

**DRAFT BASIC ASSESSMENT REPORT
SECTION F: APPENDICES**

**DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE: PORTION 7 AND 8 OF
THE FARM BOERBOOMKRAAL 353 KT AT BURGERSFORT WITHIN THE GREATER
TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT,
LIMPOPO PROVINCE.
PROJECT NUMBER: 12/1/9/3-GS 5**

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LIMPOPO PROVINCIAL GOVERNMENT**

MARCH 2015

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ABBREVIATIONS

ASAP	As Soon As Possible
Asl	Above sea level
DAFF	Department of Agriculture, Forestry and Fisheries
LEDET	Department of Economic Development, Environment and Tourism
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ESCOM	Electricity Supply Commission
GPS	Geographical Positioning System
HIA	Heritage Impact Assessment
HIV	Human Immunodeficiency Virus
I&AP's	Interested and Affected Parties
IEM	Integrated Environmental Management
LEDET	Department of Economic Development, Environment and Tourism
LSA	Late Stone Age
m	metre
mm	millimetre
NA	Not Applicable
NDA	National Department of Agriculture
NEMA	National Environmental Management Act
PDI	Previously Disadvantaged Individual
RES	Rhengu Environmental Services
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
Sqm	Square Metre

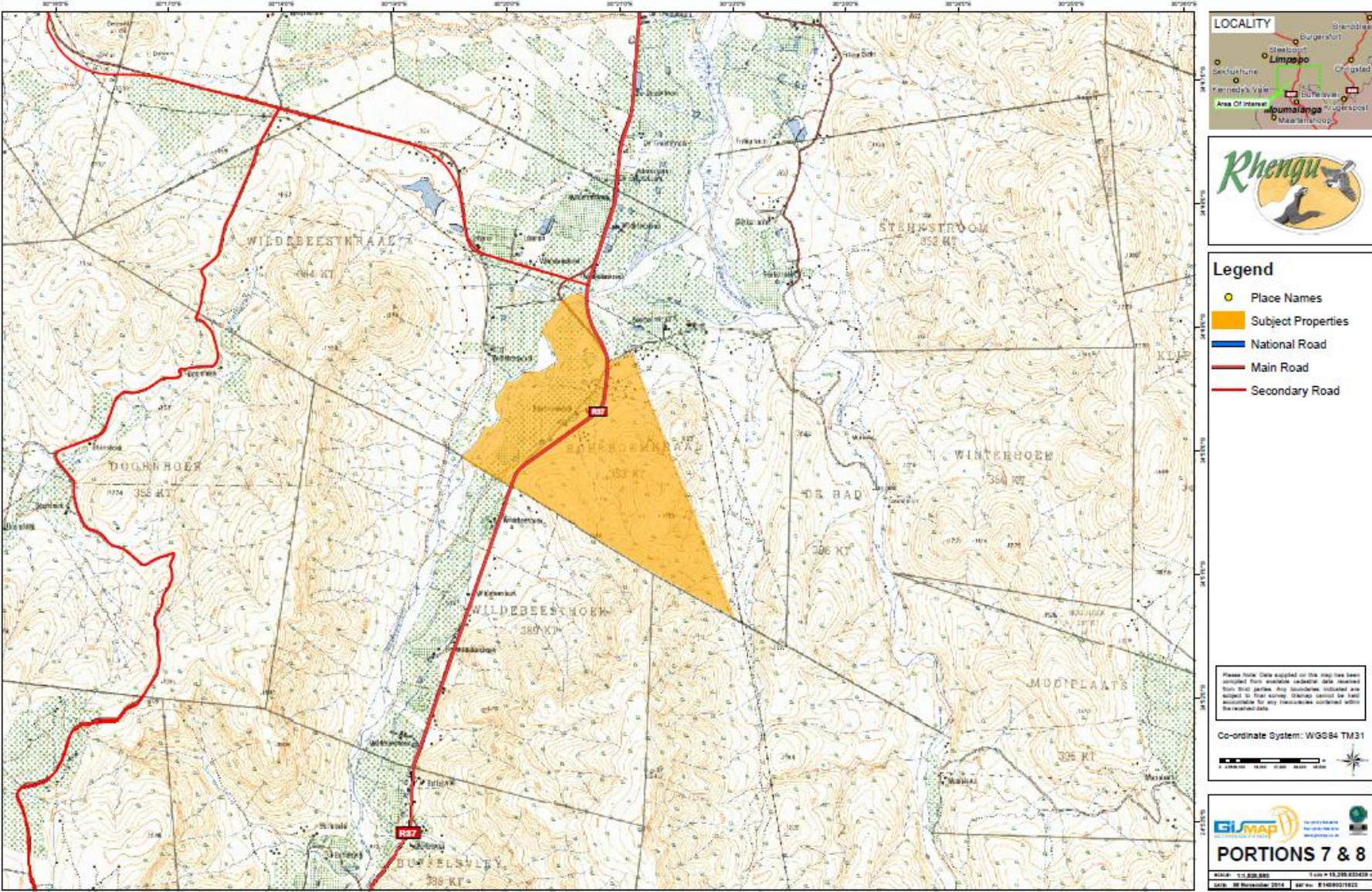
APPENDIX A:
SITE MAPS

GPS Positions of the Property Corners of the Project Site as per Maps included in Appendix A: See Maps below.

Label as per Map	Longitude E	Latitude S
1	E 30° 19' 59.825"	S 24° 50' 15.366"
2	E 30° 19' 44.793"	S 24° 50' 7.130"
3	E 30° 19' 44.680"	S 24° 50' 6.162"
4	E 30° 19' 51.536"	S 24° 50' 1.571"
5	E 30° 20' 21.598"	S 24° 49' 1.038"
6	E 30° 20' 27.163"	S 24° 48' 50.916"
7	E 30° 20' 33.994"	S 24° 48' 50.860"
8	E 30° 20' 46.315"	S 24° 49' 39.453"
9	E 30° 20' 45.465"	S 24° 49' 39.922"
10	E 30° 20' 42.136"	S 24° 49' 36.898"
11	E 30° 20' 39.532"	S 24° 49' 39.294"
12	E 30° 20' 35.528"	S 24° 49' 39.277"
13	E 30° 20' 35.470"	S 24° 49' 41.340"
14	E 30° 20' 39.662"	S 24° 49' 41.445"
15	E 30° 20' 39.602"	S 24° 49' 43.895"
16	E 30° 20' 0.237"	S 24° 50' 15.621"
17	E 30° 20' 53.087"	S 24° 49' 14.805"
18	E 30° 21' 5.356"	S 24° 49' 10.688"
19	E 30° 21' 15.035"	S 24° 49' 33.645"
20	E 30° 21' 14.923"	S 24° 49' 37.084"
21	E 30° 20' 18.166"	S 24° 50' 1.943"
22	E 30° 20' 14.868"	S 24° 50' 1.929"
A	E 30° 20' 52.918"	S 24° 49' 38.046"
B	E 30° 20' 11.656"	S 24° 49' 27.309"
C	E 30° 20' 27.563"	S 24° 48' 55.348"
D	E 30° 20' 39.971"	S 24° 49' 3.146"
E	E 30° 20' 40.145"	S 24° 48' 54.948"

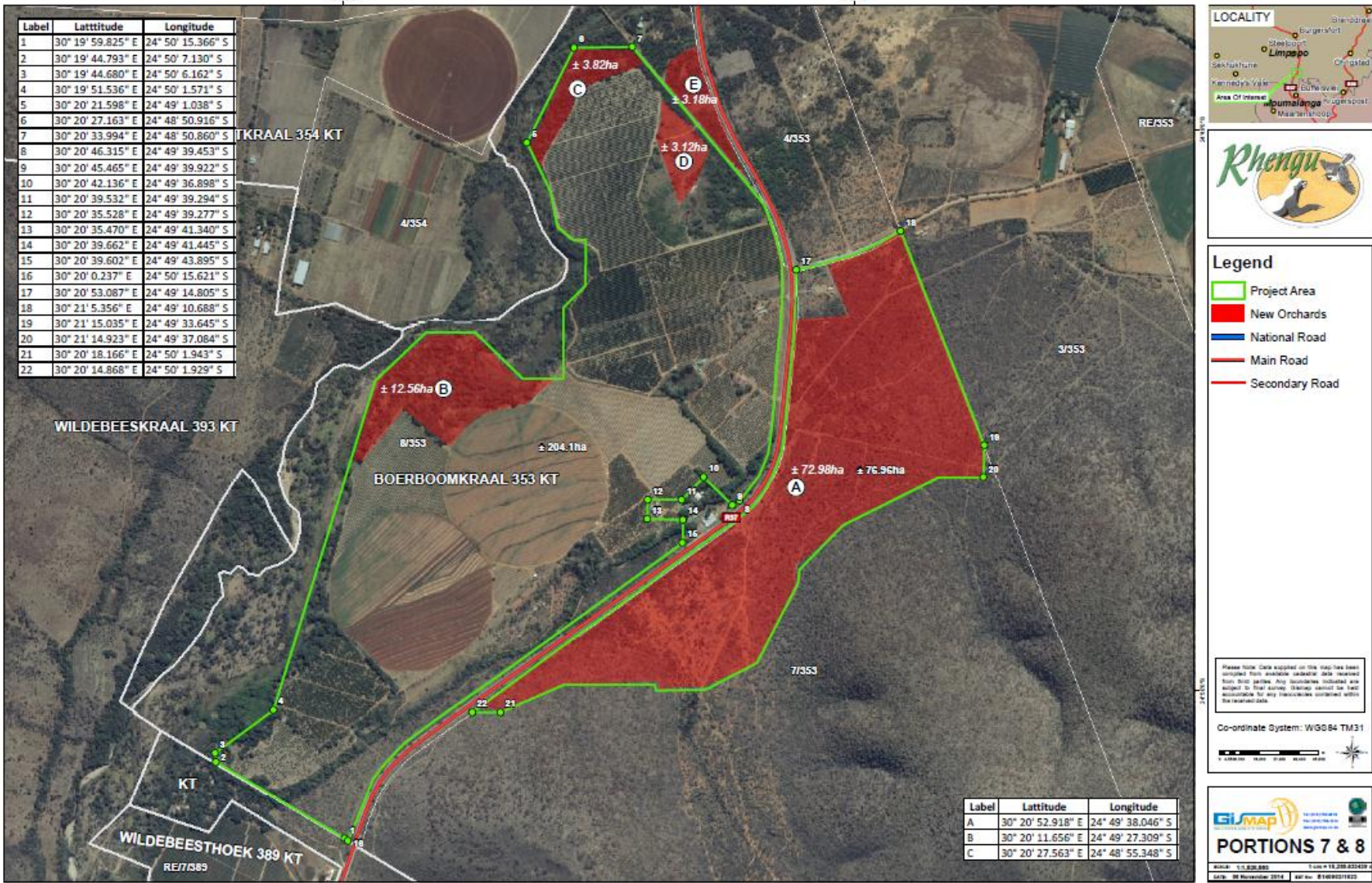
TOPOGRAPHICAL MAP: PORTIONS 7 AND 8: BOERBOOMKRAAL 353 KT

BOERBOOMKRAAL 353 KT



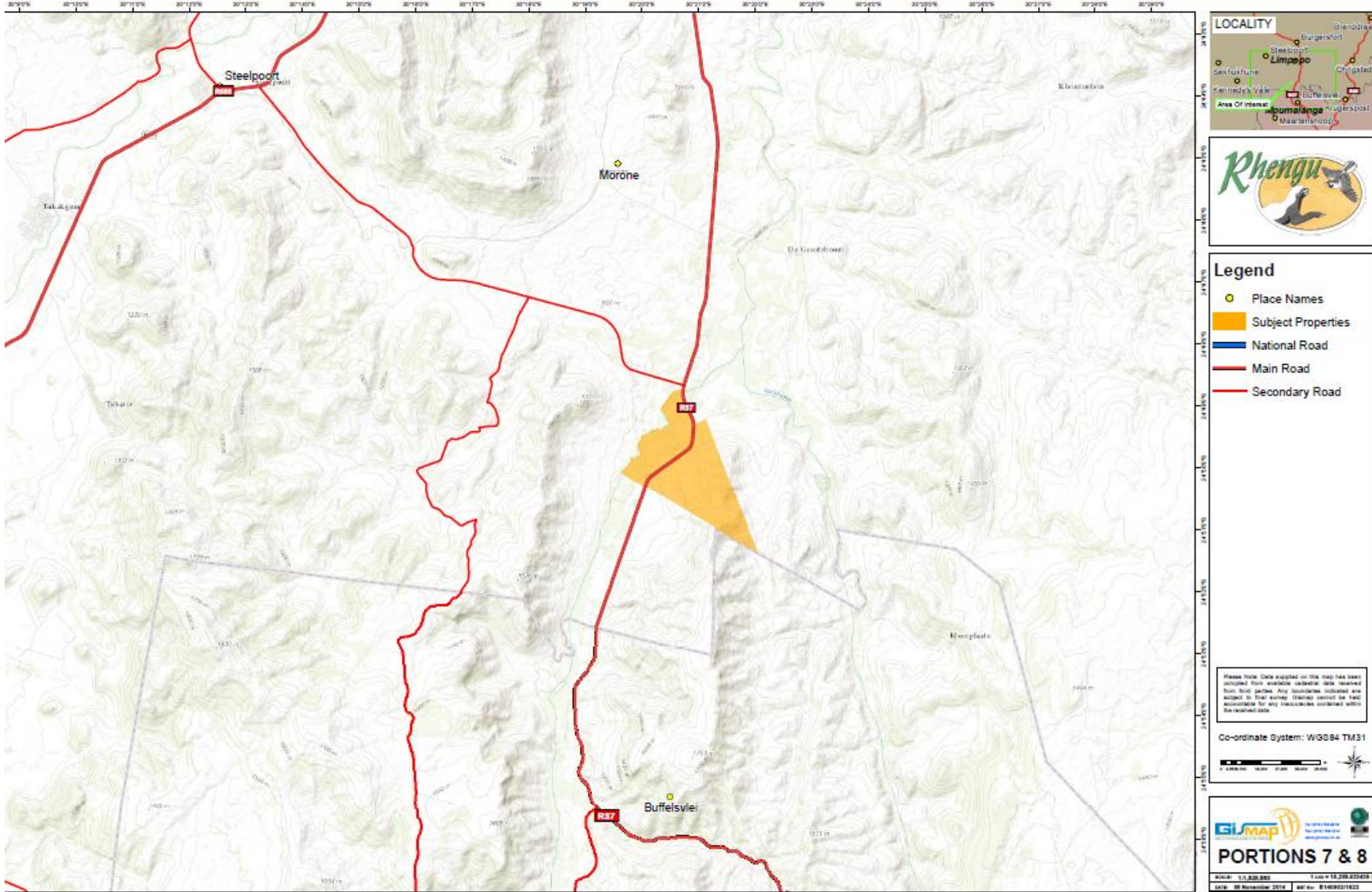
GOOGLE MAP: PORTIONS 7 AND 8: BOERBOOMKRAAL 353 KT

BOERBOOMKRAAL 353 KT



LOCALITY MAP: PORTIONS 7 AND 8: BOERBOOMKRAAL 353 KT

BOERBOOMKRAAL 353 KT



APPENDIX B:
SITE - AND PROJECT PHOTOGRAPHS

Site Photographs: EIA: Portion 7 and 8 Boerboomkraal 353 KT



Figure 1: Waterval Sitrus is a stable farming enterprise.



Figure 2: Citrus Farming has been at the core of the farming business for many decades.



Figure 3: Eskom Lines traverse the farm at various points.



Figure 4: The Farm Packhouse.

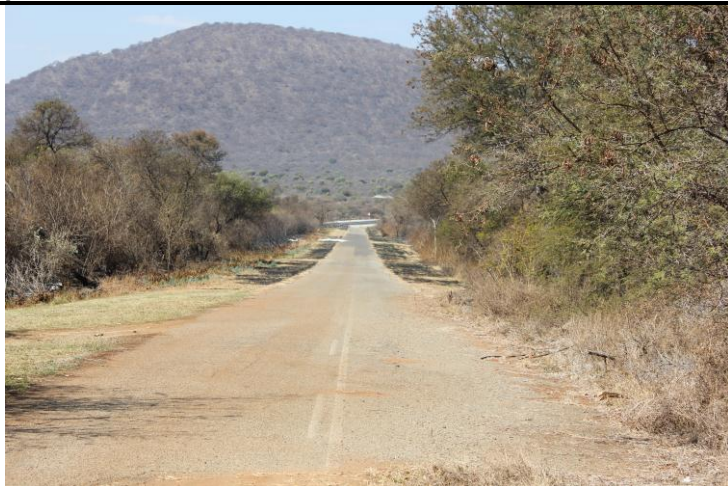


Figure 5: The old tar road to Burgersfort traverses a section of the farm separating sections D and E.



Figure 6: The new road to Burgersfort dividing the two project portions 7 and 8.

Site Photographs: EIA: Portion 7 and 8 Boerboomkraal 353 KT



Figure 7: The Game Section is home to a recreational camp for hunters and associated activities.



Figure 8: Waterhole providing water for game.



Figure 9: Redundant farm infrastructure is found on the project sections B and C.



Figure 10: The game is fed at certain sites of the game camp.



Figure 11: An old, redundant structure was found on the project boundary.



Figure 12: Some grave sites are found in the Project Area A.

Site Photographs: EIA: Portion 7 and 8 Boerboomkraal 353 KT



Figure 13: Large *Acacia sieberiana* trees are found in the floodplain zone.



Figure 14: Unused sections of the farm are becoming dumping grounds for the littering public.



Figure 15: Alien invader plants are located in an unused section of the farm.



Figure 16: Alien invader plants are located in an unused section of the farm.



Figure 17: Alien invader plants are located in an unused section of the farm.



Figure 18: Alien invader plants are located in an unused section of the farm.

Site Photographs: EIA: Portion 7 and 8 Boerboomkraal 353 KT



Figure 19: Dr. Deacon conducting Biodiversity Studies.



Figure 20: Dr. Deacon conducting Biodiversity Studies.



Figure 21: Public Participation: Site Visit.



Figure 22: Public Participation. Meeting.

COPIES OF SITE ADVERTISEMENTS



Waterval Citrus Gate 1: S 24° 49' 43.5'' E 30° 2' 41.3''



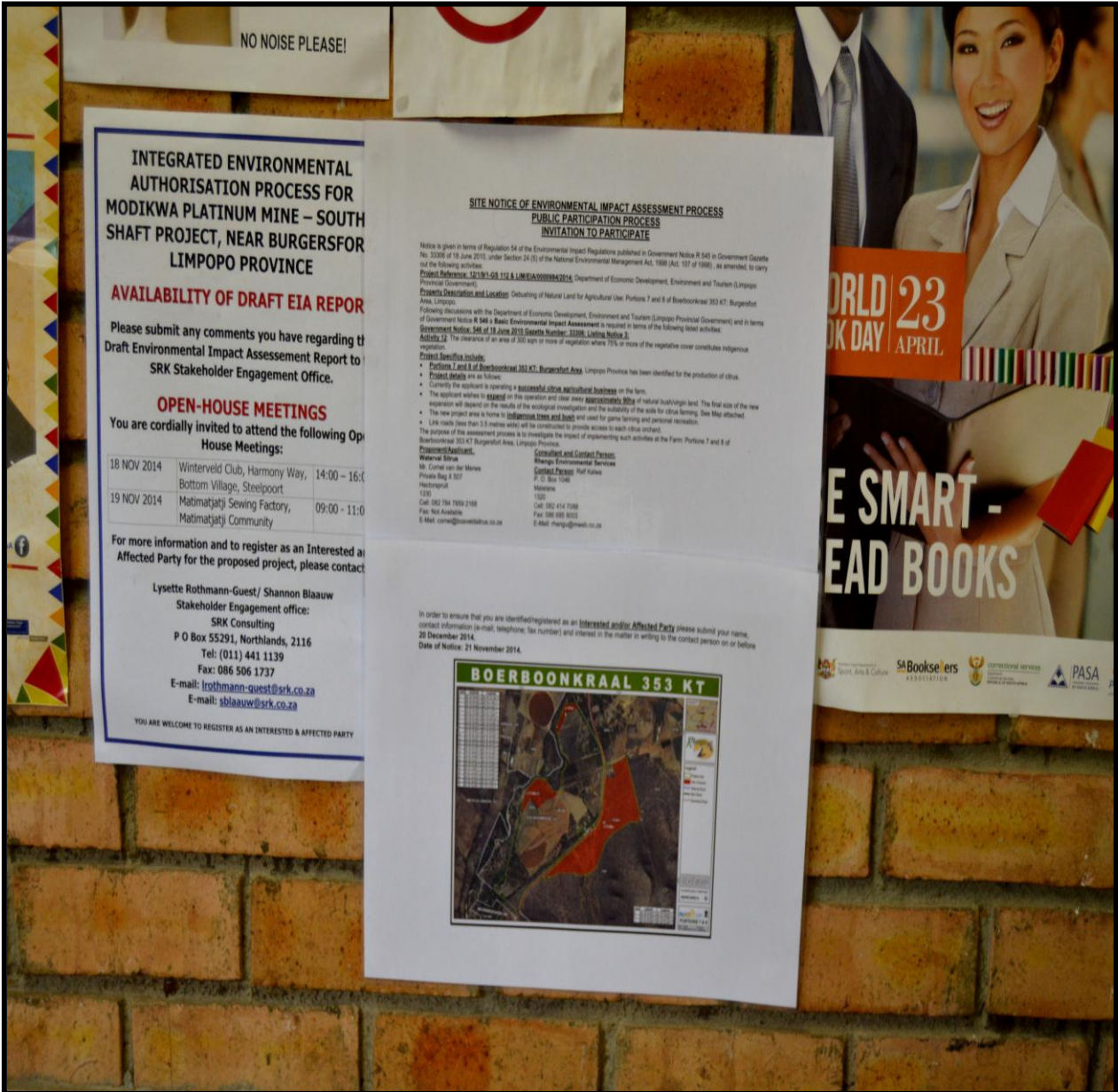
Gate 2: S 24°49'41.3'' E 30°20'46.3''



Fence 1: S 24°49'30.2'' E 30°20'51.8''



Fence 2: S 24°49'30.3'' E 30°20'50.8''



Library Burgersfort: S 24°40'40.9" E 30°19'51.3"

APPENDIX C:
FACILITY ILLUSTRATIONS

NONE: No construction will take place. No facilities will be constructed.

APPENDIX D:
SPECIALIST REPORTS

D.1. Soil Specialist Report

The contents of this report (spelling and grammar) remain unchanged. See BAR for an English Summary of the Key Points.

**GRONDKARTERINGSVERSLAG
VIR DIE PLAAS BOERBOOM KRAAL**

OPGESTEL DEUR

H.B BOOYENS, Cert.Sci.Nat **, B.C. SCHOONWINKEL** & G.

TUFFNEY

** Geakrediteerde Lid van die Suid Afrikaanse Grondopnemers Organisasie

LANDBOUKUNDIGE

W. Fourie

OKTOBER 2014

INHOUDSOPGAWE

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**the science of growing • wetenskap vir groei*

1. INLEIDING

Die doel van die opname was om 'n grondkaart daar te stel om sodoende optimale grondgebruik te bewerkstellig en plaasbeplanning vir volhoubare gewasverbouing onder besproeiing te vergemaklik.

2. WERKSWYSE

Basis data

Die uitleg van observasiepunte is met behulp van lugfotos en "Google Earth" satellietbeelde gedoen. Waarnemings was per observasiepunt aangeteken en grondgrense vanaf die veldwerk ingetrek.

Veldwerk

Waarnemings is met behulp van 'n meganiese boor tot op 'n diepte van 2.1 m of tot op die beperkende laag gedoen. Die grondvorm en grondfisiese eienskappe soos diepte, tekstuur en die voorkoms van oppervlakteklip is by elke waarneming aangeteken. Die gronde is volgens die Taksonomiese Grondklassifikasiesisteen van Suid-Afrika geklassifiseer (Grondklassifikasiewerkgroep, 1991).

3. GRONDTIPES EN EIENSKAPPE

Die dominante grondtipes wat op die plaas voorkom word hier onder aangedui.

	<p style="text-align: center;">CLOVELLY</p> <p style="text-align: center;">Orties/Geel-Bruin Apedaal B/Ongespesifiseerde Materiaal</p> <p>Die aangeduide diepte van die Clovellyvorm is tot waar die geelbruin apedale horison eindig en na die onderliggende ongespesifiseerde materiaal (gewoonlik rots of saproliet) oorgaan. Soliede rots is totaal beperkend vir wortelindringing, terwyl gebroke rots en saproliet wortelgroei ernstig benadeel.</p>
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	<p style="text-align: center;">HUTTON</p> <p style="text-align: center;">Orties/Rooi Apedaal B/Ongespesifiseerde Materiaal</p> <p>Die aangeduide diepte van die Huttonvorm is tot waar die rooi apedale horison eindig en na die onderliggende ongespesifiseerde materiaal (gewoonlik rots of saproliet) oorgaan. Soliede rots is totaal beperkend vir wortelpenetrasie, terwyl gebroke rots en saproliet wortelgroei ernstig benadeel. In gevalle wanneer die grondprofiel sodanig diep is dat die onderliggende laag nie met die boortoerusting bereik kon word nie, is die diepte van waarneming as effektiewe diepte aangedui.</p>
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4. GROND POTENSIAAL OORSIG

Boerboom Kraal

Daar word twee (2) dominante gronde op hierdie plaas aangetref (Clovelly (Cv) en Hutton (Hu)) wat 58.8 ha van die totale oppervlakte beslaan. Gronde se potensiaal word deur gronddiepte, tekstuur, struktuur, teenwoordigheid of afwesigheid van gruis, klip, konkresies of enige ander beperkende materiaal binne die grondprofiel asook die klimaat bepaal.

Die Augrabies (Ag), Clovelly (Cv), Hutton (Hu), Knersvlakte (Kn), Kimberley (Ky), Molopo (Mp) en Trawal (Tr) gronde het droë onderliggende materiaal wat 'n teken is dat water vrylik sal dreineer. In die gronde sal versuip-toestande nie somer voorkom nie. Die Augrabies (Ag), Clovelly (Cv), Hutton (Hu), Knersvlakte (Kn), Kimberley (Ky), Molopo (Mp) en Trawal (Tr) se vermoë om water in die profiel te stoor is nie so goed nie. Daar is nie 'n keerlaag soos sagte plintiet wat dreinerings van water uit die profiel kan keer nie. Hierdie gronde se diepte word deur kliplae, rots, verweerde rots en dorbanke beperk. Dorbanke kan meganies of chemies opgehef word wat wortelindringing bevorder. Diepte van die gronde is die grootste beperking op potensiaal.

Die Augrabies (Ag), Kimberley (Ky), Molopo (Mp) en Trawal (Tr) gronde bevat karbonaat (neokarbonaat of sagte karbonaat) in die ondergrond. Ondergrond pH is daarom redelik hoog wat moontlik die opname van sekere plantvoedingstowwe kan beperk. Die sagte karbonaat horisonte kan egter heelwat water vashou en beskikbaar stel vir plant opname. Gereelde chemiese ontledings word daarom aanbeveel om chemiese status van die gronde te bepaal sodat chemiese regstellings vroegtydig gedoen kan word.

Effektiewe diepte is dominant <40cm (65.4% of 44.9 ha). Hierdie gronde se diepte word deur gebroke klip/kliplyn, dorbank of rots beperk. Waar hierdie gronde se diepte deur dorbanke of kliplyne beperk word, kan die beperkings met 'n diep skeurtand bewerking opgehef word. Operding kan oorweeg word om gronddiepte te verhoog.

Besproeiingskedulering gaan krities wees aangesien gronde vinnig sal toeslaan as gevolg van die hoë natuurlike kalsium/magnesium inhoud en relatief hoë klei-inhoud van van die gronde. Oormatige besproeiing aan bokant van hellings kan tot versuiping van laerliggende gronde lei. Deur die vlakker gronde op te erd kan gronddiepte verhoog word. Die dieper gronde is die mees geskikste gronde vir gewasverbouing op hierdie plaas. Gereelde chemiese ontleding van die bogronde word aanbeveel om die kalsium/magnesium status van die gronde te bepaal en reg te stel om sodoende toeslaan van gronde te verhoed.

Die gemiddelde bogrond klei-inhoud van die gronde is 10-25%. Die 2^{de} horison se klei-inhoud is dominant 15-20%(25.4%). Die 3^{de} horison en dieper se klei-inhoude is tussen 1-25%. Die dieper ondergrond het 'n hoër klei-inhoud as die bogrond. Die hoër klei-inhoud het laer infiltrasie tempo van water tot gevolg. Waar daar 'n groot toename in die klei-inhoud van die bogrond na die ondergrond is, kan tydelike versuiping voorkom. Die rede is dat die infiltrasietempo van die water vinnig in die bogrond en stadiger in die ondergrond is. Hierdie luviese eienskappe word by 0.6 ha van die gronde aangetref. Deur besproeiingsintensiteit hier aan te pas, kan die probleem oorkom word.

Klip/konkresies/gruis binne die profiel en op die oppervlak beperk die grondpotensiaal deurdat die waterhouvermoë en wortel ontwikkeling van die plante negatief beïnvloed word. Hoe meer klip/konkresies/gruis in die profiel is hoe minder grond is daar wat water kan stoor. By 9 ha van die gronde word meer as 5% klip/konkresies/gruis in die profiel aangetref en by 4 ha word meer as 10% gruis/klip op die oppervlak aangetref wat die waterhouvermoë en wortel ontwikkeling negatief beïnvloed.

Die dreinerings van die gronde, die gruis/klipfraksie op die oppervlak en in die grondprofiel en grondstruktuur beïnvloed hier die potensiaal van die grond baie negatief.

Die gronde is goed gedreineer en daarom sal meer gereelde minder intense besproeiing aanbeveel word. Hoë intensiteit besproeiing sal tot toeslaan en hoë afloop lei.

5. _____ BESPREKING VAN GRONDKAARTE

5.1 Grondkaart

Die grondkaart dui die verspreiding van grondvorms op die plaas aan. Grondeenhede wat ± 1 ha en kleiner is, word nie as 'n dominante eenheid voorgestel op die grondkaart nie. Die gronde wat die grootste oppervlakte beslaan is die Clovelly (Cv) (37.6 ha of 54.8%) en Hutton (Hu) (21.2 ha of 30.9%) vorm.

Die Clovelly (Cv) het 'n Ortiese A, geel-bruin apedale B en 'n ongespesifiseerde B horison opeenvolging. Hierdie grondvorm het egter nie 'n beduidende klei keerlaag soos in die geval van die Bloemdal, Pinedene of Bainsvlei gronde nie, en is dus 'n aanduiding dat die grondprofiel se vrywater vrylik dreineer.

Die Hutton (Hu) het 'n Ortiese A, rooi apedale B en 'n ongespesifiseerde B horison opeenvolging. Hierdie grondvorm se vrywater sal ook vrylik dreineer en soos met die Clovelly sal die profiel dreineer tot veldkapasiteit bereik is. Die Hutton het 'n rooi apedale B horison wat 'n aanduiding is dat daardie horison goed gedreineer is en veroorsaak dus die oksidasie van Fe (Yster) in die grond.

5.2 Effektiewe Diepte

Effektiewe diepte verwys na die diepte van die grondmateriaal tot waar eenjarige gewasse se wortels geredelik kan indring om water en plantvoedingstowwe te bekom. Die diepte strek tot by 'n laag wat genoegsaam verskil van oorliggende lae se materiaal ten opsigte van fisiese, chemiese of hidrouliese eienskappe wat die wortelgroei verhinder of ernstig vertraag (van der Watt en van Rooyen, 1990).

Hierdie kaart dui die verspreiding van vlak (swak potensiaal) gronde, asook diep (hoë potensiaal) gronde op die plaas aan. Effektiewe diepte word op al die kaarte as 'n syfer langs die grondkode aangedui, wat met 10 vermenigvuldig moet word om ware diepte in sentimeter te kry bv. Cv2 beteken dis 'n Clovelly grondvorm met 'n effektiewe diepte van 20 cm.

Die effektiewe gronddiepte van 44.9 ha of 65.5% van die gronde is vlakker as 40 cm. Die gronde met 'n effektiewe gronddiepte dieper as 80 cm (17.2%) se potensiaal vir gewasproduksie is relatief hoog.

5.3 Plantbeskikbare water

Plantbeskikbarewater word bereken as die hoeveelheid water beskikbaar vir plantverbruik tussen veldwaterkapasiteit en verwelkpunt vir 'n spesifieke grondtipe en is 'n funksie van effektiewe gronddiepte en tekstuur. Die plantbeskikbarewater kaart is 'n aanduiding van die verspreiding van waterhouvermoë oor die plaas. Die berekening word gedoen volgens grondtekstuurgroep waardes soos in die MVSA Bemestingshandleiding (2003) vervat.

Plantbeskikbare water wissel van 0 - 40 mm (53.2%) tot 240 - 260 mm (0.1%). By 71.3% van die gronde is die plantbeskikbare waterhouvermoë onder 60 mm. Die syfer is laag en beteken dat die gronde min water kan stoor vir gewas verbruik. Bogenoemde kom meestal by vlak gronde voor. Dit sal beteken dat besproeiing meer gereeld en minder intens moet wees. Hierdie gronde sal nie hoë intensiteit besproeiing kan hanteer nie. (Sien Plantbeskikbare water kaart).

5.4 Diepte van tekens van natheid

Die kaart dui die diepte van tekens van natheid en vlekligheid in die ondergrond aan. Hierdie ondergrond materiale is 'n aanduiding van fluktuierende watertafels. As die sagte plintiet, G-horisonte,

ongespesifiseerde nat materiaal en E-horisonte egter te vlak is (vlakker as ongeveer 60 cm), kan versuip-toestande onder hoë reënval voorkom.

Die diepte van tekens van natheid kaart dui aan waar die maontlike watertafel gronde kan voorkom. Geen tekens van natheid kom voor by die gekarteerde oppervlakte nie.

5.5 Beraamde Boggrond klei persentasie

Hierdie kaart stel die verspreiding van die boggrondklei as 'n persentasie voor. Die diagnostiese boggronde van SA is selde dikker as 40 cm. Die klei persentasie is geskat met die vingertoetsmetode (veldmetode).

Die boggrond klei persentasie waardes is tussen 10 en 25%. Water infiltrasie is daarom vinnig tot redelik vinnig. Plantbeskikbare water is hier relatief laag maar die infiltrasie tempo is redelik vinnig. Meer gereelde besproeiing word hier aanbeveel.

5.6 Beraamde Klei persentasie in horison 2

Hierdie kaart stel die verspreiding van die horison 2 klei-inhoud as 'n persentasie voor. Die klei persentasie is geskat met die vingertoetsmetode (veldmetode).

