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1. INTRODUCTION

The main phases of the TMG Aquifer Feasibility Study and Pilot Project are as follows:

- Inception Phase: During this phase negotiations will take place with the Client to finalise the Terms of Reference and the budget.
- Preliminary Phase: In this phase the study will focus on the selection of the most favourable target areas for wellfields and sites for pilot boreholes after having considered all the relevant factors and ramifications.
- Exploratory Phase: This phase is intended to verify the predicted hydrogeological characteristics and to refine the siting of the target wellfields.
- Pilot Phase: During this final phase a number of boreholes will be drilled to develop one or more wellfields with a target yield of 3 to 5 million m³ a⁻¹ each.

The Inception and Preliminary Phases are complete and the TMGA Project is currently in the Exploratory Phase. The objectives of the Exploratory Phase are to undertake exploratory drilling, verify hydrogeological characteristics and refine the selection of the proposed target wellfields.

At the end of the Preliminary Phase, an additional Environmental Impact Assessment (EIA) Task was motivated and approved for inclusion in the Exploratory Phase. The main aim of the EIA task is to identify sufficient target site sub-areas (TSSs) to allow for 7 000 m of drilling, and to lodge a request with DEADP to grant approvals for drilling in the identified of the TSS's. The EIA Task itself if divided into 12 sub-tasks.

Table 1.1 Sub-tasks comprising the additional EIA Task added to the Exploratory Phase.

Sub-Tasks	Additional tasks	Tasks Involved
1.	Delineate target site sub-areas (TSSs) of not more than 100ha in size.	Hydrogeological
2.	Field visit of "sausages"	Hydro, Eco, Societal & Legal (S&L), Eng & Drilling (E&D), Monitoring
3.	Sensitivity Mapping and course scoping of sensitive TSS's	Eco
4.	Public Meetings- introduce project & sausages for comment	Hydro, Eco, S&L,
5.	Written Specialist input	Hydro, Eco, E&D
6.	Report compilation	S&L
7.	Meeting with Authorities	Hydro, Eco, S&L,
7a ¹	Field visit with authorities	Hydro, Eco
	SUBMISSION TO AUTHORITIES	
8.	Final Borehole Site Selection	Hydro, Eco
9.	Develop Site Specific EMP	Hydro, Eco,
10. ²	Public meetings- introduce sites and EMP's for comment	Hydro, Eco, S&L, E&D
	SUBMISSION TO AUTHORITIES	
10a ³	Field visit with authorities	Hydro, Eco
11.	Monitoring of drilling- ECO	S&L
12.	Study management	Project management team

This report addresses Task 3, viz. sensitivity mapping and coarse scoping of the most sensitive TSS's.

¹ If required

² If required- depending on public interest and concerns raised in the first contact meetings

³ If required- DEADP might possibly insist on site visits initially and for very sensitive sites

2.1 TERMS OF REFERENCE

The Terms of Reference (ToR) for this study were as follows⁴:

- Attend a preparatory fieldtrip on the morning of 5 March 2004 and attend the afternoon workshop formalizing the field methodology to be utilized.
- Undertake field visits to each of the identified target site sub-area (TSS) to undertake sensitivity mapping of these sites.
- Compile a sensitivity map⁵ of each TSS.
- Compile a short report on the TSSs based on the fieldtrip/s and existing knowledge and literature.

2.2 STUDY TEAM

The team for this specialist report was comprised of Dr Charlie Boucher, University of Stellenbosch and Dr Cate Brown, Southern Waters Ecological Research and Consulting. For the field work component, Drs Boucher and Brown were accompanied variously by:

Dr Chris Hartnady	Umvoto
Mr Chris Jackson	Umvoto
Mr John Weaver	CSIR
Mr Charl de Villiers	Ninham Shand
Ms Pepe Jones	Ninham Shand.

2.3 DATES OF THE STUDY

The study commenced on 5th March 2004 and was completed on 31 May 2004. The dates for the TSS field visits were as follows:

W7	29 and 30 March 2004
T4	31 March 2004
H6&8	14 April 2004
T2&3	19 April 2004
V3	23 April 2004
T6	11 May 2004 (rain interrupted)
T6	14 May 2004
K1	14 June 2004.

First draft report: 18 June 2004.

2.4 LAYOUT OF THIS REPORT

The report is structured as follows:

- Section 2 deals with the mapping of key habitat types, the methods used and the identification of the vegetation in terms of that described in the literature.
- Section 3 deals with the prioritisation of the plant communities identified and of the individual TSS in terms of the importance and sensitivity.
- Section 4 discussed the implication of the results for the Exploratory and Pilot Testing Phases of the project.
- Section 5 is a list of referenced used in the text.

The appendices are as follows:

Appendix 1: Raw data tables for the mapping units identified in each of the TSS visited in the study.

Appendix 2: NBI Rare and endangered species lists for plants recorded in the study area.

Appendix 3: WCNCB Rare and endangered species lists for fauna recorded in the study area.

Appendix 4: TSS maps showing community types ranked by sensitivity and importance.

⁴ Please note, the evaluation of impacts (visual or otherwise) did not form part of the ToR for this report.

⁵ Digitising of the maps did not form part of these ToR and was undertaken separately by Umvoto.

2. MAPPING OF KEY HABITAT TYPES

2.1 GENERAL APPROACH ADOPTED

A total of 33 TSSs in nine Target Site Areas (TSAs) were visited and mapped. These included 27 TSSs that were listed as Priority TSSs by the hydrogeologists (Table 2.1), plus six TSSs that had already been mapped before the prioritised list was made available to the study team.

Table 2.1 TSSs mapped in this study

TSA	TSS
Prioritised TSSs	
B1	B1a
	B1c
H6	H6a
	H6b
H8	H8
K1	K1
T2	T2a
	T2d
	T2f
T3	T3g
	T3h
T4	T4a
	T4b
	T4c
	T4d
	T4e
T6	T6a
	T6b
	T6c
	T6d
V3	V3a
	V3b
W7	W7d
	W7f
	W7i
	W7j
	W7k
Other TSSs assessed	
T6	T6e
W7	W7a
	W7b
	W7c
	W7h
	W7l

The combination of the number and size of the individual TSSs (<100 ha) and the time constraints placed on the field work component of this project necessitated the adoption of a pragmatic, relatively coarse-scale approach to the mapping of habitats within each TSS. To this end, the following general principles were adopted:

- 1 Vegetation communities were used as indicators of habitat type. The reasons for this were:

- a. At the scale at which mapping was undertaken (1:10 000, see Section 2.2) vegetation communities were the most easily identified ecological units.
 - b. Species composition is particularly sensitive to habitat features such as geology and moisture, and vegetation acts as an indicator of different habitat types, e.g., terrestrial, semi-aquatic or aquatic.
- 2 The presence of rare or endangered species was assessed using existing data obtained from the National Botanical Institute and Cape Nature Conservation (see Section 2.4).
 - 3 Detailed species lists for each mapping unit could not be compiled in the allocated time, and only the dominant or obvious characteristic species were recorded as these allowed comparison:
 - a. between mapping units.
 - b. with the scientific literature (see Section 2.3).
 - 4 Ecological significance was assessed relative to the perceived natural state.

2.2 MAPPING OF THE VEGETATION

2.2.1 Methods

The following procedures were followed:

In the field:

- 1 Vantage points were found from which all (or significant portions) of each TSS were visible.
- 2 From these vantage points, distinguishable vegetation units were mapped onto 1:10 000 colour aerial photos or orthophotos (provided by Umvoto) for each TSS.
- 3 Each mapping units identified in Point 2 above was then visited on foot, and the conspicuous, dominant species in each were recorded.
- 4 For each mapping unit, the following was also recorded:
 - a. General description of the habitat type.
 - b. Ecological condition relative to natural (including presence of invasive alien species).
 - c. Aerial extent within the TSS.
 - d. Sensitivity of habitat type to abstraction and/or mechanical damage.
 - e. Sensitivity of vegetation type to abstraction and/or mechanical damage.
 - f. Suitability for monitoring the ecological effects of large-scale groundwater abstraction.

In the laboratory:

- 5 Field maps were retraced onto a second set of 1:10 000 colour or black and white aerial photos or orthophotos and crosschecked.
- 6 Retraced maps were sent to Umvoto for digitising.
- 7 Data recorded were used for:
 - a. grouping mapping units according to recognised vegetation communities (see Section 2.3).
 - b. prioritising vegetation communities and TSSs in terms of their distribution, relative rarity and sensitivity to abstraction and/or mechanical damage (Section 3).

Note: The sources of water to the various seeps that were identified were not established.

2.2.2 Results

Some 164 individual vegetation units were identified and mapped during the study. The results of the vegetation mapping are provided in the data tables for each TSS in Appendix 1, and the corresponding TSS maps in Appendix 2.

2.3 VEGETATION RELATIVE TO THOSE IN THE SCIENTIFIC LITERATURE

2.3.1 Methods

The plant communities comprising the mapping units identified in Section 2.2 were grouped according to basic floristic similarities in terms of species composition and the units were then related to those described in the scientific literature. These communities were then used to provide an indication of the wider (i.e., study area) distribution of the communities recorded in each mapping unit.

2.3.2 Results

The communities that were recognised are listed below. These correspond to the “community type” column in the data tables for each TSS in Appendix 1. Please note there is no overall classification of wetland communities for the study area, and the information on community types provided here has been collated from numerous studies⁶.

Woodlands

- A. *Restio gaudichaudianus* Closed or Open Woodlands (Community 2. in VW & K 1985)
- A1 *Ischyrolepis gaudichaudianus-Metrosideros angustifolia* Closed Woodland (Community 2.1 in VW & K 1985)
- Closely related to:
- A6 *Brabejum-Rhus* Riverine Scrub (Community 3.3.3 in Boucher 1978)
Equivalent to:
Brabejum-Pteridium Woodland (Community Bs in Boucher 1988) &
Pteridium aquilinum-Brabejum stellatifolium Low Forest (Community 1 in Taylor 1996)
- A2 *Ischyrolepis gaudichaudianus-Heeria argentea* Open Woodland (Community 2.2a in VW & K 1985)
- A3 *Heeria argentea-Olea europaea* subsp. *africana* (Community 2.2b in VW & K 1985)
Equivalent to:
Brabejum-Maytenus Woodland (Community Sw in Boucher 1988) &
Olea africana-Metrosideros angustifolia Low Forest (Community 3 in Taylor 1996)
- A4 *Ischyrolepis gaudichaudianus-Widdringtonia nodiflora* Closed Woodland (Community 2.3 in VW & K 1985)
- A5 *Ischyrolepis gaudichaudianus-Protea nitida* Open Woodland (Community 2.4 in VW & K 1985)

Fynbos Riparian Shrublands

- J *Prionium serratum* Shrublands
- J1 *Prionium serratum-Wachendorfia thyrsiflora* Swampland (Community 3.3.1 in Boucher 1978)
- K *Metrosideros angustifolia* Shrublands
- K1 *Berzelia-Metrosideros angustifolia* Tall fynbos of rocky streams (Community 3.3.2 in Boucher 1978)
- K2 *Brunia alopecuroides-Prionium serratum* Stream-fringing Fynbos (undescribed, related to community B1 but water more permanent, no *Brabejum*). Equivalent to: *Pteridium aquilinum-Todea barbara* Low Forest (with *Elegia capensis*) (Community 2 in Taylor 1996)

Fynbos seeps, bogs and mires

- B. *Cliffortia graminea* Fynbos Shrublands and Herblands of Seeps, Bogs & Mires (Community 1. in VW & K 1985)
- B1 *Cliffortia graminea -Elegia thyrsifera* Tall Closed Herbland (Community 1.1a in VW & K 1985)
- B2 *Elegia thyrsifera-Osmitopsis asteriscoides* Tall Closed Shrubland (Community 1.1b in VW & K 1985)
- B3 *Cliffortia graminea-Ehrharta dura* Closed Herbland (Community 1.2 in VW & K 1985)
- D *Polygonum salicifolium* Shrublands of Watercourses & drainage lines
- D1 *Polygonum salicifolium-Juncus capensis* High Open Shrubland (Community 5.7.A in Boucher 1987)

⁶ There is a dire need for an overall classification of wetland communities for the Fynbos Biome, particularly in mountainous areas.

- G *Chondropetalum mucronatum* Seeps, Bogs & Mires
- G1 *Chondropetalum mucronatum*-*Restio* Tussock Marsh (*Restio bifidus*, *R. ambiguus*, *R. obtusissimus*) (Community 3.2.4.3 in Boucher 1978)
- G2 *Restio bifurcus*-*Anthochortus crinalis* Short Closed Restioid (Community A5 in Sieben *et al.* 2004 in press)
- G3 *Platycaulos depauperatus* Short Closed Restioid (Community B1 in Sieben *et al.* 2004 in press)
- G4 *Grubbia rosmarinifolia*-*Restio* aff. *versatilis* Medium Closed Shrubland (Community B3 in Sieben *et al.* 2004 in press)
- G5 *Tetraria capillacea*-*Restio subtilis* Short to Tall Closed Restioid (Community B4 in Sieben *et al.* 2004 in press)
- N *Elegia capensis* Seeps and mires
- N1 *Elegia capensis*-*Psoralea pinnata* Tall restioid Seeps (not described in the literature)
- H *Restio purpurascens* Restioids of Watercourses & drainage lines
- H1 *Erica autumnalis*-*Restio purpurascens* Tall Closed Restioid (Community B2 in Sieben *et al.* 2004 in press)
- M Fynbos communities on yellow clay-rich soils (Communities 3.2.2 in Boucher 1978)
- M1 *Berzelia lanuginosa*-*Leucadendron xanthoconus* Moist Tall Fynbos (Community 3.2.2.2 in Boucher 1978)
- M2 *Protea scabra*-*Tetraria bromoides* Dry Short Fynbos (Community 3.2.2.1 in Boucher 1978)
- M3 *Rhus angustifolia*-*Berzelia lanuginosa* Short Closed Shrubland (Community 1.1.3.1 in McDonald 1988)
- I *Anthochortus crinalis* Restioids
- I1 *Anthochortus crinalis*-*Elegia intermedia* Tall Closed Restioid (Community A3 in Sieben *et al.* 2004 in press)
- I2 *Ficinia argyropa*-*Epischoenus villosus* Short Closed Restioid (Community A4 in Sieben *et al.* 2004 in press)
- Fynbos Dryland Communities
- C *Staberoha cernua* Fynbos of Dry Sandstone slopes (Community 3. in VW & K 1985)
- C1 *Staberoha cernua* – *Askidosperma paniculatum* Tall Mid-dense Herbland (Community 3.1 in VW & K 1985)
- L Mixed fynbos communities of Sandstone Footslopes
- L1 Mixed ericoid & restioid fynbos of the lower drier northerly inland slopes (drainage lines with *Elegia spathacea*, *Restio bifarius*, *Scyphogyne longistyla*, *Erica cristata*) (Community 3.2.4.1.2 in Boucher 1978)
- L2 Mixed ericoid & restioid fynbos of the xeric upper rocky northerly inland slopes (*Restio purpurascens*, *R. egregius*, *Leucadendron microcephalum*) (Community 3.2.4.1.3 in Boucher 1978)
- L3 Mixed ericoid & restioid fynbos of the mesic upper rocky northerly inland slopes (*Brunia albiflora*, *Restio occultus*, *R. egregius*, *Elegia spathacea*, *Erica imbricata*, *E. massoni*, *E. fastigiata*) (Community 3.2.4.1.4 in Boucher 1978)
- L4 Mixed inland lower southerly slope fynbos (*Brunia albiflora*, *Leucadendron xanthoconus*) (Community 3.2.4.2.1 in Boucher 1978)
- L5 Mixed short ericoid & restioid fynbos of the xeric inland flat areas (*Chondropetalum hookerianum*, *Elegia stipularis*, *Erica cristata*) (Community 3.2.4.1.1 in Boucher 1978)
- L6 *Chondropetalum ebracteatum*-*Berzelia dregeana* Upper Hygric Fynbos (*Priestleya calycina*, *Osmitopsis asteriscoides*, *Psoralea pinnata*, *Chondropetalum deustum*, *Erica hispidula*, *L. gandogeri*) (Community 3.2.4.2.2 in Boucher 1978)

F. Renosterveld related Fynbos Shrublands
F1 *Ischyrolepis capensis-Willdenowia incurvata* Tall Sparse Shrubland (Community 5.2.5.4.A.a in Boucher 1987)

J *Elegia thyrsoifera* Dryland Sandstone Fynbos
J1 *Elegia thyrsoifera-Centella laevis* Short Closed Herbland (Community A2 in Sieben *et al.* 2004 in press)
J2 *Hypolaena crinalis-Erica parvula* Tillite Dwarf Restioid Fynbos (Community 3.2.2.3 in Boucher 1978)

Grassland seeps, bogs and mires

E *Pennisetum macrourum* Grasslands of Seeps, Bogs and Mires
E1 *Pennisetum macrourum – Hemarthria altissima* Wetland Grassland (Community G in Boucher 2001)

Undescribed communities

O
O1 Undescribed community of the plateau dry flats, Witteberg Sandstone Fynbos.

Other 'communities' recognised

P Plantations, generally pine, for which the understorey was not assessed because they could not be interpreted on the photographs provided. Thus the authors cannot guarantee that there are not rare and endangered or sensitive communities that exist in these areas.
A Heavily invaded, for which the understorey was not assessed because they could not be interpreted on the photographs provided. Thus the authors cannot guarantee that there are not rare and endangered or sensitive communities that exist in these areas.

2.4 IDENTIFICATION OF RARE AND ENDANGERED PLANT SPECIES

The National Botanical Institute (NBI) and the Western Cape Nature Conservation Board (WCNCB) were approached to provide data on the occurrence of rare and endangered plants (NBI) and animals (WCNCB). These data were used as they were received, and no provision was made for ground-truthing or fine-tuning of the information. There is little doubt that these are incomplete in many of the areas represented by the TSSs and should be used with caution (see points made in 2.4.1).

2.4.1 NBI data

The rare and endangered plant species recorded in the vicinity of the TSSs are provided in Appendix 2. The following points apply to these data:

- Spatial distribution of rare and endangered species were obtained for the study areas from the NBI prior to field assessments from general drilling localities but some reference grid localities provided to the authors resulted in inaccurate information. This was corrected where possible, but the rare and endangered listings remain subject to verification.
- Numerous records for the same species, as each recording represent a single field record.
- All the TSAs for which there were data had at least one rare and endangered species listed, with some having more than others. Thus, it is assumed that the TSAs for which there are no data provided will also have rare and endangered species, they have simply not been sampled.
- Areas along tracks and roads are more likely to have records than less visited areas.
- Showy permanently recognisable species are more likely to be recorded than species that only flower periodically, such as after fire.

- More detailed records exist for Proteaceae than for other families of plants because of the efforts made to record species for the biome under the Protea Atlas Project.
- Species listed and rare and endangered ratings given follow Hilton-Taylor (1996).
- Data provided to give idea of the relative likelihood of encountering rare and endangered species in each TSA.
- The data on rares are as provided by NBI and have not been altered, i.e., apparent anomalies have been left uncorrected.
- Proteaceae that are not listed as rare and endangered in Hilton-Taylor are not reported here.

2.4.2 WCNCB data

The faunal information received from the WCNCB is given in Appendix 3. The following points apply to these data:

- Spatial distribution of rare and endangered species were obtained for the study areas from the NBI prior to field assessments from the general (TSA) drilling localities. This was corrected where possible, but the rare and endangered listings remain subject to verification.
- Data provided to give idea of the relative likelihood of encountering rare and endangered species in each TSA.
- These data are listed as provided by WCNCB and have not been altered, i.e., apparent anomalies have been left uncorrected.
- A paucity of data on non-vegetation species in the TSAs means that the absence of data for an area cannot be equated with a lack of rare or endangered species. This is especially true for aquatic invertebrate taxa, which are poorly ampled and poorly described in the Western Cape.

3. SENSITIVITY AND IMPORTANCE ANALYSIS AND PRIORITISATION

3.1 GENERAL APPROACH ADOPTED

The objective of the sensitivity analysis and prioritisation is to provide a coarse level scoping of the most sensitive TSS's. To this end it was decided to undertake an assessment of relative sensitivity of:

- 1 the vegetation community types identified relative to one another;
- 2 the TSSs relative to one another.

3.2 PRIORITISATION OF SENSITIVE AND IMPORTANT IDENTIFIED VEGETATION COMMUNITIES

3.2.1 Methods

1 The vegetation communities identified in 2.3 were scored, using either an 11-point scale (0-10) or a binary scale (0/1), according to the following criteria (see also Table 3.1):

- Distribution over the study area (range).
- Aerial extent within the TSSs.
- Perceived ecological condition relative to natural.
- General habitat sensitivity⁷.
- Sensitivity to erosion.

Table 3.1 An indication of the application of scales to the criteria.

Criteria	Scale/Anchor points on an 11-point scale
Distribution over the study area (range) ⁸	1 = Widespread
	2 = Localised
	3 = Limited and patchy
	4 = Rare
Aerial extent within the TSSs ⁹	0 = >40 % of study area
	10 = ≤ 1 % of study area
Vulnerability to invasion.	0 = 0%
	10 = >50%
Binary scale	
General habitat sensitivity	0 = not very sensitive
	1 = sensitive – highly sensitive
Sensitivity to erosion	0 = not very sensitive
	1 = sensitive – highly sensitive

2 Thereafter, within each TSS, the ecological condition of the particular vegetation community was also taken into account before producing the TSS maps indicating community sensitivity. 'Sensitivity' for heavily invaded areas was set at half that of the non-invaded equivalent.

