

3.2 Human influence

In terms of the available land cover information from 2000 on a national level (Figure 3), it is also evident that quaternary catchment D41K is in a pristine state in terms of transformation levels, with less than 1% of the land cover being associated with transformation (habitat loss and fragmentation) (Table 1). Therefore the development of the proposed mine; will contribute not even 1% to transformation in the quaternary catchment, while should the whole original farm be developed eventually it will contribute 0.5% to transformation.

On a local scale/ landscape level⁴, the level of transformation or habitat loss is low at 1% (Table 2). The footprint of the mine should the total study area be transformed will contribute 2% to habitat loss on a local scale, and should the original farm be converted to a mine, it will contribute 20% to habitat loss, which would be considered to be significant at a local scale.

On the study area level (very large scale), 109 ha or 68% is natural with 52 ha or 32% being transformed. None of the vegetation categories within the study area is degraded, therefore the remaining natural vegetation within the study area and the landscape (regional context) as a whole represent a pristine area.

The main concern currently is that it is not only this mine which is being proposed for the area, but also other mines (Figure 4) and solar power plants. On a local scale/ individual assessment levels, the development of these mines and solar power plants do not contribute significantly to habitat loss and fragmentation, however the same cannot be said of their cumulative impact on a regional scale in terms of habitat loss and fragmentation. **It should also be noted that habitat loss is not only associated with the loss of vegetation but that certain animals, are shy of people and will move away or will become prosecuted due to an increase in human density** (Lindenmayer & Fischer 2006).

⁴ An area of 1 km² or more consisting of various communities, natural or manmade, which reflects or influences ecosystem function and services on a local scale (Van Andel & Aronson 2006, Wiens, Moss, Turner & Mladenoff 2006, Turner, Gardner & O'Neill 2001, Lindenmayer & Fischer 2006, Barbour, Burk & Pitts 1980, Hilty, Lidicker Jr & Merenlender 2006).

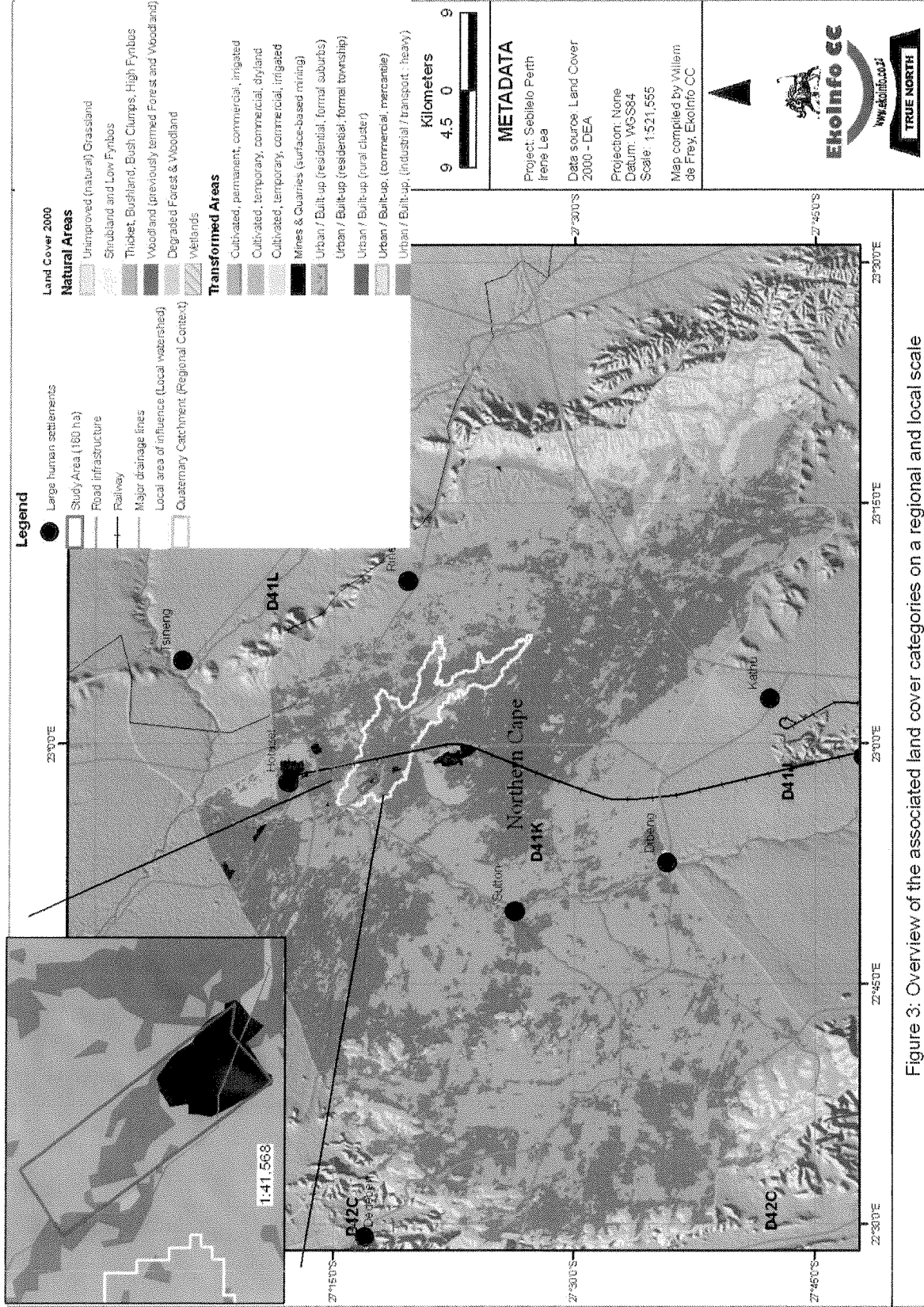


Table 1: Level of human influence (transformed areas) within quaternary catchment D41K

| Land Cover 2000 Categories | Surface Area (ha) | % Cover | Derived Ecological Status | |
|--|-------------------|---------|---------------------------|-------------------|
| | | | Natural Areas | Transformed Areas |
| Thicket, Bushland, Bush Clumps, High Fynbos | 201725 | 47.9% | 201725 | |
| Woodland (previously termed Forest and Woodland) | 164711 | 39.1% | 164711 | |
| Shrubland and Low Fynbos | 42387 | 10.1% | 42387 | |
| Degraded Forest & Woodland | 9229 | 2.2% | 9229 | |
| Mines & Quarries (surface-based mining) | 1528 | 0.4% | | 1528 |
| Wetlands | 1060 | 0.3% | 1060 | |
| Urban / Built-up (residential, formal suburbs) | 222 | 0.1% | | 222 |
| Urban / Built-up (rural cluster) | 206 | 0.0% | | 206 |
| Unimproved (natural) Grassland | 70 | 0.0% | | 70 |
| Cultivated, temporary, commercial, dryland | 56 | 0.0% | | 56 |
| Cultivated, permanent, commercial, irrigated | 27 | 0.0% | | 27 |
| Urban / Built-up (residential, formal township) | 27 | 0.0% | | 27 |
| Urban / Built-up, (industrial / transport : heavy) | 10 | 0.0% | | 10 |
| Cultivated, temporary, commercial, irrigated | 9 | 0.0% | | 9 |
| Urban / Built-up, (commercial, mercantile) | 0 | 0.0% | | 0 |
| TOTALS | 421265 | 100.0% | 419111 | 2154 |
| | | | 99.5% | 0.5% |
| Proposed Mining Area (Study Area) | 160 | 0.0% | | |
| Original farm | 1978 | 0.5% | | |

Table 2: Level of human influence (transformed areas) on a landscape/ local scale level

| Land Cover 2000 Categories | Surface Area (ha) | % Cover | Derived Ecological Status | |
|--|-------------------|---------|---------------------------|-------------------|
| | | | Natural Areas | Transformed Areas |
| Woodland (previously termed Forest and Woodland) | 6715 | 67% | 6715 | |
| Thicket, Bushland, Bush Clumps, High Fynbos | 1694 | 17% | 1694 | |
| Degraded Forest & Woodland | 1555 | 15% | 1555 | |
| Mines & Quarries (surface-based mining) | 119 | 1% | | 119 |
| Wetlands | 3 | 0% | 3 | |
| Cultivated, temporary, commercial, dryland | 1 | 0% | | 1 |
| TOTALS | 10087 | 100% | 9967 | 120 |
| | | | 99% | 1% |
| Proposed Mining Area (Study Area) | 160 | 2% | | |
| Original farm | 1978 | 20% | | |

Table 3: Level of human influence (transformed areas) within the study area

| Land Cover 2000 Categories | Surface Area (ha) | % Cover | Derived Ecological Status | |
|--|-------------------|---------|---------------------------|-------------------|
| | | | Natural Areas | Transformed Areas |
| Thicket, Bushland, Bush Clumps, High Fynbos | 68 | 42% | 68 | |
| Mines & Quarries (surface-based mining) | 52 | 32% | | 52 |
| Woodland (previously termed Forest and Woodland) | 41 | 26% | 41 | |
| TOTALS | 161 | 100% | 109 | 52 |
| | | | 68% | 32% |

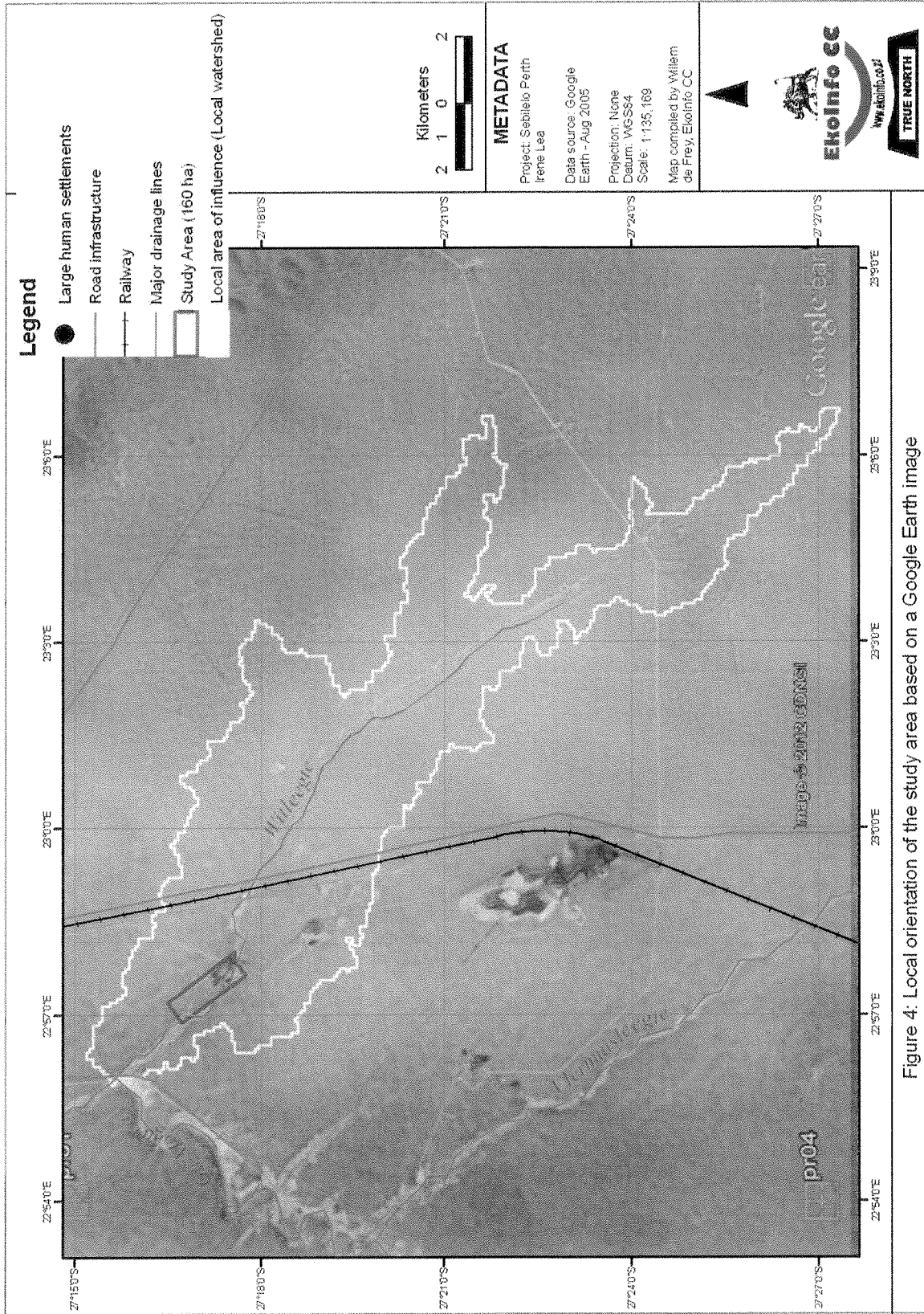


Figure 4: Local orientation of the study area based on a Google Earth image

4 RESULTS

These results reflect the observations made during the site visit in March 2012, as well as information obtained from the literature and desktop review.

4.1 Site Visit

The site visit was completed on the 27th of March 2012, the study area was from the gravel road, six (6) observations were made based on observed variation on the Google Earth Image (Figure 5).

At each observation point, four photos (Photo plate 1) were taken towards the major wind directions (North, East, South, West). The main objective of the site visit was to confirm the validity of the available Google Earth Image from August 2005.

It is evident from the photo records that the study area does contain local variation with regards to species composition, structure and density (Photo plate 2).

No suveys were done therefore detail assessments to verify the presence or absence of flora and fauna species of concern (threatened Red Data, protected, medicinal and alien/ feral), will be required prior to construction commencing because the destruction of these species or their habitat requires permits from provincial and national authorities.

4.2 Ecosystem diversity

The literature review indicated that the site is located within a single regional vegetation unit (ecosystem) on a national scale.

However at a local scale (farm level) the local variation in altitude, slope, aspect and soil conditions result in local vegetation communities or ecosystems. Although a detailed assessment of these local vegetation communities was beyond the scope of this report, satellite imagery was used to highlight the local ecosystem diversity within the area (Figure 6) and on site.

At a regional level using Landsat 7 bands⁵ 1, 2, 3, 4, 5 and 7 in an unsupervised classification, the analysis indicates the presence of 18 clusters (Table 4), which potentially represents 18 vegetation communities. Of the 18 clusters, 14 clusters or 78% are present within the local watershed (local area of influence). Seven clusters or 50% of the clusters present in the local watershed is also present within the study area.

In the absence of a detail assessment it is not possible to determine the nature (species composition) of these vegetation communities or whether they contain species of concern (Red Data, protected, medicinal, alien invasive). However from comparing the satellite imagery results with the available Google Image, it would appear has if cluster 4 correlates with transformed areas such as roads and previously mined areas.

Using the available Digital Elevation Model (DEM) from the NASA's Space Shuttle survey it was possible to model the potential for water to accumulate in the landscape using SAGA⁶'s wetness index (Figure 7). An overlay (Figure 8) of the dominant soil forms and the wetness index derived from 5 m contours shows a good correlation, with the wetness index showing a slightly broader extent. **In the absence of a detailed wetland assessment the precautionary principle should apply and infrastructure should be kept at least 100 m away.**

⁵ Band 1 – Visible Blue, Band 2 – Visible Green, Band 3 – Visible Red, Band 4 – Near Infrared, Band 5 – Mid Infrared, Band 7 – Mid Infrared

⁶ www.saga-gis.org

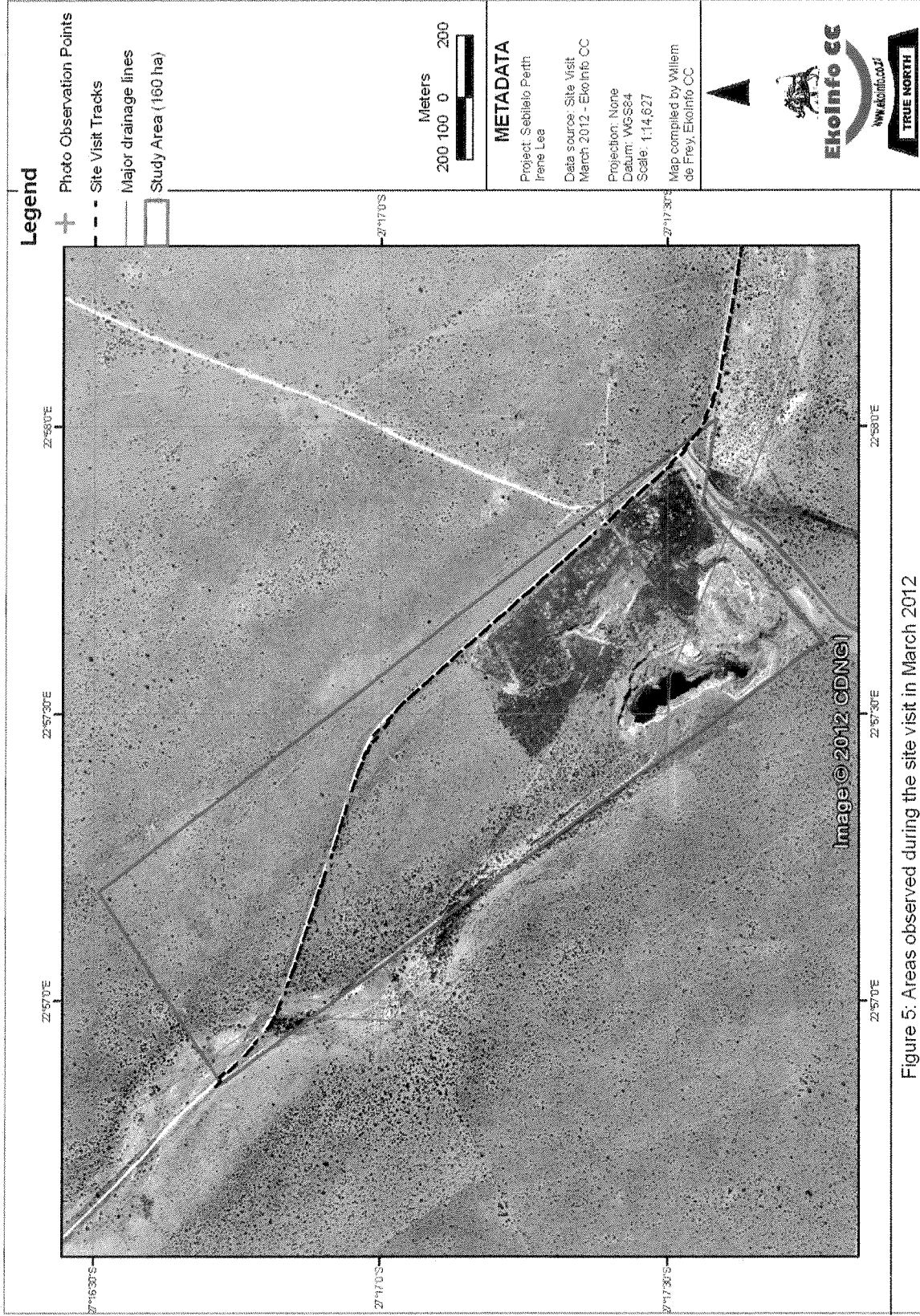
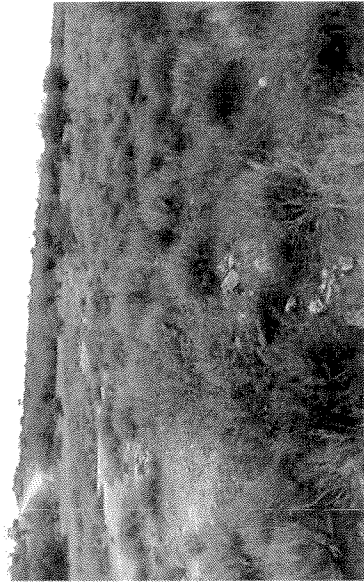


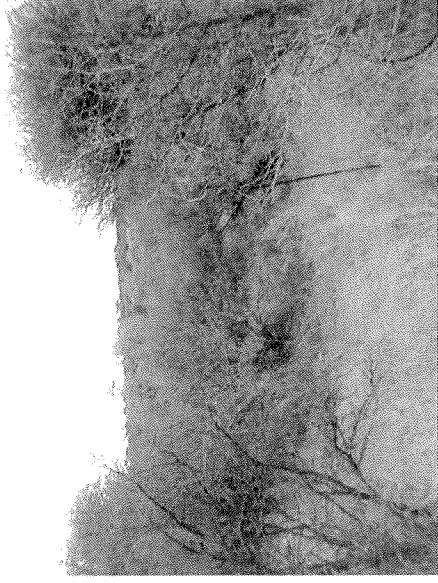
Figure 5: Areas observed during the site visit in March 2012



Most northern point (1) – direction south



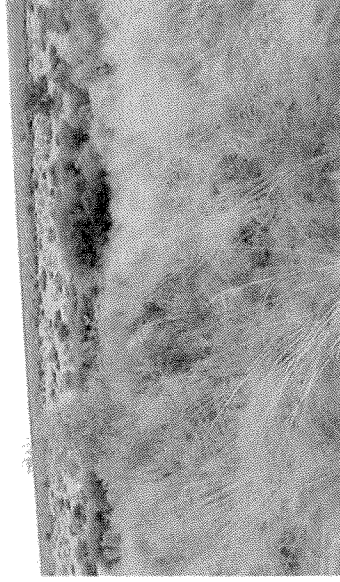
Point 2 – direction south



Point 3 – direction south



Point 4 – direction south



Point 5 – direction south



Most southern point (6) – direction west

Photo plate 1: A collection of photos taken during the site visit in March 2012

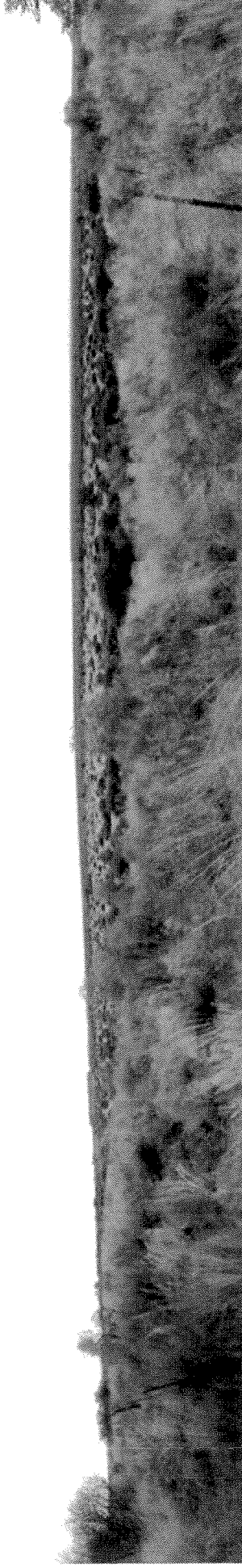


Photo plate 2: A panoramic view of the study area from point 5, from east to west towards the south

