

Table 5.51.2c Protected Invertebrate Species Likely to Occur within some of the Study Sites

Common Name	Scientific Name	Status	Occurrence within Study Area (Reference)
Creeping Scorpions	<i>Opistacanthus asper / validus</i>	PS	Likely (Leeming, 2003)
Burrowing Scorpions	<i>Opisthopthalmus glabrifrons</i>	PS	Likely (Leeming, 2003)
Horned Baboon Spiders	<i>Ceratogyrus</i> spp.	PS	Likely (Finer, 1995)
Common Baboon Spiders	<i>Harpactra</i> spp.	PS	Likely (Finer, 1995)
Golden Baboon Spiders	<i>Previously Pterinochilus</i> spp.	PS	Likely (Finer, 1995)
Coega Copper Butterfly	<i>Aloeides clarki</i>	PS	Likely Woodhall (2005)
Winehead Blue	<i>Lepidochrysops hutchins</i>	Rare (PS)	Likely Woodhall (2005)

None of the species listed in Table 5.52.2c were recorded at any of the sites. However, there was possible evidence (scorpion and spider burrows) indicating the presence of Burrowing Scorpions and Baboon Spiders at nine of the sites. Scorpion burrows and suitable habitat were located at Blinkhof, Eagle's Crag, Saltaire, Marlow Borrow Pit, the possible borrow pit at Conway, and Emil. Potential Baboon Spider burrows were located at Kommadagga, and Cookhouse borrow pit 1 and 2.

MEDICINAL PLANT SPECIES

5.53

It is estimated that the Southern African subcontinent holds approximately 24 300 plant taxa (Arnold & De Wet, 1993), an estimated 10 % of the world's flora. In addition, South Africa is home to a diversity of cultural groups all of which utilise plant species for some purpose.

A number of these species are highly prized for their traditional healing properties, especially for "muthi" (they have ethnomedicinal value). It is estimated that more than 28 million people in South Africa consume about 19 500 tonnes of plant material per annum (Mander, 1998). Although most of these plant species are regionally widespread and abundant, some of the more sought-after plant resources are currently declining and should be envisaged as priority conservation entities. Table 5.53 lists those species considered to be of economical or cultural value (according to Van Wyk *et al.*, 2002).

Table 5.53 A list of important medicinal taxa observed from the study area based on Van Wyk *et al.* (1997).

Site	Medicinal Taxa
Widespread, observed from many sites	<i>Azadirachta indica</i>
Widespread, observed from many sites	<i>Aloe ferox</i>
16.2 Knutsford Borrow Material	<i>Boophaea disticha</i>
1.1 Barkley Bridge Borrow Pit	<i>Carpobrotus edulis</i>
Widespread, observed from many sites (primarily from Eastern Cape localities)	<i>Cotyledon orbiculata</i>
31 Mambuthwane loops	<i>Elephantorrhiza elephantiina</i>
1.1 Barkley Bridge Borrow Pit	<i>Euclea natalensis</i>
9. Kommadagga	<i>Hypoxis cf. iridifolia</i>
5. Eagles Crag	

NATURAL SCIENTIFIC SERVICES

Common Name	Scientific Name	De Aar to Hottentot	De Aar to the Port of Ngqura	Conservation
Cape Mountain Lizard	<i>Tropidurus gularis</i>	Does not occur	Occurs in southern extremes	Endemic to South Africa; restricted, patchy and rare
Common Mountain Lizard	<i>Tropidurus montana</i>	Does not occur	Occurs in southern extremes	Endemic to South Africa; restricted, patchy and rare
Namaqua Plated Lizard	<i>Gerrhonotus typicus</i>	Does not occur	Occurs in southern parts	South African endemic; restricted and rare
FitzSimons' Long-tailed Seps	<i>Tetraneura africana</i>	Does not occur	Occurs in southern parts	South African endemic; restricted and rare
Short-legged Seps	<i>Tetraneura seps</i>	Does not occur	Occurs in southern extremes	South African endemic; restricted and rare
Common Long-tailed Seps	<i>Tetraneura tetraneura</i>	Does not occur	Occurs in southern parts	South African endemic; restricted and rare
Cape Grass Lizard	<i>Chamaesura nigritina</i>	Does not occur	Occurs in southern parts	Restricted and patchy, but may be locally common
Elandsberg Dwarf Chameleon	<i>Bradypodion hildebrandtii</i>	Does not occur	Occurs in southern parts	South African Endemic; restricted distribution; IUCN listed
Peringuey's Coastal Leaf-toed Gecko	<i>Cryptactites peringueyi</i>	Does not occur	Occurs from Chelsea Point to Kromme estuary	South African endemic; very restricted range; very rare
Essex's Dwarf Leaf-toed Gecko	<i>Goggia essexi</i>	Does not occur	Occurs in the southern extremes	South African endemic; restricted range
Giant Bullfrog	<i>Ptychocheilus mdispersus</i>	Occurs in limited QDS's	Occurs in limited QDS's	Near Threatened

No Red Data/Rare / Endemic / Restricted herpetofaunal species were recorded at any of the sites. However, Barkly Bridge, Marlow and Conway borrow pits all had suitable habitat for a few of the reptiles listed in Table 5.52.2b.

Macro invertebrates

At a National level, the National Environmental Management: Biodiversity Act, 2004 (Act no. 10, 2004), Table 5.51c lists protected invertebrate species that have the potential to occur within some of the relevant study sites.

NATURAL SCIENTIFIC SERVICES

Site	Medicinal Taxa
1.1 Bartley Bridge Borrow Pit	<i>Olea carthagenica</i> subsp. <i>officinalis</i>
3. Coenry	<i>Pharbitis auriculata</i>
5. Eagles Crag	
6. Toonah	
32. Postmasburg	<i>Taraxacum officinale</i>
34. Emil	

5.54

DECLARED WEEDS & INVADER PLANTS

Invaders and weed species are plants that invade natural or semi-natural habitats; especially areas disturbed by humans and are commonly known as environmental weeds. Weeds that invade severely disturbed areas are known as ruderal and agrestal weeds. Most of these weeds are annuals colonising waste sites and cultivated fields. These weeds only persist on recently disturbed areas and seldom invade established areas (Henderson, 2001).

Declared weeds and invaders have the tendency to dominate or replace the canopy or herbaceous layer of natural ecosystems, thereby transforming the structure, composition and function of natural ecosystems.

The amended Regulations (Regulation 15) of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) identify three categories of problem plants:

- Category 1 plants may not occur on any land other than a biological control reserve and must be controlled or eradicated. Therefore, no person shall establish, plant, maintain, propagate or sell/import any category 1 plant species.
- Category 2 plants are plants with commercial application and may only be cultivated in demarcated areas (such as biological control reserves) otherwise they must be controlled.
- Category 3 plants are ornamentally used plants and may no longer be planted, except those species already in existence at the time of the commencement of the regulations (30 March 2001), unless they occur within 30 m of a 1:50 year floodline and must be prevented from spreading.

Most of these species were recorded from past-perturbed systems showing localised, albeit patchy invasions along the railway servitude. Table 5.54 provides a list of declared weed and invasive plant species recorded during the current study.

Table 5.54

A list of weed and invader taxa recorded from the railway servitude.

Species	Vernacular Name	Type	Control Measure	Category
<i>Agave americana</i>	American agave	Invader	Eradicate	2
<i>Argemone odipyleuca</i>	Mexican poppy	Weed	Difficult to eradicate	1
<i>Atriplex hindsii</i>	Australian saltbush	Invader	Control	3
<i>Cirsium vulgare</i>	Scotch thistle	Weed	Difficult to eradicate	1
<i>Eucalyptus camaldulensis</i>	Red river gum	Invader	Control	2
<i>Nicotiana glauca</i>	Wild tobacco	Weed	Eradicate	1
<i>Opuntia ficus-indica</i>	Sweet Prickly-pear	Weed	Eradicate	1
<i>Opuntia inamifera</i>	Creeching prickly pear	Weed	Eradicate	1
<i>Opuntia tuberculata</i>	Inbricate prickly pear	Weed	Eradicate	1
<i>Parisetium setaceum</i>	Fountain grass	Weed	Eradicate	1
<i>Pinus spp.</i>	Pines	Invader	Control	2
<i>Prosopis glandulosa</i>	Mesquite	Invader	Eradicate	2

6.1

EXISTING IMPACTS

The majority of the areas where proposed construction activities will take place have already been disturbed, due to the existing railway line stretching the entire length of the greater project area (all study sites between the Port of Ngqura and Hlotsele). Areas where proposed construction activities will take place include the railway reserve, old and current railway stations, railway yards and associated infrastructure, and borrow pits. There were, however, a number of study sites that were located in areas where no disturbance from the existing railway line occurred. However, other disturbances (such as livestock grazing) occur throughout a large portion of these sites. General existing ecological issues, therefore include:

- Inadequate or no rehabilitation, which has resulted in exposed soil (bare ground) i.e. existing borrow pits;
 - Stands of alien invader and weedy species within and adjacent to the majority of the proposed sites, therefore there is a loss in biodiversity in these areas;
 - Introduced faunal species, i.e. feral and/or domesticated cats and domesticated dogs;
 - Livestock grazing within and adjacent to the majority of the proposed sites;
 - Habitat fragmentation due to the existing railway line and access roads for some of the proposed sites;
 - Mismanagement, which has led to erosion both onsite and within adjacent areas for some of the proposed sites (e.g. 23, Carlton); and
 - A large portion of the proposed study areas have existing adjacent disturbances in the form of agricultural activities (cultivated lands, grazing livestock, etc.) and dwellings (both rural and urban).
- The above existing threats to biodiversity are the result of anthropogenic disturbances (e.g. human settlement, poverty and land mismanagement). Secondary impacts that result from the above include:
- Loss of habitat;
 - Loss and disturbance of species;
 - Loss of species of conservation concern; and
 - Increase in alien and invasive species, i.e. therefore a change in habitat structure.

However, with these existing threats to biodiversity natural ecosystems are still able to function, therefore, all future impacts need to be assessed to determine their significance. Future impacts are discussed and evaluated in the sections below.

Summary	Construction	Operation
Project Aspect/ activity	The development, especially the laydown and construction camps, will result in the clearing of a proportion of vegetation to accommodate the necessary infrastructure.	Increase in erosion potential, alien invasive and weedy species flourishing, and an increase in railway traffic.
Impact Type	Negative / Direct	Negative / Direct & Indirect
Stakeholders/ Receptors Affected	Vegetation in the study sites: L1; 14.1; 18.1; 2; 5; 7; 10.1; 10.2; 12; 16.1; 22; 23; 27.1.	Vegetation at all the study sites.

Construction Phase Impacts

The development, especially the laydown and construction camps, will result in the clearing of a proportion of vegetation to accommodate the necessary infrastructure during the construction process. These will entail the establishment of temporary offices, stores, shelters, mess toilets and ablution facilities. Part of the construction phase will also include the relocation of fence structures and existing electrical and signalling equipment.

In addition, a number of new and existing borrow pits will be worked to gain access to fill material. Herewith it is anticipated that clearing of vegetation will take place to obtain underlying fill material.

The indirect effects of vegetation clearing will increase the erosion potential of the area and surface water runoff. During dry periods, increased dust will have a negative impact on the surrounding vegetation. Secondly, the contractors and their staff could remove some of the plant taxa (e.g. for medicinal use) or fell woody species for use of firewood, and potential contamination soils and groundwater with waste and hydrocarbons.

Some of the loop sites (22, Flonker and 23, Carlton), although classified with medium sensitivities, border on "climax" vegetation units (e.g. Tarkastad Montane Shrubland and Besemkaroo Koppies Shrubland) or areas with steep gradients. Therefore, an overspill of construction activities into these areas could increase possible impacts on the vegetation composition and function.

Box 6.2a

Construction Impact: Loss of Vegetation Communities

A. Sites with High Ecological Importance: 1.1 Barkley Bridge Borrow Pit, 14.1 Marlow Borrow Pit, 18.1 Conway possible Borrow Pit

Nature: Construction activities would result in a negative direct impact on the vegetation of the study site

Impact Magnitude: High

- Extent: On-site
- Duration: Permanent
- Intensity: Medium

Likelihood – High
Impact significance (Pre-mitigation) - High
Degree of Confidence: High

B. Sites with *Medium Ecological Importance*: 2, Addo, 5, Eagles Crag, 7, Blinkhof, 10, 1, Cookhouse Borrow Pit, 10, 2, Cookhouse Borrow Pit, 12, Mortimer, 16, 1, Knutstorf Borrow Pit, 22, Flonker, 23, Carlton, 27, 1, Hannover Road Borrow Pit

Nature: Construction activities would result in a **negative direct** impact on the vegetation of the study site

Impact Magnitude: Medium

- Extent: On-site
- Duration: Permanent
- Intensity: Medium

Likelihood – High
Impact significance (Pre-mitigation) - Medium
Degree of Confidence: High

Operation Phase Impacts

During the operational phase there is the potential for an increase in erosion if rehabilitation measures are not implemented correctly. Alien invasive and weedy species could also flourish if an alien invasive removal programme is not implemented. In addition, with the development of the loop extensions there will be an increase in railway traffic, which is likely to result in an increase in manganese/iron ore dust pollution.

Box 6.2b

Operational Impacts: Loss of Vegetation Communities

All sites

Nature: Operational activities would result in a **negative direct/indirect** impact on the vegetation of the study area

Impact Magnitude: Medium

- Extent: Local
- Duration: Permanent
- Intensity: Medium

Likelihood – High
Impact significance (Pre-mitigation) - Medium
Degree of Confidence: High

Mitigation

The objective of mitigation is to minimise the impacts on the vegetation communities and limit the amount of clearing required at each site.

Specific measures include:

- Footprint areas of the proposed laydown and construction camps should be located on existing disturbed areas as opposed to “greenfield” areas. However, all areas identified must be scanned for Red Listed, protected and important medicinal plant species prior to the construction phase. It is recommended that these plants be

identified and marked, and if threatened by destruction be removed (with the relevant permits) and temporarily placed within an onsite nursery for re-establishment after construction.

- Areas where new borrow pits are proposed, if they are to be used, then potentially a small nursery at each site to collect and store seeds would be an option;
- The extent of the construction site should be demarcated on the site layout plans, and no construction personnel or vehicles may leave the demarcated area except those authorised to do so. Those areas surrounding the construction site that are not part of the demarcated development area should be considered as “no-go” areas for employees, machinery or even visitors;
- The extent of the construction camp should be fenced-off;
- Checks must be carried out at regular intervals to identify areas where erosion is occurring. Appropriate remedial action, including the rehabilitation of the eroded areas, and where necessary, the relocation of the paths causing the erosion, are to be undertaken;
- Vehicles transporting materials to and from a designated offloading area must be covered with tarpaulins to reduce dust generation and must be restricted to designated roads;
- Harvesting of firewood should be prohibited. The immediate surrounding area should be regularly monitored for evidence of wood collection. Fines could be implemented to alleviate firewood collection; Stockpiles susceptible to wind erosion are to be covered during windy periods;
- Excavated and stockpiled soil material are to be stored and bermed on the higher lying areas of the footprint area and not in any storm-water run-off channels or any other areas where it is likely to cause erosion, or where water would naturally accumulate;
- Measures must be put in place to ensure that the energy of storm-water that is to be released into any watercourse is dissipated;
- A alien invasive and weedy species removal programme should be implemented during the construction and operational phase;
- A *rehabilitation programme* should be implemented once construction activities ceased, general rehabilitation measures are highlighted in Section 7, and
- Both labour and visitors should be educated on the regulations and good practice regarding general housekeeping and the ecological process, biodiversity value and function of the area (in the form of a pamphlet or induction process).