3 The planation areas have been given a default ranking of 'low' sensitivity as these are¹⁰:

⁷ General habitat sensitivity was judged on the chances of habitat damage as a result of disturbance. In general aquatic linked habitats were judged to have the highest general habitat sensitivity because once disturbed they: are vulnerable to invasion by alien plants and result in knock-on effects in downstream ecosystems.

⁸ 'Study area' = TSSs. Distribution outside of that area not assessed.

⁹ Aerial extent used = that within the TSSs. This does not imply that the vegetation communities are restricted to these areas.

¹⁰ Nonetheless it was noted that the understoreys in some of the planation areas were relatively well-developed, in particular those in T4 and T3. In addition, these planations were on extremely wet slopes, particularly given that the surveys took place at the end of summer. Hence due care will need to be taken should these areas be targeted for drilling activities.

1. highly disturbed areas;
2. impossible to map using the methods adopted for this study because the understorey vegetation is completely obscured by the trees.

Cleared plantation areas that were recovering well were given a default ranking of ‘moderate to low’ sensitivity.

3.1.1 Results

The relative sensitivity ranking of the communities types identified in Table 3.2 is given below. The ranking of each TSS mapping unit is also provided (Table 3.3).

Table 3.2 Relative sensitivity ranking of the vegetation communities.

TSS (Map unit)	Distribution over the study area	Aerial extent within the study area	Degree of invasion in the study area	General habitat sensitivity	Susceptibility to erosion	TOTAL	Sensitivity rating	Sensitivity ranking if heavily invaded
Buildings	0	0	0	0	0	0		
Aliens	0	0	0	1	1	2		
Plantations	0	0	0	1	1	2		
L2	1	9	0	0	1	11		
J2	1	10	0	0	0	11		
A2	1	5	5	0	0	11		
L5	1	10	0	0	1	12		
L1	1	8	2	0	1	12		
H1	1	10	0	1	1	13		
L4	1	10	0	1	1	13		
G4	1	10	0	1	1	13		
K1	2	9	0	1	1	13		
C1	1	8	2	1	1	13		
L3	1	9	2	0	1	13		
B1	3	9	0	1	1	14		
N1	2	10	0	1	1	14		
D	2	10	0	1	1	14		
J1	2	10	0	1	1	14		
O2	3	10	0	0	1	14		
B2	1	9	2	1	1	14		
O1	3	10	0	0	1	14		
G1	3	10	0	1	1	15		
B3	3	10	0	1	1	15		
H	3	10	0	1	1	15		
G2	3	10	0	1	1	15		
L6	3	10	0	1	1	15		
A4	3	9	2	0	1	15		
M2	3	9	2	0	1	15		
E1	4	10	0	1	1	16		
A5	1	5	9	0	1	16		
A6	2	9	5	1	1	18		
M1	2	9	5	1	1	18		
A3	1	9	8	0	1	19		
A1	1	8	10	1	1	21		
K2	2	9	10	1	1	23		

Key:

Negligible	Low	Moderate	Very High
Very Low	Low moderate ¹¹	High	Extremely high

¹¹ Low moderate has been given to areas cleared of pine but recovering well.

Table 3.3 Ranking of the individual TSS mapping units according to the vegetation community and ecological condition of the vegetation in each.

B1A (11)	A1		T2D(3p)	P		T4E(13P)	P	
B1A (21)	A2		T2F (1)	A1		T4E(15)	B2	
B1A(20)	A5		T2F(2)	L1		T4E(15P)	P	
B1C (11)	A6		T2F(3)	L1		T4E(16)	A1	
B1C (21)	A2		T2F(4)	M1		T4E(3)	L3	
B1C(20)	A5		T3G (1)	A1		T4E(7)	L3	
B1C(22)	Aliens		T3G (2)	P		T4E(7P)	P	
H6A(1)	K1		T3H(1)	M1		T6A (10)	A6	
H6A(1p)	P		T3H(2)	M1		T6A (11)	B2	
H6A(2)	A2		T3H(3)	L1		T6A (12)	G2	
H6A(3)	M2		T3H(4)	M2		T6A (15)	A2	
H6A(4)	L5		T3H(6a)	L1		T6A(14)	A2	
H6A(6)	L1		T3H(6b)	L6		T6B (10)	A6	
H6B(1)	M2		T4A(1)	G4		T6B (11)	B2	
H6B(2)	J2		T4A(2)	L1		T6B (16)	A2	
H6B(3)	K1		T4A(3)	L2		T6B(17)	A2	
H6B(4)	L5		T4A(4)	L4		T6C (2)	A2	
H6B(5)	L4		T4A(5)	K2		T6C (3)	M2	
H6B(6)	L1		T4A(6)	M1		T6C (5)	J1	
H6B(7)	K1		T4A(7)	G4		T6C (6)	A6	
H8(1)	K1		T4A(8)	L1		T6C (7)	A3	
H8(2)	L1		T4B(10)	N1		T6C (8)	N1	
H8(2p)	L1		T4B(11)	A2		T6D (1)	L2	
H8(3)	L1		T4B(12)	M1		T6D (2)	A2	
H8(4)	H		T4B(3)	L3		T6D (4)	Aliens	
H8(5)	C1		T4B(5)	K2		T6E (1)	L2	
H8(5p)	C1		T4B(5a)	A1		T6E (2)	A2	
H8(6)	G2		T4B(6)	M1		T6E (3)	M2	
H8(7)	K2		T4B(7)	H1		V3A (1)	A1	
H8(8)	P		T4B(8)	L1		V3A (2)	A2	
K1(1)	A6		T4C(12)	M1		V3A (4)	M1	
K1(2)	L5		T4C(12p)	P		V3A(3)	M1	
K1(4)	M1		T4C(13)	B2		V3A(5)	Aliens	
K1(5)	L1		T4C(3)	L3		V3A(6)	O2	
K1(6)	G1		T4C(3P)	P		V3A(7)	C1	
K1(7)	K1		T4C(5)	K1		V3B (8)	K2	
K1(8)	J2		T4D(12)	M1		V3B (9)	A2	
T2A(1)	J1		T4D(12p)	P		V3B(1)	A1	
T2A(2)	L1		T4D(13)	K1		V3B(5)	Aliens	
T2A(3)	A1		T4D(14)	K1		W7A(1)	B2	
T2A(4)	A4		T4D(16P)	A1		W7A(2)	A1	
T2A(4p)	P		T4D(17)	Buildings		W7A(3)	A2	
T2A(5)	L1		T4D(3)	L3		W7A(4)	A4	
T2D(1)	M2		T4D(3p)	P		W7A(5)	A5	
T2D(1p)	P		T4E(12)	M1		W7A(6)	B1	
T2D(2)	M1		T4E(12P)	P		W7B(1/A)	O	
T2D(3)	A4		T4E(13)	K1				

Table 3.3(cont) Ranking of the individual TSS mapping units according to the vegetation community and ecological condition of the vegetation in each.

W7B(2/E)	C1		W7F (5a)	A5	
W7B(3/C)	C1		W7F(4)	A1	
W7B(4/D)	A3		W7F(7)	A1	
W7C(1/B)	C1		W7G(1)	A1	
W7C(2/E)	B2		W7G(2)	A5	
W7C(3/F)	B2		W7G(3)	A5	
W7C(4/G)	B1		W7G(4)	A2	
W7C(5/H)	B1		W7G(5)	A1	
W7C(6/K)	A2		W7G(6)	C1	
W7C(7/L)	C1		W7G(7)	A5	
W7D(1/P)	A5		W7H (1)	L5	
W7D(2/R)	B2		W7H (2)	A1	
W7D(3/Rip)	A1		W7I(1)	A5	
W7D(4/S)	A5		W7I(22)	Buildings	
W7D(5/T)	B3		W7I(3)	A2	
W7D(6/D)	A3		W7I(4)	A1	
W7E(1)	A1		W7J(1)	A5	
W7E(2)	P		W7J(10)	C1	
W7E(2p)	P		W7J(11)	A1	
W7E(3)	A3		W7J(22)	Buildings	
W7E(4)	Aliens		W7J(6)	A2	
W7E(5)	O1		W7J(7)	A5	
W7E(5a)	D		W7J(8)	Aliens	
W7E(6)	A1		W7J(9)	A1	
W7E(7)	A1		W7J(9a)	A1	
W7E(8)	E1		W7K(M/8)	A5	
W7F (1)	A5		W7K(N/9)	A1	
W7F (2)	A2		W7K(O/10)	A5	
W7F (2p)	A2		W7K(O/10p)	A5	
W7F (3)	A5		W7K(P/11)	A5	
W7F (5)	A5				

The maps denoting the sensitivity areas within each TSS are provided in Appendix 4.

3.2 PRIORITISATION OF TSSS

3.2.1 Methods

The TSSs were ranked relative to one another using the following procedure:

- the vegetation community sensitivity index (from Table 3.3)
- multiplied by aerial extent in the TSS;
- multiplied by an “edge-effect score” (e.g., Norton 2002; , where 3 = TSS situated at the core of an unimpacted area; 2 = TSS situated at the edge of an unimpacted area, and; 1 = TSS situated outside of an unimpacted area;
- divided by the area of the TSS.

Every attempt was made to restrict the assessment to objective or relatively objective assessments. For the most part those used in this exercise could be calculated from the data collected in the field. The exception to this was the evaluation of ‘edge effect’, which was based on the condition of the vegetation surrounding a TSS.

The prioritisation of the TSSs according to the above criteria is given in Table 3.4. The comments given in Section 4.3 should be considered when evaluating the results in Table 3.4.

In the interests of transparency the “edge-effect scores” for each TSS used in the ranking are provided separately in Table 3.4.

Table 3.4 Ranking of the TSS mapping units according to overall sensitivity to trampling, mechanical damage and abstraction. Ranking according to sensitivity index weighted with the edge effect score.

Rank	TSS	Weighted sensitivity index (excl. Edge effect score)	Weighted sensitivity index (incl. Edge effect score)
1	T2A	5.78	17.34
2	T6C	5.75	17.26
3	V3A	5.67	16.61
4	T6A	5.53	16.45
5	T4B	5.48	16.43
6	W7B	5.43	16.29
7	H6B	5.34	16.02
8	H6A	5.33	15.98
9	W7A	5.26	15.79
10	T4A	5.22	15.66
11	K1	5.15	15.46
12	T6B	5.07	15.20
13	W7C	5.00	14.10
14	B1A	5.67	11.34
15	W7D	5.47	10.93
16	T2D	5.42	10.85
17	W7F	5.41	10.81
18	V3B	5.09	10.18
19	H8	5.03	10.05
20	W7G	4.91	9.82
21	B1C	4.66	9.33
22	W7K	4.40	8.80
23	T2F	4.30	8.60
24	T6D	4.16	8.325
25	T4C	3.70	7.41
26	W7J	4.99	4.99
27	W7E	3.82	3.82
28	T3H	3.63	3.63
29	W7I	3.58	3.58
30	T4E	3.48	3.48
31	T4D	2.90	2.90
32	T3G	2.71	2.71
33	T6E	1.22	2.40
34	W7H	Estimated	Estimated

Figure 3.1 provides an indication of the grouping of the TSS on the basis of the sensitivity index calculated as per the methods described in Section 3.2.1.

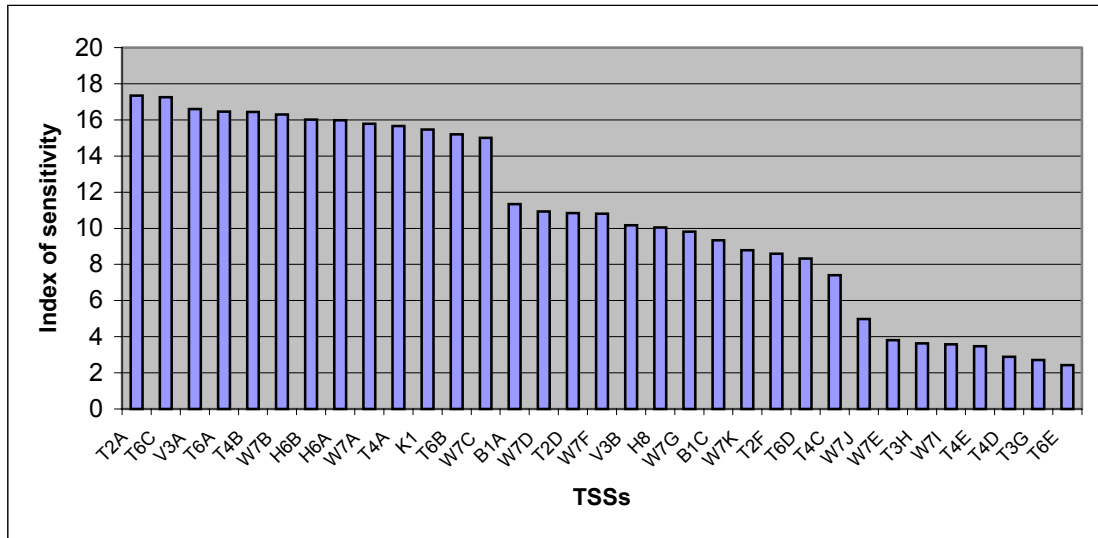


Figure 3.1 An indication of the grouping of the TSS (excl. W7H) on the basis of the sensitivity index calculated as per the methods described in Section 3.2.1.

4. IMPLICATIONS FOR THE EXPLORATORY AND PILOT TESTING PHASES

1. The TSSs differ significantly with respect to their overall sensitivity to mechanical damage as a result of drilling operations (Figure 3.1).
 2. The ranking of the TSSs is intended only to guide the authorities to those TSSs that may require the most careful consideration with respect to conditions that may accompany approval for those area, should such be granted (see Point 3).
 3. The within TSA area differences in term of habitat sensitivity (i.e. between TSSs within a single TSA) are higher than the between TSA differences (i.e., based on a general assessment of TSA sensitivity). Similarly, for some of the TSSs, the within TSS differences are greater than the between TSS difference. In general, this is the case for the wetter and more diverse TSSs. This has some serious implications for the EIA portion of the project, as follows:
 - a. ranking of a TSS as generally sensitive does not imply that there are no less sensitive areas (W7D is a case in point);
 - b. in some cases, provided drilling is restricted to areas near to access routes, and outside of the vegetation communities designated as highly sensitive, it can be accomplished with little or no additional impacts on the overall ecological condition of the TSS (see especially Point 8). Indeed there are roads that run through most, if not all of the TSSs, which were not taken into account (in terms of their aerial contribution) in the ranking process (Table 3.4);
 - c. thus the actual location of the intended disturbance within a TSS remains important, and should be evaluated on the basis of the GIS maps indicating community sensitivity within each TSS;
 - d. due consideration **MUST** be given to access routes through the TSSs, and through the unmapped areas through with the access routes may pass. NB: Examination of these unmapped areas did not form part of the ToR for this exercise. However, the ‘edge-effect scores’ given in Table 3.4 provide a rough indication of the extent of undisturbed areas that will need to be navigated to reach each of the TSSs. It is worth noting that only TSSs with existing access routes at least into the TSS were selected for evaluation in this report, thus although access routes may pass through undisturbed areas outside of the TSSs, they do already exist in some form or another.
 4. Thus, these data are intended to guide site selection, site selection should only be finalised after detailed investigations of more preferred area.
 5. An evaluation of likelihood for rare and endangered plants and animals was not included in the prioritisation because:
 - a. the coverage for the records obtained from NBI and WCNCB was poor (see Appendix 2 and 3);
 - b. the faunal data were extremely poor and, in the opinion of the authors, do not provide an adequate reflection of the situation in the TSAs;
 - c. coverages were at the level of TSA, and there were clearly vast differences within TSAs in terms of both anthropogenic impacts and vegetation types.Further investigation of favoured locations within key TSSs will need to include a detailed survey to determine the presence of rare and/or endangered plants and animals.
 6. Boundary lines within each TSS were hand-drawn in the field on (at times black and white) aerial photographs (Scale: 1:10 000) of dubious quality. Thus these is a degree of inaccuracy within them based on scale, this could be reduced by additional photo interpretation on the computer. This means that, should a preferred borehole locality be close to a boundary with a sensitive area, the precautionary principle dictates that it should be assumed the locality lies within the sensitive area.
 7. TSSs allocated a high Conservation Importance and Ecological Condition Ranking generally for core areas for the conservation of the vegetation types and habitats that are found in them. An example of this is K1, which quite literally sits at the centre of the Kogelberg Biosphere Reserve. The contribution of these areas towards the biodiversity and integrity of both the terrestrial and freshwater ecosystems of the Western Cape should not be underestimated.
 8. The first 13 TSSs in the prioritised list are considered to be particularly good, undisturbed examples of high altitude (except for K1, which is near the coast; Figure 3.1) fynbos ecosystems of high conservation importance. The contribution of surface water ecosystems in these areas to the condition and biodiversity of downstream ecosystems did not form part of the ToR for this exercise but should not be underestimated.
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9. Following on from Point 5. This study specifically excluded consideration of the effects of abstraction or discharge on the ecosystems within the TSSs or on those downstream of the TSSs (see Section 2.1). The process followed here (*viz.* restricting the study to the TSSs) would not be appropriate for the assessment of the effects of abstraction and or discharge – and new approach will need to be devised to assess such impacts.
10. The last seven TSSs listed in Table 3.4 are comprised predominately of relatively insensitive habitats and/or already heavily impacts habitats.

5. ACKNOWLEDGEMENTS

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APPENDIX 1: DATA TABLES FOR TSSs VISITED IN THIS STUDY

Villiersdorp B1A (Figure A4.1).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Villiersdorp B1A	B1A (11)	Similar to T6A (10) - mature riparian vegetation but slightly drier than at T6. SOME INVASION – VERY HEAVY IN B1C.	3-4 years	<i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Pronium serrata</i> <i>Brabejum stellatifolium</i> <i>Brachyleana nerifolia</i> <i>Leucadendron salicifolium</i> <i>Pteridium aquilinum</i> <i>Rhus angustifolia</i> NO <i>Cunonia capensis</i>	Community A1	Localised along major streams	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, unnatural streamflow changes and thus to changes in superficial groundwater.	Yes
	B1A(20)	Shale footslope - Dry restio fynbos	3-4 years	<i>Protea nitida</i> <i>Protea repens</i> <i>Leucadendron adscendens</i> <i>Leucadendron rubrum</i> <i>Askidiosperma paniculatum</i> <i>Tetraria bromoides</i> <i>Calopsis paniculata</i> <i>Bobartia indica</i> <i>Elegia stipularis</i> <i>Serruria aemula</i> <i>Montinia caryophyllacea</i>	Community A5	Widespread but patchy – restricted to large valleys and associated with shale bands	Susceptible to erosion – friable soils. Sensitive to disturbance and including compaction.		No
	B1A (21)	Dry slopes. rocky outcrops/areas – slight differences between patches within this area. Similar to T6A (14 and 15).	3-4 years	<i>Protea acaulos</i> <i>Heeria argentea</i> <i>Leucadendron salignum</i> <i>Hypodiscus aristatus</i> <i>Calopsis paniculata</i> <i>Protea laurifolia</i> <i>Protea repens</i> (scattered) <i>Berzelia lanuginosa</i> <i>Brunia laevis</i> <i>Asparagus thunbergii</i> <i>Maytenus oleoides</i> <i>Erica plukenetti</i> <i>Erica thomae</i> <i>Podalyria sericea</i>	Community A2	Widespread	Sensitive to physical damage	Not too susceptible to erosion	No

Villiersdorp B1C (Figure A4.1).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Villiersdorp B1C	B1C (11)	Similar to T6A (10) Mature riparian vegetation. But slightly drier. SOME INVASION – VERY HEAVY IN B1C.	3-4 years	<i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Pronium serrata</i> <i>Brabejum stellatifolium</i> <i>Brachyleana nerifolia</i> <i>Leucadendron salicifolium</i> <i>Pteridium aquilium</i> <i>Rhus angustifolia</i> <i>Cunonia capensis</i>	Community A6	Localised along major streams	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, unnatural streamflow changes and thus to changes in superficial groundwater.	Yes
	B1C(20)	Same as B1A (20)	3-4 years	<i>Protea nitida</i> <i>Protea repens</i> <i>Leucadendron adscendens</i> <i>Leucadendron rubrum</i> <i>Askidiosperma paniculatum</i> <i>Tetraria bromoides</i> <i>Calopsis paniculata</i> <i>Bobartia indica</i> <i>Elegia stipularis</i> <i>Serruria aemula</i> <i>Montinia caryophyllacea</i>	Community A5	Widespread but patchy – restricted to large valleys and associated with shale bands	Susceptible to erosion – friable soils. Sensitive to disturbance and including compaction.	Sensitive to disturbance and including compaction.	No
	B1C (21)	Same as B1A (21)	3-4 years	<i>Protea acaulos</i> <i>Heeria argentea</i> <i>Leucadendron salignum</i> <i>Hypodiscus aristatus</i> <i>Calopsis paniculata</i> <i>Protea laurifolia</i> <i>Protea repens</i> (sparse) <i>Berzelia lanuginosa</i> <i>Brunia laevis</i> <i>Asparagus thunbergii</i> <i>Maytenus oleoides</i> <i>Erica plukenetti</i> <i>Erica thomae</i> <i>Podalyria sericea</i>	Community A2	Widespread	Sensitive to physical damage	Susceptible to erosion	No