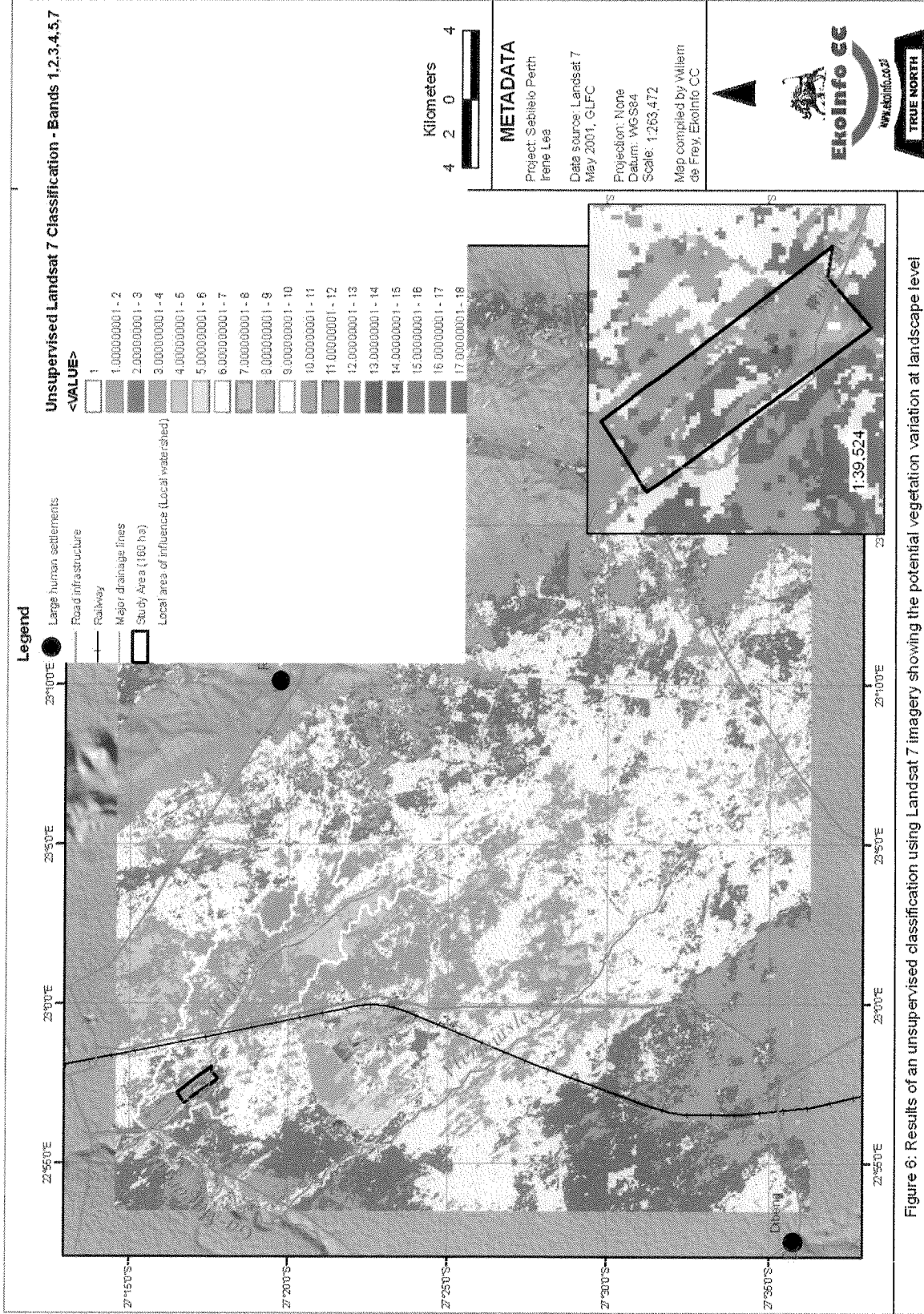


Figure 6: Results of an unsupervised classification using Landsat 7 imagery showing the potential vegetation variation at landscape level

Table 4: Overview of the satellite imagery based clusters (potential vegetation variation) present on a regional, local and study area scale

| Cluster no | Regional landscape | | Local watershed | | Study area | |
|------------------|--------------------|-------------|-----------------|-------------|------------|-------------|
| | Hectares | % Cover | Hectares | % Cover | Hectares | % Cover |
| Cluster 1 | 61401 | 32% | 3492 | 35% | 22 | 14% |
| Cluster 2 | 55642 | 29% | 653 | 6% | 73 | 46% |
| Cluster 3 | 33059 | 17% | 821 | 8% | 38 | 24% |
| Cluster 4 | 19947 | 10% | 3584 | 36% | 11 | 7% |
| Cluster 5 | 12547 | 7% | 19 | 0% | 8 | 5% |
| Cluster 6 | 4045 | 2% | 1007 | 10% | 0 | 0% |
| Cluster 7 | 976 | 1% | 39 | 0% | 0 | 0% |
| Cluster 8 | 990 | 1% | 65 | 1% | 0 | 0% |
| Cluster 9 | 645 | 0% | 146 | 1% | 1 | 0% |
| Cluster 10 | 635 | 0% | 171 | 2% | 0 | 0% |
| Cluster 11 | 389 | 0% | 65 | 1% | 5 | 3% |
| Cluster 12 | 143 | 0% | 0 | 0% | 0 | 0% |
| Cluster 13 | 146 | 0% | 3 | 0% | 0 | 0% |
| Cluster 14 | 124 | 0% | 0 | 0% | 0 | 0% |
| Cluster 15 | 113 | 0% | 5 | 0% | 0 | 0% |
| Cluster 16 | 112 | 0% | 22 | 0% | 0 | 0% |
| Cluster 17 | 54 | 0% | 0 | 0% | 0 | 0% |
| Cluster 18 | 47 | 0% | | 0% | 0 | 0% |
| TOTALS | 191014 | 100% | 10092 | 100% | 160 | 100% |
| | | | | | | |
| No of clusters | 18 | | 14 | | 7 | |
| % of larger area | | | | 78% | | 50% |

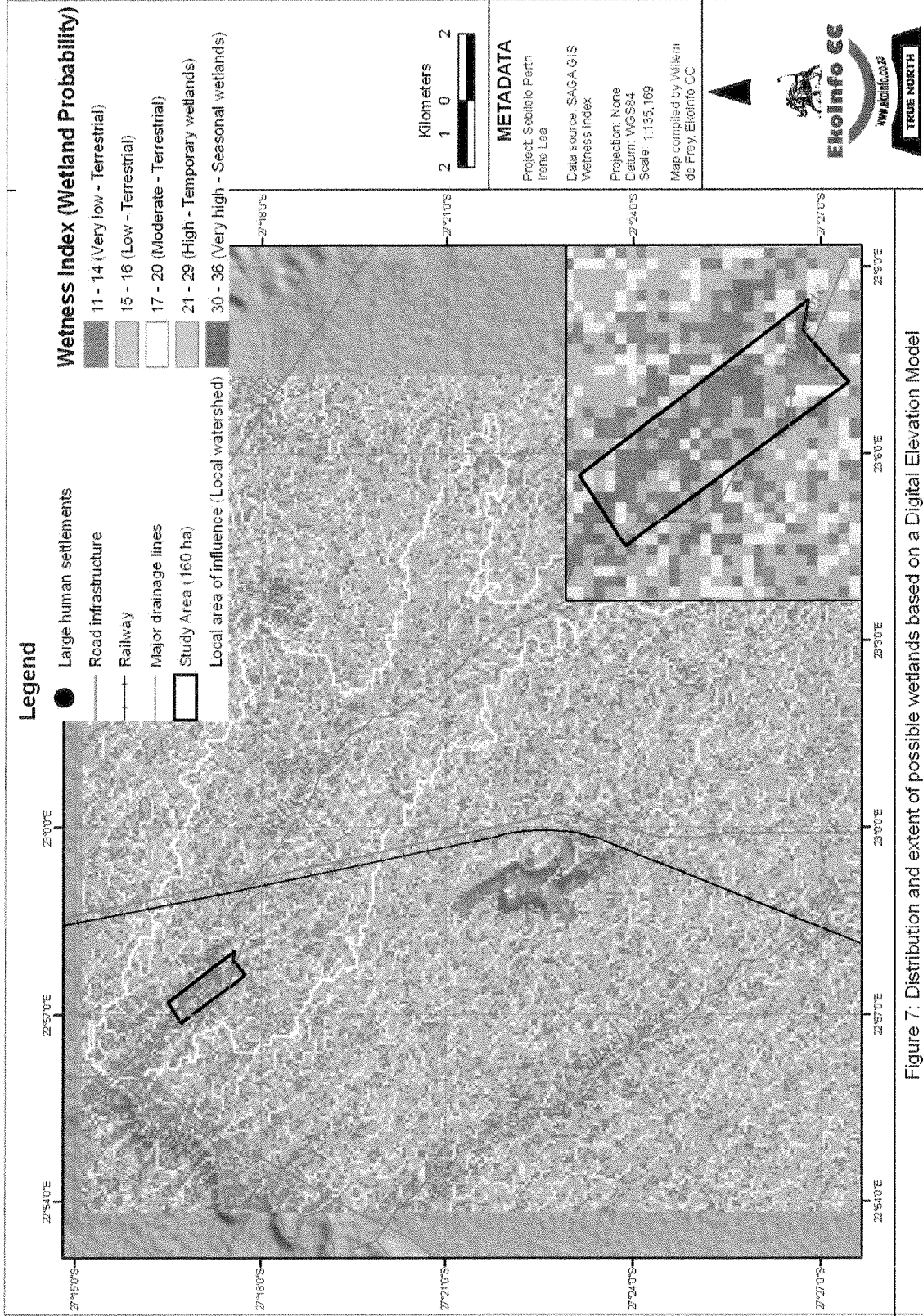


Figure 7: Distribution and extent of possible wetlands based on a Digital Elevation Model

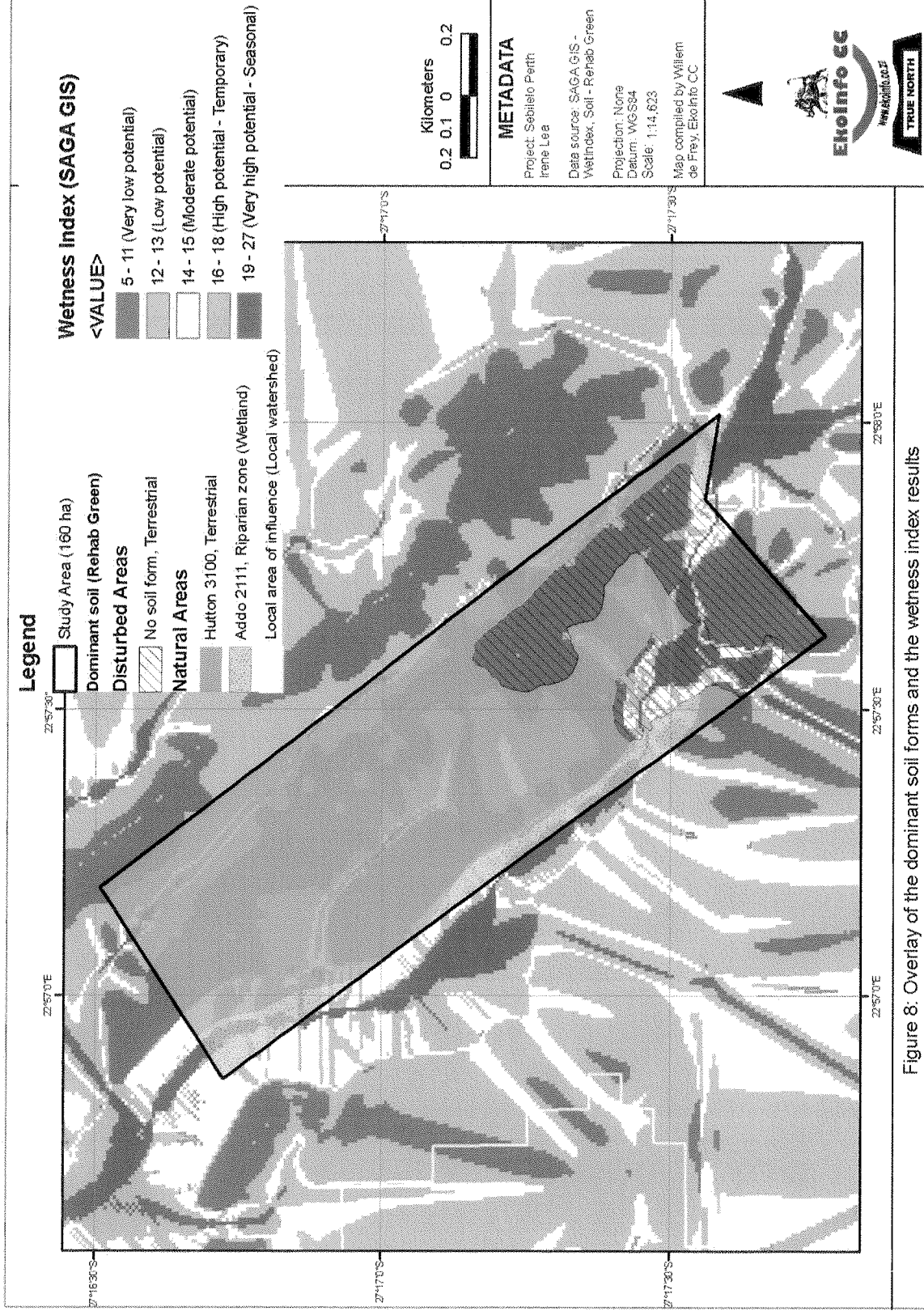


Figure 8: Overlay of the dominant soil forms and the wetness index results

4.3 Species of concern/ species diversity

As a detailed species account of the species present at the site was beyond the scope of the document.

The quarter degree grids associated with the site are poorly sampled (Table 5), according to SANBI's data objectives, because they reflect less than 200 species per grid, these grids needs to be surveyed in more detail at some stage.

Within the nine grids, which surround and include the study area, a total of 530 species were recorded (Appendix B), representing 84 families and 285 genera. The following six (6) families contain more than 50% of the species: Poaceae, Asteraceae, Fabaceae, Malvaceae, Cyperaceae, Scrophulariaceae. The following 62 genera contain more than 50% of the species: *Eragrostis*, *Euphorbia*, *Cyperus*, *Hermannia*, *Indigofera*, *Aristida*, *Helichrysum*, *Solanum*, *Acacia*, *Aptosimum*, *Crotalaria*, *Hibiscus*, *Limeum*, *Searsia*, *Asparagus*, *Cleome*, *Felicia*, *Stipagrostis*, *Abutilon*, *Barleria*, *Dicoma*, *Geigeria*, *Heliotropium*, *Lycium*, *Melolobium*, *Panicum*, *Rhynchosia*, *Salsola*, *Tephrosia*, *Wahlenbergia*, *Andropogon*, *Brachiaria*, *Chascanum*, *Cheilanthes*, *Commelina*, *Cucumis*, *Digitaria*, *Enneapogon*, *Gisekia*, *Jamesbrittenia*, *Kalanchoe*, *Melhania*, *Monechma*, *Moraea*, *Osteospermum*, *Oxalis*, *Oxygonum*, *Pentzia*, *Phyllanthus*, *Portulaca*, *Salvia*, *Sida*, *Sporobolus*, *Striga*, *Tragus*, *Tribulus*, *Tripharis*, *Antheophora*, *Arctotis*, *Asplenium*, *Babiana*, *Bergia*.

The majority of the 530 species belong to one of the following major growth forms, either forbs or woody (Table 6), with forbs being the most dominant growth form.

4.3.1 Threatened Red Data flora of the Northern Cape

According to the latest Red Data flora information available from SANBI, 234 species are considered to be threatened (Vulnerable, Endangered, Critical Endangered). Of these 234 species, 187 species (80%) are Vulnerable (Table 7), 33 species (14%) are Endangered and 14 species (6%) are Critically Endangered. These 234 species are representative of 30 families (Table 8), of the following eight (8) families contains more than 75% of the species: Iridaceae, Mesembryanthemaceae, Asteraceae, Amaryllidaceae, Hyacinthaceae, Fabaceae, Asphodelaceae, Eriospermaceae. A total of 105 genera (Table 9) represent these 234 threatened plants from the Northern Cape, of which the following 16 genera contain 50% of the species: *Romulea*, *Babiana*, *Eriospermum*, *Lithops*, *Moraea*, *Lachenalia*, *Conophytum*, *Geissorhiza*, *Hesperantha*, *Oxalis*, *Cheiridopsis*, *Aloe*, *Lotononis*, *Crassula*, *Strumaria*, *Gethyllis*.

The majority of these threatened plants represent either forbs or woody species (shrubs and/or trees) (Table 10), of which the dominant growth form is forbs.

Environmental data about these species were obtained from SANBI's PRECIS officer, which represented 1421 records. From these records a profile was created of the habitat preference of these 234 species based on altitude, geology, aspect, soil, substrate, moisture, vegetation, exposure and biological effects (Tables 11 – 19).

Table 5: Overview of the number of species recorded per quarter degree grid from PRECIS at SANBI

| Quarter degree grid | No of species per grid |
|---------------------|------------------------|
| 2722BB | 65 |
| 2723AA | 140 |
| 2723AB | 118 |
| 2722BD | 5 |
| 2723AC (Study Area) | 109 |
| 2723AD | 357 |
| 2722DB | 6 |
| 2723CA | 77 |
| 2723CB | 109 |
| Average | 110 |

Table 6: Overview of the growth forms associated with the vegetation at the study area.

| Growth forms | No of species | Major Growth Forms | | |
|--|---------------|--------------------|-------|-------|
| | | Gramnoids | Forbs | Woody |
| No Growth form defined | 3 | | 3 | |
| Bryophyte | 4 | | 4 | |
| Bryophyte, epiphyte | 1 | | 1 | |
| Bryophyte, hydrophyte | 1 | | 1 | |
| Carnivore, herb, pleustophyte | 1 | | 1 | |
| Climber | 2 | | 2 | |
| Climber, dwarf shrub, succulent | 1 | | 1 | |
| Climber, herb | 5 | | 5 | |
| Climber, herb, shrub | 1 | | 1 | |
| Climber, herb, succulent | 6 | | 6 | |
| Climber, shrub | 2 | | 2 | |
| Climber, succulent | 2 | | 2 | |
| Cyperoid, emergent hydrophyte, helophyte, herb | 1 | 1 | | |
| Cyperoid, helophyte, herb | 4 | 4 | | |
| Cyperoid, herb, mesophyte | 10 | 10 | | |
| Dwarf shrub | 31 | | 31 | |
| Dwarf shrub, graminoid, shrub | 1 | | 1 | |
| Dwarf shrub, herb | 17 | | 17 | |
| Dwarf shrub, herb, shrub | 6 | | 6 | |
| Dwarf shrub, parasite, shrub | 2 | | 2 | |
| Dwarf shrub, shrub | 21 | | 21 | |
| Dwarf shrub, shrub, succulent | 2 | | 2 | |
| Dwarf shrub, shrub, suffrutex | 1 | | 1 | |
| Dwarf shrub, succulent | 6 | | 6 | |
| Epiphyte, herb, hydrophyte | 1 | | 1 | |
| Geophyte | 8 | | 8 | |
| Geophyte, herb | 8 | | 8 | |
| Geophyte, herb, lithophyte | 7 | | 7 | |
| Geophyte, herb, succulent | 2 | | 2 | |
| Geophyte, succulent | 5 | | 5 | |
| Graminoid | 93 | 93 | | |
| Helophyte, herb | 2 | | 2 | |
| Helophyte, herb, hydrophyte | 1 | | 1 | |

| Growth forms | No of species | Major Growth Forms | | |
|----------------------------|---------------|--------------------|------------|-----------|
| | | Gramnoids | Forbs | Woody |
| Herb | 171 | | 171 | |
| Herb, hydrophyte | 3 | | 3 | |
| Herb, parasite | 4 | | 4 | |
| Herb, shrub | 8 | | 8 | |
| Herb, succulent | 9 | | 9 | |
| Herb, suffrutex | 1 | | 1 | |
| Parasite, shrub, succulent | 2 | | 2 | |
| Scrambler, shrub | 1 | | 1 | |
| Shrub | 38 | | | 38 |
| Shrub, succulent | 6 | | | 6 |
| Shrub, suffrutex | 2 | | | 2 |
| Shrub, tree | 20 | | | 20 |
| Succulent | 3 | | | 3 |
| Suffrutex | 2 | | | 2 |
| Tree | 2 | | | 2 |
| TOTALS | 530 | 108 | 349 | 73 |

Table 7: Overview of the number of threatened Red Data flora per category for the Northern Cape

| Threatened categories | No of species | % of total |
|------------------------------|----------------------|-------------------|
| Vulnerable (VU) | 187 | 80% |
| Endangered (EN) | 33 | 14% |
| Critical Endangered (CR) | 14 | 6% |
| Totals | 234 | 100% |

