

Biological Scoping Report: Flora Aspect

FLORA
AND
VERTEBRATE FAUNA
SPECIES ASSESSMENT

FOR
RYNFIELD X 51

MAY 2002

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1. INTRODUCTION

A Species Assessment of the Vegetation and Bird, Mammal and Reptile species possibly found on the proposed development site, was commissioned by NB Projects cc. Special attention had to be given to the habitat requirements of all the Red Data species that may utilise the area. A survey to find Red Data species on site had to be done. The survey focused on the current status of threatened plant and animal species occurring, or likely to occur within the proposed development site, describing the available and sensitive habitats on the site. Species lists were also compiled for all species found on site and species that should utilise the area at other times of the year.

1.1 Objectives of the habitat study

- To provide a list of all the Red Data plants that can be found on the proposed site.
- To provide a list of the Red Data birds, mammals and reptiles that occurs or might occur on the proposed site.
- To identify areas of conservation importance.
- To determine potential impacts of the development on the said fauna and flora of the proposed site.
- To provide management recommendations to mitigate negative and enhance positive impacts.

1.2 Scope of study

- A Red Data vegetation survey.
- A Red Data bird, mammal and reptile species survey.
- Evaluate the conservation importance and significance of the site with special emphasis on the current status of threatened species.
- Literature investigation of possible Red Data species that might occur on site.
- Identification of potential ecological impacts that could occur as a result of the development.
- Make recommendations as to reduce or minimise impacts, should the development be approved.



2. STUDY AREA

The proposed development site lies to the north east of the Benoni CBD and east of Sandpan in Gauteng. It is situated on portion 18 (a portion of portion 4) of the farm Vlakfontein 69 IR. The proposed residential development will be along the north-eastern boundary (parallel to Vlei road) of the site and exclude the open water or wetland areas.

The coordinates of the study site are 26° 07' 30"S; 28° 20' 29"E. The vegetation type can be described as Rocky Highveld Grassland (Bredenkamp & van Rooyen, 1996) or Bankenveld A61 (Acocks, 1988). The main feature of the property is the pan or wetland area. The property in question is ecologically severely disturbed through sand mining and dumping.

3. METHODS

The site was visited on 26 May 2002 and walked, as there are no roads on the site. Plants on the proposed development site were identified or collected for positive identification later. Birds were identified by two persons using binoculars and where necessary verified from Sasol Birds of Southern Africa (Sinclair et.al., 1993). All mammals and reptiles seen or their tracks and signs (footprints, droppings) were also recorded.

Birds were identified by their calls where necessary and other signs e.g. nests, feathers were recorded. After the visit to the site and the identification of the birds found there, a list was also compiled of birds, mammals and reptiles that will most probably be found in the area in all the other seasons. The different habitats, if any, were explored to identify any sensitive or special species.

No trapping or netting (and ringing) was done on the site, as the brief or scope for this site as stipulated by the client, did not require it. It should be stressed that the survey is by no means an exhaustive list of the plants and animals present on the site but a good indication of the species that might be found there. The time of year is also wrong for identifying plant species, especially Red data species, as most are already dormant. Some idea of the more dominant species and species composition can be given.

4. RESULTS

Please note the various categories of conservation status in brackets after the English name:

- | | |
|----------------------------|----------------------|
| CR = Critically Endangered | NT = Near-Threatened |
| ED = Endangered | R = Rare |
| VU = Vulnerable | I = Indeterminate |

4.1 Flora:

The following exotic species were found on site:

Acacia baileyana (Baileys' Wattle)	Acacia dealbata (Silver Wattle)
Acacia melanoxylon (Blackwood)	Arundo donax (Spanish Reed)
Bidens formosa (Cosmos)	Bidens pilosa (Black Jack)
Cytisus scoparius (Scotch Broom)	Cortaderia selloana (Pampas Grass)
Cortaderia jubata (Pampas grass)	Cirsium vulgare (Scotch Thistle)
Conyza bonariensis (Flax-leaf fleabane)	Cynodon dactylon (Couch Grass)
Datura stramonium (Thorn Apple)	Nasella tenuissima (White Tussock)
Oenothera tetraptera (White Evening Primrose)	Pennisetum clandestinum (Kikuyu)
Plantago lanceolata (Narrow leafed Plantain)	Phragmites australis (Common Reed)
Rumex crispus (Curley dock)	Salix babylonica (Weeping Willow)
Salsola kali (Russian Tumble Weed)	Sesbania pudica
Solanum mauritianum (Bugweed)	Solanum rufum
Solanum sisymbirifolium (Doringbitterappel)	Tagetes minuta (Khaki Weed)
Tipuana tipu (Tipuana)	Verbena brasiliensis (Wild Verbena)

