

# SOVENTIX SOLAR PV PROJECT IN THE HANOVER DISTRICT, NORTHERN CAPE (DE AAR/HANOVER AREA)

Grazing Potential Assessment on several portions of  
farms in the Hanover District, Emthanjeni Local  
Municipality, Pixley Ka Seme District Municipality,  
Northern Cape Province.

JANUARY 2021  
(REVISED FROM REPORT OF FEBRUARY 2017)



by

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# **SOVENTIX SOLAR PV PROJECT IN THE HANOVER DISTRICT, NORTHERN CAPE**

(DE AAR/HANOVER AREA)

## **Grazing Potential Assessment on several portions of farms in the Hanover District, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province.**

By **S. F. de Wet** Pr.Sci.Nat

**07 JANUARY 2021 (REVISED FROM REPORT OF FEBRUARY 2017)**

### **EXECUTIVE SUMMARY**

Potential grazing capacity, based on different ecological units identified within the soil and wetland delineation by Van den Berg (2017), is estimated for the study area. Current grazing capacity is determined by using the Veld Condition Index method from Du Toit, 1997). Veld condition at the time when the veld condition was assessed was characterised by a dormant Karoo-bossie component, an abundance of bare ground and an almost absence of the grass component. Stocking rates for sheep under the last few years of relative dry years correspond well to guidelines provided by the Department of Agriculture, but it is expected that improvement in veld condition can be expected with not only improved rainfall, but also by applying management recommendations provided in this report. Long term veld condition assessment and annual monitoring under different rainfall conditions is recommended to provide the range of fluctuations envisaged in veld condition and grazing capacity.

## **1. INTRODUCTION**

### **1.1. Terms of Reference**

Enviropulse CC 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 Hennie van den Berg (IRIS International) and
- Grazing management guidelines, based on veld condition.

## 1.2. Study Area – Soventix SA proposed Solar Installation

### Location

The study area is located in the Northern Cape, approximately 32 km from De Aar and 22 km from Hanover, directly northeast of the N10 highway. There are three potential footprints, which are the same size (minimum of 450 ha) as illustrated in the soil report of IRIS International (Van den Berg, 2017).

### Geology and Soils

From the soil study of the Soventix SA Solar PV project at the De Bad area by Van den Berg (2017) the following information has become available.

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

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.

### Vegetation and Veld Condition

The vegetation at the study area is classified as Eastern Upper Karoo (Vegetation unit NKu 4, Mucina and Rutherford (2006). 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) are described in the Karoo – severely degraded, poor, intermediate, good and excellent (Esler *et al*, 2010).

## 2. METHODS

A total of 20 fixed points (illustrated in yellow) were stratified within the study area for evaluation where the grass composition and grass basal cover (as reflected from point to tuft distance). These 20 points were envisaged to represent the general variation with veld condition, that covers Areas PV01 (western side near N10), PV02 (in centre) and PV03 (eastern side). This stratification was for the purpose of providing grazing management guidelines. An additional 5 fixed survey points (illustrated in white) are earmarked for future assessments in Area PV02, which includes the area for the development of a 300MW solar photo-voltaic (PV) facility.



Soil classification at the 20 points marked in yellow, plus approximately 100 more for the purpose of a soil map, was done by Hennie van den Berg (IRIS International) according to the Taxonomic Classification System to soil form level, for each grazing assessment (MacVicar CN (ed.) (1991)).

Point sampling was done by the method of Du Toit (1997) of all plant species along 50-meter lines. The following have been recorded at intervals of one meter: list of forage plants, relative cover and plant canopy cover (%). The grazing index value and veld condition index was determined. Grazing capacity was calculated using the information from the veld condition index method. Grass tuft distances were recorded at each meter interval (nearest tuft distance to monitoring rod).

Vegetation crown cover recorded by Van den Berg (2017), including records of cover from dominant vegetation species would be used with detailed observations in the grazing report to model potential grazing capacity, based on ecological zones that would be delineated for the study area.

Due to very low grass abundance and presence due to recent drought conditions the grass phytomass was not determined.

A photo of the veld at each assessment point is available representing the condition at each assessment. It illustrates the condition at the monitoring point at the time when the survey was conducted for each of the 20 survey points.

The results are available in the appended tables, showing 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.

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 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. A difference 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 differed within the same veld condition assessment of January 2017.

Results from Van den Berg (2017) were studied and applied to obtain ecological and grazing units.

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 can be divided into four main ecological zones, i.e.:

- GRAZING UNIT I = Classes 7 to 10 and Class 12. **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 = Class 11. **Shallow to slightly deeper structured soils** (i.e., unit dominated by Swartland soils).
- GRAZING UNIT III = Classes 3 to 6: **Shallow soils** (i.e., Mispah and Glenrosa soils).
- GRAZING UNIT IV = Classes 1 and 2: **Koppies of sandstone and dolerite**. (i.e., outcrops and Mispah soils).

Colour	No	Ecological zone	Grazing Capacity Range	Median Grazing capacity
	1	GRAZING UNIT I = Classes 7 to 10 and class 12: <b>Medium deep soils at lower parts of the catena, including soils with lime present</b> (i.e., Hutton, Oakleaf, Gamoep, Addo, Augrabies soils. It also includes Valsrivier soils)	5-25 ha/LSU	15 ha/LSU
	2	GRAZING UNIT II = Class 11: <b>Shallow to slightly deeper structured soils</b> (unit dominated by Swartland soils)	10-30 ha/LSU	20 ha/LSU
	3	GRAZING UNIT III = Classes 3 to 6: <b>Shallow soils</b> (i.e., Mispah and Glenrosa soils)	15-55 ha/LSU	35 ha/LSU
	4	GRAZING UNIT IV = Classes 1 and 2: <b>Koppies of sandstone and dolerite</b> (i.e., outcrops and Mispah soils)	20-90 ha/LSU	55 ha/LSU
	5	Permanent wetland		Not assessed

Grazing Unit I with medium deep soil at lower parts of the catena has a median grazing capacity of 15 ha/LAU.

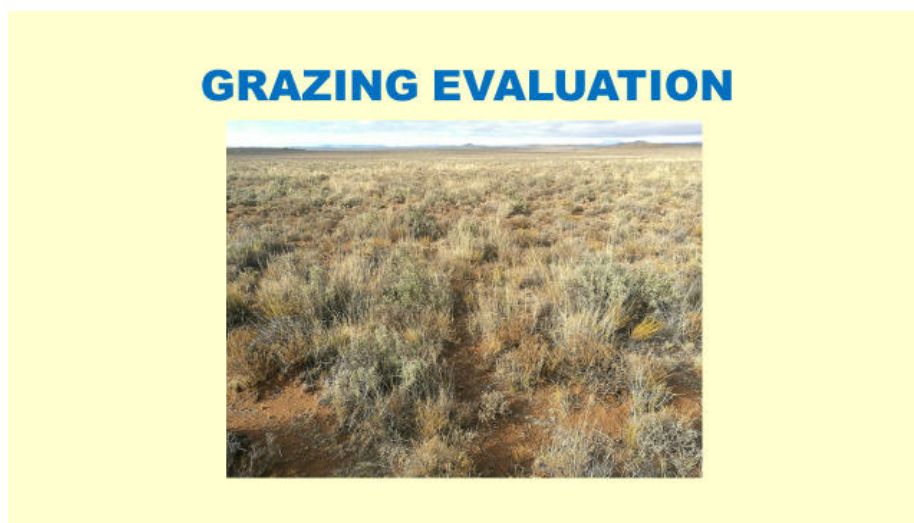
Grazing Unit II with shallow to slightly deeper structured soils has a median grazing capacity of 20 ha/LAU.

Grazing Unit III with shallow soils has a median grazing capacity of 35 ha/LAU.

Grazing Unit IV of the koppies of sandstone and dolerite has a median grazing capacity of 55 ha/LAU.

Permanent wetlands were not assessed with the grazing evaluation, as these are present mostly outside the study area.

### 3.2. Grazing Evaluation



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) are available on appended tables, reflecting grass and Karoo plant composition and cover. Grazing capacity and management recommendations are included.

See appended map of Veld Condition Index Values (Van den Berg, 2017). The veld condition index values obtained from the results were overlain on Landsat images for the study area. The grazing index zones are divided 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.

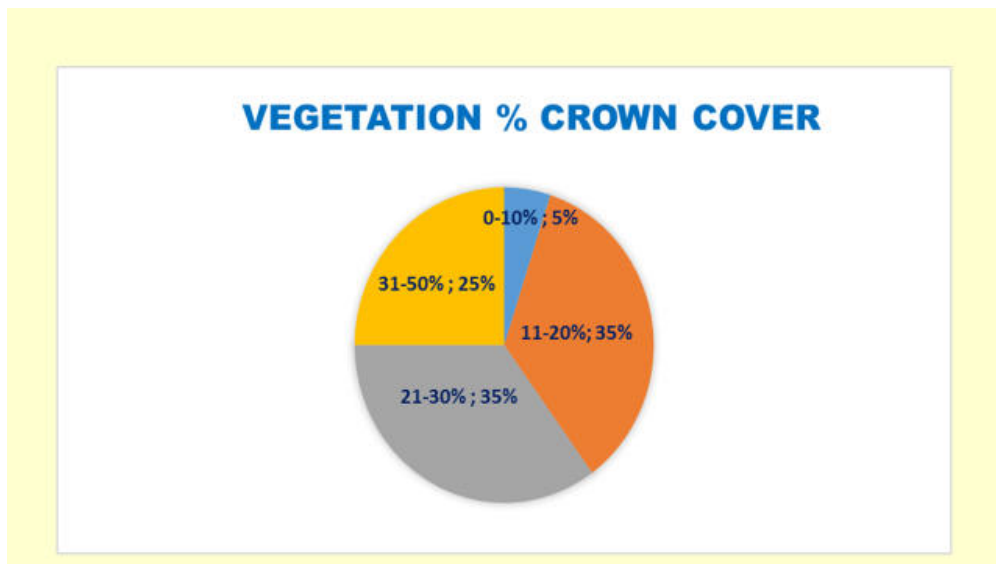
It must be born in mind that veld condition is a reflection of both rainfall and current management (and other factors discussed above).

Colour	No	Veld Condition Index Zone	Veld Condition Index Range	Median Veld Condition Index
	1	GOOD	185-238	211.5
	2	INTERMEDIATE	105-187	146.5
	3	POOR	66-147	106.9

The last few years the rainfall was below the long term average for the region. Besides that, the condition reflected by the results of this report is also strongly affected by the seasonal presence of plants, especially annuals (e.g., “opslag”).

At the time when the survey was undertaken (early January 2017) the vegetation was still mostly dormant due to little rain received. Bare ground was common and grass species richness low. Grass abundance could therefore potentially be very different (better) under good rainfall conditions in relation to what is reflected in the 2017 results.

95% of the vegetation crown cover recorded over the 20 survey sites were below 50% cover, with 5% of the survey sites that had less than 10% crown cover. This was mostly representing the non-grass component (Karoo-bossies). See illustrated below.



Veld condition index values reflect therefore largely the dormant status of vegetation at the time when the assessments were done, i.e., the non-grass perennial Karoo-bossie component, without ‘opslag’ and other Karoo plants that are common after good rains.

Dominant Plant Species – Bosies & Grasses:

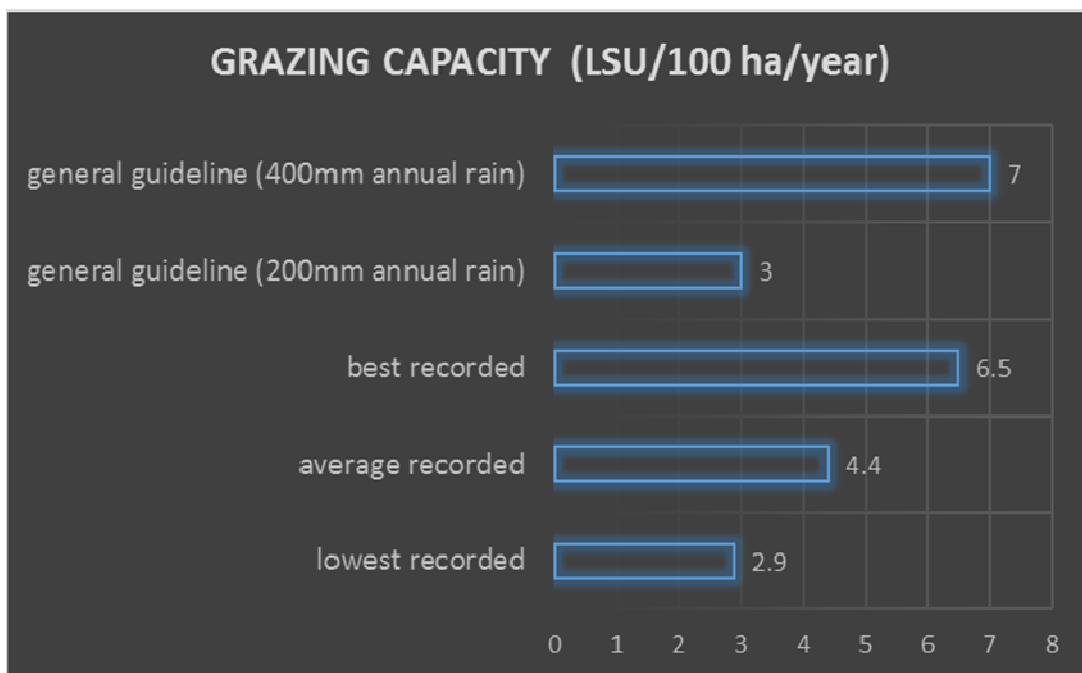
- Doringkapok
- Haasgras
- Ankerkaroo
- Doringvygie
- Wortelsaadgras
- Kapokbossie
- Douvatgras

Veld condition is mostly poor to intermediate due to low grass cover and current grass composition reflected in veld condition assessment for January 2017 represent the abundance of a few species that have relative poor grazing value (Dwarf Grass/Haasgras, *Oropetium capense* and Creeping Carrotseed Grass, *Tragus koelerioides*).

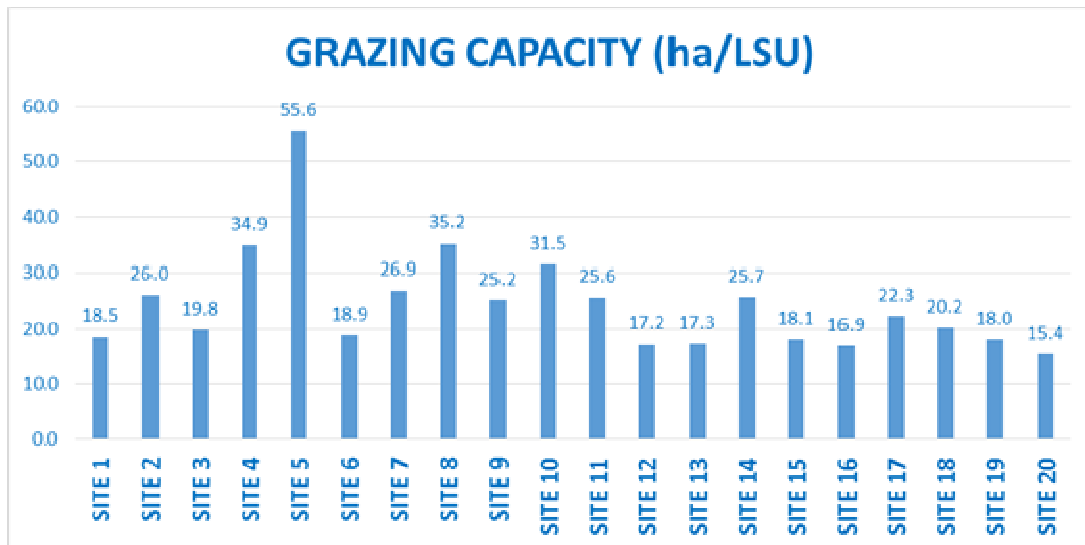
A few other grasses are listed in the appended tables that are present but none of those were sufficiently abundant to contribute significantly to improved grazing capacity. One small grass species, *Pentameris montana*, has been identified as a first collection record for its distribution for the National Herbarium (SANBI).

**3.3. Grazing Management Recommendations**

Current grazing capacity based on the results from the evaluation in January 2017 are illustrated below.