	B1C(22)	Wetland like T6A 11 but HEAVILY invaded by alien vegetation	3-4 years	<i>Acacia longifolia</i> <i>Acacia mearnsii</i> <i>Eucalyptus camaldulensis</i>	Aliens	Localised in damp areas	n.a.	n.a.	No
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Steenbras H6B (Figure A4.2).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Steenbras H6B	H6B(1)	2m tall <i>Leucadendron</i> , <i>Protea</i> , <i>Thesium</i> emergence and 60 cm restiod/ericoid understory. Relatively dry band.	Mature	<i>Leucadendron xanthoconus</i> <i>Protea lepidocarpodenron</i> <i>Thesium euphorbioides</i> <i>Tetaria bromoides</i> <i>Erica longifolia</i> <i>Erica pulchella</i> <i>Hypolaena crinalis</i> <i>Brunia laevis</i> <i>Serruria elongata</i> <i>Serruria barbiger</i> <i>Elegia parvifolia</i>	Community M2	Relatively restricted distribution only in the Kogelberg Biosphere Reserve	Sensitive to physical damage.	Sensitive to trampling. Unlikely to be highly sensitive to erosion. Potentially rare Proteaceae.	No
	H6B(2)	Rocky tillite shelves	Mature		Community J2	Widely distributed in mountains at higher altitudes from Cederberg to Kogelberg	Sensitive to physical damage	Not too susceptible to erosion	No
	H6B(3)	Small mountain stream – riparian vegetation	Mature	<i>Metrosideros</i> No <i>Brabejum</i> or <i>Cunonia</i>			Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to trampling and to groundwater abstraction.	No
	H6B(4)	Southerly facing, rocky slope	Mature				Sensitive to physical damage	Not too susceptible to erosion	

	H6B(5)	Winter seep	Mature	<i>Chondropetalum hookerianum</i> <i>Leucadendron xanthoconus</i> <i>Erica pulchella</i>	Community L4	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	Possible but mesic without freewater in summer
	H6B(6)	Species rich, typical mountain slope. Not groundwater driven.	Mature	<i>Erica sessiliflora</i> <i>Leucadendron gandogerii</i> <i>Tetralix thermalis</i> <i>Erica corifolia</i> <i>Erica hispidula</i> <i>Restio bifarius</i>	Community L1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to trampling.	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No
	H6B(7)	<i>Psoralea</i> riparian forest patch	Mature	<i>Psoralea pinnata</i> <i>Osmitopsis asteriscoides</i> <i>Berzelia lanuginosum</i> <i>Brunia alopecuroides</i> <i>Pronium serratum</i> <i>Brachylaena neriifolia</i> <i>Pteridium aquilinum</i> <i>Calopsis paniculata</i> <i>Empleurum unicusulare</i> <i>Phyllis buxifolia</i>	Community K1/2	Widely distributed as intermittent narrow strips along rocky riparian fringe through Western Cape mountains	Important for aquatic ecosystem functioning. Sensitive to stream flow changes.	Sensitive to trampling and to groundwater abstraction.	Yes

Steenbras H6A (Figure A4.2).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Steenbras H6A	H6A(1)	Riparian vegetation.	Mature	<i>Psoralea pinnata</i> <i>Osmitopsis asteriscoides</i> <i>Berzelia lanuginosum</i> <i>Brunia alopecuroides</i> <i>Pronium serratum</i> <i>Brachylaena neriifolia</i> <i>Calopsis paniculata</i> <i>Empleurum unicusulare</i> <i>Phylica buxifolia</i> <i>Psuedobaeckia africana</i>	Community K1/2	Widely distributed as intermittent narrow strips along rocky riparian fringe through Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to trampling and to groundwater abstraction.	Yes
	H6A(1a)	Side seeps associated with the river. Seeps patchy with oval stemmed restio c. 1 m high	Mature	Oval stemmed restio.		Localised.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to trampling and to groundwater abstraction.	Yes
	H6A(2)	<i>Heeria</i> rocky outcrops	Mature	<i>Heeria argentea</i> <i>Erica corifolia</i> <i>Elegia thysifera</i> <i>Erica pulchella</i> <i>Leucadendron gandogeri</i> <i>Rhus africana</i> <i>Erica hispidula</i> <i>Restio bifarius</i>	Community A2 at end of range with mixture of mesic Kogelberg Sandstone Fynbos	Restricted to isolated rock outcrops in northern catchments of Kogelberg-Steenbras Region	Sensitive to trampling	Sensitive to trampling. Unlikely to be highly sensitive to erosion.	No

	H6A(3)	Species rich, typical pristine mountain slope. Not groundwater driven.	Mature	<i>Serruria elongata</i> <i>Serruria barbiger</i> <i>Elegia thysifera</i> <i>Leucadendron adscendens</i> <i>Leucadendron gandogeri</i> <i>Leucadendron xanthoconus</i> <i>Erica similis</i> <i>Restio bifarius</i> <i>Restio egregius</i> <i>Hypodiscus aristatus</i> <i>Erica hispidula</i> <i>Erica periplocaeflora</i> <i>Leptocarpus hyalinus</i> <i>Elegia stipularis</i> Rutaceae possible rare (<i>Adenandra</i> sp.)	Community M2	Relatively restricted distribution only in the Kogelberg Biosphere Reserve	Sensitive to trampling	Sensitive to trampling. Sensitive to erosion.	No
	H6A(4)	Restio flats with a few emergent Leucadendrons, and bare coarse sandstone sandy patches	Mature	<i>Elegia stipularis</i> <i>Erica pulchella</i> <i>Erica curviramus</i> <i>Leucadendron xanthoconus</i>	Community L5	Widespread distribution but in local areas from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to trampling	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No
	H6A(6)	Species rich, typical mountain slope. Not groundwater driven.	Mature	<i>Erica sessiliflora</i> <i>Leucadendron gandogeri</i> <i>Tetraria thermalis</i> <i>Erica corifolia</i> <i>Erica hispidula</i> <i>Restio bifarius</i>	Community L1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to trampling	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No

Steenbras H8 (Figure A4.3).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Steenbras H8	H8(1)	Riparian vegetation typical of southern-most streams, with associated side seeps on organic-rich sand	Mature	<i>Psoralea pinnata</i> <i>Osmitopsis asteriscoides</i> <i>Berzelia lanuginosa</i> <i>Brunia alopecuroides</i> <i>Prionium serratum</i> <i>Restio purpurascens</i> <i>Chondropetalum mucronatum</i> <i>Disa tripetaloides</i>	Community K1	Widely distributed as intermittent narrow strips along rocky riparian fringe Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to trampling and to groundwater abstraction.	Yes
	H8(2)	Flats rocky areas with c. 2m tall <i>Leucadendron</i> emergence and 60 cm restiod/ericoid understory. Indicator of sandstone outcrops.	Mature	<i>Leucadendron gandogerii</i> <i>Erica longiflora</i> <i>Restio bifarius</i> (most common) <i>Erica hispidula</i> <i>Tetraria thermalis</i> <i>Phyllica buxifolia</i>	Community L1	Widespread through Kogelberg Biosphere Reserve	Sensitive to trampling.	Sensitive to trampling but not to groundwater abstraction.	No
	H8(2p)	H8(2) under pines.	Mature	H8(2) plus pines	Plantation - Community L1	Widespread through Kogelberg Biosphere Reserve	Sensitive to trampling.	Sensitive to trampling but not to groundwater abstraction.	No

	H8(3)	Shallow to deep coarse sandy substrate	Mature	<i>Restio bifarius</i> (most common) <i>Erica glabella</i> <i>Nevillea obtusissima</i> (in slight depressions) <i>Diastella thymelaeoides</i> ssp <i>thymelaeoides</i> <i>Leucadendron xanthoconus</i> (emergent) <i>Mimetes cuculatus</i> <i>Stoebe plumosa</i> (in wetter areas) <i>Elegia thyrseifera</i>	Communities related to: L1, G1	Restricted distribution in the Kogelberg Biosphere Reserve	Susceptible to compaction, erosion and local changes to water flow.	More susceptible to erosion than H8(1). As soon as the vegetative cover is removed the substrate will wash or blow away. <i>Diastella thymelaeoides</i> ssp <i>thymelaeoides</i> Red data book status “rare”	No
	H8(4)	Periodic seep – with taller fynbos	Mature	<i>Psoralea pinnata</i> <i>Berzelia lanuginosa</i> <i>Leucadendron xanthoconus</i> <i>Mimetes cuculatus</i> <i>Brunia alopecuroides</i>	Community related to: H	Restricted distribution localized from Nuweberg to the Kogelberg Biosphere Reserve	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	Possible but mesic without freewater in late summer
	H8(5)	Deep sandy areas on flats. Slight dunes evident. C. 2m tall emergent <i>Cliffortia</i> layer with 30cm dense mixed restiod layer. Contains seeps such as H8(6) below	Mature	<i>Cliffortia ruscifolia</i> (emergent) <i>Cliffortia</i> sp. <i>Thamnochortus fruticosus</i> <i>Leptocarpus membranaceus</i> <i>Staberoha cernua</i> <i>Restio occultus</i> <i>Erica pulchella</i> <i>Tetraria capillacea</i> <i>Hypodiscus aristatus</i> <i>Elegia stipularis</i>	Community related to: C1	Localized	Sensitive to trampling.	Sensitive to physical disturbance. Insensitive to desiccation through abstraction.	No

	H8(5p)	H8(5) under pines	Mature	H8(5) plus pines	Community related to: C1	Localized	Sensitive to trampling.	Sensitive to physical disturbance. Insensitive to desiccation through abstraction.	No
	H8(6)	Fault line seep – with taller fynbos	Mature	<i>Brunia alopecuroides</i> <i>Erica glabella</i> <i>Nevillea obtusissima</i> <i>Erica intervallaris</i> <i>Erica cristata</i> <i>Chondropetalum mucronatum</i> <i>Stoebe plumosa</i>	Communities G1, G2	Local patches	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	Yes
	H8(7)	Genuine riparian and instream vegetation	Mature	<i>Prionium serratum</i> <i>Psoralea pinnata</i> <i>Brachylaena neriifolia</i> <i>Psuedobaeckia africana</i> <i>Chondropetalum mucronatum</i> <i>Empleurum serratum</i> <i>Brunia alopecuroides</i> <i>Restio purpurascens</i> <i>Isolepis digitata</i> <i>Isolepis rivularis</i>	Community K2	Widespread alongside mountain streams between Nuweberg and the Kogelberg Biosphere Reserve	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes
	H8(8)	Pine plantations	Mature	<i>Pines plus H8(5) species</i>	Plantation	Widespread	Sensitive to trampling.	n.a.	No

Kogelberg K1 (Figure A4.4).

	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
TSA Sausage Kogelberg K1	K1(1)	Riparian vegetation – mature associated with large foothill rivers in the area. PRISTINE	15	<i>Podocarpus elongatus</i> <i>Brabejum stellatifolium</i> <i>Metrosideros angustifolia</i> <i>Cryptocaria angustifolia</i> <i>Prionium serratum</i> <i>Brachylaena neriifolia</i> <i>Psoralea pinnata</i> <i>Cunonia capensis</i> <i>Callopsiopsis paniculata</i> <i>Berzelia lanuginosa</i> <i>Widdringtonia nodiflora</i>	Community A6	Widespread along foothill streams	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	No
	K1(2)	Sandy flats. Similar to K1(5) but younger with deeper fine to medium grained soils. PRISTINE	5	<i>Brunia nodiflora</i> <i>Osmitopsis asteriscoides</i> <i>Leucadendron salicifolium</i> <i>Helichrysum vestitum</i> <i>Restio egregius</i> <i>Erica exleeana</i> <i>Staberoha cernua</i> (typical of deep sand fynbos) <i>Hypodiscus aristatus</i> <i>Erica corifolia</i> <i>Leucadendron gandogeri</i>	Community L5	Widespread along lower slopes	Sensitive to trampling and erosion	Sensitive to trampling and erosion	No
	K1(3)	Rocky outcrops interleaved with K1 (5). PRISTINE	Mature: 15	<i>Protea cynaroides</i> <i>Leucadendron gandogeri</i> <i>Watsonia borbonica</i> <i>Chondropetelum hookerianum</i> <i>Penaea mucronata</i> <i>Centella triloba</i> <i>Sympieza articularis</i> <i>Pillansia templemanii</i> <i>Rhus scytophylla</i> <i>Priestleya vestita</i>	Community J2	Widespread along lower slopes	Sensitive to trampling and erosion	Sensitive to trampling and erosion	No

	K1(4)	Wetter seep areas interleaved with K1(5). PRISTINE	15	<i>Mimetes cuculatus</i> <i>Leucadendron salicifolium</i> <i>Berzelia ecklonii</i> (restricted to the Kogelberg) <i>Berzelia lanuginosa</i> <i>Brunia superba</i> <i>Osmitopsis asteriscoides</i>	Community M1	Localised on some drainage lines	Susceptible to desiccation and trampling	Susceptible to desiccation and trampling	No
	K1(5)	General matrix in which other vegetation communities are embedded. PRISTINE	15	<i>Restio bifarius</i> <i>Elegia stipularis</i> <i>Erica pulchella</i> <i>Erica articularis</i> <i>Phaenocoma prolifera</i> <i>Restio egregius</i> <i>Tetralia thermalis</i> <i>Leucadendron gandogeri</i> <i>Nivenia stokoei</i> <i>Chondropetalum hookerianum</i>	Community L1	Widespread along lower slopes throughout the Kogelberg	Sensitive to trampling and erosion	Sensitive to trampling and erosion	No
	K1 (6)	<i>Osmitopsis</i> seeps	15	<i>Osmitopsis asteriscoides</i> <i>Psoralea pinnata</i>	Community G1	Widespread along lower slopes throughout the Kogelberg – patchy distribution	Sensitive to abstraction, to trampling, to erosion	Sensitive to abstraction, to trampling, to erosion	Yes
	K1 (7)	Mountain stream (perennial) riparian vegetation. No <i>Brabejum stellatifolium</i> . PRISTINE. Typical Hottentots Holands Section	15	<i>Osmitopsis asteriscoides</i> <i>Metrosideros angustifolia</i> <i>Brachylaena neriifolia</i> <i>Psoralea pinnata</i> <i>Berzelia lanuginosa</i> <i>Leucadendron salicifolium</i> <i>Erica perspicua</i> <i>Restio purpurascens</i> <i>Gnidia oppositifolia</i>	Community K1	Widespread along mountain streams in the Hottentots Holands	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	No

	K1 (8)	Tillite outcrop. PRISTINE	Never	<i>Erica ericoides</i> <i>Satyrium sp.</i> <i>Drosera trinervia</i> <i>Crassula fascicularis</i> <i>Oxalis versicolor</i> <i>Pteris sp.</i> <i>Thamnochortus sp.</i> Mosses <i>Lampranthus sp.</i>	Community J2	Localised on tillite outcrops	Sensitive to trampling	Sensitive to trampling	No
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Red Data species in Unit T:

Galaxia zebratus, R&E category = Lower Risk (Near threatened), in streams and rivers

Nuweberg T2A - (Figure A4.4).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T2A	T2A(1)	Seep	Mature	<i>Brunia squarrosa</i> <i>Brachylaena neriifolia</i> <i>Ischyrolepis subverticellatus</i> <i>Paranomus sceptrum-gustavianus</i> <i>Thamnochortus sp.</i> <i>Hypodiscus argenteus</i>	Community J1	Scattered local patches	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	Yes
	T2A(2)	Dry slope cleared of pines. Sandstone fynbos – similar to 6a in T3H.	Mature	<i>Stilbe vestita</i> <i>Erica longifolia</i> <i>Erica articularis</i> <i>Syncarpha vestita</i> <i>Tetraria thermalis</i> <i>Paranomus sceptrum-gustavianus</i>	Community L1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to trampling.	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction. <i>Paranomus</i> nowhere abundant but not listed as endangered.	No
	T2A(3)	Riparian vegetation	Mature	<i>Metrosideros angustifolia</i> <i>Brachylaena nerifolia</i> <i>Erica caffra</i>	Community A1	Widespread along streams	Sensitive to trampling.	Sensitive to changes to streamflow.	Yes

	T2A(4)	Seep on opposite side of the river.	Mature	<i>Cunonia capensis</i> <i>Brachylaena neriifolia</i> <i>Pteridium aquilinum</i> <i>Brunia alopecuroides</i> <i>Berzelia squarrosa</i> <i>Widdringtonia nodiflora</i>	Southern variation of Community A4	Plant community generally found on mesic southerly-facing steeper slopes on heavier colluvial soils. Restricted distribution in catchment and through West Cape Region.	Sensitive to physical disturbance	Highly sensitive to disturbance, through including compaction, which alters functioning.	Possible
	T2A(4p)	Plantation	Mature	T2A(4) plus pines	Southern variation of Community A4	n.a.	n.a.	n.a.	No
	T2A(5)	Skurweberg shallow drier sand.	7-8 years	<i>Stilbe vestita</i> <i>Erica longifolia</i> <i>Erica articularis</i> <i>Syncarpha vestita</i> <i>Tetraria thermalis</i>	Community L1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to trampling.	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No

Nuweberg T2D - (Figure A4.5).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T2D	T2D(1)	Shale band dry fynbos. Ericoid-restoid understorey of c. 0.5 m Protea overstorey of c. 1m.	Mature	<i>Stilbe vestita</i> <i>Protea cordata</i> <i>Brunia laevis</i> <i>Erica coccinea</i> <i>Protea repens</i> <i>Protea lepidocarpodendron</i> <i>Tetraria bromoides</i> <i>Mastersiella digitata</i> <i>Protea acualos</i> <i>Elegia stipularis</i> <i>Leucadendron laureolum</i>	Community M2	Generally associated with dry clay soil in bands associated with shales in mountains	Sensitive to trampling.	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No
	T2D(1p)	T2D(1) under pines	Mature	T2D(1) plus pines	Plantation	n.a.	n.a.	n.a.	No
	T2D(2)	Riparian vegetation on shale	Mature	<i>Rhus angustifolia</i> <i>Brachylaena neriifolia</i> <i>Tetraria bromoides</i> <i>Berzelia lanuginosum</i> <i>Diospyros glabra</i> <i>Montinia caryophyllacea</i>	Community M1	Generally associated with mesic clay soil in bands associated with shales in Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	No
	T2D(3)	Moist rocky foothill slope fynbos	Mature	<i>Widdringtonia nodiflora</i> <i>Tetraria thermalis</i> <i>Leucadendron xanthoconus</i> <i>Psoralea pinnata</i> <i>Erica ericoides</i> <i>Nebelia fragarioides</i> <i>Hypodiscus argenteus</i> <i>Struthiola myrsinitis</i>	Southern variation of Community A4	Plant community generally found on mesic southerly-facing steeper slopes on heavier colluvial soils. Restricted distribution in catchment and through West Cape Region.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to trampling. Insensitive to abstraction.	No
	T2D(3p)	T2D(3) under pines	Mature	T2D(3) plus pines	Plantation	n.a.	n.a.	n.a.	No

Nuweberg T2F - (Figure A4.6).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T2F	T2F (1)	Riparian vegetation on shale – invaded by pines	Immature	<i>Cunonia capensis</i> <i>Pteridium aquilinum</i> <i>Psoralea pinnata</i> <i>Rhus angustifolia</i> <i>Brachylaena neriifolia</i> <i>Acacia melanoxylon</i> Patches of <i>Gleichenia polypodioides</i> <i>Cliffortia hirsuta</i> <i>Podalyria calyptrata</i> <i>Leucadendron salicifolium</i> <i>Restio purpurascens</i> <i>Halleria elliptica</i> <i>Brabejum stellatifolium</i> <i>Pronium serratum</i>	Community A1	Local distribution in patches along rivers in kloofs generally associated with clay soil.	Sensitive to changes in streamflow, to abstraction and to mechanical damage	Sensitive to unnatural changes in streamflow and mechanical damage	No
	T2F(2)	Cleared of pine	Immature	No list, very disturbed	unidentified	unknown	Sensitive to habitat modification but not to abstraction.	Insensitive to changes to groundwater	No
	T2F(3)	Skurweberg shallow drier sand.	7-8 years	<i>Stilbe vestita</i> <i>Erica longifolia</i> <i>Erica articularis</i> <i>Syncarpha vestita</i> <i>Tetraria thermalis</i>	Community L1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to trampling.	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No
	T2F(4)	Seep	7-8 years	<i>Berzelia lanuginosa</i> <i>Brunia alopecuroides</i>	Community M1	Widely distributed in patchy seeps between Nuweberg and the Kogelberg Biosphere Reserve	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	No

Nuweberg T3H - (Figure A4.7).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T3H	T3H(1)	High altitude shale band, ericoid/restoid mesic shale fynbos. Extremely rich in Erica species	7-8 years	<i>Cannamois virgata</i> <i>Leucadendron sp.</i> <i>Leucadendron xanthoconus</i> <i>Tetraria bromoides</i> <i>Ursinia ecklonia</i> <i>Erica sitiens</i> <i>Berzelia abrotanoides</i> <i>Brunia alopecuroides</i> <i>Erica hispidula</i> <i>Protea acaulos</i> <i>Aristea c.f. major</i> <i>Pillansia templemanni</i>	Community M1	Generally associated with mesic clay soil in bands associated with shales in Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to unnatural desiccation and thus to changes in superficial groundwater.	No
	T3H(2)	Same as 1 above but under pines.	≈ 30.	Similar to T3H(1)	Community M1	Generally associated with mesic clay soil in bands associated with shales in Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to unnatural desiccation and thus to changes in superficial groundwater.	No
	T3H(3)	Band of Goudini	7-8 years	<i>Phaenocoma prolifera</i> <i>Tetraria thermalis</i> <i>Heterolepis aliena</i> <i>Diospyros glabra</i> <i>Protea repens</i> <i>Leucadendron laureolum</i>	Community L1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to physical damage	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No
	T3H(4)	Slightly drier form of 1 above. Previously invaded by 'opslag denne'.	7-8 years	<i>Nebelia fragarioides</i> <i>Tetraria bromoides</i> <i>Hypodiscus argentea</i> <i>Protea scabra</i> <i>Erica hispidula</i> <i>Protea acaulos</i> <i>Penaea mucronata</i>	Community M2	In local dry shale patches from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to physical damage	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No