Residual Impact

The implementation of the above mitigation measures would reduce the construction impacts from high to moderate significance (for sites with a high ecological importance) and moderate to minor significance (for sites with a medium ecological importance). The proposed mitigation measures would alleviate the operational impacts from moderate to minor.

Likelihood - High
 Impact significance (Pre-mitigation) - Medium
 Degree of Confidence: High

Operation Phase Impacts

Railway traffic is likely to increase during the operational phase, which could increase noise disturbance. An increase in manganese/ iron ore dust pollution could also potential impact on faunal activity.

Operational Impacts: Loss of Faunal Diversity & Richness

All sites but particularly sites with *High Faunal Activity*: 1.1 Barkley Bridge Borrow Pit, 5. Eagles Crag, 7. Blinshof, 8. Saltaire, 14.1 Marlow Borrow Pit, 16.1 Knutsford Borrow Pit, 18.1 Conway possible Borrow Pit, 25.1 Borrow Pit near Wildfontein, 25.2 Borrow Pit near Wildfontein, 27.1 Hanover Road Borrow Pit.

Nature: Operational activities would result in a **negative direct/indirect** impact on faunal diversity and richness at the study sites

- Impact Magnitude:** Low
- Extent: Local
 - Duration: Long-term
 - Intensity: Low

Likelihood - Medium
 Impact significance (Pre-mitigation) - Low
 Degree of Confidence: High

Mitigation

The objective of mitigation is to minimise the impacts on faunal diversity and species richness within and adjacent to the study sites.

Specific measures include:

- The construction camps and laydown areas should be located on existing disturbed areas. These areas should be scanned for Red Data or Protected Species that are unlikely to move off the site during or prior to construction activities commencing. These species, likely invertebrate species (Burrowing Scorpions - *Opisthophthalmus* spp. and Baboon Spiders - likely Family Theraphosidae), should be collected and placed in a museum;
- Burrowing species like the Trapdoor Spider (likely Family Ctenizidae) (burrow located at 5. Eagles Crag) should also be collected and placed in a museum as they will likely be destroyed during the construction phase;
- The extent of the construction site should be demarcated on the site layout plans, and no construction personnel or vehicles may leave the demarcated area except those authorised to do so. Those areas surrounding the construction site that are not part of the demarcated development area should be considered as "no-go" areas for employees, machinery or even visitors;

6.3

LOSS OF FAUNAL DIVERSITY & RICHNESS

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Construction: Sites of high ecological importance	High	Moderate
Construction: Sites of medium ecological importance	Moderate	Minor
Operation	Moderate	Minor

Summary	Construction	Operation
Project Aspect/ activity	The clearing of vegetation for construction activities will have an impact on faunal habitats.	During the operation of construction camps impacts could include hunting, destruction of burrows, littering or polluting
Impact Type	Negative / Direct & indirect	Negative / Direct & indirect
Stakeholders/ Receptors Affected	Faunal habitat at study sites: 1.1; 5; 7; 8; 14.1; 16.1; 18.1; 25.1; 25.2; 27.1	All sites

Construction Phase Impacts

The clearing of vegetation for construction activities (i.e. labour camps, laydown areas, new access roads, removal of fences, etc) will have an impact on faunal habitat at all sites. However, the loss of faunal habitat is likely to be significantly greater at sites with high faunal activity. Through the loss of faunal habitat there will likely to be an indirect loss in faunal diversity and species richness.

Additional activities that are likely to result in the loss of faunal diversity and species richness include:

- Hunting;
- Destruction of burrows and nesting sites;
- Littering or polluting;
- Driving at night, which can increase the likelihood of "road kills"
- Dust generation resulting from construction activities; and
- Noise disturbance.

Construction Impact: Loss of Faunal Diversity & Richness

Sites with *High Faunal Activity*: 1.1 Barkley Bridge Borrow Pit, 5. Eagles Crag, 7. Blinshof, 8. Saltaire, 14.1 Marlow Borrow Pit, 16.1 Knutsford Borrow Pit, 18.1 Conway possible Borrow Pit, 25.1 Borrow Pit near Wildfontein, 25.2 Borrow Pit near Wildfontein, 27.1 Hanover Road Borrow Pit.

Nature: Construction activities would result in a **negative direct/indirect** impact on faunal diversity and richness at the study sites

- Impact Magnitude:** Medium
- Extent: Local
 - Duration: Permanent
 - Intensity: Medium

- The extent of the construction camp should be fenced-off;
- Vehicles transporting materials to and from a designated offloading area must be covered with tarpaulins to reduce dust generation and must be restricted to designated roads;
- Construction vehicles should be restricted to driving during daylight hours only. This will reduce the likelihood of "road kills";
- Hunting or the unnecessary destruction of burrow systems or nesting sites should be prohibited. Littering or polluting onsite and within the adjacent areas should also be prohibited. Suitable facilities should be provided onsite to avoid littering or polluting.
- Stockpiles susceptible to wind erosion are to be covered during windy periods;
- A *rehabilitation programme* should be implemented once construction activities have ceased (refer to Section 7), and
- Both labour and visitors should be educated on the regulations and good practice regarding general housekeeping and the ecological process, biodiversity value and function of the area (in the form of a pamphlet or induction process).

Residual Impact

The implementation of the above mitigation measures would reduce the construction impacts from moderate to minor significance (for sites with high faunal activity). The proposed mitigation measures would alleviate the operational impacts from minor to negligible.

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Construction: Sites of high faunal activity	Moderate	Minor
Operation	Minor	Negligible

LOSS OF CONSERVATION IMPORTANT PLANT SPECIES

Summary	Construction	Operation
Project Aspect/ activity	A number of protected, endemic and "near-threatened" plant species were identified from various sites	Similar to construction phase impacts.
Impact Type	Negative / Direct	Negative / Direct
Stakeholders/ Receptors Affected	Vegetation in the study areas: 1.1; 10.1; 10.2; 5; 16.1; 18.1; 27.1.	Vegetation in the study areas: 1.1; 10.1; 10.2; 5; 16.1; 18.1; 27.1.

Construction & Operational Phase Impacts

A number of protected, endemic and "near-threatened" plant species were identified from sites along the freight line (especially from the Barkley Bridge Borrow Pit and the Cookhouse Borrow Pits). Some of the loop sites contain many succulent members of the family Mesembryanthemaceae. Although not "threatened" by any means, these taxa are all considered to be protected in the

Box 6.4

Eastern and Northern Cape Province. It is therefore recommended that if likely to become lost, a representative sample should be rescued prior to the construction phase. In addition, many of these taxa show creeping or trailing habits, making them critical important items to be used during erosion control and rehabilitation.

During the construction phase, vegetation will be cleared and it is possible that sensitive species may become lost. In addition, the increased number of anthropogenic activities associated with the construction phase could lead to uncontrolled and unsustainable harvesting of sensitive/ medicinal plant species (by both the labour force and residents).

Construction/Operation Impact: Loss of conservation important plant species

- A. Important sites containing Red Data and endemic taxa: 1.1 Barkley Bridge Borrow Pit, 10.1 Cookhouse Borrow Pit, 10.2 Cookhouse Borrow Pit
- Nature Construction/Operational activities would result in a negative direct impact on the vegetation of the study area
- Impact Magnitude: High
- Extent: On-site
 - Duration: Short-term
 - Intensity: High
- Likelihood – High
- Impact significance (Pre-mitigation) – High
- Degree of Confidence: High

- B. Sites with high densities of protected plant species: 5. Eagles Crag, 16.1 Knutsford Borrow Pit, 18.1 Conway possible Borrow Pit and 27.1 Hanover Road Borrow Pit
- Nature Construction/Operational activities would result in a negative direct impact on the vegetation of the study area
- Impact Magnitude: Medium
- Extent: On-site
 - Duration: Short-term
 - Intensity: High
- Likelihood – High
- Impact significance (Pre-mitigation) – Medium
- Degree of Confidence: High

Mitigation

The objective of mitigation is to minimise the impacts on the vegetation and the loss of conservation important species.

Specific measures include:

- For footprint areas containing Red Data plants (especially *Rhombophyllum rhomboidatum*, *Euphorbia melgominis* and *Cynantlus smithii*), protected plants and economic important medicinal plants, it is recommended that these plants be identified and marked prior to

any construction activity. These individuals should, where possible, be left *in situ*, but if threatened by destruction, be removed (with the relevant permits obtained through the provincial authorities) and temporarily placed within an onsite nursery for re-establishment after construction;

- Many of the geophyte taxa only flower during a short period of time, mainly in spring, when they appear to be conspicuous. It is therefore recommended that these individuals (e.g. *Cyrtanthus smithiae*) be searched (marked/removed) for during the optimal flowering period (preferably October) prior to any construction activity;
- A representative sample of members pertaining to the Mesembryanthemaceae should be rescued. These individuals should be stored at an onsite nursery for re-establishment after construction;
- A *management plan* must be compiled to ensure persistence of transferred/rescued individuals/populations. Such a management plan should entail the following:
 - o To ensure the persistence of the individuals or populations;
 - o To ensure proper establishment of *ex situ* individuals, which include a monitoring programme for at least two years after re-establishment; and
 - o The implementation of the management plan is the sole responsibility of the applicant;
- Re-establishment of taxa should not exceed a 10 km radius from their original locality (the locality it was found growing prior to removal). This will prohibit unwanted mixing of genetic material;
- Both labour and visitors should be educated on the regulations and good practice regarding general housekeeping and the ecological process, biodiversity value and function of the area; and
- A qualified local botanist should be appointed to supervise the identification, marking and transferring of plant taxa.

Residual Impact

The implementation of the above mitigation measures would reduce the construction impacts from high to moderate significance (for sites with endemic and “near-threatened” taxa) and moderate to low significance for sites with protected taxa.

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Construction/Operation: Sites with endemic and “near-threatened” taxa	High	Moderate
Construction/Operation: Sites with high densities of protected taxa	Moderate	Minor

6.5

LOSS OF PROTECTED INVERTEBRATE SPECIES

Summary	Construction	Operation
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Summary	Construction	Operation
Project Aspect/ activity	During the construction phase it is likely that protected invertebrate species could be destroyed.	N/A
Impact Type	Negative / Direct	
Stakeholders/ Receptors Affected	Protected invertebrate species at the study areas: 5; 7; 8; 9; 10; 1; 10.2; 14.1; 18.1; 34.	

Construction Phase Impacts

During the construction phase it is likely that protected invertebrate species (Burrowing Scorpions – *Optiophilinus spp.* and Baboon Spiders likely Family – Theraphosidae) could be destroyed. Evidence of their presence or suitable habitat was identified at a number of the loop sites, borrow pit sites and the site for the new substation (Emil). It is therefore recommended that these sites (listed below) be surveyed prior to the commencement of the construction phase by an entomologist and specimens be donated to a local museum to further scientific research on these species.

Box 6.5

Construction Impact: Loss of Protected Invertebrate Species

Sites with evidence of Protected Invertebrate Species presence: 5. Eagles Crag, 7. Blinkhof, 8. Sallaire, 9. Kommadagga, 10.1 Cookhouse Borrow Pit, 10.2 Cookhouse Borrow Pit, 14.1 Manlow Borrow Pit, 18.1 Conway possible Borrow Pit, 34. Emil Substation.

Nature: Construction activities would result in a negative direct impact on protected invertebrate species in the study area

Impact Magnitude: Medium

Extent: On-site

Duration: Short-term

Intensity: Low

Likelihood - High

Impact significance (Pre-mitigation) - Medium

Degree of Confidence: High

Operational Phase Impacts

Impacts are only expected during the construction phase.

Mitigation

The objective of mitigation is to minimise the impacts on protected invertebrate species.

Specific measures include:

- The extent of the construction sites should be demarcated on the site layout plans, and no construction personnel or vehicles should leave the demarcated area except those authorised to do so. Those areas surrounding the construction site that are not part of the demarcated

- development area should be considered as “no-go” areas for employees, machinery or even visitors;
- The extent of the construction camps should be fenced-off;
- Sites with evidence of protected invertebrate species presence should be surveyed by an entomologist prior to the construction phase. Any protected invertebrate species located onsite should be donated to a museum as specimens for scientific research purposes.

Residual Impact

The implementation of the above mitigation measures would reduce the construction impacts from moderate to negligible significance.

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Construction: Sites with evidence of protected invertebrate species	Moderate	Negligible

6.6

LOSS OF RIPARIAN VEGETATION AND DISTURBANCE TO THE BOESMANS RIVER

Summary	Construction	Operation
Project Aspect/ activity	The proposed construction of a new passing loop at Tootabhi lies adjacent to the riparian vegetation of the critically endangered Boesmans River.	Similar to construction phase.
Impact Type	Negative / Direct	Negative / Direct
Stakeholders/ Receptors Affected	6, Tootabhi	6, Tootabhi

Construction & Operational Phase Impacts

The proposed construction of a new passing loop at Tootabhi lies adjacent to the riparian vegetation of the Critically Endangered Boesmans River. These habitats support a variety of flora and faunal species, but more importantly the functioning on this system is of major concern, considering it's current ecological status (Critically Endangered). Development encroaching on the riparian vegetation will have a direct negative impact (i.e. water pollution and an increase in siltation) on the ecology of the river system. In addition, any development within the riparian vegetation will require a Water Use License according to Section 21 of the National Water Act (Act No. 36 of 1998).

Box 6.6

Construction / Operational Impact: Loss of Riparian Vegetation and Disturbance to the Boesmans River

Site 6, Tootabhi

Nature: Construction / Operational activities would result in a negative direct impact on riparian vegetation and the Boesmans River

Impact Magnitude: High

- Extent: On-site
- Duration: Short-term

- Intensity: High
- Likelihood: High
- Impact significance (Pre-mitigation) - High
- Degree of Confidence: High

Mitigation

The objective of mitigation is to minimise the impacts on the riparian vegetation and prevent pollution/ degradation of the Boesmans River.

