ECOLOGICAL ASSESSMENT

For the Installation of Transmission Power Line Between Firgrove and Phillipi or Stikland and Phillipi and Substation Upgrade

August 2010

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TITLE	:	***ECOLOGICAL ASSESSMENT FOR THE INSTALLATION OF THE FIRGROVE – MITCHELL'S PLAIN TRANSMISSION POWER LINE AND SUBSTATION UPGRADE***
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1 EXECUTIVE SUMMARY

Summary of the Results

- The proposed development site from Phillipi Substation - Mitchell's Plain and Michell's Plain to Firgrove / Stikland Substation is generally highly degraded. Three areas of concern were identified, including the Kuils River, Buffelsvlei and the Driftsands Nature Reserve.
  - **Kuils River (Stikland – Mitchell's Plain):** The Kuils River has an ecological status of intermediate, but it performs numerous important functions including flood attenuation, water quality regulation and maintenance of biodiversity. These functions affect an important area as the water enters this river from a catchment characterised by residential and agricultural land uses, with the associated impacts on the water quality, and through the Kuils River this water are eventually discharged into the sea.
  - **Buffelsvlei (Firgrove – Mitchell's Plain)**: Although the ecological status of the Buffelsvlei is only intermediate it is a wetland that performs important functions over a large extent. The dense residential developments upstream increased the volumes of water entering the Buffelvlei, and it also affected the water quality. The *Phragmites australis* and *Typha capensis* growing densely in the Buffelsvlei performs important functions in the purification and regulation of stormwater before it drains into the sea.
  - **Driftsands Nature Reserve (Stikland – Mitchell's Plain & Firgrove Mitchell's Plain):** The Driftsands Nature Reserve is an area of concern, because it is the only section along the route that represents the Cape Flats Dune Strandveld. Some impacts such as destruction of the vegetation cover and over-utilisation are visible in localised areas of the nature reserve. Few alien species are found in this nature reserve.
- No Red Data plant species were encountered on the site and due to the fragmentation of the habitat, the probability of these species occurring on this site is low.
- Several alternative routes are proposed as indicated in Figure 3-1 and 3-2. Issues where identified where these routes cross sensitive environments (Figure 7.2 and 7.4; sensitivity maps).

- Alternative A in the Firgrove – Mitchell's Plain corridor runs parallel to the Buffelsvlei;
- Alternative C in the Stikland – Mitchell's Plain corridor runs parallel to the Kuils River and
- Alternative A, C and D cross the Driftsands Nature Reserve. Within the Nature Reserve, Alternative A and C follows the route with the fewest issues, while this section of Alternative D runs parallel to the Kuils River.

- Few issues were identified along the following alternative routes (refer to Figure 3-1 and 3-2):
  - Alternative 1, 2 and 3 (Phillipi Mitchell's Plain)
  - Southern section of Alternative C inside Driftsands Nature Reserve (Stikland – Mitchell's Plain)
  - Northern section of Alternative D outside Driftsands Nature Reserve (Stikland – Mitchell's Plain)
- Three alternative locations for the additional substation were selected and the suitability of these areas in terms of potential ecological impacts compares as follow:
  - Alternative 1 presents fewest issues in terms of ecological impacts, as this area is covered by alien invasive *Acacia saligna* and the biodiversity of the site is completely destroyed. Wetland indicators were found on this site, especially in low-laying excavated areas, but the area is largely modified and does not support any biodiversity or provide wetland habitat;
  - Alternative 2 is located close to the banks of the Kuils River and within wetlands associated with the Kuils River. Potential issues have therefore been identified in Alternative 2;
  - Alternative 3 is located within the Driftsands Nature Reserve and also close to the banks of the Kuils River. This alternative is also within the wetlands associated with the Kuils River. Potential issues have therefore been identified in Alternative 3.

Recommendation and Mitigation Measures

<u>Design and Construction</u>

If existing access roads are present, these must be used during construction to minimise the construction of new roads.

If, due to technical constraints, the Transmission lines are constructed in designated sensitive areas, a suitably qualified service provider must rehabilitate the area to its former state. This service provider must be involved from the beginning of the project where the final placement of access roads and pylons are determined.

Soil erosion and sedimentation of the wetland must be managed by:

- Minimizing the area of vegetation clearance
- Minimizing the time between clearing of vegetation and construction
- Clearing vegetation in the dry season if possible
- All denuded soil must be rehabilitated after the construction

Sensitive Areas

A buffer zone of 30m is proposed around each *sensitive* area in the wetland.

Alternative routes must be considered to avoid construction in the sensitive areas of the site and their associated buffer zones. If these alternatives are technically not feasible, mitigation measures discussed in Section 7.1 must be strictly applied.

All natural areas outside the construction site must be indicated as no-go areas. These areas may not be accessed by people or vehicles.

Compacting of soil must be avoided in *sensitive* areas with their associated buffer zones.

During the construction phase no activity such as temporary housing, temporary ablution, disturbance of natural habitat, storing of equipment, waste disposal or any other use of the buffer or flood zone may be permitted in the areas classified as *sensitive*.

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2 INTRODUCTION

BKS (Pty) Ltd was appointed by Eskom Holdings Limited to conduct an ecological assessment for the construction of:

- One 400kV double circuit Transmission power line of approximately 23km from the existing Firgrove Substation to a proposed new Substation in Mitchell's Plain; and
- One 400kV single circuit Transmission power line of approximately 7km from the same proposed new Substation in Mitchell's Plain indicated above to the existing Phillipi Substation proposed to be upgraded.

All open spaces along the proposed development route were assessed to determine the ecological status and sensitivities.

3 PROPOSED DEVELOPMENT SITE

The proposed Transmission Line will be constructed east of Cape Town in the Western Province. It will cross numerous rural settlements and fall within the fynbos biome. The proposed Transmission line to be constructed is indicated in Figure 3-1 and 3-2.

There are alternative routes along which the Transmission Line will be constructed. As indicated in Figure 3-1 there are alternative routes, namely Alternative 1, 2 and 3, between Mitchell's Plain and Phillipi. From Mitchell's Plain two alternative corridors were selected, namely Firgrove - Mitchell's Plain and Stikland – Mitchell's Plain. Within these corridors alternative routes were selected. The alternative routes between Firgrove – Mitchells Plain, namely Alternative A and B, and the alternatives between Stikland – Mitchell's Plain, namely Alternative C and D, are indicated in Figure 3-2.

Mitchell's Plain Substation is owned by the City of Cape Town and Eskom needs to build a new Substation in the same area. Three alternative sites were identified as indicated in Figure 3-1.

Figure 3-1: Locality Map: Phillipi – Mitchell's Plain

Figure 3-2: Locality Map: Firgrove – Mitchell's Plain and Stikland – Mitchell's Plain

4 APPROACH

4.1 CONSTRAINTS

A part of the field surveys was conducted in March whereas the ideal timing for vegetation surveys in the fynbos biome is winter. All open spaces along the proposed development route were surveyed and the ecological status was used as a measure of sensitivity. Areas of concern were mapped and mitigating measures were proposed.

Limited time is available for the study and the field survey was limited to a snapshot view of all areas of concern.

4.2 DESKTOP ASSESSMENT

The current literature was utilised to gain an understanding of the environmental influences presently affecting the proposed development site. General information on the veld type, climate, geology and current activity on the site was acquired prior to the field assessment of the property.

The information on all sensitive plant species that have been recorded in the relevant Quarter Degree Squares (QDS) of the proposed development route was obtained from the online checklist from the South African National Biodiversity Institute (SANBI) *Plants of Southern Africa* (http://posa.sanbi.org/searchspp.php, website accessed on 13 April 2010). This information was used during the field assessment to determine the probability of occurrence of the species.

4.3 VEGETATION ASSESSMENT

The first site visit was conducted on 11 and 12 March 2010 and the second visit was conducted on 12 and 13 August 2010. The proposed route was surveyed and species lists were compiled. The proposed development site was divided into plant communities based on the species composition and land use.

4.4 FAUNAL ASSESSMENT

During the field survey a reconnaissance was undertaken and the presence or absence of any faunal species observed either directly or indirectly was noted.

4.5 WETLAND IDENTIFICATION

Wetland identification was done as per Department of Water Affairs (DWA), former Department of Water Affairs and Forestry (DWAF), guidelines (A practical field procedure for identification and delineation of wetlands and riparian areas, DWAF 2005) as well as the National Water Act (1998). The following indicators are used to determine the extent of the wetlands:

- Terrain unit indicator
- Soil wetness indicators
- Soil form indicator
- Vegetation indicator.

4.6 ECOLOGICAL STATUS

An ecological status was assigned to each plant community. A high ecological status was assigned to ecosystems with the following characteristics:

- High biodiversity
- Few or no alien species
- No signs of previous impacts
- No developmental structures
- No solid waste

An intermediate ecological status was assigned to ecosystems with the following characteristics:

- Intermediate biodiversity
- Few alien species
- Signs of erosion and land use

- Little or no structures
- Little or no solid waste

A low ecological status was assigned to ecosystems with the following characteristics:

- Low biodiversity / no natural vegetation
- Spreading alien species
- Current erosion and agricultural activities
- Previous constructions
- Solid waste

Areas where the vegetation is completely removed such as build-up areas or agricultural fields are classified as degraded.

4.7 WETLAND FUNCTIONING

The functions of the wetlands on the proposed development site were determined by using the technique for rapidly assessing ecosystem services supplied by wetlands, which were developed by Kotze *et al.,* 2005. The name of this technique is Wet-EcoServices.

4.8 PROBABILITIES OF OCCURRENCE OF RED DATA LISTED SPECIES

Red data species information of the proposed development route was obtained during the desktop assessment (refer to Section 3.2). Due to the timing of the survey it is unlikely that red data species will currently be present and / or flowering, and therefore the ecosystem status quo and potential habitat for these species were identified as an indication of the Probability of Occurrence (POC) of these species.

