,5	3
<i>Erioccephalus spinescens</i> Doringkapok								2,12		**				1	3
<i>Euryops asparagoides</i> Buldraibos								1,51			*			1	3
<i>Pentzia incana</i> Ankerkaro								2,88	***					9	27
<i>Phymaspermum parvifolium</i> Witheuningkaro								3,38	****					0,1	1
<i>Ruschia intricata</i> (Eberlanzia ferox) Doringvygie								1,54		**				0,5	1
<i>Selago geniculata</i> Pearsaar								1,5			*			0,1	2
<b>TOTAL (Shrubs / Bossies):</b>															
44															
<b>TOTAL (Grasses + Shrubs / Bossies)</b>															
100															
** Less than 1% of species recorded at site															
<b>Table 8.2: Trends in grass and shrub species composition, from Table 8.1.</b>															
VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)								FOOTSLOPE (Convex)							
								SITE - 33							
								Excl. Sedges & Forbs							
								April 2022							
Categories								%							
Decreaser species								3							
Increase I species								0							
Increase II species								53							
Unidentified species								0							
Bare Ground								0							
Shrubs /Bossies								44							
<b>Total</b>								<b>100</b>							
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>								<b>INTERMEDIATE / OVERGRAZED</b>							
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently															
Increase I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies															
Increase II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies															
<b>Table 8.3: Summary.</b>															
SUMMARY								FOOTSLOPE (Convex)							
								SITE - 33							
								ISPD 5131							
								April 2022							
Tuft distance (cm)								5,6							
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)								Medium							
Fuel load (4 tons per ha = threshold for burning)								2649							
Fuel load potential								Medium							
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)								6 (6)							
Grass Species Richness (High is = >15 spp, Low< 10 species)								Low							
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)								10 (11)							
Bossie Species Richness (High is = >15 spp, Low< 10 species)								Low							
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)								16 (17)							
Plant Species Richness (High is = >60 spp, Low< 20 species)								Low							
Dominant Bossie cover (% soil covered)								12,9% (within range of 11 - 20%)							
Dominant species contributing to crown cover (%)								One dominant species, Ankerkaro, contributed in total 100.0% to the dominant bossie crown cover. It contributed 69.8% of the crown cover.							
Number of palatable grasses								2							
Palatability (potential) %								40,0							
Good grazing grasses %								34,0							
Forage value (Grasses only)								30							
Veld Condition Index Total								2,09							
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)								14,95							
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%								46,3							
ISPD Veld Condition Assessment								INTERMEDIATE							
Notes															
<b>Management Recommendation</b>								APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.							

DE BAD - SOVENTIX								CREST (Convex)							
SITE - 34 (GRAZING UNIT 3)								SANDSTONE							
								SITE - 34							
								Excl. Sedges & Forbs							
								April 2022							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								4,9							
PHYTOMASS / FUEL LOAD (in kg/ha)								Not assessed							
CO-ORDINATES: South								30° 49' 59,0"							
East								24° 22' 56,4"							
DIRECTION OF TRANSECT								328°							
HEIGHT ABOVE SEA LEVEL (m)								1 296m							
SOIL FORM (Macvivar, 1991)								Mispah							
VELD TYPE (Mucina & Rutherford, 2006)								Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic		
DECREASERS								% on Grand Total							
No Decreaser species recorded								0							
<b>SUBTOTAL (Decreaser category):</b>								<b>0</b>							
INCREASERS I								% on Grand Total							
No Increase I species recorded								0							
<b>SUBTOTAL (Increase I category):</b>								<b>0</b>							
INCREASERS II								% on Grand Total							
