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## *Herpetofauna Habitat Scan*

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**The remainder of the farm Vlakplaats 138-IR  
(also known as Mapleton X 10)**

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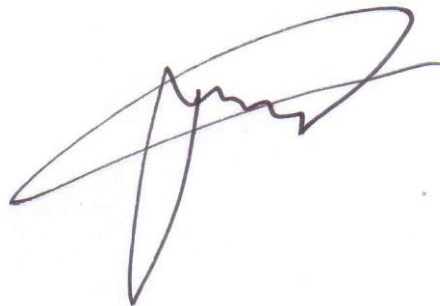
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## Declaration of Independence:

I, Jacobus Casparus Petrus van Wyk (68080450410845) declare that I:

- hold an MSc in the Biological Sciences, which allows registration by SACNASP (SA Council for National Scientific Professions) as a Professional Zoologist and sanctions me to function independently as a specialist scientific consultant
- as per prerequisite of the Natural Scientific Professions Act No. 27 of 2003, present this project as my work from inception and reflects exclusively my observations and unbiased scientific interpretations, executed to the best of my ability
- abide by the Code of Ethics of the SACNASP
- am committed to biodiversity conservation but concomitantly recognise the need for economic development. Even though I appreciate the opportunity to learn through the processes of constructive criticism and debate, I reserve the right to form and hold my own opinions and therefore will not willingly submit to the interests of other parties or change my statements to appease them
- abide by the Code of Ethics of the S.A. Council for Natural Scientific Professions
- act as an independent specialist consultant in the field of Zoology
- am subcontracted as specialist consultant by Galago Environmental CC for the project “Herpetofaunal Habitat Scan on Erven 832-863 & 865 – 866 on the Remainder of the farm VLAKPLAATS 138 IR, Gauteng Province” described in this report
- have no financial interest in the proposed development other than remuneration for work performed
- have or will not have any vested or conflicting interests in the proposed development
- undertake to disclose to Galago Environmental CC and its client as well as the competent authority any material information that have or may have the potential to influence the decision of the competent authority required in terms of the Environmental Impact Assessment Regulations, 2014
- Our intellectual property in this report will only be transferred to the client (the party/ company that commissioned the work) on full payment of the contract fee. Upon transfer of the intellectual property, we recognise that written consent of the client will be required for release of any part of this report to third parties.



J.C.P. van Wyk

# 1. INTRODUCTION

Galago Environmental CC. was appointed to undertake a Herpetofaunal Habitat scan on Erven 832-863 & 865 – 866 on the Remainder of the farm VLAKPLAATS 138 IR, Gauteng Province (the study site), also known as Pomona EXT. 246, which is scheduled for High Density Residential Development.

This report focuses on the reigning status of threatened and sensitive reptiles and amphibians (herpetofauna) likely to occur on the proposed development site and whose conservation status should be considered in the decision-making process. Special attention was paid to the qualitative and quantitative habitat conditions for Red Data species deemed present on the site, and mitigation measures to ameliorate the effect of the proposed development. The secondary objective of the investigation was to gauge which herpetofauna might still reside on the site and comment on the herpetofauna diversity of the study area.

This assignment is in accordance with the 2014 EIA Regulations emanating from Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

## 2. SCOPE AND OBJECTIVES OF THE STUDY

This report:

- is a survey of reptile and amphibian habitats, with comments on preferred habitats;
- comments on ecologically sensitive areas;
- comments on connectivity with natural vegetation and habitats on adjacent sites;
- evaluates the conservation importance and significance of the site with special emphasis on the current status of resident threatened species;
- offers recommendations to reduce or minimise impacts, should the proposed development be approved

## 3. STUDY AREA

This study site lies in the quarter degree grid cell 2628AC (Alberton). The site is situated east of the N3 National Road and to the west of the study site lies the Mapleton X 10 suburb. Luvuyo Street borders the study site on the eastern side. The entire area is 3.6822 hectares in extent and is spatially more accurately defined by 26°19'31.7172"S; 28°12'1.1571"E.

The study site lies inside the Carltonville Dolomite Grassland (Gh 15) vegetation type (Mucina & Rutherford, 2006).

Part of the site has been transformed by fences, invasive plants, indiscriminate dumping of rubbish, diggings, foot paths and gravel roads.

A few sweet thorn trees, (*Acacia karroo*), grow on the site. Many of the plants on the site are exotic and invasive such as kikuyu grass, cosmos, Spanish reeds, fruit trees, *Eucalyptus*, mulberry trees and tall khaki weeds.