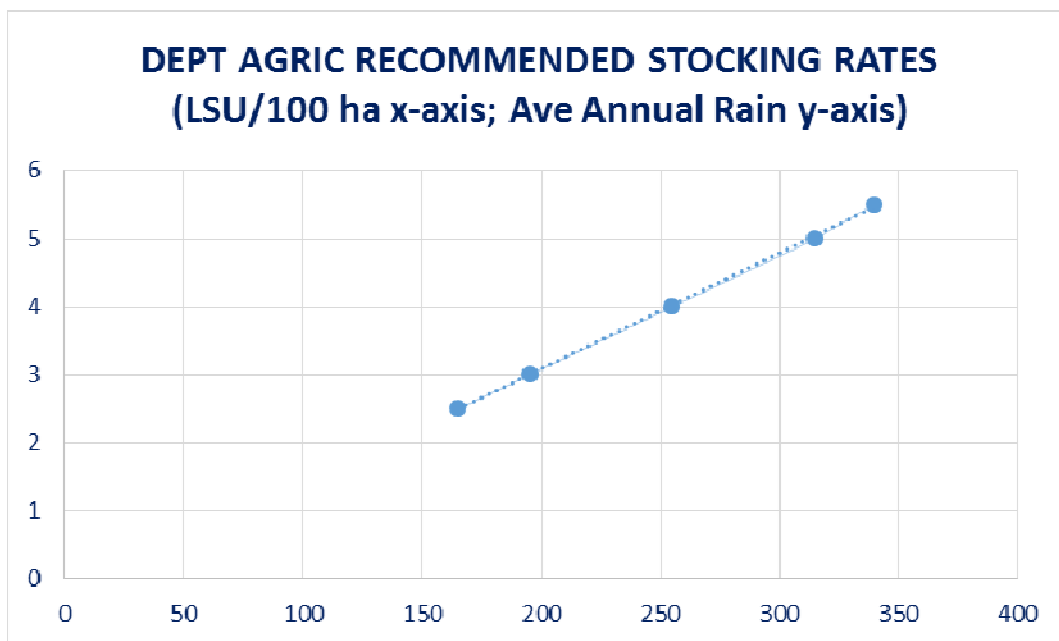






A grazing capacity of between 15 and 17 ha/LAU at better veld conditions, or an average of just less than 23 ha/LAU over all veld conditions in the study area would therefore be applicable for current rainfall conditions (excluding info from Site 5, where extreme poor conditions were observed). If only sheep were accommodated, it would translate into less than 1760 sheep on 8000 ha under current rainfall conditions. Please note: This is applicable if only sheep graze within an area of 8000 ha, but other grazers also utilise the veld, such as horses, cattle and game, and the necessary adaption should be made to have the total number of grazers and stocking rate that correspond with the current grazing capacity.

Current stocking rates the last few years for sheep therefore correspond well with the guidelines (from Esler et al, 2010) recommended by the Department of Agriculture. See figure below.



However, all grazers present on the De Bad farm should be included when the current grazing capacity is applied and rotational resting per camp is recommended for periods up to 12 months at a frequency of once every four years. This will assist to improve grass seeding and an improvement in grass production potential of palatable and will improve the grass component with important forage species. This recommendation applies to all the camps. Follow-up grazing assessments and annual monitoring of veld condition is recommended to record veld condition and grazing capacity under different rainfall conditions.

#### 4. REFERENCES

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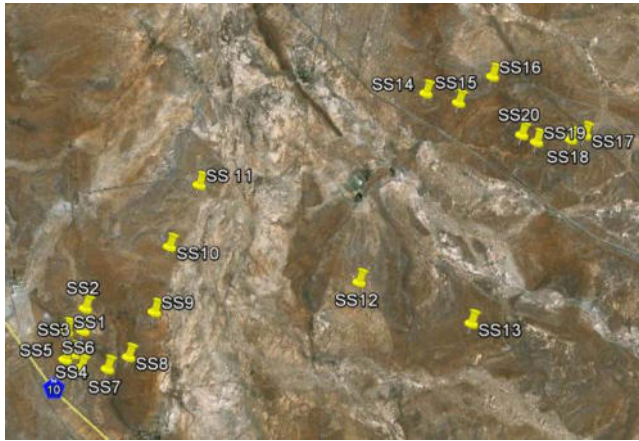
## **APPENDIX A**

### **Site Reports**



Reg. nr: CK98/46100/23  
 Sole member: S.F. de Wet

## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
 30° 53' 05.3"  
 24° 14' 26.9"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	H107
<b>SITE NUMBER</b>	Site 1
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Mispah
<b>DATE VISITED</b>	07/01/2017

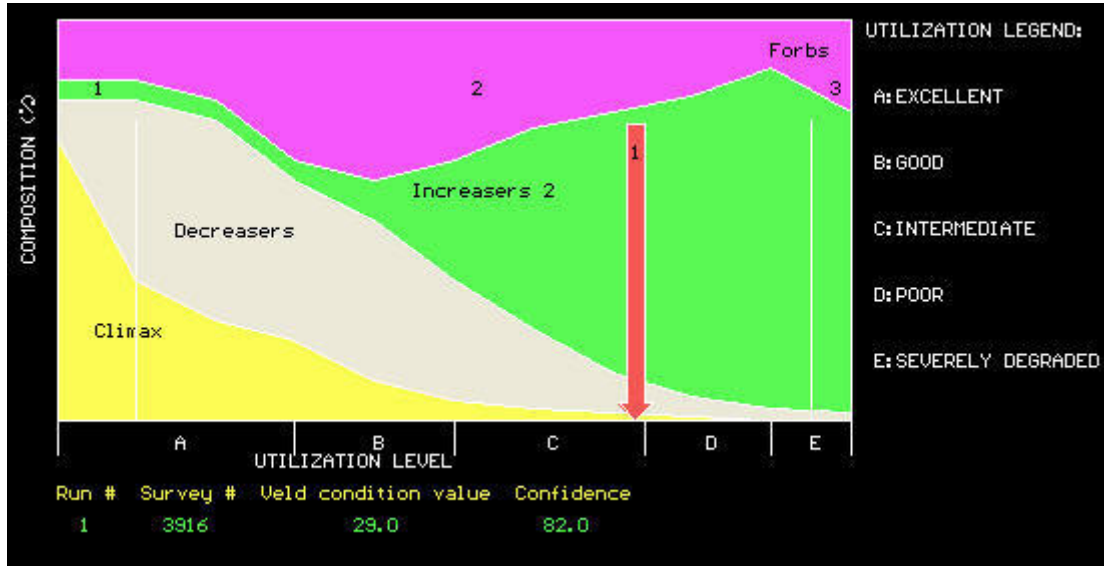


07/01/2017

<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 = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 24%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 23%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 17%</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>	Ankerkaroo (60%) & Doringkapok (30%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	10 species (11 incl. <1% species) = Low
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL</b>	186.31
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	19.16 ha/LSU

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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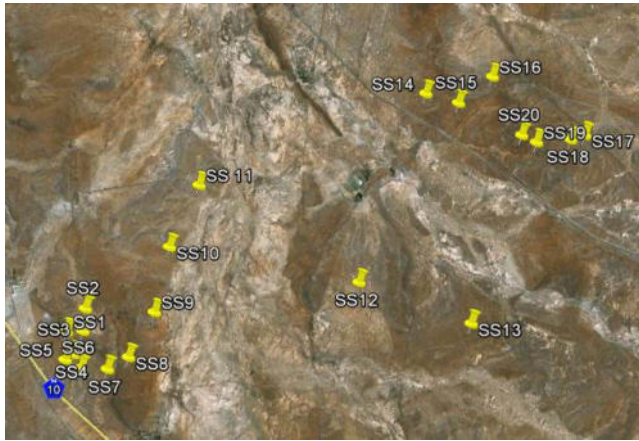
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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

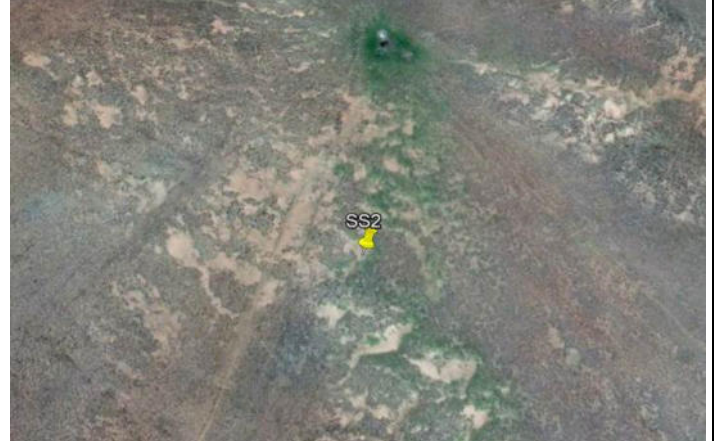


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 Sole member: S.F. de Wet


## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

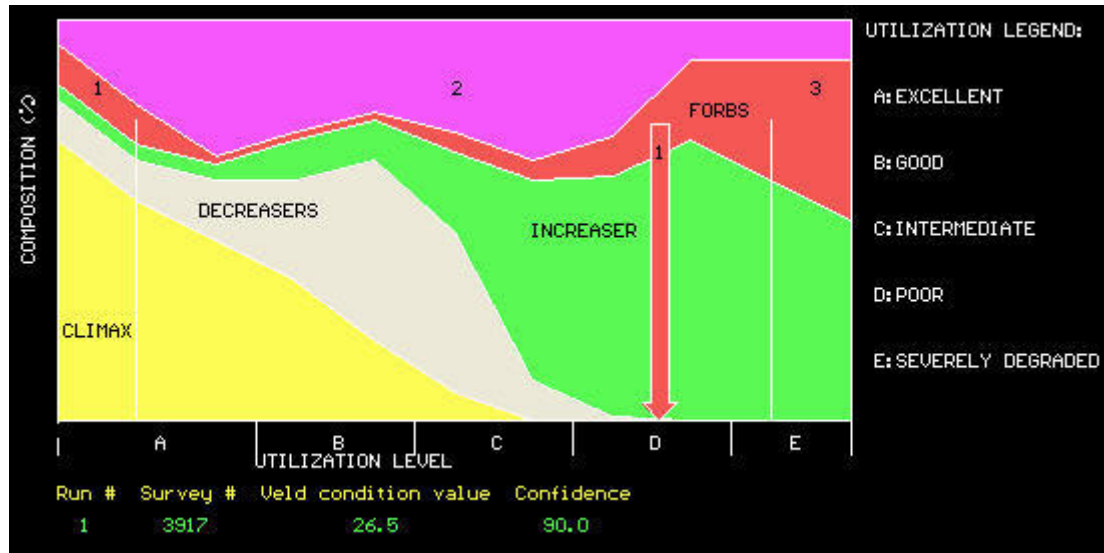


GOOGLE IMAGE OF THE SITE  
 30° 52' 50.8"  
 24° 14' 41.5"

<b>AREA</b>	De Bad - Soentix	 07/01/2017
<b>AREA NUMBER</b>	H112	
<b>SITE NUMBER</b>	Site 2	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Swartland	
<b>DATE VISITED</b>	07/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Cynodon hirsutus</i> – 2%</li> <li>• <i>Eragrostis chloromelas</i> (Narrow Curly Leaf) – 2%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 1%</li> <li>• (Bare Ground – 52%)</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	28.2 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaro (95%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	9 species (13 incl. <1% species) = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Poor	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	136.50	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	26.15 ha/LSU	

## MANAGEMENT RECOMMENDATION

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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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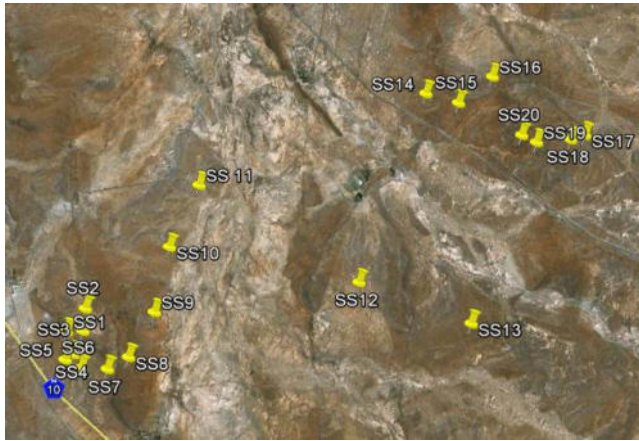
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Reg. nr: CK98/46100/23  
Sole member: S.F. de Wet

## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

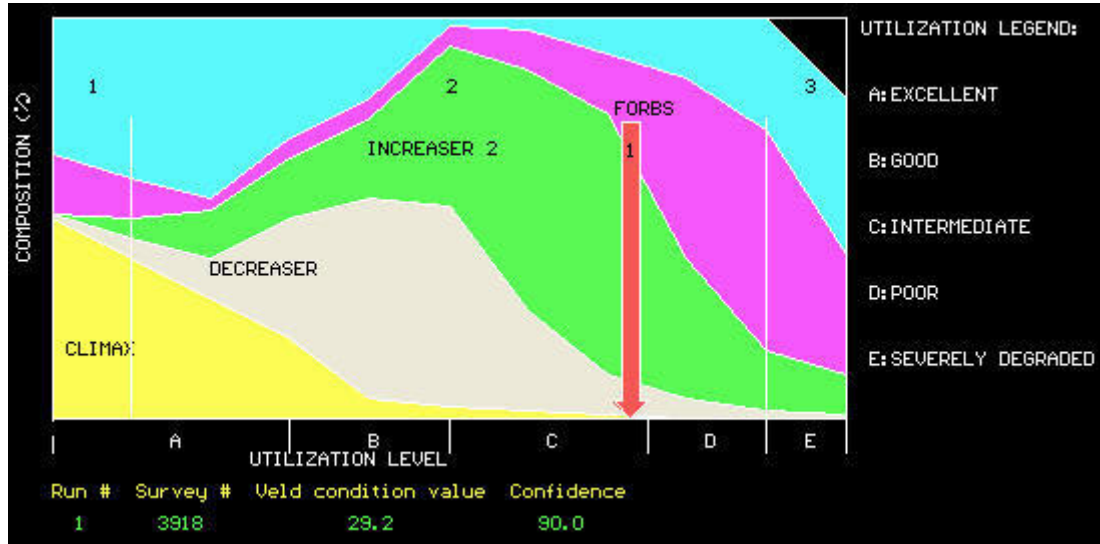


GOOGLE IMAGE OF THE SITE  
30° 53' 06.7"  
24° 14' 36.4"

<b>AREA</b>	De Bad - Soventix	<p style="text-align: center;">07/01/2017</p>
<b>AREA NUMBER</b>	H110	
<b>SITE NUMBER</b>	Site 3	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Dolerite - Mispah	
<b>DATE VISITED</b>	07/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Aristida diffusa</i> (Iron Grass) – 17%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 14%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 12%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	12.9 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringvygie (60%) & Kapokbossie (40%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 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 Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	174.32	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	20.48 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science*. Pp 337-340.

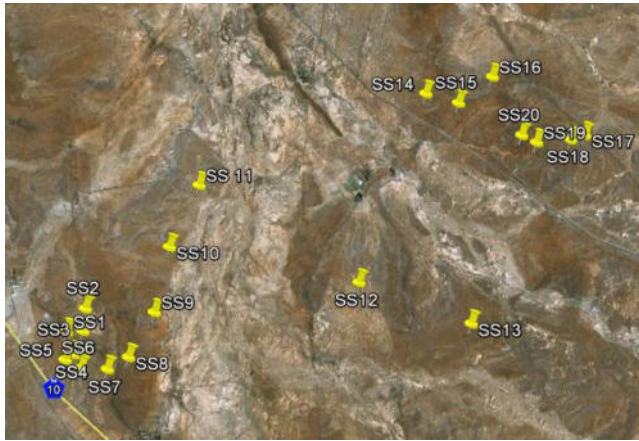
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

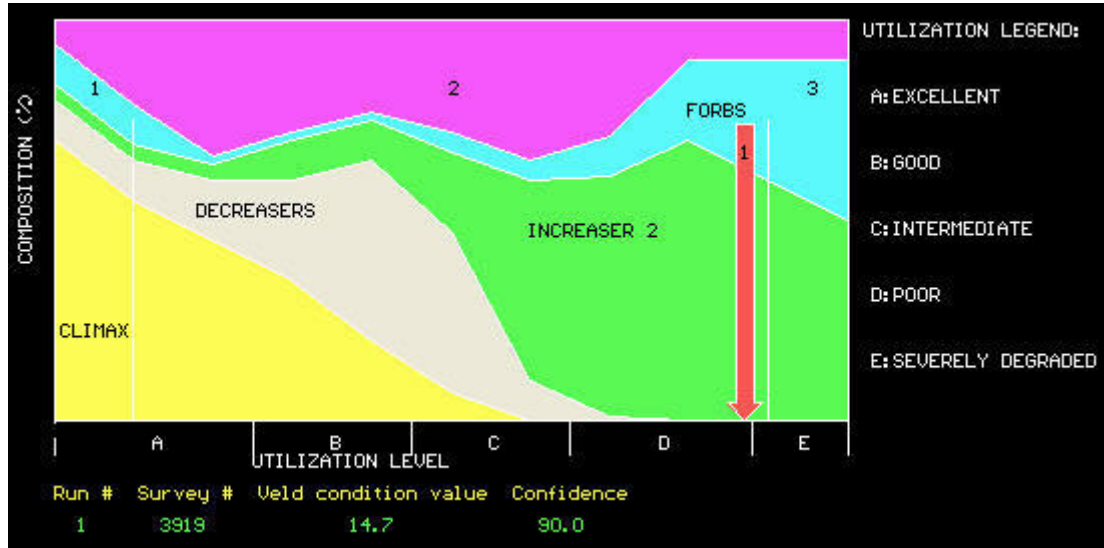


GOOGLE IMAGE OF THE SITE  
30° 53' 20.1"  
24° 14' 30.5"

<b>AREA</b>	De Bad - Soentix	 <p>07/01/2017</p>
<b>AREA NUMBER</b>	H106	
<b>SITE NUMBER</b>	Site 4	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Sandstone - Mispah	
<b>DATE VISITED</b>	07/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 54%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 3%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 2%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	14.4 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	0 - 10%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringkapok (50%) & Kapokbossie (50%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	12 species= Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Poor	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	105.60	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	33.81 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science*. Pp 337-340.