Table 8: Overview of the plant families in which the threatened 234 species in the Northern Cape occur

| Family | No of species | % of total | Cumulative % |
|---------------------|---------------|------------|--------------|
| Iridaceae | 60 | 26% | 26% |
| Mesembryanthemaceae | 40 | 17% | 43% |
| Asteraceae | 18 | 8% | 50% |
| Amaryllidaceae | 17 | 7% | 58% |
| Hyacinthaceae | 14 | 6% | 64% |
| Fabaceae | 11 | 5% | 68% |
| Asphodelaceae | 10 | 4% | 73% |
| Eriospermaceae | 10 | 4% | 77% |
| Scrophulariaceae | 6 | 3% | 79% |
| Oxalidaceae | 6 | 3% | 82% |
| Orchidaceae | 5 | 2% | 84% |
| Crassulaceae | 5 | 2% | 86% |
| Poaceae | 4 | 2% | 88% |
| Apiaceae | 3 | 1% | 89% |
| Geraniaceae | 3 | 1% | 91% |
| Rhamnaceae | 3 | 1% | 92% |
| Portulacaceae | 3 | 1% | 93% |
| Rosaceae | 2 | 1% | 94% |
| Proteaceae | 2 | 1% | 95% |
| Colchicaceae | 2 | 1% | 96% |
| Tecophilaeaceae | 1 | 0% | 96% |
| Isoetaceae | 1 | 0% | 97% |
| Malvaceae | 1 | 0% | 97% |
| Cyperaceae | 1 | 0% | 97% |
| Campanulaceae | 1 | 0% | 98% |
| Rutaceae | 1 | 0% | 98% |
| Molluginaceae | 1 | 0% | 99% |
| Apocynaceae | 1 | 0% | 99% |
| Polygalaceae | 1 | 0% | 100% |
| Aizoaceae | 1 | 0% | 100% |
| Totals | 234 | | |

Table 9: Overview of the 105 genera which represents the 234 threatened flora within the Northern Cape

| Genus | No of species | % of total | Cumulative % |
|----------------|---------------|------------|--------------|
| Romulea | 18 | 8% | 8% |
| Babiana | 11 | 5% | 12% |
| Eriospermum | 10 | 4% | 17% |
| Lithops | 9 | 4% | 21% |
| Moraea | 9 | 4% | 24% |
| Lachenalia | 8 | 3% | 28% |
| Conophytum | 8 | 3% | 31% |
| Geissorhiza | 6 | 3% | 34% |
| Hesperantha | 6 | 3% | 36% |
| Oxalis | 6 | 3% | 39% |
| Cheiridopsis | 5 | 2% | 41% |
| Aloe | 5 | 2% | 43% |
| Lotononis | 4 | 2% | 45% |
| Crassula | 4 | 2% | 47% |
| Strumaria | 4 | 2% | 48% |
| Gethyllis | 4 | 2% | 50% |
| Gladiolus | 3 | 1% | 51% |
| Pelargonium | 3 | 1% | 53% |
| Phyllica | 3 | 1% | 54% |
| Disa | 3 | 1% | 55% |
| Bulbinella | 3 | 1% | 56% |
| Brunsvigia | 3 | 1% | 58% |
| Drimia | 3 | 1% | 59% |
| Diascia | 2 | 1% | 60% |
| Daubinya | 2 | 1% | 61% |
| Euryops | 2 | 1% | 62% |
| Colchicum | 2 | 1% | 62% |
| Cliffortia | 2 | 1% | 63% |
| Haemanthus | 2 | 1% | 64% |
| Helictotrichon | 2 | 1% | 65% |
| Lampranthus | 2 | 1% | 66% |
| Avonia | 2 | 1% | 67% |
| Leipoldtia | 2 | 1% | 68% |
| Athanasia | 2 | 1% | 68% |
| Sparaxis | 2 | 1% | 69% |
| Schwantesia | 2 | 1% | 70% |
| Othonna | 2 | 1% | 71% |
| Helichrysum | 1 | 0% | 71% |
| Carex | 1 | 0% | 72% |
| Centeila | 1 | 0% | 72% |
| Cephalophyllum | 1 | 0% | 73% |

| Genus | No of species | % of total | Cumulative % |
|----------------|---------------|------------|--------------|
| Stapelia | 1 | 0% | 73% |
| Tetragonia | 1 | 0% | 74% |
| Clivia | 1 | 0% | 74% |
| Bulbine | 1 | 0% | 74% |
| Selago | 1 | 0% | 75% |
| Secale | 1 | 0% | 75% |
| Corycium | 1 | 0% | 76% |
| Cotula | 1 | 0% | 76% |
| Crocospia | 1 | 0% | 76% |
| Cullumia | 1 | 0% | 77% |
| Chrysocoma | 1 | 0% | 77% |
| Antithrixia | 1 | 0% | 78% |
| Wooleya | 1 | 0% | 78% |
| Amaryllis | 1 | 0% | 79% |
| Amphiglossa | 1 | 0% | 79% |
| Amphithalea | 1 | 0% | 79% |
| Anacampseros | 1 | 0% | 80% |
| Anginon | 1 | 0% | 80% |
| Caesalpinia | 1 | 0% | 81% |
| Annesorhiza | 1 | 0% | 81% |
| Rennera | 1 | 0% | 82% |
| Arctotheca | 1 | 0% | 82% |
| Aspalathus | 1 | 0% | 82% |
| Wiborgia | 1 | 0% | 83% |
| Wahlenbergia | 1 | 0% | 83% |
| Tylecodon | 1 | 0% | 84% |
| Brownanthus | 1 | 0% | 84% |
| Trachyandra | 1 | 0% | 85% |
| Anisodonteia | 1 | 0% | 85% |
| Lapeirousia | 1 | 0% | 85% |
| Heterorhachis | 1 | 0% | 86% |
| Isoetes | 1 | 0% | 86% |
| Ixia | 1 | 0% | 87% |
| Jacobsenia | 1 | 0% | 87% |
| Jamesbrittenia | 1 | 0% | 88% |
| Jordaaniella | 1 | 0% | 88% |
| Cyanella | 1 | 0% | 88% |
| Muraltia | 1 | 0% | 89% |
| Namaquanula | 1 | 0% | 89% |
| Monilaria | 1 | 0% | 90% |
| Leucadendron | 1 | 0% | 90% |
| Leucoptera | 1 | 0% | 91% |
| Leucospermum | 1 | 0% | 91% |

| Genus | No of species | % of total | Cumulative % |
|-----------------|---------------|------------|--------------|
| Mitrophyllum | 1 | 0% | 91% |
| Meyerophytum | 1 | 0% | 92% |
| Namaquanthus | 1 | 0% | 92% |
| Ferraria | 1 | 0% | 93% |
| Manulea | 1 | 0% | 93% |
| Psammotropha | 1 | 0% | 94% |
| Dinteranthus | 1 | 0% | 94% |
| Prionanthium | 1 | 0% | 94% |
| Disperis | 1 | 0% | 95% |
| Podalyria | 1 | 0% | 95% |
| Hessea | 1 | 0% | 96% |
| Ottosonderia | 1 | 0% | 96% |
| Xiphotheca | 1 | 0% | 97% |
| Freesia | 1 | 0% | 97% |
| Otholobium | 1 | 0% | 97% |
| Ornithogalum | 1 | 0% | 98% |
| Gnaphalium | 1 | 0% | 98% |
| Oedera | 1 | 0% | 99% |
| Agathosma | 1 | 0% | 99% |
| Cylindrophyllum | 1 | 0% | 100% |
| Phyllopodium | 1 | 0% | 100% |
| Totals | 234 | 100% | |

Table 10: Overview of the growth forms associated with the 234 threatened plant species in the Northern Cape

| Growth forms | No of species | Major Growth Forms | | |
|-----------------------------------|---------------|--------------------|-------|-------|
| | | Gramnoids | Forbs | Woody |
| Geophyte, herb | 65 | | 65 | |
| Geophyte | 48 | | 48 | |
| Succulent | 40 | | 40 | |
| Dwarf shrub | 17 | | | 17 |
| Shrub | 14 | | | 14 |
| Herb | 11 | | 11 | |
| Herb, succulent | 6 | | 6 | |
| Geophyte, succulent | 5 | | 5 | |
| Graminoid | 4 | 4 | | |
| Dwarf shrub, shrub | 3 | | | 3 |
| Dwarf shrub, succulent | 3 | | | 3 |
| Geophyte, herb, succulent | 2 | | 2 | |
| Dwarf shrub, geophyte, succulent | 2 | | 2 | |
| Dwarf shrub, herb, succulent | 2 | | 2 | |
| Geophyte, herb, hydrophyte | 2 | | 2 | |
| Succulent, tree | 2 | | | 2 |
| [No lifeform defined] | 1 | | | |
| Tree | 1 | | | 1 |
| Herb, tenagophyte | 1 | | | |
| Dwarf shrub, scrambler, succulent | 1 | | | 1 |
| Shrub, succulent | 1 | | | 1 |
| Shrub, tree | 1 | | | 1 |
| Cyperoid, herb, mesophyte | 1 | 1 | | |
| Geophyte, hydrophyte | 1 | | 1 | |
| Totals | 234 | 5 | 184 | 43 |

Table 11: Overview of the altitudinal attributes associated with the 234 threatened plants in the Northern Cape

| Altitude Class | No of records | % frequency | Relevance |
|----------------|---------------|-------------|------------|
| 0 - 500 m | 16 | 13% | |
| 500 - 1000 m | 62 | 49% | Both sites |
| 1000 - 1500 m | 42 | 33% | |
| 1500 - 2000 m | 6 | 5% | |
| Totals | 126 | 100% | |

Table 12: Overview of the geological attributes associated with the 234 threatened plants in the Northern Cape

| Lithological units | No of records | % Frequency | Petrological Units | | |
|--------------------|---------------|-------------|--------------------|-------------|-------------|
| | | | Igneous | Sedimentary | Metamorphic |
| Dolerite | 14 | 11% | 14 | | |
| Gneiss | 1 | 1% | 1 | | |
| Granite | 40 | 33% | 40 | | |
| Mica schist | 1 | 1% | | | 1 |
| Quartzite | 19 | 16% | | | 19 |
| Sandstone | 20 | 16% | | 20 | |
| Shale | 17 | 14% | | 17 | |
| Tillite | 6 | 5% | | 6 | |
| TMS | 4 | 3% | | 4 | |
| Totals | 122 | 100% | 55 | 47 | 20 |
| | | | 45% | 39% | 16% |

Table 13: Overview of the aspect attributes associated with the 234 threatened plants in the Northern Cape

| Aspect classes | No of records | % frequency |
|----------------|---------------|-------------|
| East | 16 | 20% |
| Level | 5 | 6% |
| North | 10 | 13% |
| Northeast | 3 | 4% |
| Northwest | 5 | 6% |
| South | 16 | 20% |
| Southeast | 4 | 5% |
| Southwest | 4 | 5% |
| West | 16 | 20% |
| TOTALS | 79 | 100% |

Table 14: Overview of the soil attributes associated with the 234 threatened plants in the Northern Cape

| Soil texture classes | No records | % frequency | Derived broad soil texture classes | | | | | |
|----------------------|------------|-------------|------------------------------------|------|--------|-------------|-----------------------|--|
| | | | Very fine | Fine | Coarse | Very coarse | Surface rock/ pebbles | |
| Clay | 3 | 1% | 3 | | | | | |
| Calcrete | 2 | 1% | | 2 | | | | |
| Clay | 30 | 14% | 30 | | | | | |
| Clay loam | 2 | 1% | | 2 | | | | |
| Gravel | 20 | 9% | | | | | 20 | |
| Gravel | 4 | 2% | | | | | 4 | |
| Humus-rich | 2 | 1% | | | | | | |
| Loam | 39 | 18% | | | 39 | | | |
| Sand | 96 | 43% | | | | 96 | | |
| Sandy clay | 5 | 2% | | 5 | | | | |
| Sandy loam | 18 | 8% | | | 18 | | | |
| Totals | 221 | 100% | 33 | 9 | 57 | 96 | 24 | |
| | | | 15% | 4% | 26% | 43% | 11% | |

Table 15: Overview of the substrate attributes associated with the 234 threatened plants in the Northern Cape

| Substrate categories | No of records | % Frequency | Derived habitat classes | | |
|----------------------|---------------|-------------|-------------------------|------|-------|
| | | | Water | Soil | Rocky |
| Bare rock | 11 | 5% | | | 11 |
| Gravel | 2 | 1% | | | 2 |
| In water | 2 | 1% | 2 | | |
| Roots | 2 | 1% | | 2 | |
| Soil | 106 | 48% | | 106 | |
| Soil | 1 | 0% | | 1 | |
| Stony soil/ rocky | 10 | 5% | | | 10 |
| Stony soil/rocky | 86 | 39% | | | 86 |
| Totals | 220 | 100% | 2 | 109 | 109 |
| | | | 1% | 50% | 50% |

Table 16: Overview of the moisture attributes associated with the 234 threatened plants in the Northern Cape

| Moisture description | No of records | % frequency | Derived ecosystem types | |
|-------------------------|---------------|-------------|-------------------------|---------------------------------|
| | | | Wet/Moist/Aquatic | Dry/Well - drained/ Terrestrial |
| Arid | 1 | 1% | | 1 |
| Dry | 5 | 4% | | 5 |
| Free-standing water | 1 | 1% | 1 | |
| Moist/damp | 37 | 27% | 37 | |
| Moist/damp well-drained | 2 | 1% | 2 | |
| Permanently waterlogged | 1 | 1% | 1 | |
| Poorly-drained | 3 | 2% | 3 | |
| Seasonally waterlogged | 8 | 6% | 8 | |
| Unknown | 1 | 1% | | |
| Well-drained | 71 | 52% | | 71 |
| Wet | 6 | 4% | 6 | |
| Totals | 136 | 100% | 58 | 77 |
| | | | 43% | 57% |

Table 17: Overview of the moisture attributes associated with the 234 threatened plants in the Northern Cape

| Vegetation description | No of records | % Frequency | Derived biome types | | | | |
|------------------------|---------------|-------------|---------------------|-------|-----------|----------|--------|
| | | | Fynbos | Karoo | Grassland | Woodland | Forest |
| Karoo | 9 | 6% | | 9 | | | |
| Closed shrubland | 3 | 2% | | | | 3 | |
| Closed woodland | 3 | 2% | | | | 3 | |
| Desert | 1 | 1% | | 1 | | | |
| Forest | 1 | 1% | | | | | 1 |
| Fynbos | 56 | 38% | 56 | | | | |
| Grassland | 7 | 5% | | | 7 | | |
| Karoo | 32 | 22% | | 32 | | | |
| Nama karroo | 6 | 4% | | 6 | | | |
| Open shrubland | 2 | 1% | | | | 2 | |
| Open woodland | 3 | 2% | | | | 3 | |
| Succulent karroo | 24 | 16% | | 24 | | | |
| Totals | 147 | 100% | 56 | 72 | 7 | 11 | 1 |
| | | | 38% | 49% | 5% | 7% | 1% |

Table 18: Overview of the exposure attributes associated with the 234 threatened plants in the Northern Cape

| Exposure description | No of records | % Frequency | Exposure classes | |
|----------------------|---------------|-------------|------------------|-----|
| | | | Shade | Sun |
| Full sun | 60 | 80% | | 60 |
| Light shade | 2 | 3% | 2 | |
| Medium shade | 1 | 1% | 1 | |
| Partial shade | 11 | 15% | 11 | |
| Shade | 1 | 1% | 1 | |
| Totals | 75 | 100% | 15 | 60 |
| | | | 20% | 80% |

Table 19: Overview of the biological effect attributes associated with the 234 threatened plants in the Northern Cape

| Biological effect description | No of records | % Frequency | Derived ecological status | | Derived human activity | |
|-------------------------------|---------------|-------------|---------------------------|-------------|------------------------|-------------|
| | | | Natural | Transformed | Human settlement | Agriculture |
| abandoned land | 6 | 5% | | 6 | | 6 |
| cultivated land | 1 | 1% | | 1 | | 1 |
| disturbed-other | 2 | 2% | 2 | | | 2 |
| garden | 11 | 9% | | 11 | | |
| grazed | 14 | 11% | 14 | | | 14 |
| No effect seen | 52 | 42% | 52 | | | 52 |
| plantation | 1 | 1% | | 1 | | 1 |
| recently burned | 5 | 4% | 5 | | | 5 |
| roadside/railway | 2 | 2% | | 2 | | |
| roadside/railwayside | 29 | 24% | | 29 | | |
| Totals | 123 | 100% | 73 | 50 | 42 | 81 |
| | | | 59% | 41% | 34% | 66% |

Based on this information it is concluded the majority of threatened plants within the Northern Cape, occurs at an altitude of between 500 – 1 000 metres above sea level, either on igneous or sedimentary rock, and often on granites, at any aspect, on coarse textured soils and rocky areas, seldom in association with water, either in the Fynbos or Karoo biomes, often in full sun, mainly in the agricultural/ rural areas.

Therefore, it is **low likely that threatened flora could occur at the site**, due to the fact that the site is located in the Savanna biome above the 500 – 1 000 m altitudinal range, but has present sedimentary rocks, with coarse material associated with the Aeolian sand of the Kalahari.

From an overview of the periods (months) when the majority of these threatened species, either flowers or bear fruit, that the current site visit (March 2012) was inside the optimal periods, for those species expected to flower or have seed in March/ April, but outside for those species expected to flower in August/ September (Table 20). However the majority of the threatened species are expected to flower or bear fruit in August/ September.

Based on the available information, it is concluded that the following 15 threatened species, which are associated with an altitudinal height of 1100 m.a.s.l. and coarse (sandy, sandloam) texture could occur within the site (Table 21), namely: *Avonia recurvata* (Schönland) G.D.Rowley ssp. *recurvata*, *Babiana sambucina* (Jacq.) Ker Gawl. var. *longibracteata* G.J.Lewis, *Bulbinella latifolia* Kunth var. *latifolia*, *Crassula brevifolia* Harv. ssp. *brevifolia*, *Disperis purpurata* Rchb.f. ssp. *purpurata*, *Haemanthus graniticus* Snijman, *Hesperantha latifolia* (Klatt) M.P.de Vos, *Hesperantha rivulicola* Goldblatt, *Hessea incana* Snijman, *Moraea indecora* Goldblatt, *Moraea kamiesensis* Goldblatt, *Moraea longiflora* Ker Gawl., *Moraea pendula* (Goldblatt) Goldblatt, *Otholobium hamatum* (Harv.) C.H.Stirt., *Romulea pearsonii* M.P.de Vos.

The most optimal time to verify the presence of these species for a low probability to occur in the area is September and March.

Table 20: Overview of the months in which the majority of the 234 threatened plants of the Northern Cape are expected to flower or bear fruit

| Month | No of species with flowers | No of species with fruit |
|-----------|----------------------------|--------------------------|
| July | 37 | 13 |
| August | 81 | 28 |
| September | 85 | 38 |
| October | 70 | 27 |
| November | 39 | 21 |
| December | 27 | 10 |
| January | 15 | 6 |
| February | 21 | 12 |
| March | 36 | 13 |
| April | 43 | 20 |
| May | 35 | 16 |
| June | 24 | 11 |

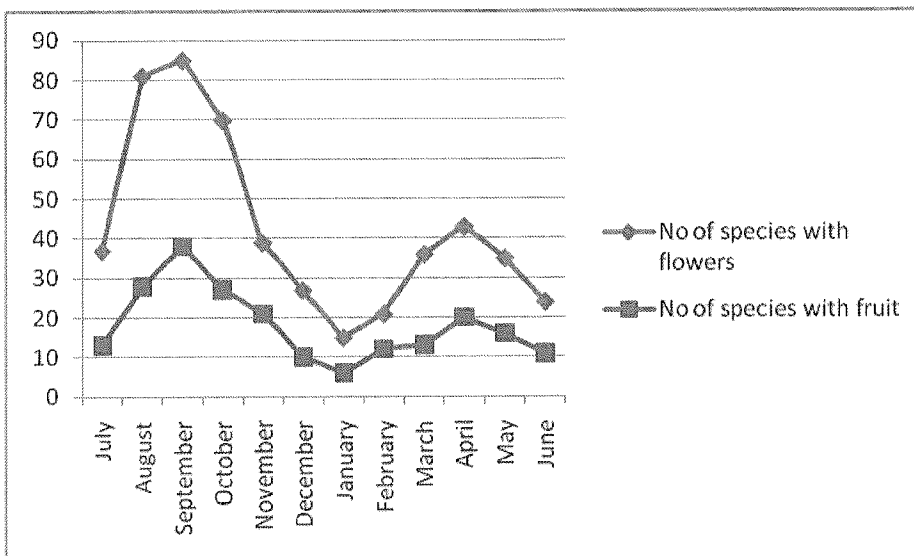


Table 21: List of potential threatened plants from the Northern Cape, which could occur at the site

| Botanical Name | Conservation Status | Growth forms | No of Habitat Criteria | Altitude | Soil texture |
|---|---------------------|------------------------|------------------------|----------|--------------|
| <i>Avonia recurvata</i> (Schönland) G.D. Rowley ssp. <i>recurvata</i> | Vulnerable | Herb, succulent | 2 | 1 | 1 |
| <i>Babiana sambucina</i> (Jacq.) Ker Gawl. var. <i>longibracteata</i> G.J.Lewis | Endangered | Geophyte, herb | 2 | 1 | 1 |
| <i>Bulbinella latifolia</i> Kunth var. <i>latifolia</i> | Vulnerable | Geophyte, herb | 2 | 1 | 1 |
| <i>Crassula brevifolia</i> Harv. ssp. <i>brevifolia</i> | Vulnerable | Dwarf shrub, succulent | 2 | 1 | 1 |
| <i>Disperis purpurata</i> Rchb.f. ssp. <i>purpurata</i> | Vulnerable | Geophyte, herb | 2 | 1 | 1 |
| <i>Haemanthus graniticus</i> Snijman | Endangered | Geophyte | 2 | 1 | 1 |
| <i>Hesperantha latifolia</i> (Klatt) M.P.de Vos | Vulnerable | Geophyte, herb | 2 | 1 | 1 |
| <i>Hesperantha rivulicola</i> Goldblatt | Endangered | Geophyte, herb | 2 | 1 | 1 |
| <i>Hessea incana</i> Snijman | Vulnerable | Geophyte | 2 | 1 | 1 |
| <i>Moraea indecora</i> Goldblatt | Vulnerable | Geophyte, herb | 2 | 1 | 1 |
| <i>Moraea kamiesensis</i> Goldblatt | Endangered | Geophyte, herb | 2 | 1 | 1 |
| <i>Moraea longiflora</i> Ker Gawl. | Vulnerable | Geophyte, herb | 2 | 1 | 1 |
| <i>Moraea pendula</i> (Goldblatt) Goldblatt | Vulnerable | Geophyte, herb | 2 | 1 | 1 |
| <i>Otholobium hamatum</i> (Harv.) C.H.Stirt. | Vulnerable | Shrub | 2 | 1 | 1 |
| <i>Romulea pearsonii</i> M.P.de Vos | Vulnerable | Geophyte, herb | 2 | 1 | 1 |

4.3.2 Protected plants of the Northern Cape

In the absence of a species list based on a detail ecological survey, it is not possible to provide a comprehensive list of the protected species in terms of the Northern Cape Nature and Environmental Conservation Ordinance (No 19 of 1974), which could occur within the site. However, **23 species belonging to protected genera and families were recorded in the topocadastral grids** in which the study area occurs and the surrounding ones (Table 22). Therefore it is highly likely that these species are present within the study area.