The substrate is mostly sandy soil and no important topographical feature occurs on the study site.

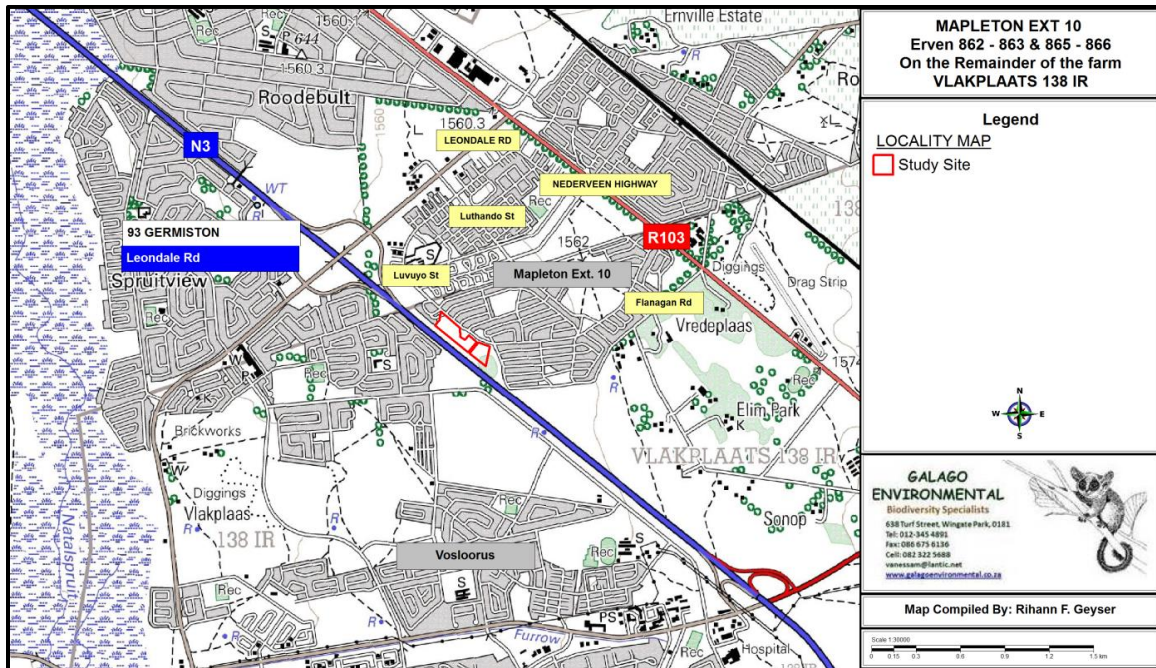


Figure 1: Locality map of the study area

## 4. METHOD

The site visit was conducted on 14 March 2017. During this visit the observed and derived presence of reptiles and amphibians associated with the recognised habitat types of the study site was recorded. This was done with due regard to the well-recorded global distributions of Southern African herpetofauna, coupled with the qualitative and quantitative nature of recognised habitats.

The 500 metres of adjoining properties were scanned for important fauna habitats.

### 4.1 Field Surveys

During the site visit, reptiles and amphibians were identified by visual sightings through random transect walks. Amphibian diversity was also established by means of acoustic identification. No trapping was conducted, as the terms of reference did not require such intensive work.

### 4.2 Desktop Surveys

As the majority of reptiles and amphibians are secretive, nocturnal and/or poikilothermic or seasonal, distributional ranges and the presence of suitable habitats were used to deduce the presence or absence of these species based on authoritative tomes, scientific literature, field guides, atlases and databases. This can be done irrespective of season.

The probability of the occurrence of reptile and amphibian species was based on their respective geographical distributional ranges and the suitability of on-site habitats.

Conclusions were drawn based on the impressions gathered during the site visit, as well as publications such as FitzSimons' Snakes of Southern Africa (Broadley, 1990), Field Guide to Snakes and other Reptiles of Southern Africa (Branch, 1998), A Guide to the Reptiles of Southern Africa (Alexander & Marais, 2007), Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates, Branch, Bauer, Burger, Marais, Alexander & De Villiers, 2014), Amphibians of Central and Southern Africa (Channing 2001), Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland (Minter, Burger, Harrison, Braack, Bishop & Kloepfer, 2004, 2004) and A Complete Guide to the Frogs of Southern Africa (Du Preez & Carruthers, 2009). The latest taxonomic nomenclature was used. The vegetation type was defined according to the standard handbook by Mucina and Rutherford (eds) (2006).