	T3H(5)	Sandstone element under pine. Lots of exposed rock.	≈ 30.				Sensitive to physical damage	Sensitive to erosion. Insensitive to abstraction.	No
	T3H(6a)	Skurweberg shallow drier sand.	7-8 years	<i>Stilbe vestita</i> <i>Erica longifolia</i> <i>Erica articularis</i> <i>Syncarpha vestita</i> <i>Tetraria thermalis</i>	Community L1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to physical damage	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No
	T3H(6b)	Skurweberg deeper wet peaty sand. Rich in ericas	7-8 years	<i>Priestleya calycina</i> <i>Mimetes cuculatus</i> <i>Protea cynaroides</i> <i>Brunia alopecuroides</i>	Related to Community L6	In small local patches from Kogelberg Biosphere Reserve to Nuweberg	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to unnatural desiccation and thus to changes in superficial groundwater.	No

Nuweberg T3G - (Figure A4.4).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T3G	T3G (1)	Riparian vegetation on shale	Mature	<i>Cunonia capensis</i> <i>Pteridium aquilinum</i> <i>Psoralea pinnata</i> <i>Rhus angustifolia</i> <i>Brachylaena neriifolia</i> <i>Acacia melanoxylon</i> Patches of <i>Gleichenia polypodioides</i> <i>Cliffortia hirsuta</i> <i>Podalyria calyprata</i> <i>Leucadendron salicifolium</i> <i>Restio purpurascens</i> <i>Halleria elliptica</i>	Community A1	Local distribution in patches along rivers in kloofs generally associated with clay soil	Sensitive to changes in streamflow, to abstraction and to mechanical damage	Sensitive to desiccation, to streamflow changes and thus to changes in superficial groundwater.	No
	T3G (2)	Mixture of 1 and 6 of T3H – all under pine	Mature	Pines plus species from T3H(1, 6)	Plantation	Widespread	Sensitive to physical damage but not to abstraction.	Sensitive to dessication and trampling.	No

Nuweberg T4A - (Figure A4.8).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T4A	T4A(1)	Mesic vegetation patch. Restiod fynbos	Immature	<i>Elegia filacea</i> <i>Chondropetalum mucronatum</i>	Community G4	Localised	Sensitive to desiccation and physical disturbance.	Sensitive to desiccation/abstraction	Yes
	T4A(2)	Ericoid, restiod, cyperoid fynbos on the dry footslopes	Immature	<i>Tetraria thermalis</i> <i>Erica articularis</i>	Community L1	Widespread through Kogelberg Biosphere Reserve	Sensitive to physical damage	Sensitive to trampling. Insensitive to desiccation through abstraction.	No
	T4A(3)	Ericoid, restiod, cyperoid fynbos on the dry upper slopes.	Immature	<i>Tetraria thermalis</i> <i>Restio occultus</i> <i>Elegia persistens</i> <i>Erica articularis</i> <i>Protea cynaroides</i> (small patches)	Community L2	Widespread through Kogelberg Biosphere Reserve	Sensitive to physical damage	Sensitive to trampling. Insensitive to desiccation through abstraction.	No
	T4A(4)	Wetter slope with patchy seeps – too fine to map	Immature	<i>Erica articularis</i> etc	Community L4	Widespread through Kogelberg Biosphere Reserve	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Possible
	T4A(8)	Rocky outcrops	Immature	<i>Raspalia microphylla</i> <i>Restio occultus</i>	Community L1	Widespread through Kogelberg Biosphere Reserve	Sensitive to physical damage	Sensitive to trampling. Insensitive to desiccation through abstraction.	No

	T4A(5)	Riparian vegetation	Mature	<i>Ischyrolepis subverticellata</i> <i>Prionium serratum</i> <i>Brunia alopecuroides</i> <i>Cliffortia graminea</i> <i>Brachylaena neriifolia</i> (old and stressed)	Community K2 (undescribed related to community B1 but water more permanent)	Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes.	Highly sensitive to disturbance, through including compaction, which alters functioning..	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes
	T4A(6)	Taller vegetation on shale band – slightly wetter. Yellow plinthic soils	Immature	<i>Tetradlea bromoides</i> Minor <i>Erica</i> , plus a number of other different ericas, e.g., <i>Erica versicolor</i>	A Nuweberg form of Fynbos on heavier yellow clay-rich soils (related to Community M1)	Localised	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes
	T4A(7)	Seeps alongside the stream – very thick peaty soils	Immature	<i>Brunia alopecuroides</i> <i>Restio occultus</i> <i>Leucadendron xanthoconus</i> <i>Leucadendron laureolum</i>	Community G4	Widely distributed as intermittent narrow strips along rocky riparian fringe through Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes

Nuweberg T4B - (Figure A4.8).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitoring
Nuweberg T4B	T4B(3)	Ericoid, restiod, cyperoid fynbos on the dry upper slopes.	Immature	<i>Tetraria thermalis</i> <i>Restio occultus</i> <i>Elegia persistens</i> <i>Erica articularis</i> <i>Protea cynaroides</i> (small patches) <i>Nebelia fragarioides</i>	Community L3	Widespread through Kogelberg Biosphere Reserve	Sensitive to physical damage	Sensitive to physical disturbance.	No
	T4B(6)	Taller vegetation on shale band – slightly wetter. Yellow plinthic soils	Immature	<i>Tetraria bromoides</i> Minor <i>Erica</i> , plus a number of different ericas, e.g., <i>Erica versicolor</i>	A Nuweberg form of Fynbos on heavier yellow clay-rich soils (related to Community M1)	Localised	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes
	T4B(8)	Rocky outcrops	Mature	<i>Raspalia microphylla</i> <i>Restio occultus</i>	Community L1	Widespread through Kogelberg Biosphere Reserve	Sensitive to physical damage	Sensitive to physical disturbance.	No
	T4B(5)	Riparian vegetation	Mature	<i>Ischyrolepis subverticellata</i> <i>Prionium serratum</i> <i>Brunia alopecuroides</i> <i>Cliffortia graminea</i> <i>Brachylaena neriifolia</i> (old and stressed)	Community K2	Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes

	T4B(5a)	Riparian vegetation on scree	Mature	<i>Erica caffra</i> <i>Brachylaena neriifolia</i> <i>Prionium serratum</i> <i>Cunonia capensis</i>	Community A1	Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes.	Highly susceptible to desiccation, such as through streamflow changes and to erosion. Sensitive to compaction.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes
	T4B(7)	Seeps alongside the stream – very thick peaty soils	Immature	<i>Brunia alopecuroides</i> <i>Restio occultus</i> <i>Leucadendron xanthoconus</i> <i>Leucadendron laureolum</i>	Community H1	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Highly susceptible to desiccation, and erosion. Sensitive to compaction.	Sensitive to desiccation and thus to changes in superficial groundwater.	Possible but footslope
	T4B(10)	Seep on opposite side of the river	Immature	<i>Elegia capensis</i> <i>Psoralea pinnata</i>	Community N1		Highly susceptible to desiccation, and erosion. Sensitive to compaction.	Sensitive to desiccation and thus to changes in superficial groundwater.	Yes
	T4B(11)	Small rocky outcrops	Mature	<i>Heeria argentea</i>	Community A2	Plant community found in patches associated with rock outcrops at most altitudes through region from Cederberg to Villiersdorp	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No

	T4B(12)	Shale band vegetation	Immature	<i>Protea repens</i> <i>Berzelia abrotanoides</i> <i>Tetragia bromoides</i> <i>Cannamois virgata</i> <i>Protea neriifolia</i> <i>Leucadendron laureolum</i>	A form of Community M1	Restricted to moist shale bands	Susceptible to desiccation, and erosion. Sensitive to compaction.	Sensitive to desiccation and thus to changes in superficial groundwater.	Possible but mesic
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Nuweberg T4C - (Figure A4.8).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T4C	T4C(3)	Ericoid, restiod, cyperiod fynbos on the dry upper rocky sandstone slopes.	Immature	<i>Tetraria thermalis</i> <i>Restio occultus</i> <i>Elegia persistens</i> <i>Erica articularis</i> <i>Protea cynaroides</i> (small patches) <i>Nebelia fragarioides</i>	Community L3	Widespread	Sensitive to erosion and trampling	Insensitive to abstraction	No
	T4C(5)	Riparian vegetation – not invaded	Mature	<i>Cannamois virgata</i> <i>Calopsis paniculata</i> <i>Prionium serratum</i> <i>Brachylaena neriifolia</i> <i>Erica caffra</i> <i>Pseudobaekia africana</i> <i>Leucadendron xanthoconus</i> <i>Pteridium aquilinum</i>	Community K1	Widely distributed as intermittent narrow strips along rocky riparian fringe through Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, to changes in streamflow and to changes in superficial groundwater.	Yes
	T4C (P)	Riparian vegetation - invaded	Mature	As above but invaded	Disturbed Community K1	Widely distributed as intermittent narrow strips along riparian fringe through rocky Western Cape mountains	Highly susceptible to desiccation, and erosion.	Highly sensitive to disturbance, through including compaction, which alters functioning.	No
	T4C(12)	Shale band vegetation burnt recently	Immature	<i>Protea repens</i> <i>Berzelia abrotanoides</i> <i>Tetraria bromoides</i> <i>Cannamois virgata</i> <i>Protea neriifolia</i> <i>Leucadendron laureolum</i>	A form of Community M1	Restricted to moist shale bands	Susceptible to desiccation, and erosion. Sensitive to compaction.	Sensitive to desiccation and thus to changes in superficial groundwater.	Possible but mesic

	T4C(12p)	T4C(12) under pine	Mature	Pines	Plantation	Restricted to moist shale bands	Susceptible to desiccation, and erosion. Sensitive to compaction.	Sensitive to desiccation and thus to changes in superficial groundwater.	No
	T4C(13)	Stream/wetland mix under pines	Mature	<i>Blechnum australe</i> <i>Histiopteris</i> <i>Gleichenia polypodioides</i> <i>Struthiola myrsinites</i> <i>Osmitopsis asteriscoides</i> <i>Calopsis paniculata</i> <i>Halleria lucida</i>	Community B2	Restricted to patchy local mountain seeps between Kleinrivier Mountains and Wemmershoek	Highly susceptible to desiccation, and erosion. Sensitive to compaction.	Highly sensitive to disturbance, through including compaction, which alters functioning.	No

Nuweberg T4D - (Figure A4.9).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T4D	T4D(3)	Ericoid, restiod, cyperoid fynbos on the dry upper slopes. North	Mature	<i>Tetraria thermalis</i> <i>Restio occultus</i> <i>Elegia persistens</i> <i>Erica articularis</i> <i>Protea cynaroides</i> (small patches) <i>Nebelia fragarioides</i>	Community L3	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to physical damage	Sensitive to physical disturbance. Insensitive to desiccation through abstraction.	No
	T4D(3p)	T4D(3) under pines	Mature	T4D(3) plus pines	Plantation	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to physical damage	Sensitive to physical disturbance. Insensitive to desiccation through abstraction.	No
	T4D(13)	Seep	Mature	<i>Gleichenia polypodioides</i>	Secondary form of Community K1	Only found in small local patches	Susceptible to unnatural desiccation, and erosion. Sensitive to disturbance including compaction.	This community has already been dried out by pine plantations. The dominance by <i>Gleichenia</i> is a response to this effect. Sensitive to further desiccation and thus to changes in superficial groundwater.	No
	T4D(12)	Ridge	Mature	<i>Protea repens</i> <i>Berzelia abrotanoides</i> <i>Tetraria bromoides</i> <i>Cannamois virgata</i> <i>Protea nerifolia</i> <i>Leucadendron lauroolum</i>	Community M1	Generally associated with mesic clay soil in bands associated with shales in Western Cape mountains	Sensitive to disturbance and including compaction.	Sensitive to desiccation and thus to changes in superficial groundwater.	No

	T4D(12p)	T4D(12) under pines	Mature	Pines <i>Protea repens</i> <i>Berzelia abrotanoides</i> <i>Tetralaria bromoides</i> <i>Cannamois virgata</i> <i>Protea nerifolia</i> <i>Leucadendron lauroolum</i>	Plantation	Generally associated with mesic clay soil in bands associated with shales in Western Cape mountains	n.a.	n.a.	n.a.
	T4D(14)	Seep	Mature	<i>Berzelia lanuginosa</i>	Community K1	Widely distributed as intermittent narrow strips along rocky riparian fringe through Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	Possible but mesic without freewater in late summer
	T4D(16p)	Typical riparian vegetation - invaded	Mature	<i>Calopsis paniculata</i> <i>Cunonia capensis</i> <i>Brachylaena neriifolia</i> <i>Prionium serratum</i> <i>Kiggelaria africana</i> <i>Agathosma crenulata</i> <i>Pteridium aquilinum</i> <i>Acacia melanoxylon</i> <i>Acacia elata</i> Other exotics	Community A1	Plant community widespread through region along rocky banks of permanent streams	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	No
	T4D(17)	Suburb	-	Urban	Urban	Localised	Insensitive	Insensitive	No

Nuweberg T4E - (Figure A4.9).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T4E	T4E(3)	Ericoid, restiod, cyperiod fynbos on the dry upper slopes. North	Mature	<i>Tetraria thermalis</i> <i>Restio occultus</i> <i>Elegia persistens</i> <i>Erica articularis</i> <i>Protea cynaroides</i> (small patches) <i>Nebelia fragarioides</i>	Community L3	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Sensitive to physical damage	Sensitive to physical disturbance. Insensitive to desiccation through abstraction.	No
	T4E(13)		Mature	<i>Gleichenia polypodioides</i>	Secondary form of Community K1	Only found in small local patches	Susceptible to unnatural desiccation, and erosion. Sensitive to disturbance including compaction.	This community has already been dried out by pine plantations. The dominance by <i>Gleichenia</i> is a response to this effect. Sensitive to further desiccation and thus to changes in superficial groundwater.	No
	T4E(13p)	Plantation	Mature	Pines <i>Gleichenia polypodioides</i>	Plantation	Widespread	n.a.	n.a.	No
	T4E(12)	Mesic clay soils	Mature	<i>Protea repens</i> <i>Berzelia abrotanoides</i> <i>Tetraria bromoides</i> <i>Cannamois virgata</i> <i>Protea nerifolia</i> <i>Leucadendron laureolum</i>	Community M1	Generally associated with mesic clay soil in bands associated with shales in Western Cape mountains	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	No

	T4E(12p)	Under pines	Mature	Pines <i>Protea repens</i> <i>Berzelia abrotanoides</i> <i>Tetraria bromoides</i> <i>Cannamois virgata</i> <i>Protea nerifolia</i> <i>Leucadendron laureolum</i>	Plantation	Widespread	n.a.	n.a.	No
	T4E(7)	Seeps on shale under pine	Mature	<i>Brunia alopecuroides</i> <i>Restio occultus</i> <i>Leucadendron xanthoconus</i> <i>Leucadendron laureolum</i> <i>Chondropetalum hookerianum</i>	Community L3	Widespread from Kogelberg Biosphere Reserve to Nuweberg	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	No
	T4E(7p)	Plantation	Mature	Pines <i>Brunia alopecuroides</i> <i>Restio occultus</i> <i>Leucadendron xanthoconus</i> <i>Leucadendron laureolum</i> <i>Chondropetalum hookerianum</i>	Plantation	Widespread	n.a.	n.a.	No
	T4E(15)	Acid marsh	Mature	<i>Osmitopsis asteroides</i> <i>Calopsis paniculata</i> <i>Gnidia oppositifolia</i> <i>Berzelia lanuginosa</i> <i>Pteridium aquilinum</i> <i>Psoralea pinnata</i>	Community B2	Restricted to patchy local mountain seeps between Kleinrivier Mountains and Wemmershoek	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and thus to changes in superficial groundwater.	Yes

	T4E(15p)	Plantation	Mature	Pines <i>Brunia alopecuroides</i> <i>Restio occultus</i> <i>Leucadendron xanthoconus</i> <i>Leucadendron laureolum</i> <i>Chondropetalum hookerianum</i>	Plantation	Widespread	-	n.a.	N.A.
	T4E(16)	Typical riparian vegetation	Mature	<i>Calopsis paniculata</i> <i>Cunonia capensis</i> <i>Brachylaena neriifolia</i> <i>Prionium serratum</i> <i>Kiggelaria africana</i> <i>Agathosma crenulata</i> <i>Pteridium aquilinum</i> <i>Acacia melanoxylon</i> <i>Acacia elata</i> Other exotics	Community A1	Plant community widespread through region along rocky banks of permanent streams	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly sensitive to disturbance, through including compaction, which alters functioning.	No

Nuweberg T6A - (Figure A4.10).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
<i>NB: Mapping Units T6A (10) and T6A(11) represent gradual zonations according to moisture</i>									
Nuweberg T6A Ideal areas for monitoring effects of groundwater abstraction on seeps.	T6A (10)	Mature riparian vegetation. SLIGHT INVASION	3-4 years	<i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Prionium serrata</i> <i>Brabejum stellatifolium</i> <i>Brachyleana nerifolia</i> <i>Cunonia capensis</i> <i>Blechnum punctulatum</i> <i>Acacia longifolia</i> <i>Isolepis fluitans</i> <i>Cyclopia genistoides</i> <i>Neesenbeckia punctoria</i>	Community A6	Localised along major streams	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, unnatural streamflow changes and thus to changes in superficial groundwater.	Yes
	T6A (11)	T6A(11) comprises several zones of communities each with slightly (decreasing) different moisture levels	3-4 years	<i>Psoralea pinnata</i> <i>Protea cynaroides</i> <i>Blechnum punctulatum</i> <i>Osmitopsis asteriscoides</i> <i>Calopsis paniculata</i> <i>Podalyria calyptrata</i>	Community B2	Widespread but patchy – restricted to large valleys and associated with shale bands	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, unnatural streamflow changes and thus to changes in superficial groundwater.	Yes – however the more isolated seeps will provide better monitoring than some of the others, and selection of monitoring seeps will be very important
				<i>Elegia capensis</i> <i>Pteridium aquilium</i> <i>Widdringtonia nodiflora</i> <i>Metrosideros angustifolia</i>	Community K2				
				<i>Leucadendron salicifolium</i> <i>Cannamois virgata</i>	Community K1				
T6A (12)	Pebbly flats with short restios – likely to contain rares (Similar to T6E(1))	3-4 years	<i>Ischyrolepis sieberi</i> <i>Protea acaulos</i> <i>Leucadendron salignum</i>	Community G2	Localised and patchy	Sensitive to physical damage	Susceptible to erosion	No	

	T6A(14)	Slope with rocky outcrops/areas – slight differences between patches within this area, with some patches having more ericas and others more proteas, but lumped because scale of differences is too small to map.	3-4 years	<i>Protea nitida</i> <i>Heeria argentea</i> <i>Askidiosperma paniculatum</i> <i>Leucadendron microcephalum</i> <i>Pentaschistis curvifolia</i> <i>Widdringtonia nodiflora</i> <i>Protea repens</i> <i>Phaenocoma prolifera</i> <i>Heterolepis aliena</i> <i>Restio egregius</i> <i>Saltera sarcocola</i> <i>Tetraria thermalis</i> <i>Hypodiscus aristatus</i> <i>Erica curvifolia</i> <i>Ursinia crythmoides</i> <i>Leucadendron salignum</i> <i>Podalyria sericea</i>	Community A2	Widespread on the dry slopes	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No
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	T6A (15)	<p>Slope with rocky outcrops/areas – slight differences between patches within this area, with some patches having more ericas and others more proteas, but lumped because scale of differences is too small to map. The yellow colour on the aerial photograph is wash down from the shale band above the site. SOME INVASION AND EVIDENCE OF INTENSIVE CLEARING. Cleared WFW camping areas evident in the sausage. Extremely difficult to tell if rares are present as the veld should be surveyed in different seasons and at a smaller scale to check for rares</p>	<p>3-4 years – some patches appear older as if they did not burn in last fire</p>	<p><i>Protea nitida</i> <i>Heeria argentea</i> <i>Askidiosperma paniculatum</i> <i>Leucadendron microcephalum</i> <i>Pentaschistis curvifolia</i> <i>Widdringtonia nodiflora</i> <i>Protea repens</i> <i>Phaenocoma prolifera</i> <i>Heterolepis aliena</i> <i>Restio egregius</i> <i>Saltera sarcocola</i> <i>Tetaria thermalis</i> <i>Hypodiscus aristatus</i> <i>Erica curvifolia</i> <i>Ursinia crythmoides</i> <i>Leucadendron salignum</i> <i>Podalyria sericea</i></p>	<p>Community A2</p>	<p>Widespread on the dry slopes</p>	<p>Sensitive to physical damage</p>	<p>Susceptible to erosion</p>	<p>No</p>
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Nuweberg T6B - (Figure A4.10).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Nuweberg T6B	T6B (10)	Same as T6A (10) Mature riparian vegetation. SLIGHT INVASION	3-4 years	<i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Prionium serrata</i> <i>Brabejum stellatifolium</i> <i>Brachyleana nerifolia</i> <i>Cunonia capensis</i> <i>Blechnum punctulatum</i> <i>Acacia longifolia</i> <i>Isolepis fluitans</i> <i>Cyclopia genistoides</i> <i>Neesenbeckia punctoria</i>	Community A6	Localised along major streams	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, unnatural streamflow changes and thus to changes in superficial groundwater.	Yes
	T6B (11)	Same as T6A(11)	3-4 years	<i>Psoralea pinnata</i> <i>Protea cynaroides</i> <i>Blechnum punctulatum</i> <i>Osmitopsis asteriscoides</i> <i>Calopsis paniculata</i> <i>Podalyria calyptrata</i>	Community B2	Widespread but patchy – restricted to large valleys and associated with shale bands	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, unnatural streamflow changes and thus to changes in superficial groundwater.	Yes – however the more isolated seeps will provide better monitoring than some of the others, and selection of monitoring seeps will be very important
				<i>Elegia capensis</i> <i>Pteridium aquilium</i> <i>Widdringtonia nodiflora</i> <i>Metrosideros angustifolia</i>	Community K2				
				<i>Leucadendron salicifolium</i>	K1				