4.9 ECOLOGICAL SENSITIVITY OF THE SITE

The Ecological Sensitivity is determined by assigning scores to each alternative site in terms of the following aspects:

- Conservation status of the veld type

  - 1: Conservation status is *Vulnerable*
  - 2: Conservation status is *Endangered*
  - 3: Conservation status is *Critically endangered*
- Number of red data species present on the site
  - 0: No sensitive species on site
  - 4: One or two sensitive species on site
  - 6: More than two sensitive species on site
- Ecological Status of the site
  - 0: The site is *Degraded*
  - 4: The site is in an *Intermediate* condition
  - 8: The site is in a *Good* condition
- Potential of the site to serve as a migratory corridor for the migration of faunal species and the dispersal of seeds
  - 1: The site is not a migratory corridor
  - 2: The site is possibly a migratory corridor
  - 3: The site is a migratory corridor
- In the case of ***wetlands*** this additional parameter is applicable:
  - 0: Not functioning
  - 4: Functions have positive impact on a small area
  - 8: Functions have positive impact on a large area

These scores are added to get a total sensitivity score. This score is interpreted as follows:

All ecosystems	**Wetlands**	**Sensitivity Rating**
8-17	8 - 25	Sensitive
3-7	3-7	Not sensitive

5 DESKTOP ASSESSMENT

5.1 LAND USE OF THE ADJACENT PROPERTIES

The proposed Transmission Line will be installed to the east of Cape Town and the general area is characterised by industrial areas as well as peri-urban an informal settlements. The cable will mostly follow the existing roads and infrastructures. The Driftsands Nature Reserve, some wetlands and open spaces are also located along the proposed route of the Transmission Line.

5.2 VELD TYPES OF THE STUDY SITE

According to Mucina and Rutherford (2006) the properties earmarked for development and the surrounding area falls within four veld types namely the Cape Flats Dune Strandveld, Cape Flats Sand Fynbos, Swartland Shale Renosterveld and the Cape Lowland Freshwater Wetlands (Figure 5-1).

5.2.1 Cape Flats Dune Strandveld

The Cape Flats Dune Strandveld is characterised by a flat to undulating landscape covered by tall, evergreen hard-leaved shrubs. Grasses and herbs are also abundant. The veld type is underlain by calcareous sand of marine origin. Rainfall occurs in winter with a Mean Annual Precipitation (MAP) of 560 mm. The conservation status of the Cape Flats Dune Strandveld is *Endangered* (Mucina & Rutherford, 2006).

5.2.2 Cape Flats Sand Fynbos

The Cape Flats Sand Fynbos has moderately undulating and flat plains with dense and rather tall ericoid shrublands. The soils are often acid, deep, grey regic sands and are often white. This veld type is critically endangered with several endemic taxa (Mucina & Rutherford, 2006).

5.2.3 Swartland Shale Renosterveld

The Swartland Shale Renosterveld has moderately undulating plains and valleys supporting low to moderately tall leptophyllous shrubland. The clay soils are generated from the Malmesbury Group shales. The area has a winter rainfall regime with a MAP of 430mm. Many endemic plant species occur in this veld type and the veld type is critically endangered (Mucina & Rutherford, 2006).

5.2.4 Swartland Granite Renosterveld

The Swartland Granite Renosterveld occurs on foot slopes and undulating plains. It supports a mosaic of grassland / herblands and microphyllous shrubland. It is dominated by renosterbos. This vegetation types is classified as critically endangered by Mucina & Rutherford (2006), as 80% has already been transformed. Approximately 2.5% are statutorily conserved (Mucina & Rutherford, 2006).

5.2.5 Cape Lowland Freshwater Wetlands

The Cape Lowland Freshwater Wetlands occurs in flats and depressions and is normally covered with *Phragmites australis* and *Typha capensis.* These wetlands are not unique like the rest of the Fynbos biome, and the vegetation in these wetlands generally occurs worldwide in similar habitats. The soils are fine, silty and clayey soils over young Quaternary sediments. Only 14% of the targeted 24% of this wetland type is statutorily conserved in the Cape Peninsula and Agulhas National Parks.

5.3 GEOLOGY AND SOILS

The western end of the route from Phillipi Substation is mainly underlain by quaternary quartz sand of the Springbok formation and Quaternary calcareous coastal dune sand of the Witzand formation. The central section of the route to the west and east of the Mitchell's Plain Substation is underlain by Quaternary calcareous coastal dune sand of the Witzand formation with Quaternary limestone calcrete of the Langebaan formation alternated by Quaternary quartz sand of the Springfontein formation. The eastern section of the proposed route up until Firgrove station is underlain by Quaternary quartz sand and calcareous coastal dune sand of the Springfontein and Witzand formation as well as surficial cover formed in situ on Malmesbury rocks (Figure 5-2).

5.4 CLIMATE

The proposed development route has an exclusive winter-rainfall regime. Mean annual rainfall for the proposed development route is indicated in Figure 5-3.

Figure 5-1: Veld types of the study site

Figure 5-2: Geology of the study site

Figure 5-3: Rainfall on the proposed development route

6 FIELD ASSESSMENT

The proposed development site extends from the Firgrove Substation via Mitchell's Plain Substations to the Phillipi Substation. On 11 March 2010 a field survey was done on the section between Mitchell's Plain and Phillipi Substation. The section between Mitchell's Plain and Firgrove was surveyed on 12 March 2010.

6.1 PHILLIPI SUBSTATION – MITCHELL'S PLAIN

The section of the proposed Transmission Lines between Mitchell's Plain and Phillipi Substation station were surveyed on 11 March 2010. The study area can be divided into open spaces and built environments or current agricultural lands where no natural vegetation is left. The open spaces are classified into plant communities namely wetlands, dunes, grasslands, old agricultural lands and *Acacia saligna* shrublands, Figure 6-1.

Figure 6-1: Plant Communities; Phillipi Substation – Mitchell's Plain

6.1.1 Sections with no natural vegetation

The majority of the study area is built-up landscapes or agricultural fields with no natural vegetation left. Figure 6-2 presents pictures taken of these areas during the field survey.

Figure 6-2: Developed areas on proposed development route with no natural vegetation

6.1.2 Grasslands

Isolated grasslands occur along the proposed development route (Figure 6-3). Grass species found in these grasslands include *Eragrostis curvula* and *Pennisetum clandestinum.* Cattle utilize some of the grasslands for grazing. *Acacia saligna* is found interspersed between the grasses. Alien acacias increase the nutrient content of the soil and this result in a change from typical fynbos vegetation to grasslands. Grasslands do not represent the original landscape of the veld types incorporated in the study area, and these veld types have therefore been modified.

Figure 6-3: (A) Cattle grazing in grasslands; (B) Grasslands used for waste dumping and some individuals of Acacia saligna in the background

6.1.3 Dunes

The proposed development route crosses a dune in the Cape Flats Dune Strandveld. Some natural vegetation remains including *Metalasia muricata, Rhus glauca* and *Thamnochortus insignis.* However, the dune has suffered intensive impacts from the nearby households. The area is used for waste dumping and alien species *Acacia saligna* invested the dune (Figure 6-4).

Figure 6-4: (A) *Acacia saligna* encroachment on dune; (B) Waste dumping on dune.

6.1.4 Wetlands

The proposed development site crosses two wetlands as indicated in Figure 6-5.

Figure 6-5: (A) Mitchell's Plain wetland; (B) Consol wetland

A list of species was recorded for each wetland as indicated in Table 6-1.

Table 6-1: Phillipi Substation – Mitchell's Plain; Species Recorded in Wetlands

Plant Community	Species List
Mitchell's Plain wetland	*Typha capensis, Pennisetum clandestinum.*
Consol wetland	*Phragmites australis, Acacia saligna, Pennisetum clandestinum, Typha capensis, Conyza bonariensis, Carpobrotus edulis, Chamaechrista comosa*

6.2 FIRGROVE – MITCHELL'S PLAIN / STIKLAND – MITCHELL'S PLAIN

Mitchell's plain can be connected to either Firgrove substation, or as an alternative to Stikland substation. Both these alternatives are discussed in this chapter.

The section of the proposed Transmission Lines between Mitchell's Plain and Firgrove station was surveyed on 12 March 2010. The study area can be divided between open spaces and built environments or current agricultural lands where no natural vegetation is left. The open spaces are classified into plant communities namely wetlands, dunes, grasslands, old agricultural lands and *Acacia saligna* shrublands, Figure 6-6.

The section between Stikland and Mitchell's Plain was surveyed on 12 and 13 August 2010. Two alternative routes (A and B) were investigated and this section will discuss the sensitive areas along both these alternatives. The general area between Stikland and Mitchell's Plain can be divided into open spaces and built environment where no natural vegetation is left. Open spaces are mainly divided into wetlands and dunes.

Figure 6-6: Plant Communities; Firgrove – Mitchell's Plain

6.2.1 Sections with no natural vegetation

The majority of the study area between both Mitchell's plain and Firgrove and between Stikland and Mitchell's plain is industrial, residential or agricultural fields with no natural vegetation left. Figure 6-7 presents pictures taken of these areas during the field survey.

Figure 6-7: Developed areas on proposed development route with no natural vegetation

6.2.2 *Acacia saligna* Shrublands

Acacia saligna is an invasive species that poses real threats to the natural biodiversity of the fynbos biome (Section 6.3). Certain sections along the proposed development route are covered by dense stands of *Acacia saligna* (Figure 6-8).