Die grootste oppervlakte (25.4%) se 2de horison klei persentasie waardes is tussen 15 en 20%. Redelik vinnige water infiltrasie kan hier verwag word. Plantbeskikbare water is egter laag.

5.7 Gemiddelde beraamde klei persentasie van 3^{de}, 4^{de} en 5^{de} horisonte

Die kaart is 'n aanduiding van die gronde se 3^{de}, 4^{de} en 5^{de} horisonte se klei persentasies. Die klei persentasie is geskat met die vingertoetsmetode (veldmetode).

Die gronde se klei-inhoud wissel tussen 1-30% in die 3^{de}, 4^{de} en 5^{de} horisonte. By die hoër klei-inhoud is die infiltrasietempo van water stadiger en kan water bokant hierdie klei laag na hoë intensiteit reënbuie of besproeiingsgeleenthede opbou. Tydelike watertafels kan maontlik vorm wat tot versuiping kan lei. (Sien kaart vir die verspreiding van die klei persentasies oor die plaas).

5.8 Oppervlak klip/gruis

Die verspreiding van Klip/gruis as 'n persentasie op die grondoppervlak word met hierdie kaart voorgestel.

Geen klip/gruis op die oppervlak word by 30.9 ha aangetref nie. By 4 ha word tussen 10-40% klip/gruis op die oppervlak aangetref. Bewerking sal hier bemoeilik word en implemente kan maontlik beskadig word.

5.9 Klip/konkresies/gruis

Die verspreiding van Klip/konkresies/gruis as 'n presentasie van die totale grondvolume word met hierdie kaart voorgestel. Konkresies in die grondvolume kan waterhouvermoë van gronde beperk deurdat die grondvolume verminder.

Waterhouvermoë word nie betekenisvol beïnvloed deur Klip/konkresies/gruis by 59.7 ha van die gekarteerde oppervlak nie en sal ook nie opbrengste negatief beïnvloed nie. By 3.6 ha van die gekarteerde oppervlakte kom daar Klip/konkresies/gruis voor van tussen 5-10% wat die opbrengste tot 'n mindere mate negatief sal beïnvloed. Opbrengste sal meer negatief beïnvloed word by 3.5 ha van die gronde waar 10-20% Klip/konkresies/gruis aangetref word. By 1.9 ha van die gekarteerde oppervlakte kom daar Klip/konkresies/gruis voor van tussen 20-40% wat die opbrengste tot 'n meerdere mate negatief sal beïnvloed.

5.10 Luviese grond

Die grond het 'n luviese B-horison indien die A of E-horison, 15% of minder klei bevat terwyl die B-horison tenminste 5% meer klei as die A of E bevat.

Luviese gronde word by 0.6 ha van die gekarteerde oppervlakte aangetref.

(Sien Luviese grond kaart).

6. OORSPRONKLIKE OBSERVASIE DATA

Data van die oorspronklike punt observasies word in die onderstaande tabel vertoon. Koördinate van al die observasie punte word aangeheg, vir inspeksie doeleindes. Die punte is nie bedoel om die grondchemiese eienskappe vas te stel nie. Verteenwoordigende monsters behoort gebruik te word vir die bepaling van grond chemiese status.

Kodes
gs=E horison
gh=G horison
sp=Sagte plintiet B
hp=Harde plintiet B
so=Saproliet
uw=Ongekonsolideerd/Ongespesifiseerd nat
R=Harde rots
sl=Kliplaag
c=konkresies
g=gruis
k=klip
R=rots
K=klei
S=sand
l=kalk
Kn = Kalknodules

VERWYSINGS

Grondklassifikasie Werkgroep, 1991. Grondklassifikasie. 'n Taksonomiese Sisteem vir Suid-Afrika. Instituut vir Grond, Klimaat en Water, Pretoria.

MVSA, 1999. **Bemestingshandleiding. Die Misstofvereniging van Suid-Afrika, Pretoria.**

MVSA, 2003. Bemestingshandleiding. Die Misstofvereniging van Suid-Afrika, Pretoria.

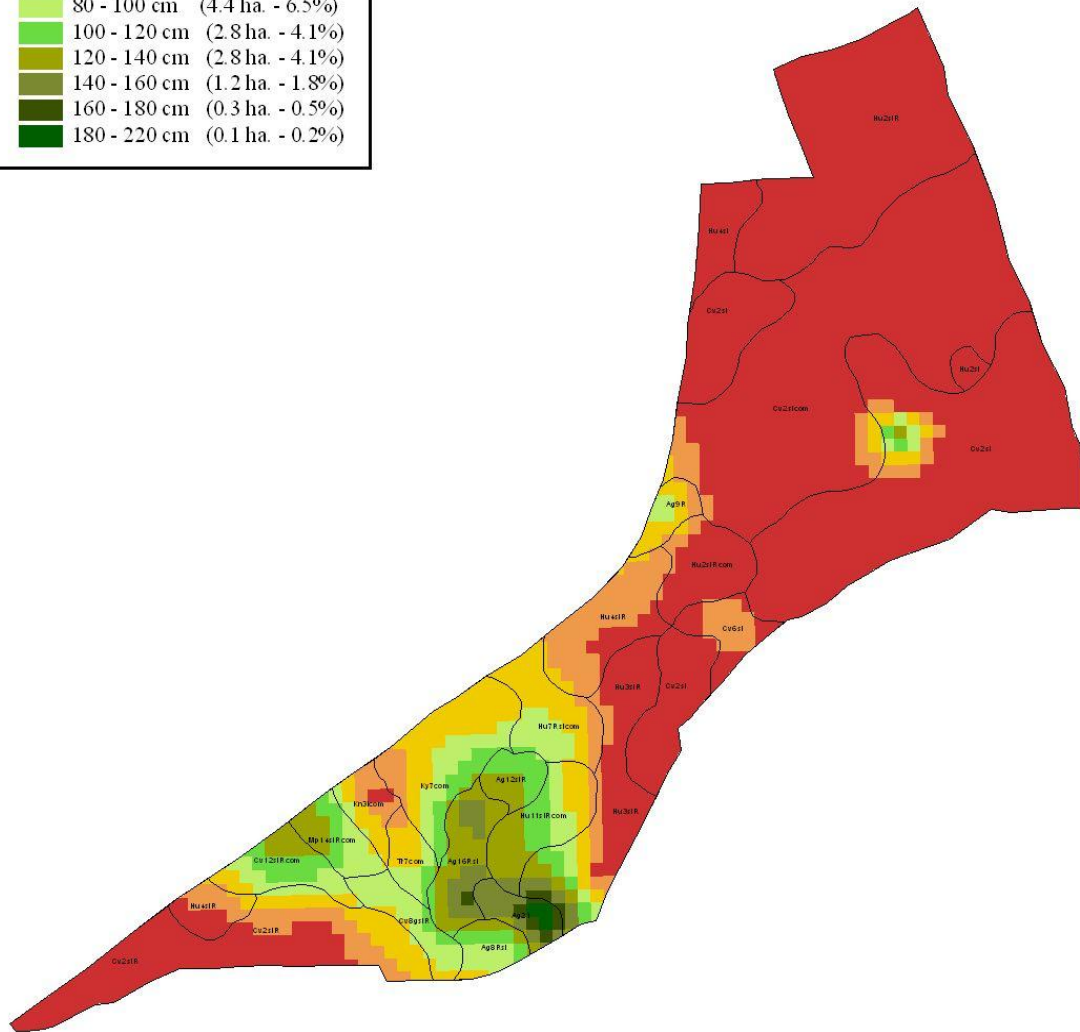
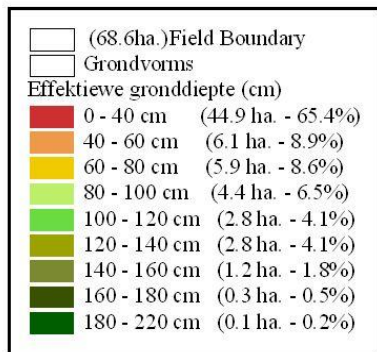
Van der Watt, H.v H. en van Rooyen, T. H, 1990. A Glossary of Soil Science. The soil Science Society of South Africa. Pretoria.

*** Fotos van grondvorme verkry vanaf SAGO en die LNR IGKW

Vrywaring

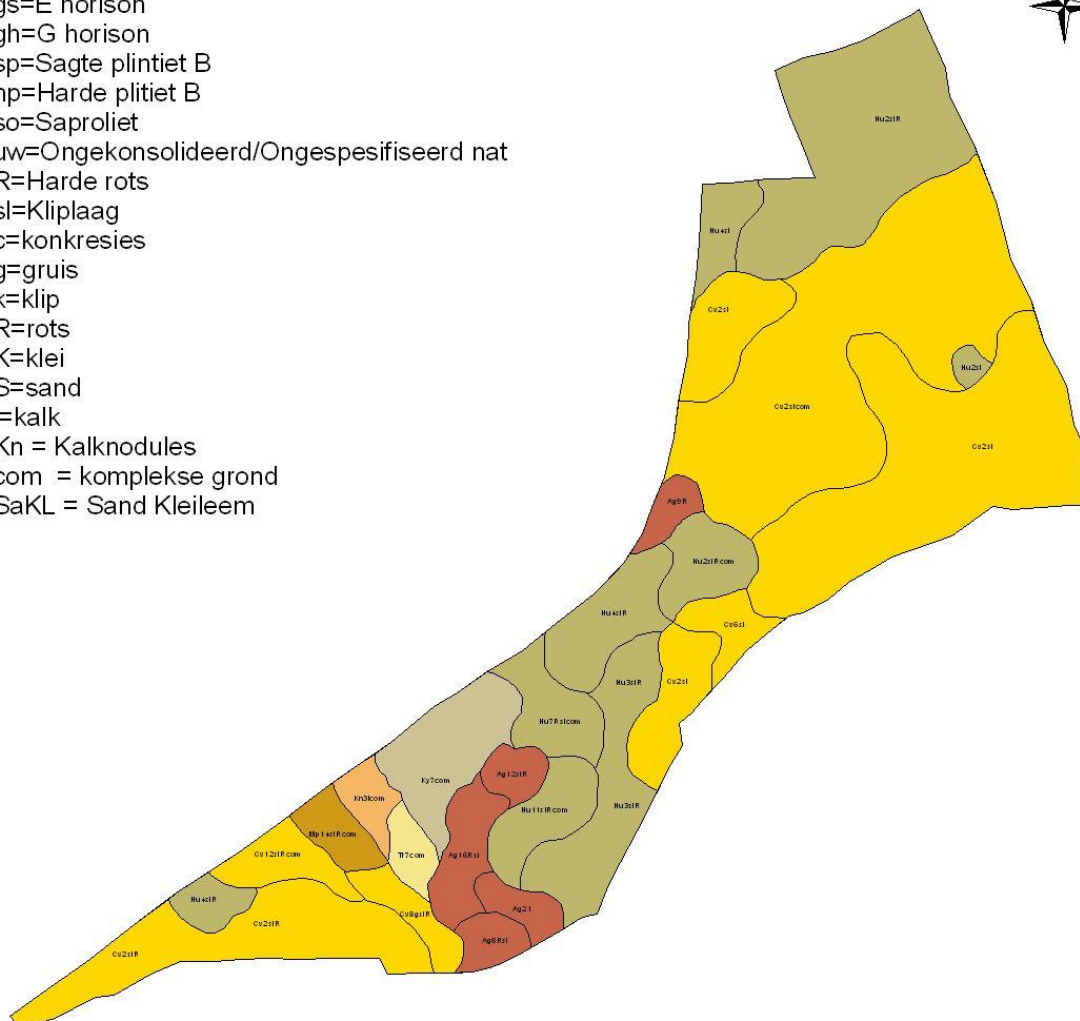
"Alhoewel groot sorg geneem word deur Omnia Kunsmis, 'n afdeling van Omnia Groep (Edms) Bpk ("Omnia") en Omnia se werknemers in die voorbereiding van die verslag, sal Omnia onder geen omstandighede aanspreeklik gehou kan word vir enige eis van watter aard ookal, vir skade of verlies wat gelei word, as gevolg van enige skuldoorsaak, hetsy dit direk of indirek veroorsaak word deur enige persoon wat die inligting gebruik, òf wat op grond van die inhoud van die verslag optree tot hulle nadeel."

Boerboom Kraal; 14 (68.60 ha.) - Effektiewe gronddiepte



Boerboom Kraal; 14 (68.60 ha.) - Grondvorme

Kodes
 gs=E horison
 gh=G horison
 sp=Sagte plintiet B
 hp=Harde plintiet B
 so=Saproliet
 uw=Ongekonsolideerd/Ongespesifiseerd nat
 R=Harde rots
 sl=Kliplaag
 c=konkresies
 g=gruis
 k=klip
 R=rots
 K=klei
 S=sand
 l=kalk
 Kn = Kalknodules
 com = komplekse grond
 SaKL = Sand Kleileem

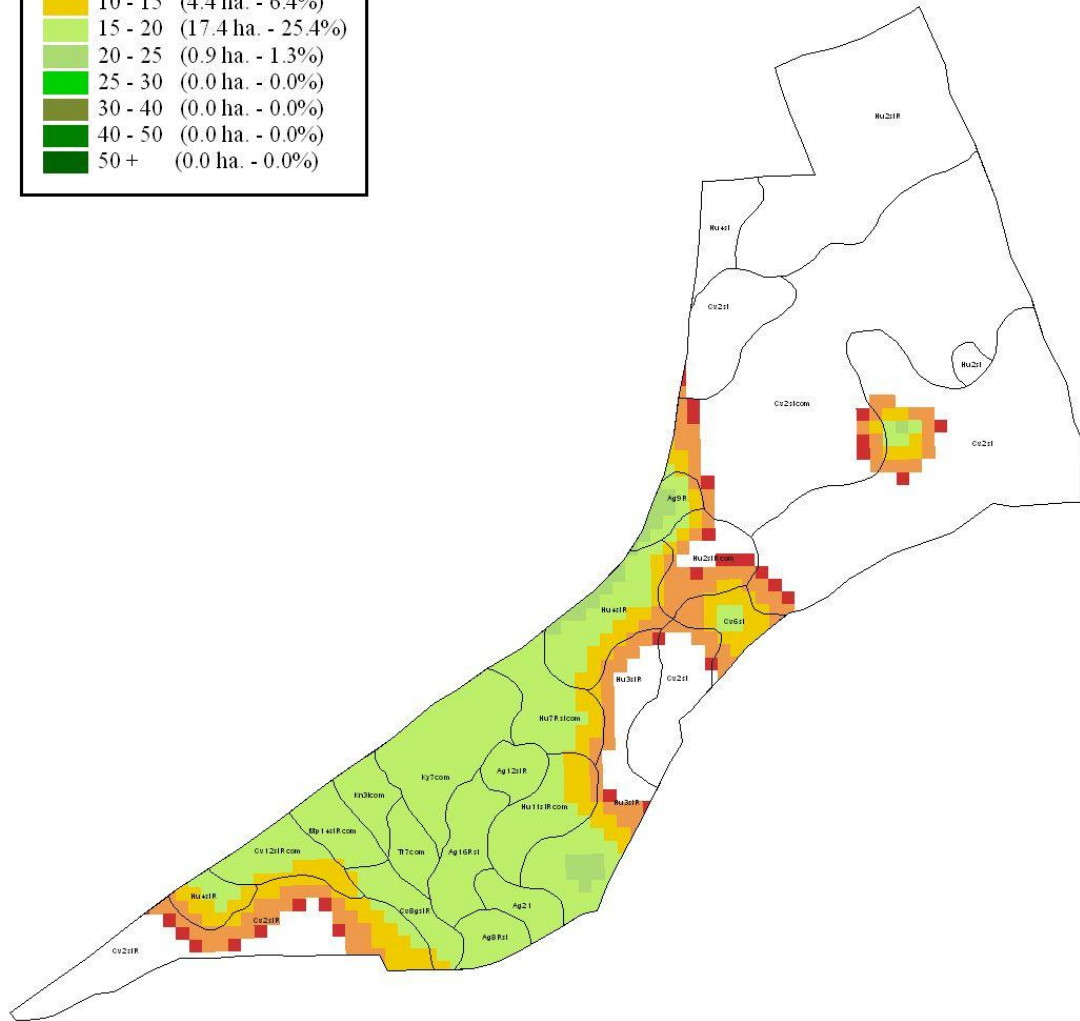
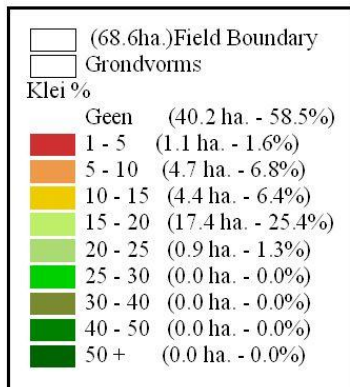


□ (68.6ha.)Field Boundary	
Grondvorme	
Ag - Augrabies	(4.4 ha - 6.5%)
Cv - Clovelly	(37.6 ha - 54.8%)
Hu - Hutton	(21.2 ha - 30.9%)
Kn - Knersvlakte	(0.8 ha - 1.1%)
Ky - Kimberley	(2.9 ha - 4.2%)
Mp - Molopo	(1.0 ha - 1.4%)
Tr - Trawal	(0.7 ha - 1.1%)

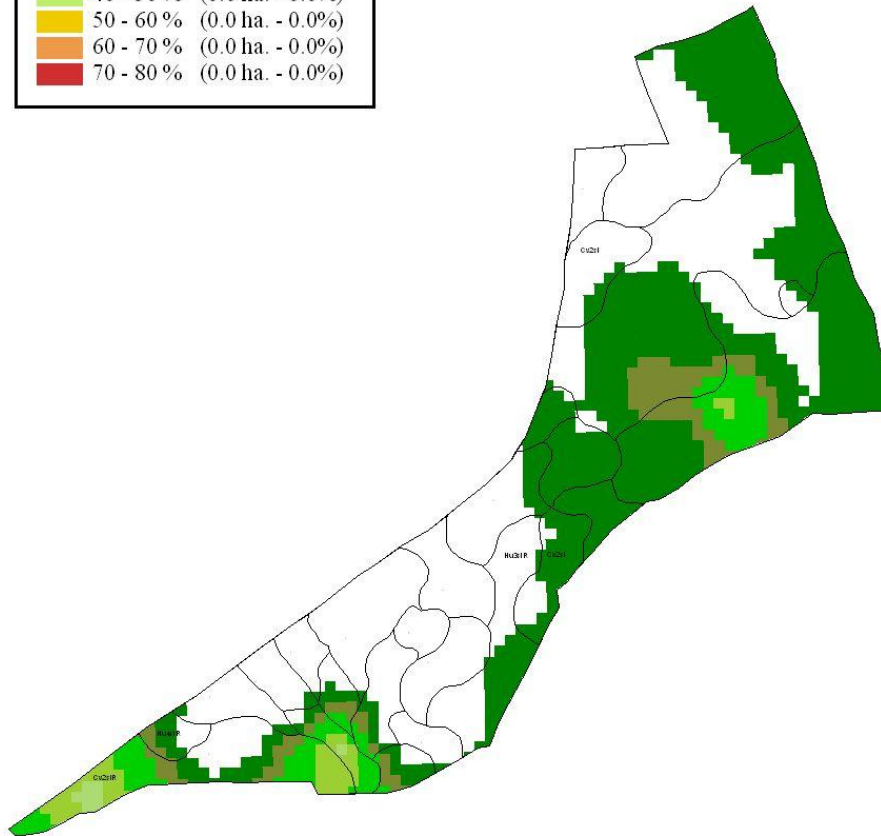
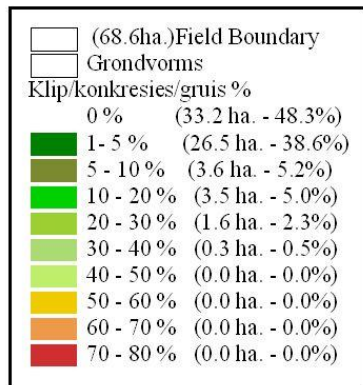


"the science of growing" • veldboskoop v.h. gesel.

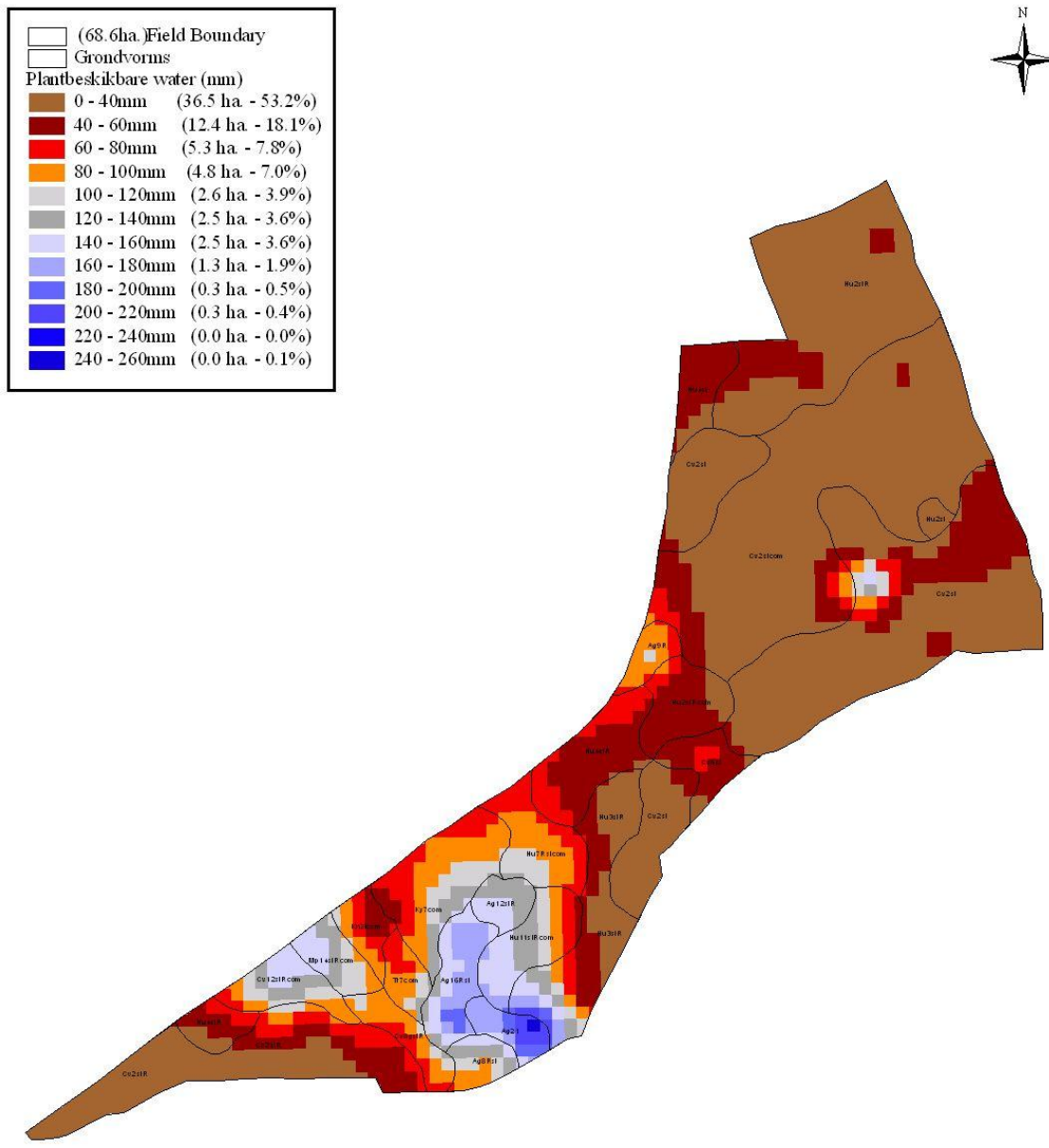
Boerboom Kraal; 14 (68.60 ha.) - Beraamde klei % van 2de horison



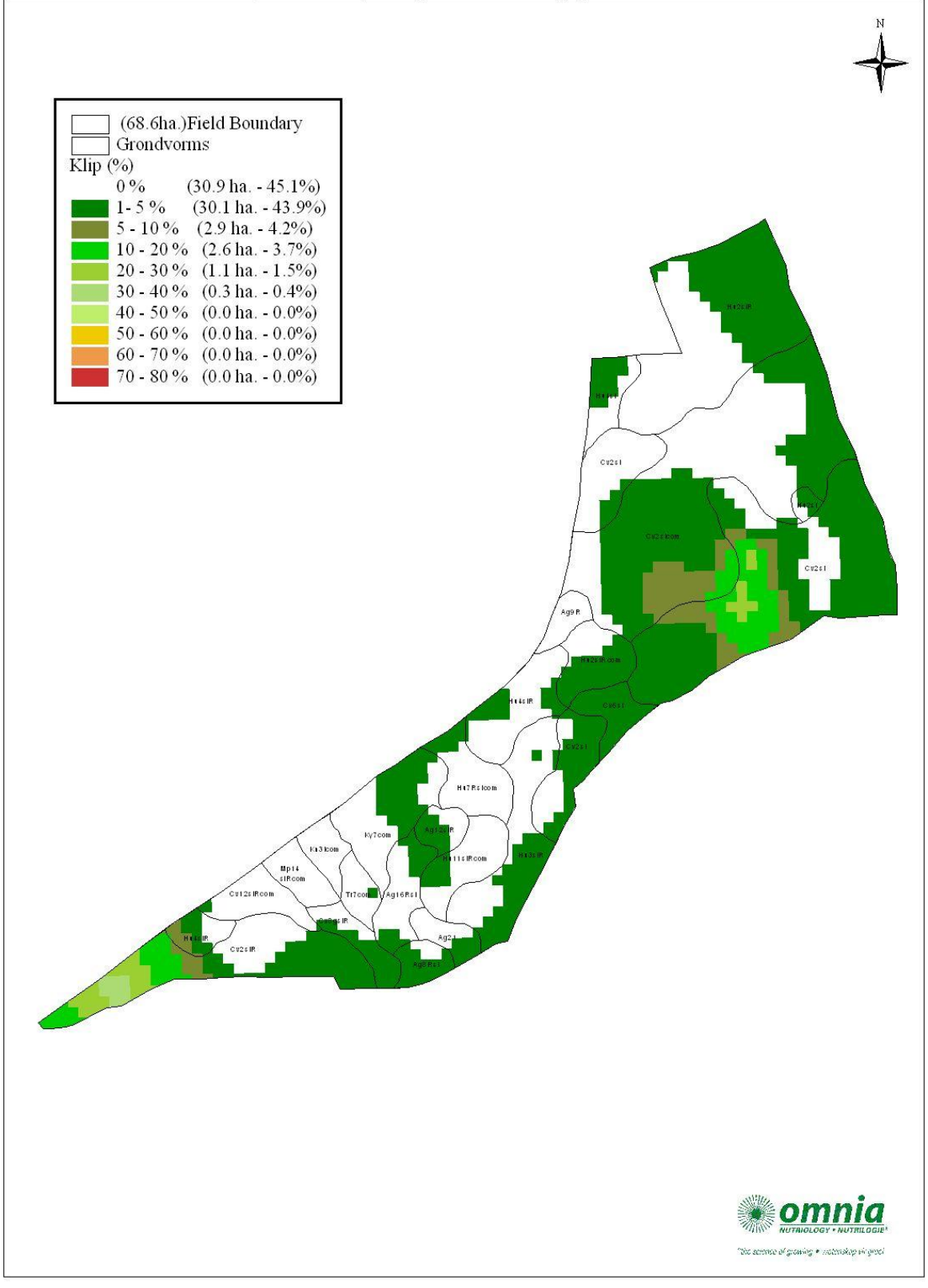
Boerboom Kraal, 14 (68.60 ha.) - Klip/konkresies/gruis as beraamde persentasie van totale grondvolume



Boerboom Kraal, 14 (68.60 ha.) - Plantbeskikbare water tussen verwelkpunt en veldkapasiteit



Boerboom Kraal; 14 (68.60 ha.) - Opervlakte klip persentasie



D.2. Ecological/Biodiversity Report

The contents of this report (spelling and grammar) remain unchanged.

Ecological Assessment

**Alteration of Virgin Natural Land
Type to Agricultural Land Use -
Portion 7 and 8 of Boerboomkraal
Farm (353 KT), Burgersfort Area,
Limpopo Province.**

Dr AR Deacon

February 2015

Contents

1. Project description
2. Methodology and Approach
3. Survey results and discussion
 - 3.1 Description of the biophysical environment
 - 3.2 Vegetation survey
 - 3.3 Plants of special concern
 - 3.4 Fauna survey
 - 3.4.1 Frogs
 - 3.4.2 Reptiles
 - 3.4.3 Birds
 - 3.4.4 Mammals
 - 3.4.5 Fauna summary
4. Regional and Provincial conservation value of the project area
5. Discussion
6. Mitigation

REFERENCES

APPENDICES

1. Project description

Planned/Proposed Activity

- Currently the applicant is operating a successful agricultural citrus business on the farm (Portion 7 and 8 of the Farm: Boerboomkraal 353 KT).
- The applicant wishes to expand his operation and thus proposes to clear approximately 90ha of natural bush/virgin land. The final size of the new expansion will depend on the results of the ecological investigation and the suitability of the soils for citrus farming.

Project brief:

Aim of the study: To undertake a specialist biodiversity study of the farm as part of the Environmental Impact Assessment (EIA) process for the proposed clearing of said virgin bush (90ha) on Portion 7 and 8 of the Farm: Boerboomkraal 353 KT: Burgersfort Area, Limpopo Province.

Background study - aspects addressed:

- Assessed the broad status (e.g. global status, centre of endemism, biodiversity 'hotspot') of the affected environment;
- Assessed the distribution and extent of habitat types in the affected area in comparison to surrounding areas and within a wider regional context (i.e. contribution to habitat conservation);
- Identified main ecosystems and their threatened and/or protected status in terms of the National Spatial Biodiversity Assessment, biodiversity legislation, new South African vegetation map and Conservation Plans.

Field survey:

- The condition (e.g. extent of degradation or transformation) of the site;
- Unique or special habitats or features (e.g. quartzitic patches, wetlands, etc);
- Presence of protected or threatened species, 'keystone' species to an ecosystem (e.g. large predators), species on which ecosystem services rely (e.g. pollinators), protected trees, and/or use of the site by threatened species at certain times;
- Key ecosystem services (e.g. important water yield area, coastal protection);
- Elements sensitive to change (e.g. species with narrow tolerance limits, and sensitive habitats);
- Resilience, or ability to recover from disturbance (e.g. forest has low resilience, whereas pioneer weedy plants are adapted to disturbance).
- Its importance to surrounding areas, with regard to fixed or flexible processes (e.g. situated on a fixed vegetation transition, or within a flexible ecological corridor, provides links to fragments of the same ecosystem, or isolated);
- The main 'drivers' of ecosystem processes (e.g. fire, large herbivores);
- Trends or anticipated changes.

Identified mitigation and offset of impacts:

- Harvestable goods, important for livelihoods (e.g. source of materials like thatching grass, food source such as fish species, etc.);
- The main uses and users of the area and its ecosystem goods and services.

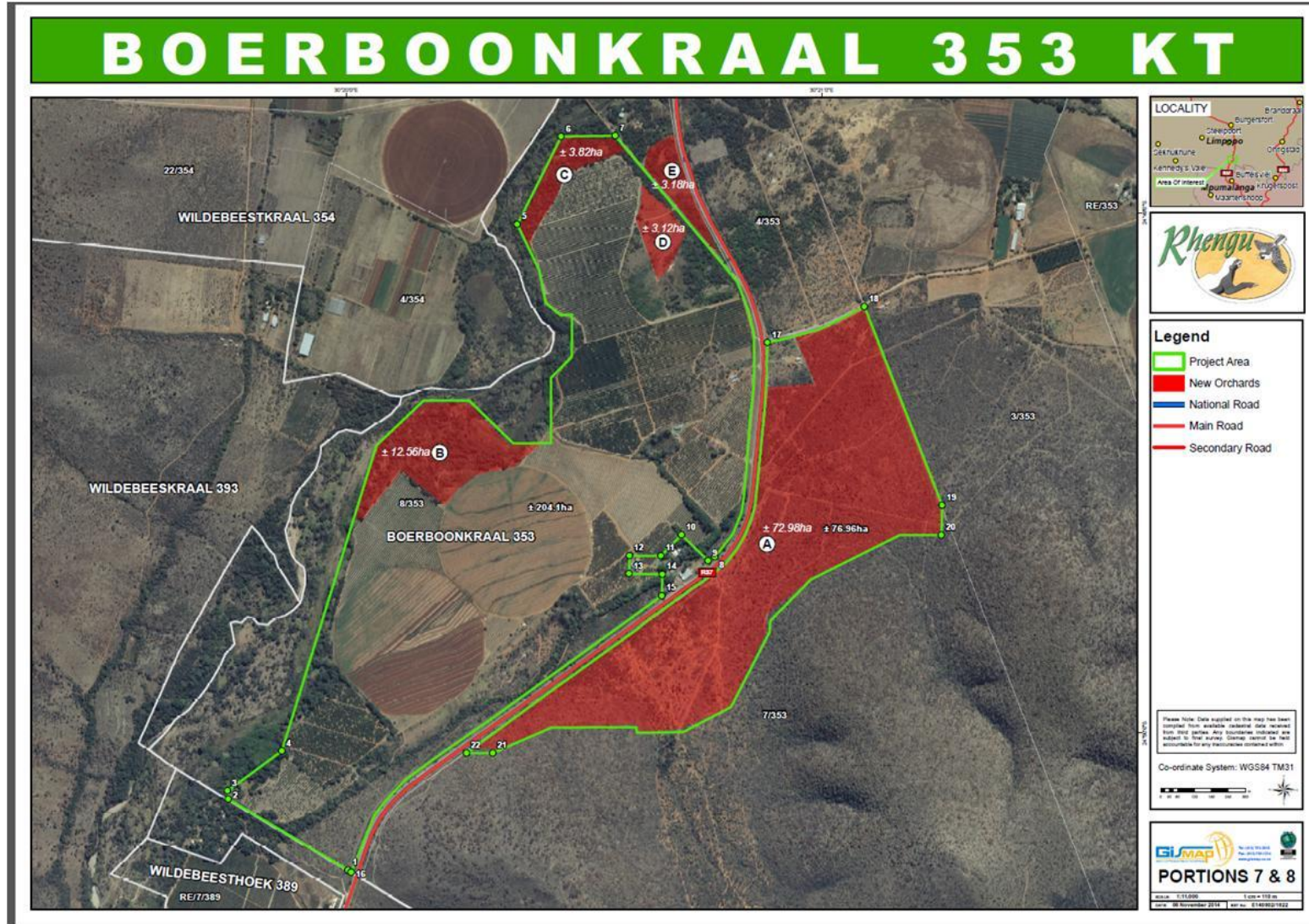


Figure 1: Area layout for the proposed new development.

