

## Online Appendix 1

The plant communities and subcommunities for Akkerendam Nature Reserve and the proposed expansion area are as follows:

1. *Dicerotheramnus rhinocerotis* Mountain Renosterveld
  - 1.1 *Bulbinella nutans* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld
  - 1.2 *Stoebe fusca* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld
  - 1.3 *Passerina truncata* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld
  - 1.4 *Tenaxia stricta* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld
  - 1.5 *Polygala virgata* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld
  - 1.6 *Anisodonteia triloba* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld
  - 1.7 *Felicia filifolia* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld
2. *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo
  - 2.1 *Ursinia pilifera* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo
  - 2.2 *Pteronia incana* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo
  - 2.3 *Pteronia glomerata* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo
  - 2.4 *Ehrharta calycina* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo
  - 2.5 *Galenia africana* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo
3. *Galenia africana* – *Eriocephalus ericoides* Hantam Karoo
  - 3.1 *Amphiglossa triloba* – *Galenia africana* – *Eriocephalus ericoides* Hantam Karoo
  - 3.2 *Eriocephalus ericoides* – *Galenia africana* – *Eriocephalus ericoides* Hantam Karoo

The description of plant communities and subcommunities (Figure 1, Online Appendix 2)

### 1. *Dicerotheramnus rhinocerotis* Mountain Renosterveld

Plant community 1 is found on the high lying areas (1111 m to 1640 m above sea level [a.s.l.]) of the larger study area such as the plateau of the Hantam Mountain as well as the steeper upper slopes of the mountain. This community is present within AKNR and proposed expansion area. Land type Ib, rocky areas with miscellaneous soils, dominate this community, which is found mainly on dolerite. Vegetation cover is generally high (> 70%) with *Dicerotheramnus rhinocerotis* (Species group J) and *Tenaxia stricta* (Species group P) dominating this plant community. Seven subcommunities are distinguished within Community 1 based on species composition and cover as well as environmental parameters evident in the field.

#### 1.1 *Bulbinella nutans* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld

Subcommunity 1.1 is found in a few isolated patches within the greater landscape. These areas serve as mini-wetlands on the slopes of the Hantam Mountain within the AKNR. This subcommunity is found on Land type Ib underlain by poorly drained, grey soils on gentle and moderate slopes. A low rock cover of between zero and < 15% occurs in these areas. Vegetation cover is high (99%) on these wet areas. *Bulbinella nutans* (Species group A) dominates this subcommunity.

#### 1.2 *Stoebe fusca* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld

The *Stoebe fusca* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld subcommunity occurs on Land type Ib, on wet, dolerite-derived, dark brown soils at an altitude of about 1612 m a.s.l. on the proposed expansion area. This subcommunity is situated on the level plateau of the Hantam Mountain plateau with a high cover of boulders. Vegetation cover is dense (99%) and dominated by the shrub *Stoebe fusca* (Species group B). *Dicerotheramnus rhinocerotis* (Species group J) also characterises this subcommunity.

#### 1.3 *Passerina truncata* – *Dicerotheramnus rhinocerotis* Mountain Renosterveld

Dark brown, dolerite-derived, soils underlie Subcommunity 1.3, which is found on Land type Ib at a high altitude of between 1561 m and 1640 m a.s.l. Subcommunity 1.3 is situated on the top of the Hantam Mountain, only in a few isolated patches within AKNR, but mainly within the proposed expansion area. The

slopes of this subcommunity are generally moderate, steep to very steep with a high rock cover of > 90% consisting of small stones, stones and boulders. Vegetation cover varies from 60% to 95% and is dominated by *Passerina truncata* (Species group C) and *Dicrothamnus rhinocerotis* (Species group J). At times species such as *Hydrophilus* sp., *Muraltia heisteria* (Species group C), *Restio* sp. (Species group I), *Tenaxia stricta* and *Diospyros austro-africana* (Species group P) are found at a high cover.

#### **1.4 *Tenaxia stricta* – *Dicrothamnus rhinocerotis* Mountain Renosterveld**

Subcommunity 1.4 is found at high altitudes (approximately 1600 m a.s.l.) on the top of the Hantam Mountain on Land type Ib, in the proposed expansion area. Dark brown soils with a high rock cover (> 90%) usually comprised of fine gravel, stones and boulders underlie this subcommunity. Dominant perennial species include *Dicrothamnus rhinocerotis* (Species group J), *Stachys rugosa* (Species group I) and *Tenaxia stricta* (Species group P). Numerous annuals and geophytes are also found in this subcommunity such as *Pentaschistis airoides*, *Heliophila deserticola*, *Crassula vaillantii*, *Romulea hantamensis* (endemic) and *Crassula thunbergiana* (Species group D).