### 4.3 Specific Requirements

During the visit the site was surveyed and assessed for the potential occurrence of Red Data species in Gauteng (Alexander & Marais, 2007; Minter, *et al*, 2004, Du Preez & Carruthers, 2009 and Bates, *et al*, 2014) such as:

- Nile Crocodile (*Crocodylus niloticus*);
- Giant Bullfrogs (*Pyxicephalus adspersus*);
- Coppery Grass Lizard (*Chamaejasura aenea*);
- Striped Harlequin Snake (*Homoroselaps dorsalis*);
- The Southern African Python (*Python natalensis*).

## 5. RESULTS

The vegetation types of the site were analysed according to Mucina and Rutherford (2006).

### ***Herpetofauna Habitat Assessment:***

The local occurrences of reptiles and amphibians are closely dependent on broadly defined habitat types, in particular terrestrial, arboreal (tree-living), rupicolous (rock-dwelling) and wetland-associated vegetation cover. It is thus possible to deduce the presence or absence of reptile and amphibian species by evaluating the habitat types within the context of global distribution ranges. From a herpetological habitat perspective, it was established that only one of the four major habitats is naturally present on the study site, namely terrestrial.

No moribund termitaria were recorded. These structures are good indicators of the occurrence of small herpetofauna. Accordingly, it is estimated that the reptile and amphibian population density for the study site is lower. At the time of the site visit the basal cover was good in many places and would provide adequate cover for small terrestrial herpetofauna (Figure 2).



**Figure 2: A southerly view of the study site. Note the good basal cover after the rains.**

Part of the site has been transformed by fences, invasive plants, indiscriminate dumping of rubbish, diggings, foot paths and gravel roads.

There are some loose rocks (Figure 3) as a result of digging in one area, but in general there are no natural rupicolous habitats on the study site. Manmade rupicolous habitat exists in the form of building rubble (Figure 4). These man-made habitats offer nooks and crannies as refuge for some common rupicolous herpetofauna. Due to the absence of natural rupicolous habitat, some species like yellow-throated plated lizard, common girdled lizard and rock agama should not occur on the study site.



**Figure 3: Some scattered rocks on the study site.**



**Figure 4: Building rubble on the study site.**

Only a few sweet thorn trees occur on the site (Figure 2), but they are not enough to create natural arboreal habitat. Due to the absence of natural arboreal habitat, some species like the flap-neck chameleon should not occur on the study site. Due to the presence of squatters, who need firewood near the study site, there are no dead logs, which could have provided shelter and food for some herpetofauna.

No aquatic habitat or wetland-associated vegetation cover occur on the study site, only a storm water drainage line (Figure 5).



**Figure 5: Storm water drainage line on the study site.**

Connectivity on the study site is poor. The study site is surrounded by the busy N3 National Road and various properties.

Sight records were also used to compile this herpetofaunal report.

***Threatened and Red listed Reptile and Amphibian Species:***

The study site falls outside the natural range of the Nile crocodile and the Southern African python and these species should not occur on the study site.



The striped harlequin snake has been recorded on this quarter degree square (TVL Museum Records or Ditsong Museum of Natural History), but no moribund termitaria, where this species is most likely to be found, are present on the study site. It is very difficult to confirm whether this cryptic snake is present on any site, but this species should not occur on this particular study site.

The Coppery grass lizard (*Chamaesaura aenea*) has not been recorded on this quarter degree square (TVL Museum Records or Ditsong Museum of Natural History). Due to the generally disturbed nature and small size of the study site, this species should not occur on the site at present.

The study site is either unsuitable for any Red Data reptile species or falls outside their natural distribution range.

The study site and the 500 metre surrounding area contain no temporary dams, which are potential breeding places for giant bullfrogs. This species should not occur on this particular study site.

**Expected and Observed Herpetofauna Species Richness:**

The species richness is poor due to the small size of the study site, the disturbed nature of some parts and the fact that no permanent or temporary water ponds are found on the actual study site. One reptile species was confirmed during the site visit (Table 1).

The American red-eared terrapin (*Trachemys scripta elegans*) and the Brahminy blind snake (*Ramphotyphlops braminus*) are the only two feral reptile or amphibian species known to occur in South Africa (De Moor and Bruton, 1988; Picker and Griffiths, 2011), but with only a few populations, they are not expected to occur on this particular site.

The species assemblage is typical of what can be expected of habitat that is severely disturbed, but with sufficient habitat to sustain populations. Most of the species of the resident diversity are fairly common and widespread (viz. the common house snake, mole snake, speckled rock skink, guttural toad, red toad and Boettger's Caco).