	T6B(17)	Slope with rocky outcrops/areas – slight differences between patches within this area, with some patches having more ericas and others more proteas, but lumped because scale of differences is too small to map.	3-4 years	<i>Protea nitida</i> <i>Heeria argentea</i> <i>Askidiosperma paniculatum</i> <i>Leucadendron microcephalum</i> <i>Pentaschistis curvifolia</i> <i>Widdringtonia nodiflora</i> <i>Protea repens</i> <i>Phaenocoma prolifera</i> <i>Heterolepis aliena</i> <i>Restio egregius</i> <i>Saltera sarcocola</i> <i>Tetraria thermalis</i> <i>Hypodiscus aristatus</i> <i>Erica curvifolia</i> <i>Ursinia crythmoides</i> <i>Leucadendron salignum</i> <i>Podalyria sericea</i>	Community A2	Widespread on the dry slopes	Sensitive to physical damage	Susceptible to erosion	No
	T6B (16)	Dry restio fynbos. rocky outcrops/areas – slight differences between patches within this area. Similar to T6A(14 and 15).	3-4 years	<i>Protea nitida</i> <i>Protea acaulos</i> <i>Heeria argentea</i> <i>Leucadendron salignum</i> <i>Erica plukenetti</i> <i>Askidiosperma paniculatum</i> <i>Pentaschistis curvifolia</i> <i>Ursinia crithmoides</i> <i>Tetraria capillacea</i> <i>Tetraria bromoides</i> <i>Metalasia sp.</i> <i>Widdringtonia nodiflora</i> <i>Erica thysifera</i> <i>Maytenus oleoides</i> <i>Diospyros glabra</i> <i>Elytropappus longifolia</i>	Community A2	Localised and patchy	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No

Nuweberg T6C - (Figure A4.10).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
<i>NB: Mapping Units T6(1) and T6(2) are not really distinct from one another. It is more a case of one being more dominant in one area and vice versa.</i>									
Nuweberg T6C Ideal areas for monitoring effects of groundwater abstraction on seeps.	T6C (1)	Same at T6E (1)	3-4 years	<i>Phaenocoma prolifera</i> <i>Protea cynaroides</i> <i>Protea acaulos</i> <i>Leucadendron lauroleum</i> <i>Anthochortus sp. cf. A. crinalis</i> <i>Restio egregius</i> <i>Leucadendron adscendens</i> <i>Hypodiscus aristatus</i> <i>Tetraria thermalis</i>	Community L2	Extensive	Sensitive to physical damage	Susceptible to erosion	No
	T6C (2)	Same at T6E (2)	3-4 years	<i>Heeria argentea</i> <i>Leucadendron adscendens</i> <i>Maytenus oleoides</i> <i>Oldenbergia intermedia</i> <i>Aloe plicatilis</i> <i>Widdringtonia nodiflora</i> <i>Askidiosperma paniculatum</i>	Community A2	Widespread but patchy	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No
	T6C (3)	Same at T6E (3). Shale lenses dotted among the sand flats. PRISTINE	3-4 years	<i>Tetraria bromoides</i> <i>Protea repens</i> <i>Erica plukenetti</i> <i>Gerbera asplenifolia</i> <i>Askidiosperma paniculatum</i> <i>Staberoha cernua</i> <i>Tetraria capillacea</i> <i>Corymbium cf. africanum</i> <i>Protea acaulos</i>	Community M2	Localised and patchy	Sensitive to physical damage	Susceptible to erosion	No

	T6C (5)	Contact seep. PRISTINE	3-4 years	<i>Leucadendron salicifolium</i> <i>Erica intervallaris</i> <i>Thesium carinatum</i> <i>Elegia thyrsoifera</i>	Community J1	Widespread but patchy	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, and to changes in superficial groundwater.	Area too small for good monitoring but excellent monitoring seep across the river from this mapping unit (PHOTO)
	T6C (6)	Mature riparian vegetation. PRISTINE	3-4 years	<i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Prionium serrata</i> <i>Brabejum stellatifolium</i> <i>Brachyleana nerifolia</i> <i>Cunonia capensis</i>	Community A6	Widespread	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, unnatural streamflow changes and thus to changes in superficial groundwater.	Yes
	T6C (7)	Shale outcrop	3-4 years	<i>Protea nitida</i> <i>Heeria argentea</i> <i>Askidiosperma paniculatum</i> <i>Leucadendron salignum</i> <i>Olea europaea ssp africana</i> <i>Protea acaulos</i> <i>Podalyria sericea</i> <i>Diospyros glabra</i> <i>Heterolepis aliena</i> <i>Gerbera tomentosa</i>	Community A3	Local	Sensitive to physical damage	Susceptible to erosion	No
	T6C (8)	Small ground water seeps scattered along the valley slopes – not associated with the river. PRISTINE	3-4 years	<i>Elegia capensis</i> <i>Psoralea pinnata</i>	Community N1	Localised, patchy	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation, and to changes in superficial groundwater.	Yes

	T6C – Chris's patch	Waboomveld - widespread	3-4 years	<i>Protea nitida</i> <i>Psoralea pinnata</i> <i>Leucadendron salicifolium</i> <i>Diospyros glabra</i> <i>Widdringtonia nodiflora</i> <i>Protea repens</i> <i>Elytropappus longifolia</i> <i>Leucadendron salignum</i> <i>Ursinia crythmoides</i> <i>Chrysanthemoides monilifera</i> <i>Ischyrolepis gaudichaudianus</i> <i>Watsonia borbonica</i> <i>Pteridium aquilium</i> <i>Cymbopogon plurinodes</i> <i>Tetraria bromoides</i> <i>Carpococe spermacoce</i> <i>Cliffortia graminea</i>	Community A5	Widespread	Sensitive to physical damage	Susceptible to erosion	No
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Nuweberg T6D - (Figure A4.10).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
<i>NB: Mapping Units T6(1) and T6(2) are not really distinct from one another. It is more a case of one being more dominant in one area and vice versa.</i>									
Nuweberg T6D Ideal areas for monitoring effects of groundwater abstraction on seeps.	T6D (1)	Same at T6E (1)	3-4 years	<i>Phaenocoma prolifera</i> <i>Protea cynaroides</i> <i>Protea acaulos</i> <i>Leucadendron lauroolum</i> <i>Anthochortus sp. cf. A. crinalis</i> <i>Restio egregius</i> <i>Leucadendron adscendens</i> <i>Hypodiscus aristatus</i> <i>Tetraria thermalis</i>	Community L2	Extensive	Sensitive to physical damage	Susceptible to erosion	No
	T6D (2)	Same at T6E (2)	3-4 years	<i>Heeria argentea</i> <i>Leucadendron adscendens</i> <i>Maytenus oleoides</i> <i>Oldenbergia intermedia</i> <i>Aloe plicatilis</i> <i>Widdringtonia nodiflora</i> <i>Askidiosperma paniculatum</i>	Community A2	Widespread but patchy	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No
	T6E (4)	Invaded vegetation	3-4 years	Pines	Aliens	Localised	n.a.	n.a.	No

Nuweberg T6E - (Figure A4.10).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
<i>NB: Mapping Units T6 (1) and T6(2) are not really distinct from one another. It is more a case of one being more dominant in one area and vice versa.</i>									
Nuweberg T6E Ideal areas for monitoring effects of groundwater abstraction on seeps.	T6E (2)	Rocky outcrops. PRISTINE	3-4 years	<i>Heeria argentea</i> <i>Leucadendron adscendens</i> <i>Maytenus oleoides</i> <i>Oldenbergia intermedia</i> <i>Aloe plicatilis</i> <i>Widdringtonia nodiflora</i> <i>Askidiosperma paniculatum</i>	Community A2	Widespread but patchy	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No
	T6E (3)	Goudini silt stone lenses dotted among the sand flats	3-4 years	<i>Tetraria bromoides</i> <i>Protea repens</i> <i>Erica plukenetti</i> <i>Gerbera asplenifolia</i> <i>Askidiosperma paniculatum</i> <i>Staberoha cernua</i> <i>Tetraria capilacea</i> <i>Corymbium cf. africanum</i> <i>Protea acaulos</i>	Community M2	Localised and patchy	Sensitive to physical damage	Susceptible to erosion	No

Voelvlei V3A - (Figure A4.11).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
<i>NB: There is concern about the effects of groundwater abstraction on the seeps in the Voelvlei environs on the other side of the watershed. Any monitoring programme must include these.</i>									
Voelvlei V3A	V3A (1)	Riparian vegetation. Grassy patch, with emergent seep becoming stream	2-3 years	<i>Elegia capensis</i> <i>Berzelia lanuginosum</i> <i>Tetraria bromoides</i> <i>Metrosideros angustifolia</i> <i>Psoralea pinnata</i> <i>Leucadendron salicifolium</i> <i>Brabejum stellatifolium</i> <i>Brachylaena neriifolia</i> <i>Gnidia oppositifolia</i> <i>Prionium serratum</i> <i>Pteridium aquilinum</i> <i>Philippia exleana</i> <i>Thesium sp</i>	Community A1	Localised variation of plant community that is widespread through region along rocky banks of permanent streams generally at lower altitudes.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to unnatural changes in streamflow and mechanical damage	Yes
	V3A (2)	Rocky slope, with very young veld. Rich in ericas and restios. Similar to Zachariashoek dry fynbos PHOTO	2-3 years	<i>Heeria argentea</i> <i>Protea cynaroides</i> <i>Nivenia corymbosa</i> <i>Maytenus oleoides</i> <i>Restio bifarius</i> <i>Hypodiscus aristatus</i> <i>Syncarpha canescens</i> <i>Hakea sericea</i> <i>Stoebe capitata</i> <i>Thesium capitatum</i> <i>Diospyros glabra</i> <i>Protea laurifolia</i> <i>Erica parilis</i> <i>Metalasia muricata</i> <i>Elegia fistulosa</i>	Community A2	Plant community found in patches associated with local rock outcrops through catchment	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No

	V3A(3)	Wet fynbos on yellow plinthic soils	2-3 years	<i>Tetraria bromoides</i>	Community M1	Localised on shale band seeps between Nuweberg and the Kogelberg Biosphere Reserve	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly susceptible to desiccation, and erosion.	No
	V3A (4)	Headwater seeps along riparian zones on yellow plinthic soils – many <i>Hakea sericea</i> seedlings. Similar structure to the Koo/Kogelberg communities but different species. Particularly similar to Kogelberg seep areas. Mixes with V3A(1a) in places. Very young veld. There are slightly higher, drier areas on sand fans collected in wet areas within the whole – similar to W7C.	2-3 years	<i>Tetraria bromoides</i> <i>Tetraria capillacea</i> <i>Elegia neesii</i> <i>Leucadendron salicifolium</i> <i>Cullunia setosa</i> <i>Berzelia lanuginosa</i> <i>Erica intervallaris</i> <i>Chrysothrix capensis</i> <i>Erica hirtiflora</i> <i>Carpococe spermacoce</i>	Community M1	Localised on shale band seeps between Nuweberg and the Kogelberg Biosphere Reserve	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to abstraction. Sensitive to trampling. Sensitive to erosion.	Potential for monitoring but made difficult by the young age of the plants.
	V3A(5)	Patch of pine trees	2-3	Pines	Aliens	Localised	Sensitive to physical damage	Insensitive to abstraction	No
	V3A(6)	Sand flats with shallow to moderately deep sands. Dry proteoid fynbos. Areas of flat rock in 6 highly susceptible to mechanical damage, which will destroy microhabitats	2-3	<i>Thesium euphorbiodes</i> <i>Hypodiscus aristatus</i> <i>Staberoha cernua</i> <i>Ischyrolepis capensis</i> <i>Protea nana</i> <i>Serruria sp.</i> <i>Stoebe vulgaris</i>	Undescribed community of the Plateau Dry Flats Witteberg Sandstone Fynbos. O2	Localised	Sensitive to physical damage	Sensitive to trampling. Very susceptible to erosion. Areas of flat rock in 6 highly susceptible to mechanical damage, which will destroy microhabitats.	No

	V3A(7)	Dry laterite yellow plinthic soils. Can possibly combine 6 and 7 as the number of hakea and proteas are the main difference but both occur in 6 and 7	2-3	<i>Protea laurifolia</i> mixed with <i>Hakea sericea</i> – both dead after fire. <i>Ascidosperma paniculatum</i> Tetraria fasciata <i>Hypodiscus aristatus</i> <i>Phylica stipularis</i> <i>Protea repens</i>	Community C1	Widespread on dry inland lower slopes	Sensitive to physical damage	Sensitive to trampling. Sensitive to erosion. Insensitive to abstraction.	No
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Voelvlei V3B - (Figure A4.11).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
<i>NB: There is concern about the effects of groundwater abstraction on the seeps in the Voelvlei environs on the other side of the watershed. Any monitoring programme must include these.</i>									
Voelvlei V3B Ideal areas for monitoring effects of groundwater abstraction on seeps.	V3A (8)	Invaded perennial seep areas – mainly invaded by <i>Acacia longifolia</i> and <i>Acacia melanoxylon</i>	2-3	<i>Elegia capensis</i> <i>Pteridium aquilinum</i> <i>Cullunia setosa</i> <i>Psoralea aphylla</i> <i>Erica</i> sp. <i>Aristea major</i> <i>Scirpoides thunbergii</i> <i>Acacia melanoxylon</i> (dead)	Community K2	Localised	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly susceptible to desiccation, and erosion.	Potential for monitoring but made difficult by the young age of the plants
	V3B(5)	Patch of aliens	2-3	<i>Acacia longifolia</i> <i>Acacia mearnsii</i> Pines	Aliens	Localised	Sensitive to physical damage	Insensitive to abstraction	No
	V3B (9)	Rocky slope, with very young veld. Expected to see <i>P. nitida</i> but was not present. Dry fynbos. Coarse sandy soils, with bedrock at the surface in places – very little hakia.	2-3 years	<i>Heeria argentea</i> <i>Protea laurifolia</i> <i>Cymbopogon marginatus</i> <i>Cullunia setosa</i> <i>Phylica axillaris</i> <i>Ischyrolepis gaudichaudianus</i> <i>Elytropappus glandulosus</i> <i>Ursinia crithmoides</i> <i>Muraltia heisteria</i> <i>Hypodiscus aristatus</i> <i>Erica hirtiflora</i>	Community A2	Widespread on the lower rocky slopes	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No
	V3B(1)	Same as for V3A – some riparian areas are more developed than others – i.e., associated with larger drainage lines/streams.	2-3 years	<i>Elegia capensis</i> <i>Berzelia lanuginosum</i> <i>Metrosideros angustifolia</i> <i>Psoralea pinnata</i> <i>Leucadendron salicifolium</i> <i>Brabejum stellatifolium</i> <i>Brachylaena neriifolia</i> <i>Gnidia oppositifolia</i> <i>Prionium serratum</i> <i>Pteridium aquilinum</i>	Community A1	Localised	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly susceptible to desiccation, and erosion.	Yes

Red Data species in Unit W:

Bufo angusticeps (Cape sand toad), R&E category = Least Concern, habitat = sandy soils – breeds in temporary pools (Minter *et al.* 2004.)

Galaxia zebratus, R&E category = Lower Risk (Near threatened), in streams and rivers

Pseudobarbus burgi, R&E category = Critically Endangered, habitat = streams and rivers

Zachariashoek W7A - (Figure A4.12).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7A	W7A(1)	Winter seep, no summer baseflow. Thick peaty soils. Small, deeply incised channel bisecting area.	≈ 6.	<i>Leucadendron salicifolium</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i> <i>Stoebe plumosa</i>	Dry variation of B2	At site it is of limited extent around border of seep. Generally occurs along lower altitude drainage lines.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly susceptible to desiccation, and erosion.	Yes
	W7A(2)	Riparian vegetation	≈ 6.	<i>Brabejum stellatifolium</i> <i>Psoralea pinnata</i> Some invasion by <i>Acacia mearnsii</i>	Community A1	Widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly susceptible to desiccation, and erosion.	Yes
	W7A(3)	Rocky outcrops.	≈ 6.	<i>Heeria argentea</i> <i>Maytenus oleoides</i>	Community A2	Plant community found in patches in local rock outcrops at most altitudes through catchment and region from Cederberg to Villiersdorp.	N/a	Unlikely to be highly susceptible to erosion	No.

	W7A(4)	Mesic fynbos	≈ 6	<i>Widdingtonia nodiflora</i> <i>Tetraria involucrata</i> <i>Protea nitida</i> <i>Maytenus oleoides</i> on dry colluvium	Community A4	Plant community found on mesic southerly-facing steeper slopes on heavier colluvial soils. Restricted in catchment and through West Cape Region.	Sensitive to trampling.	Insensitive to abstraction.	No
	W7A(5)	Dry restioid fynbos. Colluvial	≈ 6	<i>Protea nitida</i>	Community A5	Commonly known as waboomveld. Widespread in catchment. Found on moderately rocky mesic to dry colluvial, often ferruginized sandstone slopes through Fynbos Region.	Sensitive to trampling.	Insensitive to abstraction.	No
	W7A(6)	Shallow coarse sand within sandstone colluvium. Moderately dry restioid fynbos.	≈ 6	<i>Leucadendron salignum</i> <i>Leucadendron microcephalum</i> <i>Protea cynaroides</i> Various Ericaceae & Restionaceae.	Community B1, C1	Common through catchment on higher altitude dry lithosol slopes	Sensitive to trampling.	Sensitive to trampling. Insensitive to superficial groundwater changes.	No.

Zachariashoek W7B - (Figure A4.12).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7B	W7B(1/A)	Winter seep, no summer baseflow. Thick peaty soils. Small, deeply incised channel bisecting area.	≈ 6.	<i>Leucadendron microcephalum</i> <i>Helichrysum vestitum</i> <i>Ischyrolepis leptocladus</i> <i>Stoebe plumosa</i> <i>Hypodiscis aristatus</i> <i>Ursinia quinquepartita</i> <i>Ceratocaryum decipiens</i> Restios demarkating dry edge.	Open Shrubland with closed herbland understorey Not described by (VW & K 1985)	Limited around border of seep	Highly susceptible to desiccation, and erosion.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Yes
	W7B(2/E)	Deep sand substrate, probably aeolean. Deeper sandy areas appear to be correlated with wetlands, areas. Probably a result of wetland vegetation growing faster after fires, and trapping windblown sand more efficiently than other areas.	≈ 6.	<i>Leucadendron salignum</i>	Form of Community C1	Localized through catchment on high altitude dry sand flats	Sensitive to physical damage	High erodibility (from both wind and water).	No.
	W7B(3/C)	Colluvial gravel and sands on the side of shallow upland valleys.	≈ 6.	<i>Leucadendron salignum</i>	Community C1	Common through catchment on higher altitude lithosols and dry sand flats	Sensitive to physical damage	High erodibility.	No.
	W7B(4/D)	Rocky outcrops.	≈ 6.	<i>Heeria argentea</i> <i>Aloe plicatilis</i>	Community A3	Patches in larger rock outcrops through catchment and region from Cederberg to Villiersdorp.	Sensitive to physical damage	Insensitive to abstraction.	No.