<i>Aristida adscensionis</i> Eenjarige Steekgras								1,08			*				39
<i>Aristida diffusa</i> Iron Grass								3,18	***						0
<i>Cynodon hirsutus</i> Cynodon								1,5					**		4
<i>Enneapogon desvauxii</i> Kalkgras								2,07		**					8
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass								3,24	***						1
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras								2,94	***						2
<i>Oropetium capense</i> Dwarf Grass / Haasgras								1,04		**					4
Bare Ground								0							
<b>SUBTOTAL (Increase II category):</b>								<b>59</b>							
<b>TOTAL (Grasses):</b>								<b>59</b>							
SHRUBS (BOSSIES)								COVER							
								Dominant bossies contribution to cover (%)						80	
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Asparagus glauca</i> Bloukatdoring								1		**				0,1	1
<i>Eriocephalus ericoides</i> Kapokbos								2,43	***					11	33
<i>Euryops asparagoides</i> Buldraailbos								1,51			*			1	2
<i>Felicia muricata</i> Bloublommetjie								1,5		**				0,1	1
<i>Pentzia incana</i> Ankerkaro								2,88	***					0,5	4
<b>TOTAL (Shrubs / Bossies):</b>								<b>41</b>							
<b>TOTAL (Grasses + Shrubs / Bossies)</b>								<b>100</b>							
** Less than 1% of species recorded at site															

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		CREST (Convex)	
		SITE - 34	
		Excl. Sedges & Forbs	
		April 2022	
Categories		%	
Decreaser species		0	
Increase I species		0	
Increase II species		59	
Unidentified species		0	
Bare Ground		0	
Shrubs /Bossies		41	
<b>Total</b>		<b>100</b>	
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>		<b>POOR / OVERGRAZED</b>	
<b>Legend: Decreaser species</b> - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently			
<b>Increase I species</b> - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies			
<b>Increase II species</b> - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies			

SUMMARY		CREST (Convex)	
		SITE - 34	
		ISPD 5132	
		April 2022	
Tuft distance (cm)		4,9	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		Low	
Fuel load (4 tons per ha = threshold for burning)		Not assessed	
Fuel load potential		Very High	
Number of Grass species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)		7 (7)	
Grass Species Richness (High is = >15 spp, Low< 10 species)		Low	
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)		12 (12)	
Bossie Species Richness (High is = >15 spp, Low< 10 species)		Low	
Number of bossies and grass species per 2500 m <sup>2</sup> (excl. and incl. <1% of species)		19 (19)	
Plant Species Richness (High is = >60 spp, Low< 20 species)		Low	
Dominant Bossie cover (% soil covered)		12,7% (within range of 11 - 20%)	
Dominant species contributing to crown cover (%)		One dominant species, Kapokbos, contributed in total 100.0% to the dominant bossie crown cover: It contributed 68.6% of the crown cover.	
Number of palatable grasses		3	
Palatability (potential) %		42,9	
Good grazing grasses %		3,6	
Forage value (Grasses only)		Low	
Veld Condition Index Total		3,70	
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		26,45	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		28,5	
ISPD Veld Condition Assessment		POOR	
Notes			
Management Recommendation		APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.	

DE BAD - SOVENTIX							FOOTSLOPE (Concave)	
SITE - 35 (GRAZING UNIT 3)							SITE - 35	
							Excl. Sedges & Forbs	
							April 2022	
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							6,4	
PHYTOMASS / FUEL LOAD (in kg/ha)							3910	
CO-ORDINATES: South							30° 50' 12,0"	
East							24° 23' 06,0"	
DIRECTION OF TRANSECT							333°	
HEIGHT ABOVE SEA LEVEL (m)							1 286m	
SOIL FORM (Macvicar, 1991)							Mispah	
VELD TYPE (Mucina & Rutherford, 2006)							Nku 4 - Eastern Upper Karoo	
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								
Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic			
DECREASERS							% on Grand Total	
No Decreaser species recorded							0	
<b>SUBTOTAL (Decreaser category):</b>							<b>0</b>	
INCREASES I								
No Increase I species recorded							0	
<b>SUBTOTAL (Increase I category):</b>							<b>0</b>	