The following two trees, which were observed during the site visit, are protected in terms of National Forest Act (Act no. 84 of 1998): *Acacia erioloba* E.Mey. and *Acacia haematoxylon* Willd (Photo plate 3). **It should be noted that permits are required from the national and provincial authorities to destroy these protected plants.**

4.3.3 Medicinal plants

In the absence of a comprehensive list of species for the site, it is not possible to list all the medicinal plants that could occur in the area; however the following sixteen (16) species with medicinal properties were recorded in the topocadastral grids associated with the study area and therefore is highly likely to occur there: *Acacia karroo*, *Croton gratissimus*, *Datura stramonium*, *Elephantorrhiza elephantina*, *Euclea undulata*, *Gomphocarpus fruticosus*, *Harpagophytum procumbens*, *Olea europaea*, *Pellaea calomelanos*, *Rumex lanceolatus*, *Scabiosa columbaria*, *Sutherlandia frutescens*, *Tarhonanthus camphoratus*, *Terminalia sericea*, *Thesium hystrix*, *Withania somnifera* (Table 23).

4.3.4 Alien invasive plants

In terms of the Conservation of Agricultural Resources Act (No 43 of 1983), four declared species, namely *Argemone ochroleuca*, *Datura stramonium*, *Prosopis glandulosa*, *Prosopis velutina* were recorded in the topocadastral grids associated with the study area. These species are classified as Category 1 and 2 respectively (Table 24), their presence in the study area should be verified and if present managed accordingly to the requirements of the act.

4.4 Fauna

Dewald Kamffer of Ecocheck Environmental Services compiled this section on behalf of EkoInfo CC.

4.4.1 Regional Faunal Diversity

It is important to view the study area on an ecologically relevant scale; consequently, all sensitive animal species (specific faunal groups) known from the Northern Cape Province are included in this assessment (except for the avifauna which focuses on the Q-grids of the study area). Data on all faunal groups are lacking (notably for most of the invertebrate groups), as a result, only data sets on specific faunal groups allow for habitat sensitivity analyses based on the presence/absence of sensitive faunal species (red data species) and their specific habitat requirements. At present, the following faunal groups are included in these analyses:

- Butterflies (Invertebrata: Insecta: Lepidoptera – Nymphalidae, Lycaenidae, Hesperidae, Pieridae and Papilionidae). References used include the IUCN Red List (2011) – <http://www.iucnredlist.org> and the South African Butterfly Conservation Assessment (SABCA, 2011) – <http://sabca.adu.org.za>.
- Frogs (Amphibia: Anura). References used include the Atlas and Red Data Book of the South Africa, Lesotho and Swaziland, the Giant Bullfrog Conservation Group (2011) – <http://www.up.ac.za/bullfrog> and a Complete Guide to the Frogs of Southern Africa (du Preez & Carruthers, 2009).

Table 22: List of species recorded within the surrounding grids which belongs to provincially protected genera or families

| Protected Taxon | Species recorded in topocadastral grids | Conservation note |
|---------------------|--|-------------------------------|
| AMARYLLIDACEAE | Boophone disticha (L.f.) Herb. | All species |
| AMARYLLIDACEAE | Nerine laticoma (Ker Gawl.) T.Durand & Schinz | All species |
| APOCYNACEAE | Brachystelma circinatum E.Mey. | All species |
| APOCYNACEAE | Brachystelma cupulatum R.A.Dyer | All species |
| APOCYNACEAE | Fockea angustifolia K.Schum. | All species |
| APOCYNACEAE | Gomphocarpus fruticosus (L.) Aiton f. subsp. fruticosus | All species |
| APOCYNACEAE | Gomphocarpus tomentosus Burch. subsp. tomentosus | All species |
| APOCYNACEAE | Microloma armatum (Thunb.) Schltr. var. burchellii (N.E.Br.) Bruyns | All species |
| APOCYNACEAE | Piaranthus decipiens (N.E.Br.) Bruyns | All species |
| APOCYNACEAE | Raphionacme velutina Schltr. | All species |
| APOCYNACEAE | Sarcostemma viminale (L.) R.Br. subsp. viminale | All species |
| IRIDACEAE | Babiana bainesii Baker | All species |
| IRIDACEAE | Babiana hypogaea Burch. | All species |
| IRIDACEAE | Gladiolus permeabilis D.Delaroche subsp. edulis (Burch. ex Ker Gawl.) Oberm. | All species |
| IRIDACEAE | Lapeirousia erythrantha (Klotzsch ex Klatt) Baker | All species |
| IRIDACEAE | Lapeirousia sandersonii Baker | All species |
| IRIDACEAE | Moraea longistyla (Goldblatt) Goldblatt | All species |
| IRIDACEAE | Moraea pallida (Baker) Goldblatt | All species |
| IRIDACEAE | Moraea polystachya (Thunb.) Ker Gawl. | All species |
| MESEMBRYANTHEMACEAE | Prepodesma orpenii (N.E.Br.) N.E.Br. | All species |
| Aloe | Aloe claviflora Burch. | All species, check exceptions |
| Anacampseros | Anacampseros filamentosa (Haw.) Sims subsp. filamentosa | All species |
| Haworthia | Haworthia venosa (Lam.) Haw. subsp. tessellata (Haw.) M.B.Bayer | All species |

Table 23: List of species with medicinal properties recorded with the topocadastral grids associated with the study area

| |
|---|
| Botanical Name |
| Gomphocarpus fruticosus (L.) Aiton f. subsp. fruticosus |
| Tarchonanthus camphoratus L. |
| Terminalia sericea Burch. ex DC. |
| Scabiosa columbaria L. |
| Euclea undulata Thunb. |
| Croton gratissimus Burch. var. gratissimus |
| Acacia karroo Hayne |
| Elephantorrhiza elephantina (Burch.) Skeels |
| Sutherlandia frutescens (L.) R.Br. |
| Olea europaea L. subsp. africana (Mill.) P.S.Green |
| Harpagophytum procumbens (Burch.) DC. ex Meisn. subsp. procumbens |
| Rumex lanceolatus Thunb. |
| Thesium hystrix A.W.Hill |
| Pellaea calomelanos (Sw.) Link var. calomelanos |
| Datura stramonium L. |
| Withania somnifera (L.) Dunal |



Acacia erioloba



Acacia haematoxylon

Photo plate 3: Examples from the internet of the nationally protected trees *Acacia erioloba* and *A. haematoxylon*

Table 24: List of alien invasive species recorded with the topocadastral grids associated with the study area

| Species | Common name | Description |
|---|------------------------------|---|
| Argemone ochroleuca Sweet subsp. ochroleuca | White flowered Mexican poppy | Category 1 plants are weeds and serve no useful economic purpose and possess characteristics that are harmful to humans, animals or the environment. |
| Datura stramonium L. | Common thorn apple | Category 1 plants are weeds and serve no useful economic purpose and possess characteristics that are harmful to humans, animals or the environment. |
| Prosopis glandulosa Torr. var. glandulosa | Honey mesquite | Category 2 plants are plants that are useful for commercial plant production purposes but are proven plant invaders under uncontrolled conditions outside demarcated areas. |
| Prosopis velutina Wooton | Velvet mesquite | Category 2 plants are plants that are useful for commercial plant production purposes but are proven plant invaders under uncontrolled conditions outside demarcated areas. |

- Reptiles (Reptilia: Testudines and Squamata). References used include the IUCN Red List (2011) and the South African Reptile Conservation Assessment (SARCA, 2011) – <http://sarca.adu.org.za>.
- Birds: All bird groups (Roberts VII Multimedia: Birds of Southern Africa, PC Edition).
- Terrestrial Mammals (Mammalia: Insectivora, Chiroptera, Primates, Lagomorpha, Pholidota, Rodentia, Carnivora, Tubulidentata, Proboscidea, Hyracoidea, Perissodactyla and Artiodactyla). References used include the Red Data Book of the Mammals of South Africa: A Conservation Assessment (Endangered Wildlife Trust - 2004).

As more data become available, additional faunal groups are likely to be added to these assessments. Dragonflies and Damselflies (Invertebrata: Insecta: Odonata) are some examples of future inclusions.

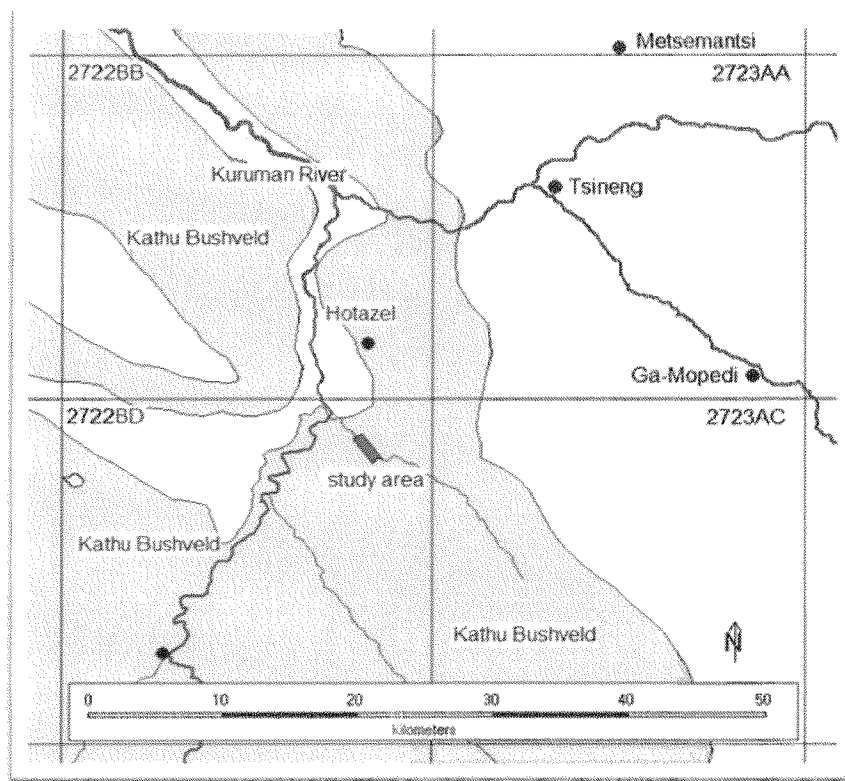


Figure 9: The study area (red) is found within the Q-grid 2722BD in the Northern Cape Province of South Africa. It is located south of Hotazel, includes a minor tributary of the Kuruman River and is characterised by the regional vegetation of the Kathu Bushveld vegetation community (yellow).

4.4.2 Red Data Faunal Assessment

The probability of occurrence assessments of red data species not found to occur in the study area during the field assessment use the following criteria (to, in the end, obtain a low/moderate-low/moderate/moderate-high/high probability of occurrence for all species not confirmed for the study area):

- the size of the study area;
- the location and connectivity of the study area with regards to other natural faunal habitats; and,
- the presence/absence, status and diversity of natural faunal habitats within the study area.

Above-mentioned criteria were used in partnership with the known distribution of red data species as well as their known habitat requirements to estimate their likelihood of occurring in the study area.

Table 25: Data species of the Northern Cape Province and the Q-grid 2722BD (birds)

| SPECIES DETAILS | | | |
|---|-----------------------------|---------------|--------------------|
| Biological Name | English Name | STATUS | Probability |
| BUTTERFLIES | | | |
| <i>Aloeides kaplani</i> | Kaplan's Copper | VU | low |
| <i>Aloeides nollothi</i> | Nolloth's Copper | VU | low |
| <i>Aloeides pallida jonathani</i> | Giant Copper | DD | low |
| <i>Chrysoritis azurius</i> | Azure Opal | VU | low |
| <i>Chrysoritis beaufortius stepheni</i> | Stephen's Opal | VU | low |
| <i>Chrysoritis dicksoni</i> | Dickson's Strandveld Copper | EN | low |
| <i>Chrysoritis pan lysander</i> | Lysander Opal | DD | low |
| <i>Chrysoritis trimeni</i> | Trimen's Opal | VU | low |
| <i>Chrysoritis turneri wykehami</i> | Wykeham's Opal | VU | low |
| <i>Lepidochrysops badhami</i> | Badham's Blue | VU | low |
| <i>Lepidochrysops penningtoni</i> | Pennington's Blue | VU | low |
| <i>Lepidochrysops titei</i> | Tite's Blue | VU | low |
| <i>Lepidochrysops wykehami</i> | Wykeham's Blue | VU | low |
| <i>Phasis pringlei</i> | Pringle's Arrowhead | VU | low |
| <i>Thestor dryburghi</i> | Dryburgh's Skolly | VU | low |
| <i>Thestor pringlei</i> | Pringle's Skolly | VU | low |
| <i>Tuxentius hesperis</i> | Western Pie | DD | low |
| <i>Tuxentius melaena griqua</i> | Black Pie | DD | moderate |
| AMPHIBIANS | | | |
| <i>Cacosternum karoicum</i> | Karoo Caco | DD | low |
| <i>Pyxicephalus adspersus</i> | Giant Bullfrog | NT | moderate |
| <i>Strongylopus springbokensis</i> | Namaqua Stream Frog | VU | low |
| REPTILES | | | |
| <i>Bitis inornata</i> | Plain Mountain Adder | VU | low |
| <i>Bitis schneideri</i> | Namaqua Dwarf Adder | VU | low |
| <i>Cordylus macropholis</i> | Large-scaled Girdled Lizard | NT | low |
| <i>Cordylus mclachlani</i> | McLachlan's Girdled Lizard | VU | low |
| <i>Dermodochelys coriacea</i> | Leatherback Turtle | CR | low |
| <i>Gerrhosaurus typicus</i> | Karoo Plated Lizard | NT | low |
| <i>Goggia gemmula</i> | Richtersveld Pygmy Gecko | DD | low |
| <i>Goggia microlepidota</i> | Small-scaled Gecko | NT | low |
| <i>Homopus signatus</i> | Speckled Padloper | NT | low |
| <i>Lamprophis fiskii</i> | Fisk's House Snake | VU | low |
| <i>Typhlosaurus lomiae</i> | Lomi's Blind Legless Skink | VU | low |
| BIRDS | | | |
| <i>Phoenicopterus roseus</i> | Greater Flamingo | NT | moderate |
| <i>Phoenicopterus minor</i> | Lesser Flamingo | NT | moderate |
| <i>Ciconia nigra</i> | Black Stork | NT | moderate-low |
| <i>Leptoptilos crumeniferus</i> | Marabou Stork | NT | moderate-low |
| <i>Sagittarius serpentarius</i> | Secretarybird | NT | high |
| <i>Gyps africanus</i> | White-backed Vulture | VU | moderate |
| <i>Gyps coprotheres</i> | Cape Vulture | VU | moderate-low |
| <i>Torgos tracheliotus</i> | Lappet-faced Vulture | VU | moderate |
| <i>Terathopus ecaudatus</i> | Bateleur | VU | moderate-low |
| <i>Circus maurus</i> | Black Harrier | VU | moderate |

| | | | |
|----------------------------------|---------------------------------|----|---------------|
| <i>Aquila rapax</i> | Tawny Eagle | VU | moderate-high |
| <i>Polemaetus bellicosus</i> | Martial Eagle | VU | moderate |
| <i>Falco naumanni</i> | Lesser Kestrel | VU | moderate-high |
| <i>Falco biarmicus</i> | Lanner Falcon | NT | moderate-high |
| <i>Ardeotis kori</i> | Kori Bustard | VU | high |
| <i>Neotis ludwigii</i> | Ludwig's Bustard | VU | moderate |
| <i>Charadrius pallidus</i> | Chestnut-banded Plover | NT | moderate-low |
| <i>Glareola nordmanni</i> | Black-winged Pratincole | NT | moderate-low |
| MAMMALS | | | |
| <i>Acinonyx jubatus</i> | Cheetah | VU | low |
| <i>Atelerix frontalis</i> | South African Hedgehog | NT | low |
| <i>Bathyergus janetta</i> | Namaqua Dune Mole-rat | NT | low |
| <i>Bunolagus monticularis</i> | Riverine Rabbit | CR | low |
| <i>Chrysochloris asiatica</i> | Cape Golden Mole | DD | low |
| <i>Chrysochloris visagiei</i> | Visagie's Golden Mole | CR | low |
| <i>Cistugo lesueuri</i> | Leseur's Wing-gland Bat | NT | low |
| <i>Cistugo seabrai</i> | Angolan Wing-gland Bat | VU | low |
| <i>Crocidura cyanea</i> | Reddish-grey Musk Shrew | DD | moderate-high |
| <i>Crocidura fuscumurina</i> | Tiny Musk Shrew | DD | low |
| <i>Crocidura hirta</i> | Lesser Red Musk Shrew | DD | moderate |
| <i>Crocidura silacea</i> | Lesser Grey-brown Musk Shrew | DD | low |
| <i>Crocota crocuta</i> | Spotted Hyaena | NT | low |
| <i>Cryptochloris wintoni</i> | De Winton's Golden Mole | CR | low |
| <i>Damaliscus lunatus</i> | Western Tsessebe | EN | low |
| <i>Diceros bicornis bicornis</i> | Black Rhinoceros - arid ecotype | CR | low |
| <i>Elephantulus intufi</i> | Bushveld Elephant-shrew | DD | low |
| <i>Equus zebra hartmannae</i> | Hartmann's Mountain Zebra | EN | low |
| <i>Erimitalpa granti</i> | Grant's Golden Mole | VU | low |
| <i>Graphiurus platyops</i> | Rock Dormouse | DD | low |
| <i>Hippotragus equinus</i> | Roan Antelope | VU | low |
| <i>Parahyaena brunnea</i> | Brown Hyaena | NT | moderate |
| <i>Lycan pictus</i> | African Wild Dog | EN | low |
| <i>Manis temminckii</i> | Ground Pangolin | VU | low |
| <i>Mellivora capensis</i> | Honey Badger | NT | moderate |
| <i>Miniopterus schreibersii</i> | Schreiber's Long-fingered Bat | NT | moderate |
| <i>Mirounga leonina</i> | Southern Elephant Seal | EN | low |
| <i>Myosorex varius</i> | Forest Shrew | DD | low |
| <i>Mystromys albicaudatus</i> | White-tailed Rat | EN | low |
| <i>Otomys slogetti</i> | Sloggett's Rat | DD | low |
| <i>Panthera leo</i> | Lion | VU | low |
| <i>Paratomys littledalei</i> | Littledale's Whistling Rat | NT | low |
| <i>Petromys typicus</i> | Dassie Rat | NT | low |
| <i>Poecilogale albinucha</i> | African Striped Weasel | DD | low |
| <i>Rhinolophus capensis</i> | Cape Horseshoe Bat | NT | low |
| <i>Rhinolophus clivosus</i> | Geoffroy's Horseshoe Bat | NT | moderate |
| <i>Rhinolophus darlingi</i> | Darling's Horseshoe Bat | NT | moderate-low |
| <i>Rhinolophus denti</i> | Dent's Horseshoe Bat | NT | moderate-low |
| <i>Rhinolophus fumigatus</i> | Ruppel's Horseshoe Bat | NT | low |
| <i>Suncus varilla</i> | Lesser Dwarf Shrew | DD | low |
| <i>Tatera leucogaster</i> | Bushveld Gerbil | DD | moderate |
| <i>Xerus princeps</i> | Mountain Ground Squirrel | NT | low |

Ninety-two red data species from five categories (IUCN) are known to occur in the Northern Cape (Invertebrates, Reptiles, Frogs and Mammals) and the Q-grid 2722BD (birds). Of these, 18 are listed as Data Deficient (DD), 28 as Near Threatened (NT), 35 as Vulnerable (VU), 6 as Endangered (EN) and 5 as Critically Endangered (CR). It is estimated that 63 of the 92 species have a low probability of occurring

in the study area; 8 have an estimated moderate-low probability of occurring, 15 a moderate and 4 a moderate-high probability (Table 3). Additionally, two red data are estimated to have a high probability of occurring in the study area:

The Secretarybird, *Sagittarius serpentarius* (Falconiformes: Sagittariidae), is a Near Threatened (NT) bird found throughout sub-Saharan Africa. The Secretarybird prefers open grassland with scattered trees, shrubland and open woodland savanna. The species is currently not threatened but local populations in South Africa are decreasing.