Zachariashoek W7C - (Figure A4.13).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7C	W7C(1/B)	Deep sand substrate, probably aeolean. Deeper sandy areas appear to be correlated with wetlands, areas. Probably a result of wetland vegetation growing faster after fires, and trapping windblown sand more efficiently than other areas.	≈ 6.	<i>Leucadendron salignum</i>	Form of Community C1	Localized through catchment on high altitude dry sand flats	Sensitive to physical damage	High erodibility (from both wind and water).	No.
	W7C(2/E)	Excellent high altitude seep on sandstone.	6	<i>Leucadendron microcephalum</i> <i>Protea cynaroides</i> (isolated individuals) <i>Pteridium aquilinum</i> <i>Calloopsis paniculata</i>	Form of Community B2	Small local patches near the head of drainage lines. Scattered through catchment.	Highly susceptible to desiccation, and erosion.	Sensitive to trampling and desiccation except naturally at the height of summer.	Yes
	W7C(3/F)	Excellent high altitude seep on sandstone.	6	<i>Leucadendron salicifolium</i> (3-4 m tall)	Community B2	Widespread patches on rivers and seeps throughout the catchment, particularly along lower altitude drainage lines.	Highly susceptible to desiccation, and erosion.	Sensitive to desiccation.	Yes but not very accessible.
	W7C(4/G)	Hygric fynbos	6	<i>Mimetes cucullatus</i> <i>Cannomois virgata</i> (clumps around the edge) <i>Psoralea aphylla</i> <i>Gnidia oppositifolia</i>	A variation of Community B	Throughout catchment along upland, southerly colluvial slopes.	Highly susceptible to desiccation, and erosion.	Sensitive to trampling. Low sensitivity to desiccation.	No

	W7C(5/H)	North slope – wetter area than G	6	<i>Berzelia lanuginosa</i> <i>Cliffortia graminea</i> <i>Epischoenus gracilis</i> , <i>Neesenbeckia punctoria</i> <i>Gnidia oppositifolia</i> (on margins)	A variation of Community B1	Small local patches on southerly slopes and through upland areas in the catchment	Highly susceptible to desiccation, and erosion.	Sensitive to soil compaction and desiccation.	Yes
	W7C(6/K)	Rocky areas	6	<i>Heeria argentea</i>	Community A2	Plant community found in patches in local rock outcrops at most altitudes through catchment and region from Cederberg to Villiersdorp.	Sensitive to physical damage	Unlikely to be highly susceptible to erosion	No
	W7C(7/L)	Shallow coarse sand within sandstone rock. Moderately dry restioid fynbos.	6	<i>Leucadendron salignum</i> <i>Elegia filacea</i> <i>Ceratocaryum argentea</i> <i>Protea cordata</i> <i>Tetraria involucrata</i>	Community C1	Common through catchment on higher altitude lithosols and dry sand flats		High erodibility.	No

Zacchariashoek W7D (Possible locality for *Diastella buekii* R&E category = endangered. Detailed site investigation necessary.) - (Figure A4.14).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
	W7D(6/D)	Rocky outcrops.	≈ 6.	<i>Heeria argentea</i> <i>Aloe plicatilis</i>	Community A3	Patches in larger rock outcrops through catchment and region from Cederberg to Villiersdorp.	Sensitive to physical damage	Insensitive to abstraction.	No.
Zacchariashoek W7D	W7D(1/P)	1-m tall proteiod fynbos recovering after clearing of pines and a fire	≈ 3	<i>Leucadendron rubrum</i> <i>Diospyros glabra</i> <i>Ursinia crithmifolia</i> <i>Cliffortia ruscifolia</i> <i>Hypodiscus aristatus</i>	A community related to Community A5 without <i>Protea nitida</i>	Widespread footslope	Sensitive to trampling	High erodibility.	No
	W7D(2/R)	Seep with running water in late summer	≈ 6	<i>Leucadendron xanthoconus</i> <i>Psoralea aphylla</i> <i>Ischyrolepis subverticellata</i> <i>Pteridium aquilinum</i> <i>Osmitopsis asteriscoides</i>	Community B2	Locally rare near site but generally occurs along lower altitude drainage lines.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly susceptible to desiccation, and erosion.	Yes
	W7D(3/Rip)	Riparian vegetation	≈ 6	<i>Brabejum stellatifolium</i> <i>Leucadendron xanthoconus</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i>	Community A1	Widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Highly susceptible to desiccation, and erosion.	Yes

	W7D(4/S)	Moderately dry, rocky colluvial footslope - pristine	≈ 6	<i>Protea nitida</i> <i>Leucadendron salignum</i> <i>Anthospermum aethiopicum</i>	Community A5	Commonly known as waboomveld. Widespread in catchment. Found on moderately rocky mesic to dry colluvial, often ferruginized sandstone slopes through Fynbos Region	Sensitive to physical damage.	Not sensitive to erosion	No
	W7D(5/T)	Hygric fynbos Seep	≈ 6	<i>Psoralea aphylla</i> <i>Cassytha ciliolata</i> <i>Cannomois virgata</i>	Community B3	Small patches scattered through catchment at head of streams at higher altitudes.	Highly susceptible to desiccation, and erosion. Sensitive to compaction and other disturbance.	Sensitive to desiccation and erosion.	Yes

Zachariashoek W7E - (Figure A4.15).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7E	W7E(1)	High water table. Alluvial fan/riparian	Long time	<i>Brabejum stellatifolium</i> <i>Erica caffra</i> <i>Ilex mitis</i> <i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i> <i>Cunonia capensis</i> <i>Rubus</i> at edge	Community A1	Very rare geomorphological feature (both locally and regionally). Plant community widespread through region along rocky banks of permanent streams generally at lower altitudes	Sensitive to desiccation, removal of boulders, trampling and physical disturbance.	Sensitive to lowering of streamflows or raising of dam levels.	No
	W7E(2)	Pine plantation	Mature	Aliens	Plantation	Widespread	N/a	N/a	No
	W7E(3)	Cleared pine on sandstone scree.	Recent	Immature vegetation	Community A3	Widespread	Insensitive	Insensitive	No
	W7E(4)	Eucalyptus patch.	Mature	<i>Eucalyptus plantation</i>	Aliens	Local	N/a	N/a	No
	W7E(5)	Meadow disturbed/created through construction of levees.	Immature	<i>Pennisetum macrourum</i>	Described from Stellenbosch by Kareko (2004) – Community O	Local	Sensitive to trampling.	Relatively insensitive but requires periodic wet soil.	No
	W7E(5a)	Meadow/dry fan/old lands.	Immature	<i>Athanasia trifurcata</i> <i>Rhus angustifolia</i>	Related to Community D	Local	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation particularly in winter and thus to unnatural changes in superficial groundwater.	No

	W7E(6)	Riparian veg influenced by farming previously and by plantation upstream	Mature	<i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i>	Community A1	Plant community widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion.	No
	W7E(7)	Riparian vegetation	Mature	<i>Brabejum stellatifolium</i> <i>Erica caffra</i> <i>Ilex mitis</i> <i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i> <i>Cunonia capensis</i>	Community A1	Plant community widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion.	No
	W7E(8)	Meadow with shallow inundation at FSL. Very peaty soils remaining from larger pre-dam alluvial fan.	Immature	<i>Hemarthria altissima</i>	Community E1	Very rare extensive patch, usually few plants along Wetbank of rivers	Sensitive to dam levels.	Sensitive to grazing, trampling, and drying of habitat in the winter and spring.	No

Zachariashoek W7F - (Figure A4.15).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
	W7F(0)	Dam – inundated area							
Zachariashoek W7F	W7F (1)	Shale band with patchy colluvial overburden comprise of wet and dry patches (not mapable)	unknown	<i>Protea repens</i> <i>Protea laurifolia</i> <i>Leucadendron xanthoconus</i> <i>Leucadendron rubrum</i> <i>Cliffortia ruscifolia</i>	Related to Community A5 without <i>Protea nitida</i>	Fairly widespread, wet patchy.	Soils in wetter areas susceptible to drying out and erosion. Sensitive to trampling.	Insensitive in dry patches but wetter patches sensitive to desiccation	No
	W7F (2)	Small cliff	Mature	<i>Protea repens</i> <i>Protea nitida</i> <i>Heeria argentea</i>	Mixture of two communities but mainly Community A2	Plant community found in patches associated with larger local rock outcrops in catchment.	Drill on road only as slopes are very steep and erodable	Sensitive to trampling. Insensitive to desiccation through abstraction.. Unlikely to be highly susceptible to erosion	No
	W7F (3)	Shale band – wetter than (1).	unknown	<i>Anthospermum aethiopicum</i> <i>Rhus angustifolia</i> <i>Leucadendron rubrum</i> (dense on northerly slope).	Related to Community A5 but without <i>Protea nitida</i>	Fairly widespread but this unit is in excellent condition as it has not been under pine.	Sensitive to physical damage	Insensitive	No
	W7F(4)	Drainage lines (wet) on slopes	unknown	<i>Metrosideros angustifolia</i> <i>Rhus angustifolia</i> <i>Ischyrolepis subverticellata</i> among <i>Protea nitida</i> <i>Montinia caryophyllacea</i> <i>Tetraria ustulata</i>	Community A1 & A5	Plant community widespread through region along rocky banks of permanent streams generally at lower altitudes. Widespread on shale bands	General slope Sensitive to physical damage	Sensitive	No

	W7F (5)	Shallow sand and colluvial rocks	unknown	<i>Protea nitida (tall)</i> <i>Protea acaulos</i>	Community A5	Widespread	Sensitive to physical damage	Insensitive	No
	W7F (5a)	Much sparser	unknown	<i>Protea nitida</i>	Community A5	Commonly known as waboomveld. Widespread in catchment. Found on moderately rocky mesic to dry colluvial, often ferruginized sandstone slopes through Fynbos Region.	Sensitive to physical damage	Insensitive	No
	W7F(7)	Riparian	Mature	<i>Brabejum stellatifolium</i> <i>Erica caffra</i> <i>Ilex mitis</i> <i>Psoralea pinnata</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i> <i>Cunonia capensis</i>	Community A1	Widespread along rivers but this example is in excellent condition, unlike many of the others in the area, which are invaded by pine and other aliens	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	Yes

Zachariashoek W7G (Possible locality for *Diastella buekii* R&E category = endangered. Detailed site investigation necessary.) - (Figure A4.16).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
	W7G(0)	Dam – inundated area	-	-	-	Local	Sensitive to physical damage	Terrestrial vegetation insensitive to abstraction. Aquatic veg temporary due to considerable fluctuations in dam levels	No
Zachariashoek W7G	W7G(1)	Disturbed/invaded riparian vegetation (Wemmerhoek River)	Unknown	<i>Brabejum stellatifolium</i> <i>Acacia mearnsii</i> <i>Acacia longifolia</i> <i>Pinus pinaster</i>	Community A1	Under a clearing programme. Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	No
	W7G(2)	Cleared pine plantation	Unknown	Potentially <i>Protea nitida</i> <i>Protea laurifolia</i>	Potentially Community A5	Commonly known as waboomveld. Widespread in catchment. Found on moderately rocky mesic to dry colluvial, often ferruginized sandstone slopes through Fynbos Region.	Sensitive to physical damage	Insensitive	No

	W7G(3)	Moderately dry southerly slope	Mature to senescent	<i>Protea nitida</i> <i>Protea laurifolia</i>	Community A5	Commonly known as waboomveld. Widespread in catchment. Found on moderately rocky mesic to dry colluvial, often ferruginized sandstone slopes through Fynbos Region.	Sensitive to physical damage	Insensitive	No
	W7G(4)	Scattered rocky outcrops	Mature to senescent	<i>Heeria argentea</i> <i>Maytenus oleoides</i>	Community A2	Plant community found in patches in local rock outcrops at most altitudes through catchment and region from Cederberg to Villiersdorp	Sensitive to physical damage	Insensitive	No
	W7G(5)	Riparian zone/seeps of poor quality	Mature to senescent	<i>Brabejum stellatifolium</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilium</i> <i>Struthiola myrsinites</i> <i>Halleria elliptica</i> <i>Erica parviflora</i>	Community A1	This patch is localised in the sausage although the plant community is widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	No
	W7G(6)	Shale band on dam side of platkop	2-4 years	<i>Tetaria involucrata</i> <i>Protea repens</i>	Community C1	Widespread through catchment and western region on drier sandy slopes	Sensitive to physical damage	Insensitive	No

	W7G(7)	Rocky colluvial slope	Mature to senescent	<i>Protea nitida</i> <i>Leucadendron salignum</i> <i>Anthospermum aethiopicum</i>	Community A5	Commonly known as waboomveld. Widespread in catchment. Found on moderately rocky mesic to dry colluvial, often ferruginized sandstone slopes through Fynbos Region.	Sensitive to physical damage	Insensitive	No
	W7G(8) = W7G(4)	Rocky outcrop	Mature	<i>Heeria argentea</i> <i>Maytenus oleiodes</i>	Community A2	Plant community found in patches in local rock outcrops at most altitudes through catchment and region from Cederberg to Villiersdorp	Sensitive to physical damage	Sensitive to physical damage. Unlikely to be highly susceptible to erosion	No

Zachariashoek W7H - (Figure A4.16).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7H	W7H(1)	Old pine plantation flats. Poor quality vegetation, although recovering. Deep sandy soil, recently burnt. NB. Poor season for assessing botanical rares.	1 year	<i>Anthospermum aethiopicum</i> , <i>Cliffortia ruscifolia</i> , <i>Stoebe plumosa</i>	Community L7	Localised near river floodplains.	Sensitive to trampling	Sensitive to trampling	No
	W7H(2)	Riparian vegetation, invaded by <i>Acacia mearnsii</i> and pines but with a little indigenous elements remaining. River banks badly eroded.	Unknown	<i>Brabejum stellatifolium</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i> <i>Acacia mearnsii</i> <i>Acacia melanoxylon</i>	Community A1	Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes.	Sensitive to abstraction but less sensitive to physical damage	Sensitive to changes in streamflow and mechanical damage	No
	W7H(3)	Disturbed/invaded riparian vegetation (Wemmerhoek River)	Unknown	<i>Brabejum stellatifolium</i> <i>Acacia mearnsii</i> <i>Acacia longifolia</i> <i>Pinus pinaster</i>	Community A1	Under a clearing programme. Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	

Zachariashoek W7I - (Figure A4.16).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7I	W7I(1)	Dry opslag denne, plantation felled c. 2-3 years, criss-crossed by roads. <i>Eucalyptus</i> plantation as firebreak on the top margin. Bottom margin water treatment works housing, etc.	Recently burnt with clearing	<i>Leucadendron rubrum</i> <i>Leucadendron salignum</i> <i>Protea nitida</i>	Community A5	Widespread.	Sensitive to physical damage.	Sensitive to physical damage.	No
	W7I(3)	Dry rocky outcrop	Mature	<i>Heeria argentea</i>	Community A2	Plant community found in patches in local rock outcrops at most altitudes through catchment and region from Cederberg to Villiersdorp	Sensitive to physical damage.	Sensitive to physical damage. Unlikely to be highly susceptible to erosion	No
	W7I(4)	Floodplain – previously infested with <i>Acacia mearnsii</i> and <i>A. longifolia</i> . Some bulldozing of river banks and levee constructed.	Recently burnt with clearing	<i>Brabejum stellatifolium</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilium</i>	Community A1	Only downstream of the dam wall. The original plant community was widespread through the region along rocky banks of permanent streams generally at lower altitudes	Impacts will adversely affect river ecosystem functioning.	Insensitive as a result of past impacts	No
	W7I(22)	Built-up area	-	-	-	Local	Insensitive to abstraction	Insensitive to abstraction	No

Zachariashoek W7J - (Figure A4.17).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7J	W7J(1)	Dry opslag denne, plantation felled c. 2-3 years, criss-crossed by roads. <i>Eucalyptus</i> plantation as firebreak on the top margin. Bottom margin water treatment works housing, etc.	Recently burnt with clearing	<i>Leucadendron rubrum</i> <i>Leucadendron salignum</i> <i>Protea nitida</i>	Community A5	Widespread.	Sensitive to physical damage.	Sensitive to physical damage.	No
	W7J(22)	Built-up area	-	-	-	Local	Insensitive	Insensitive	No
	W7J(6)	Rocky outcrops	Mature	<i>Heeria argentea</i>	Community A2	Plant community found in patches associated with local rock outcrops at most altitudes through catchment and region from Cederberg to Villiersdorp	Sensitive to physical damage	Sensitive to physical damage. Unlikely to be highly susceptible to erosion	No
	W7J(7)	Colluvial slopes	Recent	Dense <i>Protea nitida</i> on scree	Community A5	Commonly known as waboomveld. Widespread in catchment. Found on moderately rocky mesic to dry colluvial, often ferruginized sandstone slopes through Fynbos Region.	Sensitive to physical damage	Sensitive to physical damage	No
	W7J(8)	Alien vegetation	Mature	<i>Eucalyptus</i> . <i>Pinus</i> and garden escapees	Aliens	Localised dense patches	N/a	N/a	No

	W7J(9)	Riparian vegetation, invaded by <i>Acacia mearnsii</i>	Unknown	<i>Brabejum stellatifolium</i> <i>Acacia mearnsii</i> <i>Acacia longifolia</i>	Community A1	Under a clearing programme. Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	No
	W7J(9a)	Riparian vegetation, invaded by <i>Acacia mearnsii</i> but with some indigenous elements remaining	Unknown	<i>Brabejum stellatifolium</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i> <i>Acacia mearnsii</i> <i>Acacia melanoxylon</i>	Community A1	Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	No
	W7J(10)	Dry restioid proteoid fynbos	Recently burnt	<i>Protea laurifolia</i> <i>Dodonaea viscosa</i> <i>Cliffortia ruscifolia</i> <i>Ischyrolepis gaudichaudianus</i> <i>Protea repens</i>	A form of the Community C1	Common plant community on dry footslopes with feruginized soils through Fynbos Region	Sensitive to physical damage	Insensitive to abstraction	No
	W7J(11)	Riparian vegetation	Unknown	<i>Brabejum stellatifolium</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Rhus angustifolia</i> <i>Pteridium aquilinum</i>	Community A1	Plant community widespread through region along rocky banks of permanent streams generally at lower altitudes.	Highly sensitive to disturbance, through including compaction, which alters functioning.	Sensitive to desiccation and erosion	Yes

Zachariashoek W7K - (Figure A4.13).

TSA Sausage	Map Unit	Habitat description	Years since fire	Characteristic species	Community type	Extent in catchment	Habitat Sensitivity	Vegetation sensitivity	Monitor
Zachariashoek W7K	W7K(O/10)	Dry rocky slopes – previously disturbed and recovering well.	≈ 6	<i>Protea nitida</i> <i>Heeria argentea</i> <i>Protea laurifolia</i> <i>Athanasia trifurcata</i>	Community A5	Plant community found in patches associated with local drier rock outcrops surrounded by colluvium at most altitudes through catchment and region from Cederberg to Villiersdorp	Sensitive to physical damage. Sensitive to compaction.	Sensitive to trampling.	No
	W7K(M/8)	Dry footslope - cleared of pines c. 3 years ago or fire c. 6 years ago - recovering well.	≈ 6	<i>Leucadendron salignum</i> <i>Leucadendron rubrum</i> <i>Ischyrolepis sieberi</i>	A community related to the Community A5	Type is widespread on mesic footslopes with heavier soils between Bainskloof and Sir Lowry's Pass – but cleared areas more local.	Invasion causes physical damage.	Insensitive to abstraction.	No
	W7K(N/9)	Periodically wet, lateral seep along side river. Some disturbance due to surrounding pines now removed.	≈ 6	<i>Brabejum stellatifolium</i> <i>Leucadendron salicifolium</i> <i>Metrosideros angustifolia</i> <i>Ischyrolepis subverticellata</i> <i>Brachylaena neriifolia</i> <i>Psoralea pinnata</i>	Community A1	Original plant community widespread through region along rocky banks of permanent streams generally at lower altitudes.	Highly sensitive to disturbance, through including compaction, which alters functioning..	Sensitive to invasion (hot fires, no shading, etc.)	Yes – v-notch weir requires rehabilitation
	W7K(P/11)	Moderately dry footslope. 1-m tall proteiod fynbos recovering after clearing of pines and a fire	≈ 3	<i>Leucadendron rubrum</i> <i>Diospyros glabra</i> <i>Ursinia crithmifolius</i> <i>Cliffortia ruscifolia</i> <i>Hypodiscis aristatus</i>	A community related to Community A5 without <i>Protea nitida</i>	Widespread	High erodibility.	Sensitive to trampling. Not sensitive to abstraction.	Yes

APPENDIX 2: NBI: RARE AND ENDANGERED PLANT SPECIES RECORDS FOR THE STUDY AREA

TAXON	FAMILY	STATUS	COLLYR	LOC
B1 = 2 species				
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1997	0.45 km NW of Sh 872 at: Vondeling 23 E Of Middagkrans
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1997	1.85 km S of Tb 72 Blokkop at: Vondeling 23 Upper Witklip Kloof
<i>Serruria altiscapa</i>	PROTEACEAE	Vulnerable	2002	2.25 km S of Tb2 Blokkop at: Blokkop Vondeling23 W Witklipkloof N Sh836m Flats
<i>Serruria altiscapa</i>	PROTEACEAE	Vulnerable	1997	0.50 km NW of Sh 836 at: Vondeling 23 Just S Head Of Witklipkloof On Ridge
H6 = 4 species				
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1994	1.70 km NE of Tb55 770.8m Kogelbaai308 at: Rainuage To Ridge Passing Sphth.375m F-s
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1994	1.60 km ENE of Tb55 770.8m Kogelbaai308 at: Moving S Ending At Bridge On Stream Stee
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1994	1.00 km SSE of Tb55 770.8m Kogelbaai308 at: Jeeprack Abv Boskloof To Sphth.538m F-k
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1998	2.70 km W of Tb57 Steenbras at: Kogelberg 308 Kogelberg Trach N-end Plateau With Vie
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1999	1.00 km E of Tb56 Sandgat at: Kogelbaai308 Twixt Sh538&654 W Rd
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1996	0.75 km SSE of Boskloofpiek Tb 55 at: Southside Of Quarry Along Rd Before South Turn
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1997	1.00 km NNW of Boskloof Peak Tb55 at: Alongside Rd At Boskloof Neck
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	1998	0.75 km SE of Tb55 Boskloofpeak at: Top Of Kloof Opposite Boskloof South Side Of Rd
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Neck Top Of Boskloof
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck At Old Quarry Site
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck At Old Quarry Site
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2001	0.70 km SSE of Tb 55 Boskloof Pk at: Kogelbaai308 Quarry Opp Boskloof On Track To Ko
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck At Old Quarry Site
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	1.10 km ENE of Tb 55 at: Kogel Baai 308 To Ridge Overlooking Steep Valley
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.50 km ENE of Tb55 at: Kogel Baai 308 Up Ridge And Hill Slope Above
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.50 km ESE of Tb55 at: Kogel Baai 308 Down Slope Slightly S Of Original Ascent
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.25 km SE of Tb55 at: Kogel Baai 308 Up Slope Sw Of Descent
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	1.75 km NE of Tb 55 at: Steenbras Catchment Area 307 Nr Dam Edge
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	1.30 km E of Tb 55 at: Steenbras Catchment Area 307
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.30 km E of Tb 55 at: Kogel Baai 308 Se Slope Of Pk
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	0.20 km ESE of Tb 55 at: Kogel Baai 308 Below A Saddle
<i>Diastella thymelae. thymelaeoides</i>	PROTEACEAE	Rare	2000	1.10 km N of Tb 55 at: Kogel Baai 308 On Ridge