INCREASES II								
<i>Aristida adscensionis</i> Eenjarige Steekgras	1,08	***		*		1		
<i>Aristida congesta</i> subsp. <i>congesta</i> Cat's tail Three-awn	3,36	**				**		
<i>Chloris virgata</i> Feather-top Chloris / Kwasgras	0,78				**	1		
<i>Cynodon hirsutus</i>	1,5				**	12		
<i>Enneapogon desvauxii</i> Kalkgras	2,07		**			**		
<i>Enneapogon scoparius</i> Kalkgras	2,07		**			**		
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3,24	***				35		
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2,94	***				2		
<i>Eragrostis</i> sp. <i>Eragrostis</i>	1,5		**			**		
<i>Sporobolus africanus</i> Ratstail Dropseed / Taaipol	3,47	***				**		
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0,84			**		1		
Bare Ground						0		
<b>SUBTOTAL (Increase II category):</b>							<b>51</b>	
<b>TOTAL (Grasses):</b>							<b>51</b>	
SHRUBS (BOSSIES)							COVER	
							Dominant bossies contribution to cover (%)	
							80	
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								
Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total	
<i>Asparagus glauca</i> Bloukatdoring	1		**			0,01	**	
<i>Erioccephalus ericoides</i> Kapokbos	2,43	***				5	3	
<i>Euryops asparagoides</i> Buldraai-bos	1,51		*			0,1	1	
<i>Felicia muricata</i> Bloublometjie	1,5		**			0,3	9	
<i>Monsonia salmoniflora</i> Boesmanskers	1,5		*			0,01	1	
<i>Oedera humilis</i> ( <i>Rosenia humilis</i> ) Perdekaroo	1,77		**			0,1	1	
<i>Pentzia incana</i> Ankerkaroo	2,88	***				3	13	
<i>Ruschia intricata</i> ( <i>Eberlanzia ferox</i> ) Doringvygie	1,54		**			8,5	18	
<i>Selago geniculata</i> Persaar	1,5		*			0,01	3	
Unidentified ( <i>Vygie</i> species)	1,5		*			0,01	1	
Unidentified species ( <i>Bossie</i> 1)	1,5		**			0,01	**	
<b>TOTAL (Shrubs / Bossies):</b>							<b>49</b>	
<b>TOTAL (Grasses + Shrubs / Bossies)</b>							<b>100</b>	
** Less than 1% of species recorded at site								
<b>Table 10.2: Trends in grass and shrub species composition, from Table 10.1.</b>								
VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)							FOOTSLOPE (Concave)	
							SITE - 35	
							Excl. Sedges & Forbs	
							April 2022	
Categories							%	
Decreaser species							0	
Increase I species							0	
Increase II species							51	
Unidentified species							0	
Bare Ground							0	
Shrubs /Bossies							49	
<b>Total</b>							<b>100</b>	
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>							<b>INTERMEDIATE / OVERGRAZED</b>	
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently								
Increase I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies								
Increase II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies								
<b>Table 10.3: Summary.</b>								
SUMMARY							FOOTSLOPE (Concave)	
							SITE - 35	
							ISPD 5133	
							April 2022	
Tuft distance (cm)							6,4	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)							Medium	
Fuel load (4 tons per ha = threshold for burning)							3910	
Fuel load potential							High	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)							6 (11)	
Grass Species Richness (High is = >15 spp, Low< 10 species)							Low	
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)							9 (11)	
Bossie Species Richness (High is = >15 spp, Low< 10 species)							Low	
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)							15 (22)	
Plant Species Richness (High is = >60 spp, Low< 20 species)							Low	
Dominant Bossie cover (% soil covered)							17.1% (within range of 11 - 20%)	
Dominant species contributing to crown cover (%)							Two dominant species, Kapokbos and Doringvygie, contributed in total 78.9% to the dominant bossie crown cover: It contributed 79.2% of the crown cover.	
Number of palatable grasses							4	
Palatability (potential) %							36,4	
Good grazing grasses %							37,8	
Forage value (Grasses only)							30	
Veld Condition Index Total							2,13	
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)							15,20	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%							43,9	
ISPD Veld Condition Assessment							<b>INTERMEDIATE</b>	
Notes								
Management Recommendation							APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.	