Non invasive Exotic trees :

- Quercus species (Spanish and European Oak trees)
Chinese Elm



The following indigenous Species could be found on Site:

Grasses:

Hyparrhenia hirta (Thatoth grass) - most dominant species

<i>Eragrostis gummiflora</i>	<i>E. curvula</i>
<i>Eragrostis</i> sp.	Cf <i>Mischanthus junceus</i>
<i>Aristida transvaalensis</i>	<i>Imperata cylindrica</i>
<i>Sporobolus africanus</i> (Rats's Tail Dropseed)	<i>Setaria pallida</i>
<i>Chloris virgata</i>	<i>Chloris gayana</i>
<i>Andropogon eucomis</i> (Old Man's beard)	<i>Themeda tryandra</i>
<i>Tristacya biseriata</i>	<i>T. leucothrix</i>
<i>Cymbopogon</i> cf. <i>validus</i> (Giant Turpentine Grass)	

Wetland plants:

<i>Phragmites australis</i> (Common Reed)	<i>Ficinia cinnamomea</i>
<i>Scirpus ficinioides</i>	<i>Typha capensis</i>
<i>Schenoplectus corymbosus</i> (marsh reed)	<i>Cyperus</i> spp.
<i>Limosella major</i>	

Habenaria sp. impossible to ID without the flowers. This orchid is growing in abundance within the area close to the dam.

Terrestrial Lichens and mosses

Trees:

<i>Acacia karroo</i> (Sweet thorn)	<i>Rhus lancea</i> (Karee)
<i>Salix mucronata</i> (Indigenous Willow) planted on this tree does not occur naturally on site	
<i>Rhus</i> cf. <i>pyroides</i> (Taaibos)	

Herbs and bulbs:

<i>Albuca glauca</i>	<i>Acalypha angustata</i> (Copper leaf)
<i>Asclepias burchellii</i> (Milk Bush)	<i>Asclepias fruticosa</i> (Milkweed)
<i>Berkheya seminivea</i> (Thistle Thorn)	<i>Cotzya podocephala</i>
<i>Felicea muricata</i> (White Highveld Little Daisy)	<i>Euryops laxis</i>
<i>Gladiolus crassifolius</i> (Wild Gladiolus)	
<i>Helichrysum acutatum</i> (Sticky Everlasting)	

<i>Habenaria cf arenaria</i> (Terrestrial orchid)	<i>Helichrysum coriaceum</i> (Vaalteebossie)
<i>Helichrysum caespitium</i> (Flat fine medicinal ground cover)	
<i>Helichrysum eppañosum</i>	<i>Helichrysum harveyanum</i>
<i>Helichrysum kraussii</i>	<i>Helichrysum rugulosum</i>
<i>Helichrysum setosum</i> (Yellow Everlasting)	
<i>Hermannia depressa</i> (Carpet leaf ground cover)	<i>Indigofera acutisepala</i> (Wild Sweetpea)
<i>Indigofera filipes</i> or <i>I. Setiflora</i> (Wild pea)	<i>Limosella major</i> (Multistars)
<i>Monsonia angustifolia</i> (Crane's bill)	<i>Pelargonium sp</i> (Wild Geranium)
<i>Pelargonium pseudofumarioides</i> (Miniature little Geranium)	
<i>Plantago lanceolata</i> (Narrow leafed Plantain) Exotic	
<i>Polygala hottentotta</i> (Grassveld Polygala)	<i>Rumex lanceolatus</i> (Smooth Dock)
<i>Senecio inaequidens</i>	<i>Senecio inornatus</i>
<i>Senecio serratuloides</i>	<i>Senecio harveianus</i> or <i>H. inaequidens</i>
<i>Senecio pentactinus</i>	
<i>Selago densiflora</i> (Miniature groundcover)	<i>Senecio inornatus</i>
<i>Senecio sertuloides</i>	<i>Stoebe vulgaris</i> (Bankrupt Bush)
<i>Tephrosia longipes</i> (Wild Pea)	

Most of these herbs are indicators of disturbed veld.