**Table 1: Reptile and Amphibian species positively confirmed on the study site, observed indicators and habitat.**

SCIENTIFIC NAME	ENGLISH NAME	OBSERVATION INDICATOR	HABITAT
<i>Trachylepis punctatissima</i>	Speckled Rock Skink	Sight record of a few individuals on buildings and building rubble	Man-made rupicolous habitat

The speckled rock skink listed in Table 1 should be abundant on the study site and elsewhere in its range.

## 6. FINDINGS AND POTENTIAL IMPLICATIONS

No important topographical feature occurs on the study site. Part of the site has been transformed by fences, invasive plants, indiscriminate dumping of rubbish, diggings, foot paths and gravel roads.

Species richness: The species richness is poor due to the small size of the study site and its disturbed nature.

Endangered species: No Red Data herpetofauna should be found on this study site.

Sensitive species and/or areas (Conservation ranking): The study site falls in the Carltonville Dolomite Grassland (Gh 15) vegetation type, which is considered as Vulnerable (Mucina & Rutherford, 2006).

Habitat(s) quality and extent: Part of the site has been transformed by fences, invasive plants, indiscriminate dumping of rubbish, diggings, foot paths and gravel roads.

Impact on species richness and conservation: The residential development will have a large and permanent footprint.

Connectivity: Connectivity on the study site is poor.

Management recommendation: Alien and invasive plants must be removed.

General: From a herpetological perspective, there is no objection against the proposed development.

## 7. LIMITATIONS, ASSUMPTIONS AND GAPS IN KNOWLEDGE

Galago Biodiversity and Aquatic Specialists are committed to the conservation of biodiversity but concomitantly recognise the need for economic development. Even though we appreciate the opportunity to learn through the processes of constructive criticism and debate, we reserve the right to form and hold our own opinions and therefore will not willingly submit to the interest of other parties or change statements to appease them.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. To some extent, conclusions are drawn and proposed mitigation measures suggested based on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons to account for fluctuating environmental conditions and migrations. Since environmental impact studies deal with dynamic natural systems, additional information may come to light at a later stage. Galago Biodiversity and Aquatic Specialists can therefore not accept responsibility for conclusions drawn and mitigation measures suggested in good faith based on own databases or on the information provided at the time of the directive. This report should therefore be viewed and acted upon with these limitations in mind.

## 8. RECOMMENDED MITIGATION MEASURES

The following mitigation measures are proposed by the specialist.

- If any herpetological species are encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity.
- Alien and invasive plants must be removed.

## 9. CONCLUSION

The study site falls the Carltonville Dolomite Grassland (Gh 15) vegetation type, which is considered as Vulnerable (Mucina & Rutherford, 2006).

No Red Data herpetofauna should be found on the site, but removal of invasive plants, rubbish and building rubble will greatly improve the area.

From a herpetological perspective, the site has a low sensitivity.