Specific measures include:

- All construction and operational activities at the Tootabhi site should be restricted to the railway reserve, more specifically to the western side of the railway reserve and vacant areas to the west of the reserve;
- The eastern side of the railway reserve (adjacent to the riparian vegetation) should be fenced;
- The extent of the construction camp should be fenced-off;
- The riparian vegetation and the Boesmans River should be considered as “no-go” areas;
- Both labour and visitors should be educated on the regulations and good practice regarding general housekeeping and the ecological process, biodiversity value and function of the area; and
- Should the development impact on the riparian vegetation or the Boesmans River then an application for a Water Use License according to Section 21 of the National Water Act (Act No. 36 of 1998) should be applied for.

Residual Impact

The implementation of the above mitigation measures would reduce the construction / operational impacts from high to moderate significance.

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Construction/ Operational: Impact on the riparian vegetation and the Boesmans River	High	Moderate

LOSS OF DECLARED INVADER AND WEED SPECIES

Summary	Construction	Operation
Project Aspect/ activity	During the construction phase it is likely that the populations/ stands of exotic invader and weed species would become lost during the clearing of vegetation.	A number of localised patches of invader and weed taxa occur along the railway line servitude.
Impact Type	Positive / Direct	Positive / Direct
Stakeholders/ Receptors Affected	All sites	All sites

Construction Phase Impacts

During the construction phase it is likely that the populations/stands of alien invader and weedy species would become lost during the clearing of vegetation. This impact is considered to be positive.

Box 6.7

Construction Impact: Loss of Declared Invader and Weed Species

Nature: Construction activities would result in a positive direct impact on the vegetation of the study area

Impact Magnitude: Low

- Extent: On-site
- Duration: Temporary
- Intensity: Low

Likelihood - Medium

Impact significance (Pre-mitigation) - Low

Degree of Confidence: High

No impacts during the operational phase.

Mitigation

The objective of mitigation is to increase floral/faunal diversity through the removal of alien vegetation.

Specific measures include:

- All declared invader and weed species should be eradicated as indicated in Table 5.54. The railway servitude should regularly (biannually) be inspected for re-established invader species and the follow-up removal thereof (Refer to Section 6.8); and
- Cleared areas should be succeeded by proper soil stabilisation procedures and rehabilitation to prevent soil erosion.

Residual Impact

The implementation of the above mitigation measures would reduce the construction impacts from minor to negligible significance. The proposed mitigation measures would alleviate the operational impacts from minor to negligible.

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Construction	Minor	Negligible

6.8

ESTABLISHMENT OF ALIEN INVADER AND WEED TAXA

Summary	Construction	Operation
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Summary	Construction	Operation
Project Aspect/ activity	The clearing of vegetation during the construction phase will leave bare patches of soil enhancing the colonisation by ruderal weeds or declared alien species.	Similar to construction phase.
Impact Type	Negative / Direct	Negative / Direct
Stakeholders/ Receptors Affected	All sites	All sites

Construction Phase Impacts

The clearing of vegetation during the construction phase will leave bare patches of soil (e.g. the construction camps), thereby enhancing the colonisation by ruderal weeds (mostly annual weeds) or declared alien species that will prohibit the natural succession during rehabilitation procedures.

Such soil disturbances (as well as the inappropriate handling of topsoil) could enhance the spread of invader taxa to other systems or vegetation units of high sensitivities. Furthermore, the anticipated increase in freight volume could also facilitate the spread of unwanted plant taxa to and from the study area.

Also, increased disturbances along drainage lines (e.g. 12. Mortimer) could also contribute towards the spread of alien invader species. It is also possible that bush encroacher species may become dominant in the immediate surrounding areas (e.g. *Acacia natalitia* & *A. karroo*). All these species will impact on the natural dynamics of the system at hand, which in turn will also affect faunal habitats and diversity.

Box 6.8

Construction/Operation Impact: Establishment of Alien Invader and Weed Taxa

Nature: Construction/Operational activities would result in a negative direct impact on the vegetation and fauna of the study area

Impact Magnitude: Low

- Extent: Regional
- Duration: Long-term
- Intensity: Low

Likelihood - Medium

Impact significance (Pre-mitigation) - Medium

Degree of Confidence: High

Operation Phase Impacts

Similar to construction phase, however in addition, no rehabilitation of borrow pits and poor monitoring measures are likely to lead to an increase in alien species.

Mitigation

The objective of mitigation is to minimise the impacts on vegetation communities, faunal habitats and species diversity.

Specific measures include:

- All declared invader and weed species should be eradicated as indicated in Table 5.54. The railway servitude should regularly (biannually) be inspected for the re-establishment of invader species and the follow-up removal thereof;
- Cleared areas should be succeeded by proper soil stabilisation procedures and rehabilitation to prevent soil erosion; and
- Monitoring programmes need to be implemented.

Residual Impact

The implementation of the above mitigation measures would reduce the construction impacts from moderate to minor significance. The proposed mitigation measures would alleviate the operational impacts from moderate to low.

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Construction	Moderate	Minor
Operation	Moderate	Minor

6.9

POTENTIAL MANGANESE/IRON ORE DUST POLLUTION

Operation Phase Impacts

The potential for manganese/iron ore dust pollution is essentially an operational impact. In the context of this project, manganese/iron ore dust pollution cannot be ignored since the anticipated increase in freight traffic could potentially increase the risk of pollution. In general, dust is a global problem and it impacts on all levels of both the abiotic and biotic environment.

However, various methods of dust suppression have been proposed and in most cases resolved to rather short-term (and sometimes costly) solutions such as wetting the ore with water. In fact little information is available on the effect of dust pollution on vegetation specifically that of manganese dust pollution. Possible negative effects of dust on plant physiology are likely to be reflected in a significant reduction of photosynthesis and through high manganese/iron concentrations in the soil, thereby altering plant metabolism.

However, Low and Pond (2000) have conducted long-term monitoring on the effects of iron ore dust in and around the Port of Saldanha. Their research, although still in progress, has postulated a number of hypotheses dealing with the impacts of iron ore dust on the plant communities at Saldanha Bay. Some

noteworthy postulations based on anecdotal observations maintain that (1) dust cause death in some plant species as seen from unusually high numbers of dead dust-covered wood in affected areas, (2) dust is not a major impact on plant communities since the plant composition remained stable for over 15 years, (3) some plant taxa could escape the effects of dust by growing outside the period of excessive dust deposition, (4) dust deposition affect annuals worse than perennial taxa. However, since their studies have not yet been able to determine the effect of dust on plant communities, it is fair to reason that excessive dust deposition is likely to have a net-negative effect.

Box 6.9

Operation Impact: Potential Manganese/Iron Ore Dust Pollution

Nature: Operational activities would result in a negative direct/indirect impact on the vegetation of the study area
 Impact Magnitude: Uncertain
 • Extent: Regional
 • Duration: Long-term
 • Intensity: High
 Likelihood - High
 Impact significance (Pre-mitigation) - High
 Degree of Confidence: Low

Mitigation

The objective of mitigation is to minimise the impacts on vegetation growth and structure.

Specific measures include:

- All railway freight should be implemented with dust suppression devices such as tarpaulins. Wetting of the manganese ore would also alleviate the problem. However, please be advised that water is a scarce and valuable commodity in South Africa; and
- An ecological study is proposed to determine the impact of manganese dust deposition on natural plant communities (both structurally and compositionally) at selected areas known to be affected by dust deposition. The study should focus on a quantitative pairwise comparison of impacted and non-impacted areas, as well as growth trials (testing the effect of different dust loads under controlled conditions). It is recommended that the work be undertaken in partnership with a credible academic (tertiary) institution.

Residual Impact

The proposed mitigation measures would alleviate the operational impacts from high to moderate (albeit at a low degree of confidence).

Phase	Significance (Pre-mitigation)	Residual Impact Significance
Operation	High	Moderate

7 REHABILITATION

INTRODUCTION

Rehabilitation entails the active re-vegetation of cleared areas such as the construction camps, laydown areas and borrow pits. Active re-vegetation is essential to prevent erosion of disturbed areas.

A large number of sites correspond to the Nama-Karoo Biome (Upper Northern and Eastern Karoo and Albany Broken Field) and Albany Thicket Biome, both floristic regions where active rehabilitation is deemed necessary. Most of these sites will remain barren after construction ceases, and will eventually deteriorate during a mild rainstorm event and subsequent runoff. If left unattended, these sites will eventually become degraded with the resultant loss of valuable topsoil, especially on sloping or broken terrain.

An important consideration to take into account during any rehabilitation process is the slow rate of seed dispersal and veld recruitment of karroid-type vegetation. As an example, it could take up to 10 years for certain plant species to colonise an area as far as 500 m from the parent plant if the seed are wind or water dispersed over 10-50 m in a year (Esler *et al.*, 2006). In addition, many of the Karoo species only flower when they are two years or older.

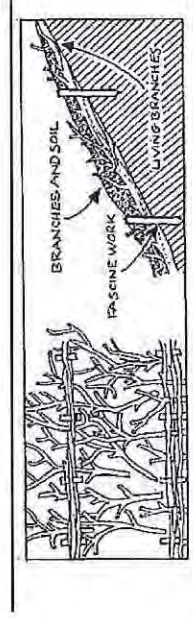
In most cases, the clearing of vegetation, either to make room for construction camps or to excavate borrow material, will leave bare patches of soil behind, necessitating soil stabilisation. The basal grass and forb cover on these areas would be extremely low due to a low incidence of rainfall. It is therefore recommended that rehabilitation should follow a phased approach and should entail (1) soil stabilisation and (2) active re-vegetation.

PHASE 1: SOIL STABILISATION

- Hard compacted soil requires soil management to improve the infiltrating of water and to reduce the loss of topsoil. Soil management is an essential precursor towards preparing the soil for re-vegetation and to speed up the natural process of plant succession. Furthermore, in areas with a low and unpredictable rainfall pattern, soil salinity tends to increase, demanding expensive treatment/ remediation of the soil layer before permanent vegetation could be established.
- Compacted soil and the soil crust should be ripped (preferably to a depth of 25 cm) and loosened before planting/ sowing could take place;
- Runoff water should be trapped through the breaking of the soil surface (as explained above) and by packing of stones brushwood or mulch along the natural contours of the landscape. The brush and rocks will trap soil sediment which also contains part of the seed bank;

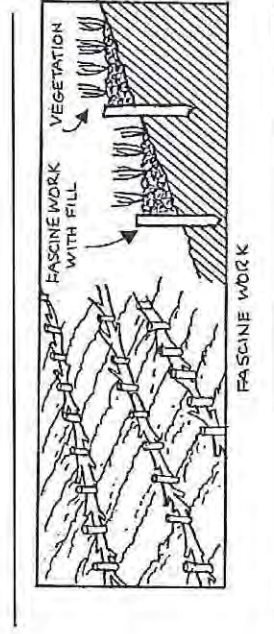
- Areas destined for seeding/ sowing should be covered with brushwood (the covering should not exceed 0.5 m). The brushwood will retain the soil moisture and prevent surface erosion during precipitation events. Mulch (e.g. straw or fine brushwood material) should be added to control erosion during seed germination, and to provide organic matter for plant growth (Figure 8.2a). Mulch also reduces the impact of raindrops on bare soil. Raindrops causes the soil to breakdown and this facilitate the dispersion of clay fractions into the soil pores - thereby "sealing" the soil surface and preventing infiltration of water (Esler *et al.*, 2006);

Figure 7.2a A typical example of brushwood (mulch) application (Ethekwini Municipality, 2002).



- Pitter basins (small shallow depressions) should be created on sites corresponding to areas with low precipitation or unpredicted rainfall (e.g. loop sites and borrow pits between Cradock and Hotazel). The basins should be orientated and shaped to face upslope with the main aim of trapping rainwater and organic matter containing the seed bank; and
- Areas with very little topsoil could be augmented by creating fascine work filled with topsoil to facilitate plant establishment (Figure 8.2b);

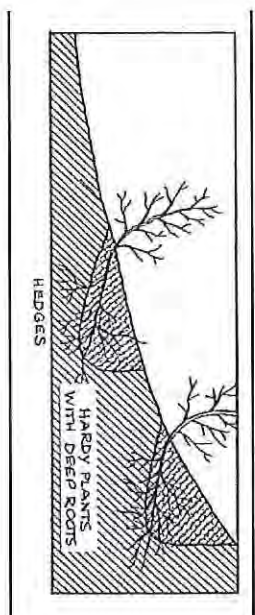
Figure 7.2b An example of fascine work and fascine work with fill (Ethekwini Municipality, 2002).



PHASE 2: RE-VEGETATION

- Areas left with little plant cover or none should be re-seeded or re-planted. Re-vegetation, where possible must make use of locally occurring plant species typical to the vegetation affected by the development. It would be appropriate to map the vegetation of each designated footprint prior to development in order to replace any lost individuals. The selected species should be suitable for both local soil conditions and climate, and should represent the natural composition at hand.
- Suitable soil-binding species include many of the succulent taxa pertaining to the genera *Portulacaria*, *Aloe* and the family *Mesembryanthemaceae*. Many of these species could be produced from cuttings and are good ground covers. All species harvested, mainly from the affected areas, should be kept at an onsite nursery. Please note that relocation of any taxa should not exceed a radius of 10 km from the original collected locality.
- All indigenous plant material sourced from outside the study area for the purpose of augmenting re-vegetation must be in good condition, free from pests or diseases and weed free. Indigenous plant material should not be sourced from a radius of more than 50 km away.
- Seed should be hand-collected or by means of a modified vacuum cleaner from the adjacent veld. Seed collection should preferably correspond to a period 6-8 weeks after the major spring rainfall event.
- All seed collected should be sown within a year of collection.
- Timing of sowing should take place immediately after the first reliable rains;
- Seeding of pitter basins with *Acacia karnoo*, *A. natalitia*, *Sphragrostis* spp. and *Salsola* spp. would encourage soil stabilisation and plant succession.
- On steep gradients, sowing should be in rows and should take place between barrier lines (or fascine work). Barrier lines must follow the natural contour line of the land (Figure 5.2). The barrier lines will slow the movement of surface water in the event of heavy rains and prevent bank erosion.
- During the rehabilitation of steep gradients it is recommended that woody species in particular *Acacia* spp. and *Rhus* spp. be established along gradients to facilitate soil binding and stabilisation (Figure 8.3);

Figure 7.3: An example of slope stabilisation by means of woody species (Ethekuni Municipality, 2002).



- No gardening or cultivation of exotic ornamental species may occur, and the planting of *Kikuyu* (*Pennisetum clandestinum*) or any lawn should be prohibited;
- The original soil composition should be retained to prevent slope failure due to different weights and textures of different soil types when saturated;
- The use of fertiliser should be prohibited; and
- The success of rehabilitation must be evaluated through continual monitoring.