4.2 The following list contain the birds that were actually observed (in bold) as well as birds that will most probably make use and be found on site and does not include over flying birds:

Roberts No.	Name	Scientific Names
6	Great Crested Grebe	<i>Podiceps cristatus</i>
7	Black-necked Grebe	<i>Podiceps nigricollis</i>
8	Little Grebe	<i>Tachybaptus ruficollis</i>
55	White-breasted Cormorant	<i>Phalacrocorax [c.] luctuosus</i>
58	Reed Cormorant	<i>Phalacrocorax africanus</i>
60	Darter	<i>Anhinga melanogaster</i>
62	Grey Heron	<i>Ardea cinerea</i>
63	Blackheaded Heron	<i>Ardea melanoccephala</i>
64	Goliath Heron	<i>Ardea goliath</i>
65	Purple Heron	<i>Ardea purpurea</i>
66	Great (White) Egret	<i>Egretta alba</i>
67	Little Egret	<i>Egretta garzetta</i>
68	Intermediate (Yellow-billed) Egret	<i>Egretta intermedia</i>
69	Black Egret	<i>Egretta ardesiaca</i>
71	Cattle Egret	<i>Bubulcus ibis</i>
72	Squacco Heron	<i>Ardeola ralloides</i>
74	Greenbacked Heron	<i>Butorides striatus</i>
76	Blackcrowned Night Heron	<i>Nycticorax nycticorax</i>
78	Little Bittern	<i>Ixobrychus exilis</i>
81	Hammerkop	<i>Scopus umbretta</i>
85	Abdim's Stork	<i>Ciconia abdimii</i>
87	African Openbill (NT)*	<i>Anastomus lamelligerus</i>
91	Sacred Ibis	<i>Threskiornis aethiopicus</i>
93	Glossy Ibis	<i>Plegadis falcinellus</i>
94	Hadedda Ibis	<i>Bostrychia hagedash</i>
95	African Spoonbill	<i>Platalea alba</i>
96	Greater Flamingo	<i>Phoenicopterus ruber</i>
97	Lesser Flamingo	<i>Phoenicopterus minor</i>
99	White-faced Duck	<i>Dendrocygna viduata</i>
100	Fulvous Duck	<i>Dendrocygna bicolor</i>
102	Egyptian Goose	<i>Alopochen aegyptiacus</i>
104	Yellow-billed Duck	<i>Anas undulata</i>
105	African Black Duck	<i>Anas sparsa</i>
106	Cape Teal	<i>Anas capensis</i>
107	Hottentot Teal	<i>Anas hottentota</i>
108	Red-billed Teal	<i>Anas erythrorhynchos</i>
112	Cape Shoveller	<i>Anas smithii</i>
116	Spur-winged Goose	<i>Plectropterus gambensis</i>
117	Maccoa Duck	<i>Oxyura maccoa</i>
923	Malard Duck	<i>Anas platyrhynchos</i>
126	Black Kite	<i>Milvus migrans</i>
126b	Yellowbilled Kite	<i>Milvus parasituz</i>
127	Blackshouldered Kite	<i>Elanus caeruleus</i>
128	African Cuckoo Hawk	<i>Ayceda cuculoides</i>
149	Steppe Buzzard	<i>Buteo buteo</i>
157	Little Sparrowhawk	<i>Accipiter minullus</i>