2. Methodology and Approach

The fieldwork component of this survey was conducted during the summer of November 2014. The purpose of the survey was to 1) describe the current floristic and faunal status and conservation importance of the site, 2) identify expected impacts due to the proposed developments, and 3) provide recommendations regarding appropriate mitigation and/or management measures should the proposed activities be authorised.

During the study, 24 detailed biodiversity transects were surveyed across the study area (Figure 2). Biodiversity transects were undertaken on foot or from a slow moving vehicle to record the presence of different animal and plant species. Functional assemblages were identified and grouped according to local topography and vegetation type (Figure 27). All animal sightings and signs were noted in the different areas, including all potential habitat types.

The identified areas for the proposed development were demarcated as follow:

- One area (Game Camp) of 76.9 ha (area A on map – Figure 1) with a combination of virgin bush, mixed with areas showing signs of degradation, forming the eastern boundary of the proposed development (referred to as the Game Camp from here on).
- Two areas of 16.3 ha along the Waterval River (areas B and C on map – Figure 1) in the western part of the farm (referred to hereafter as Waterval River);
- Two areas of 6.9 ha on fallow lands (areas D and E on map – Figure 1) in the north-eastern corner of the farm (referred to hereafter as fallow land);

Table 1: List of transects (Figure 2) where fauna and flora surveys were conducted across the different plots (Figure 1) demarcated in the project area (November 2014).

Transect	Coordinates				Length (m)	Total (m)
	Start S	Start E	End S	End E		
Game Camp (area A on map)						
Transect 211 - 217	24° 49'35	30° 21'14	24° 49'59	30° 20'53	610m	
Transect 217 - 222	24° 49'59	30° 20'53	24° 49'15	30° 21'07	680m	
Transect 222 - 211	24° 49'15	30° 21'07	24° 49'35	30° 21'14	680m	
Transect 224 - 226	24° 49'50	30° 20'46	24° 49'54	30° 20'32	800m	
Transect 226 - 228	24° 49'54	30° 20'32	24° 49'57	30° 20'45	440m	
Transect 228 - 224	24° 49'57	30° 20'45	24° 49'50	30° 20'46	350m	
Transect 339 - 243	24° 49'38	30° 21'07	24° 49'49	30° 20'47	800m	
Transect 240 - 245	24° 49'37	30° 21'02	24° 49'52	30° 21'01	230m	
					Total	4590m
Waterval River riparian (Areas B and C on map)						
Transect 1 (area B on map)	24° 49'20	30° 20'12	24° 49'29	30° 20'17	350m	
Transect 2 (area C on map)	24° 48'53	30° 20'22	24° 48'56	30° 20'27	170m	
					Total	520m

Fallow lands (Areas D and E on map)						
Transect 3 (area D on map)	24° 48'59	30° 20'41	24° 49'10	30° 20'44	720m	
Transect 4 (area E on map)	24° 49'02	30° 20'45	24° 48'49	30° 20'41	580m	
					Total	1300m

GPS coordinates, acquired in the field, were used with Google Earth to illustrate and demarcate the study area. The Land-Use Decision Support (LUDS) Tool, managed by SANBI, was used to assess broad-scale biodiversity importance of the area. Importantly, it must be noted that LUDS should only be used as a guide for biodiversity planning and cannot replace specialist ecological assessments.

An annotated checklist of plants of Southern Africa by Germishuizen and Meyer (2003) was downloaded from the POSA site (<http://posa.sanbi.org>; last update occurred on January 8, 2015). This assisted us in establishing the status of plants in the 2430CD degree quadrant of the study area. A number of atlases and additional literature containing distribution data of biota was used to establish species diversity at a quarter degree resolution. These sources are listed in the report references section.

Limitations of the study: Not enough time was spent in the field to assess all faunal species, particularly those that may only move through the area (e.g. birds) and those which are secretive, nocturnal or sub-surface (e.g. moles, fossorial herpetofauna or bats). We moderated these limitations by establishing a baseline of biota assemblages in the study area as follows: An assessment was made of the ecosystem template which is a function of geomorphology (abiotic) and vegetation (biotic) structure. We matched this template with known records of biota identified during the study (or previously recorded). Thereafter, we compiled an expected species list from species distribution records and associated habitat type for the study area.

Therefore, a major component of the specialist survey is the characterization of habitats and their associated biota (obtained from regional distribution records). This information is then used as a basis for predicting impacts of the proposed development and other human-induced activities to the ecology of the area.

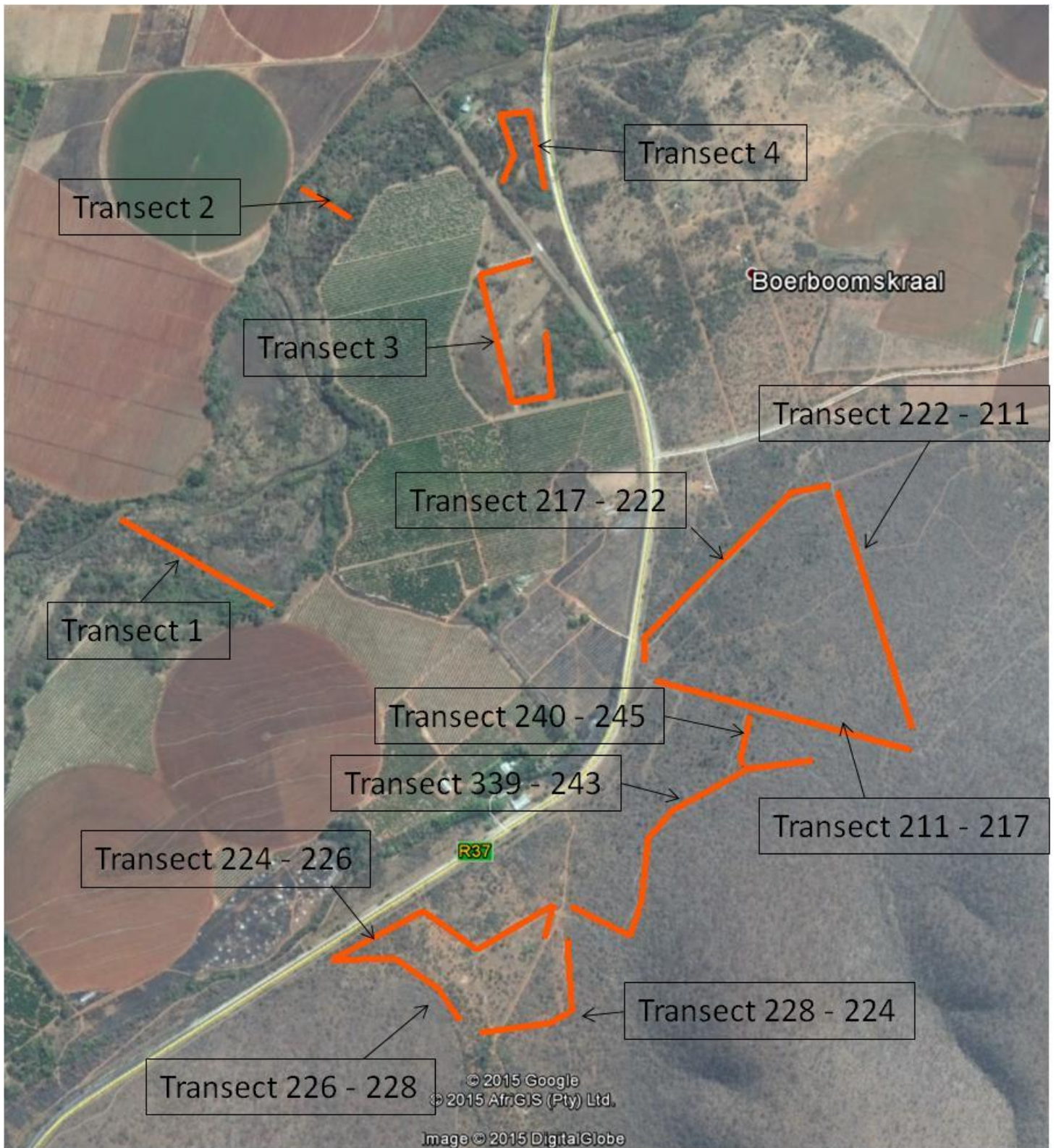


Figure 2: Map of study area with survey transects demarcated (transect details are listed in Table1).

3. Survey results and discussion

3.1 Description of the biophysical environment

The project site is located on Portion 7 and 8 of the Farm: Boerboomkraal 353 KT: Burgersfort Area, Limpopo Province. The area is situated within the Greater Tubatse Municipality (LIM475) in the Ohrigstad Mountain Bushveld (SVcb 26) vegetation type (Figure 32) along steep valley and mountain slopes south of the town Burgersfort. This vegetation type is categorized by Acocks (1953) as Sourish Mixed Bushveld and Mixed Bushveld, and by Low and Rebelo (1996) as North-eastern Mountain Grassland. Mucina and Rutherford (2006) describe it as follows: “Open to dense woody layer, with associated woody and herbaceous shrubs and closed to open grass layer. Moderate to steep slopes on mountain sides and sometimes deeply incised valleys; also flat terrain in a few places. Altitude varies widely from around 500m to about 1 400 m. Primarily on quartzite and shale; weathering to shallow rocky soils (Glenrosa or Mispah). Erosion is very variable. Summer rainfall with dry winters (mean annual precipitation is 500-800 mm). Most of the unit is relatively dry mountain bushveld in the rainshadow west of the northern parts of the Drakensberg.

The conservation status of this vegetation type is categorised as Least Threatened: Target 24%; about 8% statutorily conserved. Some 9% is transformed, mainly by cultivation.” The vegetation and landscape features consist of flat topography supporting low beds dominated by reeds, sedges and rushes, waterlogged meadows dominated by grasses, especially along the riverine habitats. The clayey soils are waterlogged and contain high levels of decaying organic matter, especially in the very productive reed beds.

The Waterval River, a tributary of the Spekboom River, flows through the area and forms the western boundary of the farm. This river, confined to the wide valley between steep mountain slopes, represents elements of the Subtropical Freshwater Wetlands (AZf 6) vegetation type (Mucina and Rutherford, 2006). These wetlands, as well as scattered seasonally inundated depressions, are confined within the flood benches of the Waterval River. The vegetation is in various forms of transformation and degradation (overgrazing, wood harvesting, frequent fires, and alien vegetation invasion) with large areas displaying a natural species composition especially within the steep hill-slopes and wooded valley bottoms.

3.2 Vegetation survey

Twelve transects (Table 1) were surveyed from which vegetation was identified and abundance estimated. The most abundant tree species were used to demarcate biotopes (Appendices 1 and 2; Figure 27), while the remaining plant species were listed as “expected” vegetation as presented by the POSA website (Appendix 4 and 5).

Vegetation types provide a good proxy for terrestrial biodiversity since most fauna species are associated with particular habitat types (structure and function). Broad-scale vegetation units were identified using structural and functional criteria (Figure 27), namely:

- Slope;
- Cover: tree, herbaceous and rocks;
- Tree species.

As a result, the following units were demarcated:

Area 1: Woodlands on flat slopes with low rock and tree cover; somewhat degraded with medium grass cover; and vegetation dominated by *Acacia tortilis* and *Dichrostachys cinerea* (Figures 3 to 6).

Area 2: Woodlands on flat slopes with low rock cover, but high tree and grass cover; vegetation dominated by *Acacia tortilis*, *Aloe* species and *Grewia* species (Figures 7 to 10).

Area 3: Woodlands on medium slopes with medium rock cover, but low tree and grass cover; vegetation dominated by *Commiphora mollis*, *Commiphora pyracanthoides*, *Aloe*- and *Grewia* species (Figures 11 to 14).

Area 4: Woodlands on steep slopes with high rock and tree cover; vegetation dominated by *Acacia nigrescens*, *Commiphora mollis*, *Commiphora pyracanthoides*, *Euphorbia ingens*, *Grewia* species and *Dichrostachys cinerea* (Figures 15 to 18).

Area 5: The Waterval River riparian zone with a mix of hydrophilic grasses, sedges, reeds and riparian trees (*Acacia polyacantha*, *Combretum erythrophyllum*, *Ficus sycamorus*, *Nuxia oppositifolia* and many alien invader species) (Figures 19 to 22).

Area 6: An area of fallow land, waterlogged in places due to the damming effect of the road (Figures 23 to 26).

Area 1:



Figure 3: An overgrazed and somewhat degraded part of Area 1.



Figure 4: An *Acacia tortilis* and *Dichrostachys cinerea* dominated landscape.



Figure 5: Low tree cover with hardy succulents for ground cover.



Figure 6: Woodland on a flat slope with low rock and tree cover.

Area 2:



Figure 7: The vegetation in Area 2 contains an abundance of *Aloe* and *Euphorbia* species



Figure 8: A level area in the foot-slope zone.



Figure 9: Dense tree cover in most of Area 2.



Figure 10: Grass cover is moderate with some loose rocks in places.

Area 3:



Figure 11: Area 3 contains an open woodlands with *Commiphora* and *Grewia* species.



Figure 12: Loose rock and boulders provide ideal habitat for reptiles (underneath the rocks).



Figure 13: The area has a moderate slope and some grass cover in open places.



Figure 14: A denser spot in Area 3.

Area 4:

Figure 15: *Commiphora mollis* is abundant in Area 4.



Figure 16: High rock and tree cover but low grass cover.



Figure 17: Some grass cover in more open spaces.



Figure 18: Dense tree and shrub cover.

Riparian zone:



Figure 19: A riparian woodland with *Acacia spp.* dominating on the riparian shelf bar.



Figure 20: A combination of riparian forest and open areas covered with sedges and hygrophilic grasses.



Figure 21: The riparian woodland along the Watervals River.



Figure 22: An abundance of sedges in an inundated high flow side channel.



Figure 23: The drenched fallow lands with sedges emerging in clumps.



Figure 24: Waterlogged secondary grassland.



Figure 25: The only trees are on the edges of the old agriculture patches.

Figure 26: Some surface water prevented from draining due to the road and the canal wall.



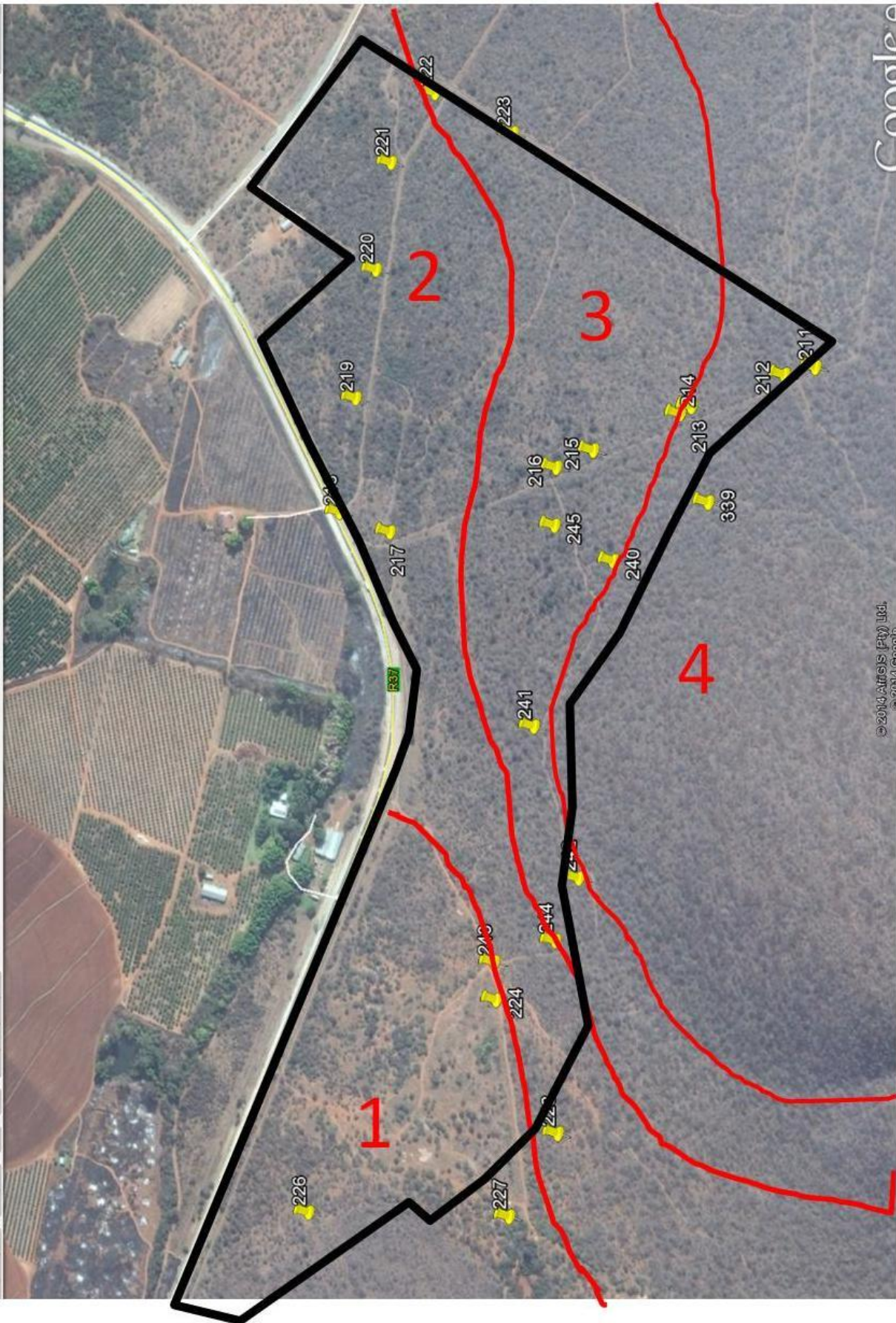


Figure 27: Broad-scale vegetation units (as described in the text above) identified on the basis of topography, and woody vegetation structure and function.

Observed tree species are listed below. See appendix 5 for a list of expected tree species in the region according to the POSA website (Germishuizen and Meyer, 2003).

Riparian:

Acacia polyacantha - White thorn
Acacia robusta - Brack thorn
Albizia versicolor - Large-leaved false-thorn
Ficus sur - Broom cluster fig
Ficus sycamorus - Sycamore fig
Nuxia oppositifolia - Water elder (Nuxia)
Trema orientalis – Pigeonwood
Trichilia emetica - Natal mahogany

Game Camp:

Acacia caffra - Common hook-thorn
Acacia exuvialis - Flaky thorn
Acacia karroo - Sweet thorn
Acacia nigrescens - Knob thorn
Acacia nilotica - Scented-pod thorn
Acacia tortilis - Umbrella thorn
Albizia anthelmintica - Worm-cure albizia
Boscia albitrunca - Shepherd's tree
Combretum apiculatum - Red bushwillow
Combretum erythrophyllum - River bushwillow
Commiphora mollis - Velvet-leaved corkwood
Commiphora pyracanthoides - Firethorn corkwood
Dichrostachys cinerea africana - Sickle bush
Ehretia rigida - Puzzle bush
Euphorbia ingens - Common tree Euphorbia
Gymnosporia buxifolia - Common spike thorn
Kirkia wilmsii - Mountain seringa
Pappea capensis - Jacket plum
Peltoporum africanum - Weeping wattle
Schotia brachypetala - Weeping boer-bean
Sclerocarya birrea – Marula
Spirostachys africana – Tamboti
Sterculia rogersii - Common star-chestnut
Commiphora schimperi - Glossy leaved corkwood
Euphorbia turicalli - Rubber-hedge euphorbia
Terminalia prunioides - Purple cluster leaf

Alien trees

Cereus jamacaru - Queen-of-the-night
Jacaranda mimosifolia – Jacaranda
Lantana camara - Christmas berry
Melia azedarach – Syringa
Morus alba - White mulberry
Opuntia ficus-indica - Sweet prickly pear
Populus x canescens - Grey popular
Ricinis communis - Castor oil bush
Solanum mauritianum – Bugweed
Tecoma stans - Geelklokkies

3.3 Plants of special concern

During the survey, the following protected trees (Department of Water Affairs and Forestry, 2007) were observed in the project area (Appendix 3):

1. *Balanites maughamii* - Green thorn
2. *Boscia albitrunca* - Shepherd's tree
3. *Sclerocarya birrea* subsp. *caffra* - Marula

Appendix 4 lists the expected species of concern (Appendix 10 - Definitions of categories) in the region and is obtained from the POSA website (Germishuizen and Meyer, 2003). According to this list, the following plants of special concern have distribution ranges that overlap with the study area (Grid: 2430CD).

Near-threatened

ACANTHACEAE: *Dicliptera fruticosa*

This range-restricted species is still relatively common, with more than 10 remaining locations. It is suspected to be declining in parts of its range due to ongoing expansion of human settlements and agriculture.

South African endemic - Limpopo, Mpumalanga, Strydpoort Mountains to Ohrigstad. Savanna and open woodland, shady areas on rocky magnetite and dolomite slopes.

Threatened within some parts of its range by expanding human settlements and agriculture. This shade-loving species may also be sensitive to excessive wood extraction which reduces tree cover in savanna habitat. This species can be sparse to locally common in suitable habitat. Population trend: Decreasing. (Photo: Similar species - forwildlife.wordpress.com)



Vulnerable

ANACARDIACEAE: *Searsia batophylla*

It has a restricted range (EOO 945 km²), but is locally common (at least 26 known subpopulations). There has been extensive transformation of its habitat by mining, human settlements and land degradation due to overgrazing. We estimate a 30% decline of the population in the last three generations (90-150 years) based on a 32% loss of habitat.

A South African endemic, Limpopo, Sekhukhuneland. Sekhukhuneland is rich in minerals, and habitats in this area are severely threatened by destruction as a result of both the mines themselves, as well as associated sprawling informal settlements and overgrazed communally owned rangelands of communities dependant on the mines. Mining in this area started as early as the 1870s (Etherington 1979), and recently there has been a renewed interest in mining as a result of changing mining laws making it easier to obtain prospecting and mining rights. This species sometimes occurs in degraded systems (R.H. Archer pers. comm.), however heavy grazing by goats leads



to severe stunted growth (Moffett 1993) and may lead to poor recruitment. Not currently conserved in any formally protected area (Photo: Walter Sisulu NBT).

Data Deficient - Taxonomically Problematic (DDT)

APIACEAE: *Alepidea peduncularis*

South African endemic (Photo: iSpot, SANBI).



Biogeographically Important Taxa (Central Bushveld endemic) in this vegetation type, are:

Low shrub: *Petalidium oblongifolium*

Small tree: *Encephalartos cupidus*

Woody climbers: *Asparagus lynnetae*, *Rhoicissus laetans*

Succulent herbaceous climber: *Ceropegia distincta* subsp. *verruculosa*



Figure 28: *Petalidium oblongifolium* (Photo: iSpot, SANBI).

Figure 29: *Encephalartos cupidus* (Photo: commons.wikimedia.org).

Figure 30: *Rhoicissus laetans* (Photo: iSpot, SANBI).

Figure 31: *Ceropegia distincta* subsp. *verruculosa*

During the public participation process, it was pointed out that certain important plant species were discovered in the area directly north of the Game Camp area. A visit to the northern part of the camp did reveal a further four species of importance:

- *Ceropegia distincta* subsp. *verruculosa* is a South African endemic and its Red List status is "Data deficient" (DDD). This species was only known from the type locality collected in 1957 near Burgersfort. This species was subsequently found in the survey area during a visit on 4 February 2015. Not enough is known about this subspecies' distribution and population status to determine its status. It is possibly threatened by crop cultivation and livestock grazing.

- *Eulophia leachii* is not endemic to South Africa and had a change of status from “Vulnerable” (2002) to “Least Concern” (2009). This species was observed during a visit to the project area on 4 February 2015.
- *Eulophia petersii* is not endemic to South Africa and its status is “Least Concern” (2009). This species was also observed during a visit to the project area on 4 February 2015.
- *Eulophia speciosa* is not endemic to South Africa and its status is “Declining” (2008). Declines in wild subpopulations have been observed as a result of harvesting for the medicinal trade. It common in muthi markets and we suspected an overall, continuing decline. It is still too common to list as NT. *E. speciosa* has a wide ecological amplitude and has been recorded from thornveld, valley bushveld and mountain grassland vegetation, on a variety of substrates including, sandy, lateritic and black clay soils.

3.4 Fauna survey.

In evaluating the project area and proposed development, the surrounding area was also assessed (including higher mountain and riverine areas) to determine whenever the development might impact on these adjacent areas.

3.4.1 Frogs

According to the 2004 Frog Atlas (Minter, *et al* 2004), the study area is situated in the Sour Grassland Assemblage. The associated frog distribution maps suggest 18 frog species are expected to be present in the region. This Sour Grassland Assemblage has a moderate species richness (11-20 species per grid cell), but is low in endemic species (1-3) (Minter *et al* 2004). In compiling the expected frog lists, detailed frog distribution records by Jacobsen (1989) from the old Transvaal were used along with interpolated distribution maps, as well as data from the frog atlas project (Minter *et al* 2004), and information from the comprehensive work of Du Preez and Carruthers (2009). Of the 18 frog species that have distribution ranges coinciding with the study area, all are expected to occur in the area (Appendix 7). During the survey, four species were encountered, mostly within the riparian zone next to the river, with the exception of the rain frog which is not restricted to wetlands and was heard calling in the woodlands:

Riparian:

- Guttural toad (*Amietophrynus gutturalis*)
- African split-skin toad (*Schismaderma carens*)
- Natal dwarf puddle frog (*Phrynobatrachus natalensis*)

Game Camp:

- Common rain frog (*Breviceps adspersus*)

According to the South African Frog Atlas map (Minter, *et al*, 2004) the study area potentially contains 1-3 endemic species. By making use of known species distribution maps and linking habitat preference of species to the study area, no endemic species are expected to occur in the study area.

The most recent listings of the IUCN Red Data (IUCN, 2012) and NEMBA (National Environmental Management: Biodiversity Act) suggest there is currently one threatened frog species expected to occur in the area (range and habitat):

- Giant Bullfrog (*Pyxicephalus adspersus*) – Protected species (NEMBA)

3.4.2 Reptiles

Current knowledge of reptiles within the study area is derived from preliminary results of the Reptile Atlas Project (ADU, 2010). These data are largely based on surveys done by N.H.G. Jacobsen (1989), which provide a detailed account of all reptiles in the then Transvaal province.

The savannah ecoregion is the most extensive ecoregion in the subregion, occurring over much of the northern parts of Southern Africa. Although reptile richness and endemism is described as extremely high, this may be partially due to the ecoregion's size. Few savannah reptile species are classified as threatened, and many have extensive ranges (Alexander & Marais, 2007).

In compiling the expected reptile lists, detailed distribution records of the herpetofauna of the old Transvaal by Jacobsen (1989) were used with published distribution maps, as well as data from the reptile atlas project produced by the Animal Demographic Unit (ADU, 2010). As a result, 79 species have distribution ranges that extend into the region. Of these, 74 species are expected to occur in the area (Jacobsen, 1989; ADU, 2010) as their habitat requirements are met in the area (Appendix 8).

During the surveys, the following 10 reptile species were observed:

Riparian:

- Water monitor (*Varanus niloticus niloticus*)

Game Camp:

- Leopard tortoise (*Stigmochelys pardalis*)
- Incognito thread snake (*Leptotyphlops incognitus*)
- Brown house snake (*Boaedon capensis*)
- Spotted bush snake (*Philothamnus semivariegatus*)
- Mozambique spitting cobra (*Naja mossambica*)
- Rainbow rock skink (*Trachylepis margaritifer*)
- Variable skink (*Trachylepis varia*)
- Striped skink (*Trachylepis striata striata*)
- Yellow-throated plated lizard (*Gerrhosaurus flavigularis*)
- Common dwarf gecko (*Lygodactylus capensis*)

Possible reasons for not finding many reptiles are as follows:

- Subterranean lifestyle of many species
- Nocturnal lifestyle of many species
- Secretive and retiring lifestyle of many species
- Small size of most of the species
- Well-camouflaged species

There are more endemic reptiles in southern Africa than any other vertebrates, and new species are being discovered regularly. Due to their limited distribution and range in South Africa, endemic species are also included as species of special interest below. An endemic species has a restricted distribution (>90%) to the atlas region. According to the South African Reptile Atlas (ADU, 2010), the study area may support the following 11 endemic species (SA endemic - Including Lesotho & Swaziland):

Riparian:

- Dusky-bellied water snake (*Lycodonomorphus laevissimus*)
- Western Natal green snake (*Philothamnus natalensis occidentalis*)

Game Camp:

- Olive snake (*Lycodonomorphus inornatus*)
- Spotted harlequin snake (*Homoroselaps lacteus*)
- Swazi rock snake (*Lamprophis swazicus*)
- Delalande's sandveld lizard (*Nucras lalandii*)
- Van Dam's girdled lizard (*Smaug vandami*)
- Sekukhune flat lizard (*Platysaurus orientalis orientalis*)
- Spotted dwarf gecko (*Lygodactylus ocellatus ocellatus*)
- Black-spotted dwarf gecko (*Lygodactylus nigropunctatus nigropunctatus*)
- Transvaal gecko (*Pachydactylus affinis*)

In determining the threatened status of reptile species, the most recent listings of the IUCN Red Data (IUCN, 2012) and NEMBA (National Environmental Management: Biodiversity Act) were consulted. Currently there are two threatened reptile species expected to occur in the area (range and habitat):

- Southern African python (*Python natalensis*) – **TOPS NEMBA: Protected species; SA Red Data: Vulnerable**
- Yellow-bellied house snake (*Lamprophis fuscus*) – **SA Red Data: Near-threatened species. IUCN Lower Risk/Near-threatened.**
- Swazi rock snake (*Lamprophis swazicus*) - **SA Red Data: Rare**
- Variegated wolf snake (*Lycophidion variegatum*) - **SA Red Data: Peripheral**

3.4.3 Birds

A total of 323 bird species were observed during the Bird Atlas project (Harrison *et al*, 1997) in this region (Appendix 9). If bird distribution and local habitat are evaluated, it is clear that a total of 310 species of birds are likely to utilize the different biotopes of the study area.

Of the bird species expected to be found in the area, a number of birds are resident and will remain in the area throughout the year. Nomadic species will periodically move to other areas further away from the study area for feeding or breeding purposes.

Of the expected migratory bird species, some birds are visitors from further up north in the African continent and will visit the southern African region only during the warmer seasons to feed and most of them, to breed. The Palaearctic migrants spend our winters in Eurasia and are summer visitors to the warm south during the cold winters up north. Very few breed in Southern Africa.

During the surveys, 66 bird species were observed in all transects surveyed. See Appendix 9 for details:

1. Egyptian goose (*Alopochen aegyptiaca*)
2. African Harrier-Hawk (*Polyboroides typus*)
3. Common buzzard (*Buteo buteo*)
4. Crested francolin (*Dendroperdix sephaena*)
5. Natal spurfowl (*Francolinus natalensis*)
6. Helmeted guineafowl (*Numida meleagris*)
7. Laughing dove (*Spilopelia senegalensis*)
8. Ring-necked dove (*Streptopelia capicola*)
9. Red-eyed dove (*Streptopelia semitorquata*)
10. Emerald-spotted wood dove (*Turtur chalcospilos*)
11. Purple-crested turaco (*Tauraco porphyreolophus*)
12. Jacobin cuckoo (*Clamator jacobinus*)
13. Red-chested Cuckoo (*Cuculus solitarius*)
14. Klaas's cuckoo (*Chrysococcyx klaas*)
15. Diederik cuckoo (*Chrysococcyx caprius*)
16. Black cuckoo (*Cuculus clamosus*)
17. Speckled mousebird (*Colius striatus*)
18. Red-faced mousebird (*Urocolius indicus*)
19. Brown-hooded kingfisher (*Halcyon albiventris*)
20. European bee-eater (*Merops apiaster*)
21. Southern yellow-billed hornbill (*Tockus leucomelas*)
22. Yellow-fronted tinkerbird (*Pogoniulus chrysoconus*)
23. Black-collared barbet (*Lybius torquatus*)
24. Acacia Pied Barbet (*Tricholaema leucomelas*)
25. Cardinal Woodpecker (*Dendropicos fuscescens*)
26. Barn Swallow (*Hirundo rustica*)
27. Lesser striped swallow (*Cecropis abyssinica*)
28. Fork-tailed drongo (*Dicrurus adsimilis*)
29. Black-headed oriole (*Oriolus larvatus*)
30. Dark-capped bulbul (*Pycnonotus tricolor*)
31. Sombre greenbul (*Andropadus importunus*)
32. Southern Black Tit (*Parus niger*)
33. Arrow-marked babbler (*Turdoides jardineii*)
34. White-throated robin-chat (*Cossypha humeralis*)
35. White-browed scrub robin (*Erythropygia leucophrys*)
36. Willow Warbler (*Phylloscopus trochilus*)
37. Grey-backed Camaroptera (*Camaroptera brevicaudata*)
38. Yellow-bellied Eremomela (*Eremomela icteropygialis*)
39. Long-billed crombec (*Sylvietta rufescens*)
40. Rattling cisticola (*Cisticola chiniana*)
41. Red-faced cisticola (*Cisticola erythrops*)
42. Neddicky (*Cisticola fulvicapilla*)
43. Tawny-flanked prinia (*Prinia subflava*)
44. African paradise flycatcher (*Terpsiphone viridis*)
45. Chinspot batis (*Batis molitor*)
46. Brubru (*Nilaus afer*)
47. Black-backed puffback (*Dryoscopus cubla*)
48. Black-crowned tchagra (*Tchagra senegala*)
49. Brown-crowned Tchagra (*Tchagra australis*)
50. Southern boubou (*Laniarius ferrugineus*)

51. Crimson-breasted Shrike (*Laniarius atrococcineus*)
52. Orange-breasted bushshrike (*Chlorophoneus sulfureopectus*)
53. Grey-headed bushshrike (*Malaconotus blanchoti*)
54. Violet-backed starling (*Cinnyricinclus leucogaster*)
55. White-bellied sunbird (*Cinnyris talatala*)
56. Cape white-eye (*Zosterops capensis*)
57. Southern Grey-headed Sparrow (*Passer diffusus*)
58. White-browed Sparrow-Weaver (*Plocepasser mahali*)
59. Southern Masked weaver (*Ploceus velatus*)
60. Village weaver (*Ploceus cucullatus*)
61. Red-headed Weaver (*Anaplectes melanotis*)
62. Thick-billed weaver (*Amblyospiza albifrons*)
63. White-winged widowbird (*Euplectes albonotatus*)
64. Blue waxbill (*Uraeginthus angolensis*)
65. Yellow-fronted canary (*Crithagra mozambicus*)
66. Golden-breasted bunting (*Emberiza flaviventris*)

Four South African endemic bird species are expected to occur in the study area, namely:

- Cape Rock Thrush (*Monticola rupestris*)
- Sentinel Rock Thrush (*Monticola explorator*)
- Buff-streaked Chat (*Oenanthe bifasciata*)
- Pied Starling (*Lamprotornis bicolor*)

Of the expected bird species, 13 species are listed as threatened in the IUCN Red List of Threatened Species (IUCN, 2012), SA Red Data or TOPS lists (NEMBA 2007). No bird species endemic to South Africa are expected to occur in the study area.