7.4

GENERAL CONSIDERATIONS DURING REHABILITATION

- Topsoil should be sourced and stockpiled during the construction period. Topsoil should not be sourced from adjacent areas as this will lead to unnecessary erosion, disturbance and inappropriate composition.
- Imported soils should be scanned for alien and invader plants; Recommendations during alien eradication:
 - All alien and invader plants should be eradicated;
 - Rehabilitate areas where infestation is the most severe;
 - Always rehabilitate in a downstream direction of a drainage line;
 - Follow-up eradication is important during alien clearing;
 - Flat or gently sloping (1:3) areas shall be ripped in lines 30-50 cm apart and to a depth of at least 25-30 cm parallel to the contours to alleviate soil compaction and to establish a seedbed suitable for the establishment of growth;
- The Environmental Control Officer (ECO) should be satisfied that the soil composition is adequate before re-vegetation;
- The final surface should not be smooth but furrowed along with the natural contours to promote the soil-root binding ratio;
- General planting guidelines:
 - Seed shall be sown by means of broadcast sowing. During seeding, the seed mixture shall be regularly mixed by hand in order to prevent the

8 CONCLUSION

The proposed linear development includes 51 sites (some sites have been combined because of their close proximity) over a considerable distance. A terrestrial ecological assessment was undertaken at each of the relevant sites and the ecological importance and taxa of importance were identified at each site. These results have been summarised in Table 8 below.

Table 8
Site Ecological Importance and important Flora and Fauna at each Site (Areas of Concern).

Site	Ecological importance	Flora	Taxa of importance: Fauna
1 Barkly Bridge	Low	<i>Delosperma</i> spp., <i>Drosanthemum hispidum</i> , <i>Mallephora</i> spp.	None
1.1 Borrow pit Barkley Bridge	High	<i>Sideroxylon inerme</i> , <i>Euphorbia micloformis</i> subsp. <i>valida</i> , <i>Carpobrotus edulis</i> , <i>Delosperma rogersii</i> , <i>Miscanthymthemum nitens</i> , <i>Ruschia lanata</i> , <i>Ruschia</i> spp., <i>Tricholindera bulbosum</i> , <i>Drosanthemum</i> spp., <i>Hanoveria attenuata</i> , <i>Aloe humilis</i> , <i>Pachypodium bispinosum</i> , <i>Carpobrotus edulis</i>	High faunal activity
2 Addo	Medium	<i>Mallephora</i> spp	None
3 Coerney	Low	<i>Drosanthemum hispidum</i> , <i>Mallephora</i> spp., <i>Lamprolaima productus</i>	None
4 Yerby	Low	None	None
5 Eagle's Crag	Medium	<i>Aloe spectiosa</i> , <i>A. temulor</i> , <i>Delosperma ecklonatum</i> , <i>Ruschia pitterillii</i> , <i>R. uncinata</i> , <i>Lamprolaima productus</i> , <i>Brucea strata</i> , <i>Nerine cf. succulentum</i> , <i>Hypoxis cf. triaffinis</i>	Possible burrowing scorpion (<i>Opiotriton</i> spp.) & high faunal activity
6 Toolabi	Low	<i>Aloe temulor</i> , <i>A. spectiosa</i>	None
7 Blimkhof.	Medium	None	Possible burrowing scorpion (<i>Opiotriton</i> spp.) & high faunal activity

- separation of smaller and larger seeds in the mixture. To ensure an even distribution of seed, divide the seed to be sown into two equal portions. Sow the land twice, in opposite directions. Sowing depths should not exceed 0.5 cm.
- After seeding, the soil surface shall be lightly raked parallel to the contours in order to cover the seed. During raking, care shall be taken to prevent the redistribution or removal of seed from any area.
- Planting holes for individual plants (trees) should be large enough and squared holes are preferred to round ones. The latter will increase the probability of root strangulation.
- Trees must be well spaced.
- All holes should be well watered prior to planting and again after planting took place;
- Hay and wood chips could be scattered around the base of the stems of trees to increase moisture retention.
- Maintenance:
 - All seeded or planted areas should be monitored and supervised by the ECO;
 - The water used for irrigation (when available) should be free from pollutants.

Site	Ecological importance	Flora	Fauna
8 Saltaire	Low	<i>Aloe striata</i> , <i>Mastoloma</i> spp., <i>Psyllobolus spinosus</i>	Possible burrowing scorpion (<i>Opisthoplathus</i> spp.) & high faunal activity
9 Kommedagga	Low	<i>Ruscchia</i> spp., <i>Aloe striata</i>	Baboon Spider (possible Family Theraphosidae)
10 Golden Valley	Low	None	None
10.1 Road borrow-pit near Cookhouse	Medium	<i>Cyrtanthus senilius</i>	Baboon Spider (possible Family Theraphosidae)
10.2 Cookhouse possible burrow pit	Medium	<i>Cyrtanthus senilius</i> , <i>Aloe tenuior</i> , <i>Stomatum grandifolium</i> var. <i>grandifolium</i>	Baboon Spider (possible Family Theraphosidae)
10.3 Golden Valley possible burrow pit	Medium	None	None
11 Klipfontein	Low	<i>Aloe tenuior</i> , <i>A. striata</i>	None
11.1 Klipfontein cutting as borrow pit	Low	None	None
12 Mortimer.	Medium	None	None
13 Halesowen	Low	<i>Drosanthemum hispidum</i> , <i>Phyllobolus splendens</i> , <i>Psilocaulon corinthium</i> , <i>P. articulatum</i> , <i>Mitella</i> spp.	None
14 Marlow	Low	<i>Psilocaulon articulatum</i>	None
14.1 Marlow borrow pit	High	<i>Hemantibus humilis</i> , <i>Cyrtanthus contractus</i> , <i>Hieracium bolusii</i> var. <i>hirsutum</i> , <i>Trichodiadema powellianum</i> , <i>Ruscchia spinosa</i>	Possible burrowing scorpion (<i>Opisthoplathus</i> spp.) & high faunal activity
15 Kaptein	Low	<i>Psilocaulon corinthium</i> , <i>Drosanthemum hispidum</i>	None
16 Kunstford	Low	None	None
16.1 Kunstford borrow pit	Medium	<i>Ruscchia spinosa</i> , <i>Doloperyna multiflora</i> , <i>Drosanthemum hispidum</i> , <i>Mitella</i> spp., <i>Ruscchia cradockensis</i> subsp. <i>cradockensis</i> , <i>Trichodiadema</i> spp., <i>Pachypodium succulentum</i>	High faunal activity

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Site	Ecological importance	Flora	Fauna
16.2 Kunstford Borrow material	Low	<i>Ruscchia spinosa</i> , <i>Bomphora disticha</i>	None
17 Visriver	Low	<i>Psilocaulon cf. corinthium</i>	None
17.1 Visriver Collett se quarry	Low	<i>Ruscchia spinosa</i>	None
17.2 Visriver possible burrow pit (exsting)	Low	None	None
18 Conway	Low	None	None
18.1 Conway possible burrow pit	High	<i>Ruscchia spinosa</i> , <i>Aloe bromii</i> , <i>Stomatum (?)</i> spp.	Possible burrowing scorpion (<i>Opisthoplathus</i> spp.) & high faunal activity
19 Glenheath	Low	<i>Delaperyna</i> spp.	None
20 Tafelberg	Low	<i>Ruscchia spinosa</i>	None
21 Rosmead	Low	None	None
22 Flonker	Medium	None	None
23 Carlton	Medium	None	None
24 Barroedel	Low	None	None
25 Wildfontein	Low	None	None
25.1 Borrow pit near Wildfontein	Low	None	High faunal activity
25.2 Borrow pit near Wildfontein	Low	None	High faunal activity
26 Linte	Low	None	None
27 Hanover Road	Low	None	None
27.1 Hanover Road existing borrow pit	Medium	<i>Ruscchia spinosa</i> , <i>Titanopsis</i> spp.	High faunal activity
28 Burger-villeweg	Low	None	None
29 Bleteman	Low	None	None
29.1 Bleteman road borrow pit	Low	<i>Ruscchia spinosa</i>	None
30 Honazel	Low	<i>Acaea erialata</i> , <i>Acaea lammaroxylon</i>	None
30.2 HZL Tie in of triangle	Low	<i>Acaea humannoylon</i>	None
31 Marnathwane loops	Low	None	None
31.3 Middleplaats take off	Low	<i>Acaea humannoylon</i>	None

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A further study would be to determine the significance of manganese/iron ore dust pollution on fauna and flora.

Site	Ecological importance	Taxa of importance: Flora	Fauna
32 Postmaasburg yard (PMG Electrifying line)	Low	None	None
33 Romaldevlei & Beaconsfield Yards	Low	None	None
34 Emil Substation	Low	None	Possible burrowing scorpion (<i>Cryptophtilius</i> spp.)

In addition, the railway section between De Aar and Kimberly was also assessed at a broad level (drive through visual scan), and the refurbishment of the route is unlikely to cause significant disturbance to terrestrial ecology. However, a number of stands of alien invasive and weedy species were identified. It is recommended that this issue be addressed by implementing an 'Alien Invasive Programme'.

Three sites (Barkly Bridge borrow pit, Marlow borrow pit & the possible borrow pit at Conway), either existing or a potentially new borrow pit, were recorded as having a high ecological importance (Table 8). The use of borrow material from these sites is likely to have a significant negative affect on terrestrial ecology onsite and within the adjacent areas. If possible it is recommended that these sites not be utilized. In the event of this being unavoidable mitigation measures recommended in Section 6 should be strictly adhered to, or perhaps alternative sites could be sourced, however, these would need to be investigated.

With the extent of existing impacts (e.g. existing railway reserve, existing borrow pits, etc.) throughout the study sites it was hypothesized that potential future impacts would not have a major effect on the terrestrial ecology. This was true for some of the potential impacts, however four were assessed to have major impact pre- mitigation, these included:

- Loss of vegetation communities;
- Loss of conservation important plant species;
- Loss of riparian vegetation and disturbance to the Boesmans River; and
- Potential Manganese / Iron Ore dust pollution.

By implementing the recommended mitigating measures all of these impacts will be reduced to a moderate significance. Key mitigating measures include:

- An Alien Invasive Programme;
- Rehabilitation Programme - A general rehabilitation programme has been discussed in Section 7 (Rehabilitation guidelines are broad guidelines due to the size of the study area, therefore they are not specific for each site);
- Remaining within the identified 'Footprint Areas';
- On-going Monitoring Programme;
- A Management Plan for important plant species; and
- Education on Ecological Processes for labour and visitors.

- Agrestial Weed:** A weed that commonly invades cultivated land.
- Alien species:** Plant taxa in a given area, whose presence there, is due to intentional or accidental introduction as a result of human activity.
- Annual plant:** A plant that survives only a single season.
- Austral:** Pertaining to the southern hemisphere.
- Biodiversity:** Biodiversity is the variability among living organisms from all sources including inter alia terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.
- Biome:** A major biotic unit consisting of plant and animal communities having similarities in form and environmental conditions, but not including the abiotic portion of the environment.
- Climax:** Species that are perennial plants under normal optimal conditions without experiencing any disturbance events. The ultimate stage of succession.
- Conservation:** The management of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. The wise use of natural resources to prevent loss of ecosystem function and integrity.
- Critically Endangered:** A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
- Cultural:** Plants used during spiritual or traditional ceremonies or used as charms (e.g. protection against lightning).
- Data Deficient:** A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution is lacking. Data Deficient is therefore not a category of threat or Lower Risk. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available.
- Ecosystem:** Organisms together with their abiotic environment, forming an interacting system, inhabiting an identifiable space.

Endangered:

A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.

Endemic:

Occurring in a particular region, and nowhere else.

Environment:

NEMA defines "environment" as "the surroundings within which humans exist and that are made up of the land, water and atmosphere of the earth; microorganisms, plant and animal life; any interrelationships among and between them and the physical, chemical aesthetic and cultural properties and conditions that influence human health and well-being".

Faunal Activity:

A general term to broadly define the level of faunal diversity and richness. Evidence of activity includes: visual observations, evidence of presence (spoor, droppings, nests, burrows, etc.), and potential suitable habitat.

Flora:

The plant life of a region.

Geophyte:

A perennial plant with renewal buds located on the plant below the soil surface.

Graminoid:

Referring to a grass species of the family Poaceae or a grass-like member of the Cyperaceae (sedges).

Grassland:

A natural vegetation formation type in which grasses and forb species are dominant.

Habitat:

Type of environment in which a plant lives.

Indigenous:

Any species of plant, shrub or tree that occurs naturally in South Africa.

Invasive species:

Naturalised alien plants that have the ability to reproduce, often in large numbers. Aggressive invaders can spread and invade large areas.

Medicinal:

Used to prevent or cure illnesses and diseases.

Near-endemic:

Occurring in a particular region but do spill over to a small area of another region (e.g. a species may occur in South Africa but extends into the southern part of Namibia due to the presence of suitable habitat).

Perennial plant:

A plant that survives for longer than a season.

Pioneer species:

Hardened, annual plants, which can grow in very unfavourable conditions. Benefits of having these species include less run-off and more available moisture, cooler soil surfaces and less evaporation, protection against wind and build up of organic matter thereby increased enrichment of the soil.

Protected plant:

According to the Cape Nature and Environmental Conservation Ordinance (No. 19 of 1974) no one is allowed to sell, buy, transport, or remove this plant without a permit from the responsible authority.

Rare species:

Species, which have naturally small populations, and species, which have been reduced to small (often unstable) populations by man's activities.

- Ruderal Weed:** A plant that grows on waste or disturbed areas.
- Threatened species:** Species, which have naturally small populations, and species, which have been reduced to small (often unstable) populations by man's activities.
- Red Data:** A list of species, fauna and flora that require environmental protection. Based on the IUCN definitions.
- Secondary:** An early to mid successional stage in a plant community, usually disturbed.
- Spatial Heterogeneity:** The variability measured across spatial scales.
- Species diversity:** A measure of the number and relative abundance of species (see biodiversity).
- Species richness:** The number of species in an area or habitat.
- Soil:** A mixture of organic and inorganic substances, the composition and structure of the latter is derived from the parent rock material. Soil also contains bacteria, fungi, viruses and micro-arthropods, nematodes and worms.
- Suffrutex:** A woody plant with most of its woody components (e.g. main stem and branches) underground. An adaptation for survival in grassland frequented by regular veld fires.
- Vulnerable:** A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.