DE BAD - SOVENTIX								FOOTSLOPE (Convex)								
SITE - 36 (GRAZING UNIT 4)								DOLERITE								
TUIT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								SITE - 36								
PHYTOMASS / FUEL LOAD (in kg/ha)								Excl. Sedges & Forbs								
CO-ORDINATES: South								April 2022								
East								4,3								
DIRECTION OF TRANSECT								30° 49' 32,4"								
HEIGHT ABOVE SEA LEVEL (m)								24° 21' 27,0"								
SOIL FORM (Macvicar, 1991)								358°								
VELD TYPE (Mucina & Rutherford, 2006)								1 282m								
								Mispah								
								Nku 4 - Eastern Upper Karoo								
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic			
DECREASERS																
No Decreaser species recorded																
SUBTOTAL (Decreaser category):								0								
INCREASERS I																
No Increaser I species recorded																
SUBTOTAL (Increaser I category):								0								
INCREASERS II																
<i>Aristida adscensionis</i> Enjarige Steekgras								1,08	***		*				11	
<i>Aristida congesta</i> subsp. <i>congesta</i> Cat's tail Three-awn								3,36	**						1	
<i>Chloris virgata</i> Feather-top Chloris / Kwasgras								0,78					**		**	
<i>Cynodon hirsutus</i> Cynodon								1,5					**		1	
<i>Enneapogon desvauxii</i> Kalkgras								2,07		**					16	
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass								3,24	***						1	
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras								2,94	***						18	
<i>Oropetium capense</i> Dwarf Grass / Haasgras								1,04		**					18	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass								0,84			**				9	
Bare Ground																
SUBTOTAL (Increaser II category):								74								
TOTAL (Grasses):								74								
SHRUBS (BOSSIES)								COVER								
								Dominant bossies contribution to cover (%)						70		
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total	
<i>Eriosephalus ericoides</i> Kapokbos								2,43	***					3	7	
<i>Eriosephalus spinescens</i> Doringkapok								2,12		**				6	13	
<i>Helichrysum lucilloides</i> Kerriebos								0,94			*			0,1	1	
<i>Phymaspermum parvifolium</i> Witheuningkaro								3,38	****					0,5	4	
<i>Ruschia intricata</i> (Eberlanzia ferox) Doringvygie								1,54		**				0,1	1	
<i>Selago geniculata</i> Pearsaar															0,01	1
TOTAL (Shrubs / Bossies):															26	
TOTAL (Grasses + Shrubs / Bossies)															100	
** Less than 1% of species recorded at site																

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)								FOOTSLOPE (Convex)	
								SITE - 36	
								Excl. Sedges & Forbs	
								April 2022	
Categories								%	
Decreaser species								0	
Increaser I species								0	
Increaser II species								74	
Unidentified species								0	
Bare Ground								0	
Shrubs / Bossies								26	
Total								100	
Veld Condition (Trollope's Method / Tainton's Method)								POOR / OVERGRAZED	
Legend: Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently									
Increaser I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies									
Increaser II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies									

SUMMARY								FOOTSLOPE (Convex)	
								SITE - 36	
								ISPD 5134	
								April 2022	
Tuft distance (cm)								4,3	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)								Low	
Fuel load (4 tons per ha = threshold for burning)								1518	
Fuel load potential								Low	
Number of Grass species present per 100 m² (excl. and incl. <1% of species)								8 (9)	
Grass Species Richness (High is = >15 spp, Low< 10 species)								Low	
Number of Bossies species present per 2500 m² (excl. and incl. <1% of species)								6 (6)	
Bossie Species Richness (High is = >15 spp, Low< 10 species)								Low	
Number of bossies and grass species per 100 m² (excl. and incl. <1% of species)								14 (15)	
Plant Species Richness (High is = >60 spp, Low< 20 species)								Low	
Dominant Bossie cover (% soil covered)								9.7% (within range of <10%)	
Dominant species contributing to crown cover (%)								Two dominant species, Kapokbos and Doringkapok, contributed in total 92,7% to the dominant bossie crown cover. It contributed 30.9% and 61.8% respectively to the crown cover.	
Number of palatable grasses								3	
Palatability (potential) %								33,3	
Good grazing grasses %								30,4	
Forage value (Grasses only)								30	
Veld Condition Index Total								2,39	
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)								17,08	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%								29,9	
ISPD Veld Condition Assessment								POOR	
Notes									
Management Recommendation								APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.	

DE BAD - SOVENTIX								PAN ECOTONE (Concave)													
SITE - 37 (GRAZING UNIT 5)								Siltstone / Shale													
								SITE - 37													
								Excl. Sedges & Forbs													
								April 2022													
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm								4,2													
PHYTOMASS / FUEL LOAD (in kg/ha)								2291													
CO-ORDINATES: South								30° 49' 42,0"													
East								24° 20' 54,3"													
DIRECTION OF TRANSECT								047°													
HEIGHT ABOVE SEA LEVEL (m)								1 286m													
SOIL FORM (Macvicar, 1991)								Tukulu													
VELD TYPE (Mucina & Rutherford, 2006)								Nku 4 - Eastern Upper Karoo													
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic								
DECREASERS																					
<i>Panicum coloratum</i> Small Buffalo Grass / Witbuffelsgras														5,22	***						1
SUBTOTAL (Decreaser category):																					1
INCREASES I																					
No Increase I species recorded																					0
SUBTOTAL (Increase I category):																					0
INCREASES II																					
<i>Aristida adscensionis</i> Eenjarige Steekgras														1,08	***		*				**
<i>Chloris virgata</i> Feather-top Chloris / Kwasgras														0,78					**		**
<i>Cynodon hirsutus</i> Cynodon														1,5					**		20
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass														3,24	***						1
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras														2,94	***						3
<i>Eragrostis sp.</i> Eragrostis														1,5		**					34
Bare Ground																					0
SUBTOTAL (Increase II category):																					57
TOTAL (Grasses):																					58
SHRUBS (BOSSIES)								COVER													
								Dominant bossies contribution to cover (%)							75						
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)								Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total						
<i>Asparagus glauca</i> Bloukatdoring										**				0,7	1						
<i>Erioccephalus ericoides</i> Kapokbos								2,43	***					0,1	1						
<i>Erioccephalus spinescens</i> Doringkapok								2,12		**		*		0,5	1						
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp								0,5				*		0,5	8						
<i>Oedera humilis</i> (Rosenia humilis) Perdekaroo								1,77		**				0,01	**						
<i>Pentzia incana</i> Ankerkaroo								2,88	***					8,5	33						
<i>Phaeoptilum spinosum</i> Brosdoring								1,5	***					0,01	**						
TOTAL (Shrubs / Bossies):															42						
TOTAL (Grasses + Shrubs / Bossies)															100						
** Less than 1% of species recorded at site																					
Table 12.2: Trends in grass and shrub species composition, from Table 12.1.																					
VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)												PAN ECOTONE									
												SITE - 37									
												Excl. Sedges & Forbs									
												April 2022									
Categories												%									
Decreaser species												1									
Increase I species												0									
Increase II species												57									
Unidentified species												0									
Bare Ground												0									
Shrubs /Bossies												42									
Total												100									
Veld Condition (Trollope's Method / Tainton's Method)												POOR / OVERGRAZED									
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently																					
Increase I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies																					
Increase II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies																					
Table 12.3: Summary.																					
SUMMARY												PAN ECOTONE									
												SITE - 37									
												ISPD 5135									
												April 2022									
Tuft distance (cm)												4,2									
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)												Low									
Fuel load (4 tons per ha = threshold for burning)												2291									
Fuel load potential												Medium									
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)												5 (7)									
Grass Species Richness (High is = >15 spp, Low< 10 species)												Low									
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)												5 (7)									
Bossie Species Richness (High is = >15 spp, Low< 10 species)												Low									
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)												10 (14)									
Plant Species Richness (High is = >60 spp, Low< 20 species)												Low									
Dominant Bossie cover (% soil covered)												9.7% (within range of <10%)									
Dominant species contributing to crown cover (%)												One dominant species, Ankerkaroo, contributed in total 100.0% to the dominant bossie crown cover: It contributed 87.4% of the crown cover.									
Number of palatable grasses												4									
Palatability (potential) %												57,1									
Good grazing grasses %												4,1									
Forage value (Grasses only)												Low									
Veld Condition Index Total												2,57									
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)												18,33									
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%												27,6									
ISPD Veld Condition Assessment												POOR									
Notes																					
Management Recommendation												APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.									

DE BAD - SOVENTIX							FOOTSLOPE (Convex)							
SITE: 38 (GRAZING UNIT 3)							Siltstone / Shale							
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							SITE - 38							
PHYTOMASS / FUEL LOAD (in kg/ha)							Excl. Sedges & Forbs							
CO-ORDINATES: South							April 2022							
East							15,1							
DIRECTION OF TRANSECT							30° 49' 57,7"							
HEIGHT ABOVE SEA LEVEL (m)							24° 18' 42,8"							
SOIL FORM (Macvicar, 1991)							083°							
VELD TYPE (Mucina & Rutherford, 2006)							1.316m							
							Mispah							
							Nku 4 - Eastern Upper Karoo							
GRASS SPECIES IN CATEGORIES (Palatability indicated by *****)							Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Grass	Toxic	% on Grand Total	
<b>DECREASERS</b>														
No Decreaser species recorded												0		
<b>SUBTOTAL (Decreaser category):</b>												<b>0</b>		
<b>INCREASERS I</b>														
No Increase I species recorded												0		
<b>SUBTOTAL (Increase I category):</b>												<b>0</b>		
<b>INCREASERS II</b>														
<i>Aristida adscensionis</i> Eenjarige Steekgras							1,08	***	**	*			31	
<i>Erneapogon desvauxii</i> Kalkgras							2,07		**				8	
<i>Eragrostis obtusa</i> Dew Grass / Douwatgras							2,94	***					4	
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass							0,84			**			1	
Bare Ground												18		
<b>SUBTOTAL (Increase II category):</b>												<b>62</b>		
<b>TOTAL (Grasses):</b>												<b>62</b>		
SHRUBS (BOSSIES)							COVER							
							Dominant bossies contribution to cover (%)					50		