Bird species that are expected to occur in the area (range and habitat) and are considered threatened are listed below (IUCN, 2012; NEMBA, 2007; Barnes, 2000):

Riparian:

- Black stork (*Ciconia nigra*) - **NEMBA (TOPS): Vulnerable species; SA Red Data (Barnes 2000): Near-threatened.**
- Half-collared Kingfisher (*Alcedo semitorquata*) - **SA Red Data (Barnes 2000): Near-threatened.**

Game Camp:

- African white-backed vulture (*Gyps africanus*) - **NEMBA (TOPS): Endangered species; IUCN 2010 NT: Near-threatened; SA Red Data (Barnes 2000): Vulnerable.**
- Cape vulture (*Gyps coprotheres*) - **NEMBA (TOPS): Endangered species; IUCN 2010 VU; SA Red Data (Barnes 2000): Vulnerable.**
- Secretary bird (*Sagittarius serpentarius*) - **SA Red Data (Barnes 2000): Near-threatened.**
- Tawny eagle (*Aquila rapax*) – **NEMA (TOPS): Vulnerable species; SA Red Data (Barnes 2000): Vulnerable.**
- Martial eagle (*Polemaetus bellicosus*) - **NEMBA (TOPS): Vulnerable species; SA Red Data (Barnes 2000): Vulnerable.**
- African Crowned eagle (*Stephanoaetus coronatus*) - **SA Red Data (Barnes 2000): Near-threatened.**
- Lesser Kestrel (*Falco naumanni*) - **IUCN 2010 Status: Vulnerable. NEMBA (TOPS): Vulnerable Species. SA Red Data (Barnes 2000): Vulnerable.**
- Lanner falcon (*Falco biarmicus*) - SA Red Data (Barnes 2000): Near-threatened.
- White-bellied korhaan (*Eupodotis senegalensis*) - **SA Red Data (Barnes 2000): Vulnerable.**
- European roller (*Coracias garrulus*) - **IUCN 2010 NT: Near-threatened.**
- Red-billed oxpecker (*Buphagus erythrorhynchus*) - **SA Red Data (Barnes 2000): Vulnerable.**

3.4.4 Mammals

Of the 121 mammal species that have distribution ranges extending into the region (Friedman & Daly, 2004), 115 species are expected to be present under natural conditions.

During field visits, signs and/or sighting of 13 mammal species were recorded from transects surveyed, and another 15 species were opportunistically observed or reported, mostly by the

local farmer (see Appendix 10 for detail). Thus, the following mammal species were noted during the survey (observed or reported, mostly by the local farmer):

- South African hedgehog (*Atelerix frontalis*)
- Wahlberg's fruit bat (*Epomophorus wahlbergi*)
- Southern lesser bushbaby (*Galago moholi*)
- Thick-tailed bush baby (*Otolemur crassicaudatus*)
- Chacma baboon (*Papio ursinus*)
- Vervet monkey (*Cercopithecus aethiops*)
- Brown hyaena (*Hyaena brunnea*)
- Leopard (*Panthera pardus*)
- Caracal (*Felis caracal*)
- Serval (*Felis serval*)
- Black-backed jackal (*Canis mesomelas*)
- Large-spotted genet (*Genetta tigrina*)
- African civet (*Civettictis civetta*)
- Slender mongoose (*Galerella sanguinea*)
- Burchell's (Plains) zebra (*Equus burchellii*)
- Rock dassie (*Procavia capensis*)
- Bushpig (*Potamochoerus porcus*)
- Warthog (*Phacochoerus aethiopicus*)
- Blue wildebeest (*Connochaetes taurinus*)
- Impala (*Aepyceros melampus*)
- Kudu (*Tragelaphus strepsiceros*)
- Mountain reedbuck (*Redunca fulvorufula*)
- Grey duiker (*Sylvicapra grimmia*)
- Bushbuck (*Tragelaphus scriptus*)
- Cape Porcupine (*Hystrix africaeaustralis*)
- Tree squirrel (*Paraxerus cepapi*)
- Common Molerat (*Cryptomys hottentotus*)
- Scrub hare (*Lepus saxatilis*)

The following 10 mammal species, expected to occur in the area (range and habitat), are considered threatened (IUCN, 2012; NEMBA, 2007):

Riparian:

- Reedbuck (*Redunca arundinum*) - **TOPS NEMA: Protected species**
- Water Rat (*Dasymys incomtus*) –**SA Red Data (2004): Near threatened; IUCN: Least concern. Population trend: Unknown.**
- Spotted-necked otter (*Lutra maculicollis*) - **TOPS NEMBA: Protected species**
- Cape clawless otter (*Aonyx capensis*) - **TOPS NEMBA: Protected species**

Game Camp:

- Brown hyaena (*Hyaena brunnea*) - **TOPS NEMBA: Protected species; IUCN 2010: Near threatened.**
- Leopard (*Panthera pardus*) - **IUCN (2010): NT Near-threatened. TOPS NEMBA: Vulnerable species.**
- Serval (*Felis serval*) - **TOPS NEMBA: Protected species**
- Honey badger (*Mellivora capensis*) - **TOPS NEMBA: Protected species.**
- Sharpe's grysbok (*Raphicerus sharpei*) - **TOPS NEMA: Protected species; IUCN 2010: Least concern.**
- Pangolin (*Manis temminckii*) - **TOPS NEMBA: Vulnerable species.**

The Laminated Vlei Rat (*Otomys laminatus*) is the only South African endemic mammal species that is expected to occur in the study area.

3.4.5 Fauna summary

While analyzing the fauna distribution data and habitat availability in the study area, it became clear that the three areas evaluated, riparian woodland; fallow land and savannah woodland (Game Camp), have different faunal assemblages associated with available habitat. Some species only occur in one biotope, while others have a wider distribution and overlap habitats. Table 2 lists these assemblages in the three sections of the project area.

Table 2: Faunal assemblages listed in the areas of preference.

Faunal group	Riparian woodland	Fallow land	Savannah woodland (Game Camp)
Frogs	16	13	8
Reptiles	33	20	68
Birds	161	68	214
Mammals	74	38	90
Total	284	139	380

Therefore, we conclude that the presence of different faunal groups is dependent on the availability of potential habitats in the distinct biotopes. From Table 2 it is clear that the Savannah woodland habitat in the Game Camp attracts most animals (380 species) while the Riparian woodland biotope is a close second, offering habitat for 284 species. The lower number of animals (139 species) in the fallow land habitat is indicative of a higher disturbance factor and the resulting lack of micro-habitats in this human-influenced biotope.

4. Regional and Provincial conservation value of the project area

The Ohrigstad Mountain Bushveld (Figure 32) vegetation type has a conservation status of “Least Threatened”. The conservation target is 24% and some 40-50% is present in game parks, Ramsar sites and in the near-by Kruger National Park. So far only 4% has been transformed (largely by cultivation), but pressure of local grazing and urban sprawl will result in the loss of many subtropical freshwater habitats (Mucina and Rutherford, 2006). Furthermore, disturbance leads to invasion by alien plants and aquatic weeds, which is certainly the case on the Boerboonkraal farm.

While the Ohrigstad Mountain Bushveld is not itself threatened, the Watervals River valley is surrounded by rare and endangered ecosystems (Figure 32), including Sekhukhune Norite Bushveld, Sekhukhune Montane Grassland, Sekhukhune Mountainlands and Lydenburg thornveld.

According to the LUDS Tool (Figure 32) the area which is earmarked for development (Figure 1) is classified as “Least Concern” (excluding the riparian wetland). Figure 32 shows the position of the proposed development in relation to the surrounding landscape in that region. The farm is situated in the Olifants Water Management Area and the Watervals River flows through the Steelpoort Sub Water Management Area. Wetlands and wetland clusters which are classified as National Freshwater Ecosystem Priority Areas (NFEPA) are indicated (Figure 33).

The riparian wetland of the river is identified by the NFEPA (2011) Wetlands Map as Central Bushveld Group 1 – Channeled valley-bottom wetland.

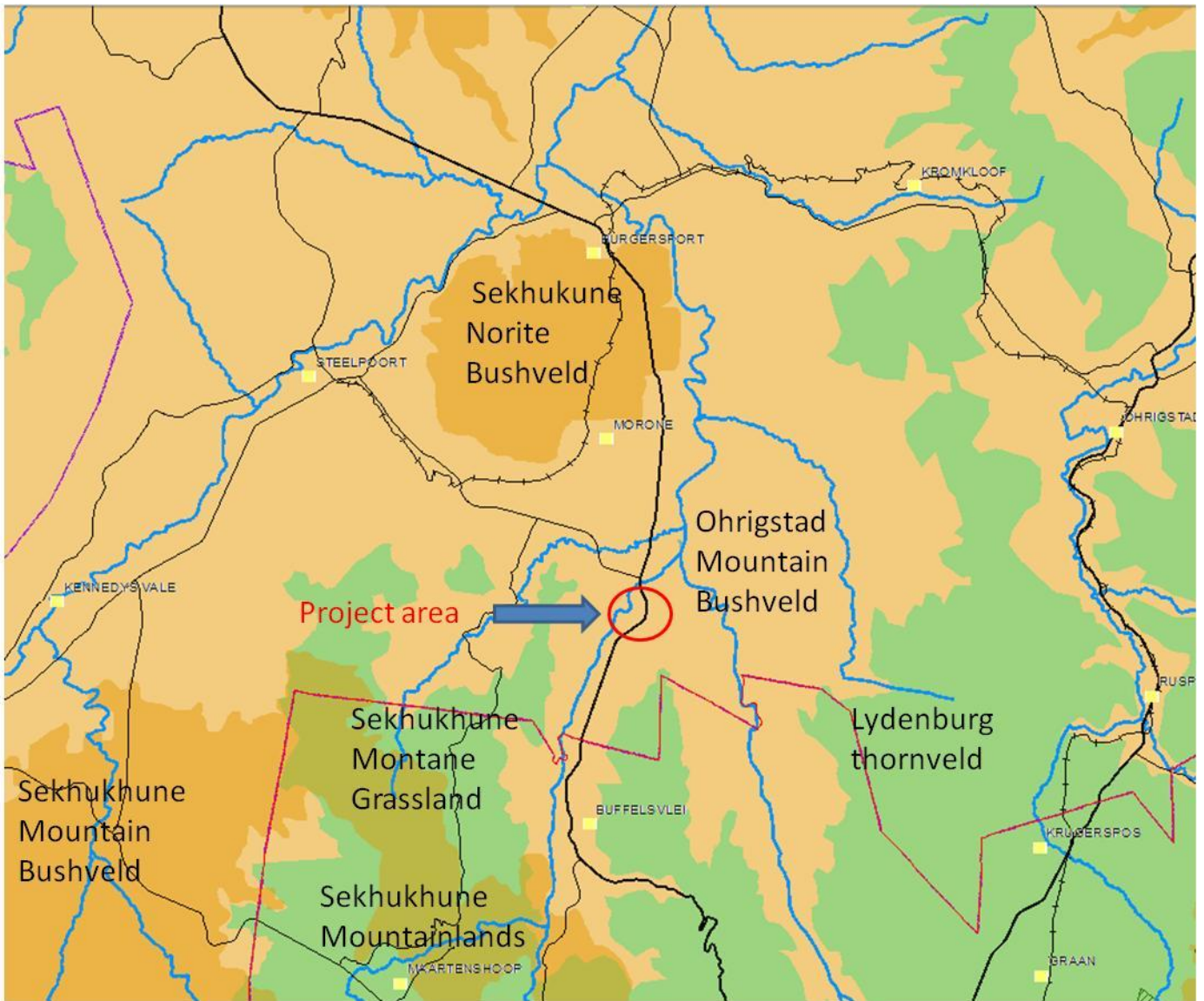
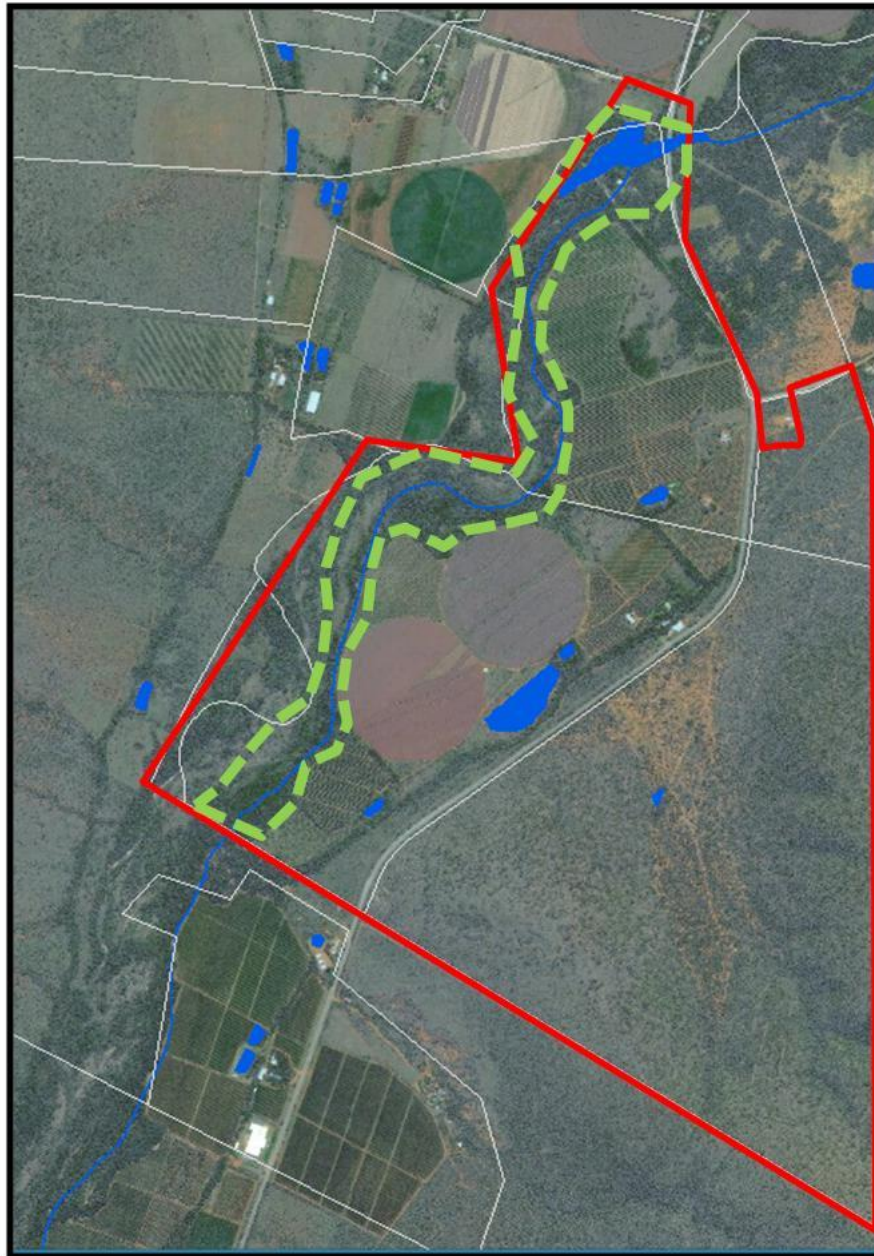


Figure 32: The position of the Project Area in the Ohrigstad Mountain Bushveld vegetation type in relation to the surrounding vegetation types.



- Farm boundary
- Riparian delineation
- NFEPA wetland

Figure 33: A broad overview of the delineated riparian zone of the Waterval River flowing through the project area. NFEPA wetland indicators (in blue) point out artificial dams and an important riparian wetland in the top of the picture.

Biodiversity assets in these landscapes contribute to natural ecosystem functioning, ensure the maintenance of viable species populations and provide essential ecological and environmental goods and services across the landscape. Although these areas contribute least to the achievement of biodiversity targets they have significant environmental, aesthetic and social values and should not be viewed as wastelands or carte-blanche development zones.

Development options are extensive in these areas. At the broad scale, these areas and those where natural habitat is already lost, serve as preferred sites for all forms of development. Although, land-use planners are still required to consider other environmental factors such as socioeconomic efficiency, aesthetics and the sense-of-place before making any development decisions. Prime agricultural land should also be avoided for all non-agricultural land uses.

Land-use and administrative options for positive biodiversity outcomes include:

- Where this category of land occurs close to areas of high biodiversity value, and/or it may provide useful ecological connectivity or ecosystem services functions, e.g. ecological buffer zones and corridors or water production. In these situations encouragement needs to be given to biodiversity-friendly forms of management and even restoration options where appropriate;
- Develop incentives to reverse biodiversity loss for selected parcels of land where buffer zones and connectivity are potentially important;
- Standard application of EIA and other planning procedures;
- Areas where natural habitat is already lost should serve as preferred sites for all forms of urban and industrial development.

5. Discussion

Proposed areas for clearing

The project proposes to clear 90 ha of natural bush from Portion 7 and 8 of the Boerboomkraal Farm (353 KT) to plant and irrigate citrus. Three areas have been identified below as favourable for cultivation.

Section 1: Game Camp Area

The Game Camp woodland area (76.9 ha) can be divided into four biotopes:

- Area 1:** Woodlands on flat slopes with low rock and tree cover;
- Area 2:** Woodlands on flat slopes with low rock cover and high tree and grass cover;
- Area 3:** Woodlands on medium slopes with medium rock cover and low tree and grass cover;
- Area 4:** Woodlands on steep slopes with high rock and tree cover.

Although these areas have distinct differences in the woody species composition, structural differences are less pronounced at the macro scale. Therefore the larger and more mobile faunal species (large mammals and birds) will be able to move freely between biotypes in the area. However at the local scale, differences in vegetation density; soil density and rocky cover, which create micro-habitats, will have a significant influence on the distribution of small mammal species and herpetofauna (frogs and reptiles).

Should the project be approved and bush clearing proceed in the identified area, all vegetation will be removed and most of the surface soil disturbed. As a result, the eight frog species and 68 reptile species that are expected to occur in the area will also be compromised. Should they prevail after bush clearing, they may move to adjacent suitable habitat on the remainder of the Game Farm. Larger reptile species, such as fast-moving snakes and big lizards will most probably be able to evade the bush clearing activities.

Due to their subterranean lifestyle, moles, rodents and shrews may also temporarily escape the bush clearing activities, but the soil and surrounding environment will no longer be able to support them and they will also eventually have to leave the area if they are able to.

Species of Concern

The protected Giant Bullfrog (*Pyxicephalus adspersus* NEMBA), has a regional distribution range that appears to extend into this area. However, no sightings were made during our surveys and it is doubtful they will occur in the dry savannah woodland environment of the Game Camp due to the lack of suitable grassy depressions and sandy soils.

The nine reptile species that are expected to occur in the Game Camp, should also occur in similar densities in the rest of the farm not affected by the proposed development. Unfortunately, three of the four Red Data snake species that may inhabit the proposed development area will be compromised by bush clearing activities. The Swazi rock snake (*Lamprophis swazicus*) however, might avoid displacement since they occur in the very rocky areas which will not be cleared.

Nine of the 11 endemic reptile species expected to occur in the area will be compromised by the clearing. These are smaller species that shelter in the soil, between rocks and under dense vegetation. Only the Van Dam's girdled lizard (*Smaug vandami*) and the Sekukhune

flat lizard (*Platysaurus orientalis orientalis*) may find refuge in the rocky outcrops and boulders not influenced by clearing.

There are 13 expected Red Data bird species that will be potentially displaced should bush clearing proceed. However, since no signs were recorded of breeding colonies the larger birds will probably flee the area as soon as it is developed. Fortunately the remainder of the Game Camp land has favourable habitat and they may utilize this area. The only smaller Red Data birds nesting in the area that might be impacted are the Red-billed oxpecker (*Buphagus erythrorhynchus*) which breeds in hollow trees and logs.

All storks, vultures, eagles, secretary birds, smaller raptors, korhaan and other Red Data bird species, are expected to move away from the area of development. The extensive natural mountainous areas adjacent to the Game Camp development will serve as adequate safe haven for these birds. In addition, three of the four endemic birds are associated with rocky outcrop habitats, a habitat that will not be impacted directly by the clearing. Finally, the Pied Starling (*Lamprotornis bicolor*), a widespread and common species is also unlikely to be affected by the development.

Of the six Red Data mammal species, the following two species might be compromised: The Brown hyaena (*Hyaena brunnea*) den was noted on one of the slopes, fortunately this specific den is well up the slope in a very rocky area which is unlikely to be impacted directly. The other mammal, the pangolin (*Manis temminckii*), is a nocturnal, secretive and slow-moving animal. As such, the well-being of this species will be impacted by ploughing and bush clearing..

In conclusion, it is clear that the proposed development will adversely impact the natural environment and associated habitat. However, since there are still large areas of near-natural savannah and montane woodland surrounding the development, effects should be restricted to minor range contraction of the distribution of fauna in the area. Of the 22 Red Data faunal species that are expected to occur in the proposed development zone of the Game Camp area, only the following five species may be compromised to a degree:

- Southern African python (*Python natalensis*) - shelters in holes and dense vegetation, slow moving;
- Yellow-bellied house snake (*Lamprophis fuscus*) - shelters in holes and dead wood, slow moving;
- Variegated wolf snake (*Lycophidion variegatum*) - shelters in holes, under rocks and dead wood, slow moving;
- Red-billed oxpecker (*Buphagus erythrorhynchus*) - nests in hollow tree stumps or logs;
- Pangolin (*Manis temminckii*) - shelters in holes and dense vegetation, slow moving.

During a visit on 4 February 2015 (guided by local plant enthusiasts), the following rare species were pointed out in an area bordering the project site. A follow-up survey confirmed the presence of all but one of these species in the project area:

- *Ceropegia distincta subsp. verruculosa* - abundant in a section of the the project area.
- *Eulophia leachii* - scarce in a section of the project area.
- *Eulophia petersii* – abundant in a section of the project area.
- *Eulophia speciosa* – only observed in adjacent area, however, it is anticipated that it will occur in the same vicinity of the project area.

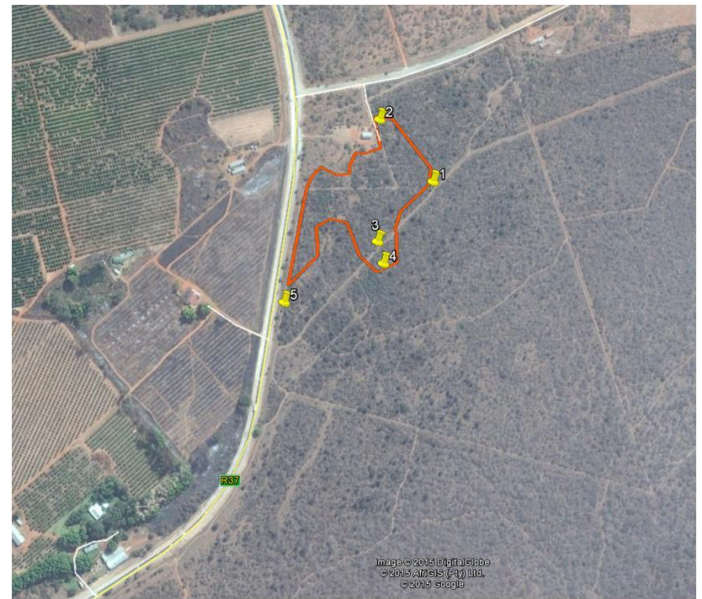


Figure 34: The area identified for the presence of the rare plants.

Figure 35: A Google image demarcating the area with the highest concentration of the rare plant.

Apart from the above-mentioned species, and the three species of protected trees observed, no other plant of special concern was encountered in the Game Camp area (Project Area A).

Section 2: Waterval River riparian

According to Figures 36 and 37, both areas along the Waterval River surveyed are true riparian wetlands, containing vegetation and a macro-channel morphology that is typical of wetland structure. (Project Areas B and C).

In the event of low-flow channel flooding into the adjacent channel bar (embankment) during high flow events, water will first fill high-flow channels and later reach the tops of shelves and terraces. Lower wetland soils are associated with sedges and other hydrophilic forbs, while larger riparian trees and shrubs cover the shelves and terraces. It is clear that the previous farmer was aware of the importance and sensitivity of this riparian wetland with its water-logged soils, as he fenced the area off from the edge of the true riparian zone.

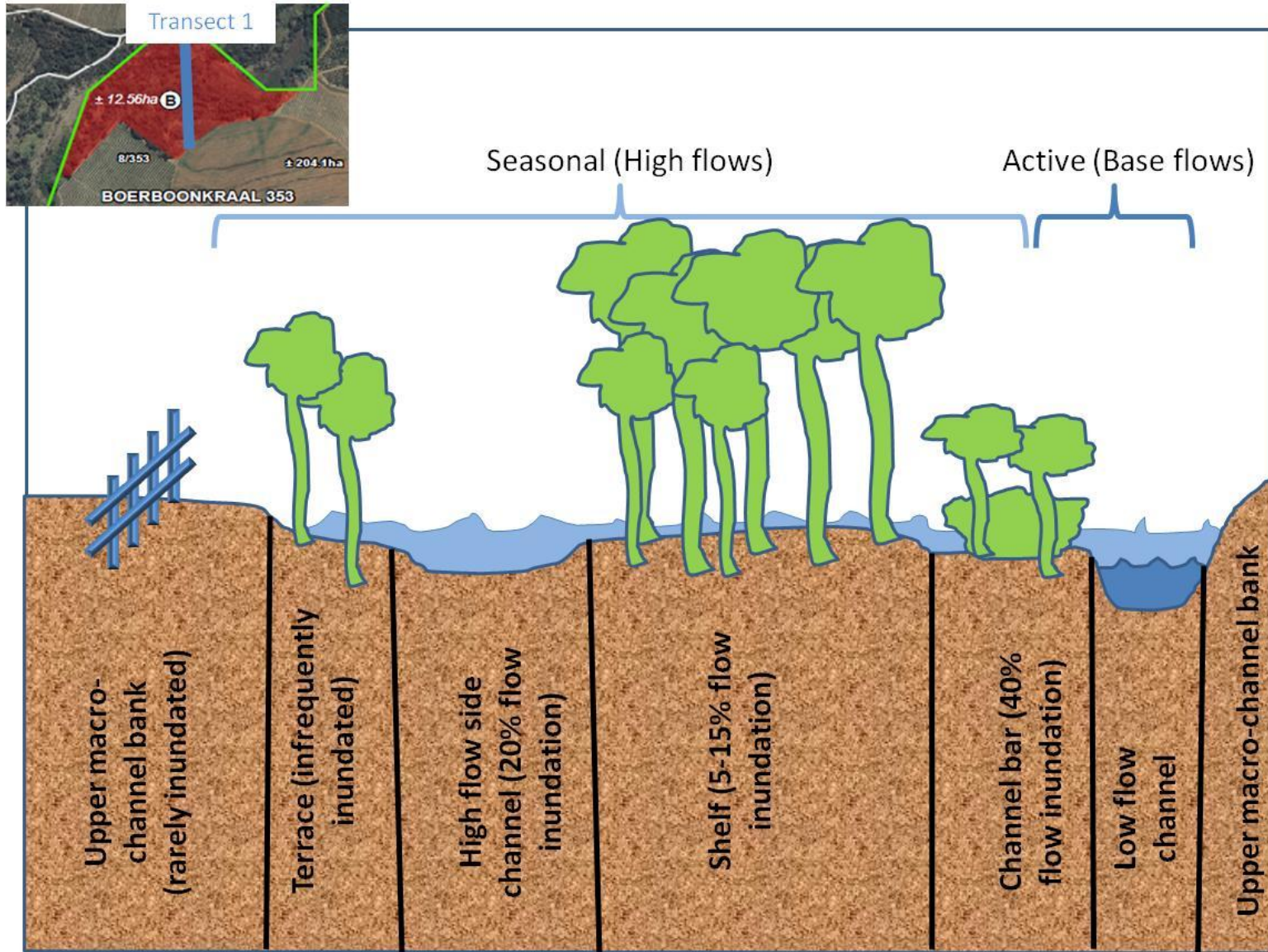


Figure 36: A diagram depicting a cross-section along Transect 1 through the Waterval River riparian zone (Area B in Figure 1)

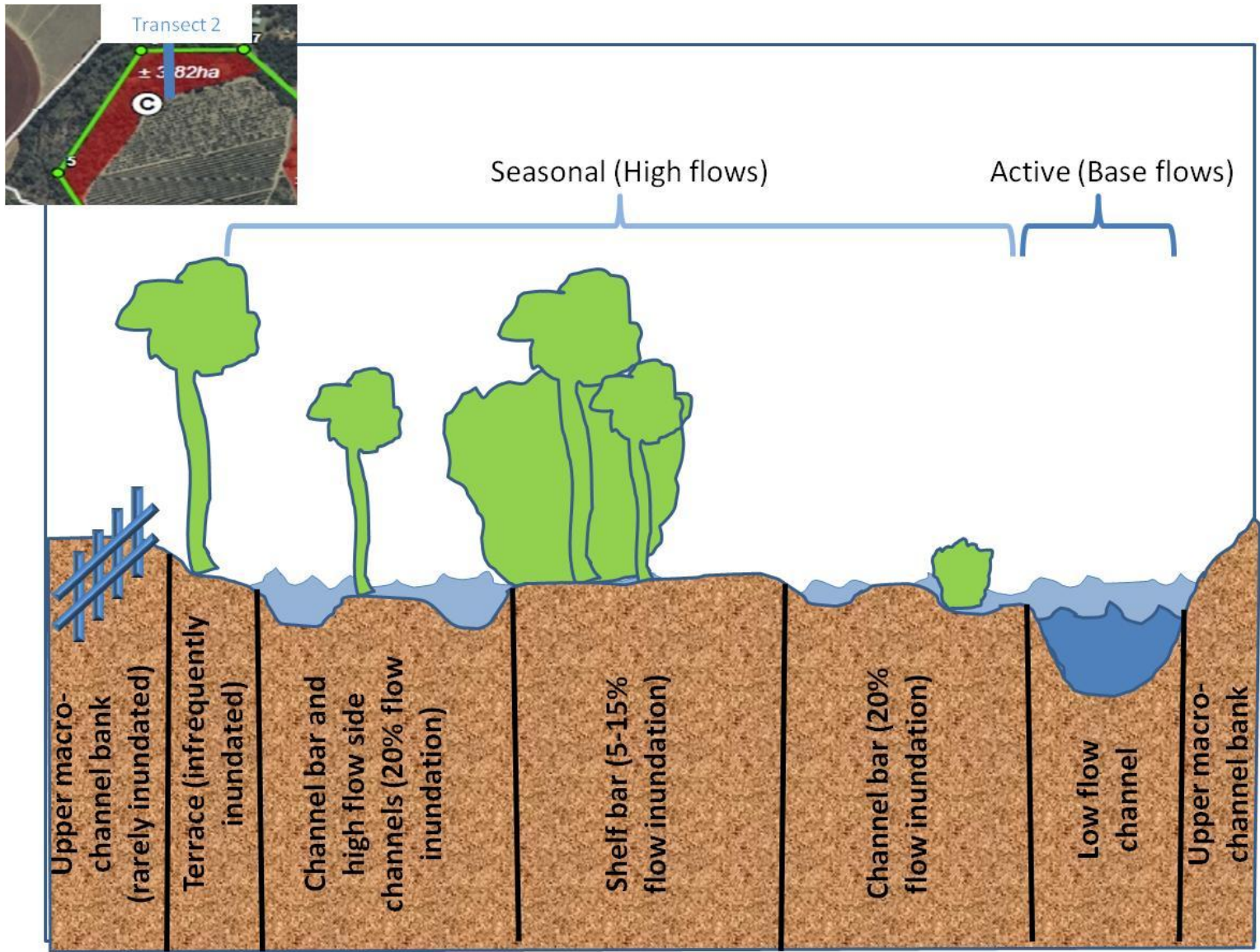


Figure 37: A diagram depicting a cross-section along Transect 2 through the Waterval River riparian zone (Area C in Figure 1)

Species of Concern

Around 284 faunal species are expected to utilize the riparian zone and the river as habitat. Although 16 species of frogs might occur here, none are endemic or Red Data listed. Two endemic reptiles, the Dusky-bellied water snake (*Lycodonomorphus laevissimus*) and Western Natal green snake (*Philothamnus natalensis occidentalis*), and one Red Data species, the Southern African python (*Python natalensis*) are expected to utilize this biotope. In addition, the following two bird and three mammal species are Red Data listed:

Two Red Data birds are expected in this habitat:

- Black stork (*Ciconia nigra*)
- Half-collared Kingfisher (*Alcedo semitorquata*)

Three Red Data mammals are expected in this habitat:

- Reedbuck (*Redunca arundinum*)
- Water Rat (*Dasymys incomtus*)
- Spotted-necked otter (*Lutra maculicollis*)
- Cape clawless otter (*Aonyx capensis*)

Section 3: Fallow land (Project Areas D and E)

This historically disturbed and fragmented biotope does not supply any special habitat to the area. The fact that it became waterlogged due to the damming effects might also render it less favourable for farming practises.

6. Mitigation

Due to the total change in land cover, from natural bush to citrus production, the proposed activity will impact the natural ecology. To lessen the impact of the disturbance, the following mitigation measures are proposed:

1. **Riparian Wetlands:** It is proposed that the Waterval River riparian zone should be excluded from the development. Therefore Areas B and C will not be cleared as they are considered important wetlands acknowledged by NFEPA and therefore protected by law.
2. **Removal of vegetation:** During the survey of the Game Camp, a number of large, old Shepherd's trees (*Boscia albitrunca*) which are listed as protected (National Forests Act. 1998) were noted on the foot-slope of the mountain. It is proposed that these trees be marked (with danger tape by the ECO) and left intact after clearing. In fact, the trees may be used to demarcate the edge of the orchard itself.
3. **Plants of Special Concern:** In the northern corner of the project area a number of special flowering plants (*Ceropegia distincta subsp. verruculosa*) make the area a hotspot for rare plant species. Following an assessment to establish distribution and abundance of these special plants, it is proposed that the area demarcated in Figure 38, should be classified as a **special plant reserve** where **no development** will take place.
4. **Vegetation clearing:** During the clearing of vegetation in the project area most vertebrates will move away from the site. During this activity the project team may encounter slow moving reptiles and smaller mammals. These animals should be allowed to move away unharmed or be assisted to relocate to adjacent uncleared areas in the Game Camp.
5. **Red Data Fauna:** Should any of the slower moving Red Data species be encountered (e.g. Southern African python and Pangolin), a special effort should be made to release these animals unharmed into the unaffected Game Camp area to the east.