#### **1.5 *Polygala virgata* – *Dicrothamnus rhinocerotis* Mountain Renosterveld**

This subcommunity describes many of the washes, stream banks and drainage line vegetation found along the ephemeral streams and washes on the gentle slopes of the Hantam Mountain within AKNR. Altitude varies from 1044 m to 1109 m a.s.l. Subcommunity 1.5 is found on Land type Ib, usually with a low rock cover (5%) consisting of gravel, small stones or stones on light brown or grey coloured soils. Vegetation cover is high (> 95%) and this is the only vegetation unit in which trees are usually present at a relatively high cover (1–50% cover). Dominant species include *Thamnochortus* sp., *Polygala virgata*, *Searsia lancea* (Species group E) and *Struthiola leptantha* (Species group I). Additionally, species such as *Dicrothamnus rhinocerotis* (Species group J), *Diospyros austro-africana* (Species group P), *Euryops lateriflorus* (Species group W), *Chrysocoma ciliata* and *Galenia africana* (Species group X) are usually found in this subcommunity.

#### **1.6 *Anisodonteia triloba* – *Dicrothamnus rhinocerotis* Mountain Renosterveld**

The *Anisodonteia triloba* – *Dicrothamnus rhinocerotis* Mountain Renosterveld subcommunity, Subcommunity 1.6, is found on the slopes (level to steep) of the Hantam Mountain in the AKNR and proposed expansion area. Altitude ranges from 1050 m to 1600 m a.s.l. This subcommunity is situated on Land type Ib, generally with a high rock cover (usually > 90%) comprising of gravel, small stones and boulders. Soils are red brown or light brown in colour derived from dolerites or Ecca shales. Slopes vary from gentle to very steep. Vegetation cover is high (> 70%) with dominant species such as *Anisodonteia triloba*, *Dodonaea viscosa* var. *angustifolia* (Species group F), *Felicia filifolia*, *Oedera genistifolia* (Species group H), *Dicrothamnus rhinocerotis* (Species group J), *Tenaxia stricta*, *Eriocephalus africanus* (Species group P), *Euryops lateriflorus* (Species group W), *Chrysocoma ciliata* and *Galenia africana* (Species group X).

#### **1.7 *Felicia filifolia* – *Dicrothamnus rhinocerotis* Mountain Renosterveld**

Subcommunity 1.7 is found on the slopes of the Hantam Mountain only in the proposed expansion area at altitudes of about 1500 m to 1600 m a.s.l. Land type Ib underlies this subcommunity with its dark and red brown soils and generally high rock cover (95%) of small stones and boulders. The slopes on which this subcommunity is found vary from level to moderate to steep. The vegetation cover is high (generally > 90%). This subcommunity is characterised by *Heliophila carnosae*, *Felicia ovata* (Species group G), *Felicia filifolia* (Species group H), *Dicrothamnus rhinocerotis* (Species group J), *Tenaxia stricta* (Species group P), *Euryops lateriflorus* (Species group W) and *Asparagus capensis* (Species group X).

#### **2. *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo**

Plant community 2 is found on the mid- to lower lying slopes of the study area within AKNR and the proposed expansion area. Land type Ib, rocky areas with miscellaneous soils, dominate this community, which is found on dolerite and/or Ecca shale and/or sandstone. Vegetation cover is generally high with

*Pteronia glauca* (Species group W) and *Eriocephalus ericoides* (Species group X) dominating this plant community. Five subcommunities are distinguished within Community 2.

### **2.1 *Ursinia pilifera* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo**

Subcommunity 2.1 is situated on the middle to lower slopes of the Hantam Mountain within the AKNR and proposed area of expansion at an altitude of approximately 1100 m a.s.l. This subcommunity is found on Land type Ib with dolerite and shale evident in the surrounding environment. The dolerite-derived soils are red brown in colour and the surface is covered by a high percentage (> 80%) rock cover comprised of small stones, stones and boulders. Slopes vary from gentle to moderate to steep. Vegetation cover varies from 60 to 90%. *Ursinia pilifera* (Species group K), *Tenaxia stricta* (Species group P), *Phiambolia unca* (Species group V), *Pteronia glauca* (Species group W), *Eriocephalus ericoides* and *Asparagus capensis* (Species group X) are the perennial species that characterise this subcommunity. The species composition of this subcommunity is similar to the subsequent subcommunity, Subcommunity 2.2, however, the perennial grass *Tenaxia stricta* is absent in Subcommunity 2.2.

### **2.2 *Pteronia incana* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo**

This subcommunity is found on the mid- to lower slopes of the Hantam Mountain within the AKNR at about 1100 m a.s.l. Land type Ib underlies this subcommunity, which is found on dark and red brown dolerite-derived soils on level and gentle slopes. Rock cover varies from 50 to 95% and consists of small stones. At times shale derived gravel covers the soil surface while the slopes on which this subcommunity occurs are level or gentle. The vegetation cover is usually > 75%. Dominant perennial species include *Ursinia pilifera* (Species group K), *Phiambolia unca* (Species group V), *Pteronia incana* (Species group W), *Eriocephalus ericoides* and *Asparagus capensis* (Species group X). This subcommunity is similar to the previous subcommunity i.e. Subcommunity 2.1, but lacks the perennial grass species *Tenaxia stricta* (Species group P), which is present in the previous subcommunity.