199	Swainson's Spurfowl (Francolin)	<i>Pternistes swainsoni</i>
203	Helmeted Guineafowl**	<i>Numida meleagris</i>
210	African Rail	<i>Rallus caerulescens</i>
213	Black Crake	<i>Amaurornis flavirostris</i>
223	Purple Gallinule	<i>Porphyrio porphyrio</i>
226	Moorhen	<i>Gallinula chloropus</i>
228	Red-knobbed Coot	<i>Fulica cristata</i>
248	Kittlitz's Plover	<i>Charadrius pecuarius</i>
249	Three-banded Plover	<i>Charadrius tricoloris</i>
255	Crowned Lapwing (Plover)	<i>Vanellus coronatus</i>
258	Blacksmith Lapwing (Plover)	<i>Vanellus armatus</i>
260	Wattled Lapwing (Plover)	<i>Vanellus senegalus</i>
264	Common Sandpiper	<i>Actitis hypoleucos</i>
266	Wood Sandpiper	<i>Tringa glareola</i>
269	Marsh Sandpiper	<i>Tringa stagnatilis</i>
270	Common Greenshank	<i>Tringa nebularia</i>
272	Curlew Sandpiper	<i>Calidris ferruginea</i>
274	Little Stint	<i>Calidris minuta</i>
284	Ruff	<i>Philomachus pugnax</i>
286	African (Ethiopian) Snipe	<i>Gallinago nigripennis</i>
294	Pied Avocet	<i>Recurvirostra avosetta</i>
295	Black-winged Stilt	<i>Himantopus himantopus</i>
297	Spotted Dikkop	<i>Burhinus capensis</i>
315	Grey-headed Gull	<i>Larus cirrocephalus</i>
338	Whiskered Tern	<i>Chlidonias hybridus</i>
339	White-winged Tern	<i>Chlidonias leucopterus</i>
348	Feral Pigeon	<i>Columba livia</i>
349	Rock Pigeon	<i>Columba guinea</i>
352	Red eyed Dove	<i>Streptopelia semitorquata</i>
354	Cape Turtle Dove	<i>Streptopelia capicola</i>
355	Laughing Dove	<i>Streptopelia senegalensis</i>
373	Grey Go-away-bird (Lourie)	<i>Corythoides concolor</i>
377	Red-chested Cuckoo	<i>Cuculus solitarius</i>
386	Diederik Cuckoo	<i>Chrysococcyx caprius</i>
391a	Burchell's Coucal	<i>Centropus burchelli</i>
392	Barn Owl	<i>Tyto alba</i>
395	Marsh Owl	<i>Asio capensis</i>
401	Spotted Eagle Owl	<i>Bubo africanus</i>
415	Whiterumped Swift	<i>Apus caffer</i>
417	Little Swift	<i>Apus affinis</i>
421	Palm Swift	<i>Cypselurus parvus</i>
424	Speckled Mousebird	<i>Colinus striatus</i>
426	Redfaced Mousebird	<i>Colinus indicus</i>
428	Pied Kingfisher	<i>Ceryle rudis</i>
429	Giant Kingfisher	<i>Megaceryle maxima</i>
431	Malachite Kingfisher	<i>Alcedo cristata</i>
435	Brownhooded Kingfisher	<i>Halcyon albiventris</i>
438	European Bee-eater	<i>Merops apiaster</i>
443	White-fronted Bee-eater	<i>Merops bullockoides</i>
451	Hoopoe	<i>Upupa epops</i>
452	Redbilled Woodhoopoe	<i>Phoeniculus purpureus</i>
464	Blackcollared Barbet	<i>Lybtus torquatus</i>
465	Acacia Pied Barbet	<i>Tricholaema leucomelas</i>