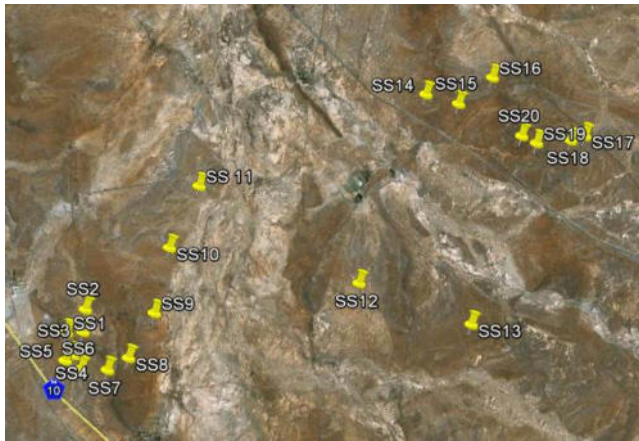
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)




GOOGLE IMAGE OF THE FOCUS AREA



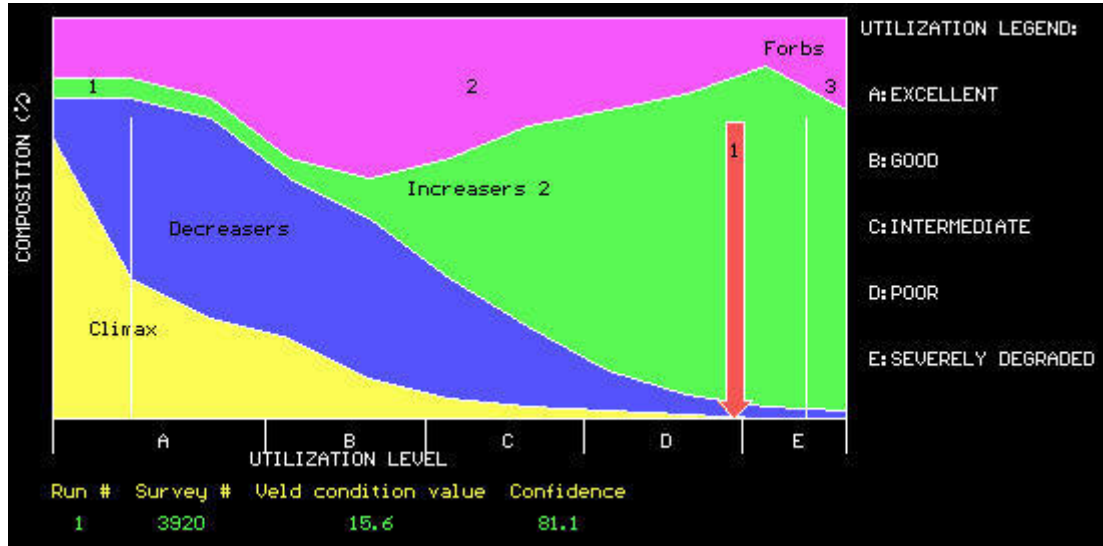
GOOGLE IMAGE OF THE SITE

30° 53' 23.9"  
 24° 14' 25.4"

<b>AREA</b>	De Bad - Soventix	
<b>AREA NUMBER</b>	H105	
<b>SITE NUMBER</b>	Site 5	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Mispah	
<b>DATE VISITED</b>	07/01/2017	
	07/01/2017	
<b>GRASS SPECIES RICHNESS ((Number of grass species per 100 m<sup>2</sup>): High is = &gt;15 spp, Low &lt; 10 species)</b>	2 species = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 18%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 2%</li> <li>• (Bare Ground – 54%)</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	24.3 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringkapok (90%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	8 species (9 incl. <1% species)= Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Poor	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	66.38	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	53.78 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

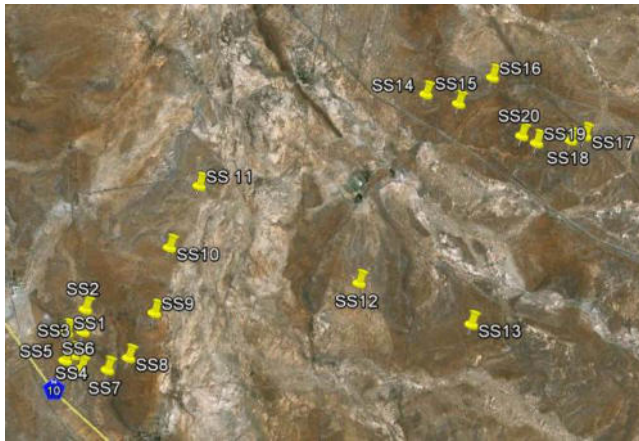
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)




GOOGLE IMAGE OF THE FOCUS AREA



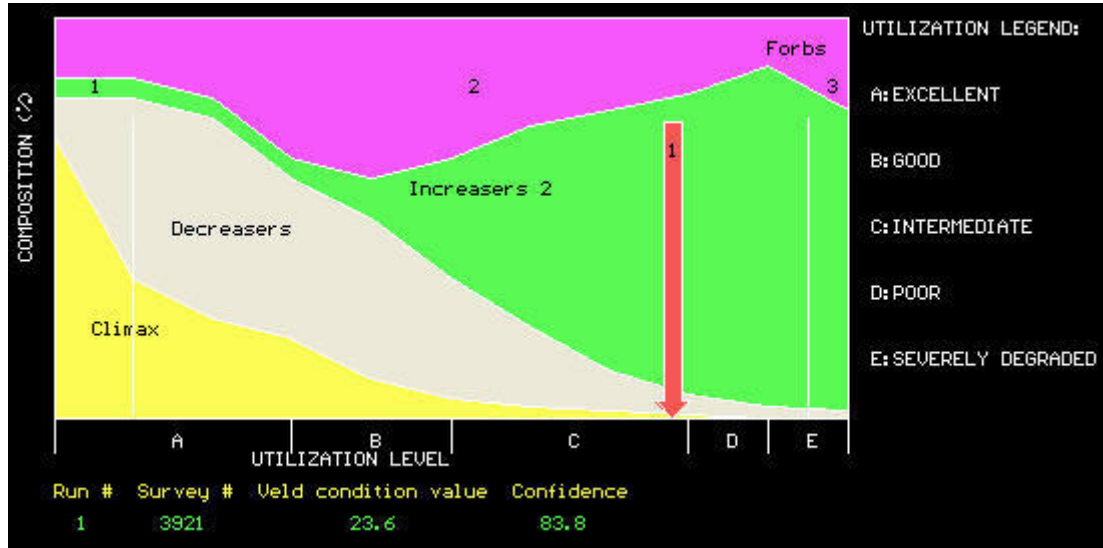
GOOGLE IMAGE OF THE SITE

30° 53' 29.2"  
 24° 14' 37.3"

<b>AREA</b>	De Bad - Soventix	 07/01/2017
<b>AREA NUMBER</b>	H104	
<b>SITE NUMBER</b>	Site 6	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Mispah	
<b>DATE VISITED</b>	07/01/2017	
<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)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 40%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 10%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 3%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	11.2 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	31 - 50%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringkapok (50%) & Doringvygie (50%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	12 species = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	153.21	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	23.30 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** 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.

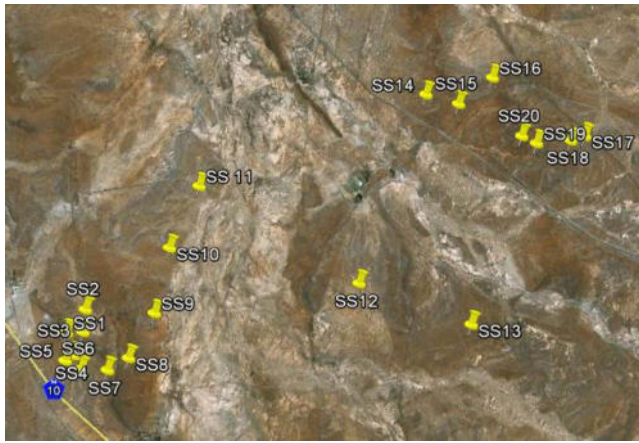
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.





Reg. nr: CK98/46100/23  
Sole member: S.F. de Wet


## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

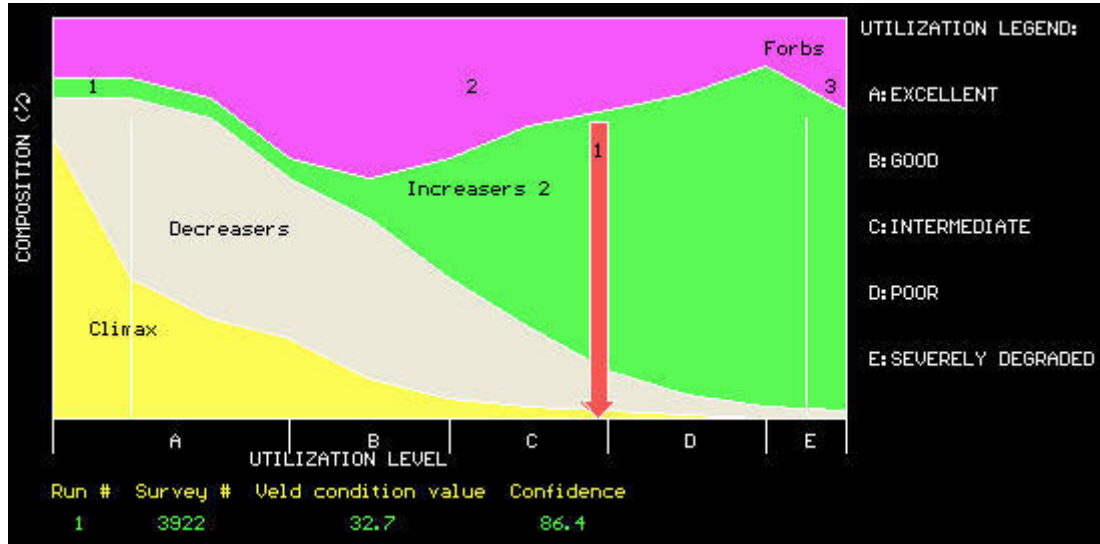


GOOGLE IMAGE OF THE SITE  
30° 53' 30.6"  
24° 14' 57.7"

<b>AREA</b>	De Bad - Soventix	
<b>AREA NUMBER</b>	H099	
<b>SITE NUMBER</b>	Site 7	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone/Shale - Mispah	
<b>DATE VISITED</b>	07/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 48%</li> <li>• <i>Eragrostis lehmanniana</i> (Lehmann's Love Grass) – 20%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 2%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	4.6cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (90%) & Doringkapok (10%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 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 Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	195.66	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	18.25 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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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.

**DU TOIT, P. C. V. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

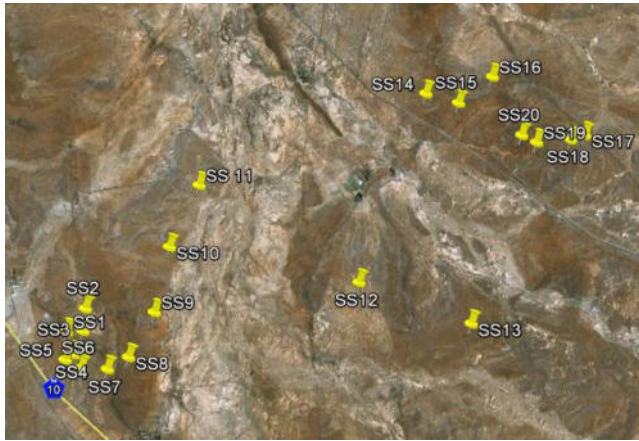
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

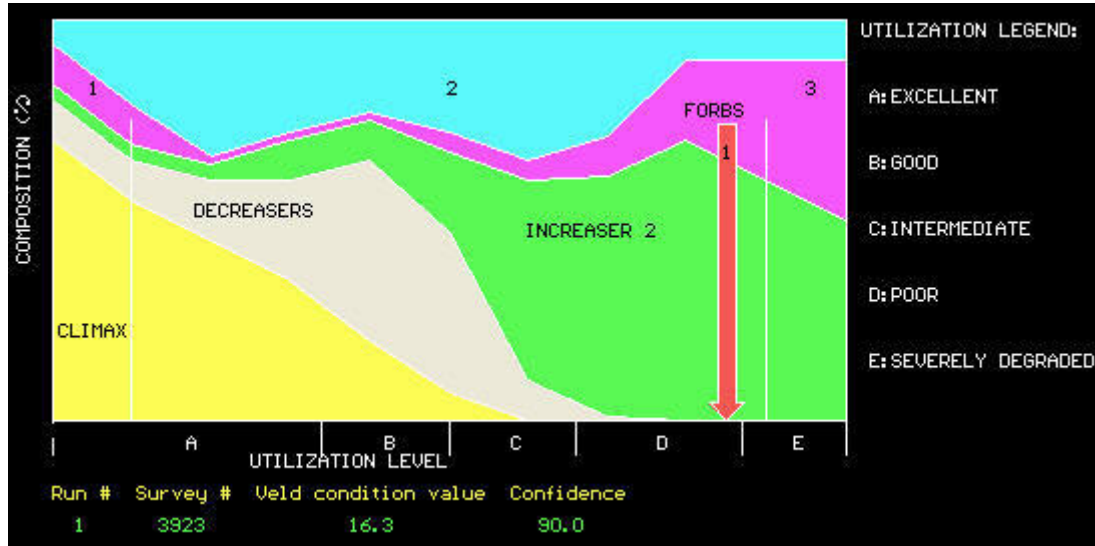


GOOGLE IMAGE OF THE SITE  
 30° 53' 23.3"  
 24° 15' 13.8"

<b>AREA</b>	De Bad - Soventix	<p style="text-align: center;">07/01/2017</p>
<b>AREA NUMBER</b>	H121	
<b>SITE NUMBER</b>	Site 8	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Dolerite - Hutton	
<b>DATE VISITED</b>	07/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 75%</li> <li>• <i>Aristida diffusa</i> (Iron Grass) – 6%</li> <li>• <i>Pentameris montana</i> – 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>	2.8 cm = Low	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11 - 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo, Voeltjie-kan-nie-sit-nie, Doringkapok and Doringvygie (each 25%) & Doringkapok (10%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	10 species (12 incl. <1% species) = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	135.24	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	26.40 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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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.

**DU TOIT, P. C. V. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

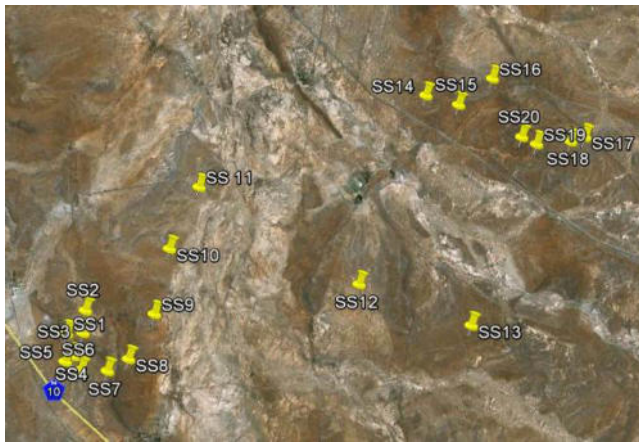
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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Reg. nr: CK98/46100/23  
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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

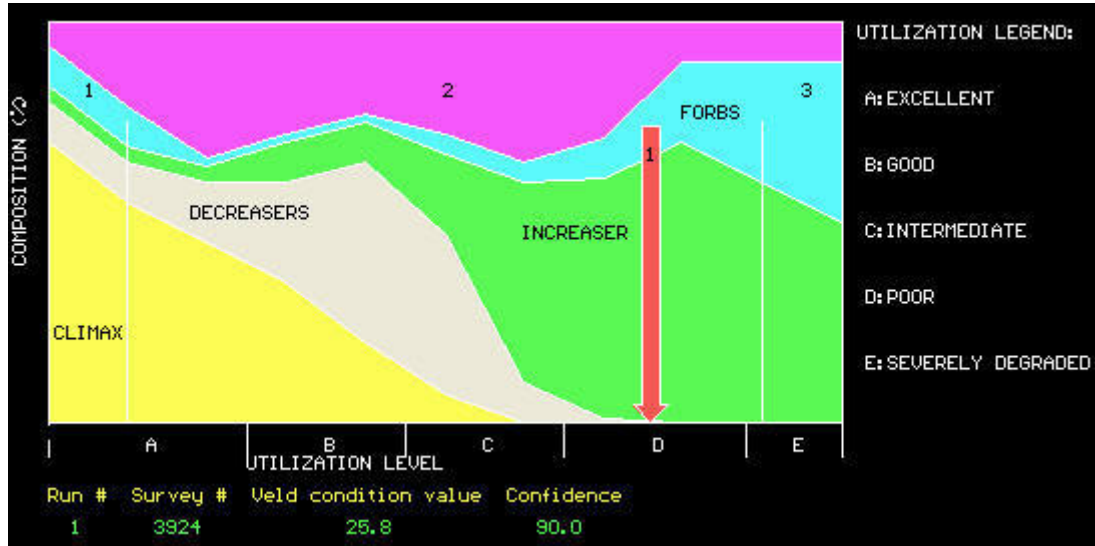


GOOGLE IMAGE OF THE SITE  
 30° 52' 54.2"  
 24° 15' 33.6"

<b>AREA</b>	De Bad - Soventix	 07/01/2017
<b>AREA NUMBER</b>	H119	
<b>SITE NUMBER</b>	Site 9	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Sandstone - Mispah	
<b>DATE VISITED</b>	07/01/2017	
<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)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 13%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 7%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 2%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	20.5 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	31- 50%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (10%), Doringvygie (60%) & Doringkapok (30%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	15 species = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Poor	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	147.43	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	24.22 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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**LITERATURE**