Community benefits

1. **Removal of vegetation:** All trees and other plants of commercial use (e.g. *Aloes*) should be made available to nurseries and wood factories. In this way the removal of the plants will benefit the communities economically, creating jobs and business opportunities as a spin-off of the project.

Provided the applicant implements the mitigation measures listed above, no significant impacts are known which could prevent the proposed project from going ahead as proposed on the remainder of the project areas.



Figure 38: Map indicating the proposed special plant reserve area (inside the red lines), which will provide refuge to a large number of rare plants.

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APPENDICES

Appendix 1: Results of transects surveys in the Game Camp area used to group habitats.

Transect	Latitude S	Longitude E	Slope degrees	Rock cover %	Tree cover %	Grass cover %
211	24°49'35.9"S	30°21'14.9"E	18	15	75	
339	24°49'38"S	30°21'07.3"E	12	10	60	15
			6	12	75	60
238			10	15	50	10
213	24°49'34.8"S	30°21'08.9"E	13	10	60	
212	24°49'35.7"S	30°21'13.2"E	2	13	80	
228	24°49'57.4"S	30°20'45.6"E	4	3	60	20
224	24°49'51.3"S	30°20'46.6"E	4	5	80	60
227	24°49'59.2"S	30°20'41.9"E				
245	24°49'35.2"S	30°21'00"E	10	70	10	35
214	24°49'34.5"S	30°21'06.2"E	11	10	60	
244	24°49'50.7"S	30°20'50.3"E	15	10	55	20
226			2	7	40	30
241	24°49'42.2"S	30°20'54.7"E	12	15	70	10
219	24°49'25.6"S	30°20'56"E	2	6	80	80
240	24°49'38.4"S	30°21'02"E	8	8	75	45
222	24°49'16.2"S	30°21'07.3"E	8	15	75	80
218	24°49'29.5"S	30°20'52.2"E	2	7	80	80
215	24°49'33.6"S	30°21'01.6"E	12	11	60	80
217	24°49'31.6"S	30°20'52.6"E				
223	24°49'19.8"S	30°21'09"E	6	8	65	85
216	24°49'33.5"S	30°21'01.4"E	10	10	75	80
221	24°49'17.6"S	30°21'03.7"E	3	10	80	85
242	24°49'48.7"S	30°20'52.8"E	22	23	60	20

Appendix 2: The results of transect surveys in the Game Camp area used to group vegetation types.

Transect	<i>Acacia erubescens</i>	<i>Acacia nigrescens</i>	<i>Acacia tortilis</i>	<i>Aloe</i>	<i>Combretum apiculatum</i>	<i>Commiphora mollis</i>	<i>Commiphora pyracanthoides</i>	<i>Dichrostachys cinerea</i>	<i>Euphorbia ingens</i>	<i>Euphorbia turicalli</i>	<i>Grewia spp</i>	<i>Kirkia wilmsii</i>	<i>Sansevieria</i>	<i>Sterulia rogersii</i>
211					2	20		45			25	2		
339		5			5	20	20	5			20	5		
???		15				15	10		5		20	10		
238						15	5	10			40	15		
213						15	10	10			40	15		
212						30		10			25	30		
228							5	5			30	30		
224														
227	30		50								10		5	
245		10				20	15	5	5		20		5	
214		5		8		10	15	20	15		20			
244		15		5		20		10			20			
226	10		10					20	5		30		5	
241		20				25	10		5		30			
219			10	15		10	5		10		30		10	5
240		20				20	10				30			
222						20	10	5	5		40			
218			5	10			5	10	5	5	40		10	
215	10			5		5	10	30	10		40			
217			30	10				10			40			
223				5		20		15			40			5
216				10		40					40			
221				10		10	10		5		50		10	5
242		10			5	10	10	5						5

Appendix 3: Protected trees of South Africa (National Forests Act. 1998).

Botanical Name	English Common Names	Tree Number
<i>Acacia erioloba</i>	Camel Thorn	168
<i>Acacia haematoxylon</i>	Grey Camel Thorn	169
<i>Adansonia digitata</i>	Baobab	467
<i>Azelia quanzensis</i>	Pod Mahogany	207
<i>Balanites maughamii</i>	Torchwood	251
<i>Barringtonia racemosa</i>	Powder-puff Tree	524
<i>Boscia albitrunca</i>	Shepherd's Tree	122
<i>Brachystegia spiciformis</i>	Msasa	198.1
<i>Breonadia salicina</i>	Matumi	684
<i>Bruguiera gymnorrhiza</i>	Black Mangrove	527
<i>Cassipourea swaziensis</i>	Swazi Onionwood	531.1
<i>Catha edulis</i>	Bushman's Tea	404
<i>Ceriops tagal</i>	Indian Mangrove	525
<i>Cleistanthus schlechteri</i>	False Tamboti	320
<i>Colubrina nicholsonii</i>	Pondo Weeping Thorn	453.8
<i>Combretum imberbe</i>	Leadwood	539
<i>Curtisia dentata</i>	Assegai	570
<i>Elaeodendron transvaalensis</i>	Bushveld Saffron	416
<i>Erythrophysa transvaalensis</i>	Bushveld Red Balloon	436.2
<i>Euclea pseudebenus</i>	Ebony Guarri	598
<i>Ficus trichopoda</i>	Swamp Fig	54
<i>Leucadendron argenteum</i>	Silver Tree	77
<i>Lumnitzera racemosa</i> var. <i>racemosa</i>	Tonga Mangrove	552
<i>Lydenburgia abottii</i>	Pondo Bushman's Tea	407
<i>Lydenburgia cassinoides</i>	Sekhukhuni Bushman's Tea	406
<i>Mimusops caffra</i>	Coastal Red Milkwood	583
<i>Newtonia hildebrandtii</i> var. <i>hildebrandtii</i>	Lebombo Wattle	191
<i>Ocotea bullata</i>	Stinkwood	118
<i>Ozoroa namaquensis</i>	Gariiep Resin Tree	373.2
<i>Philenoptera violacea</i>	Apple-leaf	238
<i>Pittosporum viridiflorum</i>	Cheesewood	139
<i>Podocarpus elongatus</i>	Breede River Yellowwood	15
<i>Podocarpus falcatus</i>	Outeniqua Yellowwood	16
<i>Podocarpus henkelii</i>	Henkel's Yellowwood	17
<i>Podocarpus latifolius</i>	Real Yellowwood	18

<i>Protea comptonii</i>	Saddleback Sugarbush	88
<i>Protea curvata</i>	Serpentine Sugarbush	88.1
<i>Prunus africana</i>	Red Stinkwood	147
<i>Pterocarpus angolensis</i>	Wild Teak	236
<i>Rhizophora mucronata</i>	Red Mangrove	526
<i>Sclerocarya birrea subsp. caffra</i>	Marula	360
<i>Securidaca longependunculata</i>	Violet Tree	303
<i>Sideroxylon inerme subsp. inerme</i>	White Milkwood	579
<i>Tephrosia pondoensis</i>	Pondo Fish-poison Pea	226.1
<i>Warburgia salutaris</i>	Pepper-bark Tree	488
<i>Widdringtonia cedarbergensis</i>	Clanwilliam Cedar	19
<i>Widdringtonia schwarzii</i>	Willowmore Cedar	21

Appendix 4: Expected plant species (excluding trees) for the study area (Grid: 2430CD) downloaded from POSA (<http://posa.sanbi.org>) on January 8, 2015, in addition to plants observed during the November 2014 survey.

Family	Species	Threat status	SA Endemic	Growth forms	Observed during November 2014 survey.
ACANTHACEAE	<i>Barleria gueinzii</i> Sond.	LC	No	Herb, shrub	
ACANTHACEAE	<i>Barleria obtusa</i> Nees	LC	No	Dwarf shrub, herb, shrub	
ACANTHACEAE	<i>Barleria senensis</i> Klotzsch	LC	No	Dwarf shrub, herb, shrub	
ACANTHACEAE	<i>Blepharis subvolubilis</i> C.B.Clarke	LC	No	Dwarf shrub, herb, shrub	
ACANTHACEAE	<i>Chaetacanthus costatus</i> Nees	LC	No	Dwarf shrub, herb	
ACANTHACEAE	<i>Dicliptera clinopodia</i> Nees	LC	No	Herb, shrub	
ACANTHACEAE	<i>Dicliptera fruticosa</i> K.Balkwill	NT	No	Herb	
ACANTHACEAE	<i>Dyschoriste fischeri</i> Lindau	LC	No	Dwarf shrub, shrub	
ACANTHACEAE	<i>Dyschoriste rogersii</i> S.Moore	LC	No	Dwarf shrub, shrub	
ACANTHACEAE	<i>Justicia flava</i> (Vahl) Vahl	LC	No	Dwarf shrub, herb	
ACANTHACEAE	<i>Justicia odora</i> (Forssk.) Vahl	LC	No	Dwarf shrub, herb, shrub	
ACANTHACEAE	<i>Petalidium oblongifolium</i> C.B.Clarke	LC	No	Dwarf shrub, herb, shrub	
ACANTHACEAE	<i>Ruellia cordata</i> Thunb.	LC	No	Dwarf shrub, herb	
ACANTHACEAE	<i>Ruellia patula</i> Jacq.	LC	No	Herb	
AMARANTHACEAE	<i>Aerva leucura</i> Moq.	LC	No	Herb	
AMARYLLIDACEAE	<i>Scadoxus piniceus</i>	LC	No	Herb	Observed
ANACARDIACEAE	<i>Searsia batophylla</i> (Codd) Moffett	VU	No	Shrub	
ANEMIACEAE	<i>Anemia dregeana</i> Kunze	LC	No	Geophyte, herb	
APIACEAE	<i>Alepidea peduncularis</i> A.Rich.	DDT	No	Herb	
APIACEAE	<i>Alepidea setifera</i> N.E.Br.	LC	No	Herb	
APOCYNACEAE	<i>Ceropegia ampliata</i> E.Mey. var. <i>ampliata</i>	LC	No	Climber, succulent	
APOCYNACEAE	<i>Ceropegia nilotica</i> Kotschy var. <i>nilotica</i>	LC	No	Climber, succulent	
APOCYNACEAE	<i>Duvalia polita</i> N.E.Br.	LC	No	Succulent	

APOCYNACEAE	<i>Huernia hystrix</i> (Hook.f.) N.E.Br. subsp. <i>hystrix</i>	LC	No	Succulent	
APOCYNACEAE	<i>Orbea carnososa</i> (Stent) Bruyns subsp. <i>keithii</i> (R.A.Dyer) Bruyns	LC	No	Succulent	
APOCYNACEAE	<i>Orbea tapscottii</i> (I. Verd.) L.C. Leach	LC	No	Succulent	
APOCYNACEAE	<i>Secamone parvifolia</i> (Oliv.) Bullock	LC	No	Climber	
ARACEAE	<i>Stylochaeton natalensis</i> Schott	LC	No	Herb	
ARALIACEAE	<i>Cussonia transvaalensis</i> Reyneke	LC	No	Succulent, tree	
ASPARAGACEAE	<i>Asparagus buchananii</i> Baker	LC	No	Climber	
ASPARAGACEAE	<i>Asparagus divaricatus</i> (Oberm.) Fellingham & N.L.Mey.	LC	No	Shrub	
ASPARAGACEAE	<i>Asparagus lynetteae</i> (Oberm.) Fellingham & N.L.Mey.	LC	No	Scrambler	
ASPARAGACEAE	<i>Asparagus suaveolens</i> Burch.	LC	No	Shrub	
ASPHODELACEAE	<i>Aloe aculeata</i> Pole-Evans	LC	No	Herb, succulent	
ASPHODELACEAE	<i>Aloe cryptopoda</i> Baker	LC	No	Dwarf shrub, shrub, succulent	
ASPHODELACEAE	<i>Aloe globuligemma</i> Pole-Evans	LC	No	Dwarf shrub, succulent	
ASPHODELACEAE	<i>Aloe greatheadii</i> Schönland var. <i>davyana</i> (Schönland) Glen & D.S.Hardy	LC	No	Herb, succulent	
ASPHODELACEAE	<i>Aloe parvibracteata</i> Schönland	LC	No	Herb, succulent	
ASPHODELACEAE	<i>Aloe pretoriensis</i> Pole-Evans	LC	No	Herb, shrub, succulent	
ASPHODELACEAE	<i>Bulbine abyssinica</i> A.Rich.	LC	No	Geophyte, herb, succulent	
ASTERACEAE	<i>Dicoma anomala</i> Sond. subsp. <i>gerrardii</i> (Harv. ex F.C.Wilson) S.Ortiz & Rodr.Oubiña	LC	No	Herb	
ASTERACEAE	<i>Emilia transvaalensis</i> (Bolus) C.Jeffrey	LC	No	Herb, suffrutex	
ASTERACEAE	<i>Gymnanthemum crataegifolium</i> (Hutch.) H.Rob.	LC	No	Shrub	
ASTERACEAE	<i>Hirpicium bechuanense</i> (S.Moore) Roessler	LC	No	Dwarf shrub	
ASTERACEAE	<i>Kleinia fulgens</i> Hook.f.	LC	No	Succulent, suffrutex	
ASTERACEAE	<i>Osteospermum muricatum</i> E.Mey. ex DC. subsp. <i>muricatum</i>	LC	No	Herb	
BARTRAMIACEAE	<i>Philonotis dregeana</i> (Müll.Hal.) A.Jaeger		No	Bryophyte	
BORAGINACEAE	<i>Heliotropium steudneri</i>	LC	No	Shrub	Observed

CALYMPERACEAE	<i>Syrhropodon asper</i> Mitt.		No	Bryophyte, epiphyte	
CAPPARACEAE	<i>Cleome angustifolia</i> Forssk. subsp. <i>petersiana</i> (Klotzsch ex Sond.) Kers	LC	No	Herb	
CARYOPHYLLACEAE	<i>Pollichia campestris</i> Aiton	LC	No	Herb	
COLCHICACEAE	<i>Colchicum striatum</i> (Hochst. ex A.Rich.) J.C.Manning & Vinn.	LC	No	Geophyte	
COMMELINACEAE	<i>Commelina benghalensis</i> L.	LC	No	Herb	
CONVOLVULACEAE	<i>Ipomoea gracilispala</i> Rendle	LC	No	Herb	
CONVOLVULACEAE	<i>Ipomoea obscura</i> (L.) Ker Gawl. var. <i>obscura</i>	LC	No	Herb	
CONVOLVULACEAE	<i>Ipomoea sinensis</i> (Desr.) Choisy subsp. <i>blepharosepala</i> (Hochst. ex A.Rich.) Verdc. ex A.Meeuse	LC	No	Climber, herb	
CONVOLVULACEAE	<i>Merremia kentrocaulos</i> (C.B.Clarke) Rendle	LC	No	Climber	
CRASSULACEAE	<i>Kalanchoe rotundifolia</i> (Haw.) Haw.	LC	No	Dwarf shrub, succulent	
CUCURBITACEAE	<i>Coccinia sessilifolia</i> (Sond.) Cogn.	LC	No	Climber, herb, succulent	
CUCURBITACEAE	<i>Corallocarpus triangularis</i> Cogn.	LC	No	Climber, herb, succulent	
CYPERACEAE	<i>Cyperus decurvatus</i> (C.B.Clarke) C.Archer & Goetgh.	LC	No	Cyperoid, herb, mesophyte	
DICRANACEAE	<i>Campylopus introflexus</i> (Hedw.) Brid.		No	Bryophyte	
DICRANACEAE	<i>Campylopus pilifer</i> Brid. var. <i>pilifer</i>		No	Bryophyte	
DICRANACEAE	<i>Campylopus robillardii</i> Besch.		No	Bryophyte	
DICRANACEAE	<i>Leucoloma rehmannii</i> (Müll.Hal.) Rehm ex Paris		No	Bryophyte, epiphyte	
DIOSCOREACEAE	<i>Dioscorea cotinifolia</i> Kunth	LC	No	Climber, geophyte, succulent	
DIOSCOREACEAE	<i>Dioscorea dregeana</i> (Kunth) T.Durand & Schinz	LC	No	Climber, geophyte, succulent	
DIOSCOREACEAE	<i>Dioscorea quartiniana</i> A.Rich.	LC	No	Climber, geophyte, succulent	
DITRICHACEAE	<i>Ditrichum difficile</i> (Duby) M.Fleisch.		No	Bryophyte	
DRACAENACEAE	<i>Sansevieria pearsonii</i>	LC	No	Geophyte	Observed
DRACAENACEAE	<i>Sansevieria hyacinthoides</i>	LC	No	Geophyte	Observed
EBENACEAE	<i>Diospyros lycioides</i> Desf. subsp. <i>lycioides</i>	LC	No	Shrub	
EQUISETACEAE	<i>Equisetum ramosissimum</i> Desf. subsp. <i>ramosissimum</i>	LC	No	Herb, hydrophyte	

EUPHORBIACEAE	<i>Acalypha angustata</i> Sond.	LC	No	Dwarf shrub, herb	
EUPHORBIACEAE	<i>Acalypha caperonioides</i> Baill. var. <i>caperonioides</i>	DDT	No	Dwarf shrub, herb	
EUPHORBIACEAE	<i>Acalypha villicaulis</i> Hochst.	LC	No	Dwarf shrub, herb, shrub	
EUPHORBIACEAE	<i>Clutia affinis</i> Sond.	LC	No	Shrub	
EUPHORBIACEAE	<i>Clutia natalensis</i> Bernh.	LC	No	Shrub	
EUPHORBIACEAE	<i>Euphorbia lydenburgensis</i> Schweick. & Letty	LC	No	Shrub, succulent	
EUPHORBIACEAE	<i>Euphorbia monteiroi</i> Hook.f. subsp. <i>ramosa</i> L.C.Leach	LC	No	Shrub, succulent	
EUPHORBIACEAE	<i>Jatropha hirsuta</i> Hochst. var. <i>oblongifolia</i> Prain	LC	No	Dwarf shrub, herb, succulent	
EUPHORBIACEAE	<i>Jatropha latifolia</i> Pax var. <i>latifolia</i>	LC	No	Dwarf shrub, herb, succulent	
EUPHORBIACEAE	<i>Jatropha zeyheri</i> Sond.	LC	No	Dwarf shrub, herb, succulent	
FABACEAE	<i>Argyrolobium transvaalense</i> Schinz	LC	No	Dwarf shrub, shrub	
FABACEAE	<i>Astragalus atropilosulus</i> (Hochst.) Bunge subsp. <i>burkeanus</i> (Harv.) J.B.Gillett var. <i>burkeanus</i>	LC	No	Herb	
FABACEAE	<i>Chamaecrista mimosoides</i> (L.) Greene	LC	No	Herb	
FABACEAE	<i>Dolichos trilobus</i> L. subsp. <i>transvaalicus</i> Verdc.	LC	No	Climber, herb	
FABACEAE	<i>Eriosema gunniae</i> C.H.Stirt.	LC	No	Herb	
FABACEAE	<i>Neonotonia wightii</i> (Wight. ex Arn.) J.A.Lackey	LC	No	Climber	
FABACEAE	<i>Rhynchosia crassifolia</i> Benth. ex Harv.	LC	No	Climber, herb	
FABACEAE	<i>Rhynchosia totta</i> (Thunb.) DC. var. <i>totta</i>	LC	No	Climber, herb	
FABACEAE	<i>Teramnus labialis</i> (L.f.) Spreng. subsp. <i>labialis</i>	LC	No	Climber, herb	
FABACEAE	<i>Vigna vexillata</i> (L.) A.Rich. var. <i>vexillata</i>	LC	No	Climber, herb	
FISSIDENTACEAE	<i>Fissidens asplenioides</i> Hedw.		No	Bryophyte	
FISSIDENTACEAE	<i>Fissidens ovatus</i> Brid.		No	Bryophyte, hydrophyte	
GENTIANACEAE	<i>Sebaea leiostyla</i> Gilg	LC	No	Herb	
GERANIACEAE	<i>Monsonia glauca</i> R.Knuth	LC	No	Herb	
HERBERTACEAE	<i>Herbertus dicranus</i> (Taylor ex Gottsche et al.) Trevis.		No	Bryophyte, epiphyte	
HYACINTHACEAE	<i>Schizocarphus nervosus</i> (Burch.) Van der Merwe	LC	No	Geophyte	
HYACINTHACEAE	<i>Urginea delagoensis</i>	LC	No	Geophyte, herb	Observed

HYPERICACEAE	<i>Hypericum aethiopicum</i> Thunb. subsp. <i>sonderi</i> (Bredell) N.Robson	LC	No	Herb	
HYPERICACEAE	<i>Hypericum revolutum</i> Vahl subsp. <i>revolutum</i>	LC	No	Shrub	
IRIDACEAE	<i>Gladiolus crassifolius</i> Baker	LC	No	Geophyte, herb	
LAMIACEAE	<i>Leonotis nepetifolia</i> (L.) R.Br.	LC	No	Herb	
LAMIACEAE	<i>Leucas sexdentata</i> Skan	LC	No	Herb	
LAMIACEAE	<i>Ocimum tubiforme</i> (R.D.Good) A.J.Paton	LC	No	Shrub	
LAMIACEAE	<i>Plectranthus xerophilus</i> Codd	LC	No	Shrub, succulent	
LAMIACEAE	<i>Tinnea rhodesiana</i> S.Moore	LC	No	Shrub	
LEPTODONTACEAE	<i>Leptodon smithii</i> (Hedw.) F.Weber & D.Mohr		No	Bryophyte, epiphyte	
LEUCOBRYACEAE	<i>Leucobryum acutifolium</i> (Mitt.) Cardot		No	Bryophyte, epiphyte	
LEUCODONTACEAE	<i>Pterogoniadelphus assimilis</i> (Müll.Hal.) Ochyra & Zijlstra		No	Bryophyte, epiphyte	
MALPIGHIACEAE	<i>Sphedamnocarpus pruriens</i> (A.Juss.) Szyszyl. subsp. <i>pruriens</i>	LC	No	Climber, shrub	
MALPIGHIACEAE	<i>Triaspis glaucophylla</i> Engl.	LC	No	Climber, shrub	
MALPIGHIACEAE	<i>Triaspis hypericoides</i> (DC.) Burch. subsp. <i>nelsonii</i> (Oliv.) Immelman	LC	No	Climber, shrub	
MALVACEAE	<i>Dombeya pulchra</i> N.E.Br.	LC	No	Shrub	
MALVACEAE	<i>Grewia vernicosa</i> Schinz	LC	No	Dwarf shrub, shrub	
MALVACEAE	<i>Hermannia cristata</i> Bolus	LC	No	Dwarf shrub	
MALVACEAE	<i>Hermannia glanduligera</i> K.Schum.	LC	No	Dwarf shrub, herb	
MALVACEAE	<i>Hermannia montana</i> N.E.Br.	LC	No	Dwarf shrub	
MALVACEAE	<i>Hermannia staurostemon</i> K.Schum.	LC	No	Dwarf shrub, shrub	
MALVACEAE	<i>Hermannia umbratica</i> I.Verd.	LC	No	Herb	
MALVACEAE	<i>Hibiscus barnardii</i> Exell	LC	No	Dwarf shrub, herb	
MALVACEAE	<i>Hibiscus pedunculatus</i> L.f.	LC	No	Herb	
MALVACEAE	<i>Melhania acuminata</i> Mast. var. <i>acuminata</i>	LC	No	Dwarf shrub	
MALVACEAE	<i>Melhania prostrata</i> DC.	LC	No	Dwarf shrub	
MALVACEAE	<i>Pavonia columella</i> Cav.	LC	No	Herb, shrub	
MALVACEAE	<i>Sida dregei</i> Burtt Davy	LC	No	Dwarf shrub, herb	

METEORACEAE	<i>Aerobryopsis capensis</i> (Müll.Hal.) M.Fleisch.		No	Bryophyte, epiphyte	
METEORACEAE	<i>Papillaria africana</i> (Müll.Hal.) A.Jaeger		No	Bryophyte, epiphyte	
NECKERACEAE	<i>Porotrichum madagassum</i> Kiaer ex Besch.		No	Bryophyte, epiphyte	
OLEACEAE	<i>Jasminum quinatum</i> Schinz	LC	No	Climber, dwarf shrub	
OLEACEAE	<i>Jasminum stenolobum</i> Rolfe	LC	No	Climber, dwarf shrub, shrub	
ONAGRACEAE	<i>Oenothera rosea</i> L'Hér. ex Aiton	Not Evaluated	No	Herb	
OROBANCHACEAE	<i>Alectra sessiliflora</i> (Vahl) Kuntze var. <i>sessiliflora</i>	LC	No	Herb, parasite	
ORTHOTRICHACEAE	<i>Macromitrium levatum</i> Mitt.		No	Bryophyte, epiphyte	
PEDALIACEAE	<i>Ceratotheca triloba</i> (Bernh.) Hook.f.	LC	No	Herb	
PEDALIACEAE	<i>Pterodiscus luridus</i>	LC	No	Herb	Observed
PHYTOLACCACEAE	<i>Phytolacca octandra</i> L.	Not Evaluated	No	Herb, succulent	
PILOTRICHACEAE	<i>Hookeriopsis utacamundiana</i> (Mont.) Broth.		No	Bryophyte, epiphyte	
PLUMBAGINACEAE	<i>Plumbago zeylanica</i> L.	Not Evaluated	No	Shrub	
POACEAE	<i>Bothriochloa insculpta</i> (Hochst. ex A.Rich.) A.Camus	LC	No	Graminoid	
POACEAE	<i>Brachiaria nigropedata</i> (Ficalho & Hiern) Stapf	LC	No	Graminoid	
POACEAE	<i>Cenchrus ciliaris</i> L.	LC	No	Graminoid	
POACEAE	<i>Digitaria ciliaris</i> (Retz.) Koeler	Not Evaluated	No	Graminoid	
POACEAE	<i>Digitaria eriantha</i> Steud.	LC	No	Graminoid	
POACEAE	<i>Enneapogon scoparius</i> Stapf	LC	No	Graminoid	
POACEAE	<i>Enteropogon macrostachyus</i> (Hochst. ex A.Rich.) Munro ex Benth.	LC	No	Graminoid	
POACEAE	<i>Eragrostis barbinodis</i> Hack.	LC	No	Graminoid	
POACEAE	<i>Eragrostis curvula</i> (Schrad.) Nees	LC	No	Graminoid	
POACEAE	<i>Eragrostis gummiflua</i> Nees	LC	No	Graminoid	
POACEAE	<i>Eragrostis nindensis</i> Ficalho & Hiern	LC	No	Graminoid	
POACEAE	<i>Eragrostis superba</i> Peyr.	LC	No	Graminoid	Observed
POACEAE	<i>Hyparrhenia tamba</i> (Steud.) Stapf	LC	No	Graminoid	
POACEAE	<i>Miscanthus junceus</i> (Stapf) Pilg.	LC	No	Graminoid	
POACEAE	<i>Melinis repens</i>	LC	No	Graminoid	Observed
POACEAE	<i>Mosdenia leptostachys</i> (Ficalho & Hiern) Clayton	LC	No	Graminoid	

POACEAE	<i>Pogonarthria squarrosa</i>	LC	No	Graminoid	Observed
POACEAE	<i>Setaria sphacelata</i> (Schumach.) Stapf & C.E.Hubb. ex M.B.Moss var. <i>torta</i> (Stapf) Clayton	LC	No	Graminoid	
POACEAE	<i>Sporobolus panicoides</i> A.Rich.	LC	No	Graminoid	
POACEAE	<i>Stipagrostis hirtigluma</i> subsp. <i>patula</i> (Hack.) De Winter	LC	No	Graminoid	
POACEAE	<i>Tristachya biseriata</i> Stapf	LC	No	Graminoid	
POLYGALACEAE	<i>Polygala albida</i> Schinz subsp. <i>albida</i>	LC	No	Herb	
POLYGALACEAE	<i>Polygala sphenoptera</i> Fresen. var. <i>sphenoptera</i>	LC	No	Dwarf shrub, herb	
POLYGALACEAE	<i>Polygala virgata</i> Thunb. var. <i>decora</i> (Sond.) Harv.	LC	No	Dwarf shrub, shrub	
POLYTRICHACEAE	<i>Atrichum androgynum</i> (Müll.Hal.) A.Jaeger		No	Bryophyte	
POLYTRICHACEAE	<i>Polytrichum commune</i> Hedw.		No	Bryophyte	
POTTIACEAE	<i>Hypodontium dregei</i> (Hornsch.) Müll.Hal.		No	Bryophyte, epiphyte	
POTTIACEAE	<i>Leptodontium longicaule</i> Mitt.		No	Bryophyte	
POTTIACEAE	<i>Trichostomum brachydontium</i> Bruch		No	Bryophyte	
PROTEACEAE	<i>Protea welwitschii</i> Engl.	LC	No	Dwarf shrub, shrub	
PTERIDACEAE	<i>Actiniopteris radiata</i> (J.König ex Sw.) Link	LC	No	Geophyte, herb, lithophyte	
RANUNCULACEAE	<i>Clematis brachiata</i> Thunb.	LC	No	Climber	
SCROPHULARIACEAE	<i>Zaluzianskya distans</i>	LC	No	Herb	Observed

Appendix 5: Expected tree species for the study area (Grid: 2430CD) downloaded from POSA (<http://posa.sanbi.org>) on January 8, 2015, in addition to trees observed during the November 2014 survey.

Family	Species	Threat status	SA Endemic	Growth forms	Observed during November 2014 survey.
ANACARDIACEAE	<i>Searsia dentata</i> (Thunb.) F.A.Barkley	LC	No	Shrub, tree	
ANACARDIACEAE	<i>Searsia pentheri</i> (Zahlbr.) Moffett	LC	No	Shrub, tree	
ANACARDIACEAE	<i>Searsia pyroides</i> (Burch.) Moffett var. <i>integrifolia</i> (Engl.) Moffett	LC	No	Shrub, tree	
ANACARDIACEAE	<i>Sclerocarya birrea</i>	LC	No	Tree	Observed
ARALIACEAE	<i>Cussonia transvaalensis</i> Reyneke	LC	No	Succulent, tree	
ASPHODELACEAE	<i>Aloe castanea</i> Schönland	LC	No	Shrub, succulent, tree	
CELTIDACEAE	<i>Trema orientalis</i>	LC	No	Tree	Observed
BALANITACEAE	<i>Balanites maughamii</i> Sprague subsp. <i>maughamii</i>	Not Evaluated	No	Tree	Observed
BURSERACEAE	<i>Commiphora africana</i> (A.Rich.) Engl. var. <i>africana</i>	LC	No	Dwarf shrub, shrub, tree	
BURSERACEAE	<i>Commiphora marlothii</i> Engl.	LC	No	Succulent, tree	
BURSERACEAE	<i>Commiphora mollis</i> (Oliv.) Engl.	LC	No	Tree	Observed
BURSERACEAE	<i>Commiphora pyracanthoides</i>	LC	No	Tree	Observed
BURSERACEAE	<i>Commiphora schimperi</i>	LC	No	Tree	Observed
CAPPARACEAE	<i>Maerua angolensis</i> DC. subsp. <i>angolensis</i>	LC	No	Shrub, tree	
CAPPARACEAE	<i>Boscia albitrunca</i>	LC	No	Shrub, tree	Observed
CELASTRACEAE	<i>Maytenus undata</i> (Thunb.) Blakelock	LC	No	Shrub, tree	
CELASTRACEAE	<i>Gymnosporia buxifolia</i>	LC	No	Shrub, tree	Observed
COMBRETACEAE	<i>Combretum erythrophyllum</i> (Burch.) Sond.	LC	No	Shrub, tree	Observed
COMBRETACEAE	<i>Combretum apiculatum</i>	LC	No	Shrub, tree	Observed
COMBRETACEAE	<i>Terminalia prunioides</i>	LC	No	Shrub, tree	Observed
EBENACEAE	<i>Euclea linearis</i> Zeyh. ex Hiern	LC	No	Shrub, tree	
EBENACEAE	<i>Euclea undulata</i> Thunb.	LC	No	Shrub, tree	
FABACEAE	<i>Acacia ataxacantha</i> DC.	LC	No	Climber, shrub, tree	
FABACEAE	<i>Acacia caffra</i>	LC	No	Shrub, tree	Observed
FABACEAE	<i>Acacia exuvialis</i> I.Verd.	LC	No	Shrub, tree	Observed

FABACEAE	<i>Acacia karroo</i> Hayne	LC	No	Shrub, tree	Observed
FABACEAE	<i>Acacia nigrescens</i>	LC	No	Tree	Observed
FABACEAE	<i>Acacia nilotica</i>	LC	No	Tree	Observed
FABACEAE	<i>Acacia robusta</i> Burch. subsp. <i>robusta</i>	LC	No	Tree	Observed
FABACEAE	<i>Acacia tortilis</i> (Forssk.) Hayne subsp. <i>heteracantha</i> (Burch.) Brenan	LC	No	Shrub, tree	Observed
FABACEAE	<i>Albizia anthelmintica</i> (A.Rich.) Brongn.	LC	No	Shrub, tree	Observed
FABACEAE	<i>Albizia versicolor</i>	LC	No	Shrub, tree	Observed
FABACEAE	<i>Mundulea sericea</i> (Willd.) A.Chev. subsp. <i>sericea</i>	LC	No	Shrub, tree	
FABACEAE	<i>Ormocarpum trichocarpum</i> (Taub.) Engl.	LC	No	Shrub, tree	
FABACEAE	<i>Peltophorum africanum</i> Sond.	LC	No	Tree	Observed
FABACEAE	<i>Senna septemtrionalis</i> (Viv.) H.S.Irwin & Barneby	Not Evaluated	No	Dwarf shrub, shrub, tree	
FABACEAE	<i>Bauhinia galpinii</i> N.E.Br.	LC	No	Climber, shrub	
FABACEAE	<i>Dichrostachys cinerea africana</i>	LC	No	Shrub, tree	Observed
FABACEAE	<i>Schotia brachypetala</i>	LC	No	Tree	Observed
EUPHORBIACEAE	<i>Euphorbia ingens</i>	LC	No	Succulent, tree	Observed
EUPHORBIACEAE	<i>Euphorbia turicalli</i>	LC	No	Succulent, tree	Observed
EUPHORBIACEAE	<i>Spirostachys africana</i>	LC	No	Tree	Observed
GREYIACEAE	<i>Greyia radlkoferi</i> Szyszyl.	LC	No	Shrub, tree	
HETEROPYXIDACEAE	<i>Heteropyxis natalensis</i> Harv.	LC	No	Shrub, tree	
KIRKIACEAE	<i>Kirkia wilmsii</i> Engl.	LC	No	Tree	Observed
BUDDLEJACEAE	<i>Nuxia oppositifolia</i>	LC	No	Shrub, tree	Observed
SAPINDACEAE	<i>Pappea capensis</i>	LC	No	Shrub, tree	Observed
LAMIACEAE	<i>Vitex obovata</i> E.Mey. subsp. <i>wilmsii</i> (Gürke) C.L.Bredenkamp & D.J.Botha	LC	No	Tree	
MORACEAE	<i>Ficus sur</i>	LC	No	Tree	Observed
MORACEAE	<i>Ficus sycamorus</i>	LC	No	Tree	Observed
MALVACEAE	<i>Grewia bicolor</i> Juss. var. <i>bicolor</i>	LC	No	Shrub, tree	
MALVACEAE	<i>Grewia hexamita</i> Burret	LC	No	Shrub, tree	
MALVACEAE	<i>Grewia monticola</i> Sond.	LC	No	Shrub, tree	
MALVACEAE	<i>Sterculia murex</i> Hemsl.	LC	No	Tree	

MALVACEAE	<i>Sterculia rogersii</i>	LC	No	Tree	Observed
MELIACEAE	<i>Ekebergia capensis</i> Sparrm.	LC	No	Tree	
MELIACEAE	<i>Ekebergia pterophylla</i> (C.DC.) Hofmeyr	LC	No	Shrub, tree	
MELIACEAE	<i>Trichilia emetica</i>	LC	No	Tree	Observed
BORAGINACEAE	<i>Ehretia rigida</i>	LC	No	Shrub, tree	Observed
OCHNACEAE	<i>Ochna inermis</i> (Forssk.) Schweinf.	LC	No	Shrub, tree	
OLEACEAE	<i>Schrebera alata</i> (Hochst.) Welw.	LC	No	Shrub, tree	

Appendix 6: Alien trees species observed on the farm.