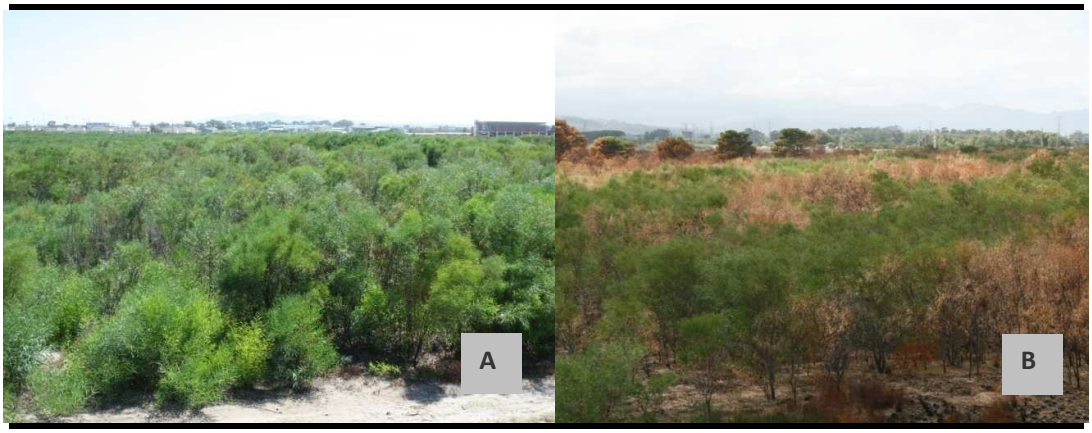

Figure 6-8: *Acacia saligna* shrublands on proposed development route

6.2.3 Old Agricultural Lands

Certain sections along the proposed development route are abandoned agriculture lands (Figure 6-9). These areas are generally covered by pioneer grass species such as *Eragrostis curvula* and *Lagurus ovatus* and forbs such as *Asclepias fruticosa.* The vegetation cover of these areas is generally more than 80 % and the height is 75 cm. The biological diversity in these areas is low and there is no indication of the original fynbos veld types that was initially present on these sites.

Figure 6-9: Old agricultural lands on the study site

6.2.4 Grasslands

Isolated grasslands occur along the proposed development route (Figure 6-10). Grass species found in these grasslands include *Eragrostis curvula, Pennisetum clandestinum* and *Lagurus ovatus. Acacia saligna* is found interspersed between the grasses. Alien acacias increase the nutrient content of the soil and this result in a change from typical fynbos vegetation to grasslands. Grasslands do not represent the original landscape of the veld types incorporated in the study area, and these veld types have therefore been modified.

Figure 6-10: (A) Rodent nests in grasslands; (B) Grasslands with intersperses *Acacia saligna*

6.2.5 Dunes

Both alternatives, i.e. Firgrove – Mitchell's Plain and Stikland – Mitchell's Plain, will cross the Driftsands Nature Reserve. The Driftsands Nature Reserve has dunes and in certain areas characteristic vegetation of the Cape Flats Dune Strandveld are found (Figure 6-11). The vegetation cover on the dunes is approximately 30% and between the dunes the cover is 10%.

The nature reserve is located opposite informal settlements from Khayelitsha, and the area is therefore exposed to impacts from human activities. The Nature Reserve is not fenced of and easy access has resulted in various footpaths. The nature reserve is used for illegal waste dumping and cows are grazing the area. The original fynbos vegetation has largely been replaced by grass.

Figure 6-11 and 6-12 indicate sections of the Driftsand Nature Reserve along Firgrove – Mitchell's Plain and Stikland – Mitchell's Plain respectively.

Figure 6-11: Driftsands Nature Reserve along Firgrove – Mitchell's Plain alternative; A- Boundary between the Nature Reserve and N2, facing west; B - Boundary between the Nature Reserve and N2, facing east; C – Degradation between dunes; D – Stable dune further from the N2.

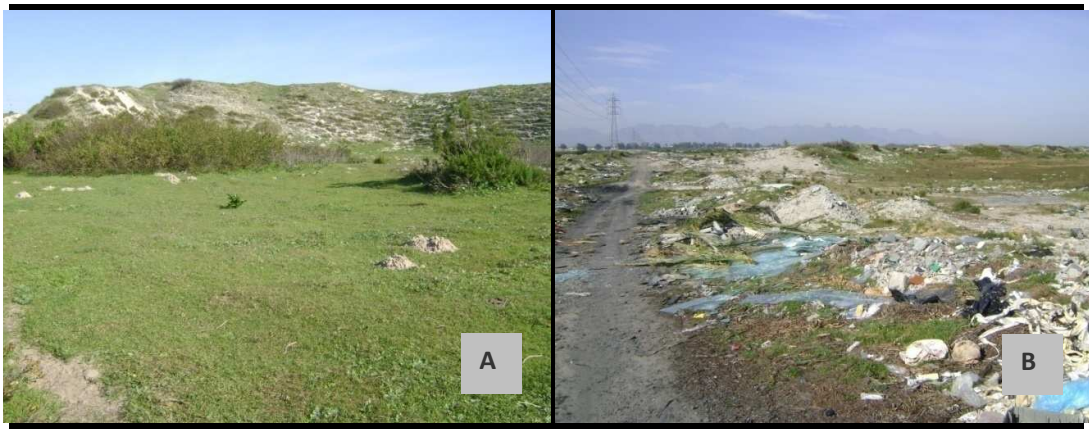

Figure 6-12: Sections of the Driftsands Nature Reserve along Stikland – Michell's Plain alternative

The species diversity in the Driftsands Nature Reserve is low, Table 6-2 indicate the main plant species recorded in this area.

Table 6-2: List of main plant species recorded in the Driftsand Nature Reserve

Driftsand Nature Reserve Main Species
Osteospermum moniliferum, *Metalasia muricata,* *Pennisetum clandestinum,* *Rhus glauca,* *Thamnochortus insignis*

6.2.6 Wetlands

Both alternative routes, i.e. Firgrove – Mitchell's Plain and Stikland – Mitchell's Plain, cross wetlands. Both alternatives cross the Kuils River and the Eerste Rivier will be crossed by the Firgrove – Mitchell's Plain alternative. Both rivers are associated with extensive wetlands and drains into the sea.

Firgove – Mitchell's Plain crosses wetlands such as Firgrove wetland, Airstrip wetland, Buffelsvlei and Khayelitsha wetland (Figure 6-13). These wetlands were named for referencing purposes in this report. A list of plant species recorded in these wetlands is indicated in Table 6-3. Of these four wetlands, the Buffelsvlei is the largest and most important wetland in terms of wetland functions, refer to Chapter 7.2.2

Figure 6-13: Firgrove – Mitchell's Plain Wetlands; A – Firgrove wetland; B – Airstrip wetland; C – Buffelsvlei; D - Khayelitsha wetland

Table 6-3: Firgrove – Mitchell's Plain; Wetlands Species List

Plant Community	Species List
Firgrove wetland	*Typha capensis, Persicaria lapatifolia, Acacia saligna, Pennisetum clandestinum.*
Airstrip wetland	*Phragmites australis*
Buffelsvlei	*Typha capensis, Phragmites australis*, *Persicaria lapatifolia, Asclepias fruticosa, Pennisetum clandestinum*
Khayelitsha wetland	*Phragmites australis*, *Typha capensis, Ricinus communis, Datura* species, *Acacia saligna, Pennisetum clandestinum*

6.2.6.1 Stikland Wetland

The area directly north of Stikland Power Station is a wetland. This wetland is canalised and the flow of water is controlled. The wetland is infested by *Acacia saligna.*

6.2.6.2 Kuils River

Both alternative routes between Stikland and Mitchell's Plain cross the Kuils River more than once. This section of the Kuils River flows through heavy industrial and residential areas, with only small fragments of natural vegetation. Several pollutants are likely to be discharged into the river. At various places the Kuils River has been impacted and developments are often very close to the water channel.

Alternative C crosses the Kuils River at GPS coordinate S33˚57'16.31"; E18˚39'47.76". To the north of the road where the survey point was taken the Kuils River is a channelled valley bottom (Figure 6-14 A). To the south of the road the river is much more diffuse in an unchannelled valley bottom and overgrown with *Pragmites australis* (Figure 6-14 B). After this crossing for approximately 2.7km, Alternative C runs parallel to the river, at various distances of between 100-300m east of the river. This section of the route falls within wetlands associated with the Kuilsriver. The route crosses the Kuils River again further south within the Drift Sands Nature Reserve.

Figure 6-14: Alternative C crossing Kuils River; A: Channelled valley bottom wetland; B: Flow of water in the Kuils River is more diffuse and unchannelled with *Phragmites australis*

Alternative D crosses the Kuils River at GPS coordinate S33˚54'52.83"; E18˚41'32.5" and then again further south within the Driftsands Nature Reserve. In between these crossings, Alternative D is far from the Kuils River. South of the Driftsands Nature Reserve, Alternative D runs parallel to the Kuils River at approximately 200m west of the river. Figure 6-15 indicates two sites in the Kuils River that will be crossed by Alternative D. Table 6-4 indicates plant species recorded at these crossings during a site visit.

Figure 6-15: Alternative D crossing Kuils River at different locations

Table 6-4: List of main plant species recorded at various crossings of the Kuils River

Kuils River Crossing	Main Species
1	*Phragmites australis, Zantedeschia aethiopica, Pennisetum clandestinum, Ricinus communis.*
2	*Watsonia species, Zantedeschia aethiopica, Acacia saligna, Pennisetum clandestinum,* sedges.
3	*Pennisetum clandestinum, Zantedeschia aethiopica, Ricinus communis*

6.2.6.3 Mitchell's Plain Wetland

A section of an open space north of Mitchell's Plain was selected as an alternative site for a new Substation. During the site visit, the presence of wetlands was determined on this site. The topography of the area is erratic and previous excavations have occurred. At the lowest points of these excavations permanent water are found (Figure 6-16 A). Soil samples were taken in these

areas in order to compare to the soil in the alternative development site. The soils were sandy and grey with lighter grey mottling (Figure 6-16 B).

The alternative site for the substation is located in another slightly low-laying excavated area. Water and light grey mottling was found at 0.5m into the soil profile. No wetland vegetation was found, other that a few individuals of *Zantedeschia aethiopica*. During the site visit in March the area proposed for the new substation development were completely covered by *Acacia saligna* (Figure 6-16 C). During the site visit in August, these trees were cut off presumably in an attempt to control their spread (Figure 6-16 D). Due to the presence of some wetland indicators this area are classified as a wetland, as per the DWA guidelines. Because of the big variation in the topography and the total absence of biodiversity, it is believed that the water table are now closer to the surface due to excavations on this site. If the wetlands occur naturally on this site, it is now critically modified with a complete loss in natural habitat.