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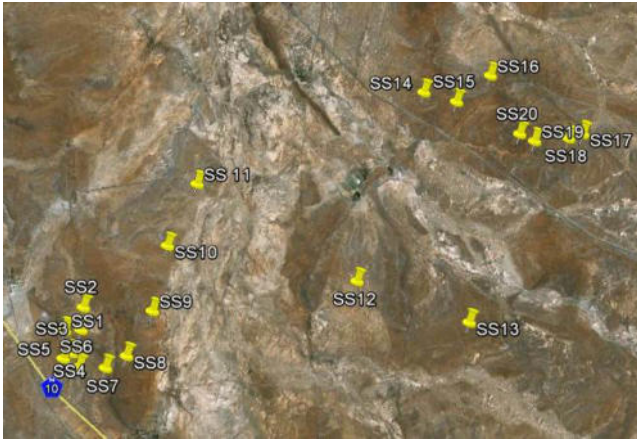
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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Reg. nr: CK98/46100/23  
 Sole member: S.F. de Wet

## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
 30° 52' 11.5"  
 24° 15' 46.1"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	H086
<b>SITE NUMBER</b>	Site 10
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Mispah
<b>DATE VISITED</b>	08/01/2017

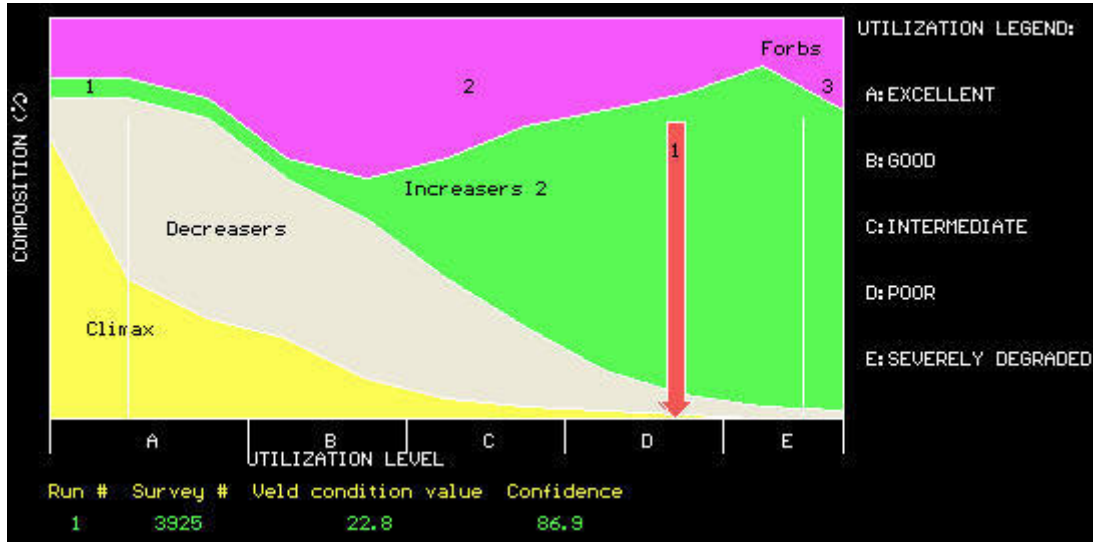


08/01/2017

<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 = Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 15%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 12%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 2%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	20.9 cm = High
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11- 20%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (50%) & Doringkapok (50%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	12 species (14 incl. <1% species) = Low
<b>VELD CONDITION (according to Tainton, 1988)</b>	Poor
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL</b>	107.15
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	33.32 ha/LSU

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



**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. 1993.** 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.

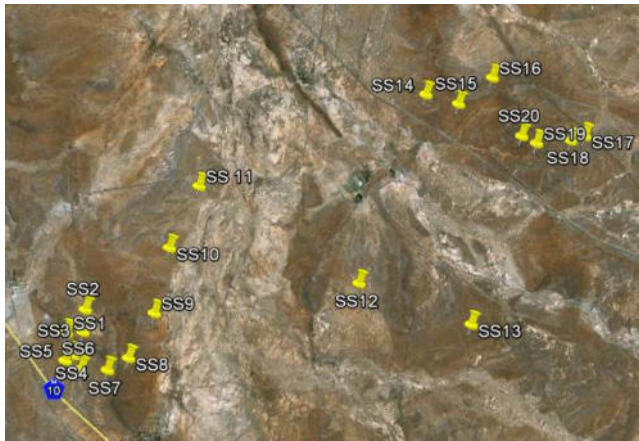
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.





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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA



GOOGLE IMAGE OF THE SITE  
 30° 51' 30.6"  
 24° 16' 09.9"

<b>AREA</b>	De Bad - Soventix
<b>AREA NUMBER</b>	H080
<b>SITE NUMBER</b>	Site 11
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Swartland
<b>DATE VISITED</b>	06/01/2017

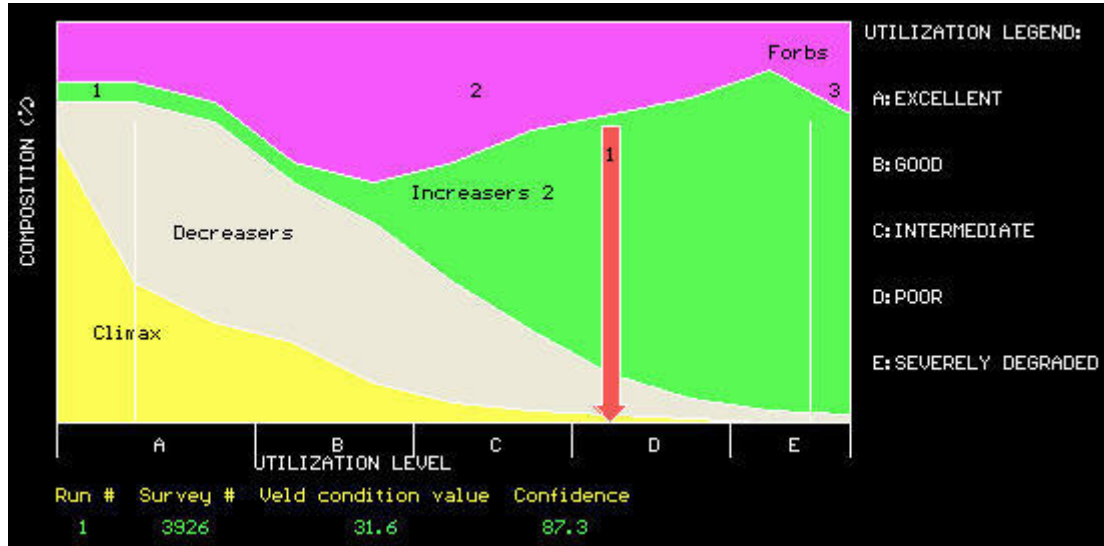


06/01/2017

<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 (5 incl. <1% species)= Low
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 17%</li> <li>• <i>Cynodon sp.</i> – 6%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 1%</li> </ul>
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	21.2 cm = High
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21- 30%
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	'Honderdpoetbossie' (50%), Katdoring (30%), Doringvygie (10%) & Blomkool Ganna (10%)
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	15 species (17 incl. <1% species) = Low
<b>VELD CONDITION (according to Tainton, 1988)</b>	Poor
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.
<b>VELD CONDITION INDEX TOTAL</b>	168.67
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	21.17 ha/LSU

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

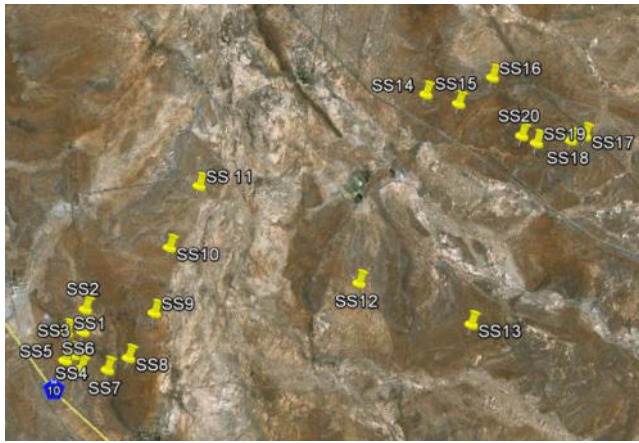
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

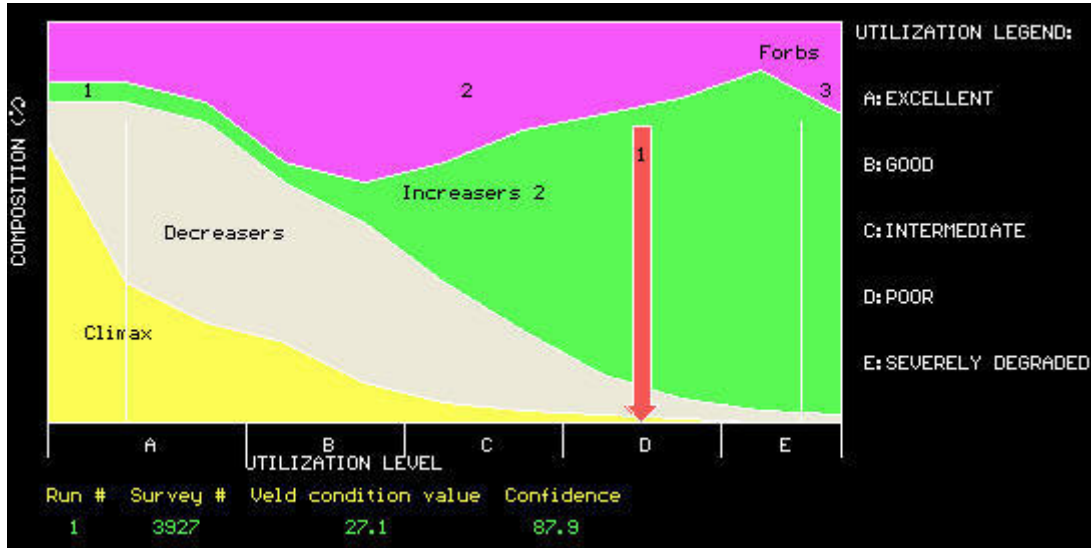


GOOGLE IMAGE OF THE SITE  
 30° 52' 39.1"  
 24° 18' 11.9"

<b>AREA</b>	De Bad - Soventix	 04/01/2017
<b>AREA NUMBER</b>	H049	
<b>SITE NUMBER</b>	Site 12	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Gamoep	
<b>DATE VISITED</b>	04/01/2017	
<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)</b>	<ul style="list-style-type: none"> <li>• <i>Melica decumbens</i> (Dronkgras) – 27%</li> <li>• <i>Stipagrostis cf. obtusa</i> (Small Bushman Grass) – 6%</li> <li>• <i>cf. Eragrostis rigidior</i> (Curly Leaf) – 3%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	18.2 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21- 30%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Ankerkaroo (50%), Doringkapok (30%) & Doringvygie (10%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	18 species = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate - Poor	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	217.29	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	16.43 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



**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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science*. Pp 337-340.

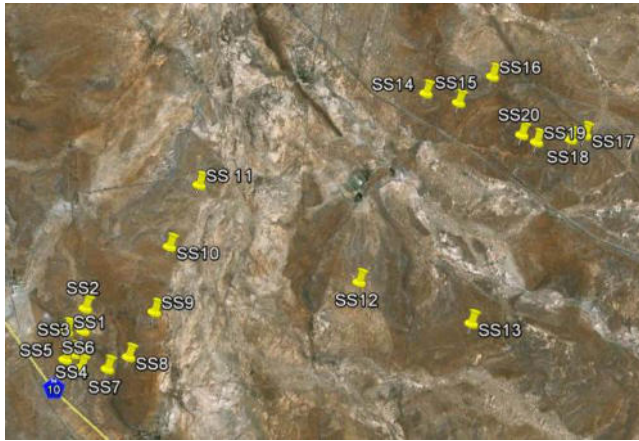
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

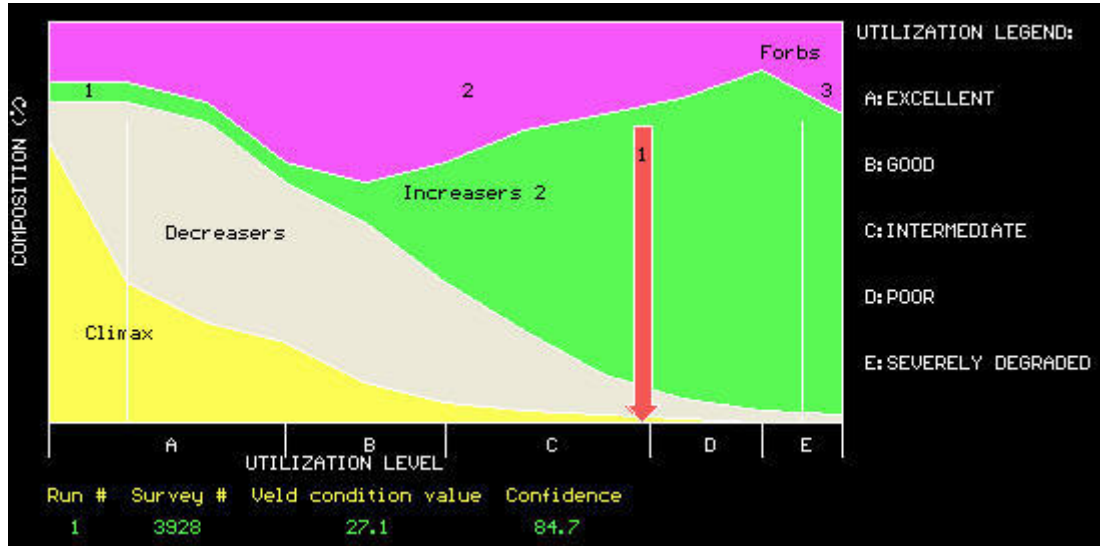


GOOGLE IMAGE OF THE SITE  
 30° 53' 07.6"  
 24° 19' 36.3"

<b>AREA</b>	De Bad - Soventix	 05/01/2017
<b>AREA NUMBER</b>	H070	
<b>SITE NUMBER</b>	Site 13	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Mispah	
<b>DATE VISITED</b>	05/01/2017	
<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 (7 incl. <1% species) = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 32%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 12%</li> <li>• <i>Melica decumbens</i> (Dronkgras) – 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>	10.2 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21- 30%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	'Doringkapok (80%) & Doringvygie (20%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	14 species (20 incl. <1% species) = Low (Medium)	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	187.36	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	19.05 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

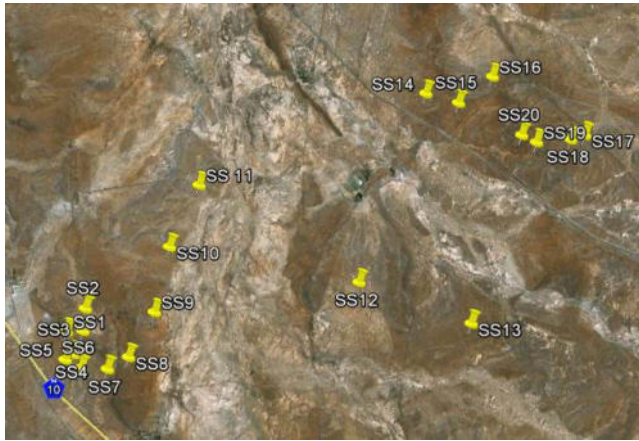
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

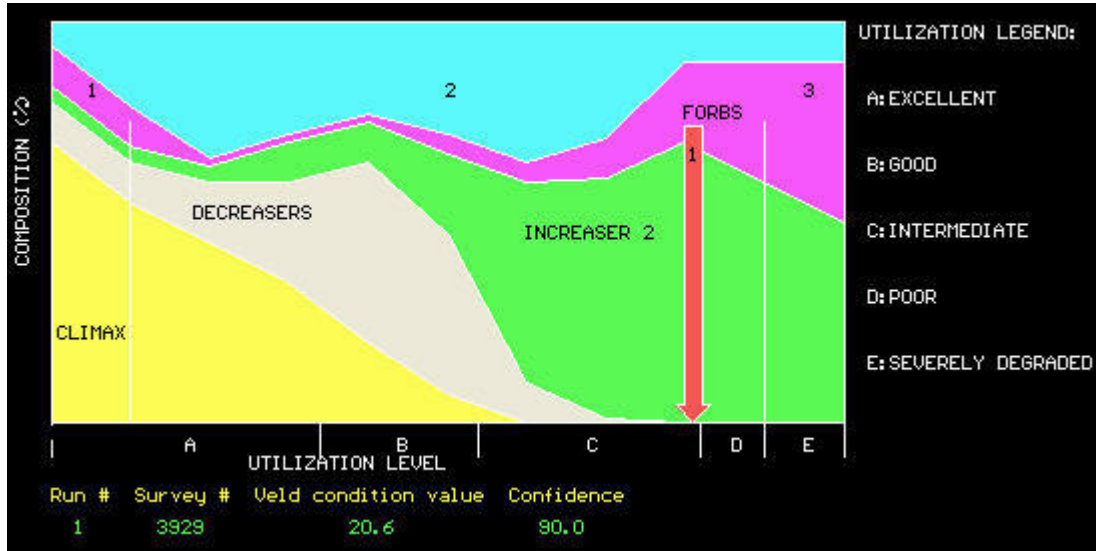


GOOGLE IMAGE OF THE SITE  
30° 50' 32.4"  
24° 19' 09.9"