Species	Common name
<i>Cereus jamacaru</i>	Queen-of-the-night
<i>Jacaranda mimosifolia</i>	Jacaranda
<i>Lantana camara</i>	Christmas berry
<i>Melia azedarach</i>	Syringa
<i>Morus alba</i>	White mulberry
<i>Opuntia ficus-indica</i>	Sweet prickly pear
<i>Populus x canescens</i>	Grey poplar
<i>Ricinis communis</i>	Castor oil bush
<i>Solanum mauritianum</i>	Bugweed
<i>Tecoma stans</i>	Geelklokkies

Appendix 7. FROGS: Available habitat, expected occurrence and observed presence of frog species during surveys (Jacobsen, 1989: Interpreted distribution map; Minter et al, 2004).

Frogs expected to occur in the available natural habitats on Portion 7 and 8 of the Farm: Boerboonkraal 353 KT: Burgersfort Area, are listed below. The words in **bold font** represent qualifying habitat (preferred habitat), and *underlined italics* disqualifying habitat (the reason why the organism will not occur in the area). The shaded cells indicate the land type that incorporates the preferred habitat, and the number inside a cell gives the number of individuals or definite signs detected during surveys.

FROG SPP	HABITAT PREFERENCE	RSA STATUS	Waternal River Riparian	Fallow land	Game Camp
Family: Breviceptidae					
Common rain frog (<i>Breviceps adspersus</i>)	Savannah biome: Semi-arid habitats with sandy to sandy-loam soils. Bushveld vegetation with a grassy ground layer and distinct upper layer of woody plants.	Least concern. Does not appear to be at risk – game and cattle farming and reserves.			3
Family: Bufonidae					
Northern pygmy toad (<i>Poyntonophrynus fenoulheti</i>)	Savannah biome: Variety of bushveld vegetation types, sometimes in adjacent grassland. Occasionally found in sandy areas, usually occupy rocky outcrops in savannah or woodland. Refuge between rocks or on soil under stones.	Least concern. Not considered to be at risk – habitat well protected.			
Eastern Olive toad (<i>Amietophrynus garmani</i>)	Various bushveld vegetation types in the savannah biome. Prefer well-wooded low-lying areas where there is relatively high rainfall (above 600mm/annum). Breeds in vleis, pans and dams in open or wooded savannah. Occasionally in quiet backwaters of rivers and pools along small, slow-flowing streams. Tadpole metamorphosis complete after 64-91 days.	Least concern Common and widespread – habitat not threatened; range may have expanded.			
Guttural toad (<i>Amietophrynus gutturalis</i>)	Savannah, Grassland & Thicket biome: Breeds in open shallow pools, vleis, dams, rivers, streams or other more or less permanent water. Common in suburban gardens and farmland. Excavate burrows in soft ground. Tadpole metamorphosis complete after 5-6 weeks.	Least concern. Population trend: increasing. Not threatened. Relatively secure as it is widely distributed, locally abundant and highly adaptable to human settlement.	2		
Raucous toad (<i>Amietophrynus rangeri</i>)	Mesic temperate areas: Fynbos and Grassland biomes. Breeds in rivers (pools along slow-flowing streams), streams and ponds in grassland or woodland. Suburban gardens and farmland. Favour running water sources. Call from floating vegetation, shallow water near banks, or among reeds. Breeds in still reaches of rivers, streams and man-made ponds.	Least concern. Not threatened. Species secure, however decline along northeastern escarpment. SA endemic (Incl. Lesotho & Swaziland). Population trend: decreasing.			

Western Olive toad (<i>Amietophrynus poweri</i>)	Occurs around vleis and pans in thornveld savannah where rainfall is relatively low (less than 600mm/ann). Tadpole metamorphosis complete after 73 days.	Least concern.			
African split-skin toad (<i>Schismaderma carens</i>)	Wide variety of vegetation types in savannah biome, also in Rocky Highveld, and Grassland. Breeds in permanent, often fairly deep, muddy - pools, dams or waterholes in open or wooded savannah. Wanders to forage. Hibernates at a considerable distance from water, under stones, logs and piles of dead vegetation. Tadpole metamorphosis complete after 37-52 days.	Least concern. Not threatened. Adapts in disturbed areas. Tadpole survives in polluted water.	1		
Family: Hyperoliidae Subfamily: Kassiniinae					
Bubbling kassina (<i>Kassina senegalensis</i>)	Wide variety of vegetation types in savannah and Grassland biomes.	Least concern. Not threatened. Widely distributed and abundant. Does not require conservation attention. Dams improve breeding habitat. Population trend: stable.			
Family: Microhylidae Subfamily: Phrynomerinae					
Banded rubber frog (<i>Phrynomantis bifasciatus</i>)	Variety of bushveld vegetation types in savannah biome. Hot semi arid environments (50-1450m). Breeds in shallow temporary pans and pools, or inundated grass in savannah and Acacia. Also small shallow dams.	Least concern. Common throughout it range – not threatened.			
Family: Phrynoatrachidae					
Natal dwarf puddle frog (<i>Phrynobatrachus natalensis</i>)	A variety of vegetation types in the savannah and Grassland biome. Shelter under rocks near breeding sites.	Least concern. Not threatened. Abundant and often near human habitation. Population trend: stable.	2		
Family: Ptychadenidae					
Anchieta's ridged frog (<i>Ptychadena anchietae</i>)	Savannah biome. Found sheltering amongst grass and plant and plant debris on edges of breeding sites. Adults occur in the grassy edges of rivers and streams, escape into the water.	Least concern. Does not appear to be at risk.			
Mozambique ridged frog (<i>Ptychadena mossambica</i>)	Savannah species; bushveld vegetation types, open grassland. Conceal themselves in grass tussocks near vleis, seepage areas and pans. Floodplains of rivers and inundated grassland. Dry season: deep cracks in dry mud of pans. Call from vegetation from water edge.	Least concern.			

Family: Xenopodinae					
African clawed frog (<i>Xenopus laevis</i>)	Most of the biomes. Restricted to aquatic habitats. Historically occurred in streams, rivers and their pools. Currently in man-made water bodies. Breeds in any more or less permanent bodies of water. Breeding = non-breeding habitat. Eutrophic waters seem to produce the highest densities. Burrow into dry mud to aestivate when pools dry up. Washed down during heavy rains into dry river courses. Breeds in remnant pools.	Least concern. Not threatened. Not threatened in any part of its range. Unprotected. Population trend: Increasing. Common and widespread.			
Family: Pyxicephalidae					
Boettger's dainty frog (<i>Cacosternum boettgeri</i>)	Nama Karoo, succulent Karoo, grassland and thicket. Wide variety of vegetation types. Favors open areas with short vegetation and grassy areas. Forest clearings - absent from dense forest. Pans or along river courses. Aestivates in cracks, under logs and stones and in animal burrows or unused termitaria. Call from: concealed positions under vegetation or other cover at water level, also from exposed position.	Least concern. Not threatened. Not threatened. Generalist, adapting well to disturbance. Unaffected by moderate eutrophication. Population trend: unknown.			
African bullfrog (<i>Pyxicephalus adspersus</i>)	Seasonal shallow grassy pans, vleis and other temporary rain-filled depressions in open flat areas of grassland or savannah. At the limits of its distribution in Nama Karoo in thicket. For much of the year it remains buried. Tadpoles complete development in 18-33 days	NEMA (Tops): Protected species. IUCN Least concern. Frog Atlas: Near Threatened			
Knocking sand frog (<i>Tomopterna krugerensis</i>)	Occupies a variety of habitats in savannah areas. Breeds in temporary rain pools and pans.	Least concern.			
Common sand frog (<i>Tomopterna cryptotis</i>)	Variety of habitats in open savannah and grassland, including arid areas. Open arid landscapes with sandy soils form the habitat of this species. The frogs spend most of the year buried in the soil; hibernate half a meter or more beneath the soil surface. Males call from exposed sites at the banks of streams, pools and puddles. They call at least partially from subterranean refuges, too. The frogs spawn in small temporary waters. They are usually nocturnal, but occasionally diurnal during periods of heavy rainfall. In Transvaal, the breeding season lasts about 150 days. The frogs spawn at night, reacting spontaneously to favorable environmental conditions but stopping their activities with similar promptitude. Rainfall plays a significant role as a trigger of reproductive activity. Eggs are deposited individually in shallow, usually rather turbid water. The tadpoles hatch 2–3 days later	Least concern. Not threatened. Unprotected. Widespread. Secure. Population trend: stable.			
Natal sand frog (<i>Tomopterna natalensis</i>)	Variety of vegetation types in the Grassland and savannah biome. Annual rainfall: 300-1000mm. Call from: exposed positions near water edge on bare rock, sand or mud.	Least concern. Not threatened. This widespread species does not appear to require conservation action. Population trend: stable.			

Family: Rhacophoridae					
Grey foam-net treefrog (<i>Chiromantis xerampelina</i>)	Savannah biome. Breeds over temporary pans, vleis and rivers in constructing foam nests. Found around seasonal or permanent bodies of open water in a variety of bushveld vegetation types in the savannah biome.	Least concern.			

Appendix 8. REPTILES: Available habitat, expected occurrence and observed presence of reptile species during surveys (Jacobsen, 1989; Interpreted distribution map - Branch, 1988).

Reptiles expected to occur in the available natural habitats of Portion 7 and 8 of the Farm: Boerboonkraal 353 KT: Burgersfort Area, are listed below. The words in **bold font** represent qualifying habitat (preferred habitat), and *underlined italics* disqualifying habitat (the reason why the organism will not occur in the area). The shaded cells indicate the land type that incorporates preferred habitat, and the number inside a cell gives the number of individuals or definite signs detected during surveys.

SPECIES	Total habitat	Status	Waterval River Riparian	Fallow land	Game Camp
Family Testudinidae (Land tortoises)					
Leopard tortoise (<i>Stigmochelys pardalis</i>)	Montane grassveld, fynbos, valley bushveld, arid and mesic savannah. Level areas in open woodland and scrub or wooded grassland. A shelter in crevices in rock outcrops, under rocks or in burrows dug into old termitaria or earthen banks. Aestivates – in old termitaria or tightly fitting burrows, excavate under rocks, logs – scrape into earth embankments.	Protected. Widespread. Vulnerable but secure.			1
Lobatse hinged tortoise (<i>Kinixys lobatsiana</i>)	Savannah, coastal plain and dune forest, entering thornveld. Old termitaria or small burrows in earth embankments.				
Family Pelomedusidae					
Marsh terrapin (<i>Pelomedusa subrufa</i>)	Grassland, Closed woodland, Rivers, Seasonal pools, Pans. Slow-moving and still water, including natural temporary veld pans and pools (seasonal waters) away from perennial rivers and dams (permanent water - crocodiles). Basking - at water's edge, exposed rock, and protruding log or mud bank; fresh or stagnant water-bodies (tolerates wide variation in water quality). Bury themselves up to 5 cm deep in soil, mud or debris to aestivate during winter. Lays eggs in moist soil above high water mark; dig with hind feet.	Secure, protected			
Family Typhlopidae					
Bibron's blind snake (<i>Afrotyphlops bibronii</i>)	Highveld and coastal grassland. Under stones and in termitaria. Underground.	Partially protected. Widespread. Secure and out of danger.			
Delalande's beaked blind snake (<i>Rhinotyphlops lalandei</i>)	Found in variety of veld types. Varied, semi-desert, savannah. Under stones and in termitaria. Is most commonly found in or near the nest of termites or under loose boulders.	Partially protected. Widespread. Secure.			
Schlegel's beaked blind snake (<i>Megatyphlops</i>)	Varied, coastal bush to sandveld. Deep underground. Variety of veld types, mostly sandy soil. Large adults deeper underground than smaller				

<i>schlegelii</i>)	specimens, come to surface only after heavy rains have flooded them out.				
Family Leptotyphlopidae					
Jacobsen's Thread Snake (<i>Leptotyphlops jacobsoni</i>)	Grassland and moist savannah at an altitude of between 1300 and 1700. Found under stones and in deserted termite mounds.				
Incognito thread snake (<i>Leptotyphlops incognitus</i>)	Varied: grassland, coastal bush, mesic and arid savannah . Burrow underground. Lives underground and only wriggle to surface after being flooded by heavy rains from their underground retreats. In or under rotting logs, among the roots of grass and small bushes . In particularly in or near termitaria where there is an abundance of termites.				1
Eastern Cape thread snake (<i>Leptotyphlops scutifrons conjunctus</i>)	Varied; grassland, coastal bush, mesic and arid savannah . Fossorial: under stones, among roots of grass tussocks; moribund termitaria.				
Family Boidae					
Southern African python (<i>Python natalensis</i>)	Open savannah regions, particularly rocky areas and riverine scrub. Moist, rocky, well-wooded valleys, reed-beds or even bush country , seldom venture far from permanent water. Eggs are laid in hollow tree trunks, antbear holes, caves or old termite hills. Fond of water in which they may lie and hunt. Dive into deep pools, remain submerged for long periods.	NEMA TOPS 2007: Protected. SA Red Data: Vulnerable			
Family Colubridae					
Brown water snake (<i>Lycodonomorphus rufulus</i>)	Small streams, pans and vleis. Water-living and confined to rivers, streams and other permanent water or the immediate vicinity thereof. Under cover around water margins. Under rocks, debris, holes in the ground. Among swampy vegetation. Small streams, pans and vleis.	Partially protected. Widespread. Secure.			
Dusky-bellied water snake (<i>Lycodonomorphus laevisimus</i>)	Aquatic. Foraging in water. Pools in slow-moving, well-wooded streams; entering grassland streams in Swaziland. Alongside perennial streams in grassland.	Endemic to South Africa. Locally common.			
Spotted house snake (<i>Lamprophis guttatus</i>)	Karroid areas to mesic savannah. Variety of habitats: Rocky and mountainous areas. Under rocks or in cracks/crevices between rocks at altitudes ranging from 800-2300m. Rock crevices, exfoliating flakes of rock, under rocks on rock.	Partially protected. Uncommon but secure.			
Brown house snake (<i>Boaedon capensis</i>)	Wide distribution: Highveld grassland and arid karroid regions. Terrestrial Nocturnal. Eggs being laid in decaying vegetable matter, termite hills or other suitable location. Variety of habitats: Moribund termitaria or any form of shelter. Tolerant of urban sprawl.	Partially protected. Widespread, adaptable. Under no threat.			1
Yellow-bellied house snake (<i>Lamprophis fuscus</i>)	Open grassland. Under stones and moribund termitaria.	SA Red Data: Near threatened. IUCN Lower Risk/Near-			

		threatened. Partially protected. Rare and vulnerable.			
Olive snake (<i>Lycodonomorphus inornatus</i>)	Moist coastal bushveld and fynbos, extending into grassveld. Moister habitats.	Endemic to South Africa. Partially protected. Common.			
Swazi rock snake (<i>Lamprophis swazicus</i>)	Rock outcrops in savannah. Nocturnal, sheltering in rock cracks.	SA Red Data (1988): Rare Endemic to South Africa.			
Variegated wolf snake (<i>Lycophidion variegatum</i>)	Savannah inhabitants. Under stones, dead aloes and rotting logs.	SA Red Data (1988): Peripheral			
Mole snake (<i>Pseudaspis cana</i>)	Sandy scrubland in SW Cape, highveld grassland, mountainous and desert regions. Open woodland. Abandoned animal burrows: Rodent burrows, larger animal burrows.	Partially protected. Uncommon, vulnerable.			
Lined shovel-snout (<i>Prosymna lineatus</i>)	Dry areas, including savannah woodlands (open), highveld and karroid areas, entering fynbos and mesic thicket in the Cape. Nocturnal, partially fossorial. Burrow in loose soil. Under rocks, logs or even piles of bricks.	Partially protected. Rare. Widespread.			
Spotted grass snake (<i>Psammophylax rhombeatus rhombeatus</i>)	Widespread in the highveld and montane grasslands, mesic thicket and fynbos, entering karroid areas. Rocky and moist places, moist grassland. Under rocks on soil or in crevices, moribund termitaria, holes in earth banks.	Partially protected. Widespread and not uncommon. Considered secure.			
Western yellow-bellied sand snake (<i>Psammophis subtaeniatus</i>)	Open woodland and scrub in arid areas, open dry savannah, thorn- or bushveld. Dry rocky hillsides in crevices between rocks, large termitaria, under loose bark or dead logs.	Partially protected. Widespread, under no immediate danger.			
Olive whip snake (<i>Psammophis mossambicus</i>)	Coastal plains and upland savannah. Bush along streams and rivers rather than the more open dry area. Mainly ground-living – in grass; may resort climbing on tops of bushes and shrubs in order to bask in sun. Pursued: quick moving, dash into thick cover where it lies still. Eggs are laid in piles of dead leaves or other similar location.				
Short-snouted whip snake (<i>Psammophis brevirostris brevirostris</i>)	Highveld & montane grassland. <i>Grassland</i> , moist savannah and lowland forest in the east, and Karoo scrub and Namib desert in the west.	Partially protected. Common, under no immediate threat.			
Cross-marked whip snake (<i>Psammophis crucifer</i>)	<i>Highveld and montane grassland, entering fynbos. Mountain plateaus and moist grasslands.</i>	Partially protected. Uncommon, considered secure.			

Atractaspididae					
Bibron's stiletto snake (<i>Atractaspis bibronii</i>)	Variable: grassland, scrub and open woodland to coastal forest in semi-arid to quite moist climates (sea level to 1700m), highveld grassland to semi desert. Occasionally found on surface on warm rainy nights in summer. Moribund termitaria. Rotting logs, under logs on soil, under stones, and crevices at ground level or under debris.	Partially protected. Considered secure.			
Black-headed centipede-eater (<i>Aparallactus capensis</i>)	Varied: Highveld and montane grassland, open woodland, open scrub veld, grassland and coastal bush. Open bush or savannah country. Found in moribund termitaria, which offer shelter, warmth and food. Under stones, under logs, among roots of shrubs and grasses.	Partially protected. Common, not threatened or endangered. Adequately protected.			
Reticulated centipede-eater (<i>Aparallactus lunulatus lunulatus</i>)	Sandy lowveld. Under logs and stones.				
Spotted harlequin snake (<i>Homoroselaps lacteus</i>)	Varied: Semi-desert to savannah and coastal bush. Highveld grassland. Underground, under rocks and stones on soil, moribund termitaria.	Endemic to South Africa Partially protected. Uncommon, considered secure.			
Spotted bush snake (<i>Philothamnus semivariatus</i>)	Open woodland, scrub and coastal forest, open forest or savannah: Open forest or bush , even dry and far removed from water, however more frequently where water is – swims with ease. Coastal plain, along streams and rivers or along river courses. On rocky hillsides and mountains, shrubs and bushes on rocky ridges. Holes in trees or under loose bark. In crevices between or under rocks. In holes in large termitaria of Macrotermes. Take refuge to trees if disturbed.	Partially protected. Widespread, currently secure.	1		
South-eastern green snake (<i>Philothamnus hoplogaster</i>)	Varied: Coastal plains (bush), fynbos to higher inland savannah (Arid and mesic savannah) and even montane forest. Home near water bodies where it hunts for frogs, frequenting marshes, ponds, rivers, reedbeds, pans, vleis and streams. Under logs, stones and under debris. Favours damp localities such as reed swamps, riverine thickets and flood plains of lakes and rivers.	Partially protected. Widespread, not common.			
Western Natal green snake (<i>Philothamnus natalensis occidentalis</i>)	Varied: Wet montane, miombo woodland and dry forest. In shrubs or trees close to water. Home near water bodies where it hunts for frogs, frequenting marshes, ponds, rivers, reedbeds, pans, vleis and streams.	Endemic to South Africa. Partially protected. Uncommon, secure.			

Rhombic egg-eater (<i>Dasypeltis scabra</i>)	Widespread in most veld types: from sea level to an altitude of 2300m. Common in grassveld and bushveld . Absent only from true desert and closed-canopy forest. Mainly terrestrial, but climb trees in search of birds' eggs. Any place where it can find shelter: Moribund termitaria, rock crevices, rock faces, heaps of rubble, rotting logs.	Partially protected. Widespread, common. Secure.			
Red-lipped snake (<i>Crotaphopeltis hotamboeia</i>)	Most habitats: savannah and open woodland; Grassland to coastal forest but not in desert. Preference for damp localities. Marshy areas. Under virtually any available cover: Under rocks, in termitaria. Eggs laid in vegetable matter.	Partially protected. Occurs widely. Considered secure.			
Oate's vine snake / Oate's Twig snake (<i>Thelotornis capensis oatesii</i>)	savannah woodland: Open or closed woodland or coastal forest from sea level to 1200m. Almost exclusively arboreal: Live amongst the branches of trees. Entering holes in evergreen trees on slope during cold periods. May hibernate in hole in tree and even hole in ground.				
Boomslang (<i>Dispholidus typus typus</i>)	Common in most wooded regions outside actual rainforests. From closed woodland through more open areas to scrub, from sea level to 1700m. Diurnal, mostly arboreal; move through branches of trees, shrubs and bushes. Mating takes place in trees and eggs are deposited in holes or hollows of trees, woodpeckers' nests or leaf litter on ground wherever suitable conditions exist. Take shelter in holes in trees and large termitaria and hibernate in holes in trees.	Partially protected. Widespread, secure.			
Colubridae					
Family:Elapidae					
Intermediate Shield Cobra (<i>Aspidelaps scutatus intermedius</i>)	Open woodland and scrub in stony or sandy areas at altitudes between 200m and 1400m. Fossorial: Stony or sandy areas, rodent burrows or buries itself in leaf litter and loose sand.				
Mozambique spitting cobra (<i>Naja mossambica</i>)	Savannah: Rocky outcrops and hillsides in fairly closed woodland at altitudes from sea-level to 1750m along rivers or localities near water. Cleared areas in former forests. Holes in termitaria and other small animal burrows.	Partially protected. Widespread, common. Status is secure.			1
Rinkhals (<i>Hemachatus haemachatus</i>)	Grassland, from the coast up to 2 500m. Montane grasslands of old escarpment. Close to vleis. Rodent and mole burrows, under rocks, among thick grass tussocks.	Partially protected. Declined in numbers. Indeterminate.			
Black mamba (<i>Dendroaspis polylepis</i>)	Savannah & open coastal bush below 1500m: Lower lying, drier more open woodland and scrub to wooded grassland, moist savannah and lowland forest (900m-1200m). Ground living snake, also at home in bush, shrubs or trees - in thickets, commonly on hillsides and outcrops, granite hillocks, termite mounds, hollow tree trunks. Female will find a good place to lay eggs, burrow must be damp but not wet, and warm, but not too hot (termite nests).	Partially protected. Widespread, mostly uncommon. In need of greater conservation effort.			

Sub-Family: Hydrophiinae					
Family:Viperidae					
Puff adder (<i>Bitis arietans arietans</i>)	Widespread: Fynbos, grassland, scrub and woody savannahs , from sea level to 1800m. Absent only from desert, dense forest and mountain tops. Any sort: rock on rock, rock on soil, logs, moribund grass.	Partially protected. Widespread, status is secure.			
Cape berg adder (<i>Bitis atropos</i>)	Montane species. Montane grasslands (up to 3000m), and coastal and montane fynbos. Rocky slopes and hillsides . Under slabs of rock and grass tussocks.	Partially protected. Rare, vulnerable.			
Snouted night adder (<i>Causus defillippii</i>)	Open to closed woodland from sea level to an altitude of 1200m. Under rocks on soil or under rotting logs, often associated with rocky outcrops, burrowing.				
Rhombic night adder (<i>Causus rhombeatus</i>)	Mesic savannah. In undergrowth, under stones or logs, in termitaria. Forages at night.	Partially protected. Widely distributed, uncommon. Status currently secure.			
Family:Amphisbaenidae					
Family:Scincidae					
Montane dwarf burrowing skink (<i>Scelotes mirus</i>)	<i>Rocky montane grassland</i> . Live in grass among rocks on upper mountain slopes and summits.	Endemic to South Africa			
Giant legless skink (<i>Acontias plumbeus</i>)	Lowveld in woodland and alluvial sandy areas, forested areas. Fossorial: Usually found below soil surface in sandy soil admixed with vegetable matter, accumulated leaf litter and humic soils in damp situations. Under stones, logs and other rotting vegetation, termitaria and among roots of trees.	Protected. Uncommon, widely distributed. Status currently secure.			
Cape skink (<i>Trachylepis capensis</i>)	Very varied, grassland: arid karroid veld, moist coastal bush, montane grassland, etc. Hunting on ground, open sandy spots. Digs tunnels in loose sand at base of bushes or boulders, also dead trees and aloe stems.	Protected. Status currently secure.			
Rainbow rock skink (<i>Trachylepis margaritifer</i>)	Rock-living form: Confined to rocky outcrops and koppies in bushveld country: Sandstone, granite, rhyolite, dolerite and basalt, in vertical and horizontal crevices. Granite domes and other hard rock surfaces (paragneiss and some sandstone).	Protected. Status currently secure and under no threat.			2

Striped skink (<i>Trachylepis striata</i>)	Variety of bushveld and savannah types, and a wide range of ecological conditions from sea level to high mountain tops, desert to tropical bush. Although mainly arboreal, they also inhabit rocky koppies and will cross open ground readily. Among rocks and boulders, on the ground and in trees.	Protected. Widespread, adaptable. Considered secure.			3
Speckled Rock Skink (<i>Trachylepis punctatissima</i>)	Variety of bushveld and savannah types, and a wide range of ecological conditions from sea level to high mountain tops, desert to tropical bush. Although mainly arboreal, they also inhabit rocky koppies and will cross open ground readily. Among rocks and boulders, on the ground and in trees. Forages on rock outcrops as well as trees.	Protected. Widespread and adaptable. Status is currently secure.			
Variable skink (<i>Trachylepis varia</i>)	Varied: Very adaptive, wide variety of habitats: from sea level to high mountain slopes: Bushveld, open woodland and scrubby grasslands without rocks and grassland. Desert, karroid veld, montane grassland, savannahh, coastal bush, mesic thicket. Terrestrial and diurnal: Amongst rocks and stones at rocky or stony localities , but avoids extensive rocky areas. Broken ground, rocks and tree bases.	Protected. Widespread. Considered secure.			2
Sundevall's writhing skink (<i>Mochlus sundevallii sundevallii</i>)	Sandy savannah and open bushveld country. A nocturnal fossorial to terrestrial species - lead largely a sub-terrestrial existence. In search of food they often burrow to the surface of the ground. Shelter under stones, rotting logs, accumulations of dead leaves and other debris. Eggs laid in a suitable nook underground, particularly termitaria.	Protected. Widespread. Under no immediate threat.			
Wahlberg's snake-eyed skink (<i>Afrolepharus wahlbergii</i>)	Arid & mesic savannah. From highveld grasslands and mountain tops through the bushveld and into the lowveld. Forage among grass and leaf-litter, seeking prey under fallen leaves. Shelter among grass tussocks, grass roots, under stones and rotting logs, in moribund termitaria and among leaf-litter in shady places under shrubs, in termite hills, and on broken ground. Eggs laid under a stone or log or sheltered, under stones and rotting logs or among fallen leaves and brushwood lying in shady places, lying on moist ground or among the roots of a tree or shrub, grassy spots, shrubs and trees. Rocky outcrops and rocky hillsides.	Protected. Widespread. Considered secure.			
Family: Lacertidae					
Holub's sandveld lizard (<i>Nucras holubi</i>)	Broken rocky ground in mesic savannah. Among grass tussocks, the base of bushes, holes in the ground, under rocks on soil and under debris.	Protected. Widespread. Currently secure.			

Ornate sandveld lizard (<i>Nucras ornata</i>)	Variety of habitats: open grassy or stony flats to sand- or bushveld country: sandy soils. Rocky hillsides and outcrops in open woodland and grassland. Forage singly among grass tussocks and in leaf litter. Shelter in holes in the ground and under rock on soil.				
Delalande's sandveld lizard (<i>Nucras lalandii</i>)	Montane and temperate (Highveld) grassland. Under rocks on soil in slight depression; burrows under stones or between stones, grass tussocks in open grassland.	Endemic to South Africa. Protected. Uncommon, considered secure.			
Family: Gerrhosauridae					
Yellow-throated plated lizard (<i>Gerrhosaurus flavigularis</i>)	Wide range of habitat: Scrub- or bush-covered flats near coast to high mountain slopes and plateau; including highveld, bushveld and lowveld. Bushveld, lowveld, grasslands (highveld) savannah. On stony hillsides, sandy flats, woodland and grassland. Burrows of considerable lengths dug in ground under suitable sheltering bushes, shrubs, under boulders etc. Also shelters in rodent burrows, under rocks (lay half buried in soil), moribund termitaria. Escape to suitable refuge through low matted vegetation. Lays eggs in small chamber dug in leaf litter or on soil under a stone or rock in a hole which the female excavates, buried and left to incubate.	Protected. Status – secure.			1
Common Giant plated lizard (<i>Gerrhosaurus validus validus</i>)	Arid and mesic savannah, open woodland (up to 1400m): Hills and outcrops in bushveld country. Terrestrial and rupicolous (rock-living); gregarious: confined to granitic and other boulder-strewn hills and outcrops. May forage several hundred meters from base of outcrop in which they live, quickly retreat back to suitable crevice or burrow in rocky retreats. Shelter in deep Crevices or Cracks between and under rocks on outcrops. Upper slopes of large granite koppies. Lays eggs in soil-filled rock crevices.				
Breyer's long-tailed seps (<i>Tetradactylus breyeri</i>)	Montane and highveld grassland. <i>Short grasslands</i> , sheltering in old termite nests and under stones.	Endemic to South Africa			
Cape grass lizard (<i>Chamaesaura anguina anguina</i>)	Montane grassland, gentle slopes. Flat rocks and grass tussocks.	Protected. Appears currently to be secure.			

Family:Cordylidae					
Van Dam's girdled lizard (<i>Smaug vandami</i>)	A montane form, living amongst rocks on rocky outcrops , cliffs and rocky hillsides in bushveld up to 1600m. Lowveld: Broken country along the Olifants River, the Bango Gorge area in the Lebombos, and the Timbavati River. Shelters in crevices between rocks or under rock on rock. Do not go far from shelter, retire into crevices when disturbed.	Endemic to South Africa			
Jones' girdled lizard (<i>Cordylus jonesii</i>)	Bushveld or open woodland (300-1500m), dry savannah: Under loose bark of dead trees or in the hollows or holes of living trees or dead stumps, in the dried leaves of aloes, in woodpiles and decaying logs. Under stones, dead logs and brushwood, where suitable trees are not available, amongst rocks at ground level.	Protected. Widespread in TVL. Secure.			
Common girdled lizard (<i>Cordylus vittifer</i>)	Rock outcrops in Grassland. In cracks in small rock outcrops.	Protected. Widespread, status is secure.			
Sekukhune flat lizard (<i>Platysaurus orientalis orientalis</i>)	Mesic savannah: Mpumalanga escarpment. Restricted to eastern Sekukhuneland.	Endemic to South Africa			
Common crag lizard (<i>Pseudocordylus melanotus melanotus</i>)	<i>Rock outcrops on mountain plateaus and in rolling grassland.</i> Slope and foothill specialists. In rock cracks.	Endemic to South Africa			
Family:Varanidae					
Rock monitor (<i>Varanus albigularis albigularis</i>)	Savannah and open bush or forest country, open woodland, rocky hillsides, ridges and outcrops. Moister Karroid areas. Terrestrial. Dig tunnel under rock overhangs. Cracks and fissures between or under rocks, or in disused animal burrows or in hollow trees or holes in trees. Expert climbers: tree and rocks. Great wanderers – even far from water. Eggs deposited in holes in suitable soil dug to 150-230 mm - cover and camouflage nest. Eggs in live termite nest, hollow tree, usually hole in soft moist sand.	Protected by Provincial legislation (CITES, Appendix 11). Widespread, status considered secure.			
Water monitor (<i>Varanus niloticus niloticus</i>)	Near water: rivers, dams, pans and major lakes. Major river valleys. Shelter in holes in banks, in animal burrows or in crevices between rocks or under rocks, marginal vegetation. Basking in sun on rocks, outcrops, tree stumps, branches of overhanging trees or amongst vegetation on banks - never far from water. Escape into water – swim swiftly. Forage in marginal vegetation. Hibernate in large rock crag on rocky cliff or koppie bordering river. Young – marginal reed beds. Eggs deposited in hole dug deep into a living termite nest or sandbank by female, roughly covered over – termites seal up securely.	Protected by Provincial legislation (CITES, Appendix 11). Widespread, status considered secure.	1		

Family:Agamidae					
Distant's ground agama (<i>Agama aculeata distanti</i>)	Semi-desert and savannah: Open highveld (Grassland) and sandy thornbush (woodland) country with suitable rodent and other small animal burrows for shelter. Utilize rodent and other small animal burrows for shelter; burrows in termitaria; under stones and debris, partly buries in soil.	Protected. Widespread in TVL. Sparsely distributed. Secure.			
Southern rock agama (<i>Agama atra atra</i>)	Semi-desert to fynbos, from sea level to mountain tops. Rock outcrops and mountain plateaus, also rocky plains. May shelter under bark of dead trees. Shelter in deep cracks. Eggs in hole in damp soil.	Endemic to southern Africa. Protected. Widespread, locally common. Secure.			
Southern tree agama (<i>Acanthocercus atricollis</i>)	Open woodland with large trees, areas covered by <i>Acacia</i> thickets, woodland or woodland savannah, open bush and forest country (not in rain forests). Arboreal; diurnal, lizards, most commonly - trunks of large trees. Descend to ground to forage and cross to another tree. Spend most of their time foraging in larger trees - trees provide greater refuge from predators, increased foraging surfaces and the potential for invertebrate prey. May shelter in holes, crevices, hollow tree trunk or crack in branch or under peeling bark. Lay eggs in hole dug in moist soil.				
Family:Chamaeleonidae					
Common flap-necked chameleon (<i>Chamaeleo dilepis dilepis</i>)	Various kinds of woodland: savannah woodland; and wooded grassland, along streams. Wooded areas; branches of trees; branches of shrubs; Open forest and bush country, savannah woodland. Lays eggs in tunnel in damp soft soil at a sheltered spot. Diurnal, arboreal species, common in suitable habitat.	Protected. Widespread, out of danger.			
Wolkberg dwarf chameleon (<i>Bradypodion transvaalense</i>)	Prefers forested or thick, bushy habitats, usually with closed canopy. Not found in savannah areas outside forest fragments.				
Family:Gekkonidae					
Turner's giant gecko (<i>Chondrodactylus turneri</i>)	Terrestrial, restricted to rock outcrops. Semi-desert and arid savannah, entering moist habitats. Eggs laid in small hole in sand or rock cracks.				