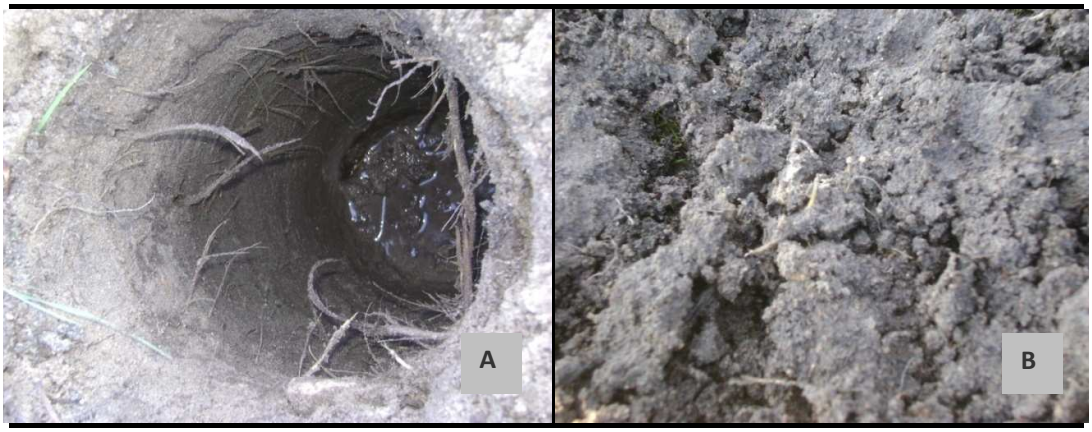

Figure 6-16: Alternative site for substation (A) Wet soils at 0.5m; (B) Soil sample with mottles; (C) *Acacia saligna* cover during March 2010; (D) *Acacia saligna* removed in August 2010.

6.3 ALIEN INVASIVE SPECIES

Acacia saligna is an invasive tree from Australia that is present in dense stands along the proposed development route. Alien acacias result in elevated nutrient levels in the soil which convert the veld into *Eragrostis curvula* grasslands and more regular fires (Mucina & Rutherford, 2006). The *A. saligna* trees in the study site are infected by a gall forming rust fungus, *Uromycladium tepperianum* that is used as a biological control agent on these trees.

Other alien invasive plants that occur on the proposed development site is *Pinus pinea, Eucalyptus* species, *Pennisetum clandestinum, Persicaria* species, *Ricinus communis, Datura* species, *Echium vulgare* and *Plantago lanceolata*.

All alien species have a certain degree of impact on the biodiversity of the ecosystems. On the proposed development route the impact of *Acacia saligna* and *Pennisetum clandestinum* is most extensive and in some areas these species have replaced the natural vegetation entirely.

7 ANALYSIS OF THE RESULTS

7.1 PHILLIPI SUBSTATION – MITCHELL'S PLAIN

The proposed development route from Phillipi Substation to Mitchell's Plain are situated in two veld types namely the Cape Flats Dune Strandveld and the Cape Flats Sand Fynbos (Mucina and Rutherford, 2006). This area crosses the Quarter Degree Squares (QDS) 3418 BA and 3318 DC.

7.1.1 Ecological status

The ecological status of the different vegetation communities between Phillipi Substation and Mitchell's Plain were assessed as per Section 3.5. The results are presented in Table 7-1 and Figure 7-1.

Table 7-1: Phillipi Substation – Mitchell's Plain Ecological Status of Plant Communities

Plant community	Ecological status
Build-up environments – no natural vegetation left	Degraded
Grasslands:	Low
Dune	Low
Wetlands: Mitchell's Plain wetland	Low
Wetlands: Consol wetland	Low

Figure 7-1: Ecological Status; Phillipi Substation – Mitchell's Plain

7.1.2 Wetland functioning

There are two wetlands between Phillipi Substation and Mitchell's Plain that are likely to be affected by the proposed development. The functioning of these wetlands was determined as per the methods discussed in Section 3.6. Table 7-2 also indicates the extent of impact of the wetland functions, i.e. it is the size of the area that is positively impacted on by the wetland functions. This is influenced by the wetland's surroundings and its connectivity to other water sources.

Table 7-2: Phillipi Substation – Mitchell's Plain; Wetland Functioning

Plant Community	Wetland functioning	Extent of impact of wetland functions
Mitchell's Plain wetland	Nitrate and toxicant removal	Local: wetland is not connected to other water sources
Consol wetland	Phosphate and sediment trapping. Nitrate and toxicant removal	Local: wetland is not connected to other water sources.

7.1.3 Probability of Occurrence (POC) of Red Data Listed (RDL) species

Table 11-1 and Table 11-2 list the RDL plant species that have been recorded in the QDS 3318 DC and 3418 BA and that will also have a potential distribution in this section of the proposed development route. No RDL species were recorded on this section of the proposed development site. The POC of RDL species are low, because the poor quality and the low biodiversity of the ecosystems will not support these species.

7.1.4 Sensitivity

The sensitivity of each plant community between Phillipi Substation and Mitchell's Plain was determined as per the methods discussed in Section 3.8. The sensitivity results are presented in Table 7-3 and Figure 7-2. The towers of the proposed route can easily jump these wetlands, avoiding all construction impacts on the wetlands.

Table 7-3: Phillipi Substation – Mitchell's Plain; Sensitivity

Plant community	Sensitivity rating
Build-up environments – no natural vegetation left	Not Sensitive
Grasslands:	Not Sensitive
Driftsands Nature Reserve	Not Sensitive
Wetlands: Mitchell's Plain Wetland	Not Sensitive
Wetlands: Consol wetland	Not Sensitive

Figure 7-2: Sensitivity; Phillipi – Mitchell's Plain

7.2 FIRGROVE – MITCHELL'S PLAIN / STIKLAND MITCHELL'S PLAIN

As per Mucina and Rutherford (2006) the proposed development route from Firgrove to Mitchell's Plain are situated in four veld types namely the Cape Flats Dune Strandveld (Endangered), the Cape Flats Sand Fynbos (Critically Endangered), Swartland Shale Renosterveld (Critically Endangered), and the Cape Lowlands Freshwater Wetlands (Least Threatened). The Stikland – Mitchell's Plain alternative crosses the same veld types including Swartland Granite Renosterveld (Critically Endangered). Firgrove – Mitchell's Plain alternative crosses the Quarter Degree Squares (QDS) 3418 BA and 3418 BB. Stikland and Mitchell's Plain alternative falls with QDS 3318 DC and 3418 BA.

7.2.1 Ecological status

The ecological status of the different vegetation communities between Firgrove and Mitchell's Plain and Stikland – Mitchell's Plain were assessed as per Section 3.5 and the results are presented in Table 7-4 and Figure 7-3.

Table 7-4: Ecological Status; Firgrove – Mitchell's Plain / Stikland Mitchell's Plain

Plant community	Ecological status
Firgrove – Mitchell's Plain	
No natural vegetation left	Degraded
Acacia saligna shrubland	Low
Old agricultural lands	Low
Grasslands:	Low
Driftsands Nature Reserve	Intermediate
Wetlands: Firgrove wetland	Low
Wetlands: Airstrip wetland	Low
Wetlands: Buffelsvlei wetland	Intermediate
Wetlands: Khayelitsha wetland	Low
Stikland – Mitchell's Plain	
No natural vegetation left	Degraded
Driftsands Nature Reserve	Low
Wetlands: Stikland wetland	Low
Wetlands: Kuils River wetlands	Intermediate
Wetlands: Mitchell's Plain wetland	Degraded

Figure 7-3: Ecological Status; Firgrove – Mitchell's Plain

7.2.2 Wetland functioning

The functioning of wetlands between Firgrove – Mitchell's Plain and Stikland – Mitchell's Plain was determined as per the methods discussed in Section 3.6. Table 7-5 indicates the wetland functions as well as the extent of the wetland functions, i.e. it is the area that is positively impacted on by the wetland functions. This is influenced by the wetland's surroundings and its connectivity to other water sources.

Table 7-5: Wetland Functioning; Firgrove – Mitchell's Plain / Stikland – Mitchell's Plain

Plant Community	Wetland functioning	Extent of impact of wetland functions
Firgrove – Mitchell's Plain		
Firgrove wetland	Nitrate and toxicant removal	Local: wetland is not connected to other water sources
Airstrip wetland	Nitrate and toxicant removal and erosion control	Local: wetland is not connected to other water sources.
Buffelsvlei	Nitrate and toxicant removal and erosion control	High extent: Wetland receives water from the Kuilsriver and drains into the sea
Khayelitsha wetland	Nitrate and toxicant removal and erosion control	Local: wetland is not connected to other water sources.
Stikland – Mitchell's Plain		
Stikland wetland	Nitrate and toxicant removal and erosion control	Local: wetland is not connected to other water sources due to habitat fragmentation.
Kuils River wetland	Flood attenuation, sediment and phosphate trapping, nitrate and toxicant removal, erosion control, maintenance of biodiversity	High extent: wetland received water from a large catchment, drains into the Buffelsvlei and then into the sea.
Mitchell's Plain wetland	Nitrate and toxicant removal and erosion control	Local: wetland is not connected to other water sources due to habitat fragmentation.

7.2.3 Probability of Occurrence (POC) of Red Data Listed (RDL) species

The Kuils River supports a biodiversity of species, although the general area is fragmented. An African march harrier has been identified within this system by the avifaunal specialist (refer to avifaunal report).

Table 11-2 and Table 11-3 lists the RDL plant species that have been recorded in the QDS 3418 BA and 3418 BB and will also have a potential distribution in this section of the proposed development route. The POC of RDL species are low, because the poor quality and the low biodiversity of the ecosystems will not support these species.

7.2.4 Sensitivity

The sensitivity of each plant community was determined as discussed in Section 3.8. The sensitivity results are presented in Table 7-6 and Figure 7-4. The Driftsand Nature Reserve falls within the *Not Sensitive* category based on the current ecological status and presence of red data species. However, due to the *Critically Endangered* status of this veld type and the possibilities for rehabilitation, the area is regarded as sensitive.