<b>AREA</b>	De Bad - Soventix	 <p>07/01/2017</p>
<b>AREA NUMBER</b>	H032	
<b>SITE NUMBER</b>	Site 14	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Dolerite - Glenrosa	
<b>DATE VISITED</b>	07/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 49%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 7%</li> <li>• <i>Stipagrostis cf. obtusa</i> (Small Bushman Grass) – 3%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	7.9 cm = Medium	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21- 30%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Kapokbos (70%), Brosdoring (15%) & Doringvygie (13%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 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 Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	150.65	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	23.70 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



**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. 1993.** 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.

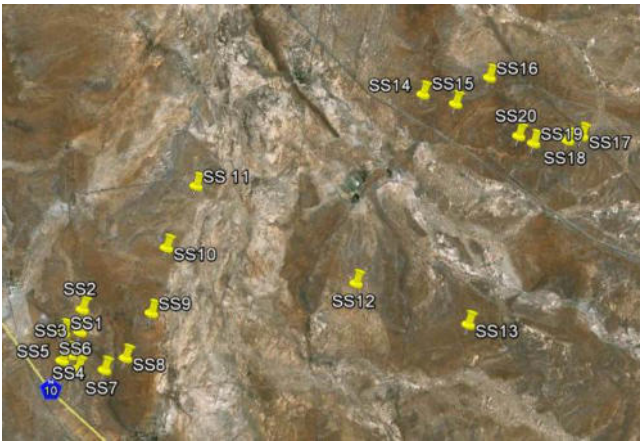
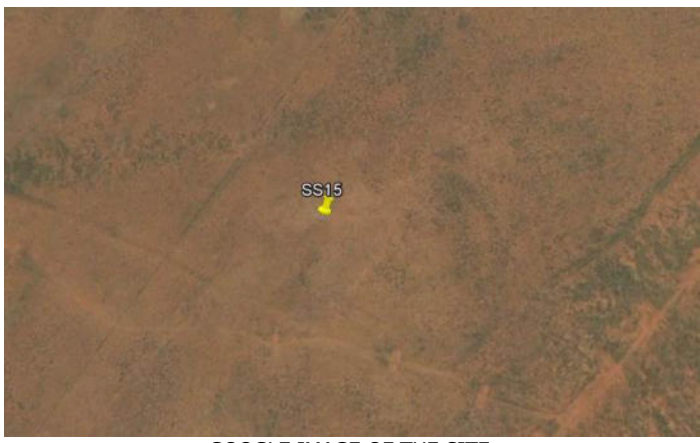

**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.





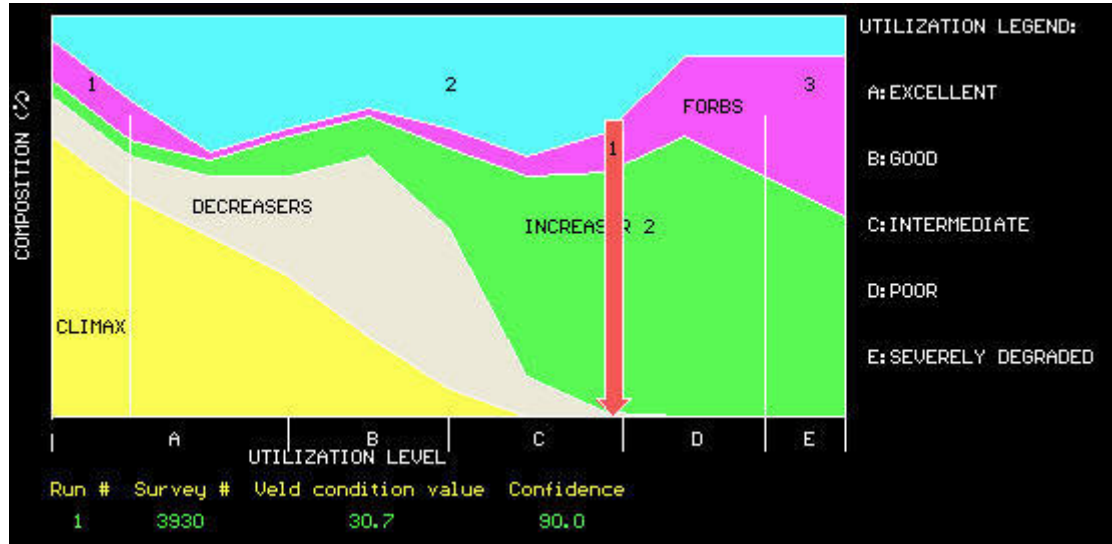
Reg. nr: CK98/46100/23  
 Sole member: S.F. de Wet

## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)

 <p>GOOGLE IMAGE OF THE FOCUS AREA</p>	 <p>GOOGLE IMAGE OF THE SITE        30° 50' 39.6"        24° 19' 34.4"</p>	
<b>AREA</b>	De Bad - Soventix	 <p>05/01/2017</p>
<b>AREA NUMBER</b>	H043	
<b>SITE NUMBER</b>	Site 15	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Dolerite - Mispah	
<b>DATE VISITED</b>	05/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Microchloa caffra</i> (Pincushion Grass) – 18%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 17%</li> <li>• <i>Melica decumbens</i> (Dronkgras) – 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>	6.7 cm = Medium	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21- 30%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringvygie (90%) & 10% Doringkapok	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	14 species = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	212.34	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	16.81 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

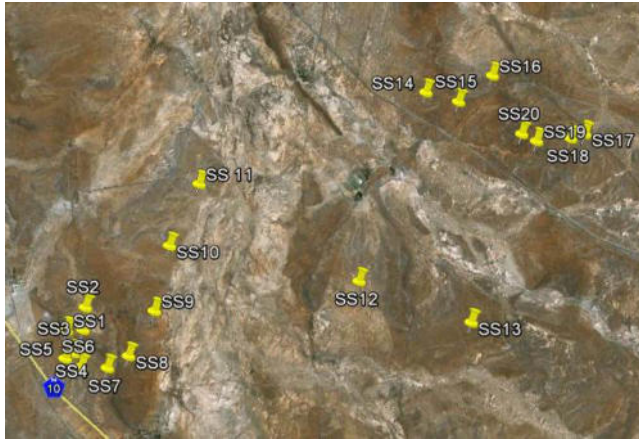
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



Reg. nr: CK98/46100/23  
Sole member: S.F. de Wet


## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

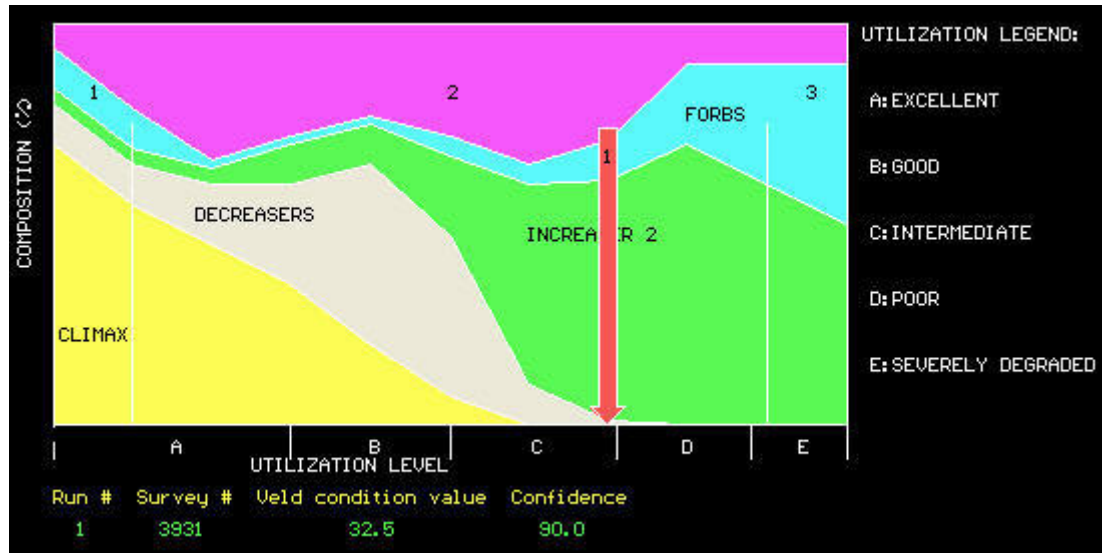


GOOGLE IMAGE OF THE SITE  
30° 50' 22.3"  
24° 20' 02.0"

<b>AREA</b>	De Bad - Soventix	 06/01/2017
<b>AREA NUMBER</b>	H020	
<b>SITE NUMBER</b>	Site 16	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Sandstone - Mispah	
<b>DATE VISITED</b>	06/01/2017	
<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 = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Aristida diffusa</i> (Iron Grass) – 27%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 24%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 8%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	8.7 cm = Medium	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21- 30%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Kapokbos (50%) & Doringvygie (50%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	11 species = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	204.97	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	17.42 ha/LSU	

## MANAGEMENT RECOMMENDATION

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

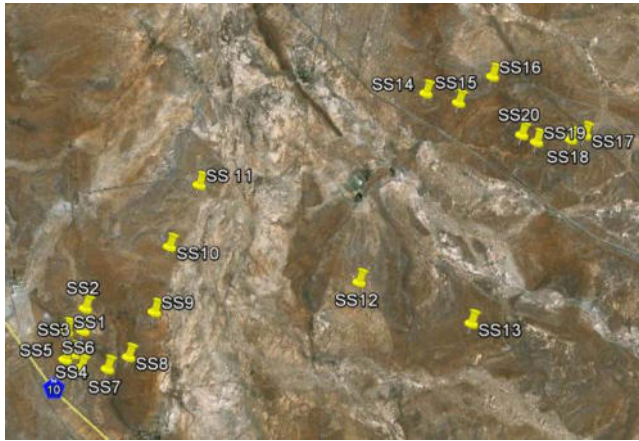
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

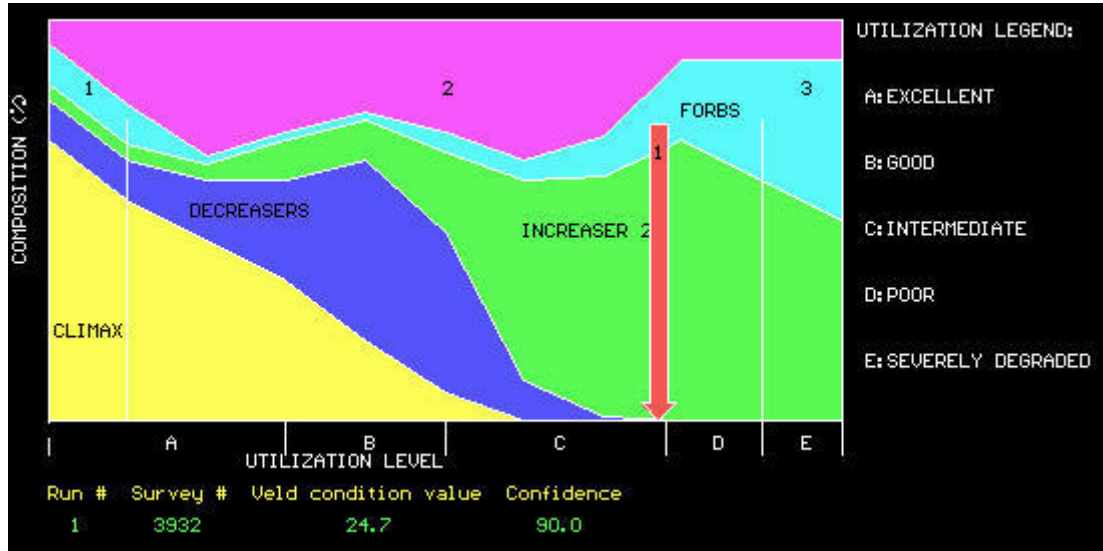


GOOGLE IMAGE OF THE SITE  
 30° 51' 03.8"  
 24° 21' 11.6"

<b>AREA</b>	De Bad - Soventix	 06/01/2017
<b>AREA NUMBER</b>	H013	
<b>SITE NUMBER</b>	Site 17	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Sandstone - Mispah	
<b>DATE VISITED</b>	06/01/2017	
<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 (8 incl. <1% species) = Low	
<b>DOMINANT GRASS SPECIES (FREQUENCY ABUNDANCE)</b>	<ul style="list-style-type: none"> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 28%</li> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 25%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 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>	6.3 cm = Medium	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	11- 20%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Kapokbos (90%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	13 species (18 incl. <1% species) = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	155.46	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	22.96 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



**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. 1993.** A model to estimate grazing index values for Karoo plants. *South African Journal of Science.* Pp 337-340.

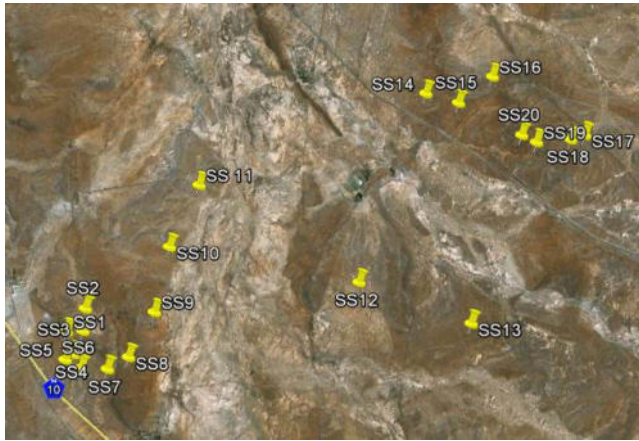
**MUCINA, L. & RUTHERFORD, M.C., 2006.** The Vegetation of South Africa, Lesotho and Swaziland. Tien Wah Press, Singapore. 807 pp.

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



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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

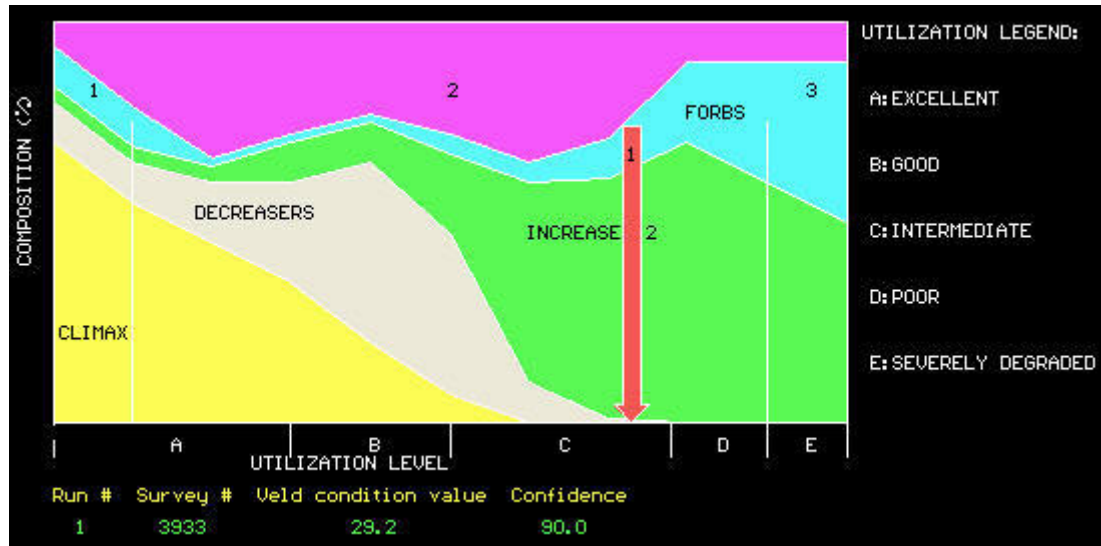


GOOGLE IMAGE OF THE SITE  
 30° 51' 07.0"  
 24° 21' 00.8"

<b>AREA</b>	De Bad - Soventix	 <p style="text-align: center;">06/01/2017</p>
<b>AREA NUMBER</b>	H011	
<b>SITE NUMBER</b>	Site 18	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Sandstone - Mispah	
<b>DATE VISITED</b>	06/01/2017	
<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)</b>	<ul style="list-style-type: none"> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 39%</li> <li>• <i>Eragrostis obtusa</i> (Dew Grass) – 17%</li> <li>• <i>Stipagrostis cf. obtusa</i> (Small Bushman 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>	6.1 cm = Medium	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	21- 30%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringkapok (80%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	14 species (16 incl. <1% species) = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	184.97	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	19.30 ha/LSU	

## MANAGEMENT RECOMMENDATION

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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. 1993.** 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.

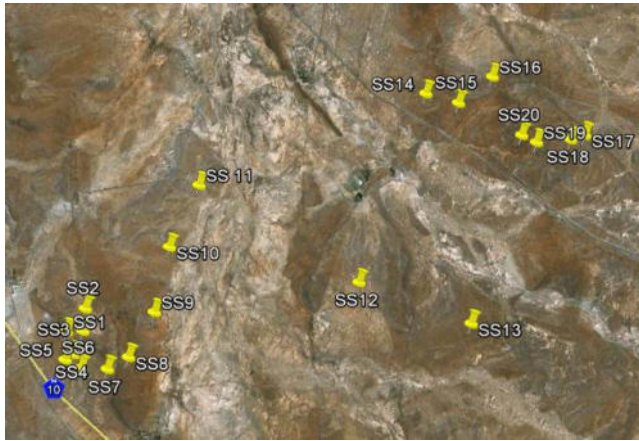
**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.