473	Crested Barbet	<i>Trachyphonus vaillantii</i>
476	Lesser Honeyguide	<i>Indicator minor</i>
483	Golden-tailed Woodpecker	<i>Campethera abingoni</i>
486	Cardinal Woodpecker	<i>Dendropicos fuscescens</i>
489	Redthroated Wrenneck	<i>Jynx ruficollis</i>
518	European (Barn) Swallow	<i>Hirundo rustica</i>
520	White-throated Swallow	<i>Hirundo albicollis</i>
523	Pearlbreasted Swallow	<i>Hirundo dimidiata</i>
526	Greater Striped Swallow	<i>Hirundo cucullata</i>
527	Lesser Striped Swallow	<i>Hirundo abyssinica</i>
528	South African Cliff-Swallow	<i>Hirundo spilogera</i>
529	Rock Martin	<i>Hirundo fulgula</i>
530	House Martin	<i>Delichon urbica</i>
532	Sand Martin	<i>Riparia riparia</i>
533	Brown-throated Martin	<i>Riparia paludicola</i>
541	Forktailed Droogo	<i>Dicurus adimilis</i>
548	Pied Crow	<i>Corvus albus</i>
568	Dark-capped (Black-eyed) Bulbul	<i>Pycnonotus tricolor (barbatus)</i>
577	Olive Thrush	<i>Turdus olivaceus</i>
596	African Stonechat	<i>Saxicola torquata</i>
601	Cape Robin	<i>Cossypha caffra</i>
619	Garden Warbler	<i>Sylvia borin</i>
628	Great Reed-Warbler	<i>Acrocephalus arundinaceus</i>
631	African Reed-Warbler	<i>Acrocephalus baeticatus</i>
634	(European) Sedge Warbler	<i>Acrocephalus schoenobaenus</i>
635	Lesser Swamp-Warbler	<i>Acrocephalus gracillirostris</i>
638	Little Rush- (African Sedge) Warbler	<i>Bradypterus baboecala</i>
643	Willow Warbler	<i>Phylloscopus trochilus</i>
661	Grassbird	<i>Sphenoeacus afer</i>
664	Fantailed Cisticola	<i>Cisticola juncidis</i>
665	Desert Cisticola	<i>Cisticola aridula</i>
677	Levaillant's Cisticola	<i>Cisticola tinniens</i>
681	Noddicky	<i>Cisticola subvirens</i>
683	Tawnyflanked Prinia	<i>Prinia subflava</i>
685	Black-chested Prinia	<i>Prinia flavicans</i>
706	Fairy Flycatcher	<i>Stenostira zetta</i>
710	African Paradise-Flycatcher	<i>Terpsiphone viridis</i>
713	Cape Wagtail	<i>Motacilla capensis</i>
716	Grassveld Pipit	<i>Anthus cinnamomeus</i>
727	Orange-throated Longclaw	<i>Macromyx capensis</i>
732	Fiscal Shrike	<i>Lanius collaris</i>
736	Southern Boubou	<i>Laniarius ferrugineus</i>
740	Puffback	<i>Dryoscopus cubla</i>
746	Bokmakierie	<i>Telophorus zeylonus</i>
758	Common Myna	<i>Acridotheres tristis</i>
760	Wattled Starling	<i>Creatophora cinerea</i>
764	Glossy Starling	<i>Lamprotornis nitens</i>
769	Red-winged Starling	<i>Onychognathus morio</i>
787	Whitebellied Sunbird	<i>Nectarinia talatala</i>
792	Black Sunbird	<i>Nectarinia amethystina</i>
796	Cape White-eye	<i>Zosterops pallidus</i>
801	House Sparrow	<i>Passer domesticus</i>
803	Cape Sparrow	<i>Passer melanurus</i>

804	Grey-headed Sparrow	<i>Passer griseus</i>
813	Cape Weaver	<i>Ploceus capensis</i>
814	Masked Weaver	<i>Ploceus velatus</i>
821	Red-billed Quail	<i>Qualea qualea</i>
824	Southern Red Bishop	<i>Euplectes orbic</i>
828	Red-shouldered Widow	<i>Euplectes axillaris</i>
829	White-winged Widow	<i>Euplectes albonotatus</i>
831	Red-collared Widow	<i>Euplectes ardens</i>
832	Long-tailed Widow	<i>Euplectes progn</i>
846	Common Waxbill	<i>Estrilda astrild</i>
852	African Quailfinch	<i>Ortygospiza atricollis</i>
854	Orange-breasted Waxbill	<i>Sporaeopis subflavus</i>
860	Pintailed Whydah	<i>Vidua macroura</i>
869	Yellow-eyed Canary	<i>Serinus mozambicus</i>
870	Black-throated Canary	<i>Serinus atrogularis</i>

(Names in bold were actually seen on site.)

- * A single African Openbill was observed at the most southern point of the site. This species is a very rare and unusual visitor to this area and the whole of Gauteng and is classified as near threatened in the Rare data book
- ** Evidence of breeding observed.

4.3 The Mammals:

The Table below lists the mammal species which definitely occur, based on observations during our site visit (printed in bold), should at times occur based on ecological and distributional parameters (*), or may occur (?) in spite of restrictions imposed by urban development.