Spotted dwarf gecko (<i>Lygodactylus ocellatus ocellatus</i>)	Rocky hillsides. Exclusive rupicolous; among rocks and stones on exposed hillsides.	Endemic to South Africa. Protected. Common, status is secure.			
Common dwarf gecko (<i>Lygodactylus capensis capensis</i>)	Well-wooded dry savannah: Open woodland and well-wooded dry savannah country. Diurnal and arboreal gecko. Inhabiting trees with holes or loose bark, which provides shelter. Also shelters among rocks and dead vegetation. Marked preference for Baobab, Acacia and Mopane – plenty suitable rough bark as cover. Eggs are laid in rock cracks, crevices, under stones or under loose bark. Forage in low scrub and on dead trees. Observed clinging, head down, near base of tree waiting for prey.	Protected. Widespread, abundant. Under no threat.			2
Black-spotted dwarf gecko (<i>Lygodactylus nigropunctatus nigropunctatus</i>)	Wet and dry savannah and subtropical thicket. Rock-living, sheltering in rock crevices or under loose rocks. Occasionally climb trees.	Endemic to South Africa			
Wahlberg's velvet gecko (<i>Homopholis wahlbergii</i>)	Land type varied - mesic and arid savannah, Coastal bush. Living in holes of old tree trunks, holes in dead trees and branches , under bark, in holes in baobab trees, empty swallow nests in caves and rock overhangs, or amongst rocks and boulders – latter case prefer those lying in river-beds near the water; rock fissures, particularly on overgrown koppies along river beds. Feeding both day and night but forage away from their retreat only at night. Eggs are laid in a rock cracks or/ crevices or beneath loose bark and in holes in trees.				
Common tropical house gecko (<i>Hemidactylus mabouia</i>)	Varied; arid and mesic savannah, and coastal bush. Arboreal in wild and very territorial. Common under loose tree bark and in the hollows of trees (particularly baobab), in the crowns of palms, and in rock cracks and crevices. In fact, in any dark convenient place on or above the ground (also piles of rubble). In the wild the eggs are laid under a rock or in a crevice and sometimes in a communal depository. Mainly nocturnal.				
Van Son's gecko (<i>Pachydactylus vansonii</i>)	Land type: Varied – karroid veld, grassland and mesic savannah. Terrestrial; inhabits rocky outcrops and more frequently - tunnel under rotting rocks or logs on soil; disused termitaria, occasionally low rock cracks. Solitary, nocturnal. At night – emerge to forage, it moves about on the ground in search of food. Eggs laid in soil under rocks or stones, under bark; or logs; in old termitaria in summer.	Protected. Status is secure.			

<p>Speckled gecko (<i>Pachydactylus punctatus</i>)</p>	<p>Prefer dry savannah, also found in arid desert: Open grass country, bushveld or boulder-strewn koppies and mountain slopes and hillsides. Terrestrial; in suitable rupicolous surroundings very common under rotting logs, stones, in rock crevices or other cover. Largely nocturnal. Lay eggs on sand under logs, stones or among debris.</p>				
<p>Transvaal gecko (<i>Pachydactylus affinis</i>)</p>	<p>Widespread in TVL. Rocky outcrops and dead termite nest in Highveld grassland. Nocturnal; Largely rupicolous: Seek refuge during day and move about slowly in crevices and under stones on rocky outcrops and hillsides; moribund termitaria, piles of rubble or other suitable refuges. Eggs deposited in any suitable spot under bark, under stones and in rock cracks.</p>	<p>South African endemic. Widespread in TVL.</p>			

Appendix 9. BIRDS: Available habitat, expected occurrence and observed presence of bird species during surveys (Gibbons, 1997; Harrison et al, 1997; Hockey et al, 2005 – latest name changes).

Birds expected to occur in the available natural habitats of Portion 7 and 8 of the Farm: Boerboonkraal 353 KT: Burgersfort Area, are listed below. The words in **bold font** represent qualifying habitat (preferred habitat), and *underlined italics* disqualifying habitat (the reason why the organism will not occur in the area). The shaded cells indicate land types that incorporate preferred habitat, and the number inside a cell gives the number of individuals or definite signs detected during surveys.

BIRD	Biotope (Geographical area)	SA status	Waterval River Riparian	Fallow land	Game Camp
Grebes					
Little Grebe (<i>Tachybaptus ruficollis</i>)	<i>More permanent waters: lakes, ephemeral pans and dams; emergent or overhanging vegetation, weedy shores. Backwaters in slow flowing rivers and streams. More permanent water. Infrequent: slow-flowing streams. Rarely in estuaries and sheltered bays.</i>	Common resident or nomad			
Cormorants					
White-breasted cormorant (<i>Phalacrocorax lucidus</i>)	Coastal and fresh waters: Dams and impoundments, streams and rivers . Mainly aquatic, in both salt and freshwater. Interior - streams and rivers.	Common resident			
Reed cormorant (<i>Microcarbo africanus</i>)	Virtually all freshwater habitats except fast flowing streams. Prefers gently sloping shores. Also estuaries, lagoons and sheltered coastal waters. Freshwater wetlands (any size) and water bodies: ephemeral habitats, major rivers and fast-flowing streams with pools , artificial wetlands: dams, sewage works.	Common resident			
Darters					
African Darter (<i>Anhinga rufa</i>)	Freshwater wetlands, rivers and streams ; avoids fast-flowing and turbulent water; adapted to artificial wetlands. Still and slow-moving freshwater bodies with open water. Scarce on fast flowing rivers and in areas with dense floating vegetation. Prefers areas with dead trees, rocks or banks where it can rest after feeding.	Common resident			

Egrets, herons and bitterns					
Grey heron (<i>Ardea cinerea</i>)	Bodies of shallow open water. Wetlands – rivers, dams , pans, marshes and estuaries – provided there is sufficient shallow water to feed in. Mountainous areas: keep to valleys. Tall trees, reed beds and cliffs for roosting. Also marine intertidal zone, estuaries, lagoons. Rarely in dry grasslands.	Relatively uncommon; resident Breeding resident Numbers augmented by Palearctic migrants Expansion in range – artificial water bodies Common			
Little egret (<i>Egretta garzetta</i>)	Open areas of shallow water: margins of lakes, dams, rivers , marshes, salt pans, estuaries and mangrove swamps. Breeds near water in trees or bushes. Edges of rivers and lakes, estuaries, pans, marshes, and salt pans. Also mangroves, open coastal.	Fairly common resident			
Intermediate egret (<i>Egretta intermedia</i>)	Shallow water or wet grasslands. Margins of lakes, rivers , salt pans and estuaries; especially seasonal waterbodies, marshes and flooded grasslands. Prefers shallow water, but also forages in dry grassland close to water.	Uncommon to locally common; local movements, possibly migratory in part			
Western Great Egret (<i>Egretta alba</i>)	Shallow open water at lakes, rivers , floodplains, flooded grasslands, marshes, salt pans and estuaries.	Uncommon resident			
Black-headed heron (<i>Ardea melanocephala</i>)	Open habitats, preferring grasslands. Pastures and field of stubble near wetlands . Tall trees for breeding and roosting.	Common resident			
Goliath heron (<i>Ardea goliath</i>)	Open water: lakes, dams, large wide rivers and estuaries with extensive shallows and where there are extensive reeds or papyrus. Nests on islands. Shallow margins of large water bodies.	Uncommon resident generally, but common and conspicuous on larger rivers.			
Purple heron (<i>Ardea purpurea</i>)	Larger water bodies and wetlands: Reedbeds, marshes, reed-fringed rivers and lakes; flooded areas with tall grasses, rushes and sedges. Dense emergent vegetation, especially reed beds fringing shallow wetlands; also mangroves.	Uncommon to common resident			
Western Cattle egret (<i>Bubulcus ibis</i>)	Terrestrial; open short grassland. Nests in trees and reedbeds.	Very common resident			
Squacco heron (<i>Ardeola ralloides</i>)	Freshwater habitats: dense emerging/fringing vegetation in the quiet backwaters of ponds and the edges of slow-flowing rivers and streams. Adequate reed cover and a few bushes or trees are prerequisites. Flooded grasslands and ephemeral pans with emergent vegetation.	Uncommon to locally common resident			

Straited heron (<i>Butorides striata</i>)	Densely vegetated rivers , estuaries, streams, lakes, ponds, swamps and mangroves. Wooded areas around margins of rivers, streams, lakes, estuaries, mangroves reedbeds, and swamps where vegetation overhangs water. Occasional - mudflats, temporarily flooded grassland and seashore.	Uncommon resident			
Black-crowned night heron (<i>Nycticorax nycticorax</i>)	Dense vegetation along the edges of shallow, still or slow-moving water such as rivers , lakes, pans, marshes or seasonal floodplains. Well-vegetated and slow-moving water - estuaries, mangroves. Roosts in trees and reedbeds.	Common resident			
Storks					
Black stork (<i>Ciconia nigra</i>)	Shallow water: streams, rivers , marshes, floodplains, coastal estuaries, flooded grassland; large and small dams; dry land. Shallows of rivers, pools in dry riverbeds. Uncommon in seasonal pans lacking fish.	NEMBA (TOPS): Vulnerable species; SA Red Data (Barnes 2000): Near-threatened. Uncommon to rare nomadic			
Abdim's stork (<i>Ciconia abdimii</i>)	Grasslands, pastures and cultivated fields.	Non-breeding intra-African migrant, very common			
White stork (<i>Ciconia ciconia</i>)	Open woodland , grassland, grassy Karoo and wetland areas.	Non-breeding Palaearctic migrant			
Spoonbills					
African spoonbill (<i>Platalea alba</i>)	Shallow aquatic habitats: freshwater wetlands, marshes, pans, temporary flooded grasslands, floodplains, rivers , dams. Almost exclusively shallow aquatic habitats, favouring lake and river margins, seasonally and permanent pans, coastal lagoons and estuaries.	Locally common nomadic			
Ibis					
Hadeda Ibis (<i>Bostrychia hagedash</i>)	Open moist grasslands & Savannah, along well-vegetated river courses; also marshes, flooded grasslands, edges of large wetlands, gardens.	Very common resident			
Southern Bald Ibis (<i>Geronticus calvus</i>)	High rainfall, sour and alpine grasslands – absence of trees, short dense grass sward. <i>Montane grassland</i> of Eastern Transvaal escarpment. Cliffs for breeding.	IUCN 2010 VU: Vulnerable; NEMBA (TOPS): Vulnerable species; SA Red Data (Barnes 2000): Vulnerable. SA endemic.			
African Sacred ibis (<i>Threskiornis aethiopicus</i>)	<i>Grassland habitats, associated with freshwater habitats: marshes, estuaries and dams.</i>	Common to very common resident			

Hamerkop					
Hamerkop (<i>Scopus umbretta</i>)	Large perennial waterbodies (lakes, dams and rivers), vleis and ephemeral wetlands, perennial and seasonal rivers with pools. Edges and shallow waters of lakes, pans, swamps and marshes, rivers, streams and seasonally flooded ponds, including relatively small puddles.	Common resident			
Ducks & geese					
White-faced whistling duck (<i>Dendrocygna viduata</i>)	Inland waters, mainly in Savannah and grassland. Expanses of shallow water with emergent vegetation: backwaters of larger rivers, grassy floodplains, small ephemeral pans. Feeds in water - usually in shallows of permanent or seasonal wetlands, or flooded grasslands; on land - natural grasslands.	Common resident. Nomadic when breeding. Not threatened.			
Egyptian goose (<i>Alopochen aegyptiaca</i>)	Inland waters: rivers , dams, lakes, marshes, pans, and estuaries with some exposed shoreline; wetland edges. Rich aquatic plant growth. Naturally: Restricted to flood plains and large rivers with broad sandbanks. Currently: Cropfields and cereal fields.	Very common resident	2		1
Spur-winged goose (<i>Plectropterus gambensis</i>)	Inland waters / wetland: larger bodies of water , floating vegetation; croplands. Flightless moult: Dams and dense swamp. Breeding: smaller system or secluded bay, emerging fringing vegetation. Rivers - shallow areas in open.	Common to very common resident			
African black duck (<i>Anas sparsa</i>)	Rivers with running water , pools with wooded banks. Mainly perennial rivers and streams, from fast-flowing mountain streams to wide sandy river mouths, preferring shallow stony bottom streams with wooded banks. Moulting: lodged branches undercut banks.	Uncommon localized resident			
Yellow-billed duck (<i>Anas undulata</i>)	Inland waters: Sluggish or still waters and still waters of rivers and streams ; mostly with marginal vegetation such as reeds. Avoid fast flow and saline/ acidic water bodies. Usually floats near emergent aquatic vegetation, occasionally on open water.	Very common resident			
Red-billed teal (<i>Anas erythrorhyncha</i>)	Shallow, permanent or temporary eutrophic fresh water with grassy surroundings .	Common resident but nomadic			
Vultures					
African White-backed Vulture (<i>Gyps africanus</i>)	Drier woodlands , mopane, arid Kalahari; tall trees for roosting and nesting	NEMA (TOPS): Endangered species; IUCN 2010 NT: Near-threatened; SA Red Data (Barnes 2000): Vulnerable. Common nomadic			

Cape Vulture (<i>Gyps coprotheres</i>)	Both open country (grasslands) and woodland . Reliant on tall cliffs for breeding and roosting. Wanders widely.	NEMA (TOPS): Endangered species; IUCN 2010 VU Vulnerable C1+2a; SA Red Data (Barnes 2000): Vulnerable. Locally common			
Secretary bird					
Secretary bird (<i>Sagittarius serpentarius</i>)	Open country: Savannah, open woodland, grassland and dwarf shrubland	IUCN status (2014): Vulnerable. SA Red Data (Barnes 2000): Near-threatened. IUCN Status: Least Concern. Uncommon to fairly common resident.			
Hawks and eagles					
African Cuckoo Hawk (<i>Aviceda cuculoides</i>)	Forest and dense woodland , indigenous or exotic.	Uncommon to fairly common resident. Probably rare.			
Black-winged Kite (<i>Elanus caeruleus</i>)	Wide distribution: Most abundant in grassland and fynbos with cultivated areas.	Common resident & nomad			
Yellow-billed Kite (<i>Milvus parasitus</i>)	Great variety of habitats: especially woodlands (higher rainfall areas)	Common breeding Palearctic migrant			
African fish eagle (<i>Haliaeetus vocifer</i>)	Widespread. Coastal along the sea shore, and at estuaries and lagoons; inland on lakes and large rivers . Usually associated with large water bodies, either flowing or still, including estuaries. Sometimes along open coastline. May remain on seasonally dry rivers once last pools dry up, subsisting on birds and scavenging carcasses. Absent from rivers that flow for only a few weeks a year.	Uncommon resident			
Black-chested Snake-Eagle (<i>Circaetus pectoralis</i>)	Open country; Savannah woodlands, dwarf shrublands, semi-desert.	Uncommon resident or local migrant			
Brown Snake Eagle (<i>Circaetus cinereus</i>)	Arid woodland. Breeds and roosts in trees.	Uncommon to fairly common resident			
African Harrier-Hawk (<i>Polyboroides typus</i>)	Mainly in forests. Dense woodland, tall riparian vegetation and well-wooded ravines. Partial to stands of alien trees.	Locally common resident			1
Lizard Buzzard (<i>Kaupifalco monogrammicus</i>)	Savannah and woodland, especially mature broadleaved deciduous woodland.	Fairly common resident; somewhat nomadic			
Gabar Goshawk (<i>Micronisus gabar</i>)	Open woodland: Acacia parkland and Acacia-dominated riparian zone.	Common resident			
African Goshawk (<i>Accipiter tachiro</i>)	Mainly indigenous forest; also dense riverine woodland and exotic plantations.	Common resident			

Little Sparrowhawk (<i>Accipiter minullus</i>)	Forest and woodland types: Dense vegetation - forests, riparian bush and thickets.	Uncommon resident			
Ovambo Sparrowhawk (<i>Accipiter ovampensis</i>)	Mosaic of tall woodland and open areas. Ecotone between woodland and grassland.	Uncommon to local common resident			
Common Buzzard (<i>Buteo buteo</i>)	Open country: dwarf shrubland, grassland, Savannah, open woodland , thornveld & fynbos. Also found in dense woodland.	Common non-breeding Palaeatric migrant			1
Jackal Buzzard (<i>Buteo rufofuscus</i>)	Mountainous and hilly areas: grass and other short vegetation. Nests on cliffs and in trees.	Locally common			
Tawny Eagle (<i>Aquila rapax</i>)	Woodlands, lightly wooded areas: needs trees	NEMA (TOPS): Vulnerable species; SA Red Data (Barnes 2000): Vulnerable. Common resident			
Verreaux's Eagle (<i>Aquila verreauxii</i>)	Rocky habitats in hills and mountains with nest sites; vegetation types associated with mountainous regions - Alpine grasslands. Need dassies as food.	Locally fairly common resident			
Wahlberg's Eagle (<i>Hieraaetus wahlbergi</i>)	Woodland – flat areas: river lines and riparian woodlands. Breeding in tall riparian trees in grassland and woodland	Common intra African breeding migrant			
African Hawk-Eagle (<i>Aquila spilogaster</i>)	Woodlands: breeds on hill slopes or along river courses in tall trees.	Uncommon to fairly common resident			
Booted Eagle (<i>Hieraaetus pennatus</i>)	Breeding birds occur in semi-arid hilly country and edges of karoo; nonbreeding birds occur in wide variety of habitats from woodland to semi-desert.	Intra-African migrants, sometimes breeding, common			
Martial Eagle (<i>Polemaetus bellicosus</i>)	Open grassland and scrub. Large trees for nests. Wide range of vegetation types: deserts, densely wooded and forested areas.	IUCN 2014 Status: Vulnerable. NEMBA (TOPS): Vulnerable species; SA Red Data (Barnes 2000): Vulnerable. Fairly common to uncommon resident			
Crowned Eagle (<i>Stephanoaetus coronatus</i>)	Dense indigenous forest, including riverine gallery forest; may range far from forest to hunt.	IUCN 2014 Status: Near-threatened. SA Red Data (Barnes 2000): Near-threatened. Common resident in suitable habitat, but numbers declining through deforestation			

Falcons, hobbies and kestrels					
Lesser Kestrel (<i>Falco naumanni</i>)	<i>Semi-arid grassland. Avoid wooded areas; forage in agricultural fields. Grassy Karoo, Sweet and Mixed grassland, Central Kalahari vegetation types.</i>	IUCN 2010 Status: Vulnerable. NEMBA (TOPS): Vulnerable Species. SA Red Data (Barnes 2000): Vulnerable. Population trend: decreasing. Abundant non-breeding Palaearctic migrant.			
Rock Kestrel (<i>Falco rupicolus</i>)	Wide variety of habitat types: arid to mesic conditions. Mountainous areas for breeding. Montane grassveld with rocky outcrops.	Common resident			
Greater Kestrel (<i>Falco rupicoloides</i>)	<i>Open, arid and grassland habitats.</i>	Common resident			
Amur Falcon (<i>Falco amurensis</i>)	Open and high-rainfall (sour) grasslands. Also open areas in woodland.	Very common non-breeding Palaearctic migrant			
Lanner Falcon (<i>Falco biarmicus</i>)	Open habitats. Cliff-nester, also in old nests in trees.	SA Red Data (Barnes 2000): Near-threatened. Fairly common resident			
Francolins and spurfowl					
Coqui Francolin (<i>Peliperdix coqui</i>)	Savannah or well-grassed woodland, sandy areas with good bush cover: grassy clearings and along edges of woodland.	Common resident			
Crested Francolin (<i>Dendroperdix sephaena</i>)	Woodlands with dense scrub component. Favors areas with bush encroachment in Savannahs and tolerates poor grass cover.	Very common resident			1
Red-winged Francolin (<i>Scleroptila levaillantii</i>)	<i>Open grasslands or grassy fynbos: Hilly, high rainfall areas. Moister montane grassland, usually at somewhat lower elevations, low-lying grasslands.</i>	Fairly common resident.			
Shelley's Francolin (<i>Scleroptila shelleyi</i>)	Acacia Savannah with good grass cover, edges of cultivated lands, often on stony ground.	Fairly common resident.			
Natal spurfowl (<i>Francolinus natalensis</i>)	Woodland types: Savannah with scrub understorey, especially along water courses, to thickets and coastal forest. Dry riparian vegetation and wooded hills.	Near-endemic. Common resident			2
Swainson's Spurfowl (<i>Pternistes swainsonii</i>)	Wide variety of habitats. Tall grass in open country (grassland) or woodland. Adjacent to cultivation or close to water.	Near-endemic. Very common resident			
Guineafowl					
Helmeted Guineafowl (<i>Numida meleagris</i>)	Savannah mixed with cultivation. Inhabiting most agricultural regions	Very common resident			11
Quails					

Kurrichane Buttonquail (<i>Turnix sylvatica</i>)	Open grassveld: neither very tall or very dense. Savannah. Fallow lands.	Uncommon resident			
Crake and rails					
Black crane (<i>Amaurornis flavirostris</i>)	Rank grass, sedges, reedbeds, bulrushes, papyrus, swampy thickets, bushes and other vegetation beside flowing, still or open fresh and estuarine waters. Occurs in tangled growth in which birds climb, roost and nest. In thin cover along very small streams in arid regions.	Common resident			
Common Moorhen (<i>Gallinula chloropus</i>)	Wetlands with emergent fringing vegetation, including lakes, dams, ponds, pans, rivers, streams , canals, swamps and marshes. Flooded grassland. Temp ponds on floodplains. Sheltered sites with some open water, avoids very open situations.	Common resident			
Coot, moorhens and gallinules					
Red-knobbed coot (<i>Fulica cristata</i>)	Open freshwater of lakes, lagoons, ponds, pans and vleis, floodplains, reedy swamps. Occasionally on rivers and tidal lagoons. Favouring wetlands with emergent vegetation and pondweed. Spend much time swimming on open water.	Abundant resident, highly nomadic			
Korhaans and bustards					
Red-crested Korhaan (<i>Lophotis ruficrista</i>)	Bushveld and scrub in woodland biomes: Acacia-dominated and broadleaved Savannahs.	Common resident			
White-bellied korhaan (<i>Eupodotis senegalensis</i>)	Open grassland and lightly wooded Savannah ; prefer taller grass.	SA Red Data (Barnes 2000): Vulnerable. Uncommon resident			
Plovers and lapwings					
Three-banded plover (<i>Charadrius tricollaris</i>)	Any freshwater habitat with an open shoreline. Open shores of any freshwater habitat , favouring pools, streams and seeps. Also at tidal pools, estuaries and lagoons.	Common resident, nomadic			
Blacksmith plover (<i>Vanellus armatus</i>)	Moist short grasslands and mudflats on edges of pans, lakes, rivers , and estuaries.	Common resident, nomadic			

African Wattled plover (<i>Vanellus senegallus</i>)	Wet short grasslands and marshes near vleis, streams and on river floodplains. Waterlogged grasslands at seeps, streams, edges of marshes and flood plains; exposed areas around lakes and pans.	Locally common resident			
Crowned Lapwing (<i>Vanellus coronatus</i>)	Dry, short and over-grazed or burnt grassveld. Widespread in a number of grassland and woodland types. Absent from mountainous and desert areas.	Common resident, nomadic			
Sandpipers & other waders					
Wood sandpiper (<i>Tringa glareola</i>)	Marshy shorelines: ephemeral pans, vleis, marshes, streams, floodplains and upper reaches of estuaries. Muddy, sandy or gravel borders of dams and ponds, inundated short grassland, sandy and muddy riverbeds, natural pans, mixed rocky and sandy beaches, salt marshes, estuaries, tidal and non-tidal lagoons and mangroves. Marsh-like conditions favoured over open shore-lines.	Common non-breeding Palaeartic migrant			
Common sandpiper (<i>Actitis hypoleucos</i>)	Any aquatic habitat, but favours streams and rivers shores with sandy, gravelly, stony or rocky substrata, estuaries, tidal creeks in salt marsh, mangroves. Open water edges: streams, rivers, marshes, vleis, coastal lagoons and upper reaches of tidal estuaries. Prefer wet conditions adjacent to water rather than wading in water.	Fairly common non-breeding Palaeartic migrant			
Little stint (<i>Calidris minuta</i>)	Muddy edges of wetlands.	Common non-breeding Palaeartic migrant			
Dikkops or thick-knees					
Spotted Thick-knee (<i>Burhinus capensis</i>)	Various types of grasslands; whole of SA highveld. Open grassland and Savannah, edges of woodland , semi-desert with scrub, stony slopes of low hills, cultivated land. Sparse ground cover where stony.	Common resident			
Doves and pigeons					
Speckled Pigeon (<i>Columba guinea</i>)	Mountains, cliffs, rocky gorges , boulder-strewn hills. Inhabitant of cliffs and crags, fly out to forage on open ground. Artificial structures. Roosts on cliff ledges, in caves and sometimes on trees.	Common to abundant resident, nomadic			
African Olive-Pigeon (<i>Columba arquatrix</i>)	Afromontane, lowland and coastal forests, riverine forests.	Locally common resident			
Laughing dove (Spilopelia senegalensis)	Open Savannah, Acacia thornveld and grassland; avoids natural high altitude grasslands.	Very common resident		2	6

Ring-necked Dove (<i>Streptopelia capicola</i>)	Catholic choice of habitats: all vegetation types , except forests.	Very common resident		1	2
Red-eyed Dove (<i>Streptopelia semitorquata</i>)	Tall trees in the vicinity of water. Riparian woodland , forest verges and other well-wooded country.	Common resident	2		3
Emerald-spotted Wood Dove (<i>Turtur chalcospilos</i>)	Various deciduous woodland types & moister thornveld ; thickets or drainage lines and in valleys – taller denser growth.	Common resident	1		7
Tambourine Dove (<i>Turtur tympanistria</i>)	Lowland evergreen forest, riverine woodland , dense thickets; less often on edges of montane forest.	Fairly common resident			
Namaqua Dove (<i>Oena capensis</i>)	Dry to semi-arid open woodlands and Savannahs. More open habitat.	Common resident, nomad			
African Green-Pigeon (<i>Treron calva</i>)	Well-wooded areas, along permanent rivers. Fig trees for food. Nests in drier woodlands.	Common resident, nomad			
Louries					
Knysna Turaco (<i>Tauraco corythaix</i>)	Evergreen and riverine forest, dense thickets.	Fairly common resident			
Purple-crested Turaco (<i>Tauraco porphyreolophus</i>)	Closed woodland, particularly riverine woodland , secondary forest, patches where woodland intergrades with forest, coastal forest, dense scrub and thickets on termitaria. Riverine forest, evergreen thickets, woodland, dense thornveld, Savannah, parks and gardens.	Fairly common resident	2		
Grey go-away-bird (<i>Corythaixoides concolor</i>)	Open woodland, Acacia woodlands, near water.	Common resident			
Coucals					
Burchell's Coucal (<i>Centropus burchellii</i>)	Rank and tangled growth. Reedbeds, marshes, and thickets, coastal bush. Along drainage lines, edges of wetlands.	Common resident			
Cuckoos					
Jacobin Cuckoo (<i>Clamator jacobinus</i>)	Dry open Savannahs, Acacia. Dry to moist woodlands.	Fairly common non-breeding Palaeartic and Indian migrant			1
Levaillant's Cuckoo (<i>Clamator levaillantii</i>)	Dense, closed humid woodland, scrub and woody growth along streams. Well-developed woodland – Acacia & broadleaved.	Uncommon breeding intra African migrant			
Red-chested Cuckoo (<i>Cuculus solitarius</i>)	Forest and well-wooded habitats: riparian growth, thickets and evergreen forests. Trees around habitation.	Common intra African breeding migrant	1		4
African Cuckoo (<i>Cuculus gularis</i>)	Variety of woodlands – broadleaved and Acacia.	Uncommon breeding intra African migrant			

Klaas's Cuckoo (<i>Chrysococcyx klaas</i>)	Forest, moist woodland and Savannah. Trees around habitation.	Fairly common resident and intra African breeding migrant			4
Diederik Cuckoo (<i>Chrysococcyx caprius</i>)	Variety of habitats: from forest edge to semi desert. Not in forests and uncommon in mopane.	Very common intra African breeding summer visitor			12
Black Cuckoo (<i>Cuculus clamosus</i>)	Forest edges, woodland riverine bush exotic plantations farmland, suburban areas. Acacia woodland, riparian thickets and mixed thornveld.	Fairly common intra African breeding migrant			3
Owls					
Western Barn owl (<i>Tyto alba</i>)	Wide range of vegetation types. Northern woodlands. Needs large trees to roost . Nomadic owls moving in response to rodent population explosion.	Locally common resident			
African Scops-Owl (<i>Otus senegalensis</i>)	Range of woodland types; tall scattered trees.	Common resident			
Spotted eagle-owl (<i>Bubo africanus</i>)	Broad range of habitats. Man-made structures. Rocky areas, woodland, forest edge Savannah, semi desert. Towns.	Common resident			
Verreaux's Eagle-Owl (<i>Bubo lacteus</i>)	Large trees in open Savannah woodlands or riparian woodland adjacent to floodplains.	Fairly common to common resident			
African Wood Owl (<i>Strix woodfordii</i>)	Evergreen and riverine forest, dense woodland , coastal bush, pine plantations; seldom in Savannah.	Locally fairly common resident			
Pearl-spotted Owlet (<i>Glaucidium perlatum</i>)	Relatively open woodlands (not tall dense woodlands) Sparse grass cover & trees for nests.	Common resident			
Nightjars					
Rufous-cheeked Nightjar (<i>Caprimulgus rufigena</i>)	Woodland , grassland, semi-desert bush and scrub. Ground gravelly, stony or covered with sparse, dry leaf litter, trees and bushes. Avoid forests, dense bush and high mountains.	Fairly common breeding intra-African migrant			
Fiery-necked nightjar (<i>Caprimulgus pectoralis</i>)	Dense broadleaved woodland, Savannah , coastal bush, fynbos and alien plantations. Ground, preferring areas where there is dense leaf litter.	Common partial migrant			
Freckled nightjar (<i>Caprimulgus trisigma</i>)	Favours areas of bare granite, Karoo sandstone, quartzite, mica-schist and weathered basalt substrata on hills, escarpments, boulder-strewn hillsides, in ravines and along dry, rocky river beds. Bare rocky outcrops and escarpments with well-wooded slopes. Requires some vegetation cover. By day roosts on exposed rock or among vegetation, in spite of ground temperatures sometimes reaching 60 degrees C.	Locally common to very common resident			

Swifts and spintails					
African Palm-Swift (<i>Cypsiurus parvus</i>)	Governed by the distribution of the flabelliform palms , nests underside dead leaves.	Locally common resident			
Alpine Swift (<i>Tachymarptis melba</i>)	Over all vegetation types: Especially over Alpine grassland and Fynbos – breeding sites. Dry vertical cracks in overhanging cliffs.	Common breeding intra-African migrant			
African Black Swift (<i>Apus barbatus</i>)	Montane habitats: nesting – horizontal cracks on cliffs or in caves. Forage - open country.	Breeding intra-African migrant			
Little Swift (<i>Apus affinis</i>)	Over all vegetation types: prefers open grasslands and Karoo, not high-altitude alpine grasslands. Occur over water and nests under dry overhangs.	Very common partial migrant			
Horus Swift (<i>Apus horus</i>)	<i>Anywhere: common in more humid south and east. Associated with high altitude grasslands. Nests in sandbanks.</i>	Common breeding intra African migrant			
White-rumped Swift (<i>Apus caffer</i>)	Forage over open ground. Cliffs. <i>Anywhere: common in more humid south and east.</i>	Very common breeding intra African migrant			
Mousebirds					
Red-faced Mousebird (<i>Urocolius indicus</i>)	Savannah woodlands, moist woodlands , shrubland. Avoiding forest and open grassland.	Very common resident			4
Speckled mousebird (<i>Colius striatus</i>)	Forest, subtropical thicket and mesic woodland. Ecotones: Edges of forests and closed woodland, wooded drainage lines and gardens.	Common resident			3
Hoopoe and woodhoopoes					
African Hoopoe (<i>Upupa africana</i>)	Catholic use of habitats. Tall Savannah thornveld. Woodland. Bare ground and short grass.	Sparse to common resident			
Green Wood-Hoopoe (<i>Phoeniculus porphyreus</i>)	Arboreal. Most woodland types. Edges of evergreen forests.	Common resident			
Common Scimitarbill (<i>Rhinopomastus cyanomelas</i>)	Tropical and subtropical arid woodland. Absent from closed canopy woodland.	Fairly common resident			
Kingfishers					
Half-collared Kingfisher (<i>Alcedo semitorquata</i>)	Clear fast flowing perennial streams , rivers and estuaries; clear water and well-wooded banks; often near rapids; narrow and secluded with dense marginal vegetation. Broken escarpment terrain. Well-vegetated lake shores and coastal lagoons.	SA Red Data (Barnes 2000): Near-threatened. Uncommon resident.			