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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

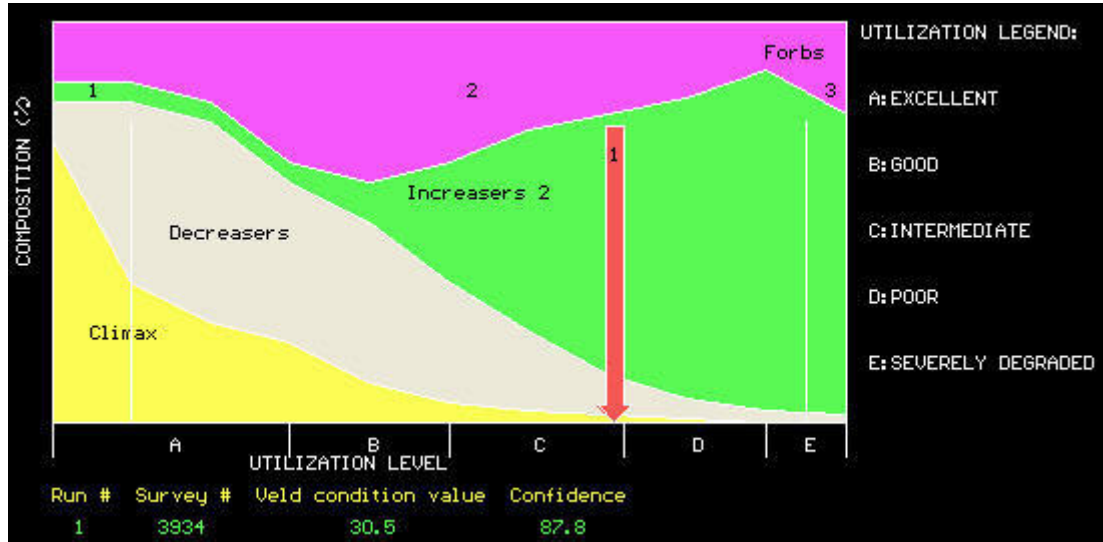


GOOGLE IMAGE OF THE SITE  
 30° 51' 07.8"  
 24° 20' 33.5"

<b>AREA</b>	De Bad - Soventix	
<b>AREA NUMBER</b>	H007	
<b>SITE NUMBER</b>	Site 19	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Swartland	
<b>DATE VISITED</b>	06/01/2017	
<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)</b>	<ul style="list-style-type: none"> <li>• <i>Tragus koelerioides</i> (Creeping Carrot-seed Grass) – 18%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 13%</li> <li>• <i>Stipagrostis cf. obtusa</i> (Small Bushman Grass) – 11%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	10.0 cm = Medium	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	31 - 50%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringkapok (50%) & Kapokbos (50%)	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	17 species (18 incl. <1% species) = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	199.61	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	17.88 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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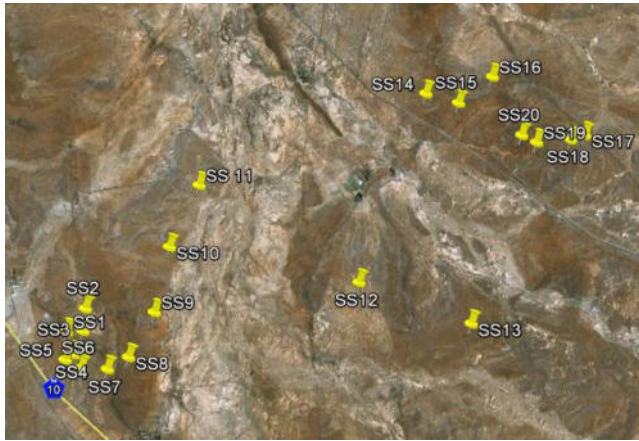
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**TAINTON, N.M. 1988.** Veld and Pasture Management in South Africa. Shuter & Shooter, Pietermaritzburg. 481 pp.



Reg. nr: CK98/46100/23  
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## VELD CONDITION ASSESSMENT SITE REPORT – 2017 (SEE ATTACHED TABLE)



GOOGLE IMAGE OF THE FOCUS AREA

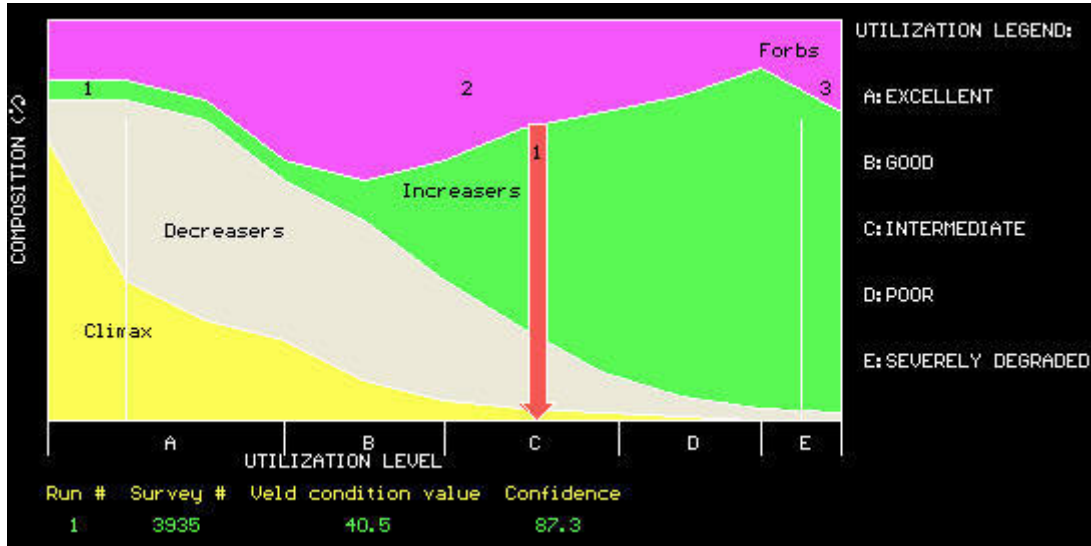


GOOGLE IMAGE OF THE SITE  
 30° 51' 02.7"  
 24° 20' 22.7"

<b>AREA</b>	De Bad - Soventix	 06/01/2017
<b>AREA NUMBER</b>	H006	
<b>SITE NUMBER</b>	Site 20	
<b>VELD TYPE – MUCINA &amp; RUTHERFORD</b>	Nku 4 - Eastern Upper Karoo	
<b>GEOLOGY AND SOIL FORM</b>	Siltstone / Shale - Valsrivier	
<b>DATE VISITED</b>	06/01/2017	
<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)</b>	<ul style="list-style-type: none"> <li>• <i>Eragrostis lehmanniana</i> (Lehmann's Love Grass) – 14%</li> <li>• <i>Stipagrostis cf. obtusa</i> (Small Bushman Grass) – 11%</li> <li>• <i>Oropetium capense</i> (Dwarf Grass) – 10%</li> </ul>	
<b>AVERAGE GRASS TUFT DISTANCE (Soil erosion potential: Low is ≤5 cm, Medium &gt;5-10 cm &amp; High &gt; 10cm)</b>	12.3 cm = High	
<b>VEGETATION CROWN COVER (% Soil covered)</b>	31- 50%	
<b>DOMINANT BOSSIE SPECIES (contributing to above)</b>	Doringvygie	
<b>PLANT SPECIES RICHNESS ((Number of bossies and grass species per 100 m<sup>2</sup>) High is = &gt;60 spp, Low &lt; 20 species)</b>	15 species = Low	
<b>VELD CONDITION (according to Tainton, 1988)</b>	Intermediate	
<b>VELD CONDITION TREND</b>	This is baseline data, no trend can be established yet.	
<b>VELD CONDITION INDEX TOTAL</b>	238.01	
<b>GRAZING CAPACITY in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14)</b>	15.00 ha/LSU	

**MANAGEMENT RECOMMENDATION**

- STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.



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**APPENDIX B**  
**Tables**

**Table 1.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H107 - SITE 1							MIDSLOPE (Convex)
							Siltstone / Shale
							SITE 1
							Excl. Sedges & Forbs
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							4.9
CO-ORDINATES: South							30° 53' 05.3"
East							24° 14' 26.9"
DIRECTION OF TRANSECT							120°
HEIGHT ABOVE SEA LEVEL (m)							1335m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					17
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				24
<i>Pentameris montana</i>	1.5				*		1
<i>Stipagrostis obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					4
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			23
Bare Ground							0
<b>TOTAL (Increaser II category):</b>							<b>69</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				**
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				3
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					3
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				8
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		1
<i>Pentzia incana</i> Ankerkaroo	2.88	***					16
<b>TOTAL (Shrubs / Bossies):</b>							<b>31</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 1.2: Trends in grass and shrub species composition, from Table 1.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (Convex)
		SITE 1
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	69	
Unidentified species (%)	0	
Bare Ground (%)	0	
Shrubs /Bossies (%)	31	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>	<b>INTERMEDIATE</b>	

**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 1.3: Summary.**

SUMMARY		MIDSLOPE (Convex)
		SITE 1
		ISPD 3916
		January 2017
Tuft distance (cm)	4.9	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	Low	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	5	
Grass 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 (11)	
Plant Species Richness (High is = >60 spp, Low< 20 species)	Low	
Vegetation cover (% soil covered)	21 - 30%	
Dominant species contributing to crown cover (%)	Ankerkaroo (60%) & Doringkapok	
Veld Condition Index Total	186.31	

[Benchmark (=500)]/ (Veld Condition Index Total)	2.68
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.05 LSU/ha or 19.16 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	<b>29.0</b>
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>
Notes	New distribution record at SANBI for <i>Pentameris montana</i> .
<b>Management Recommendation</b>	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.

**Table 2.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H112 - SITE 2							PAN ECOTONE
							Siltstone / Shale
							SITE 2
							Excl. Sedges & Forbs
							January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							28.2
CO-ORDINATES: South							30° 52' 50.8"
East							24° 14' 41.5"
DIRECTION OF TRANSECT							110°
HEIGHT ABOVE SEA LEVEL (m)							1333m
SOIL FORM (Macvicar, 1991)							Swartland
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Cynodon hirsutus</i>	1.5				**		2
<i>Eragrostis chloromelas</i> <b>Narrow Curly Leaf</b>	3.26	***					2
<i>Eragrostis obtusa</i> <b>Dew Grass / Douvatgras</b>	2.94	***					1
<i>Oropetium capense</i> <b>Dwarf Grass / Haasgras</b>	1.04		**				1
<i>Stipagrostis cf. obtusa</i> <b>Small Bushman Grass / Kortbeenboesmangras</b>	4.07	****					1
Bare Ground							52
<b>TOTAL (Increaser II category):</b>							<b>59</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> <b>Katdoring</b>	0.9		**				**
<i>Berkheya spinosa</i> <b>Vlaktekissel</b>	0.68	***					**
<i>Lycium cinereum</i> <b>Kriedoring</b>	1.63		**				1
<i>Moraea pallida</i> <b>Yellow Tulp / Geel Tulp</b>	0.5				*		**
<i>Pentzia incana</i> <b>Ankerkaro</b>	2.88	***					35
<i>Phymaspermum parvifolium</i> <b>Wittheuningkaro</b>	3.38	****					1
<i>Rosenia humilis</i> <b>Perdekaro</b>	1.77		**				**
<i>Salsola tuberculata</i> <b>Blomkoolganna</b>	3.5	***					4
<b>TOTAL (Shrubs / Bossies):</b>							<b>41</b>
<b>TOTAL</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)		PAN ECOTONE
		SITE 2
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		0
Increaser II species (%)		7
Unidentified species (%)		0
Bare Ground (%)		52
Shrubs /Bossies (%)		41
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>POOR</b>

**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 2.3: Summary.**

SUMMARY		PAN ECOTONE
		SITE 2
		ISPD 3917
		January 2017
Tuft distance (cm)		28.2
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		High
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		5
Grass 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)		9 (13)
Plant Species Richness (High is = >60 spp, Low< 20 species)		Low
Vegetation cover (% soil covered)		11 - 20%



Dominant species contributing to crown cover (%)	Ankerkaroo (95%)
Veld Condition Index Total	136.50
[Benchmark (=500)]/ (Veld Condition Index Total)	3.66
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method)= 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.04 LSU/ha or 26.15 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	<b>26.5</b>
ISPD Veld Condition Assessment	<b>POOR</b>
Notes	Bare Ground dominant - grass almost absent.
<b>Management Recommendation</b>	<b>STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.</b>

**Table 3.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H110 - SITE 3							CREST
							Dolerite
							SITE 3
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							12.9
CO-ORDINATES: South							30° 53' 06.7"
East							24° 14' 36.4"
DIRECTION OF TRANSECT							110°
HEIGHT ABOVE SEA LEVEL (m)							1340m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
<i>Eragrostis curvula</i> Weeping Love Grass / Oulandsgras							1
<b>TOTAL (Increaser I category):</b>							<b>1</b>
<b>INCREASERS II</b>							
<i>Aristida adscensionis</i> Eenjarige Steekgras							2
<i>Aristida diffusa</i> Iron Grass							17
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass							2
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras							4
<i>Oropetium capense</i> Dwarf Grass / Haasgras							14
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras							1
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass							12
Bare Ground							13
<b>TOTAL (Increaser II category):</b>							<b>65</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Aloe sp.</i> Aloe							**
Unidentified species (Bossie 3)							1
<i>Eberlanzia ferox</i> Doringvygie							16
<i>Erioccephalus ericoides</i> Kapokbos							12
<i>Erioccephalus spinescens</i> Doringkapok							2
<i>Pentzia incana</i> Ankerkaro							1
<i>Phymaspermum parvifolium</i> Witheuningkaro							2
<b>TOTAL (Shrubs / Bossies):</b>							<b>34</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 3.2: Trends in grass and shrub species composition, from Table 3.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		CREST
		SITE 3
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		1
Increaser II species (%)		52
Unidentified species (%)		0
Bare Ground (%)		13
Shrubs /Bossies (%)		34
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 3.3: Summary.**

SUMMARY		CREST
		SITE 3
		ISPD 3918
		January 2017
Tuft distance (cm)		12.9
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		High
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		8
Grass 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)		14 (15)
Plant Species Richness (High is = >60 spp, Low< 20 species)		Low
Vegetation cover (% soil covered)		11 - 20%
Dominant species contributing to crown cover (%)		Doringvygie (60%) & Kapokbossie
Veld Condition Index Total		174.32
[Benchmark (=500)]/ (Veld Condition Index Total)		2.87
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha		0.05 LSU/ha or 20.48 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		29.2
ISPD Veld Condition Assessment		<b>INTERMEDIATE</b>
Notes		
<b>Management Recommendation</b>		STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES

**Table 4.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H106 - SITE 4							MIDSLOPE (CONCAVE)
							Sandstone
							SITE 4
							Excl. Sedges & Forbs
							January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							14.4
CO-ORDINATES: South							30° 53' 20.1"
East							24° 14' 30.5"
DIRECTION OF TRANSECT							100°
HEIGHT ABOVE SEA LEVEL (m)							1331m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					3
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				54
<i>Pentameris montana</i>	1.5				*		1
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					2
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			2
Bare Ground							24
<b>TOTAL (Increaser II category):</b>							<b>86</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				1
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					3
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				3
Unidentified species ("Impala Lelie")	1.5			**			3
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		1
<i>Pentzia incana</i> Ankerkaroo	2.88	***					2
<i>Phymaspermum parvifolium</i> Witheuningkaroo	3.38	****					1
<b>TOTAL (Shrubs / Bossies):</b>							<b>14</b>
<b>TOTAL</b>							<b>100</b>

\*\* 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)		MIDSLOPE (CONCAVE)
		SITE 4
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	62	
Unidentified species (%)	0	
Bare Ground (%)	24	
Shrubs /Bossies (%)	14	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>	<b>POOR</b>	

**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		MIDSLOPE (CONCAVE)
		SITE 4
		ISPD 3919
		January 2017
Tuft distance (cm)	14.4	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	High	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	5	
Grass 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)	12	
Plant Species Richness (High is = >60 spp, Low< 20 species)	Low	
Vegetation cover (% soil covered)	0 - 10%	
Dominant species contributing to crown cover (%)	Doringkapok (50%) & Kapokbossie	

Veld Condition Index Total	105.60
[Benchmark (=500)]/ (Veld Condition Index Total)	4.73
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method)= 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.03 LSU/ha or 33.81 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	14.7
ISPD Veld Condition Assessment	<b>POOR</b>
Notes	
<b>Management Recommendation</b>	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.

**Table 5.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H105 - SITE 5							MIDSLOPE (CONCAVE)
							Siltstone / Shale
							SITE 5
							Excl. Sedges & Forbs
							January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							24.3
CO-ORDINATES: South							30° 53' 23.9"
East							24° 14' 25.4"
DIRECTION OF TRANSECT							335°
HEIGHT ABOVE SEA LEVEL (m)							1333m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				18
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			2
Bare Ground							54
<b>TOTAL (Increaser II category):</b>							<b>74</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Berkheya spinosa</i> Vlakedissel	0.68	***					**
Unidentified species (Bossie 3)	1.5		**				1
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				4
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				13
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		5
<i>Pentzia incana</i> Ankerkaroo	2.88	***					2
<i>Phymaspermum parvifolium</i> Witheuningkaroo	3.38	****					1
<b>TOTAL (Shrubs / Bossies):</b>							<b>26</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 5.2: Trends in grass and shrub species composition, from Table 5.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONCAVE)
		SITE 5
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		0
Increaser II species (%)		20
Unidentified species (%)		0
Bare Ground (%)		54
Shrubs /Bossies (%)		26
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>POOR</b>

**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 5.3: Summary.**

SUMMARY		MIDSLOPE (CONCAVE)
		SITE 5
		ISPD 3920
		January 2017
Tuft distance (cm)		24.3
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		High
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		2
Grass 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)		8 (9)
Plant Species Richness (High is = >60 spp, Low< 20 species)		Low
Vegetation cover (% soil covered)		11 - 20%
Dominant species contributing to crown cover (%)		Doringkapok (90%)
Veld Condition Index Total		66.38
[Benchmark (=500)]/ (Veld Condition Index Total)		7.53
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		0.03 LSU/hectare/ year

Current Grazing Capacity in ha/LSU (Du Toit Method)= 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.02 LSU/ha or 53.78 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	<b>15.6</b>
ISPD Veld Condition Assessment	<b>POOR</b>
Notes	
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.