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11 APPENDICES

11.1 APPENDIX A – FAUNAL SPECIES IDENTIFIED AT EACH SITE

EASTERN CAPE COASTS														
COMMON NAME	SCIENTIFIC NAME	STATUS	BIRDS											
			BARLTX BRIDGE	ADDO	GOERNVY	VERRY	FAGES Ckak	TOOTLBI	BLINKHOFF	SALTALIRE	KOMVA DAGCA	GOLDEN VALLEY	KIPFON TEIN	NORIMBER
1	2	3	4	5	6	7	8	9	10	11	12	13		
Acacia Pied Babbler	<i>Trichocera leucomelas</i>	LC												
African Lark	<i>Lagotis atrifrons</i>	LC												
African Fish Eagle	<i>Falco fisheri</i>	LC												
African Paradise Flycatcher	<i>Troglodytes aedon</i>	LC												
African Pied Starling	<i>Sternonotus viridis</i>	LC												
African Red-eyed Bulbul	<i>Pycnonotus ruber</i>	LC												
African Shrikebird	<i>Scolecophagus</i>	LC												
Chat	<i>Myadestes occidentalis</i>	LC												
Bar-throated Apalis	<i>Apalis bartholomaei</i>	LC												
Barn Swallow	<i>Hirundo rustica</i>	LC												
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	LC												

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE LOOPS												
			1	2	3	4	5	6	7	8	9	10	11	12	13
			BARKLY BRIDGE	ADDO	COERNEY	VERBY	EAGLE'S CRAG	TOOTABI	BLINKHOFF	SALTAIRE	KOMMA DAGGA	GOLDEN VALLEY	KLIPFONTEIN	MORTIMER	HALESOWEN
Black-headed Heron	<i>Ardea melanocephala</i>	LC				Y	Y						Y		
Black-headed Oriole	<i>Oriolus larentus</i>	LC				Y		Y							
Black-shouldered Kite	<i>Nilvus carolinus</i>	LC				Y									
Black-throated Canary	<i>Serinus atrogularis</i>	LC													
Blue Crane	<i>Anthropoides paradiseus</i>	VU												Y	
Bokmakierie	<i>Telephorus zeylanus</i>	LC			Y		Y	Y		Y	Y				
Booted Eagle	<i>Aquila pennata</i>	LC											Y		
Brimstone Canary	<i>Serinus sulphuratus</i>	LC				Y									
Brown-hooded Kingfisher	<i>Halcyon albiventris</i>	LC													
Burchell's Coucal	<i>Centropus burchellii</i>	LC	Y												
Cape Crow	<i>Corvus capensis</i>	LC	Y					Y		Y					
Cape Glossy Starling	<i>Lamprolaima uileus</i>	LC					Y	Y		Y			Y		
Cape Longclaw	<i>Macronyx capensis</i>	LC													
Cape Robin-chat	<i>Cossypha caffra</i>	LC	Y			Y									
Cape Sparrow	<i>Passer melanurus</i>	LC	Y	Y			Y					Y			
Cape Turtle Dove	<i>Streptopelia capicola</i>	LC	Y	Y	Y	Y	Y	Y		Y		Y		Y	
Cape Wagtail	<i>Motacilla capensis</i>	LC												Y	

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE LOOPS												
			1	2	3	4	5	6	7	8	9	10	11	12	13
			BARKLY BRIDGE	ADDO	COERNEY	VERBY	EAGLE'S CRAG	TOOTABI	BLINKHOFF	SALTAIRE	KOMMA DAGGA	GOLDEN VALLEY	KLIPFONTEIN	MORTIMER	HALESOWEN
Cape Weaver	<i>Ploceus capensis</i>	LC		Y			Y								
Cape White-eye	<i>Zosterops virens</i>	LC				Y									
Cattle Egret	<i>Bobolcus ibis</i>	LC				Y	Y								
Common Buzzard	<i>Buteo swainsoni</i>	LC										Y			
Common Fiscal	<i>Lanius collaris</i>	LC	Y			Y						Y			
Common Kestrel	<i>Falco tinnunculus</i>	LC				Y			Y						
Common Moorhen	<i>Gallinula chloropus</i>	LC						Y							
Eastern Clapper Lark	<i>Mirafra fasciata</i>	LC													
Fawn-billed Lark	<i>Certhilauda semitorquata</i>	LC								Y					
Egyptian Goose	<i>Alopochen aegyptiaca</i>	LC	Y				Y					Y			
European Starling	<i>Sturnus vulgaris</i>	LC	Y												
Fiscal Flycatcher	<i>Sigelus silcus</i>	LC				Y			Y		Y				
Fork-tailed Drongo	<i>Dicrurus adsimilis</i>	LC	Y				Y		Y						
Greater Striped-Swallow	<i>Hirundo cucullata</i>	LC							Y						
Green-spotted Dove	<i>Turtur chinensis</i>	LC				Y									
Hadedda Ibis	<i>Bostrychia longicauda</i>	LC	Y	Y		Y	Y			Y		Y	Y	Y	Y
Helmeted Guineafowl	<i>Nimida macgregori</i>	LC					Y								
Jackal Buzzard	<i>Buteo rufifasciatus</i>	LC				Y									

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE LOOPS													
			1	2	3	4	5	6	7	8	9	10	11	12	13	
			BARKLY BRIDGE	ADDO	COERNEY	VERBY	EAGLE'S CRAG	TOOTABI	BLINKHOFF	SALTAIRE	KOMMA DAGGA	GOLDEN VALLEY	KLIFFON TEIN	MORTIMER	HALESOWEN	
Aardvark	<i>Orycletropus afer</i>	LC								Y						
Cape Porcupine	<i>Hystrix africaeaustralis</i>	LC							Y		Y					
Chacma Baboon	<i>Papio hamatyrus arsius</i>	LC						Y			Y					
Grey Duiker	<i>Sylvicapra grimmia</i>	LC							Y	Y						
Grey Rhebok	<i>Pelea capreolus</i>	LC									Y					
Grysbok (Cape Grysbok)	<i>Raphicerus melnoides</i>	LC														
Reck Hyrax	<i>Procavia capensis</i>	LC									Y					
Scrub Hare	<i>Lepus saxatilis</i>	LC						Y			Y	Y				
Slender Mongoose	<i>Galerella sanguinea</i>	LC													Y	
Small Grey Mongoose	<i>Galerella pulverulenta</i>	LC	Y							Y	Y	Y			Y	
South African Ground Squirrel	<i>Xerus inermis</i>	LC														Y
Steenbok	<i>Raphicerus campestris</i>	LC							Y	Y	Y	Y				
Vervet Monkey	<i>Cercopithecus nictitans</i>	LC			Y	Y					Y				Y	
Yellow Mongoose	<i>Cynictis penicillata</i>	LC								Y	Y	Y			Y	
REPTILES																
Parrot-beaked Padloper	<i>Homonops arcuolatus</i>	LC														Y
INVERTEBRATES																
Possible Baboon Spiders Burrows	specimens to be collected	PS										Y				

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE LOOPS													
			1	2	3	4	5	6	7	8	9	10	11	12	13	
			BARKLY BRIDGE	ADDO	COERNEY	VERBY	EAGLE'S CRAG	TOOTABI	BLINKHOFF	SALTAIRE	KOMMA DAGGA	GOLDEN VALLEY	KLIFFON TEIN	MORTIMER	HALESOWEN	
Possible Burrowing Scorpions	<i>Oxytelus spp.</i>	PS						Y		Y	Y					
Trapdoor Spider	Illeceps Family - Clerididae	LC						Y								

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE LOOPS												
			14	15	16	17	18	19	20	21	22	23			
			MARLOW	KAPTEIN	KNUTSFORD	VISRIYIER	CONVAY	GLENHEATH	TAFELBERG	ROSMEAD	FONKER	CARLTON			
BIRDS															
Acacia Pied Barbet	<i>Trichoceros leucostriatus</i>	LC	Y												
African Firefinch	<i>Lagonosticta rubricata</i>	LC													
African Fish Eagle	<i>Haliaeetus vocifer</i>	LC													
African Hoopoe	<i>Upupa africana</i>	LC	Y					Y							
African Paradise-flycatcher	<i>Tersilochus viridis</i>	LC													
African Pied Starling	<i>Spreo bicolor</i>	LC												Y	Y
African Red-eyed Bulbul	<i>Pycnonotus nigricans</i>	LC							Y						
African Stonechat	<i>Saxicola torquata</i>	LC							Y	Y					
Anteating Chat	<i>Mynnaecicada forficata</i>	LC			Y										
Bar-throated Apalis	<i>Apalis thoracica</i>	LC													

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE LOOPS										
			14	15	16	17	18	19	20	21	22	23	
			MARLOW	KAPTEIN	KNUTSFORD	VISRIYER	CONWAY	GLENHEATH	TAFELBERG	ROSMEAD	FLOKKE	CARLTON	
Kalahari Scrub Robin	<i>Erythropygis jaena</i>	LC											
Karoo Korhaan	<i>Eupodotis vigorsii</i>	LC			Y								
Karoo Prinia	<i>Prinia maculosa</i>	LC											
Karoo Scrub Robin	<i>Erythropygis ceryphaceus</i>	LC											
Lanner Falcon	<i>Falco biarmicus</i>	NT							Y				
Laughing Dove	<i>Streptopelia senegalensis</i>	LC				Y							
Lesser Grey Shrike	<i>Lanius minor</i>	LC											
Lesser Striped-Swallow	<i>Hirundo abyssinica</i>	LC											
Ludwig's Bustard	<i>Neotis ludwigi</i>	VU		Y									
Malachite Sunbird	<i>Nectarinia fumosa</i>	LC											
Mocking Cliff-chat	<i>Myrmecocichla cinamomeiventris</i>	LC											
Namaqua Dove	<i>Oena capensis</i>	LC	Y										
Neddicky	<i>Cisticola fulvicaapillus</i>	LC			Y								
Northern Black Korhaan	<i>Eupodotis afraedica</i>	LC		Y									
Pied Crow	<i>Corvus albus</i>	LC	Y		Y		Y	Y			Y	Y	
Red-billed Quelea	<i>Quelea quelea</i>	LC											
Red-faced Mousebird	<i>Urocochilus indicus</i>	LC											

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE LOOPS										
			14	15	16	17	18	19	20	21	22	23	
			MARLOW	KAPTEIN	KNUTSFORD	VISRIYER	CONWAY	GLENHEATH	TAFELBERG	ROSMEAD	FLOKKE	CARLTON	
Red-fronted Tinkerbird	<i>Pogoninus pusillus</i>	LC											
Red-headed Finch	<i>Amadina erythrocephala</i>	LC											
Red-winged Starling	<i>Oryzognathus minor</i>	LC											
Rock Dove (Feral Pigeon)	<i>Columba livia</i>	LC											
Rufous-eared Warbler	<i>Mitrocorus peconius</i>	LC											Y
Sacred Ibis	<i>Threskiornis aethiopicus</i>	LC											
Sombre Greenbul	<i>Andropodus superbioides</i>	LC											
South African Shelduck	<i>Tadorna cornuta</i>	LC											
Southern Boubou	<i>Laniarius villanoti</i>	LC											
Southern Red Bishop	<i>Euphonia erythronotus</i>	LC			Y								
Speckled Mousebird	<i>Coleus stratus</i>	LC											
Speckled Pigeon	<i>Columba guinea</i>	LC											
Trumpeter Hornbill	<i>Buccones lucidus</i>	LC											
Wattled Starling	<i>Crotaphaga citrea</i>	LC			Y								
White-throated Canary	<i>Serinus albogularis</i>	LC											
MAMMALS													
Aardvark	<i>Oryzomys rufus</i>	LC		Y		Y		Y	Y			Y	

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE BORROW PITS											
			1.1	10.1	10.2	10.3	11.1	14.1	16.1	16.2	17.1	17.2	18.1	
			BORROW PIT BARKLY BRIDGE	ROAD BORROW PIT NEAR COOKHOUSE	COOKHOUSE POSSIBLE BORROW PIT	GOLDEN VALLEY POSSIBLE BORROW PIT	KLIPFONTEIN CUTTING AS BORROW PIT	MARLOW NEW BORROW PIT	KNUTSFORD BORROW PIT	KNUTSFORD BORROW MATERIAL	VISRIVIER QUARRY	VISRIVIER POSSIBLE BORROW PIT	CONWAY POSSIBLE BORROW PIT	
Booted Eagle	<i>Aquila pennata</i>	LC						Y						
Brimstone Canary	<i>Serinus sulphuratus</i>	LC	Y											
Brown-hooded Kingfisher	<i>Halcyon albiventris</i>	LC							Y					
Cape Bunting	<i>Emberiza capensis</i>	LC	Y											
Cape Crow	<i>Corvus capensis</i>	LC	Y											
Cape Glossy Starling	<i>Lamprolaima nitens</i>	LC						Y						
Cape Longclaw	<i>Macropyx capensis</i>	LC		Y										
Cape Robin-chat	<i>Cossypha calfra</i>	LC	Y											
Cape Sparrow	<i>Passer melanurus</i>	LC	Y	Y									Y	
Cape Turtle Dove	<i>Streptopelia capicola</i>	LC	Y	Y	Y	Y	Y	Y	Y	Y				
Cape Wagtail	<i>Motacilla capensis</i>	LC									Y			
Callie Egret	<i>Bubulcus ibis</i>	LC		Y										
Common Fiscal	<i>Lanius collaris</i>	LC	Y	Y	Y			Y	Y	Y			Y	
Common Kestrel	<i>Falco tinnunculus</i>	LC			Y			Y						
Common Waxbill	<i>Estrilda estrild</i>	LC	Y											
Eastern Clobber Lark	<i>Mirafra fasciolata</i>	LC										Y		
Egyptian Goose	<i>Alopochen aegyptiaca</i>	LC		Y		Y								
European Starling	<i>Sturnus vulgaris</i>	LC	Y											
Familiar Chat	<i>Cercomela familiaris</i>	LC									Y			
Fork-tailed Drongo	<i>Dicurus adsimilis</i>	LC	Y											
Greater Striped-swallow	<i>Hirundo occulata</i>	LC								Y				
Hadedda Ibis	<i>Bostrychia hagedash</i>	LC		Y	Y	Y	Y	Y	Y	Y				
Helmeted Guineafowl	<i>Numida meleagris</i>	LC							Y					
Jackal Buzzard	<i>Buteo rufosus</i>	LC			Y									
Kalahari Scrub Robin	<i>Erythropgia saena</i>	LC							Y					
Karoo Korhaan	<i>Eupodotis vigorsii</i>	LC								Y		Y		