Table 7-6: Sensitivity; Firgrove – Mitchell's Plain / Stikland – Mitchell's Plain

Plant community	Sensitivity rating
Firgrove – Mitchell's Plain	
No natural vegetation left	Not Sensitive
Acacia saligna shrubland	Not Sensitive
Old agricultural lands	Not Sensitive
Grasslands:	Not Sensitive
Driftsands Nature Reserve	Sensitive
Wetlands: Firgrove Wetland	Not Sensitive
Wetlands: Airstrip wetland	Not Sensitive
Wetlands: Buffelsvlei	Sensitive
Wetlands: Khayelitsha wetlands	Not Sensitive
Stikland – Mitchell's Plain	
No natural vegetation left	Not Sensitive
Driftsands Nature Reserve	Sensitive
Wetlands: Stikland wetland	Not Sensitive
Wetlands: Kuils River wetlands	Sensitive
Wetlands: Mitchell's Plain wetland	Not Sensitive

Figure 7-4: Sensitivity; Firgrove – Mitchell's Plain

7.3 SUMMARY OF THE RESULTS

- The proposed development site from Phillipi Substation - Mitchell's Plain and Michell's Plain to Firgrove / Stikland Substation is generally highly degraded. Three areas of concern were identified, including the Kuils River, Buffelsvlei and the Driftsands Nature Reserve.
  - **Kuils River (Stikland – Mitchell's Plain):** The Kuils River has an ecological status of intermediate, but it performs numerous important functions including flood attenuation, water quality regulation and maintenance of biodiversity. These functions affect an important area as the water enters this river from a catchment characterised by residential and agricultural land uses, with the associated impacts on the water quality, and through the Kuils River this water are eventually discharged into the sea.
  - **Buffelsvlei (Firgrove – Mitchell's Plain)**: Although the ecological status of the Buffelsvlei is only intermediate it is a wetland that performs important functions over a large extent. The dense residential developments upstream increased the volumes of water entering the Buffelvlei, and it also affected the water quality. The *Phragmites australis* and *Typha capensis* growing densely in the Buffelsvlei performs important functions in the purification and regulation of stormwater before it drains into the sea.
  - **Driftsands Nature Reserve (Stikland – Mitchell's Plain & Firgrove Mitchell's Plain):** The Driftsands Nature Reserve is an area of concern, because it is the only section along the route that represents the Cape Flats Dune Strandveld. Some impacts such as destruction of the vegetation cover and over-utilisation are visible in localised areas of the nature reserve. Few alien species are found in this nature reserve.
- No Red Data plant species were encountered on the site and due to the fragmentation of the habitat, the probability of these species occurring on this site is low.
- Several alternative routes are proposed as indicated in Figure 3-1 and 3-2. Issues where identified where these routes cross sensitive environments (Figure 7.2 and 7.4; sensitivity maps).
  - Alternative A in the Firgrove – Mitchell's Plain corridor runs parallel to the Buffelsvlei;
  - Alternative C in the Stikland – Mitchell's Plain corridor runs parallel to the Kuils River and

  - Alternative A, C and D cross the Driftsands Nature Reserve. Within the Nature Reserve Alternative A and C follows the route with the fewest issues, while Alternative D runs parallel to the Kuils River.
- Few issues were identified along the following alternative routes (refer to Figure 3-1 and 3-2):
  - Alternative 1, 2 and 3 (Phillipi Mitchell's Plain)
  - Southern section of Alternative C within Driftsands Nature Reserve (Stikland – Mitchell's Plain)
  - Northern section of Alternative D outside Driftsands Nature Reserve (Stikland – Mitchell's Plain)
- Three alternative locations for the additional substation were selected and the suitability of these areas in terms of potential ecological impacts compares as follow:
  - Alternative 1 presents fewest issues in terms of ecological impacts, as this area is covered by alien invasive *Acacia saligna* and the biodiversity of the site is completely destroyed. Wetland indicators were found on this site, especially in low-laying excavated areas, but the area is largely modified and does not support any biodiversity or provide wetland habitat;
  - Alternative 2 is located close to the banks of the Kuils River and within wetlands associated with the Kuils River. Potential issues have therefore been identified in Alternative 2;
  - Alternative 3 is located within the Driftsands Nature Reserve and also close to the banks of the Kuils River. This alternative is also within the wetlands associated with the Kuils River. Potential issues have therefore been identified in Alternative 3.

8 RECOMMENDATION AND MITIGATION MEASURES

8.1 DESIGN AND CONSTRUCTION

If existing access roads are present, these must be used during construction to minimise the construction of new roads.

If, due to technical constraints, the Transmission lines are constructed in designated sensitive areas, a suitably qualified service provider must rehabilitate the area to its former state. This service provider must be involved from the beginning of the project where the final placement of access roads and pylons are determined.

Soil erosion and sedimentation of the wetland must be managed by:

- Minimizing the area of vegetation clearance
- Minimizing the time between clearing of vegetation and construction
- Clearing vegetation in the dry season if possible
- All denuded soil must be rehabilitated after the construction

8.2 SENSITIVE AREAS

A buffer zone of 30m is proposed around each *sensitive* area in the wetland.

Alternative routes must be considered to avoid construction in the sensitive areas of the site and their associated buffer zones. If these alternatives are technically not feasible, mitigation measures discussed in Section 7.1 must be strictly applied.

All natural areas outside the construction site must be indicated as no-go areas. These areas may not be accessed by people or vehicles.

Compacting of soil must be avoided in *sensitive* areas with their associated buffer zones.

During the construction phase no activity such as temporary housing, temporary ablution, disturbance of natural habitat, storing of equipment, waste disposal or any other use of the buffer or flood zone may be permitted in the areas classified as *sensitive*.

9 CONCLUSIONS

The proposed development will have an impact on some plant communities of the site. The majority of the site is however disturbed due to intensive land uses. Development can occur within non-

sensitive areas, and if any sensitive environments are involved certain mitigation measures must be adhered to.

10 REFERENCES

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11 ADDENDUM A: PREVIOUSLY RECORDED RED DATA LISTED SPECIES

Table 11-1: Red data listed plants for Quarter Degree Square 3318 DC (Phillipi Substation – Mitchell's Plain)

Family	Species
Extinct	
ERICACEAE	*Erica alexandri* Guthrie & Bolus subsp. acockii (Compton) E.G.H.Oliv.
Critically endangered, possibly extinct	
FABACEAE	*Aspalathus puberula* (Eckl. & Zeyh.) R.Dahlgren
FABACEAE	*Aspalathus retroflexa* L. subsp. bicolor (Eckl. & Zeyh.) R.Dahlgren
Critically endangered	
ASTERACEAE	*Cotula myriophylloides* Harv.
ASTERACEAE	*Metalasia distans* (Schrank) DC.
CYPERACEAE	*Trianoptiles solitaria* (C.B.Clarke) Levyns
ERICACEAE	*Erica bolusiae* Salter var. bolusiae
FABACEAE	*Amphithalea ericifolia* (L.) Eckl. & Zeyh. subsp. erecta Granby
FABACEAE	*Aspalathus horizontalis* (R.Dahlgren) R.Dahlgren
FABACEAE	*Podalyria microphylla* E.Mey.
FABACEAE	*Psoralea glaucina* Harv.
HYACINTHACEAE	*Lachenalia arbuthnotiae* W.F.Barker
IRIDACEAE	*Babiana leipoldtii* G.J.Lewis
IRIDACEAE	*Babiana regia* (G.J.Lewis) Goldblatt & J.C.Manning
IRIDACEAE	*Babiana secunda* (Thunb.) Ker Gawl.
IRIDACEAE	*Watsonia amabilis* Goldblatt
IRIDACEAE	*Watsonia humilis* Mill.
OXALIDACEAE	*Oxalis natans* L.f.
PROTEACEAE	*Diastella proteoides* (L.) Druce
PROTEACEAE	*Leucadendron levisanus* (L.) P.J.Bergius
PROTEACEAE	*Leucadendron thymifolium* (Salisb. ex Knight) I.Williams
PROTEACEAE	*Leucadendron verticillatum* (Thunb.) Meisn.
PROTEACEAE	*Serruria aemula* Salisb. ex Knight
PROTEACEAE	*Serruria furcellata* R.Br.
PROTEACEAE	*Serruria pinnata* (Andr.) R.Br.
PROTEACEAE	*Serruria trilopha* Salisb. ex Knight
RESTIONACEAE	*Restio acockii* Pillans
Endangered	

AIZOACEAE	*Tetragonia caesia* Adamson
AMARYLLIDACEAE	*Hessea cinnamomea* (L'Hér.) T.Durand & Schinz
ASPHODELACEAE	*Aloe ramosissima* Pillans
ASTERACEAE	*Athanasia capitata* (L.) L.
ASTERACEAE	*Marasmodes dummeri* Bolus ex Hutch.
ASTERACEAE	*Metalasia octoflora* DC.
BORAGINACEAE	*Echiostachys spicatus* (Burm.f.) Levyns
ERICACEAE	*Erica ferrea* P.J.Bergius
FABACEAE	*Aspalathus aculeata* Thunb.
FABACEAE	*Aspalathus tylodes* Eckl. & Zeyh.
FABACEAE	*Lebeckia meyeriana* Eckl. & Zeyh.
FABACEAE	*Lebeckia plukenetiana* E.Mey.
FABACEAE	*Podalyria argentea* Salisb.
FABACEAE	*Psoralea peratica* C.H.Stirt.
FABACEAE	*Xiphotheca lanceolata* (E.Mey.) Eckl. & Zeyh.
FABACEAE	*Xiphotheca reflexa* (Thunb.) A.L.Schutte & B.-E.van Wyk
GERANIACEAE	*Pelargonium chelidonium* (Houtt.) DC.
HYACINTHACEAE	*Lachenalia liliflora* Jacq.
HYPOXIDACEAE	*Spiloxene minuta* (L.) Fourc.
IRIDACEAE	*Aristea biflora* Weim.
IRIDACEAE	*Aristea lugens* (L.f.) Steud.
IRIDACEAE	*Babiana odorata* L.Bolus
IRIDACEAE	*Babiana villosula* (J.F.Gmel.) Ker Gawl. ex Steud.
IRIDACEAE	*Geissorhiza furva* Ker Gawl. ex Baker
IRIDACEAE	*Geissorhiza setacea* (Thunb.) Ker Gawl.
IRIDACEAE	*Gladiolus jonquilliodorus* Eckl. ex G.J.Lewis
IRIDACEAE	*Sparaxis grandiflora* (D.Delaroche) Ker Gawl. subsp. grandiflora
MESEMBRYANTHEMACEAE	*Lampranthus debilis* (Haw.) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus dilutus* N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus diutinus* (L.Bolus) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus explanatus* (L.Bolus) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus leptaleon* (Haw.) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus reptans* (Aiton) N.E.Br.
ORCHIDACEAE	*Disa draconis* (L.f.) Sw.
ORCHIDACEAE	*Disa lugens* Bolus var. lugens
ORCHIDACEAE	*Disa tenella* (L.f.) Sw. subsp. Tenella
ORCHIDACEAE	*Pterygodium cruciferum* Sond.
OXALIDACEAE	*Oxalis falcatula* T.M.Salter