*	<i>Myosorex varius</i>	Forest shrew
*	<i>Suncus infirmitissimus</i>	Least dwarf shrew
*	<i>Suncus varilla</i>	Lesser dwarf shrew
*	<i>Crocidura maritimensis</i>	Swamp musk shrew
*	<i>Crocidura moquassiensis</i>	Makwasio musk shrew
*	<i>Crocidura cyanea</i>	Reddish-grey musk shrew
*	<i>Crocidura stlacea</i>	Peters' musk shrew
?	<i>Atelertz frontalis</i> (R)	Hedgehog
?	<i>Chrysochloris villosus</i> (R or CR)	Rough-haired golden mole
?	<i>Amblysomus julianae</i> (R or CR)	Juliana's golden mole
?	<i>Taphozous mauritianus</i>	Tomb bat
?	<i>Tadarida ventralis</i>	Transvaal free-tailed bat
*	<i>Tadarida aegyptiaca</i>	Egyptian free-tailed bat
?	<i>Miniopterus schreibersii</i>	Schreibers' long-fingered bat
?	<i>Myotis welwitschii</i>	Welwitsch's hairy bat
?	<i>Myotis tricolor</i>	Temminck's hairy bat
*	<i>Eptesicus capensis</i>	Cape serotine bat



*	<i>Scotophilus dingyarti</i>	Yellow house bat
*	<i>Scotophilus borbonicus</i>	Lesser yellow house bat
?	<i>Nycteris thebaica</i>	Common alit-faced bat
?	<i>Rhinolophus clivosus</i>	Geoffroy's horseshoe bat
?	<i>Rhinolophus darlingi</i>	Darling's horseshoe bat
?	<i>Rhinolophus blatti</i>	Peak-saddle horseshoe bat
?	<i>Rhinolophus stmulator</i>	Bushveld horseshoe bat
?	<i>Hipposideros caffer</i>	Sundevall's leaf-nosed bat
	<i>Lepus saxatilis</i>	Scrub hare
	<i>Cryptomys hottentotus</i>	Common mole rat
	<i>Otomys angolensis</i>	Angoni vlei rat
	<i>Otomys irroratus</i>	Vlei rat
*	<i>Rhabdomys pumilio</i>	Striped mouse
*	<i>Dasymys inornatus</i>	Water rat
*	<i>Mus musculus</i>	House mouse
*	<i>Mus indutus</i>	Desert pygmy mouse
*	<i>Mastomys coucha</i>	Natal multimammarate mouse
*	<i>Aethomys chrysophilus</i>	Red veld rat
?	<i>Rattus rattus</i>	House rat
?	<i>Tatera leucogaster</i>	Bushveld gerbil
	<i>Tatera brantsii</i>	Highveld gerbil
*	<i>Dendromus melanotis</i>	Grey pygmy climbing mouse
*	<i>Dendromus mystacalis</i>	Chestnut climbing mouse
?	<i>Steatomys pratensis</i>	Fat mouse
	<i>Felis catus</i>	Domestic cat
	<i>Canis familiaris</i>	Domestic dog
	<i>Cynictis penicillata</i>	Yellow mongoose
*	<i>Galerella sanguinea</i>	Slender mongoose

4.4 Following is a list of Reptiles and Amphibian species that theoretically could occur on the site:

CLASS: REPTILIA	REPTILES	Probability of occurrence
ORDER: CHELONIA	TORTOISES	
Suborder: PLEURODIRA	Side-necked Terrapins	
Family: Pelomedusidae	Side-necked Terrapins	
<i>Pelomedusa subrufa</i>	Marsh or Helmeted Terrapin	Low
ORDER: SQUAMATA	SCALE-BEARING REPTILES	
Suborder: LACERTILIA	LIZARDS	
Family: Gekkonidae	Geckos	
<i>Pachydactylus capensis</i>	Cape Thick-toed Gecko	High
<i>Pachydactylus affinis</i>	Transvaal Thick-toed Gecko	Low
Family: Agamidae	Agamas	
<i>Agama aculeata distanti</i>	Distant's Ground Agama	Low