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1998	1.30 km W of Tb55 Boskloof Pk at: Kogelbaai308 Above Clarence Drive Picnic Spot Belo
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1998	1.30 km W of Tb55 Boskloof Pk at: Kogelbaai308 Below Boskloofpeak Above Clarence Dri
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1994	0.80 km SE of Tb55 770.8m Kogelbaai308 at: Jeetrack West To Saddle Abv Boskloof F-ko
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1994	1.00 km SSE of Tb55 770.8m Kogelbaai308 at: Jeeprack Abv Boskloof To Sphth.538m F-k
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1994	1.30 km ESE of Tb56 at: Trc S Paralell To Rdg Sphth.654m F-kogelbaai 308
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1998	2.50 km W of Tb57steenbras at: Kogelbaai308 Kogelberg Track At Sh 53 M Plateau With
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1999	1.00 km E of Tb56 Sandgat at: Kogelbaai308 Twixt Sh538&654 W Rd
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1996	0.85 km WSW of Tb56 618.7m at: Kogelbaai308 On R44 Clarence Dr 4k Sse Of Steenbras R
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1998	0.60 km SSE of Tb55 Boskloofpeak at: Top Of S Fork Boskloof
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Neck Top Of Boskloof
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck At Old Quarry Site
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck At Old Quarry Site
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1995	0.85 km WSW of Tb 56 618.7m at: 4km Sseof Steenbras River On Rd From Gordons Bay And
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1995	0.90 km E of Tb 56 618.7m at: 3.7km S Of Steenbras River On Rd From Gordons Bay And
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2001	0.70 km SSE of Tb 55 Boskloof Pk at: Kogelbaai308 Quarry Opp Boskloof On Track To Ko
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1999	1.10 km E of Tb56 Sandgat at: Kogelbaai 308 E Of Track + N Of Sh654
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	1999	0.90 km ENE of Tb56 Sandgat at: Kogelbaai 308 E Of Track + E Of Sh538
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck
<i>Paranomus spicatus</i>	PROTEACEAE	Rare	2000	0.70 km S of Boskloofpiek Tb55 at: Boskloof Neck At Old Quarry Site
<i>Otholobium zeyheri</i>	FABACEAE	Vulnerable		STEENBRAS; LARGE KLOOF S. OF DAM WALL.
<i>Otholobium zeyheri</i>	FABACEAE	Vulnerable		Simonstown. Steenbras; large kloof south of dam wall.
<i>Erica pillansii</i>	ERICACEAE	Vulnerable		bought from flower seller - between Steenbrass & Kogel Bay

H8 = 6 species

<i>Leucadendron discolor</i>	PROTEACEAE	Rare	1991	2.40 km NNW of Nuweberg Forstn School at: Zigzag To Ridge Above Plamiet To Tiverson
<i>Leucadendron discolor</i>	PROTEACEAE	Rare	1994	0.85 km NE of Sh 1083m at: Moordenaarskloof 93
<i>Leucadendron discolor</i>	PROTEACEAE	Rare	1995	2.85 km NE of Tb 84 1280.3m at: Nuweberg Moordenaars Kloof 93 + 200m Ne Hairpin Bend
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1994	1.75 km ESE of Tb84 at: Trhc Vergelegen 94
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1994	1.25 km NNE of Sh 857m at: Moordenaarskloof 93; Q.4km Ese Tb 84
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1992	3.25 km ESE of Landdroskop Summit at: Along Path From Sphinx To Landdroskop
<i>Serruria altiscapa</i>	PROTEACEAE	Vulnerable	1996	2.65 km NW of Drostersnes Lookout Towe at: Slopes Above Forest Nieuweberg97 Se Sh 10
<i>Serruria altiscapa</i>	PROTEACEAE	Vulnerable	1996	3.00 km NNW of Drostersnes Lookouttower at: Above Forest Bdr Swartewater 89 + Nieuwe

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Podalyria cordata</i>	FABACEAE	Rare		NUWEBERG FOR. STA.; SOUTH-FACING SLOPE ABOVE ROAD FROM NUWEBERG FOR. STA. TO LANDDROS
<i>Podalyria cordata</i>	FABACEAE	Rare		S facing slope above road from Nuweberg Forest Station to Landdroskop Hut.
<i>Pseudopentameris obtusifolia</i>	POACEAE	Rare		ON ROCKY RIDGE NEXT TO ROAD FROM LANDDROSKOP HUT TO NUWEBERG.
<i>Pseudopentameris obtusifolia</i>	POACEAE	Rare		On rocky ridge next to road from Landroskop. Hut to Nuweberg. Altitude ca. 800 m.
<i>Evetella rubiginosa</i>	ORCHIDACEAE	Rare		Hottentots Holland Mts. Boland trail, between Landroskop hut and Grabou.

T2 = 16 species

<i>Leucadendron elimense</i> <i>vyboomense</i>	PROTEACEAE	Endangered		CALEDON DIST.; VILJOENS PASS
<i>Leucadendron elimense</i> <i>vyboomense</i>	PROTEACEAE	Endangered		North foot of Viljoen's Pass.
<i>Leucadendron elimense</i> <i>vyboomense</i>	PROTEACEAE	Endangered		Caledon Division. Grown from seed collected on the north side of Viljoens Pass. Culti
<i>Leucadendron elimense</i> <i>vyboomense</i>	PROTEACEAE	Endangered		North foot of Viljoens Pass.
<i>Leucadendron elimense</i> <i>vyboomense</i>	PROTEACEAE	Endangered		Caledon Division. North foot of Viljoens Pass.
<i>Spatalla prolifera</i>	PROTEACEAE	Endangered		CALEDON DIST.; VILJOENS PASS
<i>Spatalla prolifera</i>	PROTEACEAE	Endangered		GRABOUW; VILJOENS PASS; 9 MI. BEYOND TOWN AT TOP OF PASS
<i>Amphithalea stokoei</i>	FABACEAE	Endangered		Caledon Div., Viljoens Pass.
<i>Amphithalea stokoei</i>	FABACEAE	Endangered		Caledon Div. Top of Viljoens Pass.
<i>Amphithalea stokoei</i>	FABACEAE	Endangered		Grabouw Bosreservaat; Rooskraal, in ou baan op S.O. berghang.
<i>Thaminophyllum multiflorum</i>	ASTERACEAE	Insufficiently known		CALEDON DIST.; VILJOENS PASS
<i>Thaminophyllum multiflorum</i>	ASTERACEAE	Insufficiently known		Elgin. Top of Viljoens Pass.
<i>Berzelia ecklonii</i>	BRUNIACEAE	Rare		Caledon. 5 km North of Elgin.
<i>Disa brachyceras</i>	ORCHIDACEAE	Rare		CALEDON DIST.; VILJOENS PASS; FLATS END OF PASS
<i>Disa brachyceras</i>	ORCHIDACEAE	Rare		Caledon Div., flats east of Viljoens Pass.
<i>Disa longifolia</i>	ORCHIDACEAE	Rare		Caledon Div. flats east of Viljoens Pass.
<i>Pachites bodkinii</i>	ORCHIDACEAE	Rare		Kopjes between Sugar Loaf and Elgin Valley.
<i>Erica propendens</i>	ERICACEAE	Rare		Caledon Division. About 5 miles north east of Grabouw.
<i>Erica purgatoriensis</i>	ERICACEAE	Vulnerable		Caledon Div.; Viljoen's Pass
<i>Nivenia concinna</i>	IRIDACEAE	Rare		CALEDON DIST.; VILJOENS PASS; TOP OF VILJOENS PASS
<i>Nivenia concinna</i>	IRIDACEAE	Rare		CALEDON DIST.; VILJOENS PASS
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon District: Groenland Mountains; Dry sandy plateau above Viljoens Pass.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon. Viljoens Pass, above Forest station.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon. Groenland mountains. Dry sandy plateau above Viljoens Pass. Altitude: c 3000
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon. Viljoens Pass, above Forest station.

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon div. Top of Viljoen's Pass.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon Div. Viljoens Pass.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon Div., top of Viljoens Pass.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon Div. Viljoens Pass.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon Div. Viljoens Pass.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon Div. Viljoens Pass.
<i>Nivenia concinna</i>	IRIDACEAE	Rare		Caledon Div. Viljoens Pass.
<i>Otholobium polyphyllum</i>	FABACEAE	Rare		CALEDON DIST.; VILJOENS PASS; NUBERG NR. TOP OF PASS
<i>Podalyria cordata</i>	FABACEAE	Rare		CALEDON; VILJOEN'S PASS; AT TOP OF PASS ON E FACING SLOPE
<i>Podalyria cordata</i>	FABACEAE	Rare		Caledon Division. Nuberg, near top of Viljoens Pass.
<i>Podalyria cordata</i>	FABACEAE	Rare		Caledon Division, flats east of Viljoen's Pass.
<i>Podalyria cordata</i>	FABACEAE	Rare		Caledon. Viljoen's Pass.
<i>Willdenowia purpurea</i>	RESTIONACEAE	Rare		CALEDON DIST.; VILJOEN'S PASS.; NEAR TOP OF VILJOEN'S PASS, ALONG THE OLD ROAD.
<i>Willdenowia purpurea</i>	RESTIONACEAE	Rare		Caledon District. In a marshy area near the top of Viljoen's Pass, along the old road
<i>Willdenowia purpurea</i>	RESTIONACEAE	Rare		Caledon District. In a marshy area near the top of Viljoen's Pass, along the old road
<i>Willdenowia purpurea</i>	RESTIONACEAE	Rare		Caledon District. In a marshy area near the top of Viljoen's Pass, along the old road
<i>Willdenowia purpurea</i>	RESTIONACEAE	Rare		Caledon, Viljoen's Pass
<i>Willdenowia purpurea</i>	RESTIONACEAE	Rare		Caledon, from the top of Viljoens Pass, along old rd
<i>Willdenowia purpurea</i>	RESTIONACEAE	Rare		Caledon, top of Viljoens Pass, along the old rd
<i>Roridula gorgonias</i>	RORIDULACEAE	Rare		Caledon. Viljoen's Pass.
<i>Sonderothamnus petraeus</i>	PENAEACEAE	Rare		Caledon Division. Palmiet River Valley. Near Elgin.
<i>Sonderothamnus petraeus</i>	PENAEACEAE	Rare		Caledon Division. Palmiet River Valley. Near Elgin.
<i>Sonderothamnus petraeus</i>	PENAEACEAE	Rare		Caledon Division. Palmiet River Valley. Near Elgin.

T3 = 10 species

<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1994	1.75 km ESE of Tb84 at: Trhc Vergelegen 94
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1996	0.70 km NNE of Tb84 At 1280.3m at: On Boland Trail From 7.6km Marker From Start Moor
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1993	1.05 km NE of Nuweberg Tb84 at: 0.5km Ne From Path Along Ridge
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1994	1.25 km NNE of Sh 857m at: Moordenaarskloof 93; Q.4km ESE Tb 84
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1994	0.70 km ENE of Tb 84 at: Moordenaarskloof 93
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1992	3.25 km ESE of Landdroskop Summit at: Along Path From Sphinx To Landdroskop
<i>Mimetes argenteus</i>	PROTEACEAE	Rare	1992	2.00 km ENE of Landdroskop Summit at: Along Path Sphinx To Landdroskop
<i>Mimetes argenteus</i>	PROTEACEAE	Rare		ELGIN; NUWEBERG VELD RES.
<i>Serruria altiscapa</i>	PROTEACEAE	Vulnerable	1996	2.65 km NW of Drostersnes Lookout Towe at: Slopes Above Forest Nieuweberg97 Se Sh 10

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Amphithalea stokoei</i>	FABACEAE	Endangered		Caledon Div. Nieuweberg.
<i>Amphithalea stokoei</i>	FABACEAE	Endangered		Caledon Div. Nuweberg settlement, top of Viljoens Pass.
<i>Aristea recisa</i>	IRIDACEAE	Insufficiently known		Caledon; Nuweberg Forest Station.
<i>Aristea recisa</i>	IRIDACEAE	Insufficiently known		Caledon. Nuweberg Forest Station.
<i>Ceratandra venosa</i>	ORCHIDACEAE	Endangered		Caledon. Mountain N of Elgin.
<i>Podalyria cordata</i>	FABACEAE	Rare		Caledon. Nuweberg, Kathleen Murray W.F. Reserve.
<i>Podalyria cordata</i>	FABACEAE	Rare		Caledon. Nieuweberg.
<i>Podalyria cordata</i>	FABACEAE	Rare		Caledon Div. Nieuweberg.
<i>Pseudopentameris obtusifolia</i>	POACEAE	Rare		ON ROCKY RIDGE NEXT TO ROAD FROM LANDDROSKOP HUT TO NUWEBERG.
<i>Pseudopentameris obtusifolia</i>	POACEAE	Rare		On rocky ridge next to road from Landroskop. Hut to Nuweberg. Altitude ca. 800 m.
<i>Pseudopentameris obtusifolia</i>	POACEAE	Rare		CALEDON DIST.; NUWEBERG
<i>Restio distans</i>	RESTIONACEAE	Rare		Caledon District. Nuweberg Forest Reserve. Along the contour path below Chipaway Pe
<i>Restio distans</i>	RESTIONACEAE	Rare		Nuweberg Forest Reserve. Along the contour path below Chipway Peak.
<i>Restio fusiformis</i>	RESTIONACEAE	Rare		CALEDON DIST.; NUWEBERG FOREST RES; STREAMSIDES
<i>Watsonia distans</i>	IRIDACEAE	Extinct		Hottentots Holland Mountains. Riviersonderend.

T6 = 24 species

<i>Diastella buekii</i>	PROTEACEAE	Endangered	1997	1.60 km S of Bakenkop496m at: Proteastateforest N RI E Stonepine S Lamotte N RI
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1997	1.50 km SSW of Bakenkop Sh 496m at: F1030 Nhs On Safcol Land W Stone Pine Plantation
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1997	1.90 km SSW of Bakenkop at: F 1030 N Rlwy Line Between Wemmershoek + Wolfkloof Rd Mo
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	2.00 km W of Tb28 Bynespoort Piek at: Daljosephat Fr582 Limiet Trail At Start By For
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.75 km W of Tb28 Bynespoort Piek at: Daljosephat Fr582 Limiet Trl Below Bynespoort
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.40 km W of Tb28 Bynespoort Piek at: Daljosephat Fs582 Limiet Trl N Panorama Ascent
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.00 km W of Tb28 Bynespoort Piek at: Daljosephat Fr582 Limiet Trl Below Bynespoort
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.25 km NW of Tb28 Bynespoort Piek at: Daljosephat Fr582 Limiet Trl W Sh786m W Old N
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.50 km NNW of Tb28 Bynespoort Piek at: Daljosephat Fr582 Limiet Trail On Rd W Old N
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	3.00 km W of Tb28 Bynespoort at: The Hill 590 On Rd To Limiet Trail 0.7km From Start
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	2.40 km W of Tb28 Bynespoort at: N Of Rd On Hill Nw Start Limiet Trail Daljosaphat A
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1999	1.30 km SW of Tb 766.7 at: Hawequas Safcol Plantation (voor Du Toitskloof)
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1997	2.50 km SW of Tb102 Platberg at: Zachariashoek874 Above Wemmershoek R Sw Sh216m On R
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1997	1.85 km SSW of T849 at: Bror F1147 + Skuifraam Middelberg Wsw Sh486m Se Rouxbrug
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1997	6.00 km NNW of Haelhoeksneeukop at: Half Way Up Paarl Side Of Old Du Toits Kloof Pas
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	4.10 km SW of Tb267 Huguenot Ridge at: Dekkers Valley 651 E Eindam S N1 Old Dutoits
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1999	1.70 km SSW of Tb25 Groenberg at: Vrugbaar251 S Sajeda E Sh358m Groenberg

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	2000	1.60 km S of Tb 25 at: Eucalyptus Plntn On Either Side 1.7km E Of Saieda
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	2000	0.50 km S of Tb 25 at: Groenberg Mountain Top
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	4.00 km ESE of Tb90 Newtown at: F332 At El Rd To Daljosephat F Reserve At Boundary
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1999	1.25 km SSW of Tb25 Groenberg at: F220 Ne Sajeda Groenberg
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1994	1.40 km NW of Hugenotskop 1078m at: Patats Kloof Trail Next To Jeep Track
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	2.60 km W of Tb28 Bynespoort at: Rd To Panorama 2.5 To 3k From T-off Bdr The Hill &
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	2.30 km W of Tb28 Bynespoort at: S Of Rd To Panorama @ Start Of Lemietberg Trail & O
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	3.65 km ESE of Tb90 New Town at: On Olyvenbos Rd 2.5k From T-off E Of Rydalmount F 3
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.85 km WSW of Hugenotkop 1078m at: Daljosephat Fr 582 Track N Of El To PI Brdr Dasb
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.50 km SW of Hugenootkop 1078m at: Hawequas Scout Ranch Hawequas295 On Path/firebre
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	0.80 km NW of Hugenootkop 1078m at: Hawequas Scout Ranch Hawequas295 Dasbos On Fireb
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.65 km WNW of Hugenootkop 1078m at: Hawequas Scout Ranch Hawequas295 N Dasbos River
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	2002	1.10 km W of Tb 25 Groenberg at: Farm 213
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.31 km W of Hugenootkop 1078m at: Hawequas 295 + 100m S Of Dasbos R + 500m W Of Fir
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.49 km WNW of Hugenootkop 1078m at: Hawequas 295 + 100m N Of Dasbos R + 700 M W Of
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.23 km WNW of Hugenootkop 1078m at: Hawequas 295 + 250m N Of Dasbos R + 450m W Of F
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.02 km W of Hugenootkop 1078m at: Hawequas 295 + In Two N Most Tributaries Dasbos R
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.81 km WNW of Hugenootkop 1078m at: Hawequas 295 + 550m Se Of Dagklip Farmhouse
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1997	1.53 km WSW of Hugenootkop Sh 1078m at: Hawequas Scout Ranch Hawequas 295 Brdr Above
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1997	1.43 km SW of Hugenootkop Sh 1078m at: Hawequas Scout Ranch Hawequas 295 Brdr Above
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.63 km WSW of Sh1078m Hugenootkop at: Hawequas Scout Ranch Hawequas 295 Brdr N-side
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	0.55 km W of Sh1078m Hugenootkop at: Hawequas Scout Ranch Hawequas 295 S Dasbos R W
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.75 km WNW of Sh1078m Hugenootkop at: Hawequas Scout Ranch Hawequas 295 Twixt Dagkl
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	4.60 km NW of Tb28 at: Olyfenbosch Rd Wellington To Daljoshaphat Forest Stat
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.60 km WNW of Tb28 at: Daljosaphat Forest Reserve
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	4.60 km NW of Tb28 at: Olyfenbosch Rd Wellington To Daljoshaphat Forest Stat
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	3.55 km NNW of Tb28 at: Slope Hawekwaberge Leading To Wellington Kloof
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	3.55 km NNW of Tb28 at: Slope Hawekwaberge Leading To Wellington Kloof
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.90 km WNW of Hugenootkop Sh 1318m at: Keerweder 642 At New Res N Of Fhouse On Mias
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	3.10 km ESE of Tb90 Newton at: On Olyvenbos Rd 2km Along At Sh304 N Of Rydalmount
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.00 km SW of Tb 267 1091.7 at: Kleindrakensteinberge Dutoitskloofpas N Bound Left S
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	0.50 km N of Panorama at: On Slope Below Sutoitskloofpas Road
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1995	1.20 km NE of Panorama at: On Path Below Dutoitskloofpas Road