OXALIDACEAE	*Oxalis strigosa* T.M.Salter
PENAEACEAE	*Stylapterus fruticulosus* (L.f.) A.Juss.
POACEAE	*Prionanthium pholiuroides* Stapf
POLYGALACEAE	*Muraltia brevicornu* DC.
POLYGALACEAE	*Muraltia decipiens* Schltr.
POLYGALACEAE	*Muraltia mitior* (P.J.Bergius) Levyns
PROTEACEAE	*Leucadendron lanigerum* H.Buek ex Meisn. var. lanigerum
PROTEACEAE	*Serruria brownii* Meisn.
PROTEACEAE	*Serruria cyanoides* (L.) R.Br.
PROTEACEAE	*Serruria incrassata* Meisn.
PROTEACEAE	*Serruria linearis* Salisb. ex Knight
PROTEACEAE	*Spatalla caudata* (Thunb.) R.Br.
RESTIONACEAE	*Elegia acockii* (Pillans) Moline & H.P.Linder
RESTIONACEAE	*Ischyrolepis pratensis* Esterh.
RESTIONACEAE	*Ischyrolepis sabulosa* (Pillans) H.P.Linder
RESTIONACEAE	*Restio micans* Nees
RHAMNACEAE	*Phylica plumosa* L. var. squarrosa (Vent.) Sond.
ROSACEAE	*Cliffortia ericifolia* L.f.
ROSACEAE	*Cliffortia hirta* Burm.f.
ROSACEAE	*Cliffortia marginata* Eckl. & Zeyh.
RUTACEAE	*Agathosma corymbosa* (Montin) G.Don
RUTACEAE	*Agathosma glabrata* Bartl. & H.L.Wendl.
RUTACEAE	*Macrostylis cassiopoides* (Turcz.) I.Williams subsp. cassiopoides
RUTACEAE	*Macrostylis cassiopoides* (Turcz.) I.Williams subsp. dregeana (Sond.) I.Williams
RUTACEAE	*Macrostylis villosa* (Thunb.) Sond. subsp. villosa
THYMELAEACEAE	*Passerina paludosa* Thoday
Vulnerable	
ASTERACEAE	*Othonna ciliata* L.f.
ASTERACEAE	*Steirodiscus tagetes* (L.) Schltr.
BORAGINACEAE	*Echiostachys incanus* (Thunb.) Levyns
BORAGINACEAE	*Lobostemon capitatus* (L.) H.Buek
ERICACEAE	*Erica capitata* L.
FABACEAE	*Aspalathus acanthophylla* Eckl. & Zeyh.
FABACEAE	*Aspalathus albens* L.
FABACEAE	*Aspalathus araneosa* L.
FABACEAE	*Aspalathus globulosa* E.Mey.
FABACEAE	*Aspalathus lotoides* Thunb. subsp. lotoides
FABACEAE	*Aspalathus ternata* (Thunb.) Druce

FABACEAE	*Liparia splendens* (Burm.f.) Bos & de Wit subsp. splendens
GERANIACEAE	*Pelargonium leptum* L.Bolus
HYACINTHACEAE	*Lachenalia mediana* Jacq. var. mediana
HYACINTHACEAE	*Lachenalia orthopetala* Jacq.
HYACINTHACEAE	*Lachenalia reflexa* Thunb.
HYPOXIDACEAE	*Spiloxene alba* (Thunb.) Fourc.
IRIDACEAE	*Aristea cantharophila* Goldblatt & J.C.Manning
IRIDACEAE	*Babiana melanops* Goldblatt & J.C.Manning
IRIDACEAE	*Geissorhiza purpureolutea* Baker
IRIDACEAE	*Geissorhiza tenella* Goldblatt
IRIDACEAE	*Gladiolus meliusculus* (G.J.Lewis) Goldblatt & J.C.Manning
IRIDACEAE	*Gladiolus recurvus* L.
IRIDACEAE	*Gladiolus trichonemifolius* Ker Gawl.
IRIDACEAE	*Hesperantha spicata* (Burm.f.) N.E.Br. subsp. spicata
IRIDACEAE	*Moraea elsiae* Goldblatt
IRIDACEAE	*Moraea versicolor* (Salisb. ex Klatt) Goldblatt
IRIDACEAE	*Moraea villosa* (Ker Gawl.) Ker Gawl. subsp. elandsmontana Goldblatt
IRIDACEAE	*Moraea villosa* (Ker Gawl.) Ker Gawl. subsp. villosa
IRIDACEAE	*Sparaxis elegans* (Sweet) Goldblatt
MALVACEAE	*Hermannia rugosa* Adamson
MESEMBRYANTHEMACEAE	*Antimima aristulata* (Sond.) Chess. & Gideon F.Sm.
MESEMBRYANTHEMACEAE	*Drosanthemum striatum* (Haw.) Schwantes
MESEMBRYANTHEMACEAE	*Erepsia patula* (Haw.) Schwantes
MESEMBRYANTHEMACEAE	*Erepsia ramosa* L.Bolus
MESEMBRYANTHEMACEAE	*Lampranthus filicaulis* (Haw.) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus glaucus* (L.) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus peacockiae* (L.Bolus) L.Bolus
MESEMBRYANTHEMACEAE	*Lampranthus sociorum* (L.Bolus) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus stenopetalus* (L.Bolus) N.E.Br.
MESEMBRYANTHEMACEAE	*Ruschia geminiflora* (Haw.) Schwantes
ORCHIDACEAE	*Acrolophia bolusii* Rolfe
POLYGALACEAE	*Muraltia brachypetala* Wolley-Dod
POLYGALACEAE	*Muraltia macropetala* Harv.
PROTEACEAE	*Diastella divaricata* (P.J.Bergius) Rourke subsp. montana Rourke
PROTEACEAE	*Leucadendron cinereum* (Sol. ex Aiton) R.Br.
PROTEACEAE	*Leucadendron corymbosum* P.J.Bergius
PROTEACEAE	*Leucospermum hypophyllocarpodendron* (L.) Druce subsp. Hypophyllocarpodendron
PROTEACEAE	*Leucospermum tomentosum* (Thunb.) R.Br.

PROTEACEAE	*Protea burchellii* Stapf
PROTEACEAE	*Protea restionifolia* (Salisb. ex Knight) Rycroft
PROTEACEAE	*Protea scolymocephala* (L.) Reichard
PROTEACEAE	*Serruria inconspicua* L.Guthrie & T.M.Salter
PROTEACEAE	*Serruria millefolia* Salisb. ex Knight
RESTIONACEAE	*Calopsis impolita* (Kunth) H.P.Linder
RESTIONACEAE	*Elegia prominens* Pillans
RESTIONACEAE	*Elegia verreauxii* Mast.
RESTIONACEAE	*Ischyrolepis duthieae* (Pillans) H.P.Linder
RESTIONACEAE	*Ischyrolepis paludosa* (Pillans) H.P.Linder
RHAMNACEAE	*Phylica harveyi* (Arn.) Pillans
RUTACEAE	*Diosma dichotoma* P.J.Bergius
THYMELAEACEAE	*Gnidia spicata* (L.f.) Gilg
THYMELAEACEAE	*Lachnaea capitata* (L.) Crantz
THYMELAEACEAE	*Lachnaea grandiflora* (L.f.) Baill.
THYMELAEACEAE	*Lachnaea uniflora* (L.) Crantz

Table 11-2: Red data listed plants for Quarter Degree Square 3418 BA (Phillipi Substation – Mitchell's Plain– Figrove)

Family	Species
Extinct	
ERICACEAE	*Erica pyramidalis* Sol. var. pyramidalis
FABACEAE	*Aspalathus variegata* Eckl. & Zeyh.
Extinct in the wild	
ERICACEAE	*Erica verticillata* P.J.Bergius
Critically endangered	
ASTERACEAE	*Arctotheca forbesiana* (DC.) K.Lewin
ASTERACEAE	*Arctotis angustifolia* L.
ASTERACEAE	*Cadiscus aquaticus* E.Mey. ex DC.
ASTERACEAE	*Cotula filifolia* Thunb.
ERICACEAE	*Erica capillaris* Bartl. var. capillaries
ERICACEAE	*Erica margaritacea* Sol.
FABACEAE	*Psoralea glaucina* Harv.
HYACINTHACEAE	*Lachenalia arbuthnotiae* W.F.Barker
IRIDACEAE	*Gladiolus griseus* Goldblatt & J.C.Manning
IRIDACEAE	*Moraea angulata* Goldblatt
IRIDACEAE	*Watsonia humilis* Mill.
MALVACEAE	*Hermannia procumbens* Cav. subsp. procumbens
MESEMBRYANTHEMACEAE	*Lampranthus tenuifolius* (L.) N.E.Br.