The Kori Bustard, *Ardeotis kori* (Gruiformes: Otididae), is listed as Vulnerable – the species is found singly or in loose groups in the non-breeding season. The Kori Bustard is found in fairly dry, open savanna (rainfall between 100 and 600 mm per annum); also in Nama-Karoo dwarf shrubland and occasionally in western grasslands and dry grassy pan edges. Threats to the species include habitat loss, poisoning, deliberate snaring and dogs. The species is also vulnerable to overhead collisions with power lines.

4.4.3 Protected Faunal Species

The Northern Cape includes ten provincially listed protected species (www.speciesstatus.sanbi.org – NEMBA status).

Table 26: Protected species of the Northern Cape.

| Biological Name | English Name | NEMBA status | Probability |
|----------------------------|------------------------|--------------|-------------|
| <i>Aonyx capensis</i> | African Clawless Otter | protected | low |
| <i>Atelerix frontalis</i> | South African Hedgehog | protected | low |
| <i>Ceratotherium simum</i> | White Rhinoceros | protected | low |
| <i>Circus ranivorus</i> | African Marsh Harrier | protected | low |
| <i>Crocuta crocuta</i> | Spotted Hyaena | protected | low |
| <i>Diceros bicornis</i> | Black Rhinoceros | protected | low |
| <i>Felis nigripes</i> | Black-footed Cat | protected | moderate |
| <i>Parahyaena brunnea</i> | Brown Hyaena | protected | moderate |
| <i>Spheniscus demersus</i> | African Penguin | protected | low |
| <i>Vulpes chama</i> | Cape Fox | protected | moderate |

It is estimated that seven of the ten species listed in Table 26 are unlikely to occur in the study area (low estimated probability of occurrence); three species are considered to have a moderate probability of occurrence.

4.4.4 Concerns

The study area is located in the relatively untransformed Northern Cape Province of South Africa. On a regional scale, the Kathu Bushveld regional vegetation community (part of the Eastern Kalahari Bushveld Bioregion) is listed as Least Threatened and 98.8% remains untransformed (VegMap 2006). That being said, significant developments have been proposed for the Northern Cape in general as well as the region in which the study area is located since 2006 (pers. obs.) Proposed developments include Photovoltaic Plants (solar energy), transmission power lines and mining developments. On an EIA level, these projects are usually treated singly and consequently the impact assessments seldom consider the cumulative effects of all of these proposed land transformations.

In addition, the study area is untransformed and well connected; the effects of habitat transformation and fragmentation (loss of connectivity, edge effects etc.) are likely insignificant in the region of the study area (except for the developed areas such as the town of Hotazel). It is therefore considered highly likely that at least two red data animals will be present in the study area (Secretarybird and Kori Bustard) and at least moderately likely, that at least another nineteen species will occur (cf. Table 25). Species such as the Black-footed Cat are poorly known and the potential impacts of the proposed project on these species are difficult to predict.

5 RECOMMENDATIONS

5.1 Flora

Based on the information available and the nature of the project, the following recommendations are made:

1. Due to the untransformed nature of the landscape, new infrastructure should be kept close to existing infrastructure as practically possible to prevent additional habitat fragmentation
2. The area along the western boundary is associated with a riparian wetland, its should be managed in accordance with the National Water Management Act.
3. Due to the critical function of vegetation to stabilise the soils within an arid landscape, unnecessary destruction of vegetation should be avoided at all cost.
 - a. Should the proposed activity have a detrimental impact on the vegetation cover in the area, steps should be taken immediately to address and stabilise it because it posses the following risks:
 - i. Failure to address the loss of vegetation would enhance/ accelerate deflation, which could result in a deflation hollow/ blowout (Strahler & Strahler 1987)
 - ii. The absence of vegetation would also increase the abrasion potential of the wind (Strahler & Strahler 1987).
 - b. It should be noted, that because this is an arid environment, it is far more difficult to address vegetation loss and to facilitate rehabilitation than in more humid environments. **THUS PREVENTION IS BETTER THAN CURE!**
4. To ensure environmental legal compliance in terms of
 - a. the national Forests Act
 - b. the provincial Nature and Environmental Conservation Ordinance
 - c. the national Conservation of Agricultural Resources Act
 - d. the National Environmental Management Biodiversity Act
 - i. it is strongly recommended that a detail vegetation survey be completed by a regional vegetation specialist during the optimal flowering period (April/ May, August/ September), prior to construction to:
 - identify all those species for which permits are required to allow their removal or destruction
 - identify plant specimens, which would qualify for plant rescue or for which seed should be obtained to assist with their re-establishment
 - document qualitative and quantitative, the species present, their composition and ecological drivers, to facilitate future rehabilitation of the area, should the activity be stopped and closure required, without this information no baseline information would be available to facilitate and monitor/ measure the success of the rehabilitation process.
5. Effective storm water management should form a critical component of the design of the areas, as the increased runoff from the infrastructure will enhance the effect of localised rainfall events on the drainage areas present in the area, this include the runoff to be generated from buildings, parking areas and roads. The emphasis should be on water retention and flow reduction to prevent the displacement of vegetation and subsequent excessive erosion.
6. To facilitate baseline data collection and future monitoring, it is strongly recommended that high resolution aerial photographs be taken prior to construction, repeated once during construction and on completion of construction and thereafter at least once a year for the duration of the activity; without this information it would not be possible to identify areas of:
 - a. vegetation loss
 - b. ponding
 - c. erosion
 - d. encroachment/ disturbance
 - e. rehabilitation/ restoration and/ or their progress/ success
7. Should ornamental gardens be established for what so ever reason, then only regionally indigenous species should be used!

5.2 Fauna

It is recommended that a comprehensive faunal assessment be conducted on the study area during the optimal season for the study area region. Such a study should include all of the major faunal groups (i.e. Invertebrates, Herpetofauna, Avifauna and Mammals) and should include a biodiversity assessment (species richness and species diversity analyses) and comprehensive red data assessment (i.e. special attention to threatened and protected species). It is further recommended that during the impact assessment, cumulative impacts of other proposed or current developments be considered (either within the regional vegetation community of Kathu Bushveld or within the study area's Quaternary Catchment).

6 REFERENCES

6.1 Flora

BARBOUR, M.G., BURK, J.H. & PITTS, W.D. 1980. Terrestrial Plant Ecology. Benjamin/Cummings Publishing Company, California.

BOTHMA, J du P. 1995. Wildsplaasbestuur Nuwe uitgebreide uitgawe. 2de Uit. Struik Uitgewers

FEY, M. 2010. Soils of South Africa. Cambridge

HILTY, J.A., LIDICKER JR., W.Z. & MERENLENDER, A.M. 2006. CORRIDOR ECOLOGY The Science and Practice of Linking Landscapes for Biodiversity Conservation. Island Press

JOHNSON, M.R., ANHAEUSSER, C.R. & THOMAS, R.J. (Eds) 2006. The Geology of South Africa. Geological Society of South Africa, Johannesburg/ Council of Geoscience, Pretoria, 691 pp

LE ROUX, A. 2005. NAMAQUALAND South African Wild Flower Guide 1. Botanical Society of South Africa

LINDENMAYER, D.B. & FISCHER, J. 2006. Habitat Fragmentation And Landscape Change An Ecological And Conservation Synthesis. Island Press, USA

MUCINA, L. & RUTHERFORD, M.C. (eds) 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

READ, H.H. & WATSON, J. 1983. Introduction to Geology Volume 1 PRINCIPLES. Macmillan Press Ltd, Hong Kong

RETIEF, E. & HERMAN, P.P.J. 1997. Plants of the northern provinces of South Africa: keys and diagnostic characters. Strelitzia 6: 1 - 681

SHEARING, D. 1994. KAROO South African Wild Flower Guide 6. Botanical Society of South Africa

STRAHLER, A.N. & STRAHLER, A.H. 1987. Modern Physical Geography Third Edition. Wiley & Sons, New York

TURNER, M.G., GARDNER, R.H., & O'NEILL, R.V. 2001. Landscape Ecology In Theory And Practice Pattern And Process. Springer, USA

VAN DER WALT, R. 2009. WILD FLOWERS of the Limpopo Valley. Retha van der Walt

VAN OUDTSHOORN, F.P. 1991. Gids tot grasse van Suid-Afrika. Briza Publikasies Bk. Arcadia.

VAN ROOYEN, N. 2001. Flowering plants of the Kalahari dunes

VAN WYK, A.E. & SMITH, G.F. 2001. Regions of Floristic Endemism in Southern Africa. Umdaus Press, Hatfield

VAN WYK, B-E & SMITH, G. 2008. Guide to the Aloes of South Africa. Briza Publications

VAN WYK, B-E., VAN OUDTSHOORN, B. & GERICKE, N. 2000. Medicinal Plants of South Africa. Briza

VILJOEN, M.J. & REIMOLD, W.U. 1999. An Introduction to South Africa's Geological and Mining Heritage. Mintek

WIENS, J.A., MOSS, M.R., TURNER, M.G. & MLADENOFF, D.J. 2006. Foundation Papers In Landscape Ecology. Columbia University Press, New York

6.2 Fauna

- ALEXANDER, G. & MARAIS, J. 2007. A Guide to the Reptiles of Southern Africa. Struik Publishers, Cape Town.
- BARKHUIZEN, B.P. 1978. Vetplante van Suidelike Afrika. Perskor-uitgewery, Johannesburg.
- BEGON, M., HARPER, J.L. & TOWNSEND, C.R. 1990. Ecology. Individuals, Populations and Communities. Blackwell Scientific Publications, USA.
- BOTHMA, J. (ed.). 2002. Game Ranch Management, 4th ed. Van Schaik Publishers, Pretoria.
- BRACKENBURY, J. 1995. Insects and Flowers. A Biological Partnership. Wellington House, London, UK.
- BRANCH, B. 1998. Field Guide to Snakes and Other Reptiles of Southern Africa. Struik Publishers, Cape Town.
- BRANCH, W.R. 1988. South African Red Data Book – Reptiles and Amphibians. National Scientific Programmes Report No 151.
- CAMPBELL, B.M. 1985. A classification of the mountain vegetation of the Fynbos Biome. Memoirs of the Botanical Survey of South Africa, No. 50.
- CARRUTHERS, V. 2001. Frogs and Frogging in Southern Africa. Struik Publishers, Cape Town.
- CARRUTHERS, V. (ed.) 2000. The Wildlife of Southern Africa. A Field Guide to the Animals and Plants of the Region. Struik Publishers, Cape Town.
- CHANNING, A. 2001. Amphibians of Central and Southern Africa. Protea Book House, Pretoria.
- DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND TOURISM. 2001. Environmental Potential Atlas. DEAT, Pretoria.
- DE VILLIERS, D. & COSTELLO, J. 2006. Mkambati and the Wild Coast. South Africa and Pondoland's Unique Heritage. Wilderness Safaris, Cape Town.
- DIPPENAAR-SCHOEMAN, A.S. 2002. Baboon and Trapdoor Spiders of Southern Africa: An Identification Manual. ARC – Plant Protection Research Institute, Pretoria.
- DIPPENAAR-SCHOEMAN, A.S. & JOCQUÉ, R. 1997. African Spiders: An Identification Manual. ARC – Plant Protection Institute, Biosystematics Division, National Collection of Arachnida, Pretoria.
- DU PREEZ, L. & CARRUTHERS, V. 2009. A Complete Guide to the Frogs of Southern Africa. Struik Nature, Cape Town.
- ENDANGERED WILD LIFE TRUST. 2002. The Biodiversity of South Africa 2002. Indicators, Trends and Human Impacts. Struik Publishers, Cape Town.
- ENDANGERED WILDLIFE TRUST. 2004. Red Data Book of the Mammals of South Africa: A Conservation Assessment. CBSG Southern Africa, Parkview, South Africa.
- EVANS, H.E. 1984. Insect Biology: A Textbook of Entomology. Addison-Wesley Publishing Company, USA.
- FILMER, M.R. 1991. Southern African Spiders. An identification guide. Struik Publishers, Cape Town.
- GIANT BULLFROG CONSERVATION GROUP. 2004. www.giantbullfrog.org

- GROVE, A.J. & NEWELL, G.E. 1962. *Animal Biology*, 6th ed. revised. University Tutorial Press, London.
- HILDEBRAND, M. 1988. *Analysis of Vertebrate Structure*, 3rd ed. John Wiley & Sons, Inc., New York.
- HOLM, E. 2008. *Inseklopedie van Suider-Afrika*. Lapa Uitgewers, Pretoria.
- HOLM, E. 1986. *Insekgedrag Menslik Betrag*. Ekogilde cc, Pretoria.
- HOLM, E. & MARAIS, E. 1992. *Fruit Chafers of Southern Africa (Scarabaeidae: Cetoniini)*. Ekogilde cc, Pretoria.
- HOCKEY, P.A.R.; DEAN, W.R.J. & RYAN, P.G. (eds.) 2005. *Roberts - Birds of Southern Africa*, VIIth ed. The Trustees of the John Voelcker Bird Book Fund, Cape Town.
- <http://sabca.adu.org.za>. South African Butterfly Conservation Assessment.
- <http://sarca.adu.org.za>. South African Reptile Conservation Assessment.
- <http://sabap2.adu.org.za>. South African Bird Atlas Project 2.
- IUCN 2001. 2001 IUCN Red List Categories and Criteria. In: *Red Data Book of the Mammals of South Africa: A Conservation Assessment*. CBSG Southern Africa, Parkview, South Africa.
- IUCN 2003. 2003 IUCN Red List of Threatened Species.
- KAMFFER, D. 2004. Community-level effects of fragmentation of the afro-montane grassland in the escarpment region of Mpumalanga, South Africa. MSc. Thesis, University of Pretoria, Pretoria.
- KURE, N. 2003. *Living with Leopards*. Sunbird Publishing, Cape Town.
- LEEMING, L. 2003. *Scorpions of Southern Africa*. Struik Publishers, Cape Town.
- LEROY, A. & LEROY, J. 2003. *Spiders of Southern Africa*. Struik Publishers, Cape Town.
- LIEBENBERG, L. 2000. *Tracks and Tracking in Southern Africa*. Struik Publishers, Cape Town.
- MINTER, L.R., BURGER, M., HARRISON, J.A., BRAACK, H.H., BISHOP, P.J. & KLOEPFER, D., eds. 2004. *Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland*. SI/MAB Series #9. Smithsonian Institution, Washington, DC.
- PEACOCK, F. 2006. *Pipits of Southern Africa*. Published by the author, Pretoria; www.pipits.co.za.
- PERRINS, C. & HARRISON, C.J.O. 1979. *Birds: Their Life, Their Ways, Their World*, Reader's Digest Ed. Elsevier Publishing Projects, New York.
- PICKER, M. & GRIFFITHS, C. 2011. *Alien & Invasive Animals. a South African Perspective*. Struik Publishers, Cape Town.
- PICKER, M., GRIFFITHS, C. & WEAIVING, A. 2002. *Field Guide to the Insects of South Africa*. Struik Publishers, Cape Town.
- PRINGLE, E.L.L., HENNING, G.A. & BALL, J.B. 1994. *Pennington's Butterflies of Southern Africa*, 2nd ed. Struik Publishers, Cape Town.
- SCHOLTZ, C.H. & HOLM, E. 1989. *Insects of Southern Africa*. Butterworths, Durban.
- SINCLAIR, I. & DAVIDSON, I. 1995. *Suider-Afrikaanse Voëls, 'n Fotografiese Gids*. Struik Publishers, Cape Town.

SINCLAIR, I., HOCKEY, P. & TARBOTON, W. 2002. SASOL: Birds of Southern Africa. Struik Publishers, Cape Town.

SKELTON, P. 2001. A Complete Guide to the Freshwater Fishes of Southern Africa. Struik Publishers, Cape Town.

SKINNER, J.D. & SMITHERS, R.H.N. 1990. The Mammals of the Southern African Subregion. University of Pretoria, Pretoria.

SMITHERS, R.H.N. 1986. South African Red Data Book – Terrestrial Mammals. South African National Scientific Programmes Report no 125.

SPECTOR, S. 2002. Biogeographic crossroads as priority areas for biodiversity conservation. Conservation Biology 16(6): 1480-1487.

STUART, C. & STUART, T. 2000. A field Guide to the Tracks and Signs of Southern and East African Wildlife. Struik Publishers, Cape Town.

STUART, C. & STUART, T. 2000. Field Guide to Mammals of Southern Africa. Struik Publishers, Cape Town.

SMITH, M.M. & HEEMSTRA, P.C. (eds.) 2003. Smiths' Sea Fishes. Struik Publishers, Cape Town.

SUTHERLAND, W.J. (ed.). 2006. Ecological Census Techniques, 2nd ed. Cambridge University Press, UK.

SWANEPOEL, D.A. 1953. Butterflies of South Africa. Where, When and How they fly. Maskew Miller Limited, Cape Town.

TARBOTON, W.R. & ERASMUS, R. 1998. Owls and owling in southern Africa. Struik Publishers, Cape Town.

TAYLOR, P.J. 2000. Bats of Southern Africa. University of Natal Press, South Africa.

TOLLEY, K. & BURGER, M. 2007. Chameleons of Southern Africa. Struik Publishers, Cape Town.

VAN OUDTSHOORN, F. 2002. Gids tot die Grasse van Suider-Afrika. Briza Publikasies, Pretoria.

VAN WYK, B-E. & SMITH, G. 1996. Guide to the Aloes of South Africa. Briza Publications, Pretoria.

WILSON, D.E. & MITTERMEIER, R.A. (eds.). 2009. Handbook of the Mammals of the World – Volume 1: Carnivores. Lynx Edicions, Barcelona.

WILSON, D.E. & MITTERMEIER, R.A. (eds.). 2011. Handbook of the Mammals of the World – Volume 2: Hoofed Animals. Lynx Edicions, Barcelona.

WOODHALL, S. 2005. Field Guide to the Butterflies of South Africa. Struik Publishers, Cape Town.

www.nwgp.gov.za/Agriculture/NW_ENVIRONMENTAL_OUTLOOK

www.southafricanbiodiversity.co.za/endangered

www.speciesstatus.sanbi.org

7 APPENDIX A – ABRIDGE CV, PRINCIPLE CONSULTANT

Name of firm: EkolInfo cc Environmental and Wildlife Management Consultancy
 Name of staff: WILLEM HENDRIK DE FREY
 Profession: Environmental and Wildlife Management consultant
 Years with firm: Since 1995
 Nationality: RSA
 Membership of professional societies:
 The South African Council for Natural Scientific Professions (Reg no 400100/02)
 Categories: Botanical Science and Ecological Science
 Currently in the process of affiliating to:
 South African Association of Botanist (SAAB)
 Grassland Society of Southern Africa
 South African Institute of Ecologist and Environmental Scientists (SAIE)

KEY QUALIFICATIONS:

Mr W de Frey has been involved in the discipline of ecology since 1989. During this period he prepared himself for a profession in environmental and wildlife management, by attending courses in chemistry, geology, pedology and statistics, while majoring in Botany and Zoology. His working knowledge was obtained while completing projects for his post-graduate studies in wildlife management in both the Savanna and Grassland Biomes. In addition to his academic publications, he has contributed to numerous reports regarding EMPR's, EIA's, vegetation - and soil surveys and monitoring since the registration of his own consultation close corporation in 1995. He is actively involved in the management and marketing of his close corporation while completing tasks in his field of expertise namely soil, vegetation science and Geographical Information Systems. Mr W de Frey is task orientated with consideration of people's needs and safety. He believes in a holistic approach to environmental and wildlife management and has therefore established a network with individuals in related fields. He is also assisting previously disadvantaged persons in establishing a presence in the environmental industry, namely Lordwick Makhura of Baagi Environmental Consultancy CC and a joint venture company Bonolo Biodiversity And Environmental Management consisting of Baagi Environmental Consultancy CC and Disa Mphago Community Helpers CC.

EDUCATION:

1992 BSc Botany & Zoology, University of Pretoria

| Course | Content | Level |
|------------|--|--|
| Chemistry | Organic and Inorganic chemistry | 1 st year |
| Geology | Introduction/ Geomorphology, Stratigraphy, Structural, Sedimentology Palaeontology, Crystallography | 1 st and 2 nd year |
| Pedology | Introduction, soil classification, soil fertility, soil ecology, soil physics | 1 st and 2 nd year |
| Botany | Morphology, Anatomy, Physiology, Taxonomy, Mycology, Ecology, Reproductive biology | 1 st , 2 nd and 3 rd year |
| Zoology | Taxonomy (Vertebrates and Invertebrates), Physiology (mainly vertebrates), Ecology (mainly vertebrates), Animal behaviour (mainly vertebrates) | 1 st , 2 nd and 3 rd year |
| Statistics | Sampling methods, Statistical Analysis, Probabilities | 1 st year |

1993 BSc (Hons) (Cum laude) Wildlife Management, University of Pretoria

Dissertation: 'N HOLISTIESE EKOLOGIESE BENADERING TOT DIE DRAKRAGBEPALING VAN 'N GEMENGDE WILD- EN BEESBOERDERY IN DIE UBOMBO DISTRIK, MET ENKELE BESTUURS AANBEVELINGS, 1993

1999 MSc (Cum laude) Wildlife Management, University of Pretoria

Thesis: PHYTOSOCIOLOGY OF THE MPUMALANGA HIGH ALTITUDE GRASSLANDS, 1999

COURSES/ WORKSHOPS ATTENDED

1. Red List And Threatened Species Assessment Training Workshop, Hosted by the Conservation Breeding Specialist Group Southern Africa & Endangered Wildlife Trust, December 2003
2. National State of the Environment Workshop, Hosted by DEAT and SRK, ESKOM Convention Centre – November 2004
3. Gauteng Red Data Flora Workshop, Hosted by SANBI and GDACE – November 2005
4. Gauteng Flora Minimum Requirement Workshop, Hosted by GDACE Nature Conservation – August 2007

EMPLOYMENT RECORD:

1986 – 1987

5 Signals Regiment, SADF

1998 – 1993 – Partime

Council of Geoscience, Palaeontology Section

University of Pretoria, Botany Department

Academy of Marksmanship, Range Officer

U Huisoppasser, Own enterprise

1994 – 1995

University of Pretoria, Botany Department, Assistant researcher

1995 – present

EkolInfo cc Environmental and Wildlife Management Consultancy, Founding member and consultant

Overall EkolInfo CC's principal consultant completed or administrated more than 58 vegetation studies as part of Environmental Impact Assessments within all of South Africa's nine provinces and adjacent countries such as Botswana and Mozambique with a focus on either terrestrial vegetation and/ or wetlands. Some projects were on provincial level such as the Mpumalanga and Gauteng Degradation Projects coordinated by the Institute for Soil, Climate and Water and sponsored by National Department of Agriculture. The majority of projects were on local scale from 5 ha to 50 000 ha or more for local developers and corporate institutions (SASOL, Anglo Coal, BHP Billington, Ingwe Coal, Deneys Rietz Attorneys, ESKOM) facilitated independently or as a subcontractor/ specialist for the following institutions: Oryx Environmental CC, African EPA, Arcuss Gibb, Digby Wells and Associates, Nature and Business Alliance and Eyethu Engineers, Strategic Environmental Focus.