COMMON NAME	SCIENTIFIC NAME	STATUS	EASTERN CAPE BORROW PITS											
			1.1	10.1	10.2	10.3	11.1	14.1	16.1	16.2	17.1	17.2	18.1	
			BORROW PIT BARKLY BRIDGE	ROAD BORROW PIT NEAR COOKHOUSE	COOKHOUSE POSSIBLE BORROW PIT	GOLDEN VALLEY POSSIBLE BORROW PIT	KLIPFONTEIN CUTTING AS BORROW PIT	MARLOW NEW BORROW PIT	KNUTSFORD BORROW PIT	KNUTSFORD BORROW MATERIAL	VISRIVIER QUARRY	VISRIVIER POSSIBLE BORROW PIT	CONWAY POSSIBLE BORROW PIT	
Karoo Prinia	<i>Prinia maculosa</i>	LC	Y											
Karoo Scrub Robin	<i>Erythropgia coryphaeus</i>	LC	Y											
Laughing Dove	<i>Streptopelia senegalensis</i>	LC			Y							Y		
Malachite Sunbird	<i>Nocturnia famosa</i>	LC	Y											
Namaqua Dove	<i>Oena capensis</i>	LC	Y					Y						Y
Neddicky	<i>Cisticola fulvicapillus</i>	LC							Y	Y	Y			
Pied Crow	<i>Corvus albicollis</i>	LC		Y					Y	Y	Y	Y		Y
Red-billed Quelea	<i>Quelea quelea</i>	LC				Y								
Red-faced Mousebird	<i>Urocolius indicus</i>	LC						Y	Y					
Sacred Ibis	<i>Thresornis aethiopicus</i>	LC							Y					
South African Shelduck	<i>Tadorna cana</i>	LC							Y					
Southern Bobolink	<i>Laniarius vulturinus</i>	LC						Y						
Southern Double-collared Sunbird	<i>Cinnyris chalybeus</i>	LC							Y					
Speckled Mousebird	<i>Colius sibilans</i>	LC	Y					Y	Y					
Wattled Starling	<i>Certhopoda cinerea</i>	LC								Y				
White-throated Canary	<i>Serinus albogularis</i>	LC	Y											
White-browed Scrub-robin	<i>Cercolichas leucophris</i>	LC	Y											
MAMMALS														
Aardvark	<i>Oryzomys afer</i>	LC								Y	Y	Y	Y	Y
Black-backed Jackal	<i>Canis mesomelas</i>	LC								Y				
Cape Porcupine	<i>Hystrix africaeaustralis</i>	LC									Y			
Chacma Baboon	<i>Papio hamadryas ursinus</i>	LC						Y						
Grey Dukker	<i>Sylvicapra grimmia</i>	LC	Y	Y	Y				Y	Y				
Grey Rhebok	<i>Pelea capreolus</i>	LC												Y
Grysbok (Cape Grysbok)	<i>Raphiceros melanotis</i>	LC	Y											
Mountain	<i>Redunca</i>	LC												Y

COMMON NAME	SCIENTIFIC NAME	STATUS	NORTHERN CAPE LOOPS							NORTHERN CAPE BORROW PITS				YARDS				NEW SUBSTATION
			24	25	26	27	28	29	25.1	25.2	27.2	29.1	30	31	32	33	34	
			BARRE DEEL	WILDFONTEIN	LINDE	HANOVER ROAD	BURGERVILLE WEG	BLETTERMAN	BORROW PIT NEAR WILDFONTEIN	BORROW PIT NEAR WILDFONTEIN	HANOVER ROAD EXISTING BORROW PIT	BLETTERMAN ROAD BORROW PIT	HOTAZEL	MAMAT HWANE	POSTMASBURG	RONALDSVLEI & BECONSFIELD	EMIL	
Grimson-breasted Shrike	<i>Laniarius atrococcineus</i>	LC															Y	
Eastern Clapper Lark	<i>Mirafra fasciolata</i>	LC	Y	Y	Y			Y	Y	Y	Y							
European Bee-eater	<i>Merops apiaster</i>	LC			Y						Y		Y					
Fawn-coloured Lark	<i>Mirafra africanoides</i>	LC															Y	
Fiscal Flycatcher	<i>Sipivus sibilans</i>	LC															Y	
Fork-tailed Drongo	<i>Dicurus adsimilis</i>	LC				Y												
Greater Kestrel	<i>Falco tinnunculus</i>	LC																Y
Greater Striped-Swallow	<i>Hirundo cucullata</i>	LC												Y			Y	
Grey-backed Cisticola	<i>Cisticola subruficapillus</i>	LC		Y						Y	Y							
Grey-backed Sparrowlark	<i>Eremopterix verticalis</i>	LC	Y															
Hadeded Ibis	<i>Bostrychia hagedash</i>	LC				Y					Y							
Helmeted Guineafowl	<i>Numida melanocephala</i>	LC															Y	
House Sparrow	<i>Passer domesticus</i>	LC		Y						Y	Y						Y	
Kalahari Scrub Robin	<i>Erythropgi a paena</i>	LC	Y											Y				
Karoo Korhaan	<i>Eupodotis vigorsii</i>	LC		Y						Y	Y	Y						
Karoo Scrub Robin	<i>Erythropgi a coryphaeus</i>	LC	Y															
Kimberley Pipit	<i>Anthus pseudosmilis</i>	LC															Y	
Lanner Falcon	<i>Falco biarmicus</i>	NT			Y													
Large-billed Lark	<i>Galerida magnirostris</i>	LC		Y						Y	Y							
Laughing Dove	<i>Streptopelia senegalensis</i>	LC			Y									Y				

COMMON NAME	SCIENTIFIC NAME	STATUS	NORTHERN CAPE LOOPS							NORTHERN CAPE BORROW PITS				YARDS				NEW SUBSTATION
			24	25	26	27	28	29	25.1	25.2	27.2	29.1	30	31	32	33	34	
			BARRE DEEL	WILDFONTEIN	LINDE	HANOVER ROAD	BURGERVILLE WEG	BLETTERMAN	BORROW PIT NEAR WILDFONTEIN	BORROW PIT NEAR WILDFONTEIN	HANOVER ROAD EXISTING BORROW PIT	BLETTERMAN ROAD BORROW PIT	HOTAZEL	MAMAT HWANE	POSTMASBURG	RONALDSVLEI & BECONSFIELD	EMIL	
Lesser Grey Shrike	<i>Lanius minor</i>	LC																Y
Lilic-breasted Roller	<i>Coracias caudatus</i>	LC																Y
Ludwig's Bustard	<i>Neotis ludwigii</i>	VU					Y	Y										
Namiqua Dove	<i>Oena capensis</i>	LC	Y										Y					Y
Northern Black Korhaan	<i>Eupodotis atricolor</i>	LC		Y														
Pale-winged Starling	<i>Onychognathus naabouroupp</i>	LC									Y							Y
Pied Crow	<i>Corvus albus</i>	LC		Y		Y				Y	Y	Y	Y	Y			Y	
Red-winged Starling	<i>Onychognathus minor</i>	LC									Y							
Red-backed Shrike	<i>Lanius collurio</i>	LC																Y
Red-breasted Swallow	<i>Hirundo semirufa</i>	LC												Y				
Red-crested Korhaan	<i>Eupodotis ruficristata</i>	LC																Y
Rock Dove (Feral Pigeon)	<i>Columba livia</i>	LC																Y
Rock Martin	<i>Hirundo fuligula</i>	LC					Y							Y				
Rufous-eared Warbler	<i>Malcomus nectaralis</i>	LC	Y															
Southern Pale Charling Goshawk	<i>Melierax canorus</i>	LC					Y	Y					Y					
Southern Red Bishop	<i>Euplectes orix</i>	LC												Y				
Southern-masked Weavers	<i>Ploceus velatus</i>	LC															Y	
MAMMALS																		
Aardvark	<i>Orycteropus afer</i>	LC			Y					Y	Y		Y					
Black-backed Jackal	<i>Canis mesomelas</i>	LC						Y	Y			Y						

Scientific Name	Common Name	Family	Growth Form
<i>Rhus lancea</i>	Karee	Anacardiaceae	Tree
<i>Rhus longispina</i>		Anacardiaceae	Spiny Shrub
<i>Rhus lucida</i>	Glossy Current	Anacardiaceae	Shrub
<i>Schinus molle</i> *	Pepper Tree	Anacardiaceae	Tree
<i>Carissa bispinosa</i> (=C. <i>laenuntocarpa</i>)	Num-num	Apocynaceae	Spiny Shrub
<i>Carissa bispinosa</i> subsp. <i>bispinosa</i>	Num-num	Apocynaceae	Spiny Shrub
<i>Cynanchum ellipticum</i>		Apocynaceae	Perennial Woody Climber
<i>Gomphocarpus fruticosus</i>	Milkweed	Apocynaceae	Perennial Herb
<i>Pachypodium bispinosum</i>	Krachtman	Apocynaceae	Perennial Succulent Spiny Herb
<i>Pachypodium succulentum</i>	Krachtman	Apocynaceae	Perennial Succulent Spiny Herb
<i>Pergularia daemia</i> var. <i>daemia</i>	Kgaba	Apocynaceae	Perennial Climbing Herb
<i>Sarcostemma viminalis</i>	Melktou	Apocynaceae	Perennial Succulent Scrambler
<i>Stapelia grandiflora</i> var. <i>grandiflora</i>		Apocynaceae	Perennial Succulent Herb
<i>Cissonia spicata</i>	Cabbage-tree	Araliaceae	Tree
<i>Asparagus africanus</i>	Bush Asparagus	Asparagaceae	Perennial Spiny Herb
<i>Asparagus cf. aethiopicus</i>	Haakdoring	Asparagaceae	Perennial Spiny Herb
<i>Asparagus cf. burckellii</i>	Wild Asparagus	Asparagaceae	Perennial Spiny Herb
<i>Asparagus cf. capensis</i>		Asparagaceae	Perennial Spiny Herb
<i>Asparagus retrofractus</i>		Asparagaceae	Perennial Spiny Herb
<i>Asparagus striatus</i>		Asparagaceae	Perennial Spiny Herb
<i>Asparagus suaveolens</i>	Bushveld Asparagus	Asparagaceae	Perennial Spiny Herb
<i>Bulbine abyssinica</i>		Asphodelaceae	Succulent Geophyte
<i>Bulbine frutescens</i>	Snake Flower	Asphodelaceae	Succulent Geophyte
<i>Gasteria bicolor</i>		Asphodelaceae	Perennial Succulent Herb
<i>Haworthia attenuata</i> var. <i>attenuata</i>		Asphodelaceae	Perennial Succulent Herb
<i>Haworthia bolusii</i> var. <i>blackbeardiana</i>		Asphodelaceae	Perennial Spiny Succulent Herb
<i>Trachymandra cf. affinis</i>		Asphodelaceae	Geophyte
<i>Asplenium cordatum</i> (= <i>Ceterach cordatum</i>) (Pteridophyte)	Resurrection Fern	Aspleniaceae	Perennial Pteridophyte
<i>Arctotis</i> sp.		Asteraceae	Perennial Herb
<i>Brachylaena ilicifolia</i>		Asteraceae	Shrub
<i>Chrysanthemoides incana</i>	Bietou	Asteraceae	Shrub
<i>Chrysocoma ciliata</i>	Bitterbos	Asteraceae	Perennial Herb

Scientific Name	Common Name	Family	Growth Form
<i>Cineraria lobata</i>		Asteraceae	Perennial Herb
<i>Cirsium vulgare</i> *	Thistle	Asteraceae	Annual Herb
<i>Disparago cf. ericooides</i>		Asteraceae	Perennial Herb
<i>Elytropappus rhinocerotis</i>	Renosterbos	Asteraceae	Shrub
<i>Eriocapulus ericooides</i>	Kapok Bush	Asteraceae	Perennial Herb
<i>Eriocapulus spinosus</i>	Doringkapok	Asteraceae	Perennial Spiny Herb
<i>Felicia cf. aethiopica</i>		Asteraceae	Perennial Herb
<i>Felicia filifolia</i>	Needle-leaved Felicia	Asteraceae	Shrub
<i>Felicia hirsuta</i>	Bloublommietjie	Asteraceae	Perennial Herb
<i>Felicia muricata</i>	Bloublommietjie	Asteraceae	Perennial Herb
<i>Caruleum bipinnatum</i>	Koverbos	Asteraceae	Perennial Herb
<i>Cazania krebsiana</i>	Common Gazania	Asteraceae	Perennial Herb
<i>Cotigeria oriatum</i>	Vermeebossie	Asteraceae	Perennial Fob
<i>Helichrysum argyrosphaerum</i>	Wild Everlasting	Asteraceae	Perennial Herb
<i>Helichrysum aureum</i>		Asteraceae	Perennial Fob
<i>Helichrysum cf. dreganum</i>		Asteraceae	Perennial Herb
<i>Helichrysum zeyheri</i>	Vaalbergkaro	Asteraceae	Perennial Herb
<i>Hypichium gazanioides</i>	Botterblom	Asteraceae	Perennial Herb
<i>Kleinia longiflora</i>	Sjambokbos	Asteraceae	Perennial Succulent Herb
<i>Lagera ilicurrens</i>	Wolbos	Asteraceae	Shrub
<i>Macleadam spinosum</i>	Karmedik	Asteraceae	Perennial Spiny Herb
<i>Nidorella resedifolia</i>		Asteraceae	Annual Herb
<i>Osteospermum imbricatum</i>		Asteraceae	Shrub
<i>Osteospermum sinuatum</i>		Asteraceae	Shrub
<i>Pentzia globosa</i>	Vaalkaroo	Asteraceae	Perennial Herb
<i>Pentzia incana</i>	Anchor Karoo	Asteraceae	Perennial Herb
<i>Pentzia spleenrocephala</i>	Grootberggansieskaroo	Asteraceae	Perennial Herb
<i>Pseudognaphalium undulatum</i>	Cudweed	Asteraceae	Annual Herb
<i>Pteronia glauca</i>	Perdekaro	Asteraceae	Perennial Herb
<i>Pteronia incana</i>	Asbossie	Asteraceae	Perennial Herb
<i>Pteronia pallens</i>	Scholtzbos	Asteraceae	Perennial Herb
<i>Rosenia glomerata</i>	Perlebossie	Asteraceae	Perennial Shrub
<i>Rosenia humilis</i>	Perdekaroo	Asteraceae	Perennial Shrub