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Leucospermum grandiflorum</i>	PROTEACEAE	Rare	1999	1.70 km SSW of Tb25 Groenberg at: Vrugbaar251 S Sajeda E Sh358m Groenberg
<i>Leucospermum lineare nova</i>	PROTEACEAE	Not specified	1999	1.55 km SSW of Tb49 Matoppie at: Middelberg W Side E Rd F1147/f1023 E Rouxsbrug W Sh
<i>Leucospermum lineare nova</i>	PROTEACEAE	Not specified	1999	2.05 km SSW of Tb49 Matoppie at: Middelberg W Side E Rd F1147 Wnw Sh557m Se Rouxsbru
<i>Leucospermum lineare nova</i>	PROTEACEAE	Not specified	1997	2.60 km S of Tb49 Matoppie at: F1147 Middelberg Tracks E Berg R Sw Sh557m N Den Dale
<i>Leucospermum lineare nova</i>	PROTEACEAE	Not specified	1999	1.20 km SW of Tb49 Matoppie at: Middelberg F1023/f1147 E Rd E Toff Rouxsberg
<i>Leucospermum lineare nova</i>	PROTEACEAE	Not specified	1997	1.40 km NW of Tb49 Matoppie at: Middelberg W-slopes F1023 S Wiesiesdraai
<i>Leucospermum lineare nova</i>	PROTEACEAE	Not specified	1997	1.25 km SW of Tb49 Matoppie at: F1023 Rd S Skuifraam 2.1k S Wiesiesdraai Middelberg
<i>Leucospermum lineare nova</i>	PROTEACEAE	Not specified	1999	1.90 km NW of Tb49 Matoppie at: F1023 Middelberg Below Wiesiesdraai At Toff To Wemme
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1996	2.40 km W of Tb28 Bynespoort at: N Of Rd On Hill Nw Start Limiet Trail Daljosaphat A
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1997	2.00 km W of Tb102 Platberg at: Zachariashoek874 PI Track E Bakkerskloof To Kasteels
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1999	1.25 km SSE of Tb25 Groenberg at: Potjiesvlei227 E-side Groenberg Adj Sl233
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1999	1.10 km NW of Bakenkop 496 at: Voortrekkerkamp (vague Locality Pinpointed To This) -
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	2001	0.65 km 273 of Sh 557 at: Berg Rivers Hoek 1147
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	2000	1.00 km S of Tb 25 at: 1km Ene Of Saieda
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	2000	0.80 km S of Tb 25 at: On Groenberg Mountain Top
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	2000	0.50 km S of Tb 25 at: Groenberg Mountain Top
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1997	2.55 km W of Tb102 Platberg at: Zachariashoek87 Rd W Bakkerskloof
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1999	1.45 km SSE of Tb25 Groenberg at: S Spur Groenberg Bdr Sl223/potjesvlei 227 & Nw Of
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1999	1.05 km SSE of Tb25 Groenberg at: Sl223 Groenberg Adj Potjesvlei227 800m Nnw Sh568m
<i>Serruria candicans</i>	PROTEACEAE	Rare		Wellington. Groenberg.
<i>Serruria florida</i>	PROTEACEAE	Endangered	2000	1.70 km NW of Tb55 Noordekloof at: Assegaaiboskloof Plantations S Berg R S Sh796m
<i>Agathosma stenosepala</i>	RUTACEAE	Rare		La Motte State Forest: Vicinity of Bakenskop.
<i>Erica alexandri alexandri</i>	ERICACEAE	Endangered		Wemmershoek area; Protea State Forest 800m ENE of the station.
<i>Erica alexandri alexandri</i>	ERICACEAE	Endangered		Wemmershoek area, Protea State Forest 800m ENE of the station.
<i>Erica alexandri alexandri</i>	ERICACEAE	Endangered		Worcester. Franschhoek near Sawmill.
<i>Erica alexandri alexandri</i>	ERICACEAE	Endangered		Worcester. Franschhoek near Sawmill.
<i>Erica bakeri</i>	ERICACEAE	Endangered		WEMMERSHOEK; JUST E. OF LARGE SAWMILL
<i>Erica bakeri</i>	ERICACEAE	Endangered		WEMMERSHOEK; JUST E OF LARGE SAWMILL IN VERY BOGGY AREA
<i>Erica bakeri</i>	ERICACEAE	Endangered		Outspan North; Wemmershoek near saw mill.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Worcester. Wemmershoek vlei, near Wemmershoek sawmill.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl/ Fransch Hoek area; Wemmershoek flats. Portion 1030, ENE of Wemmershoek Statio
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl. Worcester. Wemmershoek; just E of sawmill.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Wemmershoekvlei near road to Franschhoek. In marsh N of the pine forest. On right s

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Erica bakeri</i>	ERICACEAE	Endangered		Worcester. Wemmershoek; just E of large sawmill.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Franschhoek, Wemmershoek Vlei near Wemmershoek Station
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl, near the railway at Wemmershoek
<i>Erica bakeri</i>	ERICACEAE	Endangered		Wemmershoek, in marsh near station
<i>Erica bakeri</i>	ERICACEAE	Endangered		Wemmershoek, in marsh near station
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl, marsh near Wemmershoek Station
<i>Erica bakeri</i>	ERICACEAE	Endangered		Cape Town. Fransch Hoek District, 6 km from Franschhoek, at turnoff to Paarl at saw-
<i>Erica bakeri</i>	ERICACEAE	Endangered		Cape Town. Fransch Hoek-Paarl Road near turnoff to Wemmershoek.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl Division. Wemmershoek, in marshy area near station.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Fransch Hoek District. Wemmershoek Vlei near Wemmershoek Station.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl. Wemmershoek, in marshy ground near railway.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl. Wemmershoek, in marshy ground near railway.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl. Wemmershoek, in marshy ground near railway.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl. Wemmershoek, in marshy ground near railway.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl. Wemmershoek, in marshy ground near railway.
<i>Erica bakeri</i>	ERICACEAE	Endangered		Paarl. Marsh near Wemmershoek station.
<i>Erica sacciflora</i>	ERICACEAE	Endangered		FRANSCHHOEK; W. OF CENTRE PEAK ACROSS BERGRIVER CAUSEWAY BEYOND PINES S. OF STREAM
<i>Erica sacciflora</i>	ERICACEAE	Endangered		Worcester. Franschhoek, west of Centre Peak across Bergrivier causeway beyond pines
<i>Erica sacciflora</i>	ERICACEAE	Endangered		PAARL DIV.; FRENCHHOEK
<i>Erica sacciflora</i>	ERICACEAE	Endangered		FRENCH HOEK
<i>Erica sacciflora</i>	ERICACEAE	Endangered		FRANSCHHOEK
<i>Erica sacciflora</i>	ERICACEAE	Endangered		FRENCH HOEK
<i>Erica sacciflora</i>	ERICACEAE	Endangered		FRENCHHOEK
<i>Erica sacciflora</i>	ERICACEAE	Endangered		FRENCHHOEK
<i>Erica sacciflora</i>	ERICACEAE	Endangered		Paarl. Berg River Hoek.
<i>Erica sacciflora</i>	ERICACEAE	Endangered		in mountains between French Hoek and Jonkershoek
<i>Erica sacciflora</i>	ERICACEAE	Endangered		French Hoek
<i>Erica sacciflora</i>	ERICACEAE	Endangered		In rocky places of mountains around French Hoek
<i>Erica sacciflora</i>	ERICACEAE	Endangered		French Hoek Forest Reserve, slopes
<i>Erica sacciflora</i>	ERICACEAE	Endangered		French Hoek
<i>Geissorhiza furva</i>	IRIDACEAE	Rare		WELLINGTON DIST.; GROENBERG; FOOT OF GROENBERG
<i>Haemanthus pumilio</i>	AMARYLLIDACEAE	Endangered		Plains at base of Klein Drakenstein Mountains on Salem farm.

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Muraltia alba</i>	POLYGALACEAE	Rare		Stellenbosch Div. Groot Drakenstein Mts, Duiwelskloof.
<i>Ornithogalum esterhuyseniae</i>	HYACINTHACEAE	Rare		Stellenbosch District: Nuweberg State Forest; Neck 1.5km East of Emerald Dome. Mossy
<i>Ornithogalum esterhuyseniae</i>	HYACINTHACEAE	Rare		Caledon. Nuweberg State Forest. Neck 1½km E of Emerald Dome. Altitude: c. 4500'.
<i>Otholobium fruticans</i>	FABACEAE	Vulnerable		Paarl. Wemmers Hoek.
<i>Otholobium fruticans</i>	FABACEAE	Vulnerable		Paarl. Berg River Hoek.
<i>Otholobium parviflorum</i>	FABACEAE	Rare		Worcester. Bakkerskloof.
<i>Podalyria cordata</i>	FABACEAE	Rare		Paarl. Berg River Hoek.
<i>Psoralea restioides</i>	FABACEAE	Rare		Paarl. Berg River Hoek.
<i>Staavia dregeana</i>	BRUNIACEAE	Endangered		Drakenstein Mtns.
<i>Stylapterus ericoides pallidus</i>	PENAEACEAE	Rare		Paarl Division. Bainskloof. Rocky banks of Witte River at Happy Valley.
<i>Thamnochortus guthrieae</i>	RESTIONACEAE	Rare		Worcester. Zachariashoek Experimental Catchment: Kasteelkloof Catchment. Altitude:
<i>Tritoniopsis elongata</i>	IRIDACEAE	Vulnerable		Paarl. Dal Josaphat.
<i>Tritoniopsis elongata</i>	IRIDACEAE	Vulnerable		Paarl. Dal Josephat.
<i>Tritoniopsis elongata</i>	IRIDACEAE	Vulnerable		Paarl. Dal Josephat.
<i>Tritoniopsis elongata</i>	IRIDACEAE	Vulnerable		Worcester Division, hills, Dal Josaphat.
<i>Watsonia humilis</i>	IRIDACEAE	Endangered		Drakenstein, French Hoek Division.
<i>Watsonia humilis</i>	IRIDACEAE	Endangered		Paarl Division. Sandy veld between Wemmershoek Drift and French Hoek on the Drakenst

V3 = 13 species

<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	3.70 km SSW of Tb95 Merinokop at: Meerlust1006 W Kleinberg E Berg R Sw Victor Verste
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	4.30 km S of Tb95 Merinokop at: Meerlust1006 W Kleinberg Adj F1009 + Rhodes Fruit Fa
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	3.25 km SSW of Tb95 Merinokop at: Meerlust1006 Centre Of Stand W Kleinberg S Victor
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	3.50 km SSW of Tb95 Merinokop at: Meerlust1006 W Leinberg N Rhodesfruit Farm Brdr
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	2.15 km SSW of Tb95 Merinokop at: Meerlust 1006 W Of Kleinberg In Middle Of Plantati
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	4.00 km SSW of Tb95 Merinokop at: Meerlust 1006 S Bdr @ Rhodes Fruit Farm E Berg R
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	3.80 km SSW of Tb95 Merinokop at: Weltevreden 1007/meerlust 1006 Bdr E Of Berg R + W
<i>Diastella buekii</i>	PROTEACEAE	Endangered	1998	3.50 km SSW of Tb95 Merinokop at: Meerlust1006 Centre Of Pl
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1997	2.50 km SW of Tb102 Platberg at: Zachariashoek874 Above Wemmershoek R Sw Sh216m On R
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.80 km NW of Tb95 Merinokop at: Tituskloof893-f888stuurmanftn Kleindrakenstein Mtns
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.15 km NW of Tb95 Merinokop at: La Motte Sf Kleindrakenstein Mtns E Stuurmanfontein
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1996	1.53 km ENE of Tb 95 2031ft Zachariasho at: Paarl + Stuurmansfontein + E Side Nation
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.50 km NW of Tb95 Merinokop at: La Motte Sf Klein Drakenstein Track N Of Stuurmanfo
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	1.65 km WNW of Tb95 Merinokop at: Stuurmanfontein 888 Quarry E Of Paarl/franschhoek
<i>Leucadendron daphnoides</i>	PROTEACEAE	Vulnerable	1998	0.90 km NW of Tb95 Merinokop at: Kleindrakenstein Mtns Above Stuurmanfontein Brdr F8

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Protea lanceolata</i>	PROTEACEAE	Vulnerable	1995	2.90 km SSE of Tb95 Zachariashoek at: Kleinberg 1.6km N Wemmershoek Toff R45 Liarcd'
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1997	2.00 km W of Tb102 Platberg at: Zachariashoek874 PI Track E Bakkerskloof To Kasteels
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	2002	1.65 km W of Tb22 Perdekop Wemmershk at: Wemmershoek Fr1031 Wolfkloof E R W Perdekop
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1999	1.10 km NW of Bakenkop 496 at: Voortrekkerkamp (vague Locality Pinpointed To This) -
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1992	0.30 km NNE of Zach-kl Weir at: North-slope Adj Weir
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1997	3.00 km W of Tb102 Platberg at: Zachariashoek874 PI Rd E Zachariashoekfkloof To Bakk
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1998	0.00 km of Tb95 Merinokop at: Kleindrakenstein Mtns Lamotte Sf Track Above Tituskf
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1997	2.55 km W of Tb102 Platberg at: Zachariashoek87 Rd W Bakkerskloof
<i>Protea scorzonrifolia</i>	PROTEACEAE	Vulnerable	1998	3.00 km N of Tb95 Merinokop at: La Motte Sf Klein Drakenstein Mtns W Sh884m
<i>Agathosma stenosepala</i>	RUTACEAE	Rare		PAARL DIV., KLEIN DRAKENSTEIN MTS., LA MOTTE FOREST STATION, ZACHARIASHOEK, KASTEELKL
<i>Agathosma stenosepala</i>	RUTACEAE	Rare		La Motte State Forest: Vicinity of Bakenskop.
<i>Disa bodkinii</i>	ORCHIDACEAE	Rare		Wemmershoek Mountians, peak just N of Perdekop.
<i>Otholobium parviflorum</i>	FABACEAE	Rare		Worcester. Bakkerskloof.
<i>Thamnochortus guthrieae</i>	RESTIONACEAE	Rare		Worcester. Zachariashoek Experimental Catchment: Kasteelkloof Catchment. Altitude:
<i>Haemanthus pumilio</i>	AMARYLLIDACEAE	Endangered		Plains at base of Klein Drakenstein Mountains on Salem farm.
<i>Staavia dregeana</i>	BRUNIACEAE	Endangered		Drakenstein Mtns.
<i>Watsonia humilis</i>	IRIDACEAE	Endangered		Drakenstein, French Hoek Division.
<i>Watsonia humilis</i>	IRIDACEAE	Endangered		Paarl Division. Sandy veld between Wemmershoek Drift and French Hoek on the Drakenst
<i>Pentaschistis ecklonii</i>	POACEAE	Indeterminate		Paarl, Wemmershoek.
<i>Muraltia alba</i>	POLYGALACEAE	Rare		Stellenbosch Div. Groot Drakenstein Mts, Duiwelskloof.

W7 = 4 species

<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	8.30 km W of Tb1 Baileys Pk at: Wegda46 R Valley W El Old Lands' On Map But Not S
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	4.80 km WSW of Tb219 Elandskloof Populi at: Welbedagt20 E Sh130m E Brdr Barthomeiesk
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	6.50 km W of Tb219 Elandskloof Populi at: Bartholomiesklip19-druivevalley21 Brdr At
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	8.00 km W of Tb1 Baileys Pk at: Wegda46 At Sh95m W El Kranskop
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	8.90 km W of Tb1 Baileys Pk at: Druive Valley21 Kranskop Adj Wegda16 Kranskop
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1998	3.90 km W of Tb219 Populiers Bosberg at: Bartholomiesklip19-welbedagt20 Brdr At Sh14
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	5.30 km W of Tb219 Populiersboskfl Pk at: Bartholomiesklip19 W Sh130m W El Nr Brdr D
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	8.70 km W of Tb86 Bailey's Peak at: Brdr Wega48/druivevalley21 1.5k From Gouda/welli
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	5.85 km W of Tb219 Populiersboschkf at: Bartholomiesklip 19 Furrow R S Of Bend In R
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	6.20 km WSW of Tb219 Populiersboschkf at: Druivevalley 21 Under El E Sh90m
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1996	8.35 km W of Tb86 Baileys Peak at: Wegda 46 At Druive Valley 21 Bdr Kranzkop W Sh95m
<i>Leucadendron corymbosum</i>	PROTEACEAE	Vulnerable	1998	5.25 km W of Tb219 Populiersbosberg at: Bartholomiesklip 17 @ Gate To Elandsberg Pnr

TAXON	FAMILY	STATUS	COLLYR	LOC
<i>Leucadendron stellare</i>	PROTEACEAE	Not threatened	1996	8.30 km W of Tb1 Baileys Pk at: Wegda46 R Valley W El Old Lands' On Map But Not S
<i>Leucadendron stellare</i>	PROTEACEAE	Not threatened	1996	8.00 km W of Tb1 Baileys Pk at: Wegda46 At Sh95m W El Kranskop
<i>Leucadendron stellare</i>	PROTEACEAE	Not threatened	1996	8.90 km W of Tb1 Baileys Pk at: Druive Valley21 Kranskop Adj Wegda16 Kranskop
<i>Leucadendron stellare</i>	PROTEACEAE	Not threatened	1996	8.70 km W of Tb86 Bailey's Peak at: Brdr Wega48/druivevalley21 1.5k From Gouda/welli
<i>Leucadendron stellare</i>	PROTEACEAE	Not threatened	1996	8.35 km W of Tb86 Baileys Peak at: Wegda 46 At Druive Valley 21 Bdr Kranzkop W Sh95m
<i>Serruria candicans</i>	PROTEACEAE	Rare	1996	4.80 km WSW of Tb219 Elandskloof Populi at: Welbedagt20 E Sh130m E Brdr Barhomeiesk
<i>Serruria candicans</i>	PROTEACEAE	Rare	1996	8.90 km W of Tb1 Baileys Pk at: Druive Valley21 Kranskop Adj Wegda16 Kranskop
<i>Serruria candicans</i>	PROTEACEAE	Rare	1998	3.90 km W of Tb219 Populiers Bosberg at: Bartholomiesklip19-welbedagt20 Brdr At Sh14
<i>Serruria candicans</i>	PROTEACEAE	Rare	1996	5.30 km W of Tb219 Populiersbosklf Pk at: Bartholomiesklip19 W Sh130m W El Nr Brdr D
<i>Ischyrolepis duthieae</i>	RESTIONACEAE	Vulnerable		Paarl-Wellington,Bartholomeus Klip,moister areas

APPENDIX 3: WCNCB: RARE AND ENDANGERED SPECIES (EXCL. PLANTS) RECORDS FOR THE STUDY AREA

Class	Family	Taxon Name	TSA	SARDB Status	IUCN Status
Amphibia	Ranidae	<i>Afrana fuscigula</i>	B		
Amphibia	Ranidae	<i>Afrana fuscigula</i>	T		
Amphibia	Ranidae	<i>Arthroleptella villiersi</i>	T		
Amphibia	Microhylidae	<i>Breviceps montanus</i>	B		
Amphibia	Microhylidae	<i>Breviceps montanus</i>	T		
Amphibia	Bufo	<i>Bufo angusticeps</i>	W		
Amphibia	Bufo	<i>Bufo rangeri</i>	B		
Amphibia	Bufo	<i>Bufo rangeri</i>	T		
Amphibia	Heleophrynidae	<i>Heleophryne purcelli</i>	T		
Amphibia	Ranidae	<i>Tomopterna delalandii</i>	B		
Amphibia	Pipidae	<i>Xenopus laevis laevis</i>	K		
Osteichthyes	Anguillidae	<i>Anguilla marmorata</i>	T		
Osteichthyes	Anguillidae	<i>Anguilla mossambica</i>	T		
Osteichthyes	Galaxiidae	<i>Galaxias zebratus</i>	T		LOWER RISK (near threatened)
Osteichthyes	Galaxiidae	<i>Galaxias zebratus</i>	W		LOWER RISK (near threatened)
Osteichthyes	Mugilidae	<i>Liza richardsonii</i>	T		
Osteichthyes	Mugilidae	<i>Mugil cephalus</i>	T		
Osteichthyes	Salmonidae	<i>Oncorhynchus mykiss</i>	W		
Osteichthyes	Cyprinidae	<i>Pseudobarbus burgi</i>	W	ENDANGERED	CRITICALLY ENDANGERED (A1ce, B1+2abce+3acd)
Osteichthyes	Anabantidae	<i>Sandelia capensis</i>	T		
Osteichthyes	Anabantidae	<i>Sandelia capensis</i>	W		
Pinatae	CUPRESSACEAE	<i>Widdringtonia nodiflora</i>	T	Not threatened	
Reptilia	Viperidae	<i>Bitis atropos</i>	K		
Reptilia	Colubridae	<i>Dasypeltis scabra</i>	K		
Reptilia	Colubridae	<i>Psammophis notostictus</i>	W		

APPENDIX 4: TSS MAPS SHOWING COMMUNITY TYPE RANKED BY SENSITIVITY

Villiersdorp B1A (Figure A4.1).
Villiersdorp B1C (Figure A4.1).
Steenbras H6B (Figure A4.2).
Steenbras H6A (Figure A4.2).
Steenbras H8 (Figure A4.3).
Kogelberg K1 (Figure A4.4).
Nuweberg T2A - (Figure A4.4).
Nuweberg T2D - (Figure A4.5).
Nuweberg T2F - (Figure A4.6).
Nuweberg T3H - (Figure A4.7).
Nuweberg T3G - (Figure A4.4).
Nuweberg T4A - (Figure A4.8).
Nuweberg T4B - (Figure A4.8).
Nuweberg T4C - (Figure A4.8).
Nuweberg T4D - (Figure A4.9).
Nuweberg T4E - (Figure A4.9).
Nuweberg T6A - (Figure A4.10).
Nuweberg T6B - (Figure A4.10).
Nuweberg T6C - (Figure A4.10).
Nuweberg T6D - (Figure A4.10).
Nuweberg T6E - (Figure A4.10).
Voelvllei V3A - (Figure A4.11).
Voelvllei V3B - (Figure A4.11).
Zachariashoek W7A - (Figure A4.12).
Zachariashoek W7B - (Figure A4.12).
Zachariashoek W7C - (Figure A4.13).
Zachariashoek W7D - (Figure A4.14).
Zachariashoek W7E - (Figure A4.15).
Zachariashoek W7F - (Figure A4.15).
Zachariashoek W7G - (Figure A4.16).
Zachariashoek W7H - (Figure A4.16).
Zachariashoek W7I - (Figure A4.16).
Zachariashoek W7J - (Figure A4.17).
Zachariashoek W7K - (Figure A4.13).