COMMUNITY SERVICE

1. Substitute lecture – 2nd & 3rd year Botany Practical (Vegetation Survey Methods), University of Pretoria -1994 & 1995
2. Guest lecture – Wetland Vegetation Communities (2nd year students), Department of Landscape Architecture, University of Pretoria – 1996 & 1997
3. Guest lecture – Principles of Ecology (1st year students), Department of Landscape Architecture, University of Pretoria – 2002
4. Guest lecture – Principles of vegetation survey and mapping for EIA's (3rd year students), Department of Landscape Architecture, University of Pretoria – 2003
5. Referee – ILASA Merits Awards (Environmental Planning), Institute for Landscape Architects of South Africa - 2003

LANGUAGES:

| Language | Capability |
|-------------------------|-----------------------------------|
| English & Afrikaans | Speak, Read, Write - sufficient |
| Sepedi (Northern Sotho) | Speak, Read, Write – insufficient |

8 APPENDIX B – PRECIS SPECIES PER GRID

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|----------------------------------|----------------|---------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Abutilon austro-africanum</i> | Malvaceae | Dwarf shrub | 1 | | | | | | 1 | | |
| <i>Abutilon betschuanicum</i> | Malvaceae | | 1 | | | | | | | 1 | |
| <i>Abutilon dinteri</i> | Malvaceae | Herb, shrub | 1 | | | | | | | | 1 |
| <i>Abutilon rehmannii</i> | Malvaceae | Herb, shrub | 1 | | | | | | | | 1 |
| <i>Acacia erioloba</i> | Fabaceae | Shrub, tree | 1 | | | | | | | | 1 |
| <i>Acacia haematoxylon</i> | Fabaceae | Shrub, tree | 3 | | 1 | 1 | | | | | 1 |
| <i>Acacia hebeclada</i> | Fabaceae | Shrub, tree | 1 | | | | | | | | 1 |
| <i>Acacia hereroensis</i> | Fabaceae | Shrub, tree | 1 | | | | | | | | 1 |
| <i>Acacia karoo</i> | Fabaceae | Shrub, tree | 2 | | | | 1 | | | | 1 |
| <i>Acacia mellifera</i> | Fabaceae | Shrub, tree | 1 | | | | | | | | 1 |
| <i>Acanthosicyos naudinianus</i> | Cucurbitaceae | Herb, succulent | 4 | 1 | | | 1 | | 1 | | 1 |
| <i>Achyranthes aspera</i> | Amaranthaceae | Herb | 2 | | | | | | | | 1 |
| <i>Actinopterys radiata</i> | Pteridaceae | Geophyte, herb, lithophyte | 1 | | | | | | | | 1 |
| <i>Adenia repanda</i> | Passifloraceae | Climber, dwarf shrub, succulent | 1 | | | | | | | | 1 |
| <i>Aerva leucura</i> | Amaranthaceae | Herb | 1 | | | | | | | | 1 |
| <i>Agrostis lachnantha</i> | Poaceae | Graminoid | 1 | | | | | | | | 1 |
| <i>Alectra pumila</i> | Orobanchaceae | Herb, parasite | 1 | | | | | | | | 1 |
| <i>Aloe claviflora</i> | Asphodelaceae | Herb, succulent | 1 | | | | | | | | 1 |
| <i>Amaranthus hybridus</i> | Amaranthaceae | Herb | 1 | | | | | | | | 1 |
| <i>Amelius tridactylus</i> | Asteraceae | Herb | 1 | | | | 1 | | | | |
| <i>Anacamperos filamentosa</i> | Portulacaceae | Herb, succulent | 2 | | | | | | | 1 | 1 |
| <i>Anchusa capensis</i> | Boraginaceae | Herb | 1 | | | | | | | | 1 |
| <i>Andropogon chinensis</i> | Poaceae | Graminoid | 2 | | | | | | 1 | | |
| <i>Andropogon eucomus</i> | Poaceae | Graminoid | 1 | | | | | | | | 1 |
| <i>Andropogon schirensis</i> | Poaceae | Graminoid | 3 | | | | | | 1 | | 1 |
| <i>Anthephora argentea</i> | Poaceae | Graminoid | 5 | 1 | | | 1 | | 1 | | 1 |
| <i>Anthephora pubescens</i> | Poaceae | Graminoid | 4 | | | | 1 | 1 | | | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 27228B | 27228D | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|----------------------------------|------------------|----------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Anthospermum rigidum</i> | Rubiaceae | Dwarf shrub | 3 | | | | 1 | | | | 2 |
| <i>Anitzoma angustifolia</i> | Menispermaceae | Climber | 1 | | | | | | | 1 | |
| <i>Aptosimum albomarginatum</i> | Scrophulariaceae | Dwarf shrub | 2 | | | | 1 | 1 | | | |
| <i>Aptosimum elongatum</i> | Scrophulariaceae | Dwarf shrub | 3 | | | 1 | 1 | 1 | | 1 | |
| <i>Aptosimum indivisum</i> | Scrophulariaceae | Dwarf shrub | 1 | | | | 1 | 1 | | | |
| <i>Aptosimum junceum</i> | Scrophulariaceae | Dwarf shrub, shrub | 1 | | | 1 | | | | | |
| <i>Aptosimum lineare</i> | Scrophulariaceae | Dwarf shrub | 2 | | | 1 | 1 | | | | |
| <i>Aptosimum marlothii</i> | Scrophulariaceae | Dwarf shrub | 1 | | | | | | | 1 | |
| <i>Arctotis leiocarpa</i> | Asteraceae | Herb | 1 | | 1 | | | | | | |
| <i>Arctotis venusta</i> | Asteraceae | Herb | 1 | | | | 1 | | | | |
| <i>Argemone ochroleuca</i> | Papaveraceae | Herb | 1 | | | | | | | 1 | |
| <i>Aristida adscensionis</i> | Poaceae | Graminoid | 2 | 1 | | | | 1 | | | |
| <i>Aristida congesta</i> | Poaceae | Graminoid | 6 | 1 | | 1 | | 1 | 1 | 2 | 1 |
| <i>Aristida engleri</i> | Poaceae | Graminoid | 1 | | | | | | | 1 | |
| <i>Aristida meridionalis</i> | Poaceae | Graminoid | 2 | | | | | 1 | | 1 | |
| <i>Aristida mollissima</i> | Poaceae | Graminoid | 1 | | | | | 1 | | | |
| <i>Aristida stipitata</i> | Poaceae | Graminoid | 7 | 1 | | 1 | | 1 | 1 | 3 | 1 |
| <i>Aristida vestita</i> | Poaceae | Graminoid | 5 | 1 | | 1 | 1 | 1 | 1 | | 1 |
| <i>Asparagus exuvialis</i> | Asparagaceae | Shrub | 2 | | | | 1 | 1 | | | |
| <i>Asparagus laricinus</i> | Asparagaceae | Shrub | 2 | | | | | 1 | | 1 | |
| <i>Asparagus nelsii</i> | Asparagaceae | Shrub | 1 | | | | 1 | | | | |
| <i>Asparagus retrofractus</i> | Asparagaceae | Scrambler, shrub | 1 | | | | | | 1 | | |
| <i>Asparagus suaveolens</i> | Asparagaceae | Shrub | 2 | | | | 1 | | | 1 | |
| <i>Asplenium adiantum-nigrum</i> | Aspleniaceae | Geophyte, herb, lithophyte | 1 | | | | | | | 1 | |
| <i>Asplenium cordatum</i> | Aspleniaceae | Geophyte, herb, lithophyte | 1 | | | | | | | 1 | |
| <i>Aster squamatus</i> | Asteraceae | Herb | 1 | | | 1 | | | | | |
| <i>Atriplex semibaccata</i> | Chenopodiaceae | Dwarf shrub | 2 | | | 1 | | | | 1 | |
| <i>Babiana bainesii</i> | Iridaceae | Geophyte, herb | 1 | | | | | | | | 1 |
| <i>Babiana hypogaea</i> | Iridaceae | Geophyte, herb | 1 | | | | 1 | | | | |
| <i>Baccharoides adoensis</i> | Asteraceae | Herb | 1 | | | | | 1 | | | |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|--------------------------------|----------------|--|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Barleria bechuanensis</i> | Acanthaceae | Herb | 2 | | | | | | | 1 | 1 |
| <i>Barleria irritans</i> | Acanthaceae | Dwarf shrub, herb | 3 | | | | 1 | 1 | 1 | | |
| <i>Barleria macrostegia</i> | Acanthaceae | Herb | 1 | | | | | | | 1 | |
| <i>Barleria media</i> | Acanthaceae | Herb | 1 | | | | | | | 1 | |
| <i>Bergia anagalloides</i> | Elatinaceae | Herb | 1 | | | | 1 | | | | |
| <i>Bergia pentheriana</i> | Elatinaceae | Herb | 2 | | | | | 1 | | 1 | |
| <i>Berkheya ferox</i> | Asteraceae | Shrub | 1 | 1 | | | | | | | |
| <i>Berula thunbergii</i> | Apiaceae | Herb, hydrophyte | 1 | | | | 1 | | | | |
| <i>Bitens pilosa</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Blepharis integrifolia</i> | Acanthaceae | Herb | 2 | | | | 1 | | 1 | | |
| <i>Bolboschoenus maritimus</i> | Cyperaceae | Cyperoid, emergent hydrophyte, helophyte, herb | 1 | | | | 1 | | | | |
| <i>Bolusia acuminata</i> | Fabaceae | Herb | 1 | | | | | | | 1 | |
| <i>Boophone disticha</i> | Amaryllidaceae | Geophyte, succulent | 1 | | | | | | | 1 | |
| <i>Brachiaria marlothii</i> | Poaceae | Graminoid | 4 | 1 | | | 1 | 1 | | 1 | |
| <i>Brachiaria nigropedata</i> | Poaceae | Graminoid | 4 | | | | 1 | | 1 | 1 | 1 |
| <i>Brachiaria serrata</i> | Poaceae | Graminoid | 2 | | | | | | | 1 | 1 |
| <i>Brachystelma circinatum</i> | Apocynaceae | Geophyte, succulent | 1 | | | | | | | 1 | |
| <i>Brachystelma cupulatum</i> | Apocynaceae | Geophyte, succulent | 1 | | | | | 1 | | | |
| <i>Brassica tournefortii</i> | Brassicaceae | Herb | 1 | | | | | | | 1 | |
| <i>Bromus pectinatus</i> | Poaceae | Graminoid | 1 | | | | | | | 1 | |
| <i>Bryum apiculatum</i> | Bryaceae | Bryophyte, hydrophyte | 1 | | | | | | | 1 | |
| <i>Bryum capillare</i> | Bryaceae | Bryophyte | 1 | | | | | | | 1 | |
| <i>Buddleja saligna</i> | Buddlejaceae | Shrub, tree | 2 | | | | | | | 1 | 1 |
| <i>Bulbine abyssinica</i> | Asphodelaceae | Geophyte, herb, succulent | 1 | | | | | | | 1 | |
| <i>Bulbine frutescens</i> | Asphodelaceae | Dwarf shrub, succulent | 1 | | | | | | | 1 | |
| <i>Bulbostylis burchellii</i> | Cyperaceae | Cyperoid, herb, mesophyte | 3 | | | | | | 1 | 1 | 1 |
| <i>Bulbostylis hispidula</i> | Cyperaceae | Cyperoid, herb, mesophyte | 1 | | | | | | 1 | | |
| <i>Calobota cuspidosa</i> | Fabaceae | Shrub | 2 | | | | | | | 1 | 1 |
| <i>Carex burchelliana</i> | Cyperaceae | Cyperoid, helophyte, herb | 1 | | | | | 1 | | | |
| <i>Cenchrus ciliaris</i> | Poaceae | Graminoid | 5 | | | 1 | 1 | 1 | 1 | 1 | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|----------------------------------|------------------|----------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Ceratotheca triloba</i> | Pedaliaceae | Herb | 1 | | | | | | | 1 | |
| <i>Chaenostoma halimifolium</i> | Scrophulariaceae | Dwarf shrub, herb | 1 | | | | | | | | 1 |
| <i>Chamaecrista biensis</i> | Fabaceae | Herb | 2 | | | | | | | 1 | 1 |
| <i>Chamaecrista mimosoides</i> | Fabaceae | Herb | 1 | | | | | | | 1 | |
| <i>Chascanum adenostachyum</i> | Verbenaceae | Herb | 2 | | | | | | | 1 | 1 |
| <i>Chascanum hederaceum</i> | Verbenaceae | Herb | 3 | | | | 1 | | 1 | 1 | |
| <i>Chascanum pinnatifidum</i> | Verbenaceae | Herb | 2 | | | | | | 1 | 1 | |
| <i>Cheilanthes eckloniana</i> | Sinopteridaceae | Geophyte, herb, lithophyte | 1 | | | | | | | 1 | |
| <i>Cheilanthes hirta</i> | Sinopteridaceae | Geophyte, herb, lithophyte | 2 | | | | | | | 1 | 1 |
| <i>Cheilanthes multifida</i> | Sinopteridaceae | Geophyte, herb, lithophyte | 1 | | | | | | | 1 | |
| <i>Chenopodium ambrosioides</i> | Chenopodiaceae | Herb | 1 | | | | 1 | | | | |
| <i>Chenopodium hederiforme</i> | Chenopodiaceae | Herb | 1 | | | | | | | 1 | |
| <i>Chironia palustris</i> | Gentianaceae | Herb | 1 | | | | | | | 1 | |
| <i>Chlorophytum fasciculatum</i> | Anthericaceae | Herb | 1 | | | | | 1 | | | |
| <i>Chrysocoma ciliata</i> | Asteraceae | Shrub | 1 | | | | | | | 1 | |
| <i>Chrysopogon serrulatus</i> | Poaceae | Graminoid | 1 | | | | | 1 | | | |
| <i>Cineraria vallis-pacis</i> | Asteraceae | Herb, suffrutex | 1 | | | | | | | 1 | |
| <i>Citrullus lanatus</i> | Cucurbitaceae | Climber, herb, succulent | 1 | | | | | | | 1 | |
| <i>Clematis brachiata</i> | Ranunculaceae | Climber | 1 | | | | | | | | 1 |
| <i>Cleome angustifolia</i> | Capparaceae | Herb | 2 | | | | | 1 | | | |
| <i>Cleome conrathii</i> | Capparaceae | Herb | 1 | | | | | | | 1 | |
| <i>Cleome kalachariensis</i> | Capparaceae | Herb | 1 | | | | | | | 1 | |
| <i>Cleome oxyphylla</i> | Capparaceae | Herb | 1 | | | | | | | 1 | |
| <i>Cleome rubella</i> | Capparaceae | Herb | 1 | | | | | 1 | | | |
| <i>Coccinia rehmannii</i> | Cucurbitaceae | Climber, herb, succulent | 1 | | | | 1 | | | | |
| <i>Coccinia sessilifolia</i> | Cucurbitaceae | Climber, herb, succulent | 3 | | | | | 1 | | 1 | 1 |
| <i>Coelachyrum yemenicum</i> | Poaceae | Graminoid | 3 | | | | 1 | | | 1 | |
| <i>Commelina afficana</i> | Commelinaceae | Herb | 4 | | | | | 1 | | 2 | 1 |
| <i>Commelina livingstonii</i> | Commelinaceae | Herb | 4 | | | | 1 | 1 | | 1 | 1 |
| <i>Commelina modesta</i> | Commelinaceae | Herb | 1 | | | | | 1 | | | |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|----------------------------------|-----------------|---------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Convolvulus ocellatus</i> | Convolvulaceae | Herb | 1 | | | | | | 1 | | |
| <i>Coralocarpus triangularis</i> | Cucurbitaceae | Climber, herb, succulent | 1 | | | | | | 1 | | |
| <i>Corbichonia rubriviolacea</i> | Lophiocarpaceae | Herb, succulent | 1 | 1 | | | | | | | |
| <i>Corchorus asplenifolius</i> | Malvaceae | Herb | 1 | | | | | | | 1 | |
| <i>Corchorus pinnatifidus</i> | Malvaceae | Herb | 2 | | | | | 1 | | | 1 |
| <i>Crassula lanceolata</i> | Crassulaceae | Herb, succulent | 1 | | | | | | | 1 | |
| <i>Crotalaria griquensis</i> | Fabaceae | Herb | 1 | | | | 1 | | | | |
| <i>Crotalaria leubnitziana</i> | Fabaceae | Herb | 1 | | | | | | | 1 | |
| <i>Crotalaria podocarpa</i> | Fabaceae | Herb | 1 | | | | | | | 1 | |
| <i>Crotalaria spartioides</i> | Fabaceae | Shrub | 1 | | | | | | | 1 | |
| <i>Crotalaria sphaerocarpa</i> | Fabaceae | Herb | 1 | | | | | | | 1 | |
| <i>Crotalaria virgitalis</i> | Fabaceae | Shrub | 2 | 1 | | | | | | 1 | |
| <i>Croton gratissimus</i> | Euphorbiaceae | Shrub, tree | 1 | | | | | | | 1 | |
| <i>Cucumis africanus</i> | Cucurbitaceae | Herb | 2 | | 1 | | | | | 1 | |
| <i>Cucumis heptadactylus</i> | Cucurbitaceae | Herb | 1 | | | | | | | 1 | |
| <i>Cucumis myriocarpus</i> | Cucurbitaceae | Herb | 1 | | | | | | 1 | | |
| <i>Cullen tomentosum</i> | Fabaceae | Herb | 1 | 1 | | | | | | | |
| <i>Cymbopogon pospischilii</i> | Poaceae | Graminoid | 6 | 1 | | | 1 | 1 | 1 | 1 | 1 |
| <i>Cynodon dactylon</i> | Poaceae | Graminoid | 5 | 1 | | | 1 | 1 | 1 | 1 | |
| <i>Cyperus bellus</i> | Cyperaceae | Cyperoid, herb, mesophyte | 2 | | | | | 1 | | | |
| <i>Cyperus capensis</i> | Cyperaceae | Cyperoid, herb, mesophyte | 1 | | | | | | | | 1 |
| <i>Cyperus longus</i> | Cyperaceae | Cyperoid, helophyte, herb | 2 | | | | 1 | | | 1 | |
| <i>Cyperus margaritaceus</i> | Cyperaceae | Cyperoid, herb, mesophyte | 6 | 1 | | | 1 | 1 | 1 | 1 | 1 |
| <i>Cyperus marginatus</i> | Cyperaceae | Cyperoid, helophyte, herb | 2 | | | | | 1 | | 1 | |
| <i>Cyperus marlothii</i> | Cyperaceae | Cyperoid, herb, mesophyte | 3 | | | | | | 1 | 1 | 1 |
| <i>Cyperus sphaerospermus</i> | Cyperaceae | Cyperoid, herb, mesophyte | 1 | | | | | 1 | | | |
| <i>Cyperus squarrosus</i> | Cyperaceae | Cyperoid, herb, mesophyte | 1 | | 1 | | | | | | |
| <i>Datura stramonium</i> | Solanaceae | Herb, shrub | 1 | | | | 1 | | | | |
| <i>Deverra burchellii</i> | Apiaceae | Shrub | 2 | | | | | | 1 | 1 | 1 |
| <i>Dianthus namaensis</i> | Caryophyllaceae | Herb | 1 | | | | | | | 1 | |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BBB/2722BD/2722DB/2723AA | 2723AB | 2723AC | 2723AD/2723CB |
|------------------------------------|---------------|-------------------------------|----------------|------------------------------|--------|--------|---------------|
| <i>Dicoma anomala</i> | Asteraceae | Herb | 1 | | | | 1 |
| <i>Dicoma kurumanii</i> | Asteraceae | Dwarf shrub | 1 | | | 1 | |
| <i>Dicoma macrocephala</i> | Asteraceae | Herb | 1 | | | 1 | |
| <i>Dicoma schinzii</i> | Asteraceae | Herb | 3 | 1 | 1 | 1 | |
| <i>Digitaria eriantha</i> | Poaceae | Graminoid | 3 | 1 | | 1 | 1 |
| <i>Digitaria polyphylla</i> | Poaceae | Graminoid | 3 | 1 | | 1 | 1 |
| <i>Digitaria seriata</i> | Poaceae | Graminoid | 2 | | 1 | | 1 |
| <i>Diheteropogon amplexans</i> | Poaceae | Graminoid | 2 | | | | 1 |
| <i>Dimorphotheca cuneata</i> | Asteraceae | Shrub | 1 | | | | 1 |
| <i>Dimorphotheca zeyheri</i> | Asteraceae | Herb | 1 | 1 | | | |
| <i>Diospyros austro-africana</i> | Ebenaceae | Shrub | 1 | | | | 1 |
| <i>Diospyros lycioides</i> | Ebenaceae | Shrub | 2 | | | | 1 |
| <i>Dipocadi marlothii</i> | Hyacinthaceae | Geophyte | 2 | | 1 | | 1 |
| <i>Dipocadi viride</i> | Hyacinthaceae | Geophyte | 1 | | | 1 | |
| <i>Drimia sanguinea</i> | Hyacinthaceae | Geophyte | 1 | | | | 1 |
| <i>Dyschoriste transvaalensis</i> | Acanthaceae | Dwarf shrub, shrub | 1 | | 1 | | |
| <i>Elephantorrhiza elephantina</i> | Fabaceae | Dwarf shrub, shrub, suffrutex | 2 | | | 1 | 1 |
| <i>Eleusine coracana</i> | Poaceae | Graminoid | 1 | | | | 1 |
| <i>Elionurus muticus</i> | Poaceae | Graminoid | 3 | | | 1 | 1 |
| <i>Enneapogon cenchroides</i> | Poaceae | Graminoid | 4 | 1 | | 1 | 1 |
| <i>Enneapogon desvauxii</i> | Poaceae | Graminoid | 3 | 1 | | | 1 |
| <i>Enneapogon scoparius</i> | Poaceae | Graminoid | 3 | | 1 | 1 | 1 |
| <i>Equisetum ramosissimum</i> | Equisetaceae | Herb, hydrophyte | 1 | | | | 1 |
| <i>Eragrostis amabilis</i> | Poaceae | Graminoid | 1 | | | | 1 |
| <i>Eragrostis barrelleri</i> | Poaceae | Graminoid | 2 | | | 1 | 1 |
| <i>Eragrostis biflora</i> | Poaceae | Graminoid | 1 | | | 1 | |
| <i>Eragrostis capensis</i> | Poaceae | Graminoid | 1 | | | | 1 |
| <i>Eragrostis chloromelas</i> | Poaceae | Graminoid | 2 | | | | 1 |
| <i>Eragrostis curvula</i> | Poaceae | Graminoid | 3 | | | 1 | 1 |
| <i>Eragrostis echinochloidea</i> | Poaceae | Graminoid | 4 | 1 | | | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB/2722BD/2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|--------------------------|----------------|-------------------------------|----------------|----------------------|--------|--------|--------|--------|--------|
| Eragrostis homomalia | Poaceae | Graminoid | 2 | | | 1 | | 1 | |
| Eragrostis lehmanniana | Poaceae | Graminoid | 6 | 1 | 1 | 1 | 1 | 1 | 1 |
| Eragrostis mexicana | Poaceae | Graminoid | 1 | | | | | 1 | |
| Eragrostis micrantha | Poaceae | Graminoid | 2 | | | 1 | | 1 | |
| Eragrostis nindensis | Poaceae | Graminoid | 4 | | 1 | | 1 | 1 | 1 |
| Eragrostis pallens | Poaceae | Graminoid | 4 | 1 | 1 | | 1 | 1 | |
| Eragrostis procumbens | Poaceae | Graminoid | 1 | | | | | 1 | |
| Eragrostis rigidior | Poaceae | Graminoid | 3 | | | 1 | 1 | 1 | |
| Eragrostis trichophora | Poaceae | Graminoid | 5 | 1 | 1 | 1 | 1 | 1 | |
| Eragrostis truncata | Poaceae | Graminoid | 1 | | | 1 | | | |
| Eragrostis viscosa | Poaceae | Graminoid | 1 | | | | | 1 | |
| Eragrostis x | Poaceae | Graminoid | 1 | | | | | 1 | |
| Eriocephalus ericoides | Asteraceae | Shrub | 1 | | | 1 | | | |
| Eriocephalus glandulosus | Asteraceae | Shrub | 1 | | | | | 1 | |
| Eriospermum corymbosum | Eriospermaceae | Geophyte | 1 | | | | | 1 | |
| Eriogonum miserum | Asteraceae | Herb | 1 | | | | | 1 | |
| Erucastrum strigosum | Brassicaceae | Herb | 1 | | | | | 1 | |
| Euclea crispa | Ebenaceae | Shrub, tree | 1 | | | | | 1 | |
| Euclea undulata | Ebenaceae | Shrub, tree | 1 | | | | | 1 | |
| Euphorbia cateniflora | Euphorbiaceae | Dwarf shrub, shrub, succulent | 2 | | 1 | 1 | | | |
| Euphorbia duseimata | Euphorbiaceae | Dwarf shrub, succulent | 3 | | 1 | 1 | | 1 | |
| Euphorbia inaequilatera | Euphorbiaceae | Dwarf shrub, herb | 2 | | | 1 | 1 | | |
| Euphorbia mauritanica | Euphorbiaceae | Shrub, succulent | 1 | | | | | 1 | |
| Euphorbia mundii | Euphorbiaceae | Shrub, succulent | 1 | | | | | 1 | |
| Euphorbia peplus | Euphorbiaceae | Herb | 1 | | | | | 1 | |
| Euphorbia pseudotuberosa | Euphorbiaceae | Dwarf shrub, succulent | 1 | | 1 | | | | |
| Euphorbia rectirama | Euphorbiaceae | Shrub, succulent | 1 | | | | | 1 | |
| Euphorbia wilmaniae | Euphorbiaceae | Dwarf shrub, succulent | 1 | | 1 | | | | |
| Eustachys paspaloides | Poaceae | Graminoid | 5 | 1 | 1 | 1 | | 1 | 1 |
| Evolvulus alsinoides | Convolvulaceae | Herb | 2 | | 1 | | | 1 | |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB/2722BD/2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|-----------------------------------|----------------|--------------------|----------------|----------------------|--------|--------|--------|--------|--------|
| <i>Felicia clavipilosa</i> | Asteraceae | Shrub | 1 | | | | | 1 | |
| <i>Felicia fascicularis</i> | Asteraceae | Shrub | 1 | | 1 | | | | |
| <i>Felicia filifolia</i> | Asteraceae | Shrub | 1 | | | | | 1 | |
| <i>Felicia muricata</i> | Asteraceae | Shrub | 2 | | | | | 2 | |
| <i>Felicia namaquana</i> | Asteraceae | Herb | 1 | | 1 | | | | |
| <i>Fingerhuthia africana</i> | Poaceae | Graminoid | 6 | 1 | 1 | 1 | 1 | 1 | 1 |
| <i>Fissidens erosulus</i> | Fissidentaceae | Bryophyte | 1 | | | | | 1 | |
| <i>Fockea angustifolia</i> | Apocynaceae | Climber, succulent | 1 | 1 | | | | | |
| <i>Foveolina dichotoma</i> | Asteraceae | Herb | 1 | | | | | 1 | |
| <i>Galenia meziana</i> | Aizoaceae | Dwarf shrub | 1 | | 1 | | | | |
| <i>Gazania krebsiana</i> | Asteraceae | Herb | 6 | | | 1 | 1 | 2 | 2 |
| <i>Geigeria brevifolia</i> | Asteraceae | Shrub | 2 | | | | | 1 | 1 |
| <i>Geigeria burkei</i> | Asteraceae | Herb | 1 | | | 1 | | | |
| <i>Geigeria filifolia</i> | Asteraceae | Herb | 2 | | 1 | | | 1 | |
| <i>Geigeria ornativa</i> | Asteraceae | Herb | 4 | 1 | 1 | | 1 | 1 | |
| <i>Gisekia africana</i> | Gisekiaceae | Herb | 4 | | 1 | 1 | 1 | 1 | |
| <i>Gisekia pharmacioides</i> | Gisekiaceae | Herb | 4 | 1 | 1 | 1 | 1 | | |
| <i>Gladiolus permealilis</i> | Iridaceae | Geophyte, herb | 1 | | | | | 1 | |
| <i>Glossochilus burchellii</i> | Acanthaceae | Herb | 2 | | | | 1 | | 1 |
| <i>Gnaphalium englerianum</i> | Asteraceae | Herb | 1 | | | | | 1 | |
| <i>Gnaphalium flagoposis</i> | Asteraceae | Herb | 1 | | | 1 | | | |
| <i>Gnidia polycephala</i> | Thymelaeaceae | Dwarf shrub, herb | 1 | | | | | 1 | |
| <i>Gomphocarpus fruticosus</i> | Apocynaceae | Herb, shrub | 1 | | | | | 1 | |
| <i>Gomphocarpus tomentosus</i> | Apocynaceae | Herb, shrub | 1 | | | | | | 1 |
| <i>Gomphrena celosioides</i> | Amaranthaceae | Herb | 1 | | | | 1 | | |
| <i>Grewia flava</i> | Malvaceae | Shrub | 4 | 1 | | 1 | 1 | 1 | |
| <i>Gymnosporia buxifolia</i> | Celastraceae | Shrub, tree | 2 | | 1 | | | 1 | |
| <i>Harpagophytum procumbens</i> | Pedaliaceae | Herb | 1 | | | | | 1 | |
| <i>Haworthia venosa</i> | Asphodelaceae | Succulent | 1 | | | 1 | | | |
| <i>Helichrysum argyrosphaerum</i> | Asteraceae | Herb | 1 | | | | | 1 | |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|---------------------------------|---------------|--------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Helichrysum caespitium</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Helichrysum cerastioides</i> | Asteraceae | Herb | 2 | | | | | 1 | | 1 | |
| <i>Helichrysum lineare</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Helichrysum nudifolium</i> | Asteraceae | Herb | 2 | | | | | | | 1 | 1 |
| <i>Helichrysum spiciforme</i> | Asteraceae | Dwarf shrub, shrub | 1 | | | | | | | 1 | |
| <i>Helichrysum zeyheri</i> | Asteraceae | Dwarf shrub, shrub | 2 | | | | | | | 1 | 1 |
| <i>Helinus spartioides</i> | Rhamnaceae | Dwarf shrub | 2 | | | | 1 | | | 1 | |
| <i>Heliophila suavissima</i> | Brassicaceae | Dwarf shrub | 1 | | | | | | | | 1 |