### **2.3 *Pteronia glomerata* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo**

Subcommunity 2.3 occurs on the mid- to lower slopes of the Hantam Mountain within the AKNR and proposed area of expansion on Land type Ib. Dolerite and shale are found underlying this subcommunity and soils vary from light brown to red brown in colour. Altitude ranges from 1070 m to 1093 m a.s.l. Rock cover is high (generally > 90%) consisting of gravel and small stones and is found on the level, gentle and moderate slopes. Vegetation cover is lower, usually about 60%, when compared to the previous two subcommunities, Subcommunity 2.1 and 2.2. Perennial species characterising this subcommunity are *Pteronia glomerata* (Species group L), *Pentzia incana* (Species group R), *Phiambolia unca* (Species group V), *Pteronia glauca* (Species group W), *Eriocephalus ericoides* and *Asparagus capensis* (Species group X).

### **2.4 *Ehrharta calycina* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo**

This subcommunity is found on the middle to lower slopes of the Hantam Mountain in both the AKNR and possible expansion area. Dolerites and shales are present in this subcommunity, which occurs on Land type Ib at an altitude of 1087 m to 1304 m a.s.l. Slopes range from gentle to moderate to steep and rock cover is generally high (> 95%) and consists of gravel, small stones, stones and boulders. Vegetation cover varies considerably from 5% to 95%. Dominant perennial species include *Crotalaria* sp. (Species group M), *Diospyros austro-africana* (Species group P), *Tylecodon wallichii*, *Lacomucinaeae lineata*, *Euphorbia mauritanica*, *Fingerhuthia africana* (Species group V), *Pteronia incana*, *Pteronia glauca* (Species group W), *Eriocephalus ericoides* and *Ehrharta calycina* (Species group X).

### **2.5 *Galenia africana* – *Pteronia glauca* – *Eriocephalus ericoides* Hantam Karoo**

Subcommunity 2.5 is found on the mid- to lower slopes of the Hantam Mountain in AKNR and the proposed expansion area. Rock cover is generally high (> 95%). Gravel derived from Ecca shales dominate these areas and, at times, a few doleritic small stones or stones lie scattered on the soil surface. Altitude varies from about 1020 m to 1167 m a.s.l. and slopes are generally gentle to moderate. Vegetation cover ranges from 60 to 90% with *Galenia africana* (Species group X) the dominant perennial species. Other species

characterising this vegetation unit are *Tetragonia fruticosa* (Species group N), *Lotononis* cf. *azureoides* (Species group O), *Pentzia incana* (Species group R), *Pteronia incana*, *P. glauca* (Species group W) and *Eriocephalus ericoides* (Species group X).

### **3. *Galenia africana* – *Eriocephalus ericoides* Hantam Karoo**

Community 3 occurs on the flats and undulating lower slopes of the Hantam Mountain within AKNR. This community is found on Land type Da with red B horizons, at altitudes ranging from 1026 m to 1234 m a.s.l. Soils are red brown or light red brown in colour. Rock cover varies considerably from absent to > 95% on these level to gentle slopes. Vegetation cover ranges from 5% on the rocky outcrops to 90% on areas covered by more vegetation. Dominant perennial species are *Galenia africana* and *Eriocephalus ericoides* (Species group X). Other perennials characterising this community include *Aristida vestita* (Species group T), *Crassothonna rechingeri* (Species group V) and *Ehrharta calycina* (Species group X). Two subcommunities are distinguished within Community 3.

#### **3.1 *Amphiglossa triloba* – *Galenia africana* – *Eriocephalus ericoides* Hantam Karoo**

Subcommunity 3.1 is found on Land type Da in the AKNR. Slopes are level to gentle and altitude ranges from 1026 m to 1092 m a.s.l. Soils are red brown or light red brown, rock cover is generally low (absent to 65%) and consists of small stones, stones and boulders. Vegetation cover varies from 50% to 90%. *Amphiglossa triloba* (Species group Q), *Pteronia incana* (Species group W), *Eriocephalus ericoides* and *Chrysocoma ciliata* (Species group X) dominate this subcommunity. Other characteristic perennial species are *Selago glabrata* (Species group Q), *Aristida vestita* (Species group T), *Pteronia glauca* (Species group W), *Galenia africana* and *Ehrharta calycina* (Species group X). Subcommunity 3.1 is distinguished from Subcommunity 3.2 by the presence of Species groups Q, R and W, which are lacking in Subcommunity 3.2.

#### **3.2 *Eriocephalus ericoides* – *Galenia africana* – *Eriocephalus ericoides* Hantam Karoo**

This subcommunity is found in the AKNR on Land type Da on red brown and light brown soils. Altitude ranges from 1043 m to 1234 m a.s.l. and slopes are level to gentle. Rock cover is high (90% to > 95%) and rock sizes vary from small stones to stones and boulders. Vegetation cover is generally low (range: 5% – 65%, but usually 5% – 10%). Perennial species found in this subcommunity include *Ruschia intricata* (Species group S), *Eriocephalus spinescens* (Species group T), *Crassothonna rechingeri* (Species group V), *Eriocephalus ericoides*, *Ehrharta calycina* and *Hermannia cuneifolia* (Species group X). The presence of Species group S and absence of Species group Q, R and W separates this subcommunity from Subcommunity 3.1.