Family: Scincidae	Skinks	
<i>Mabuya capensis</i>	Cape Skink	High
<i>Mabuya punctatissima</i>	Speckled Skink	Medium
<i>Mabuya varia</i>	Variabile Skink	Low
<i>Panaspis wahlbergii</i>	Wahlberg's Snake-eyed Skink	Medium
<i>Acontias gracilicauda</i>	Thin-tailed Legless Lizard	Low
Family: Lacertidae	Old World Lizards or Lacertids	
<i>Nucras lalandii</i>	Delalande's Sandveld Lizard	High
<i>Nucras holubi</i>	Holub's Sandveld Lizard	Low
<i>Nucras ornata</i>	Ornate Sandveld Lizard	Low
Family: Gerrhosauridae	Plated Lizards	
<i>Gerrhosaurus flavigularis</i>	Yellow-throated Plated Lizard	Medium
Family: Cordylidae	Girdled Lizard	
<i>Chamaesaura aenea</i>	Transvaal Grass Lizard	High
Suborder: SERPENTES	SNAKES	
Family: Typhlopidae	Blind Snakes	
<i>Typhlops bibronii</i>	Bibron's Blind Snake	High
Family: Leptotyphlopidae	Thread Snake	
<i>Leptotyphlops scutifrons</i>	Peters' Thread Snake	Medium
Family: Atractaspididae	African Burrowing Snakes	
<i>Atractaspis bibronii</i>	Bibron's Stiletto Snake	High
<i>Aparallactus capensis</i>	Cape Centipede Eater	
Family: Colubridae	Typical Snakes	
<i>Lycodonomorphus rufulus</i>	Brown Water Snake	High
<i>Lamprophis aurora</i>	Aurora House Snake	High
<i>Lamprophis inornatus</i>	Olive House Snake	Low
<i>Lamprophis fuliginosus</i>	Brown House Snake	High
<i>Lycophidion capense capense</i>	Cape Wolf Snake	High
<i>Duberria lutrix lutrix</i>	Common Slug Eater	Low
<i>Pseudaspis cana</i>	Mole Snake	Low
<i>Prosymna sundevallii sundevallii</i>	Sundevall's Shovel-snout	Medium
<i>Psammophylax rhombatus</i>	Rhombic Skapspeker	Medium
<i>Psammophis brevirostris brevirostris</i>	Short-snouted Sand Snake	Low
<i>Psammophis crucifer</i>	Cross-marked Sand Snake	Low
<i>Philothamnus hoplogaster</i>	Green Water Snake	Low
<i>Crotaphopeltis hotamboeia</i>	Herald or Red-lipped Snake	High
<i>Dasyplectis scabra</i>	Common or Rhombic Egg-eater	High
Family: Elapidae	Cobras, Mambas and others	
<i>Elapsoidea sundevallii media</i>	Sundevall's Garter Snake	Low
<i>Hemachatus haemachatus</i>	Rinkhals	High

Family: Viperidae <i>Causus rhombeatus</i>	Adders Rhombic Night Adder	High
CLASS: AMPH Order: ANURA	AMPHIBIANS FROGS	
Family: Pipidae <i>Xenopus laevis laevis</i>	Clawed Frogs Platanna	High
Family: Bufonidae <i>Bufo gutturalis</i> <i>Bufo rangeri</i> <i>Schismaderma carens</i>	Toads Guttural Toad Ranger's Toad Red Toad	High Medium Medium
Family: Ranidae <i>Pyxicephalus adspersus</i> <i>Tomopterna cryptotis</i> <i>Tomopterna natalensis</i> <i>Afrana angolensis</i> <i>Phrynobatrachus natalensis</i> <i>Cocosternum boettgeri</i> <i>Kassina senegalensis</i>	Common Frogs African Bull Frog Tremolo Sand Frog Natal Sand Frog Common River Frog Snoring Puddle Frog Boettger's Froglet Bubbling Kassina	High Medium Medium High Low Medium High

5. DISCUSSION

Flora:

A detailed survey of the flora of this area should be done again (at a later stage in the active growing period of the plants) in late spring as well as in mid-summer in order to compile a complete list of the plant species of this area. The most striking feature of the plant composition is the very thick and tall stand of Thatching Grass (*Hyparrhenia hirta*) that almost covers the entire area. Very few other plants can survive in these circumstances and no sensitive (threatened) plants will be able to compete for food, water and space.