Scientific Name	Common Name	Family	Growth Form
<i>Acacia mellifera</i> subsp. <i>detinens</i>	Black Thorn	Fabaceae	Spiny Tree
<i>Acacia natalitia</i>		Fabaceae	Spiny Tree
<i>Acacia tortilis</i>	Umbrella Thorn	Fabaceae	Spiny Tree
<i>Elephantorrhiza elephantina</i>	Eland's Bean	Fabaceae	Suffrutex
<i>Indigofera daleoides</i>		Fabaceae	Perennial Herb
<i>Lessertia inflata</i>	Seeroogbossie	Fabaceae	Perennial Herb
<i>Lotomis</i> sp.		Fabaceae	Perennial Herb
<i>Melolobium</i> cf. <i>candicans</i>	Heuningbos	Fabaceae	Perennial Shrub
<i>Parkinsonia africana</i>	Wild Green-hair Tree	Fabaceae	Tree
<i>Prosopis glandulosa</i> *	Mesquite	Fabaceae	Spiny Tree
<i>Requena sphaerosperma</i>		Fabaceae	Perennial Prostrate Herb
<i>Schotia afra</i> var. <i>afra</i>	Karoo Boerboon	Fabaceae	Tree
<i>Senna italica</i> subsp. <i>arabinooides</i>	Wild Senna	Fabaceae	Perennial Decumbent Herb
<i>Sutherlandia microphylla</i>	Kankerbos	Fabaceae	Shrub
<i>Pelargonium alternans</i>	Blomkoolmalva	Geraniaceae	Perennial Herb
<i>Pelargonium carnosum</i>		Geraniaceae	Perennial Succulent Herb
<i>Pelargonium inquinans</i>		Geraniaceae	Perennial Herb
<i>Pelargonium pelatum</i>	Ivy-leaved Pelargonium	Geraniaceae	Perennial Scrambling Herb
<i>Albica</i> cf. <i>setosa</i>		Hyacinthaceae	Geophyte
<i>Albica</i> sp.		Hyacinthaceae	Geophyte
<i>Drimia</i> spp.		Hyacinthaceae	Geophyte
<i>Ledebouria</i> sp.		Hyacinthaceae	Geophyte
<i>Hypoxis iridifolia</i>	Star-flower	Hypoxidaceae	Geophyte
<i>Bacium burchellianum</i>		Lamiaceae	Perennial Herb
<i>Salvia repens</i>		Lamiaceae	Annual Herb
<i>Stachys cuneata</i>	Vaaltee	Lamiaceae	Perennial Herb
<i>Stachys</i> sp.		Lamiaceae	Perennial Herb
<i>Melinthius</i> cf. <i>comosus</i>	Kruiddjie-roer-my-nie	Melanthaceae	Shrub
<i>Carpobrotus</i> cf. <i>edulis</i>	Sour Fig	Mesembryanthemaceae	Perennial Succulent Creeper
<i>Delosperma echinatum</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Delosperma multiflora</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Delosperma rogersii</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Delosperma</i> sp.		Mesembryanthemaceae	Perennial Succulent Herb

Scientific Name	Common Name	Family	Growth Form
<i>Drosanthemum hispidum</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Drosanthemum</i> sp.		Mesembryanthemaceae	Perennial Succulent Herb
<i>Lampranthus productus</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Malephora</i> sp.		Mesembryanthemaceae	Perennial Succulent Herb
<i>Mesembryanthemum aitonis</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Mestoklenia</i> sp.		Mesembryanthemaceae	Perennial Succulent Herb
<i>Phyllabobus splendens</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Psilocaulon articulatum</i>	Asbos	Mesembryanthemaceae	Perennial Succulent Herb
<i>Psilocaulon coriarium</i>	Asbos	Mesembryanthemaceae	Perennial Succulent Herb
<i>Psilocaulon junceum</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Rhombophyllum rhomboides</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Ruschia cradockensis</i> subsp. <i>cradockensis</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Ruschia lamata</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Ruschia putterillii</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Ruschia</i> sp.		Mesembryanthemaceae	Perennial Succulent Herb
<i>Ruschia spinosa</i>	Doringvygie	Mesembryanthemaceae	Perennial Succulent Herb
<i>Ruschia uncinata</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Stomatium</i> (?) sp.		Mesembryanthemaceae	Perennial Succulent Herb
<i>Titanopsis</i> sp.		Mesembryanthemaceae	Perennial Succulent Herb
<i>Trichodiadema bulbosum</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Trichodiadema powerdianum</i>		Mesembryanthemaceae	Perennial Succulent Herb
<i>Trichodiadema</i> sp.		Mesembryanthemaceae	Perennial Succulent Herb
<i>Eucalyptus camthulensis</i> *	Gum Tree	Myrtaceae	Tree
<i>Jasminum angulare</i>		Oleaceae	Perennial Woody Climber
<i>Olea europaea</i> subsp. <i>africana</i>	Wild Olive	Oleaceae	Tree
<i>Oenothera rosea</i> *	Evening Primrose	Onagraceae	Annual Herb
<i>Argemone ochroleuca</i> *	Mexican Poppy	Papaveraceae	Annual Herb
<i>Sesamum triphyllum</i>	Wild Sesame	Pedaliaceae	Annual Herb
<i>Pinus</i> spp.*	Pine trees	Pinaceae	Tree
<i>Plantago lanceolata</i> *	Lamb's Tongue	Plantaginaceae	Perennial Herb
<i>Plumbago auriculata</i>	Plumbago	Plumbaginaceae	Shrub
<i>Anthephora pubescens</i>	Wool Grass	Poaceae	Perennial Tufted Graminoid
<i>Aristida adscensionis</i>	Annual Three-awn	Poaceae	Annual Tufted Graminoid

Scientific Name	Common Name	Family	Growth Form
<i>Senecio jacobina</i>	Common Brittle Grass	Poaceae	Perennial Tufted Graminoid
<i>Scleria verticillata</i>	Bur Bristle Grass	Poaceae	Annual Tufted Graminoid
<i>Sporobolus fimbriatus</i>	Droopseed Grass	Poaceae	Perennial Tufted Graminoid
<i>Sporobolus foliolosus</i>	Pan Dropseed	Poaceae	Perennial Tufted Graminoid
<i>Sporobolus ludwigii</i>		Poaceae	Perennial Stolioniferous Graminoid
<i>Stipa divergens</i>		Poaceae	Perennial Tufted Graminoid
<i>Stipa sparganii</i>	Small Bushman Grass	Poaceae	Perennial Tufted Graminoid
<i>Stipa sparganii</i>	Silly Bushman Grass	Poaceae	Perennial Tufted Graminoid
<i>Themeda triandra</i>	Red Grass	Poaceae	Perennial Tufted Graminoid
<i>Tragus berteronianus</i>	Cart-wheel Grass	Poaceae	Annual Tufted Graminoid
<i>Tragus koelerioides</i>		Poaceae	Perennial Stolioniferous Graminoid
<i>Erica asperula</i>		Poaceae	Annual Herb
<i>Polygala cf. rehmannii</i>		Polygalaceae	Perennial Herb
<i>Polygala cf. polygaloides</i>		Polygalaceae	Perennial Herb
<i>Rumex crispus</i>	Curly Dock	Polygalaceae	Perennial Herb
<i>Portulaca oleris</i>	Spekboom	Portulacaceae	Succulent Tree
<i>Tillandsia cf. tenuissimum</i>	Care's Thorn	Rhamnaceae	Perennial Herb
<i>Scutia myrtilina</i>	Buttalo-thorn	Rhamnaceae	Perennial Woody Climber
<i>Ziziphus mucronata</i>		Rhamnaceae	Spry Tree
<i>Anthospermum rigidum</i>		Rubiaceae	Perennial Herb
<i>Anthospermum sp.</i>		Rubiaceae	Perennial Decumbent Herb
<i>Nerax microplylla</i>	Daggaph	Rubiaceae	Perennial Herb
<i>Azima tetracoma</i>	Necitic-bush	Salvadoraceae	Spry Shrub
<i>Themis thuratum</i>	Whistom	Samolacae	Perennial Parasitic Herb
<i>Hippobovum pauciflorum</i>	False Horsewood	Sapindaceae	Tree
<i>Eppia capensis</i>	Jackie-plum	Sapindaceae	Tree
<i>Steyerxylon thurum</i>		Sapindaceae	Tree
<i>Aporosa procumbens</i>	Karoo Violet	Scrophulariaceae	Perennial Decumbent Herb
<i>Jansevillea cf. lysonti</i>		Scrophulariaceae	Perennial Herb
<i>Jansevillea microplylla</i>		Scrophulariaceae	Perennial Herb
<i>Mimosa sp.</i>		Scrophulariaceae	Annual Herb
<i>Nemisia frutescens</i>	Leucobekke	Scrophulariaceae	Annual Herb
<i>Petostemon leucorrhizum</i>	Veld Violet	Scrophulariaceae	Perennial Herb

Scientific Name	Common Name	Family	Growth Form
<i>Aristida congesta</i> subsp. <i>barbicalis</i>	Spreading Three-rain	Poaceae	Perennial Tufted Graminoid
<i>Aristida mitchellii</i>	Iron Grass	Poaceae	Perennial Tufted Graminoid
<i>Bromus pectinatus</i>	Japanese Brome	Poaceae	Annual Tufted Graminoid
<i>Cenchrus ciliaris</i>	Foxball Buffalo Grass	Poaceae	Perennial Tufted Graminoid
<i>Chloris virgata</i>	Father-top Grass	Poaceae	Perennial Tufted Graminoid
<i>Cymbopogon pectinatus</i>	Narrow-leaved Turpentine Grass	Poaceae	Perennial Tufted Graminoid
<i>Cymbopogon dactylon</i>	Couch Grass	Poaceae	Perennial Stolioniferous Graminoid
<i>Cymbopogon inaequalis</i>		Poaceae	Perennial Stolioniferous Graminoid
<i>Digitaria rugyromera</i>	Silver Finger Grass	Poaceae	Perennial Tufted Graminoid
<i>Digitaria eriantha</i>	Common Finger Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Common Elephantopus	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Eight Day Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Boilbrush Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Spoked Veld Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Narrow Curly Leaf	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Wearing Love Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Jack Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Lehmann's Love Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Dew Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Brown Rhodes Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Thimble Grass	Poaceae	Perennial Tufted Herb
<i>Elephantopus scaber</i>	Spear Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	False Barley	Poaceae	Annual Graminoid
<i>Elephantopus scaber</i>	Common Thatching Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Nahal Red Top	Poaceae	Annual Graminoid
<i>Elephantopus scaber</i>	Gultra Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Sweet Grass	Poaceae	Annual Tufted Graminoid
<i>Elephantopus scaber</i>	Fountain Grass	Poaceae	Perennial Tufted Graminoid
<i>Elephantopus scaber</i>	Common Reed	Poaceae	Perennial Rhizomatous Graminoid
<i>Elephantopus scaber</i>	Sand Quack	Poaceae	Perennial Tufted Graminoid

Scientific Name	Common Name	Family	Growth Form
<i>Selago dinteri</i>		Scrophulariaceae	Perennial Herb
<i>Sideris campanulata</i>		Scrophulariaceae	Perennial Herb
<i>Lycium cinereum</i>	Kriedoring	Solanaceae	Spiny Shrub
<i>Lycium hirsutum</i>	Rivierkareedoring	Solanaceae	Spiny Shrub
<i>Lycium horridum</i>		Solanaceae	Spiny Shrub
<i>Lycium oxycarpum</i>	Wolwedoring	Solanaceae	Spiny Shrub
<i>Nicotiana glauca</i> *	Wild Tobacco	Solanaceae	Shrub
<i>Solanum supinum</i>		Solanaceae	Perennial Herb
<i>Solanum tomentosum</i>		Solanaceae	Perennial Spiny Herb
<i>Hermannia althaeoides</i>	Doll's Roses	Sterculiaceae	Perennial Herb
<i>Hermannia cf. desertorum</i>	Suikerbos	Sterculiaceae	Perennial Herb
<i>Hermannia cf. pulverata</i>		Sterculiaceae	Perennial Herb
<i>Hermannia cuneifolia</i>	Agtlaegebossie	Sterculiaceae	Perennial Herb
<i>Hermannia nr. filifolia</i>	Doll's Roses	Sterculiaceae	Perennial Herb
<i>Hermannia tomentosa</i>	Lusernbos	Sterculiaceae	Perennial Herb
<i>Hermannia vestita</i>	Swaelbossie	Sterculiaceae	Perennial Herb
<i>Gnidia polycephala</i>	January Bush	Thymelaeaceae	Perennial Herb
<i>Grewia retinervis</i>	Kalahari Sand Raisin	Tiliaceae	Shrub
<i>Grewia robusta</i>	Kruisbessiebos	Tiliaceae	Shrub
<i>Forskaalenia caudata</i> *	Kwaaibul	Urticaceae	Perennial Herb
<i>Viscum rotundifolium</i>	Mistletoe	Viscaceae	Perennial Parasitic Herb
<i>Cyphostemma cf. quintatum</i>		Vitaceae	Perennial Woody Climber
<i>Rhoicissus digitata</i>	Wild Grape	Vitaceae	Perennial Woody Climber
<i>Lantana rugosa</i>		Verbenaceae	Shrub
<i>Verben tenuisecta</i> *		Verbenaceae	Perennial Herb
<i>Zygophyllum cf. foetidum</i>	Slymbos	Zygophyllaceae	Perennial Scrambling Herb
<i>Zygophyllum pubescens</i>	Spekbos	Zygophyllaceae	Perennial Herb

11.3 APPENDIX C - INTERIM TSP LISTING CATEGORIES

EXTINCT (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

EXTINCT IN THE WILD (EW)

A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered (see Section V), and it is therefore considered to be facing an extremely high risk of extinction in the wild.

ENDANGERED (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered (see Section V), and it is therefore considered to be facing a very high risk of extinction in the wild.

VULNERABLE (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable (see Section V), and it is therefore considered to be facing a high risk of extinction in the wild.

NEAR THREATENED (NT)

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledged the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

STILL TO BE ASSESSED (STBA)

RARE

Taxa with limited distribution ranges within South Africa and/or known from very few subpopulations, but that are not threatened are included on the national list as species of conservation concern. Their global status according to IUCN categories and criteria of these taxa is Least Concern (LC).

DECLINING

Widespread taxa that do not qualify for threatened status under any of the IUCN criteria but that are nonetheless under pressure, often as a result of harvesting for medicinal purposes, are also noted on the national list as taxa of conservation concern.