ORCHIDACEAE	*Corycium microglossum* Lindl.
ORCHIDACEAE	*Disa barbata* (L.f.) Sw.
PROTEACEAE	*Diastella proteoides* (L.) Druce
PROTEACEAE	*Leucadendron floridum* R.Br.
PROTEACEAE	*Leucadendron levisanus* (L.) P.J.Bergius
PROTEACEAE	*Leucadendron verticillatum* (Thunb.) Meisn.
PROTEACEAE	*Protea caespitosa* Andrews
PROTEACEAE	*Serruria aemula* Salisb. ex Knight
PROTEACEAE	*Serruria hirsuta* R.Br.
PROTEACEAE	*Serruria trilopha* Salisb. ex Knight
Endangered	
AMARYLLIDACEAE	*Hessea cinnamomea* (L'Hér.) T.Durand & Schinz
ERICACEAE	*Erica ferrea* P.J.Bergius
FABACEAE	*Lebeckia meyeriana* Eckl. & Zeyh.
IRIDACEAE	*Babiana villosula* (J.F.Gmel.) Ker Gawl. ex Steud.
IRIDACEAE	*Gladiolus jonquilliodorus* Eckl. ex G.J.Lewis
IRIDACEAE	*Gladiolus quadrangulus* (D.Delaroche) Barnard
IRIDACEAE	*Romulea eximia* M.P.de Vos
ISOETACEAE	*Isoetes capensis* A.V.Duthie
MESEMBRYANTHEMACEAE	*Dorotheanthus clavatus* (Haw.) Struck
MESEMBRYANTHEMACEAE	*Erepsia dunensis* (Sond.) Klak
MESEMBRYANTHEMACEAE	*Lampranthus debilis* (Haw.) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus explanatus* (L.Bolus) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus scaber* (L.) N.E.Br.
ORCHIDACEAE	*Disa draconis* (L.f.) Sw.
ORCHIDACEAE	*Disa lugens* Bolus var. lugens
ORCHIDACEAE	*Disa venusta* Bolus
PLUMBAGINACEAE	*Limonium depauperatum* (Boiss.) R.A.Dyer
POLYGALACEAE	*Muraltia mitior* (P.J.Bergius) Levyns
PROTEACEAE	*Leucospermum grandiflorum* (Salisb.) R.Br.
PROTEACEAE	*Protea stokoei* E.Phillips
PROTEACEAE	*Serruria cyanoides* (L.) R.Br.
RESTIONACEAE	*Ischyrolepis sabulosa* (Pillans) H.P.Linder
ROSACEAE	*Cliffortia ericifolia* L.f.
ROSACEAE	*Cliffortia hirta* Burm.f.
ROSACEAE	*Cliffortia marginata* Eckl. & Zeyh.
RUTACEAE	*Agathosma corymbosa* (Montin) G.Don
RUTACEAE	*Agathosma glabrata* Bartl. & H.L.Wendl.

RUTACEAE	*Macrostylis villosa* (Thunb.) Sond. subsp. villosa
SANTALACEAE	*Thesium ecklonianum* Sond.
THYMELAEACEAE	*Passerina paludosa* Thoday
Vulnerable	
APIACEAE	*Notobubon capense* (Eckl. & Zeyh.) Magee
APONOGETONACEAE	*Aponogeton angustifolius* Aiton
ASTERACEAE	*Cotula duckittiae* (L.Bolus) K.Bremer & Humphries
ASTERACEAE	*Steirodiscus tagetes* (L.) Schltr.
BORAGINACEAE	*Echiostachys incanus* (Thunb.) Levyns
FABACEAE	*Aspalathus ternata* (Thunb.) Druce
HYPOXIDACEAE	*Spiloxene alba* (Thunb.) Fourc.
IRIDACEAE	*Geissorhiza brehmii* Eckl. ex Klatt
IRIDACEAE	*Geissorhiza tenella* Goldblatt
IRIDACEAE	*Gladiolus meliusculus* (G.J.Lewis) Goldblatt & J.C.Manning
MESEMBRYANTHEMACEAE	*Antimima aristulata* (Sond.) Chess. & Gideon F.Sm.
MESEMBRYANTHEMACEAE	*Lampranthus filicaulis* (Haw.) N.E.Br.
MESEMBRYANTHEMACEAE	*Lampranthus glaucus* (L.) N.E.Br.
ORCHIDACEAE	*Acrolophia bolusii* Rolfe
POLYGALACEAE	*Muraltia macropetala* Harv.
PROTEACEAE	*Diastella divaricata* (P.J.Bergius) Rourke subsp. montana Rourke
PROTEACEAE	*Leucadendron linifolium* (Jacq.) R.Br.
PROTEACEAE	*Leucospermum hypophyllocarpodendron* (L.) Druce subsp. Hypophyllocarpodendron
PROTEACEAE	*Protea scolymocephala* (L.) Reichard
PROTEACEAE	*Protea scorzonerifolia* (Salisb. ex Knight) Rycroft
PROTEACEAE	*Serruria glomerata* (L.) R.Br.
RESTIONACEAE	*Elegia verreauxii* Mast.
RHAMNACEAE	*Phylica harveyi* (Arn.) Pillans
ROSACEAE	*Cliffortia longifolia* (Eckl. & Zeyh.) Weim.
RUTACEAE	*Diosma dichotoma* P.J.Bergius
THYMELAEACEAE	*Gnidia spicata* (L.f.) Gilg
THYMELAEACEAE	*Lachnaea capitata* (L.) Crantz
THYMELAEACEAE	*Lachnaea grandiflora* (L.f.) Baill.
THYMELAEACEAE	*Lachnaea uniflora* (L.) Crantz
THYMELAEACEAE	*Passerina ericoides* L.

Table 11-3: Red data listed plants for Quarter Degree Square 3418 BB (Firgrove – Mitchell's Plain)

Family	Species
Extinct	

Ericaceae	*Erica foliacea* Andrews subsp. fulgens (Klotzsch) E.G.H.Oliv. & I.M.Oliv.
Fabaceae	*Aspalathus complicata* (Benth.) R.Dahlgren
Fabaceae	*Psoralea gueinzii* Harv.
Critically Endangered, Possibly Extict	
Ericaceae	*Erica viscaria* L. subsp. gallorum (L.Bolus) E.G.H.Oliv. & I.M.Oliv.
Critically Endangered	
Asteraceae	*Arctotheca forbesiana* (DC.) K.Lewin
Asteraceae	*Arctotis angustifolia* L.
Asteraceae	*Cotula filifolia* Thunb.
Ericaceae	*Erica cabernetea* E.G.H.Oliv.
Ericaceae	*Erica extrusa* Compton
Ericaceae	*Erica karwyderi* E.G.H.Oliv.
Ericaceae	*Erica latiflora* L.Bolus
Ericaceae	*Erica sociorum* L.Bolus
Ericaceae	*Erica ustulescens* Guthrie & Bolus
Ericaceae	*Erica vallis-aranearum* E.G.H.Oliv.
Fabaceae	*Amphithalea ericifolia* (L.) Eckl. & Zeyh. subsp. erecta Granby
Fabaceae	*Aspalathus dasyantha* Eckl. & Zeyh.
Iridaceae	*Ixia versicolor* G.J.Lewis
Iridaceae	*Moraea angulata* Goldblatt
Iridaceae	*Watsonia amabilis* Goldblatt
Iridaceae	*Watsonia humilis* Mill.
Orchidaceae	*Corycium microglossum* Lindl.
Orchidaceae	*Disa physodes* Sw.
Proteaceae	*Diastella buekii* (Gand.) Rourke
Proteaceae	*Leucadendron levisanus* (L.) P.J.Bergius
Proteaceae	*Mimetes hottentoticus* E.Phillips & Hutch.
Proteaceae	*Mimetes stokoei* E.Phillips & Hutch.
Proteaceae	*Protea caespitosa* Andrews
Proteaceae	*Protea odorata* Thunb.
Proteaceae	*Serruria aemula* Salisb. ex Knight
Proteaceae	*Serruria hirsuta* R.Br.
Proteaceae	*Sorocephalus palustris* Rourke
Rutaceae	*Agathosma orbicularis* (Thunb.) Bartl. & H.L.Wendl.
Scrophulariaceae	*Freylinia longiflora* Benth.
Endagered	
Agapanthaceae	*Agapanthus africanus* (L.) Hoffmanns. subsp. walshii (L.Bolus) Zonneveld & G.D.Duncan
Aizoaceae	*Tetragonia caesia* Adamson

Amaryllidaceae	*Haemanthus pumilio* Jacq.
Asteraceae	*Athanasia capitata* (L.) L.
Asteraceae	*Cullumia squarrosa* (L.) R.Br.
Boraginaceae	*Echiostachys spicatus* (Burm.f.) Levyns
Boraginaceae	*Lobostemon hottentoticus* Levyns
Campanulaceae	*Merciera azurea* Schltr.
Campanulaceae	*Merciera brevifolia* A.DC.
Campanulaceae	*Merciera tetraloba* C.N.Cupido
Cyperaceae	*Ficinia micrantha* C.B.Clarke
Ericaceae	*Erica banksii* Andrews subsp. comptonii (T.M.Salter) E.G.H.Oliv. & I.M.Oliv.
Ericaceae	*Erica filiformis* Salisb. var. filiformis
Ericaceae	*Erica irregularis* Benth.
Fabaceae	*Liparia bonaespei* A.L.Schutte
Fabaceae	*Liparia boucheri* (E.G.H.Oliv. & Fellingham) A.L.Schutte
Fabaceae	*Podalyria argentea* Salisb.
Fabaceae	*Xiphotheca lanceolata* (E.Mey.) Eckl. & Zeyh.
Fabaceae	*Xiphotheca reflexa* (Thunb.) A.L.Schutte & B.-E.van Wyk
Geraniaceae	*Monsonia speciosa* L.
Hyacinthaceae	*Lachenalia bachmannii* Baker
Hyacinthaceae	*Lachenalia liliflora* Jacq.
Hypoxidaceae	*Spiloxene minuta* (L.) Fourc.
Iridaceae	*Aristea biflora* Weim.
Iridaceae	*Aristea lugens* (L.f.) Steud.
Iridaceae	*Babiana villosula* (J.F.Gmel.) Ker Gawl. ex Steud.
Iridaceae	*Geissorhiza setacea* (Thunb.) Ker Gawl.
Iridaceae	*Gladiolus quadrangulus* (D.Delaroche) Barnard
Iridaceae	*Gladiolus vigilans* Barnard
Iridaceae	*Ixia monadelpha* D.Delaroche
Iridaceae	*Klattia stokoei* L.Guthrie
Iridaceae	*Moraea tricolor* Andrews
Iridaceae	*Moraea tulbaghensis* L.Bolus
Isoetaceae	*Isoetes capensis* A.V.Duthie
Mesembryanthemaceae	*Lampranthus dilutus* N.E.Br.
Mesembryanthemaceae	*Lampranthus explanatus* (L.Bolus) N.E.Br.
Mesembryanthemaceae	*Lampranthus leptaleon* (Haw.) N.E.Br.
Mesembryanthemaceae	*Lampranthus scaber* (L.) N.E.Br.
Orchidaceae	*Disa brachyceras* Lindl.
Orchidaceae	*Disa draconis* (L.f.) Sw.