| <i>Heliotropium ciliatum</i> | Boraginaceae | Herb | 1 | | | | | 1 | | | |
| <i>Heliotropium nelsonii</i> | Boraginaceae | Herb | 1 | | | | | | 1 | | |
| <i>Heliotropium ovalifolium</i> | Boraginaceae | Herb | 2 | | | | | 1 | | 1 | |
| <i>Heliotropium strigosum</i> | Boraginaceae | Herb | 2 | | | | 1 | | | 1 | |
| <i>Hemarthria altissima</i> | Poaceae | Graminoid | 1 | | | | | 1 | | | |
| <i>Hermannia bicolor</i> | Malvaceae | Herb | 2 | | | | | 1 | | 1 | |
| <i>Hermannia comosa</i> | Malvaceae | Herb | 2 | | | | 1 | | | 1 | |
| <i>Hermannia linearifolia</i> | Malvaceae | Dwarf shrub, shrub | 1 | | | | | | | 1 | |
| <i>Hermannia linnaeoides</i> | Malvaceae | Herb | 2 | | | | | 1 | | 1 | |
| <i>Hermannia modesta</i> | Malvaceae | Dwarf shrub, herb | 2 | | | | 1 | 1 | | | |
| <i>Hermannia pulverata</i> | Malvaceae | Herb | 1 | | | | | 1 | | | |
| <i>Hermannia stellulata</i> | Malvaceae | Herb | 1 | | | | | | | 1 | |
| <i>Hermannia tomentosa</i> | Malvaceae | Herb | 2 | | | | 1 | | | 1 | |
| <i>Hermstaedtia fleckii</i> | Amaranthaceae | Herb | 2 | 1 | | | | | | 1 | |
| <i>Hermstaedtia odorata</i> | Amaranthaceae | Herb | 4 | | | | | | 1 | 3 | |
| <i>Heteropogon contortus</i> | Poaceae | Graminoid | 4 | | | | 1 | | 1 | 1 | 1 |
| <i>Hibiscus engleri</i> | Malvaceae | Herb | 1 | | | | 1 | | | | |
| <i>Hibiscus fleckii</i> | Malvaceae | Herb | 1 | | | | 1 | | | | |
| <i>Hibiscus ludwigii</i> | Malvaceae | Herb, shrub | 1 | | | | | | 1 | | |
| <i>Hibiscus marlothianus</i> | Malvaceae | Herb | 1 | | | | | | | 1 | |
| <i>Hibiscus micranthus</i> | Malvaceae | Herb, shrub | 1 | | | | 1 | | | | |
| <i>Hibiscus pusillus</i> | Malvaceae | Herb | 1 | | | | | | 1 | | |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|------------------------------------|------------------|--------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Hirpicium bechuanense</i> | Asteraceae | Dwarf shrub | 1 | | | | | 1 | | | |
| <i>Hirpicium echinus</i> | Asteraceae | Herb | 2 | | | | | 1 | | 1 | |
| <i>Hyparrhenia anamesa</i> | Poaceae | Graminoid | 1 | | | | | | | | 1 |
| <i>Hypertelis saisoioides</i> | Molluginaceae | Dwarf shrub | 2 | | | | | 1 | | 1 | |
| <i>Hypoestes forsköolii</i> | Acanthaceae | Herb | 2 | | | | | | 1 | 1 | |
| <i>Iffloga molluginoides</i> | Asteraceae | Herb | 1 | | | | | | | | 1 |
| <i>Imperata cylindrica</i> | Poaceae | Graminoid | 1 | | | | | 1 | | | |
| <i>Indigostrum argyraeum</i> | Fabaceae | Herb | 1 | 1 | | | | | | | |
| <i>Indigostrum costatum</i> | Fabaceae | Herb | 1 | | | | | 1 | | | |
| <i>Indigofera alternans</i> | Fabaceae | Herb | 5 | 1 | | | 1 | 1 | 1 | 1 | |
| <i>Indigofera comosa</i> | Fabaceae | Shrub | 1 | | | | | | | | 1 |
| <i>Indigofera daleoides</i> | Fabaceae | Herb | 3 | | | | 1 | 1 | | 1 | |
| <i>Indigofera flavicans</i> | Fabaceae | Herb | 1 | | | | | | | | 1 |
| <i>Indigofera hololeuca</i> | Fabaceae | Herb | 2 | 1 | | | | | | 1 | |
| <i>Indigofera holubii</i> | Fabaceae | Herb | 1 | | | | | 1 | | | |
| <i>Indigofera sessilifolia</i> | Fabaceae | Dwarf shrub, herb | 2 | | | | | 1 | | 1 | |
| <i>Indigofera vicioides</i> | Fabaceae | Herb | 1 | | | | | | | | 1 |
| <i>Ipomoea obscura</i> | Convolvulaceae | Herb | 2 | | | | | | 1 | | 1 |
| <i>Ipomoea suffruticosa</i> | Convolvulaceae | Suffrutex | 1 | | | | | | | | 1 |
| <i>Jamesbrittenia atropurpurea</i> | Scrophulariaceae | Dwarf shrub | 1 | | | | | | | 1 | |
| <i>Jamesbrittenia atropurpurea</i> | Scrophulariaceae | Dwarf shrub, shrub | 3 | | | | 1 | | 1 | 1 | |
| <i>Jamesbrittenia aurantiaca</i> | Scrophulariaceae | Herb | 1 | | | | | | | | 1 |
| <i>Jamesbrittenia integerrima</i> | Scrophulariaceae | Dwarf shrub, herb | 2 | | | | | | | 1 | 1 |
| <i>Juncus exsertus</i> | Juncaceae | Helophyte, herb | 1 | | | | | | | | 1 |
| <i>Juncus rigidus</i> | Juncaceae | Helophyte, herb | 3 | | | | 1 | 1 | | 1 | |
| <i>Justicia puberula</i> | Acanthaceae | Dwarf shrub, herb | 2 | | | | | | 1 | | 1 |
| <i>Kalanchoe brachyloba</i> | Crassulaceae | Shrub, succulent | 1 | | | | | | | | 1 |
| <i>Kalanchoe lanceolata</i> | Crassulaceae | Shrub, succulent | 1 | | | | | | | 1 | |
| <i>Kalanchoe rotundifolia</i> | Crassulaceae | Dwarf shrub, succulent | 1 | | | | | | | | 1 |
| <i>Kedrostis africana</i> | Cucurbitaceae | Climber, herb, succulent | 1 | | | | | | | | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB/2722BD/2722DB/2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|----------------------------------|-----------------|---------------------------|----------------|-----------------------------|--------|--------|--------|--------|
| <i>Kleinia longiflora</i> | Asteraceae | Shrub, succulent | 2 | 1 | | | 1 | |
| <i>Kohautia caespitosa</i> | Rubiaceae | Herb | 2 | | | | 1 | 1 |
| <i>Kyllinga alba</i> | Cyperaceae | Cyperoid, herb, mesophyte | 2 | | 1 | | 1 | |
| <i>Kyphocarpa angustifolia</i> | Amaranthaceae | Herb | 1 | | | 1 | | |
| <i>Lamarckia aurea</i> | Poaceae | Graminoid | 1 | | | 1 | | |
| <i>Lantana rugosa</i> | Verbenaceae | Shrub | 3 | 1 | | | 1 | 1 |
| <i>Lepirousia erythrantha</i> | Iridaceae | Geophyte, herb | 1 | | | | 1 | |
| <i>Lepirousia sandersonii</i> | Iridaceae | Geophyte, herb | 2 | | | | 1 | 1 |
| <i>Ledebouria apertiflora</i> | Hyacinthaceae | Geophyte | 1 | 1 | | | | |
| <i>Leptochloa fusca</i> | Poaceae | Graminoid | 3 | 1 | | 1 | 1 | |
| <i>Lessertia pauciflora</i> | Fabaceae | Herb | 1 | | 1 | | | |
| <i>Leucas capensis</i> | Lamiaceae | Dwarf shrub | 3 | | | 1 | 1 | 1 |
| <i>Leysera tenella</i> | Asteraceae | Herb | 1 | | | | 1 | |
| <i>Limeum aethiopicum</i> | Molluginaceae | Herb | 3 | | | 1 | 2 | |
| <i>Limeum arenicolium</i> | Molluginaceae | Herb | 1 | | | | 1 | |
| <i>Limeum fenestratum</i> | Molluginaceae | Herb | 2 | | | | 1 | 1 |
| <i>Limeum myosotis</i> | Molluginaceae | Herb | 1 | 1 | | | | |
| <i>Limeum viscosum</i> | Molluginaceae | Herb | 2 | | | 1 | 1 | |
| <i>Lobelia erinus</i> | Lobeliaceae | Herb | 1 | | | | 1 | |
| <i>Lobelia thermalis</i> | Lobeliaceae | Herb | 2 | 1 | | | 1 | |
| <i>Lophiocarpus polystachyus</i> | Lophiocarpaceae | Dwarf shrub, herb | 1 | | | | 1 | |
| <i>Lotononis calycina</i> | Fabaceae | Herb | 1 | | | | 1 | |
| <i>Lotononis crumamina</i> | Fabaceae | Herb | 2 | 1 | | | 1 | |
| <i>Lycium cinereum</i> | Solanaceae | Dwarf shrub, shrub | 1 | | 1 | | | |
| <i>Lycium hirsutum</i> | Solanaceae | Dwarf shrub, shrub | 1 | | 1 | | | |
| <i>Lycium pilifolium</i> | Solanaceae | Dwarf shrub, shrub | 1 | | 1 | | | |
| <i>Lycium schizocalyx</i> | Solanaceae | Dwarf shrub, shrub | 1 | | | | 1 | |
| <i>Medicago laciniata</i> | Fabaceae | Herb | 1 | | | | 1 | |
| <i>Megaloptacthne albescens</i> | Poaceae | Graminoid | 2 | 1 | | | 1 | |
| <i>Melihania burchellii</i> | Malvaceae | Herb | 4 | | 1 | 1 | 1 | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB/2722BD | 2722DB/2722DA | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|----------------------------------|----------------|------------------------------|----------------|---------------|---------------|--------|--------|--------|--------|--------|
| <i>Melhantha prostrata</i> | Malvaceae | Dwarf shrub | 1 | | | | | | 1 | |
| <i>Melhantha virescens</i> | Malvaceae | Dwarf shrub | 3 | | | | 1 | 1 | 1 | |
| <i>Melilotus albus</i> | Fabaceae | Herb | 1 | | | | | | 1 | |
| <i>Melinis nervigulumis</i> | Poaceae | Graminoid | 1 | | | | | | | 1 |
| <i>Melinis repens</i> | Poaceae | Graminoid | 7 | | | 1 | 2 | 1 | 2 | 1 |
| <i>Melolobium candicans</i> | Fabaceae | Dwarf shrub, herb, shrub | 1 | 1 | | | | | | |
| <i>Melolobium canescens</i> | Fabaceae | Dwarf shrub, shrub | 1 | | | | 1 | | | |
| <i>Melolobium humile</i> | Fabaceae | Dwarf shrub | 1 | 1 | | | | | | |
| <i>Melolobium microphyllum</i> | Fabaceae | Dwarf shrub, shrub | 1 | | | 1 | | | | |
| <i>Merremia verecunda</i> | Convolvulaceae | Herb | 1 | 1 | | | | | | |
| <i>Microloma armatum</i> | Apocynaceae | Dwarf shrub, shrub | 2 | | | 1 | | 1 | | |
| <i>Mollugo cerviana</i> | Molluginaceae | Herb | 2 | | | | 1 | | 1 | |
| <i>Monechma divaricatum</i> | Acanthaceae | Shrub, suffrutex | 3 | | | 1 | 1 | | 1 | |
| <i>Monechma genistifolium</i> | Acanthaceae | Dwarf shrub, shrub | 2 | 1 | | | | | 1 | |
| <i>Monechma incanum</i> | Acanthaceae | Dwarf shrub, shrub | 2 | | | | 1 | | 1 | |
| <i>Monsonia angustifolia</i> | Geraniaceae | Herb | 1 | | | | | | | 1 |
| <i>Montinia caryophyllacea</i> | Montiniaceae | Shrub | 1 | | | 1 | | | | |
| <i>Moraea longistyla</i> | Iridaceae | Geophyte, herb | 1 | 1 | | | | | | |
| <i>Moraea pallida</i> | Iridaceae | Geophyte, herb | 1 | 1 | | | | | | |
| <i>Moraea polystachya</i> | Iridaceae | Geophyte, herb | 1 | | | | | | 1 | |
| <i>Nerine laticoma</i> | Amaryllidaceae | Geophyte | 1 | | | | | | 1 | |
| <i>Nidorella hottentotica</i> | Asteraceae | Herb | 1 | | | | 1 | | | |
| <i>Nymphaea nouchali</i> | Nymphaeaceae | Epiphytate, herb, hydrophyte | 1 | | | | | | 1 | |
| <i>Ocimum americanum</i> | Lamiaceae | Herb | 1 | | | 1 | | | | |
| <i>Ocimum filamentosum</i> | Lamiaceae | Herb | 1 | | | 1 | | | | |
| <i>Olea europaea</i> | Oleaceae | Shrub, tree | 2 | | | | 1 | | 1 | |
| <i>Ornithoglossum vulgare</i> | Colchicaceae | Geophyte | 2 | | | | | 1 | | 1 |
| <i>Oropetium capense</i> | Poaceae | Graminoid | 1 | | | 1 | | | | |
| <i>Osteospermum leptolobum</i> | Asteraceae | Shrub | 1 | | | | | | | 1 |
| <i>Osteospermum microphyllum</i> | Asteraceae | Shrub | 1 | | | | | | | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB/2722BD/2722DB | 2723AA/2723AB | 2723AC | 2723AD | 2723CB |
|------------------------------------|------------------|-----------------------------|----------------|----------------------|---------------|--------|--------|--------|
| <i>Osteospermum muricatum</i> | Asteraceae | Herb | 2 | | 1 | | 1 | |
| <i>Otoptera burchellii</i> | Fabaceae | Climber, herb, shrub | 3 | | 1 | | 1 | |
| <i>Oxalis corniculata</i> | Oxalidaceae | Herb | 1 | | | | 1 | |
| <i>Oxalis depressa</i> | Oxalidaceae | Geophyte, succulent | 1 | | | | 1 | |
| <i>Oxalis lawsonii</i> | Oxalidaceae | Geophyte | 1 | | | | | 1 |
| <i>Oxygonum alatum</i> | Polygonaceae | Herb | 1 | | | | 1 | |
| <i>Oxygonum delagoense</i> | Polygonaceae | Herb | 2 | 1 | | | | |
| <i>Oxygonum dregeanum</i> | Polygonaceae | Herb | 1 | | | | | 1 |
| <i>Panicum coloratum</i> | Poaceae | Graminoid | 2 | | | 1 | 1 | |
| <i>Panicum kalaharensis</i> | Poaceae | Graminoid | 2 | | | | 1 | |
| <i>Panicum maximum</i> | Poaceae | Graminoid | 3 | | 1 | 1 | | |
| <i>Panicum stapfianum</i> | Poaceae | Graminoid | 1 | | | | 1 | |
| <i>Parkinsonia africana</i> | Fabaceae | Shrub, tree | 1 | | | | | 1 |
| <i>Paspalum dilatatum</i> | Poaceae | Graminoid | 1 | | | | 1 | |
| <i>Pavonia burchellii</i> | Malvaceae | Dwarf shrub | 2 | | | | 1 | 1 |
| <i>Pegolettia retrofracta</i> | Asteraceae | Dwarf shrub | 2 | | | | 1 | 1 |
| <i>Pelargonium myrrhifolium</i> | Geraniaceae | Dwarf shrub | 1 | | | | 1 | |
| <i>Peliostomum leucorrhizum</i> | Scrophulariaceae | Dwarf shrub | 3 | | 1 | 1 | 1 | |
| <i>Pellaea calomelanos</i> | Sinopteridaceae | Geophyte, herb, lithophyte | 2 | | | | 1 | 1 |
| <i>Pentzia argentea</i> | Asteraceae | Shrub | 1 | | | | 1 | |
| <i>Pentzia calcarea</i> | Asteraceae | Shrub, suffrutex | 2 | 1 | | | | 1 |
| <i>Pentzia quinquefida</i> | Asteraceae | Shrub | 1 | | | | | 1 |
| <i>Perisicaria lapathifolia</i> | Polygonaceae | Helophyte, herb, hydrophyte | 1 | | | | 1 | |
| <i>Phyllanthus maderaspatensis</i> | Phyllanthaceae | Herb | 2 | | 1 | | | 1 |
| <i>Phyllanthus parvulus</i> | Phyllanthaceae | Dwarf shrub, herb | 7 | | 2 | 1 | 2 | 2 |
| <i>Phyllanthus pentandrus</i> | Phyllanthaceae | Dwarf shrub, herb | 1 | | | | 1 | |
| <i>Piaranthus decipiens</i> | Apocynaceae | Succulent | 1 | | | | | 1 |
| <i>Plagiochasma rupestre</i> | Aytoniaceae | Bryophyte | 1 | | | | | 1 |
| <i>Plinthus karoocicus</i> | Aizoaceae | Dwarf shrub | 1 | | | 1 | | |
| <i>Plinthus sericeus</i> | Aizoaceae | Dwarf shrub | 3 | | 1 | 1 | | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB/2722BD/2722DB/2723AA/2723AB/2723AC/2723AD/2723CB |
|-------------------------------------|---------------------|---------------------------|----------------|---|
| <i>Pogonarthria squarrosa</i> | Poaceae | Graminoid | 4 | 1 |
| <i>Poilichia campestris</i> | Caryophyllaceae | Herb | 3 | 1 |
| <i>Polygala leptophylla</i> | Polygalaceae | Dwarf shrub | 3 | 1 |
| <i>Polygala seminuda</i> | Polygalaceae | Dwarf shrub, herb | 1 | 1 |
| <i>Polygonon monspeliensis</i> | Poaceae | Graminoid | 1 | 1 |
| <i>Pomaria lactea</i> | Fabaceae | | 1 | 1 |
| <i>Portulaca hereroensis</i> | Portulacaceae | Herb, succulent | 2 | 1 |
| <i>Portulaca kermesina</i> | Portulacaceae | Herb, succulent | 2 | 1 |
| <i>Portulaca quadrifida</i> | Portulacaceae | Herb, succulent | 1 | 1 |
| <i>Prepodesma orpenii</i> | Mesembryanthemaceae | Succulent | 1 | 1 |
| <i>Prosopis glandulosa</i> | Fabaceae | Shrub, tree | 1 | 1 |
| <i>Prosopis velutina</i> | Fabaceae | Shrub, tree | 1 | 1 |
| <i>Pseudognaphalium luteo-album</i> | Asteraceae | Herb | 1 | 1 |
| <i>Pteronia glauca</i> | Asteraceae | Shrub | 1 | 1 |
| <i>Pteronia mucronata</i> | Asteraceae | Shrub | 1 | 1 |
| <i>Ptychobolium biflorum</i> | Fabaceae | Dwarf shrub, herb | 3 | 2 |
| <i>Pulicaria scabra</i> | Asteraceae | Herb | 2 | 1 |
| <i>Pupalia lappacea</i> | Amaranthaceae | Herb | 3 | 1 |
| <i>Putterlickia pyracantha</i> | Celastraceae | Shrub | 1 | 1 |
| <i>Putterlickia saxatilis</i> | Celastraceae | Shrub | 2 | 1 |
| <i>Raphionacme velutina</i> | Apocynaceae | Geophyte, herb, succulent | 1 | 1 |
| <i>Requienia sphaerosperma</i> | Fabaceae | Herb | 2 | 1 |
| <i>Rhigozum trichotomum</i> | Bignoniaceae | Shrub | 1 | 1 |
| <i>Rhynchosia confusa</i> | Fabaceae | Climber, herb | 4 | 1 |
| <i>Rhynchosia holosericea</i> | Fabaceae | Climber, herb | 1 | 1 |
| <i>Rhynchosia tofta</i> | Fabaceae | Climber, herb | 5 | 1 |
| <i>Rhynchosia venulosa</i> | Fabaceae | Climber, herb | 2 | 1 |
| <i>Riccia albolimbata</i> | Ricciaceae | Bryophyte | 2 | 1 |
| <i>Rubus rosifolius</i> | Rosaceae | Shrub | 1 | 1 |
| <i>Rumex crispus</i> | Polygonaceae | Herb | 1 | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722B6 | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|---------------------------------|------------------|---------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Rumex lanceolatus</i> | Polygonaceae | Herb | 1 | | | | | 1 | | | |
| <i>Salsola kali</i> | Chenopodiaceae | Herb | 1 | 1 | | | | | | | |
| <i>Salsola patentipilosa</i> | Chenopodiaceae | Dwarf shrub | 1 | 1 | | | | | | | |
| <i>Salsola rabieana</i> | Chenopodiaceae | Dwarf shrub, shrub | 2 | | | 1 | | | | 1 | |
| <i>Salsola tuberculata</i> | Chenopodiaceae | Dwarf shrub | 1 | | | | | | | 1 | |
| <i>Salvia disermas</i> | Lamiaceae | Herb, shrub | 1 | | | | | 1 | | | |
| <i>Salvia stenophylla</i> | Lamiaceae | Herb | 2 | | | | | 1 | | 1 | |
| <i>Salvia verbenaca</i> | Lamiaceae | Herb | 1 | | 1 | | | | | | |
| <i>Samolus valerandi</i> | Theophrastaceae | Herb, hydrophyte | 1 | | | | | | | 1 | |
| <i>Sarcostemma viminalis</i> | Apocynaceae | Climber, succulent | 1 | | | | | | | 1 | |
| <i>Scabiosa columbaria</i> | Dipsacaceae | Herb | 1 | | | | | | | 1 | |
| <i>Schizachyrium sanguineum</i> | Poaceae | Graminoid | 2 | | | | | | | 1 | 1 |
| <i>Schmidtia kalahariensis</i> | Poaceae | Graminoid | 1 | 1 | | | | | | | |
| <i>Schmidtia pappophoroides</i> | Poaceae | Graminoid | 3 | | | 1 | | | 1 | 1 | |
| <i>Schoenus nigricans</i> | Cyperaceae | Cyperoid, helophyte, herb | 1 | | | | | 1 | | | |
| <i>Scirpoides dioecus</i> | Cyperaceae | Cyperoid, herb, mesophyte | 3 | | | 1 | | 1 | | 1 | |
| <i>Searsia dregeana</i> | Anacardiaceae | Shrub | 2 | 1 | | | | | | | 1 |
| <i>Searsia erosa</i> | Anacardiaceae | Shrub | 1 | 1 | | | | | | | |
| <i>Searsia lancea</i> | Anacardiaceae | Shrub, tree | 2 | | | 1 | | | | 1 | |
| <i>Searsia rigida</i> | Anacardiaceae | Shrub | 1 | | | | | | | | 1 |
| <i>Searsia tenuinervis</i> | Anacardiaceae | Shrub, tree | 2 | | 1 | | | 1 | | | |
| <i>Searsia tridactyla</i> | Anacardiaceae | Shrub, tree | 3 | | | | | | 1 | 1 | 1 |
| <i>Seddera capensis</i> | Convolvulaceae | Suffrutex | 3 | | | 1 | | 1 | 1 | | |
| <i>Seddera suffruticosa</i> | Convolvulaceae | Dwarf shrub, herb | 1 | | | | | | | 1 | |
| <i>Seidelia triandra</i> | Euphorbiaceae | Herb | 1 | | | | | 1 | | | |
| <i>Selago mixta</i> | Scrophulariaceae | Herb | 3 | 1 | | | | | | 1 | 1 |
| <i>Senecio consanguineus</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Senecio inaequidens</i> | Asteraceae | Herb | 1 | | | | | | | | 1 |
| <i>Senna italica</i> | Fabaceae | Herb | 1 | | | | | | | 1 | |
| <i>Sericorema remoliflora</i> | Amaranthaceae | Herb | 4 | 1 | | | 1 | | | 1 | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|---------------------------------|-----------------|-------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Sericorema sericea</i> | Amaranthaceae | Herb | 1 | | | | 1 | | | | |
| <i>Sesamum capense</i> | Pedaliaceae | Herb | 1 | | | | | | | 1 | |
| <i>Setaria sphacelata</i> | Poaceae | Graminoid | 1 | | | | | | | | 1 |
| <i>Setaria verticillata</i> | Poaceae | Graminoid | 2 | 1 | | | | | 1 | | |
| <i>Sida chrysantha</i> | Malvaceae | Dwarf shrub | 2 | | | | | | 1 | 1 | |
| <i>Sida cordifolia</i> | Malvaceae | Dwarf shrub | 3 | | | | | | 1 | 1 | 1 |
| <i>Sida ovata</i> | Malvaceae | Dwarf shrub, herb | 1 | | | | 1 | | | | |
| <i>Solanum burchellii</i> | Solanaceae | Dwarf shrub, shrub | 2 | | | | 1 | | 1 | | |
| <i>Solanum catobelense</i> | Solanaceae | Dwarf shrub, shrub | 2 | | | | 1 | | | 1 | |
| <i>Solanum lichtensteinii</i> | Solanaceae | Dwarf shrub, shrub | 1 | | | | | | 1 | | |
| <i>Solanum nigrum</i> | Solanaceae | Herb | 1 | | | | | | | 1 | |
| <i>Solanum panduriforme</i> | Solanaceae | Dwarf shrub, herb, shrub | 1 | | | | | | | 1 | |
| <i>Solanum supinum</i> | Solanaceae | Dwarf shrub, herb, shrub | 2 | | | | | 1 | | 1 | |
| <i>Solanum tomentosum</i> | Solanaceae | Dwarf shrub, herb, shrub | 2 | | | | | | 1 | 1 | |
| <i>Sonchus oleraceus</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Spergularia media</i> | Caryophyllaceae | Herb | 1 | | | | 1 | | | | |
| <i>Sphedamnocarpus pruriens</i> | Malpighiaceae | Climber, shrub | 1 | | | | | | | 1 | |
| <i>Sporobolus acinifolius</i> | Poaceae | Graminoid | 2 | | | | 1 | | | 1 | |
| <i>Sporobolus fimbriatus</i> | Poaceae | Graminoid | 6 | 1 | | | 1 | 1 | 1 | 1 | 1 |
| <i>Sporobolus tociados</i> | Poaceae | Graminoid | 1 | | | | 1 | | | | |
| <i>Stachys burchelliana</i> | Lamiaceae | Shrub | 2 | | | | | | | 1 | 1 |
| <i>Stachys spathulata</i> | Lamiaceae | Herb | 2 | 1 | | | | | 1 | | |
| <i>Stipagrostis amabilis</i> | Poaceae | Dwarf shrub, graminoid, shrub | 1 | | | | | | | 1 | |
| <i>Stipagrostis ciliata</i> | Poaceae | Graminoid | 1 | 1 | | | | | | | |
| <i>Stipagrostis hirtigluma</i> | Poaceae | Graminoid | 1 | | | | | | | 1 | |
| <i>Stipagrostis obtusa</i> | Poaceae | Graminoid | 2 | | | | 1 | 1 | | | |
| <i>Stipagrostis uniplumis</i> | Poaceae | Graminoid | 5 | | | | 1 | | 1 | 2 | 1 |
| <i>Striga biabiata</i> | Orobanchaceae | Herb, parasite | 2 | | | | | | | 1 | 1 |
| <i>Striga elegans</i> | Orobanchaceae | Herb, parasite | 2 | | | | | | | 1 | 1 |
| <i>Striga gesnerioides</i> | Orobanchaceae | Herb, parasite | 2 | 1 | | | | | | | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|--|------------------|------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Suessenguthiella scieranthoides</i> | Molluginaceae | Herb | 1 | | | | | | | 1 | |
| <i>Sutera griquensis</i> | Scrophulariaceae | Herb | 1 | | | | | | | | 1 |
| <i>Sutherlandia frutescens</i> | Fabaceae | Dwarf shrub, shrub | 1 | | | | | | | 1 | |
| <i>Syntrichia ammonsiana</i> | Pottiaceae | Bryophyte, epiphyte | 1 | | | | | | | 1 | |
| <i>Tapinanthus oleifolius</i> | Loranthaceae | Parasite, shrub, succulent | 1 | | | | | | | 1 | |
| <i>Taraxacum bessarabicum</i> | Asteraceae | Herb | 1 | | | | | 1 | | | |
| <i>Tarchonanthus camphoratus</i> | Asteraceae | Shrub, tree | 1 | | | | | | | 1 | |
| <i>Tarchonanthus obovatus</i> | Asteraceae | Shrub, tree | 2 | | | | | | 1 | 1 | |
| <i>Tephrosia burchellii</i> | Fabaceae | Herb | 3 | 1 | | | | | 1 | 1 | |
| <i>Tephrosia longipes</i> | Fabaceae | Dwarf shrub, herb, shrub | 3 | | | | | | 1 | 1 | |
| <i>Tephrosia lupinifolia</i> | Fabaceae | Herb | 1 | | | | | | | 1 | |
| <i>Tephrosia purpurea</i> | Fabaceae | Herb | 4 | | | | 1 | 1 | 1 | | 1 |
| <i>Terminalia sericea</i> | Combretaceae | Tree | 1 | | | | 1 | | | | |
| <i>Tetragonia calycina</i> | Aizoaceae | Dwarf shrub, succulent | 1 | | | | 1 | | | | |
| <i>Themeda triandra</i> | Poaceae | Graminoid | 1 | | | | | | | 1 | |
| <i>Thesium hystericoides</i> | Santalaceae | Dwarf shrub, parasite, shrub | 1 | | | | 1 | | | | |
| <i>Thesium hystrix</i> | Santalaceae | Dwarf shrub, parasite, shrub | 2 | 1 | | | 1 | | | | |
| <i>Tolpis capensis</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Trachyantra laxa</i> | Asphodelaceae | Geophyte, succulent | 1 | | | | | | | 1 | |
| <i>Tragia dioca</i> | Euphorbiaceae | Dwarf shrub, herb | 1 | | | | 1 | | | | |
| <i>Tragus berteronianus</i> | Poaceae | Graminoid | 1 | | | | | | 1 | | |
| <i>Tragus koelerioides</i> | Poaceae | Graminoid | 1 | | | | | | | 1 | |
| <i>Tragus racemosus</i> | Poaceae | Graminoid | 4 | 1 | | | 1 | | 1 | 1 | |
| <i>Trianthema parvifolia</i> | Aizoaceae | Herb, succulent | 2 | | | | 1 | | | 1 | |
| <i>Triaspis hypericoides</i> | Malpighiaceae | Climber, shrub | 3 | | | | | 1 | | 1 | 1 |
| <i>Tribulus exrucians</i> | Zygophyllaceae | Dwarf shrub, shrub | 1 | | | | | | 1 | | |
| <i>Tribulus terrestris</i> | Zygophyllaceae | Herb | 1 | | | | 1 | | | | |
| <i>Tribulus zeyheri</i> | Zygophyllaceae | Dwarf shrub, herb | 2 | | | | 1 | | | 1 | |
| <i>Tricholaena monachne</i> | Poaceae | Graminoid | 2 | 1 | | | | | | | |
| <i>Trichoneura grandiglumis</i> | Poaceae | Graminoid | 3 | | | | | | 1 | 1 | 1 |