**Table 6.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H104 - SITE 6							MIDSLOPE (CONCAVE)
							Siltstone / Shale
							SITE 6
							Excl. Sedges & Forbs
							January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							11.2
CO-ORDINATES: South							30° 53' 29.2"
East							24° 14' 37.3"
DIRECTION OF TRANSECT							315°
HEIGHT ABOVE SEA LEVEL (m)							1334m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					2
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					10
<i>Eragrostis sp.</i> Eragrostis	1.5		**				1
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				40
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					1
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			3
Bare Ground							10
<b>TOTAL (Increaser II category):</b>							<b>67</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				12
<i>Erioccephalus ericoides</i> Kapokbos	2.43	***					1
<i>Erioccephalus spinescens</i> Doringkapok	2.12		**				11
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		1
<i>Pentzia incana</i> Ankerkaroo	2.88	***					7
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					1
<b>TOTAL (Shrubs / Bossies):</b>							<b>33</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 6.2: Trends in grass and shrub species composition, from Table 6.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONCAVE)
		SITE 6
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		0
Increaser II species (%)		57
Unidentified species (%)		0
Bare Ground (%)		10
Shrubs /Bossies (%)		33
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 6.3: Summary.**

SUMMARY		MIDSLOPE (CONCAVE)
		SITE 6
		ISPD 3921
		January 2017
Tuft distance (cm)		11.2
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		High
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		6
Grass 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)		12
Plant Species Richness (High is = >60 spp, Low< 20 species)		Low
Vegetation cover (% soil covered)		31 - 50%
Dominant species contributing to crown cover (%)		Doringkapok (50%) & Doringvygie

Veld Condition Index Total	153.21
[Benchmark (=500)]/ (Veld Condition Index Total)	3.26
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method)= 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.04 LSU/ha or 23.30 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	<b>23.6</b>
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>
Notes	
<b>Management Recommendation</b>	<b>STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.</b>



**Table 7.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H099 - SITE 7							MIDSLOPE (CONVEX)
							Siltstone / Shale
							SITE 7
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							4.6
CO-ORDINATES: South							30° 53' 30.6"
East							24° 14' 57.7"
DIRECTION OF TRANSECT							280°
HEIGHT ABOVE SEA LEVEL (m)							1331m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Aristida diffusa</i> Iron Grass	3.18	***					1
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					20
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				48
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					1
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			2
Bare Ground							1
<b>TOTAL (Increaser II category):</b>							<b>73</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				**
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				**
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					1
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				4
<i>Lycium cinereum</i> Kriedoring	1.63		**				1
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		**
<i>Pentzia incana</i> Ankerkaroo	2.88	***					19
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					2
<i>Berkheya spinosa</i> Vlakedissel	0.68	***					**
<b>TOTAL (Shrubs / Bossies):</b>							<b>27</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 7.2: Trends in grass and shrub species composition, from Table 7.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 7
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	72	
Unidentified species (%)	0	
Bare Ground (%)	1	
Shrubs /Bossies (%)	27	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>	<b>INTERMEDIATE</b>	

**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 7.3: Summary.**

SUMMARY		MIDSLOPE (CONVEX)
		SITE 7
		ISPD 3922
		January 2017
Tuft distance (cm)	4.6	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	Low	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	5	
Grass 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	
Vegetation cover (% soil covered)	11 - 20%	
Dominant species contributing to crown cover (%)	Ankerkaroo (90%) & Doringkapok	
Veld Condition Index Total	195.66	
[Benchmark (=500)]/ (Veld Condition Index Total)	2.56	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.05 LSU/ha or 18.25 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	32.7	
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>	
Notes		
<b>Management Recommendation</b>	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	

**Table 8.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H121 - SITE 8							MIDSLOPE (CONVEX)
							Dolerite
							SITE 8
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							2.8
CO-ORDINATES: South							30° 53' 23.3"
East							24° 15' 13.8"
DIRECTION OF TRANSECT							70°
HEIGHT ABOVE SEA LEVEL (m)							1321m
SOIL FORM (Macvicar, 1991)							Hutton
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Aristida diffusa</i> Iron Grass	3.18	***					6
<i>Eragrostis sp.</i> Eragrostis	1.5		**				1
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				75
<i>Pentameris montana</i>	1.5				*		4
Bare Ground							0
<b>TOTAL (Increaser II category):</b>							<b>86</b>
<b>SHRUBS (BOSSIES)</b>							
Unidentified species (Bossie 4)	1.5		**				1
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				1
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					1
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				3
<i>Lycium cinereum</i> Kriedoring	1.63		**				**
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		**
<i>Pentzia incana</i> Ankerkaro	2.88	***					5
<i>Pterothrix spinescens</i> Voeltjie-kan-nie-sit-nie	1.31		**				3
<b>TOTAL (Shrubs / Bossies):</b>							<b>14</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 8.2: Trends in grass and shrub species composition, from Table 8.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 8
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		0
Increaser II species (%)		86
Unidentified species (%)		0
Bare Ground (%)		0
Shrubs /Bossies (%)		14
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 8.3: Summary.**

SUMMARY		MIDSLOPE (CONVEX)
		SITE 8
		ISPD 3923
		January 2017
Tuft distance (cm)		2.8
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		Low
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		4
Grass 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 (12)
Plant Species Richness (High is = >60 spp, Low< 20 species)		Low
Vegetation cover (% soil covered)		11 - 20%
Dominant species contributing to crown cover (%)		Ankerkaro, Voeltjie-kan-nie-sit-nie, Doringkapok and Doringvygie (each 25%) & Doringkapok (10%)
Veld Condition Index Total		135.24
[Benchmark (=500)]/ (Veld Condition Index Total)		3.70
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha		0.04 LSU/ha or 26.40 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		<b>16.3</b>
ISPD Veld Condition Assessment		<b>POOR</b>
Notes		
Management Recommendation		STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY; REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES

Table 9.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).

DE BAD - SOVENTIX							MIDSLOPE (CONCAVE)
							Sandstone
H119 - SITE 9							SITE 9
							Excl. Sedges & Forbs
							January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							20.5
CO-ORDINATES: South							30° 52' 54.2"
East							24° 15' 33.6"
DIRECTION OF TRANSECT							250°
HEIGHT ABOVE SEA LEVEL (m)							1310m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					1
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					13
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				7
<i>Pentameris montana</i>	1.5				*		1
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					2
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			2
Bare Ground							28
<b>TOTAL (Increaser II category):</b>							<b>54</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Berkheya spinosa</i> Viaktedissel	0.68	***					2
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				1
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				11
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					5
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				9
<i>Lycium cinereum</i> Kriedoring	1.63		**				1
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		5
<i>Pentzia incana</i> Ankerkaro	2.88	***					11
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					1
<b>TOTAL (Shrubs / Bossies):</b>							<b>46</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

Table 9.2: Trends in grass and shrub species composition, from Table 9.1.

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONCAVE)
		SITE 9
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		0
Increaser II species (%)		26
Unidentified species (%)		0
Bare Ground (%)		28
Shrubs /Bossies (%)		46
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>POOR</b>

**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 9.3: Summary.

SUMMARY		MIDSLOPE (CONCAVE)
		SITE 9
		ISPD 3924
		January 2017
Tuft distance (cm)		20.5
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		High
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		6
Grass 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
Plant Species Richness (High is = >60 spp, Low < 20 species)		Low
Vegetation cover (% soil covered)		31- 50%
Dominant species contributing to crown cover (%)		Ankerkaro (10%), Doringvygie (60%) & Doringkapok (30%)
Veld Condition Index Total		147.43
[Benchmark (=500)]/ (Veld Condition Index Total)		3.39
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCi Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha		0.04 LSU/ha or 24.22 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		25.8
ISPD Veld Condition Assessment		<b>POOR</b>
Notes		
Management Recommendation		STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.

**Table 10.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H086 - SITE 10							MIDSLOPE (CONCAVE)
							Siltstone / Shale
							SITE 10
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							20.9
CO-ORDINATES: South							30° 52' 11.5"
East							24° 15' 46.1"
DIRECTION OF TRANSECT							230°
HEIGHT ABOVE SEA LEVEL (m)							1306m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					2
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				12
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					2
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			15
Bare Ground							41
<b>TOTAL (Increaser II category):</b>							<b>72</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				**
<i>Berkheya spinosa</i> Vlakedissel	0.68	***					3
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				1
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					2
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				6
<i>Lycium cinereum</i> Kriedoring	1.63		**				1
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		**
<i>Pentzia incana</i> Ankerkaro	2.88	***					11
<i>Phymaspermum parvifolium</i> Witheuningkaro	3.38	****					2
<i>Salsola tuberculata</i> Blomkool Garna	3.5	****					2
<b>TOTAL (Shrubs / Bossies):</b>							<b>28</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 10.2: Trends in grass and shrub species composition, from Table 10.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONCAVE)
		SITE 10
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	31	
Unidentified species (%)	0	
Bare Ground (%)	41	
Shrubs /Bossies (%)	28	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>		<b>POOR</b>

**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 10.3: Summary.**

SUMMARY		MIDSLOPE (CONCAVE)
		SITE 10
		ISPD 3925
		January 2017
Tuft distance (cm)	20.9	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	High	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	4	
Grass 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)	12 (14)	
Plant Species Richness (High is = >60 spp, Low < 20 species)	Low	
Vegetation cover (% soil covered)	11- 20%	
Dominant species contributing to crown cover (%)	Ankerkaro (50%) & Doringkapok	
Veld Condition Index Total	107.15	
[Benchmark (=500)]/ (Veld Condition Index Total)	4.67	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.03 LSU/ha or 33.32 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	22.8	
ISPD Veld Condition Assessment	POOR	
Notes		
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	

Table 11.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).

DE BAD - SOVENTIX  H080 - SITE 11							MIDSLOPE (CONVEX)
							Siltstone / Shale
							SITE 11
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							21.2
CO-ORDINATES: South							30° 51' 30.6"
East							24° 16' 09.9"
DIRECTION OF TRANSECT							160°
HEIGHT ABOVE SEA LEVEL (m)							1303m
SOIL FORM (Macvicar, 1991)							Swartland
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>							
<i>Sporobolus fimbriatus</i> Bushveld Dropseed / Bosveldfynsaadgras	7.03	****					**
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Cynodon sp.</i>	1.5				***		6
<i>Eragrostis obtusa</i> Dew Grass / Douvalgras	2.94	***					17
<i>Melica decumbens</i> Dronkgras	3.1					*	1
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				1
Bare Ground							29
<b>TOTAL (Increaser II category):</b>							<b>54</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				4
<i>Berkheya spinosa</i> Vlaktedissel	0.68	***					**
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				1
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				5
<i>Erioccephalus spinescens</i> Doringkapok	2.12		**				1
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					1
<i>Pentzia incana</i> Ankerkaro	2.88	***					14
<i>Phymaspermum parvifolium</i> Witheuningkaro	3.38	****					2
<i>Rosenia humilis</i> Perdekaroo	1.77		**				1
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					7
Unidentified (Honderdpoortbossie)	1.5		**				8
Unidentified (Vygie species)	1.5			*			2
<b>TOTAL (Shrubs / Bossies):</b>							<b>46</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

Table 11.2: Trends in grass and shrub species composition, from Table 11.1.

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 11
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	25	
Unidentified species (%)	0	
Bare Ground (%)	29	
Shrubs /Bossies (%)	46	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>		<b>POOR</b>

**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 11.3: Summary.

SUMMARY		MIDSLOPE (CONVEX)
		SITE 11
		ISPD 3926
		January 2017
Tuft distance (cm)	21.2	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	High	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	4 (5)	
Grass 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 (17)	
Plant Species Richness (High is = >60 spp, Low< 20 species)	Low	
Vegetation cover (% soil covered)	21- 30%	
Dominant species contributing to crown cover (%)	Honderdpoortbossie' (50%), Katdoring (30%), Doringvygie (10%) & Blomkool Ganna (10%)	
Veld Condition Index Total	168.67	
[Benchmark (=500)]/ (Veld Condition Index Total)	2.96	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/ VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.05 LSU/ha or 21.17 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	31.6	
ISPD Veld Condition Assessment	POOR	
Notes		
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	

Table 12.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).

DE BAD - SOVENTIX  H049 - SITE 12							MIDSLOPE (CONCAVE)
							Siltstone / Shale
							SITE 12
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							18.2
CO-ORDINATES: South							30° 52' 39.1"
East							24° 18' 11.9"
DIRECTION OF TRANSECT							213°
HEIGHT ABOVE SEA LEVEL (m)							1321m
SOIL FORM (Macvicar, 1991)							Gamoep
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASES I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASES II</b>							
<i>Eragrostis bicolor</i> Speckled Vlei Grass	2				**		1
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					1
<i>cf. Eragrostis rigidior</i> Curly Leaf / Krulblaar	2	***					3
<i>Melica decumbens</i> Dronkgras	3.1					*	27
<i>Melinis repens</i> Natal Red Top / Natal-rooipluim	1.92	***					2
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					7
Bare Ground							17
<b>TOTAL (Increaser II category):</b>							<b>58</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				4
<i>Berkheya spinosa</i> Vlaktedissel	0.68	***					1
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				3
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				3
<i>Erioccephalus ericoides</i> Kapokbos	2.43	***					6
<i>Erioccephalus spinescens</i> Doringkapok	2.12		**				3
<i>Hirpicium allenatum</i> Haarbossie	3.16	****					1
<i>Pentzia incana</i> Ankerkaro	2.88	***					7
<i>Phaeoptilum spinosum</i> Brosdoring	1.5	***					2
<i>Phymaspermum parvifolium</i> Witheuningkaro	3.38	****					5
<i>Rosenia humilis</i> Perdekaro	1.77		**				3
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					4
<b>TOTAL (Shrubs / Bossies):</b>							<b>42</b>
<b>TOTAL</b>							<b>100</b>

\*\* 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)		MIDSLOPE (CONCAVE)
		SITE 12
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		0
Increaser II species (%)		41
Unidentified species (%)		0
Bare Ground (%)		17
Shrubs /Bossies (%)		42
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE-POOR</b>

**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 12.3: Summary.

SUMMARY		MIDSLOPE (CONCAVE)
		SITE 12
		ISPD 3927
		January 2017
Tuft distance (cm)		18.2
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		High
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		6
Grass 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
Plant Species Richness (High is = >60 spp, Low < 20 species)		Low
Vegetation cover (% soil covered)		21-30%
Dominant species contributing to crown cover (%)		Ankerkaro (50%), Doringkapok (30%) & Doringvygie (10%)
Veld Condition Index Total		217.29
[Benchmark (=500)]/ (Veld Condition Index Total)		2.30
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha		0.06 LSU/ha or 16.43 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		27.1
ISPD Veld Condition Assessment		<b>INTERMEDIATE-POOR</b>
Notes		
Management Recommendation		STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.

**Table 13.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H070 - SITE 13  TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm CO-ORDINATES: South East DIRECTION OF TRANSECT HEIGHT ABOVE SEA LEVEL (m) SOIL FORM (Macvicar, 1991) VELD TYPE (Mucina & Rutherford, 2006)							MIDSLOPE (CONVEX)
							Siltstone / Shale
							SITE 13
							Excl. Sedges & Forbs January 2017
							10.2
							30° 53' 07.6"
							24° 19' 36.3"
							265°
							1336m
							Mispah
							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>							
<i>Sporobolus fimbriatus</i> Bushveld Dropseed / Bosveldfynsaadgras	7.03	****					**
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASES I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASES II</b>							
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					2
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					12
<i>Melica decumbens</i> Dronkgras	3.1					*	6
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				32
<i>Pentameris montana</i>	1.5				*		**
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			**
Bare Ground							9
<b>TOTAL (Increaser II category):</b>							<b>61</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				**
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				1
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				7
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					1
<i>Euryops asparagoides</i> Bultdraaibos	1.51			*			1
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					**
<i>Lycium cinereum</i> Kriedoring	1.63		**				1
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		1
<i>Pentzia incana</i> Ankerkaro	2.88	***					5
<i>Phymaspermum parvifolium</i> Witheuningkaro	3.38	****					10
<i>Pterothrix spinescens</i> Voeltjie-kan-nie-sit-nie	1.31		**				11
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					1
Unidentified Bossie	1.5		**				**
<b>TOTAL (Shrubs / Bossies):</b>							<b>39</b>
<b>TOTAL</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)		MIDSLOPE (CONVEX)
		SITE 13
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	52	
Unidentified species (%)	0	
Bare Ground (%)	9	
Shrubs / Bossies (%)	39	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 13.3: Summary.**

SUMMARY		MIDSLOPE (CONVEX)
		SITE 13
		ISPD 3928
		January 2017
Tuft distance (cm)	10.2	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	High	
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 and grass species per 100 m <sup>2</sup> (excl. and incl. <1% of species)	14 (20)	
Plant Species Richness (High is = >60 spp, Low < 20 species)	Low (Medium)	
Vegetation cover (% soil covered)	21-30%	
Dominant species contributing to crown cover (%)	Doringkapok (80%) & Doringvygie	
Veld Condition Index Total	187.36	
[Benchmark (=500)] / (Veld Condition Index Total)	2.67	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.05 LSU/ha or 19.05 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	27.1	
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>	
Notes	This camp was previously used as a donkey camp (overgrazed).	
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	

**Table 14.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H032 - SITE 14							MIDSLOPE (CONVEX)
							Dolerite
							SITE 14
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							7.9
CO-ORDINATES: South East							30° 50' 32.4" 24° 19' 09.9"
DIRECTION OF TRANSECT							240°
HEIGHT ABOVE SEA LEVEL (m)							1318m
SOIL FORM (Macvicar, 1991)							Glenrosa
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					7
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				49
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					3
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			1
Bare Ground							4
<b>TOTAL (Increaser II category):</b>							<b>64</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				1
<i>Berkheya spinosa</i> Vlaktekissel	0.68	***					**
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				4
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				6
<i>Erioccephalus ericoides</i> Kapokbos	2.43	***					14
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					1
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		1
<i>Pentzia incana</i> Ankerkaro	2.88	***					1
<i>Phaeoptilum spinosum</i> Brosdoring	1.5	***					5
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					1
Unidentified Bossie (1)	1.5		**				1
Unidentified Bossie (2)	1.5		**				1
<b>TOTAL (Shrubs / Bossies):</b>							<b>36</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 14.2: Trends in grass and shrub species composition, from Table 14.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 14
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	60	
Unidentified species (%)	0	
Bare Ground (%)	4	
Shrubs /Bossies (%)	36	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 14.3: Summary.**

SUMMARY		MIDSLOPE (CONVEX)
		SITE 14
		ISPD 3929
		January 2017
Tuft distance (cm)	7.9	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	Medium	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	4	
Grass 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	
Vegetation cover (% soil covered)	21- 30%	
Dominant species contributing to crown cover (%)	Kapokbos (70%), Brosdoring (15%) & Doringvygie (13%)	
Veld Condition Index Total	150.65	
[Benchmark (=500)]/ (Veld Condition Index Total)	3.32	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.04 LSU/ha or 23.70 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	<b>20.6</b>	
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>	
Notes		
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	



Table 15.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).