Orchidaceae	*Disa lugens* Bolus var. lugens
Orchidaceae	*Disa tenella* (L.f.) Sw. subsp. Tenella
Oxalidaceae	*Oxalis falcatula* T.M.Salter
Penaeaceae	*Stylapterus barbatus* A.Juss.
Poaceae	*Pentaschistis ecklonii* (Nees) McClean
Poaceae	*Prionanthium pholiuroides* Stapf
Polygalaceae	*Muraltia mitior* (P.J.Bergius) Levyns
Proteaceae	*Leucadendron elimense* E.Phillips subsp. elimense
Proteaceae	*Leucadendron lanigerum* H.Buek ex Meisn. var. lanigerum
Proteaceae	*Leucospermum cordatum* E.Phillips
Proteaceae	*Leucospermum grandiflorum* (Salisb.) R.Br.
Proteaceae	*Mimetes arboreus* Rourke
Proteaceae	*Mimetes argenteus* Salisb. ex Knight
Proteaceae	*Mimetes capitulatus* (L.) R.Br.
Proteaceae	*Protea lacticolor* Salisb.
Proteaceae	*Protea rupicola* Mund ex Meisn.
Proteaceae	*Protea stokoei* E.Phillips
Proteaceae	*Serruria brownii* Meisn.
Proteaceae	*Serruria deluvialis* Rourke
Proteaceae	*Sorocephalus clavigerus* (Salisb. ex Knight) Hutch.
Proteaceae	*Sorocephalus tenuifolius* R.Br.
Proteaceae	*Spatalla prolifera* (Thunb.) Salisb. ex Knight
Proteaceae	*Spatalla propinqua* R.Br.
Restionaceae	*Ischyrolepis pratensis* Esterh.
Restionaceae	*Restio harveyi* Mast.
Rhamnaceae	*Phylica plumosa* L. var. squarrosa (Vent.) Sond.
Rosaceae	*Cliffortia hirta* Burm.f.
Rosaceae	*Cliffortia marginata* Eckl. & Zeyh.
Rutaceae	*Macrostylis villosa* (Thunb.) Sond. subsp. villosa
Vulnerable	
Apiaceae	*Centella caespitosa* Adamson
Apiaceae	*Notobubon capense* (Eckl. & Zeyh.) Magee
Asteraceae	*Dimorphotheca walliana* (Norl.) B.Nord.
Asteraceae	*Othonna ciliata* L.f.
Asteraceae	*Steirodiscus tagetes* (L.) Schltr.
Asteraceae	*Syncarpha lepidopodium* (Bolus) B.Nord.
Asteraceae	*Ursinia caledonica* (E.Phillips) Prassler
Boraginaceae	*Echiostachys incanus* (Thunb.) Levyns

Boraginaceae	*Lobostemon capitatus* (L.) H.Buek
Boraginaceae	*Lobostemon regulareflorus* (Ker Gawl.) M.H.Buys
Bruniaceae	*Staavia brownii* Dummer
Bruniaceae	*Thamnea massoniana* Dummer
Campanulaceae	*Merciera tenuifolia* (L.f.) A.DC.
Colchicaceae	*Wurmbea inusta* (Baker) B.Nord.
Cyperaceae	*Ficinia elatior* Levyns
Cyperaceae	*Ficinia pinguior* C.B.Clarke
Cyperaceae	*Isolepis venustula* Kunth
Ericaceae	*Erica capitata* L.
Ericaceae	*Erica marifolia* Sol.
Ericaceae	*Erica multiflexuosa* E.G.H.Oliv.
Ericaceae	*Erica nana* Salisb.
Ericaceae	*Erica niveniana* E.G.H.Oliv.
Ericaceae	*Erica pilosiflora* E.G.H.Oliv. subsp. pilosiflora
Ericaceae	*Erica purgatoriensis* H.A.Baker
Ericaceae	*Erica squarrosa* Salisb.
Ericaceae	*Erica stokoeanthus* E.G.H.Oliv.
Eriospermaceae	*Eriospermum spirale Schult*.
Fabaceae	*Amphithalea virgata* Eckl. & Zeyh.
Fabaceae	*Aspalathus acanthiloba* R.Dahlgren
Fabaceae	*Aspalathus globulosa* E.Mey.
Fabaceae	*Aspalathus lebeckioides* R.Dahlgren
Fabaceae	*Aspalathus recurva* Benth.
Fabaceae	*Indigofera psoraloides* (L.) L.
Fabaceae	*Liparia rafnioides* A.L.Schutte
Fabaceae	*Liparia splendens* (Burm.f.) Bos & de Wit subsp. splendens
Fabaceae	*Podalyria cordata* R.Br.
Hypoxidaceae	*Spiloxene alba* (Thunb.) Fourc.
Iridaceae	*Aristea cantharophila* Goldblatt & J.C.Manning
Iridaceae	*Geissorhiza lithicola* Goldblatt
Iridaceae	*Gladiolus recurvus* L.
Iridaceae	*Gladiolus trichonemifolius* Ker Gawl.
Iridaceae	*Klattia flava (G*.J.Lewis) Goldblatt
Iridaceae	*Moraea versicolor (*Salisb. ex Klatt) Goldblatt
Iridaceae	*Moraea villosa* (Ker Gawl.) Ker Gawl. subsp. elandsmontana Goldblatt
Iridaceae	*Moraea villosa* (Ker Gawl.) Ker Gawl. subsp. villosa
Malvaceae	*Hermannia rugosa* Adamson

Mesembryanthemaceae	*Antimima aristulata* (Sond.) Chess. & Gideon F.Sm.
Mesembryanthemaceae	*Erepsia patula* (Haw.) Schwantes
Mesembryanthemaceae	*Erepsia ramosa* L.Bolus
Mesembryanthemaceae	*Lampranthus filicaulis* (Haw.) N.E.Br.
Mesembryanthemaceae	*Ruschia geminiflora* (Haw.) Schwantes
Orchidaceae	*Disa atrorubens* Schltr.
Orchidaceae	*Disa longicornu* L.f.
Orchidaceae	*Satyrium foliosum* Sw.
Orchidaceae	*Satyrium striatum* Thunb.
Penaeaceae	*Glischrocolla formosa* (Thunb.) R.Dahlgren
Penaeaceae	*Stylapterus micranthus* R.Dahlgren
Polygalaceae	*Muraltia guthriei* Levyns
Polygalaceae	*Muraltia macropetala* Harv.
Proteaceae	*Diastella divaricata* (P.J.Bergius) Rourke subsp. montana Rourke
Proteaceae	*Leucadendron coniferum* (L.) Meisn.
Proteaceae	*Leucadendron linifolium* (Jacq.) R.Br.
Proteaceae	*Leucadendron platyspermum* R.Br.
Proteaceae	*Leucospermum hypophyllocarpodendron* (L.) Druce subsp. hypophyllocarpodendron
Proteaceae	*Mimetes hirtus* (L.) Salisb. ex Knight
Proteaceae	*Orothamnus zeyheri* Pappe ex Hook.f.
Proteaceae	*Protea aspera* E.Phillips
Proteaceae	*Protea burchellii* Stapf
Proteaceae	*Protea longifolia* Andrews
Proteaceae	*Protea scolymocephala* (L.) Reichard
Proteaceae	*Protea scorzonerifolia* (Salisb. ex Knight) Rycroft
Proteaceae	*Serruria flagellifolia* Salisb. ex Knight
Proteaceae	*Serruria glomerata* (L.) R.Br.
Proteaceae	*Serruria inconspicua* L.Guthrie & T.M.Salter
Proteaceae	*Serruria kraussii* Meisn.
Restionaceae	*Elegia verreauxii* Mast.
Restionaceae	*Hypodiscus alternans* Pillans
Restionaceae	*Ischyrolepis duthieae* (Pillans) H.P.Linder
Restionaceae	*Restio nuwebergensis* Esterh.
Restionaceae	*Staberoha multispicula* Pillans
Restionaceae	*Thamnochortus dumosus* Mast.
Rhamnaceae	*Phylica ampliata* Pillans
Rhamnaceae	*Phylica strigulosa* Sond.
Rosaceae	*Cliffortia phillipsii* Weim.

Rosaceae	*Cliffortia recurvata* (Weim.) C.M.Whitehouse
Rosaceae	*Cliffortia tenuis* Weim.
Rosaceae	*Cliffortia viridis* Weim.
Rutaceae	*Acmadenia nivea* I.Williams
Rutaceae	*Adenandra multiflora* Strid
Rutaceae	*Agathosma pulchella* (L.) Link
Rutaceae	*Diosma demissa* I.Williams
Rutaceae	*Diosma dichotoma* P.J.Bergius
Rutaceae	*Euchaetis schlechteri* Schinz
Thymelaeaceae	*Gnidia spicata* (L.f.) Gilg
Thymelaeaceae	*Lachnaea grandiflora* (L.f.) Baill.