| Botanical Name | Family | Growth forms | Grid Frequency | 2722BB | 2722BD | 2722DB | 2723AA | 2723AB | 2723AC | 2723AD | 2723CB |
|---------------------------------|------------------|-------------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Triphais andropogonoides</i> | Poaceae | Graminoid | 4 | | | | 1 | 1 | | 1 | 1 |
| <i>Triphais pumilio</i> | Poaceae | Graminoid | 1 | | | | | | | 1 | |
| <i>Triphais schinzii</i> | Poaceae | Graminoid | 2 | | | | | 1 | | 1 | |
| <i>Trochomeria debilis</i> | Cucurbitaceae | Climber, herb, succulent | 1 | | | | 1 | | | | |
| <i>Urelytrum agropyroides</i> | Poaceae | Graminoid | 2 | | | | | | | 1 | 1 |
| <i>Urochloa panicoides</i> | Poaceae | Graminoid | 1 | | | | | | 1 | | |
| <i>Urochloa stolonifera</i> | Poaceae | Graminoid | 1 | | | | | | 1 | | |
| <i>Ursinia nana</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Utricularia gibba</i> | Lentibulariaceae | Carnivore, herb, pleustophyte | 1 | | | | | | | 1 | |
| <i>Vahlia capensis</i> | Vahliaceae | Herb | 3 | | | | 1 | 1 | 1 | | |
| <i>Vangueria infausta</i> | Rubiaceae | Tree | 1 | | | | | | | 1 | |
| <i>Verbena brasiliensis</i> | Verbenaceae | Herb | 1 | | | | | | | 1 | |
| <i>Verbesina encelioides</i> | Asteraceae | Herb | 1 | | | | | | | 1 | |
| <i>Vigna unguiculata</i> | Fabaceae | Climber, herb | 1 | | | | | | | 1 | |
| <i>Viscum rotundifolium</i> | Viscaceae | Parasite, shrub, succulent | 1 | | | | | | | | 1 |
| <i>Wahlenbergia androsacea</i> | Campanulaceae | Herb | 2 | | | | 1 | | | 1 | |
| <i>Wahlenbergia denticulata</i> | Campanulaceae | Herb | 1 | | | | | | | | 1 |
| <i>Wahlenbergia nodosa</i> | Campanulaceae | Dwarf shrub | 1 | | | | | | | | 1 |
| <i>Wahlenbergia undulata</i> | Campanulaceae | Herb | 1 | | | | | 1 | | | |
| <i>Waltheria indica</i> | Malvaceae | Herb | 1 | | | | | | | 1 | |
| <i>Withania somnifera</i> | Solanaceae | Dwarf shrub, herb, shrub | 1 | | | | | | | | 1 |
| <i>Xenostegia tridentata</i> | Convolvulaceae | Herb | 3 | | | | | 1 | 1 | 1 | |
| <i>Zygophyllum pubescens</i> | Zygophyllaceae | Dwarf shrub, shrub, succulent | 1 | | | | | | | | 1 |