II.4 APPENDIX D - RED DATA AVIFAUNAL AND MAMMAL SPECIES RECORDED IN THE RELEVANT QDS

Avifauna

COMMON NAME	SCIENTIFIC NAME	91AUB	91ATU	91EWS	91DUN	91DBN	91DOR	91DUM	91DRT	91EAM	91EEL	91EEN	91ELM	91EMD	91ERM	91ESA	91ESB	91ESD	91ESM	91ESR	91ESS	91ETA	91ETB	91ETD	91ETM	91ETR	91ETW	91ETX	91EUN	91EUP	91EUS	91EVA	91EVC	91EVE	91EVI	91EVN	91EVS	91EWA	91EWB	91EWD	91EWM	91EWR	91EWS	91EWV	91EWX	91EWY	91EWA					
Common Raven	Corvus corax																																																			
Black-winged Stilt	Himantopus mexicanus																																																			
Black-billed Gull	Larus delawarensis																																																			
Lesser Frigatebird	Fregata aquila																																																			
Black-bellied Plover	Colinus pectoratus																																																			
Red-tailed Tropicbird	Trochiloides bairdii																																																			
Red-footed Booby	Sula nebouxi																																																			
Red-footed Booby	Sula nebouxi																																																			

Mammals

COMMON NAME	SCIENTIFIC NAME	STATUS	1722B	1722D	1722E	1722F	1722G	1722H	1722I	1722J	1722K	1722L	1722M	1722N	1722O	1722P	1722Q	1722R	1722S	1722T	1722U	1722V	1722W	1722X	1722Y	1722Z
African Weasel	<i>Procyon genivittatus</i>	DD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hottentot's Golden Mole	<i>Amblysomus hottentotus</i>	DD																								
Solator's Golden Mole	<i>Chlorotalpa schrenki</i>	DD																								
Reddish-grey Musk Shrew	<i>Crocodyra cyanea</i>	DD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Greater Musk Shrew	<i>Crocodyra flavescens</i>	DD																								
Toy Musk Shrew	<i>Crocodyra aesculapina</i>	DD																								
Lesser Grey-brown Musk Shrew	<i>Crocodyra silacea</i>	DD																								
Forest Shrew	<i>Myosorex varius</i>	DD																								
Least Dwarf Shrew	<i>Suncus etruscanus</i>	DD																								
Woodland Mouse	<i>Grammomys dolichurus</i>	DD																								
Stoggett's Rat	<i>Oryzomys stoggetti</i>	DD																								
Lesser Rod Musk Shrew	<i>Crocodyra hiata</i>	DD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bushveld Gerbil	<i>Fiberia leucogaster</i>	DD	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Samanga Monkey	<i>Ceropithecus mitis kababisi</i>	EN																								
White-tailed Rat	<i>Mystromys albicaudatus</i>	EN																								
Lesser Long-fingered Bat	<i>Miniotropus intermedius</i>	NT																								
Schreiber's Long-fingered Bat	<i>Miniotropus schreibersi</i>	NT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Farmnick's Hairy Bat	<i>Myotis farmnicki</i>	NT																								
Cape Horseshoe Bat	<i>Rhinolophus capensis</i>	NT																								
Goodfellow's Horseshoe Bat	<i>Rhinolophus goodfellowi</i>	NT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Darling's Horseshoe Bat	<i>Rhinolophus darlingi</i>	NT																								
Dart's Horseshoe Bat	<i>Rhinolophus darti</i>	NT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lilledale's Whistling Rat	<i>Paralomys lilledalei</i>	PS																								
Reebuck	<i>Rebecca arundinum</i>	PS																								
Black-fronted Cat	<i>Felis nigripes</i>	PS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Brown Hyena	<i>Hyena brunnea</i>	PS																								
Spotted-necked Otter	<i>Lutra maculicollis</i>	PS																								
Honey Badger	<i>Mellivora capensis</i>	PS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Leopard	<i>Panthera pardus</i>	PS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
South African Hedgehog	<i>Mastix frontalis</i>	PS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cape Fox	<i>Vulpes chama</i>	PS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Blind Snake	<i>Blasubentia monticola</i>	VU																								
Tree Hyrax	<i>Dendrobates arboreus arboreus</i>	VU																								
Samanga Monkey	<i>Ceropithecus mitis</i>	VU	✓																							

11.5 APPENDIX E – REPTILE LIST

Name	Common Name	De Aar to Hofazel	De Aar to the Fort of Ngqura	Conservation	Mitigation
<i>Hemopus femoralis</i>	Greater Padloper	Peripheral in the south	Occurs of much of area	SA endemic, relatively restricted	
<i>Stegmocheladys pardalis</i>	Leopard Tortoise	Occurs throughout	Occurs of much of area	Common and widespread	
<i>Chersina angulata</i>	Angulate Tortoise	Does not occur	Occurs in near PE only	Abundant but has a relatively restricted distribution, Endemic to South Africa	
<i>Psammobates oculiferus</i>	Kalahari Tent Tortoise	Occurs only in northern parts	Does not occur	Widespread but generally not common	
<i>Psammobates tentorius</i>	Tent Tortoise	Does not occur	Occurs only just north of PE	Widespread but generally not common and current work indicates that this taxon may actually represent several species. Thus the form that exists on the site may actually be more restricted than is currently understood.	
<i>Pelomedusa subrufa</i>	Marsh Terrapin	Occurs only in the south eastern extreme	Occurs throughout	Widespread and very common	
<i>Rhinolyphlops tlandei</i>	Delalande's Beaked Blind Snake	Occurs throughout	Occurs throughout	Widespread and fairly common	
<i>Leptolyphlops nigricans</i>	Black Thread Snake	Does not occur	Occurs only just north of PE	Endemic to South Africa, fairly restricted range	
<i>Leptolyphlops scullfrons</i>	Peters' Thread Snake	Occurs throughout but peripheral	Does not occur	Common and widespread	
<i>Aparallactus capensis</i>	Common Centipede Eater	Does not occur	Southern limit is at PE. Does not occur in other parts of the area	Very common and widespread	
<i>Lycodonomorphus laevisissimus</i>	Dusky-bellied Water Snake	Does not occur	Only in the southern extreme	South African endemic	
<i>Lycodonomorphus rufulus</i>	Common Water Snake	Does not occur	Only in the south near to PE	South African endemic, and common and widespread	
<i>Lamprophis capensis</i>	Common House Snake	Occurs throughout	Occurs throughout	Very widespread and common	

Name	Common Name	De Aar to Holazel	De Aar to the Port of Ngqura	Conservation	Mitigation
Elapsoidea sundevallii media	Highveld Garter Snake	Occurs in the eastern parts	Does not occur	Widespread but rare	
Naja nivea	Cape Cobra	Occurs throughout	Occurs throughout	Widespread and common	
Bilia aethiops	Puff Adder	Occurs throughout	Occurs throughout	Widespread and common	
Bilia caudalis	Horned Adder	Peripheral, occurs in parts	Peripheral, occurs in parts	Widespread and common	
Bilia inornata	Plain Mountain Adder	Does not occur	Check QDS	Restricted and rare	IUCN Listed
Bilia albantica	Albany Adder	Does not occur	Check QDS	Restricted and rare	IUCN Listed
Zygaspis quadrifrons	Koehorn Round-headed Worm Lizard	Occurs in northern parts	Does not occur	Widespread	
Monopeltis snyderi	Cape Spade-snouted Worm Lizard	Occurs in the eastern parts	Does not occur	Endemic to South Africa	
Acrotia gracilicauda	Thin-tailed Legless Skink	Does not occur	Occurs in southern parts	Endemic to South Africa, fairly restricted range	
Acrotia melegaris	Cape Legless Skink	Does not occur	Occurs in southern parts	Endemic to South Africa, fairly restricted range	
Acrotia pectivalis	Perceval's Legless Skink	Does not occur	Occurs in southern parts	Endemic to South Africa, fairly restricted range	
Scelotes anguineus	Algo Dwarf Burrowing Skink	Does not occur	Occurs around Algoa Bay	Endemic to South Africa, very restricted range	
Scelotes cofferi	Cape Dwarf Burrowing Skink	Does not occur	Occurs around Algoa Bay	Endemic to South Africa, very restricted range	
Trachylepis copensis	Cape Skink	Occurs throughout	Occurs throughout	Endemic to southern Africa, Common and widespread	
Trachylepis homiocephala	Red-sided Skink	Does not occur	Occurs in southern parts	Endemic to South Africa, fairly restricted range	
Trachylepis occidentalis	Western Three-striped Skink	Occurs in western parts	Occurs in northern parts	Endemic to southern Africa, Common and widespread	

Name	Common Name	De Aar to Holazel	De Aar to the Port of Ngqura	Conservation	Mitigation
Lomophis gulihatus	Spotted House Snake	Does not occur	Occurs throughout all southern parts	Specialist for rocky habitats	
Lomophis aurohousei	Auro House Snake	Does not occur	Occurs only just north of PE	South African endemic, grassland specialist	
Lycopodium copense	Common Wold Snake	Occurs through much of eastern section	Occurs throughout	Widespread and very common	
Duberbia lithica	Common Slug Eater	Does not occur	Occurs only just north of PE	Fully widespread and relatively common, South African endemic	
Pseudaspis cana	Mole Snake	Occurs throughout	Occurs throughout	Widespread and common	
Prosymna sundevallii snail	Sundevall's Shovel-snail	Occurs in eastern extremities	Occurs throughout	Relatively widespread, but uncommon	
Dipsosa multimaculata	Dwarf Beaked Snake	Does not occur	Occurs in the northern parts	Widespread and common	
Fremontophis thombecki	Spotted Skopskater	Occurs in southern parts	Occurs throughout	Widespread and common	
Fremontophis notosialis	Karoo Sand Snake	Occurs throughout	Occurs throughout	Widespread and common	
Fremontophis thombecki	Fork-tailed Sand Snake	Occurs throughout	Occurs in northern parts	Widespread and common	
Fremontophis thombecki	Cross-marked Grass Snake	Does not occur	Occurs in southern parts	Widespread and common	
Philothamnus natalensis	Natal Green Snake	Does not occur	Occurs in southern parts	Relatively widespread, and common	
Dorsalis scabra	Common Egg Eater	Occurs throughout	Occurs throughout	Widespread and very common	
Crotaphopeltis hotamboela	Herald	Occurs in eastern parts	Occurs throughout	Widespread and very common	
Telacopus semlani	Eastern Tiger Snake	Peripheral, occurs in the west	Does not occur	Widespread and common	
Dispholidus typus	Boomslang	Peripheral, occurs throughout	Peripheral, occurs in the south	Widespread and common	
Homonolepis	Spotted Harequin	Does not occur	Peripheral, occurs in the south	Widespread, fairly common in places but rare in others	
Aspeltis labracus	Coral Shield Cobra	Does not occur	Occurs in the southern	Widespread and common in places	

Name	Common Name	De Aar to Holazel	De Aar to the Port of Ngqura	Conservation	Mitigation
<i>Trachylepis spillogaster</i>	Kalahari Tree Skink	Occurs in western parts	Occurs in northern parts	Endemic to southern Africa. Common and widespread	
<i>Trachylepis varia</i>	Variable Skink	Occurs in eastern extremes	Occurs in southern extremes	Common and widespread	
<i>Trachylepis variegata</i>	Variegated Skink	Occurs throughout	Occurs throughout apart from southern extremes	Common and widespread	
<i>Ichnotropis squamulosa</i>	Common Rough-scaled Lizard	Occurs in northern parts	Does not occur	Common and widespread	
<i>Nucras intertexta</i>	Spotted Sandveld Lizard	Occurs in northern parts	Does not occur	Common and widespread	
<i>Nucras laalandii</i>	Delalande's Sandveld Lizard	Does not occur	Occurs in southern extremes	Endemic to South Africa, patchy and rare	
<i>Nucras taeniolata</i>	Striped Sandveld Lizard	Does not occur	Occurs around Algoa Bay and Albany	Endemic and very restricted	
<i>Nucras livida</i>	Karoo Sandveld Lizard	Does not occur	Occurs in southern parts	Endemic to South Africa, restricted and uncommon	
<i>Pedioplanis burchelli</i>	Burchell's Sand Lizard	Does not occur	Occurs throughout	Endemic to South Africa, relatively widespread and common in places	
<i>Pedioplanis lineocellata</i>	Spotted Sand Lizard	Occurs throughout	Occurs throughout	Endemic to southern Africa. Common and widespread	
<i>Pedioplanis namaquensis</i>	Namaqua Sand Lizard	Does not occur	Occurs in western parts	Widespread and common	
<i>Trapidosaurus gularis</i>	Cape Mountain Lizard	Does not occur	Occurs in southern extremes	Endemic to South Africa; restricted, patchy and rare	
<i>Trapidosaurus montana</i>	Common Mountain Lizard	Does not occur	Occurs in southern extremes	Endemic to South Africa; restricted, patchy and rare	
<i>Georchosaurus flavigularis</i>	Yellow-throated Plated Lizard	Occurs throughout	Occurs in southern parts	Widespread and common	
<i>Georchosaurus typicus</i>	Namaqua Plated Lizard	Does not occur	Occurs in southern parts	South African endemic, restricted and rare	

Name	Common Name	De Aar to Holazel	De Aar to the Port of Ngqura	Conservation	Mitigation
<i>Tetrachaclytus africanus</i>	FitzSimons' Long-tailed Seps	Does not occur	Occurs in southern parts	South African endemic, restricted and rare	
<i>Tetrachaclytus seps</i>	Short-legged Seps	Does not occur	Occurs in southern extremes	South African endemic, restricted and rare	
<i>Tetrachaclytus tetradactylus</i>	Common Long-tailed Seps	Does not occur	Occurs in southern parts	South African endemic, restricted and rare	
<i>Chamaesaura angulata</i>	Cape Grass Lizard	Does not occur	Occurs in southern parts	Restricted and patchy, but may be locally common	
<i>Cordylus cordylus</i>	Cape Girdled Lizard	Does not occur	Occurs in southern half	South African endemic; relatively widespread and common	
<i>Cordylus polyzonus</i>	Karoo Girdled Lizard	Occurs throughout	Occurs throughout	Southern African endemic; widespread and common	
<i>Cordylus tasmani</i>	Tasman's Girdled Lizard	Does not occur	Occurs in southern parts	South African endemic; restricted	
<i>Pseudocordylus microlepidotus</i>	Cape Crag Lizard	Does not occur	Occurs in northern parts and southern extremes	South African endemic; relatively widespread and common	
<i>Varanus albigularis</i>	Rock Monitor	Occurs throughout	Occurs throughout	Widespread and common	
<i>Varanus niloticus</i>	Water Monitor	Occurs in eastern parts	Occurs in southern parts	Widespread and common	
<i>Agama aculeata</i>	Ground Agama	Occurs throughout	Occurs throughout	Widespread and common	
<i>Agama atra</i>	Rock Agama	Occurs throughout	Occurs throughout	Widespread and common	
<i>Bradypodium taeniabronchum</i>	Elandsberg Dwarf Chameleon	Does not occur	Occurs in southern parts	South African Endemic; restricted distribution; IUCN listed	
<i>Bradypodium ventrale</i>	Eastern Cape Dwarf Chameleon	Does not occur	Occurs throughout	South African endemic; widespread and common	
<i>Afroedura karrooica</i>	Karoo Flat Gecko	Does not occur	Occurs in central parts	South African endemic; restricted range	
<i>Afrogecko porphyreus</i>	Marbled Leaf-loed Gecko	Does not occur	Occurs in southern extremes	South African endemic; restricted range	
<i>Crypsacillides peringueyi</i>	Peringuey's Coastal Leaf-loed Gecko	Does not occur	Occurs from Chelsea Point to Kromme estuary	South African endemic; very restricted range; very rare	

Name	Common Name	De Aar to Holazel	Ngqura	Conservation	Milgallon
<i>Eogogia essexi</i>	Essex's Dwarf Leaf-toed Gecko	Does not occur	Occurs in the southern eskimoes	South African endemic; restricted range	
<i>Chondrodactylus bilineatus</i>	Brown's Tubercled Gecko	Occurs throughout	Occurs throughout	South African endemic; widespread and common	
<i>Pachydactylus copeensis</i>	Cape Gecko	Occurs throughout	Occurs throughout	South African endemic; widespread and common	
<i>Pachydactylus maculatus</i>	Spotted Gecko	Does not occur	Occurs in southern parts	South African endemic; relatively widespread	
<i>Pachydactylus oculatus</i>	Golden Spotted Gecko	Does not occur	Occurs in much of area	South African endemic; relatively restricted	
<i>Pachydactylus moriuenis</i>	Morico Gecko	Occurs over southern parts	Occurs throughout	South African endemic; widespread and common	