SHRUB SPECIES IN CATEGORIES (Palatability indicated by *****)							Grazing Index Value	Palatable	Less Palatable	Unpalatable	Low production Shrub	Toxic	Cover (%)	% on Grand Total
<i>Asparagus glauca</i> Bloukattoring							1		**				0,5	4
<i>Berkheya spinosa</i> Vlaktedissel							0,68	***	**				0,1	3
<i>Eriocephalus spinescens</i> Doringkapok							2,12		**				0,5	3
<i>Euryops asparagoides</i> Buldraaibos							1,51			*			0,1	3
<i>Felicia muricata</i> Bloublommetjie							1,5		**				0,1	1
<i>Gorteria alienata</i> (Hirpicium alienatum) Haarbossie							3,16	****					0,1	1
<i>Lycium cinereum</i> Kriedoring							1,63		**				0,5	3
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp							0,5				**		0,1	2
<i>Pentzia incana</i> Ankerkaro							2,88	***					3	16
<i>Phymaspermum parvifolium</i> Witheuningkaro							3,38	****					0,01	**
<i>Roepera incrustata</i> Witkiedoring							1,5			*			0,1	1
<i>Ruschia intricata</i> (Eberlanzia ferox) Doringvygie							1,54		**				0,5	2
<b>TOTAL (Shrubs / Bossies):</b>												<b>38</b>		
<b>TOTAL (Grasses + Shrubs / Bossies)</b>												<b>100</b>		
** Less than 1% of species recorded at site														
Table 13.2: Trends in grass and shrub species composition, from Table 13.1.														
VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)							FOOTSLOPE (Convex)							
							SITE - 37							
							Excl. Sedges & Forbs							
							April 2022							
Categories							%							
Decreaser species							0							
Increase I species							0							
Increase II species							44							
Unidentified species							0							
Bare Ground							18							
Shrubs/Bossies							38							
<b>Total</b>							<b>100</b>							
<b>Veld Condition (Trollope's Method / Tainton's Method)</b>							<b>SEVERELY DEGRADED / SEVERELY OVERGRAZED</b>							
<b>Legend:</b> Decreaser species - Grass and herbaceous species which decrease when veld is over-utilized or burned too frequently														
Increase I species - Grass and herbaceous species which increase when veld is under-utilized or not burned in high enough frequencies														
Increase II species - Grass and herbaceous species which increase when veld is over-utilized or burned in too high frequencies														
Table 13.3: Summary.														
SUMMARY							FOOTSLOPE (Convex)							
							SITE - 37							
							ISPD 5136							
							April 2022							
Tuft distance (cm)							15,1							
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)							High							
Fuel load (4 tons per ha = threshold for burning)							979							
Fuel load potential							Low							
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)							4 (4)							
Grass Species Richness (High is = >15 spp, Low< 10 species)							Low							
Number of Bossies species present per 2500 m <sup>2</sup> (excl. and incl. <1% of species)							11 (12)							
Bossie Species Richness (High is = >15 spp, Low< 10 species)							Low							
Number of bossies and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)							15 (16)							
Plant Species Richness (High is = >60 spp, Low< 20 species)							Low							
Dominant Bossie cover (% soil covered)							5,6% (within range of <10%)							
Dominant species contributing to crown cover (%)							One dominant species, Ankerkaro, contributed in total 100.0% to the dominant bossie crown cover: It contributed 53.5% of the crown cover.							
Number of palatable grasses							2							
Palatability (potential) %							50,0							
Good grazing grasses %							34,8							
Forage value (Grasses only)							30							
Veld Condition Index Total							4,57							
Potential grazing capacity of the agricultural district (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)							32,66							
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%							23,5							
ISPD Veld Condition Assessment							POOR							
Notes														
<b>Management Recommendation</b>							APPLY REGENERATIVE GRAZING PRINCIPLES ACCORDING TO STOCKING GUIDELINES AND SCHEDULES OF ANIMAL GRAZING DAYS AT GRAZING CHARTS FOR EACH CAMP. TAKE INTO ACCOUNT THE TIMEOUS REMOVAL OF SHEEP BEFORE AVAILABLE FORAGE REACHES CRITICAL LEVELS AND PLANNED REST OVER DRY MONTHS.							