As expected no endangered red data species could be found on site this time of year. Most of the plants are dormant during the cold winter period. Only a single terrestrial orchid species could be found close to the water where it has re-establish itself quite successfully within the open spaces away from the tall Thatch Grasses. A few dry remains of this orchid species' old inflorescence could be seen in the open areas closer to the pans. There is also other indicator species that suggest that some other orchids like *Eulophia welwitschii* could be found here after thorough investigations on site in summer.



Fauna:

The time of year the survey was done is not ideal because all Palearctic and intra-African migrant species are absent from the area and the majority of amphibians are currently hibernating. A good species list for birds is compiled over many years for a certain area. The list will however provide good guidelines as to what can be expected for the area.

The birds can be described as water, garden and/or grassland birds since most of the species are associated with urban gardens, wetlands and grasslands. None of the Red Data species listed in the South African Bird Atlas or any of the species mentioned in the Eskom Red Data Book (Barnes, 2000) is likely to be found on the proposed development site. One species however, the African Openbill was observed on the site and this specie is classified as near threatened. This bird might just be passing through the area and it is uncertain if this specie has established itself in this area due to a lack of reports of this specie. This is one of a very few records of this specie in Gauteng.

Most of the birds presently found in the area should not disappear permanently with the construction but will most probably move into adjacent areas until the development is concluded and the area has been rehabilitated. The number of birds and number of species could even increase with good planning and landscaping.

Sandpan is a relative extensive body of water consisting of a natural depression holding a permanent body of water with former excavations for building sand adjacent to the pan, which in recent years have been flooded to extend the natural body of water. The pan's banks pan are largely covered by reed beds, whereas the higher lying areas are presently covered by dense, mature stands of tall, dry *Hyparrhenia hirta* or Thatching grass. The soil is loose, white sand. A few disused termite mounds were encountered. Collectively the elements mentioned form ideal habitat for the presently dense populations of rodent and shrew species listed above.

No natural trees occur on the site or rocky outcrops. Hence all arboreal and rupicolous mammals are excluded from the putative list of mammals. Itynfield X 51 is bordered by residential developments to the south, east and north. Towards the east of the pan, the last of rural areas in the form of smallholdings are located. The area in general is judged to be too

densely populated and developed to allow natural locomotory migrations to occur, or for residual populations of any of the larger carnivores or any of the antelope species to occur. This statement is borne out by the absence of any sign (tracks and scats) of Cape clawless otter or of water mongoose, in spite of adequate cover in the form of reed beds and steep banks, and of adequate prey in the form of crabs and catfish.

The buildings and other structures of civilization (bridges, warehouses, culverts) in the general area are certain to provide shelter for a number of bats. The pan itself will support swarms of insects during summer, which would attract preying bats at dusk. Hence the list of bats which may over time be found, is rather extensive for the highveld, and is likely to increase as more buildings are erected and gardens established. However, the area is too far south of the natural ranges of any of the fruit bats, which are therefore excluded from the list.

The occurrence of two rare and endangered species cannot be ruled out with certainty, i.e. the rough-haired golden mole (*Crysofalax villosus*), and Juliana's golden mole (*Amblysomus julianae*). Some of the numerous crab burrows along the pan's banks may in fact belong to rough-haired golden moles, whom are alleged to leave their tunnels open, and from which pathways for rooting radiate amongst the dense cover. Whereas the many mole hills found in the area are more than likely pushed up by rodent moles (*Cryptomys hottentotus*), the presence of Juliana's golden mole cannot be ruled out.

PLEASE NOTE: Confirming the absence / presence of any of these two insectivorous species would require extensive trapping and observations, which are best conducted during summer. However, should they be proved to be present, the proposed residential development will have a negligent impact on their continued existence, should the mitigating factors proposed be heeded. It should also be pointed out that the current conservation status of the area will continue to deteriorate, and even if one or both of the species under discussion do indeed occur, they will in due course succumb without directed conservation intervention.

The small terrestrial mammals are often resilient and tolerant towards civilization, given suitable habitat. The dense stands of vegetation along the pan offer excellent habitat for permanent populations of these creatures, and are important for their continued occurrence.

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