DE BAD - SOVENTIX  H043 - SITE 15							MIDSLOPE (CONVEX)
							Dolerite
							SITE 15
							Excl. Sedges & Forbs
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							6.7
CO-ORDINATES: South							30° 50' 39.6"
East							24° 19' 34.4"
DIRECTION OF TRANSECT							250°
HEIGHT ABOVE SEA LEVEL (m)							1329m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Aristida diffusa</i> Iron Grass	3.18	***					11
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					1
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					1
<i>Melica decumbens</i> Dronkgras	3.1					*	15
<i>Microchloa caffra</i> Pincushion Grass	1.24				**		18
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				17
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					1
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			3
Bare Ground							2
<b>TOTAL (Increaser II category):</b>							<b>69</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				3
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				1
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					12
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				7
<i>Phymaspermum parvifolium</i> Witheuningkaroo	3.38	****					7
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					1
<b>TOTAL (Shrubs / Bossies):</b>							<b>31</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

Table 15.2: Trends in grass and shrub species composition, from Table 15.1.

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 15
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	67	
Unidentified species (%)	0	
Bare Ground (%)	2	
Shrubs /Bossies (%)	31	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 15.3: Summary.

SUMMARY		MIDSLOPE (CONVEX)
		SITE 15
		ISPD 3930
		January 2017
Tuft distance (cm)	6.7	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	Medium	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	8	
Grass 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)	14	
Plant Species Richness (High is = >60 spp, Low< 20 species)	Low	
Vegetation cover (% soil covered)	21-30%	
Dominant species contributing to crown cover (%)	Doringvygie (90%) & 10%	
Veld Condition Index Total	212.34	
[Benchmark (=500)]/ (Veld Condition Index Total)	2.35	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.06 LSU/ha or 16.81 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	30.7	
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>	
Notes		
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES	

**Table 16.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H020 - SITE 16							MIDSLAPE (CONVEX)
							Sandstone
							SITE 16
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							8.7
CO-ORDINATES: South							30° 50' 22.3"
East							24° 20' 02.0"
DIRECTION OF TRANSECT							105°
HEIGHT ABOVE SEA LEVEL (m)							1329m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASES I</b>							
No Increase I species recorded							0
<b>TOTAL (Increase I category):</b>							<b>0</b>
<b>INCREASES II</b>							
<i>Aristida diffusa</i> Iron Grass	3.18	***					27
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					2
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				8
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			24
Bare Ground							3
<b>TOTAL (Increase II category):</b>							<b>64</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				3
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				12
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					9
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					1
<i>Pentzia incana</i> Ankerkaro	2.88	***					3
<i>Phymaspermum parvifolium</i> Witheuningkaro	3.38	****					5
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					3
<b>TOTAL (Shrubs / Bossies):</b>							<b>36</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 16.2: Trends in grass and shrub species composition, from Table 16.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLAPE (CONVEX)
		SITE 16
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increase I species (%)	0	
Increase II species (%)	61	
Unidentified species (%)	0	
Bare Ground (%)	3	
Shrubs /Bossies (%)	36	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>	<b>INTERMEDIATE</b>	

**Legend:** 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 16.3: Summary.**

SUMMARY		MIDSLAPE (CONVEX)
		SITE 16
		ISPD 3931
		January 2017
Tuft distance (cm)	8.7	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	Medium	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	4	
Grass 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)	11	
Plant Species Richness (High is = >60 spp, Low< 20 species)	Low	
Vegetation cover (% soil covered)	21- 30%	
Dominant species contributing to crown cover (%)	Kapokbos (50%) & Doringvygie	
Veld Condition Index Total	204.97	
[Benchmark (=500)]/ (Veld Condition Index Total)	2.44	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.06 LSU/ha or 17.42 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	<b>32.5</b>	
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>	
Notes		
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	

**Table 17.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H013 - SITE 17							MIDSLOPE (CONVEX)
							Sandstone
							SITE 17
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							6.3
CO-ORDINATES: South							30° 51' 03.8"
East							24° 21' 11.6"
DIRECTION OF TRANSECT							160°
HEIGHT ABOVE SEA LEVEL (m)							1346m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Aristida congesta subsp. barbicollis</i> Spreading Three-awn	1.04		**				**
<i>Aristida diffusa</i> Iron Grass	3.18	***					**
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					7
<i>Melica decumbens</i> Dronkgras	3.1					*	1
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				28
<i>Pentameris montana</i>	1.5				*		1
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					1
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			25
Bare Ground							4
<b>TOTAL (Increaser II category):</b>							<b>67</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				**
<i>Berkheya spinosa</i> Vlaktedissel	0.68	***					1
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				2
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				3
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					24
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					**
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		1
<i>Pentzia incana</i> Ankerkaroo	2.88	***					1
<i>Phymaspermum parvifolium</i> Witheuningkaroo	3.38	****					1
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					**
<b>TOTAL (Shrubs / Bossies):</b>							<b>33</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 17.2: Trends in grass and shrub species composition, from Table 17.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 17
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		0
Increaser I species (%)		0
Increaser II species (%)		63
Unidentified species (%)		0
Bare Ground (%)		4
Shrubs /Bossies (%)		33
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 17.3: Summary.**

SUMMARY		MIDSLOPE (CONVEX)
		SITE 17
		ISPD 3932
		January 2017
Tuft distance (cm)		6.3
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		Medium
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		6 (8)
Grass 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 (18)
Plant Species Richness (High is >60 spp, Low< 20 species)		Low
Vegetation cover (% soil covered)		11- 20%
Dominant species contributing to crown cover (%)		Kapokbos (90%)
Veld Condition Index Total		155.46
[Benchmark (=500)]/ (Veld Condition Index Total)		3.22
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha		0.04 LSU/ha or 22.96 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		24.7
ISPD Veld Condition Assessment		<b>INTERMEDIATE</b>
Notes		
Management Recommendation		STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.

Table 18.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).

DE BAD - SOVENTIX  H011 - SITE 18							MIDSLOPE (CONVEX)
							Sandstone
							SITE 18
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							6.1
CO-ORDINATES: South							30° 51' 07.0"
East							24° 21' 00.8"
DIRECTION OF TRANSECT							265°
HEIGHT ABOVE SEA LEVEL (m)							1343m
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							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Aristida diffusa</i> Iron Grass	3.18	***					1
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					17
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				1
<i>Pentameris montana</i>	1.5				*		1
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					5
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			39
Bare Ground							1
<b>TOTAL (Increaser II category):</b>							<b>65</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				**
<i>Berkheya spinosa</i> Vlaktedissel	0.68	***					1
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				2
<i>Erioccephalus ericoides</i> Kapokbos	2.43	***					2
<i>Erioccephalus spinescens</i> Doringkapok	2.12		**				17
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					2
<i>Lycium cinereum</i> Kriedoring	1.63		**				1
<i>Moraea pallida</i> Yellow Tulp / Geel Tulp	0.5				*		3
<i>Pentzia incana</i> Ankerkaroo	2.88	***					7
<i>Salsola tuberculata</i> Blomkool Ganna	3.5	****					**
<b>TOTAL (Shrubs / Bossies):</b>							<b>35</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

Table 18.2: Trends in grass and shrub species composition, from Table 18.1.

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 18
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	64	
Unidentified species (%)	0	
Bare Ground (%)	1	
Shrubs /Bossies (%)	35	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>	<b>INTERMEDIATE</b>	

**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 18.3: Summary.

SUMMARY		MIDSLOPE (CONVEX)
		SITE 18
		ISPD 3933
		January 2017
Tuft distance (cm)	6.1	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	Medium	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	7	
Grass 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)	14 (16)	
Plant Species Richness (High is = >60 spp, Low< 20 species)	Low	
Vegetation cover (% soil covered)	21- 30%	
Dominant species contributing to crown cover (%)	Doringkapok (80%)	
Veld Condition Index Total	184.97	
[Benchmark (=500)]/ (Veld Condition Index Total)	2.70	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.05 LSU/ha or 19.30 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	<b>29.2</b>	
ISPD Veld Condition Assessment	<b>INTERMEDIATE</b>	
Notes		
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	

**Table 19.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).**

DE BAD - SOVENTIX  H007 - SITE 19							MIDSLOPE (CONVEX)
							Siltstone / Shale
							SITE 19
							Excl. Sedges & Forbs
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							10.0
CO-ORDINATES: South							30° 51' 07.8"
East							24° 20' 33.5"
DIRECTION OF TRANSECT							260°
HEIGHT ABOVE SEA LEVEL (m)							1333m
SOIL FORM (Macvicar, 1991)							Swartland
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>							
<i>Sporobolus fimbriatus</i> Bushveld Dropseed / Bosveldfynsaadgras	7.03	****					3
<b>TOTAL (Decreaser category):</b>							<b>3</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					1
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					2
<i>Eragrostis racemosa</i> Narrow Heart Love Grass / Smalhartjesgras	1.5				**		1
<i>Melica decumbens</i> Dronkgras	3.1					*	2
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				13
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					11
<i>Tragus koelerioides</i> Creeping Carrot-seed Grass	0.84			**			18
Unidentified species	1.5				**		2
Bare Ground							6
<b>TOTAL (Increaser II category):</b>							<b>56</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Asparagus cf. africanus</i> Katdoring	0.9		**				2
<i>Berkheya spinosa</i> Vlaktedissel	0.68	***					**
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				6
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				1
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					13
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				15
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					1
<i>Pentzia incana</i> Ankerkaroo	2.88	***					2
<i>Psilocaulon absimile</i> Asbos	1.5			*			1
<b>TOTAL (Shrubs / Bossies):</b>							<b>41</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

**Table 19.2: Trends in grass and shrub species composition, from Table 19.1.**

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 19
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)		3
Increaser I species (%)		0
Increaser II species (%)		50
Unidentified species (%)		0
Bare Ground (%)		6
Shrubs /Bossies (%)		41
<b>Total (%)</b>		<b>100</b>
<b>Veld Condition (Tainton's Method)</b>		<b>INTERMEDIATE</b>

**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 19.3: Summary.**

SUMMARY		MIDSLOPE (CONVEX)
		SITE 19
		ISPD 3934
		January 2017
Tuft distance (cm)		10.0
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)		Medium
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)		9
Grass 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)		17 (18)
Plant Species Richness (High is = >60 spp, Low < 20 species)		Low
Vegetation cover (% soil covered)		31- 50%
Dominant species contributing to crown cover (%)		Doringkapok (50%) & Kapokbos
Veld Condition Index Total		199.61
[Benchmark (=500)]/ (Veld Condition Index Total)		2.50
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)		0.03 LSU/hectare/ year
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCI Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha		0.06 LSU/ha or 17.88 ha/LSU
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%		<b>30.5</b>
ISPD Veld Condition Assessment		<b>INTERMEDIATE</b>
Notes		
Management Recommendation		STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.

Table 20.1: Veld condition assessment table: Grass and shrub species cover and composition at De Bad - Soventix (2017).

DE BAD - SOVENTIX  H006 - SITE 20							MIDSLOPE (CONVEX)
							Siltstone / Shale
							SITE 20
							Excl. Sedges & Forbs January 2017
TUFT DISTANCES (in cm): Low is ≤5 cm, Medium >5-10 cm & High > 10 cm							12.3
CO-ORDINATES: South							30° 51' 02.7"
East							24° 20' 22.7"
DIRECTION OF TRANSECT							255°
HEIGHT ABOVE SEA LEVEL (m)							1335m
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	
<b>DECREASERS</b>							
No Decreaser species recorded							0
<b>TOTAL (Decreaser category):</b>							<b>0</b>
<b>INCREASERS I</b>							
No Increaser I species recorded							0
<b>TOTAL (Increaser I category):</b>							<b>0</b>
<b>INCREASERS II</b>							
<i>Aristida diffusa</i> Iron Grass	3.18	***					4
<i>Eragrostis curvula</i> Weeping Love Grass / Oulandsgras	3.47	****					1
<i>Eragrostis lehmanniana</i> Lehmann's Love Grass	3.24	***					14
<i>Eragrostis obtusa</i> Dew Grass / Douvatgras	2.94	***					1
<i>Oropetium capense</i> Dwarf Grass / Haasgras	1.04		**				10
<i>Stipagrostis cf. obtusa</i> Small Bushman Grass / Kortbeenboesmangras	4.07	****					11
<i>Tricholaena monachne</i> Blousaadgras	1.5		**				1
Bare Ground							3
<b>TOTAL (Increaser II category):</b>							<b>45</b>
<b>SHRUBS (BOSSIES)</b>							
<i>Chrysocoma ciliata</i> Bitterbos	1.12		**				14
<i>Eberlanzia ferox</i> Doringvygie	1.54		**				8
<i>Eriocephalus ericoides</i> Kapokbos	2.43	***					8
<i>Eriocephalus spinescens</i> Doringkapok	2.12		**				7
<i>Hirpicium alienatum</i> Haarbossie	3.16	****					4
<i>Pentzia incana</i> Ankerkaro	2.88	***					8
<i>Phymaspermum parvifolium</i> Witheuningkaro	3.38	****					5
Stinkkruid	0.5		**				1
<b>TOTAL (Shrubs / Bossies):</b>							<b>55</b>
<b>TOTAL</b>							<b>100</b>

\*\* Less than 1% of species recorded at site

Table 20.2: Trends in grass and shrub species composition, from Table 20.1.

VELD CONDITION SUMMARY OF TREND (TAINTON'S METHOD)		MIDSLOPE (CONVEX)
		SITE 20
		Excl. Sedges & Forbs
		January 2017
Decreaser species (%)	0	
Increaser I species (%)	0	
Increaser II species (%)	42	
Unidentified species (%)	0	
Bare Ground (%)	3	
Shrubs /Bossies (%)	55	
<b>Total (%)</b>	<b>100</b>	
<b>Veld Condition (Tainton's Method)</b>	<b>INTERMEDIATE</b>	

**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 20.3: Summary.

SUMMARY		MIDSLOPE (CONVEX)
		SITE 20
		ISPD 3935
		January 2017
Tuft distance (cm)	12.3	
Soil erosion potential ( Low is ≤5 cm, Medium >5-10 cm & High > 10cm)	High	
Number of Grass species present per 100 m <sup>2</sup> (excl. and incl. <1% of species)	7	
Grass 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	
Plant Species Richness (High is = >60 spp, Low< 20 species)	Low	
Vegetation cover (% soil covered)	31- 50%	
Dominant species contributing to crown cover (%)	Doringvygie & Stipagrostis	
Veld Condition Index Total	238.01	
[Benchmark (=500)]/ (Veld Condition Index Total)	2.10	
Potential grazing capacity of the area (for an average annual rainfall of 300 mm = 3 LSU/100 ha/year)	0.03 LSU/hectare/ year	
Current Grazing Capacity in ha/LSU (Du Toit Method) = 500/VCi Total x Regression value (7.14) in ha/LSU or 1/ Current Grazing Capacity in LSU/ha	0.07 LSU/ha or 15.00 ha/LSU	
Condition on ISPD Degradation Axis (%) - Norm between 60% and 80%	40.5	
ISPD Veld Condition Assessment	INTERMEDIATE	
Notes		
Management Recommendation	STOCKING RATES SHOULD CORRELATE WITH CURRENT GRAZING CAPACITY. REST CAMP IN FREQUENCY OF ONCE EVERY FOUR YEARS TO ALLOW SEEDING AND REESTABLISHMENT OF PRODUCTIVE AND PALATABLE GRASSES.	