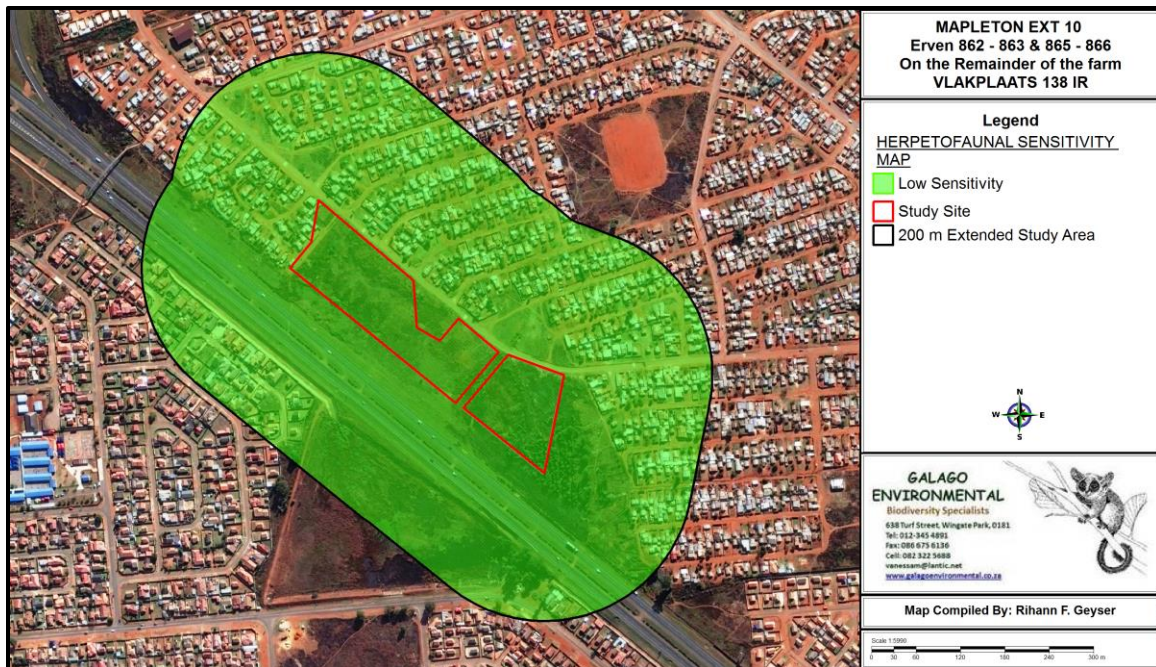


Figure 6: Herpetofaunal Sensitivity Map

## 10. LITERATURE SOURCES

Alexander, G. & Marais J. 2007. *A Guide to the Reptiles of Southern Africa*. Struik Publishers, Cape Town 408pp.

Bates, M.F., Branch, W.R., Bauer, A.M., Burger, M., Marais, J., Alexander, G.J. & De Villiers, M.S.(eds). 2014. *Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland. Suricata 1*. South African National Biodiversity Institute, Pretoria.

Branch, W.R. (Editor), August 1988. *South African Red Data Book – Reptiles and Amphibians*. S.A.National Scientific Programmes, Report No. 151, 244 pp.

- Branch, W.R. 1998. *Field Guide to the Snakes and other Reptiles of Southern Africa*. 3rd edition. Struik Publishers, Cape Town. 399 pp., maps, 112 plates.
- Branch, W.R. 2002. 'The Conservation Status of South Africa's threatened Reptiles': 89 – 103. In: G.H.Verdoorn & J. le Roux (editors), 'The State of Southern Africa's Species', Proceedings of a conference held at the Rosebank Hotel, 4 – 7 September 2001. World Wildlife Fund.
- Broadley, D.G. 1990. *FitzSimons' Snakes of Southern Africa*. Jonathan Ball & Ad Donker Publishers. 387pp.
- Carruthers, V. & Du Preez L. 2011. *Frogs & Frogging*. Struik Nature, Cape Town. p108.
- Channing, A. 2001. *Amphibians of Central and Southern Africa*. Protea Bookhouse Pretoria. 470pp.
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).
- De Moor I.J. & Bruton M.N. 1988. *Atlas of alien and translocated indigenous aquatic animals in southern Africa*. S.A.National Scientific Programmes, Report No. 144, 310pp.
- Department of Environmental Affairs and Tourism. 2007. National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): Publication of Lists of Critically Endangered, Endangered, Vulnerable and Protected Species. Government Notices.
- Du Preez L. & Carruthers V. 2009. *A Complete Guide to the Frogs of Southern Africa*. Struik Publishers, Cape Town. 488 pp.
- Environmental Conservation Act, 1989 (Act No. 73 of 1989).
- GDARD, 2014. *Requirements for biodiversity assessments, Version 3*. Directorate of Nature Conservation, Department of Agriculture and Rural Development.
- Measey, G.J. (ed.) 2011. Ensuring a future for South Africa's frogs: a strategy for conservation research. *SANBI Biodiversity Series 19*. South African National Biodiversity Institute, Pretoria. 84pp
- Minter, L.R., Burger, M., Harrison, J.A., Braack, H.H., Bishop, P.J. and Kloepfer, D. eds. 2004. *Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland*. SI/MAB Series #9. Smithsonian Institution, Washington, DC.
- Mucina, L. & Rutherford, M.C. 2006. *The vegetation of South Africa, Lesotho and Swaziland*. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- National Environmental Management Act, 1998 (Act No. 107 of 1998).
- National Environmental Management Biodiversity Act, 2004 (Act 10 Of 2004). Government Gazette RSA Vol. 467, 26436, Cape Town, June 2004.
- National Environmental Management Biodiversity Act, 2004. (Act 10 of 2004). Draft List of Threatened Ecosystems. Government Gazette RSA Vol. 1477, 32689, Cape Town, 6 Nov 2009.
- National Forests Act, 2006 (Act 84 of 1998 as amended). Government Gazette RSA Vol. 897, 29062, Cape Town, 8 Sept 2006.
- Natural Scientific Professions Act, 2003 (Act 27 of 2003).
- Picker M. & Griffiths C. 2011. *Alien & Invasive Animals. A South African Perspective*. Struik Nature, Cape Town. P240.