Malachite kingfisher (<i>Alcedo cristata</i>)	Strictly aquatic environments – availability of fish. River and stream banks – flanked by trees, shrubs and recumbent riverine grasses and weedy vegetation. Prefer well-vegetated, slow-flowing rivers and streams, but not with canopy closed over river. Sheltered shores, coastal lagoons, tidal estuaries, mangrove swamps.	Common resident			
African Pygmy Kingfisher (<i>Ispidina picta</i>)	Woodland habitats ; dry land and not necessarily near water. Coastal woodland and more open evergreen forest .	Locally fairly common breeding intra African migrant			
Woodland Kingfisher (<i>Halcyon senegalensis</i>)	Well-developed woodland; tall riverine Acacia stands & mopane; grass understorey heavily grazed.	Common breeding intra African migrant			
Brown-hooded Kingfisher (<i>Halcyon albiventris</i>)	Edges of evergreen forests, woodland and riverine woodland.	Common resident			3
Striped Kingfisher (<i>Halcyon chelicuti</i>)	Open woodlands , broadleaved & <i>Acacia</i> mesic and arid conditions.	Common resident			
Giant kingfisher (<i>Megaceryle maxima</i>)	Any water body with sufficient food and overhanging branches to hunt from - streams, rivers , estuaries, seashores. Perch under canopy in trees alongside streams or at edges of pools. Large rivers and small streams.	Fairly common resident			
Pied kingfisher (<i>Ceryle rudis</i>)	Aquatic environments – availability of fish . Any water body with small fish, including large rivers and perennial streams, estuaries, lakes, temporarily flooded areas, rocky coasts and intertidal zone of coast. Less common along well-wooded, fast flowing streams.	Common resident			
Bee-eaters					
White-fronted bee-eater (<i>Merops bullockoides</i>)	Associated with watercourses . Typically associated with vertical sandy or lateritic riverbanks and watercourses - in woodlands (broadleaved and mixed woodland) and in wooded grassland. Also at eroded gullies, perennial rivers and seasonal streams with wooded banks.	Locally abundant resident			
Little Bee-eater (<i>Merops pusillus</i>)	Semi-arid to high rainfall areas. Open spaces to forage – low bushes or reeds. Savannah and light woodland.	Common resident			
European Bee-eater (<i>Merops apiaster</i>)	Variety of woodland and shrubby habitats, avoids relatively mesic and arid conditions.	Common non-breeding Palaearctic migrant & breeding migrant			6

Rollers					
European Roller (<i>Coracias garrulus</i>)	Woodlands, bushveld and grasslands. Open woodland.	IUCN 2014 NT: Near-threatened; Fairly common non-breeding Palaearctic migrant. Population trend: decreasing.			
Lilac-breasted Roller (<i>Coracias caudatus</i>)	Ecotone between light woodland and open grassy areas. Savannah and open woodland (broadleaved & Acacia)	Common resident			
Purple roller (<i>Coracias naevius</i>)	Uniform bushveld and woodland (broadleaved & Acacia).	Fairly common resident			
Hornbills					
Southern Red-billed Hornbill (<i>Tockus rufirostris</i>)	Woodland with sparse ground cover. Broadleaved and mixed woodlands , well-developed <i>Acacia</i> woodland.	Very common resident			
Southern Yellow-billed Hornbill (<i>Tockus leucomelas</i>)	Variety of dry, open Savannah woodlands (broadleaved & Acacia)	Very common resident			1
African Grey Hornbill (<i>Tockus nasutus</i>)	Taller woodland (broadleaved & Acacia) in dry and humid Savannahs. Bushveld.	Common resident			
Barbets & tinker barbets					
Yellow-fronted Tinkerbird (<i>Pogoniulus chrysoconus</i>)	Broad-leaved woodland, moist woodland – mixed woodland and rocky hills.	Common resident	1		8
Acacia Pied Barbet (<i>Tricholaema leucomelas</i>)	Arid Savannahs, soft-wooded trees (Acacia) present , wooded drainage lines in grassland.	Common resident			2
Black-collared Barbet (<i>Lybius torquatus</i>)	Miombo, moist wooded areas, along east facing slopes of the Transvaal escarpment, eastern coastal areas. Drier Savannahs: restricted to riverine vegetation. Coastal bush, woodland, forest edge, riverine forest, parks, gardens.	Very common resident	1		4
Crested Barbet (<i>Trachyphonus vaillantii</i>)	Savannah, woodland and thickets – broadleaved woodlands. Mixed woodland and <i>Acacia</i> habitats. Thornveld, thickets in woodland, riverine bushveld, exotic plantations, parks, gardens.	Common resident			
Honeyguides & honeybirds					
Scaly-throated Honeyguide (<i>Indicator variegatus</i>)	Canopy of evergreen and taller riverine forest, bushveld , thickly wooded valleys, exotic plantations.	Fairly common to uncommon local resident.			
Greater Honeyguide (<i>Indicator indicator</i>)	Arid and moist woodland: Wide range of woodland types.	Fairly common resident			
Lesser honeyguide (<i>Indicator minor</i>)	Wide range of wooded habitats: Savannahs with scattered trees to forest fringes, riverine woodland ; exotic plantations, gardens.	Locally common resident			
Woodpeckers					

Bennett's Woodpecker (<i>Campethera bennettii</i>)	Mature woodland and parkland dominated by broadleaved trees or acacias; woodlands underlain by sandy soils.	Fairly common resident			
Golden-tailed Woodpecker (<i>Campethera abingoni</i>)	Wide spectrum of woodland and Savannah types.	Fairly common resident			
Cardinal Woodpecker (<i>Dendropicos fuscescens</i>)	Wide variety of woodland and Savannah.	Common resident			1
Bearded Woodpecker (<i>Dendropicos namaquus</i>)	More arid Savannah types. Savannah and woodland , tall trees in open park-like settings. Broadleaved woodland with tall trees and dead ones.	Fairly common resident			
Wryneck					
Red-throated Wryneck (<i>Jynx ruficollis</i>)	Grassland biome: Sour and Mixed grasslands, not Alpine grasslands; needs trees for nesting. Only found in grassland where trees are present, even exotics. Forage on open ground, absent where trees are too dense or absent. Thornveld, open bushveld , exotic plantations, farmyards, gardens.	Locally fairly common; generally uncommon; migratory in south, resident in north.			
Larks					
Rufous-naped Lark (<i>Mirafra africana</i>)	Variety of habitats: bare patches, sparse grass cover, suitable perches. Open grassland with termitaria or scattered bushes and bare patches, open Savannah woodland with sparse grass cover between trees, bare patches in fallow fields and cultivated lands.	Locally common resident. Common & conspicuous spp . No evidence of range contraction. Not threatened by habitat destruction.			
Flappet Lark (<i>Mirafra rufocinnamomea</i>)	Woodlands: clearings or drainage lines.	Common resident			
Sabota Lark (<i>Calendulauda sabota</i>)	Wide range of Savannah habitats; arid open shrubland on rocks and sands , semi-arid Acacia Savannahs on clays, calcrete and sands, on rocky slopes with tall shrubs, bushes and trees, on edges of wooded drainage lines, mixed woodlands on stony soils.	Common resident			
Chestnut-backed Sparrowlark (<i>Eremopterix leucotis</i>)	Open Savannah woodlands with bare areas; recently burnt Savannah and grassland, croplands and fallow fields. Savannah and drier grassland habitats.	Common nomad			
Red-capped Lark (<i>Calandrella cinerea</i>)	Short grasslands – heavily grazed or burnt, ploughed lands and fallow fields; dry pans or dams. Moist grasslands around edges of endorheic and ephemeral pans.	Common nomad			

Swallows & martins					
Brown-throated Martin (<i>Riparia paludicola</i>)	Associated with water: Streams, large rivers, dams, estuaries and open wetlands. Forage over dryland habitats far from water. Wetlands in fairly open habitats.	Common resident			
Barn Swallow (<i>Hirundo rustica</i>)	All habitats: more common in higher-rainfall eastern half: moister grassland, woodlands and fynbos.	Abundant non-breeding Palaeartic migrant			3
White-throated Swallow (<i>Hirundo albigularis</i>)	Vicinity of wetlands , especially rivers and other expanses of open water where suitable nesting sites are available.	Common, but localized breeding intra-African migrant			
Pearl-breasted Swallow (<i>Hirundo dimidiata</i>)	Wide range of habitats: broadleaved woodlands, avoiding Acacia woodlands. Wetland sites and open areas.	Breeding intra-African migrant			
Greater Striped Swallow (<i>Cecropis cucullata</i>)	Wide variety of fairly open habitats: semi-arid Karoo, fynbos, grassland and lightly wooded Savannah.	Common breeding intra-African migrant			
Lesser Striped Swallow (<i>Cecropis abyssinica</i>)	Variety of woodland and Savannah habitats.	Common breeding intra-African migrant	1		
Red-breasted Swallow (<i>Cecropis semirufa</i>)	Open Savannah ; sweet grassveld.	Scarce breeding intra-African migrant			
South African Cliff-Swallow (<i>Petrochelidon spilodera</i>)	Fairly dry grasslands and lightly wooded Savannahs : Forage over disturbed areas.	Locally common breeding intra-African migrant			
Rock Martin (<i>Ptyonoprogne fuligula</i>)	Habitats with rock formations: Rocky terrain. Rocky hills, cliffs, quarries.	Common resident			
Common House-Martin (<i>Delichon urbicum</i>)	Wide variety of habitats: fynbos, grassland, Savannah woodland and cultivated areas. Hilly open country.	Locally common non-breeding Palaeartic migrant			
Cuckooshrikes					
Black Cuckooshrike (<i>Campephaga flava</i>)	Canopy of moist woodlands , both broadleaved and <i>Acacia</i> woodland. Moist, arid and riparian woodlands.	Uncommon resident			
Drongos					
Fork-tailed Drongo (<i>Dicrurus adsimilis</i>)	Wide range of vegetation types: Open bush and woodland ; edges of forest patches; Highveld – alien trees.	Common resident			1
Orioles					
Black-headed Oriole (<i>Oriolus larvatus</i>)	Moist woodland ; evergreen or lightly deciduous. Afromontane Forests. Overfly extensive unsuitable habitat – grassveld.	Common resident			3
Ostrich					
Common Ostrich (<i>Struthio camelus</i>)	Arid Savannah	Common resident, somewhat nomadic at times.			

Crows and ravens					
Cape Crow (<i>Corvus capensis</i>)	Open habitats with scattered patches of trees or wooded watercourses. Croplands. East: Montane grassland; West: Open arid areas.	Common resident			
Pied Crow (<i>Corvus albus</i>)	Wide variety of biomes: unrelated to vegetation , not in southern Kalahari.	Very common resident			
White-necked Raven (<i>Corvus albicollis</i>)	Mainly mountains, gorges, cliffs , forages in more open country at times.	Locally common resident, though generally uncommon.			
Bulbuls					
Dark-capped Bulbul (<i>Pycnonotus tricolor</i>)	Wide range of habitats: moister woodland and Savannah , riverine bush, forest edge & regenerating forest (not inside) dense montane scrub, scrubby vegetation, alien plantations. Not in open grassland.	Very common resident	1		19
Sombre Greenbul (<i>Andropadus importunus</i>)	Forest, coastal and riverine bush , dense thicket.	Common resident.	1		
Tits					
Grey Penduline Tit (<i>Anthoscopus caroli</i>)	Well-developed broadleaved woodland.	Fairly common resident			
Cape Penduline Tit (<i>Anthoscopus minutus</i>)	Arid and semi-arid habitats. Thickets along water courses. Acacia.	Fairly common resident			
Southern Black Tit (<i>Parus niger</i>)	Broadleaved woodlands.	Common resident			3
Babblers					
Arrow-marked Babbler (<i>Turdoides jardineii</i>)	Thickets or strips of denser vegetation along seasonal drainage lines. Broadleaved and mixed woodlands.	Very common resident			2
Tit-babbler					
Chestnut-vented Tit-Babbler (<i>Parisoma subcaerulea</i>)	Scrub and thicket; Acacia. Thickets in Savannah woodland and thornveld.	Common resident			

Rock thrush				
Cape Rock Thrush (<i>Monticola rupestris</i>)	Rocky, mountainous habitats in relatively high-rainfall areas; gorges, incised river valleys, foothills & lowlands adjacent to mountains. Cliffs, rocky gorges, boulder strewn hillsides and scree slopes, usually with scattered low trees, bushes and succulents, such as <i>Euphorbia</i> and <i>Aloe</i> species.	South Africa endemic. Locally common resident		
Sentinel Rock Thrush (<i>Monticola explorer</i>)	Rocky uplands in grassland biome. High rolling grasslands, rocky slopes, burnt areas, felled plantations.	South Africa endemic. Common resident in lowlands; in highlands subject to seasonal altitudinal movement, breeding mostly above 1200m, some birds moving downward in winter to about 600m.		
Short-toed Rock Thrush (<i>Monticola brevipes</i>)	Broken ground with trees or tall scrub – include koppies, escarpments, ridges, valleys, and level rocky terrain. Rocky outcrops, escarpments, inselbergs, river valleys with scattered bushes and trees.	Locally fairly common resident		
Thrushes				
Kurriehane Thrush (<i>Turdus libonyana</i>)	Woodland and thickets. Moist broadleaved and mixed woodland habitat.	Common resident		
Groundscraper thrush (<i>Psophocichla litsitsirupa</i>)	Open parkland woodlands; broad-leaved and Acacia woodland – understory poorly developed & patches of bare ground. Miombo, open overgrazed woodland, plantations.	Fairly common resident		
Olive Thrush (<i>Turdus olivaceus</i>)	Riverine bush and montane forest. Adapted to plantations. Well-shaded places with damp soil and moist litter.	Common resident		
Chats				
African Stonechat (<i>Saxicola torquata</i>)	Grassland biome: High altitude grasslands down to sea level, moist, open country with rank growth of grass and herbs.	Common resident and altitudinal migrant		
Buff-streaked Chat (<i>Oenanthe bifasciata</i>)	Sour grasslands – rocky habitat on mountains, hills, ridges and escarpments (1500-1700). Avoids woodlands, including aliens.	Fairly common to uncommon resident. SA endemic.		
Mountain Wheatear (<i>Oenanthe monticola</i>)	Rocky habitats in mountains, hills, koppies, scarps and boulder strewn level ground. Scrub or grass. Rocky hills, slopes with boulders and bushes, small cliffs, old mine workings, rocky hillsides.	Locally common to fairly common resident.		

Capped Wheatear (<i>Oenanthe pileata</i>)	Open areas with bare ground. Open – burning, trampling, overgrazing.	Common breeding intra-African migrant			
Familiar Chat (<i>Cercomela familiaris</i>)	Broad range of open vegetation types, broken ground and rocky habitats. Rocky mountain slopes, rocky hills and outcrops, valley slopes, eroded gullies, sparse woodland along drainage lines.	Common resident			
Ant-eating Chat (<i>Myrmecocichla formicivora</i>)	<i>Open habitats: some grass and some scrub.</i> Grassy habitats in the east, and the Southern and Central Kalahari. Very rocky areas avoided.	Common resident			
Mocking Cliff Chat (<i>Thamnolaea cinnamomeiventris</i>)	Vicinity of rocky outcrops in wooded country. Open well-faulted rock faces with scattered trees and shrubs. <i>Ficus</i> trees. Well-wooded rocky ravines, gullies, cliffs, boulder-strewn hillsides and along streams or rivers in valley bottoms where there are large boulders.	Locally common resident			
Robins					
Cape Robin-Chat (<i>Cossypha caffra</i>)	Afromontane forest fringe: cover loving. Wide range of habitats utilized: coastal fynbos, farmstead woodlots, <i>Leucosidea</i> scrub, alpine grassland. Bracken-brair fringe of Afromontane forest.	Common resident			
White-throated Robin-Chat (<i>Cossypha humeralis</i>)	Thickets that lines dry water courses in the bushveld and thornveld. Open woodland – closed thickets under large shade trees. Termite mounds & fire-free places on rocky hills.	Locally common resident			1
White-browed robin-chat (<i>Cossypha heuglini</i>)	Dense riverine bush, evergreen thickets. . Sing from low perch in tree or bush. Riverine forest with broken canopy and dense evergreen thickets, lakesides with shady trees and shrubs, Acacia woodland on flood plains. In dry areas restricted to evergreen thickets fringing river courses.	Locally common resident			
Red-capped robin-chat (<i>Cossypha natalensis</i>)	Evergreen forests and woodland, riparian growth, deciduous thickets, riverine forests. Keeps to undergrowth of forests, forages on ground (dusk), moves seasonally to higher forest strata when fruit ripen. Sing from low perch. In general, favours linear habitats (eg along wet and dry watercourses).	Scarce to common. Mostly resident.			
Chorister Robin-Chat (<i>Cossypha dichroa</i>)	Evergreen forest, especially in mist belt.	Locally common resident; some seasonal altitudinal movement at higher elevations.			

Scrub-Robin					
White-browed Scrub Robin (<i>Erythropygia leucophrys</i>)	Woodland and bushveld habitats. Patches of dense undergrowth in thornveld and broadleaved woodland.	.Common resident			4
Kalahari Scrub Robin (<i>Erythropygia paena</i>)	Open Kalahari sandveld with scattered bushes and trees. Bare ground and large tree or bush.	Fairly common resident			
Warblers					
Little rush warbler (<i>Bradypterus baboecala</i>)	Associated with tangled vegetation around wetlands ; not usually over open water.	Locally fairly common resident and nomad.			
Cape Grassbird (<i>Sphenoeacus afer</i>)	Rank vegetation with long grasses, restios or ferns, in tangled scrub, low sparse shrubland and in hilly grasslands with scattered bushes. Avoids areas in which the woody component becomes too high or dense.	Locally common resident			
African reed-warbler (<i>Acrocephalus baeticatus</i>)	Usually in moist or wet areas , including edges of reeds, bulrushes, sedges, tall herbs and forbs, and tall grass and shrubs along river banks. Marshland: Outskirts of reed-beds where there is a mixture of grass, sedges, rushes and tall willow herbs.	Common breeding intra-African migrant			
Great reed warbler (<i>Acrocephalus arundinaceus</i>)	Marshland: Phragmites and tall grass.	Locally common non-breeding Palearctic migrant			
Lesser swamp warbler (<i>Acrocephalus gracilirostris</i>)	Marshland: Phragmites over water. Reeds and bulrushes in standing water in estuaries, lagoons, rivers, marshes.	Locally common resident			
Dark-capped Yellow Warbler (<i>Iduna natalensis</i>)	Scattered scrub and rank vegetation along streams and gullies. Edges of evergreen forest or woodland areas surrounding vleis, reedbeds or dams.	Locally common to scarce resident; some seasonal altitudinal movements			
Willow Warbler (<i>Phylloscopus trochilus</i>)	Any woodland: edges of evergreen forests, Savannahs , gardens, parks, exotic plantations. Anywhere with trees and bushes ie adequate tree cover; Adequate tree cover.	Fairly common non-breeding Palearctic migrant			1
Apalis					
Bar-throated Apalis (<i>Apalis thoracica</i>)	Adaptable, catholic: Wooded habitats. Interior of evergreen or semi-evergreen forests, forest fringes, woodland, Karoo scrub, grassveld – where suitable woodland or bush occurs, e.g. along drainage lines.	Common resident			
Yellow-breasted Apalis (<i>Apalis flavida</i>)	Riverine forest, moist bushveld , mixed woodland, mature thornveld, thickets, middle to lowland evergreen forest, regenerating scrub.	Locally fairly common resident.			

Camaroptera					
Green-backed Camaroptera (<i>Camaroptera brachyura</i>)	Evergreen forests: lowland, riparian , montane and temperate forest. Small patches of forest or dense secondary growth and thickets. Forest edges, tangled riverine bush; gardens, parks. Forages low down in undergrowth, even on ground, hopping restlessly around. Rather secretive. Nests in low herbs, bush or leafy tree, from ground level to 1.3m above ground.	Common resident			
Grey-backed Camaroptera (<i>Camaroptera brevicaudata</i>)	Thickets and dense cover in drier deciduous woodlands.	Common resident			1
Eremomela					
Yellow-bellied Eremomela (<i>Eremomela icteropygialis</i>)	Woodland to low shrub. Thornveld regions, scrub and low trees. Rather in broadleaved than <i>Acacia</i> woodland.	Fairly common resident			2
Burnt-necked Eremomela (<i>Eremomela usticollis</i>)	Wide range of woodland – Acacia woodland along major drainage lines.	Fairly common resident			
Crombec					
Long-billed Crombec (<i>Sylvietta rufescens</i>)	Woodland; scrubland. Catholic in use of different woodland – not found in unwooded grassland and forest interiors.	Common resident			5
Cisticolas					
Red-faced Cisticola (<i>Cisticola erythrops</i>)	Tall rank vegetation in marshes, along streams and rivers and bordering reedbeds in lowveld. Sometimes in weeds, rank growth and edges of canefields away from water. Skulks in dense undergrowth.	Locally common to fairly common resident	2		
Lazy Cisticola (<i>Cisticola aberrans</i>)	Rocky slopes with grass, dense scrub and occasional trees and thickets. Valley bottoms and in gullies. Rank grass, shrubs and bracken on damp ground, edges of forests.	Locally common resident			
Rattling Cisticola (<i>Cisticola chiniana</i>)	Tree Savannah – Acacia woodland where grassland interspersed with trees & thickets or shrub. Fringes of dense woodland and in coastal scrub patches.	Very common resident			2
Wailing Cisticola (<i>Cisticola lais</i>)	Montane grasslands: Long grass, hillsides, patches of rank growth, some scrub, shrubs or bracken, rocky outcrops.	Common resident			

Levaillant's cisticola (<i>Cisticola tinniens</i>)	Marshland: Stream-side where there is short grass, sedges and rushes with clumps of taller growth. Marshy areas along rivers and streams, edges of reedbeds, moist grassland, and seasonally flooded endorheic ponds.	Very common resident			
Neddicky (<i>Cisticola fulvicapilla</i>)	Dune scrub, in scrub and rank grass on hill slopes, on the edges of woodlands and plantations, in secondary growth and in thornveld Savannah . Understorey of woodlands. Tolerant of alien vegetation. Avoid dense grassland – cannot feed on ground level. Especially Valley Bushveld.	Very common resident			7
Zitting Cisticola (<i>Cisticola juncidis</i>)	Natural grasslands and weedy areas, edges of vleis, dams, pans, and salt marshes. <i>Eragrostis</i> grass pastures , cereal cropland, edges of cultivation, fallow lands, and any open areas with rank grass. Associated with wetlands.	Common resident			
Desert Cisticola (<i>Cisticola aridulus</i>)	Open dry short grasslands and Savannah with low basal cover. Adjacent to natural grasslands, cultivated areas , fallow agricultural lands.	Fairly common resident			
Cloud Cisticola (<i>Cisticola textrix</i>)	<i>Short grassland with low basal cover – in grassland biome and Grassy Karoo. Does not tolerate invasion by scrub and trees. Common – Themeda triandra grassland on Highveld.</i>	Common resident			
Wing-snapping Cisticola (<i>Cisticola ayresii</i>)	<i>Short moist and relatively dense grassland on well-drained soils – Alpine, Sour and Mixed Grasslands.</i>	Common resident			
Prinias					
Tawny-flanked prinia (<i>Prinia subflava</i>)	Marshland: In reeds and sedges in vleis. Relatively tall and dense patches of vegetation: rank grass on edges of roads or farmlands, drainage lines and edges of dams and rivers, scrubby patches within woodland Savannahs , secondary thickets, reeds and sedges in wetlands, ecotones between grassland and dense, tall woodlands and forests. Suburban and rural gardens.	Very common resident. Readily adapts to modified habitats. Distribution not changed.	2		4
Black-chested Prinia (<i>Prinia flavicans</i>)	Scrub, rank grass, low bushes and secondary growth in open woodlands or grasslands, along drainage lines, on the edges of cultivated lands or in abandoned fields.	Common resident			
Karoo Prinia (<i>Prinia maculosa</i>)	Scrub and rank mgrowth along drainage lines . Karoo and fynbos shrubland and mixture of grassland and scrub. Fallow land and edges of forests and alien plantations.	Common resident			
Drakensberg Prinia (<i>Prinia hypoxantha</i>)	Montane scrub , rank grassland thickets along streams and edges of forests, woodland and exotic plantations, tall weeds in fallow lands and on roadsides, gardens.	Common resident			

Flycatchers					
Fairy Flycatcher (<i>Stenostira scita</i>)	Woody components; intermittent scrub, riverine Acacia , dense thorny tree or bush for breeding.	Common local migrant.			
African Paradise Flycatcher (<i>Terpsiphone viridis</i>)	Woodlands: evergreen forests and broadleaved woodlands. Riverine strips, riparian vegetation.	Common breeding intra-African migrant			4
Pale Flycatcher (<i>Bradornis pallidus</i>)	Mainly broad-leaved woodland and Savannah with well-developed understory. Less often Acacia Savannah. In fork of densely foliated tree, near trunk or far out on branch, 1.5-4m above ground. Perches on lower outer branch at edge of clearing, dropping to ground to catch prey.	Common resident			
Marico Flycatcher (<i>Bradornis mariquensis</i>)	Acacia bushveld and woodland.	Common resident			
Southern Black Flycatcher (<i>Melaenornis pammelaina</i>)	Woodlands near surface water ; taller vegetation, not necessarily clumped, open space at groundlevel.	Common resident			
Fiscal Flycatcher (<i>Sigelus silens</i>)	Fairly open vegetation with trees or intermittent scrub.	Common resident			
Spotted Flycatcher (<i>Muscicapa striata</i>)	Open woodland ; habitat where bare branches alternate with open space. Open habitat with less well-structured middle and lower stratum.	Common non-breeding Palaearctic migrant			
African Dusky Flycatcher (<i>Muscicapa adusta</i>)	Evergreen and riverine forest , patches of forest in dense woodland; exotic plantations, well wooded gardens.	Locally common; some populations resident, most locally migratory			
Ashy flycatcher (<i>Muscicapa caerulescens</i>)	Edges of lowland evergreen forests , upper strata of riverine woodland, thickets in drier woodland, moister Savannah, wooded gorges.	Locally common resident			
Grey Tit-Flycatcher (<i>Myioparus plumbeus</i>)	Dense vegetation, upper strata. Riverine strips. Holes in trees for nests.	Uncommon resident			
Batis					
Cape Batis (<i>Batis capensis</i>)	Afromontane forests. Lower levels of evergreen forests , isolated forest fragments: undergrowth tangles and canopy. Densely wooded gorges and exotic plantations in summer; in winter may spread to more open woodland and Savannah.	Common resident; some seasonal altitudinal movement.			
Chinspot Batis (<i>Batis molitor</i>)	Major woodland types. Acacia spp. Valley bushveld, thornveld and karroid brokenveld.	Common resident			1

Wagtails					
African pied wagtail (<i>Motacilla aguimp</i>)	Along margins, rocky patches and sandbanks of large rivers , pans and dams. Usually near water, preferring wide rivers and open water bodies with sandy banks or exposed rocks and boulders. In drier areas restricted to perennial rivers.	Common to scarce; mostly resident; non-breeding migrant to much of Transvaal in winter.			
Cape wagtail (<i>Motacilla capensis</i>)	Almost anywhere where there is water with open ground nearby. Wide range of natural environments: require merest trickle of water; open streams in forest habitats, rivers and waterfalls.	Common resident			
Mountain wagtail (<i>Motacilla clara</i>)	Largely restricted to small streams and rivers in hilly, forested country , preferring stretches with emergent rock and where water flows over flat rocks. Especially fond of waterfalls. Also along rivers through woodland and dense thicket, including valley bushveld. Fast-flowing well-wooded rocky streams and rivers, larger forested rivers; sometimes also smaller quiet tributaries, or streams in forest with pools and waterfalls. Forced to move if rivers dry up completely.	Sparse resident on permanent streams and rivers; nomadic on seasonal tributaries.			
Longclaws					
Cape Longclaw (<i>Macronyx capensis</i>)	<i>Variety of grassland types at fairly high elevations. Not in bushveld; may occur in grassveld adjacent to woodland. In association with wetlands. Moist grassveld: near vleis and dams. Open countryside with thick grass.</i>	Common resident			
Pipits					
Striped Pipit (<i>Anthus lineiventris</i>)	Broadleaved woodland; rocky outcrops and gorge like situations; alongside small woodland streams. Deeply incised drainage lines. Rock faces.	Locally fairly common resident			
African Pipit (<i>Anthus cinnamomeus</i>)	Grasslands: open stretches fringing pans, lightly wooded Savannah, dry floodplains with short vegetation and recently burnt open veld . Avoids dense rank growth. Fallow fields.	Common resident			
Plain-backed Pipit (<i>Anthus leucophrys</i>)	Mesic grasslands: edges of well-wooded country, around waterbodies and marshes . Recently burnt grasslands.	Fairly common resident			
Buffy Pipit (<i>Anthus vaalensis</i>)	Open grassy plains, bare ground, well grazed. Veld dotted with anthills and low scrub. Fallow pastures .	Uncommon resident			

Shrikes					
Red-backed Shrike (<i>Lanius collurio</i>)	Medium dense thornveld. Open habitats with fewer smaller trees for males; females – skulk in taller woodland. Fallow land with coppicing Acacia bushes, pockets of scrub.	Fairly common non-breeding Palaeartic migrant			
Lesser Grey Shrike (<i>Lanius minor</i>)	Acacia thornveld. Arid open Acacia bushveld - low bushes and tall trees (or dead) alternating with open grassy space. Fallow land with coppicing Acacia bushes.	Fairly common non-breeding Palaeartic migrant			
Common Fiscal (<i>Lanius collaris</i>)	Open spaces with exposed perches, short or sparse ground cover and trees for nesting. Scarce in Arid Woodland, Marula and Knobthorn Savannah, Alpine Grassland.	Common resident			
Magpie Shrike (<i>Urolestes melanoleucus</i>)	Acacia Savannah and broadleaved woodland. Open Savannah with short grass.	Common resident			
Southern White-crowned Shrike (<i>Eurocephalus anguitimens</i>)	Woodland and Savannah , often with baobab trees. Forages by watching from perch and dropping to ground for prey. Nests on horizontal branch or fork several meters above ground. Some local or nomadic movements.	Fairly common to common resident			
Brubru (<i>Nilaus afer</i>)	Savannah woodlands. Acacia and broadleaved woodland. From tall, well-developed, mixed woodlands, forest edges, scattered scrubby areas.	Common resident			1
Black-backed puffback (<i>Dryoscopus cubla</i>)	Indigenous woodland and forest. Dense woodland.	Common resident			8
Black-crowned Tchagra (<i>Tchagra senegala</i>)	Scrub and woodland habitats. Mesic broadleaved woodlands.	Common resident	1		2
Brown-crowned Tchagra (<i>Tchagra australis</i>)	Woodland and scrub – restricted to undergrowth. Acacia-, mopane- and broadleaved woodland.	Common resident			1
Southern Boubou (<i>Laniarius ferrugineus</i>)	Dense tangled undergrowth, thickets along watercourses in wide range of woodland types ; all woodlands and forest types. Forests and exotic plantations. Grasslands - thickets along watercourses.	Near-endemic. Common resident.	1		19
Crimson-breasted Shrike (<i>Laniarius atrococcineus</i>)	Acacia bushveld and woodland.	Common resident			2
Bokmakierie (<i>Telophorus zeylonus</i>)	Karoo, Fynbos and grassland biomes: Scrubby habitat, low bushes in association with rocky outcrops. Avoid woodland types except Valley Bushveld. Edges of range: light mixed woodland and thorn Savannah on stony ground.	Common resident over most of range.			
Orange-breasted Bushshrike (<i>Chlorophoneus sulfureopectus</i>)	Woodland. Mixed riparian woodland.	Very common resident			4
Olive Bushshrike (<i>Chlorophoneus olivaceus</i>)	Canopy of evergreen forest, tall dense bush, riverine forest.	Locally fairly common to common resident.			

Grey-headed Bushshrike (<i>Malaconotus blanchoti</i>)	Woodland of medium density.	Uncommon resident			7
White-crested Helmet-Shrike (<i>Prionops plumatus</i>)	Deciduous broadleaved woodland – breeding. Otherwise – Acacia Savannah.	Common resident			
Retz's Helmet-Shrike (<i>Prionops retzii</i>)	Deciduous woodlands when breeding. Non-breeding: disperses into Acacia Savannah and other dry woodland types. Forages mainly on larger branches and on trunks of trees. Nests 3-20m above ground on stout horizontal branch of large tree (especially <i>Pterocarpus rotundifolia</i>).	Fairly common to common resident or nomad			
Starlings					
Red-winged Starling (<i>Onychognathus morio</i>)	Cliifs and rocky areas. Common in highland areas; less common on plains. Rocky outcrops and gorges in highland grassland, visits forests to feed on fruit.	Common resident			
Cape Starling (<i>Lamprotornis nitens</i>)	Wide range of vegetation types: Not a grassland or forest bird. Depends on trees or tall vegetation for nests. Woodland species.	Common resident			
Violet-backed Starling (<i>Cinnyricinclus leucogaster</i>)	Open woodlands; mixed broadleaved woodlands.	Fairly common to scarce breeding intra-African migrant			3
Pied Starling (<i>Lamprotornis bicolor</i>)	Open Karoo and grassland habitats. Open fields. Not found in wooded areas. Areas of broken ground.	SA endemic. Very common resident.			
Oxpeckers					
Red-billed Oxpecker (<i>Buphagus erythrorhynchus</i>)	Variety of woodlands; needs holes in trees for nesting. Food supply on game and cattle.	SA Red Data (Barnes 2000): Near-threatened. Common resident			
Sugarbirds					
Gurney's Sugarbird (<i>Promerops gurneyi</i>)	<i>Montane scrub with Protea and Aloe (mostly Mountain Sourveld); also gardens and Protea nurseries; may move into suburban gardens in winter.</i>	Locally common resident; local movements determined by flowering plants; some altitudinal movement in winter.			
Sunbirds					
Amethyst Sunbird (<i>Chalcomitra amethystina</i>)	Broadleaved woodland types. Gardens and stands of alien trees.	Common resident			
Scarlet-chested Sunbird (<i>Chalcomitra senegalensis</i>)	Woodland, Savannah, riverine bush, gardens.	Common resident; some seasonal fluctuations in some areas.			

Malachite Sunbird (<i>Nectarinia famosa</i>)	<i>Fynbos, grassland, Karoo and open Savannah: Scrubby hillsides and forest edge. Alpine Grassland, Karoo and Fynbos vegetation types. Abundance determined by food plants and their flowering phenology.</i>	Common; resident in lower-lying areas; seasonal migrant from higher regions in winter.			
Southern double-collared sunbird (<i>Cinnyris chalybeus</i>)	Evergreen forest and bush, Eucalyptus plantations, gardens.	Locally common to fairly common resident.			
Greater Double-collared Sunbird (<i>Cinnyris afer</i>)	Moist habitats with trees or tall scrub; not into forests – edge or top of canopy. Coastal, montane and riverine scrub, Protea Savannah. Mountainous or hilly country. Afromontane and Valley Bushveld .	Common resident			
White-bellied Sunbird (<i>Cinnyris talatala</i>)	Wide range of woodland and bush types – moist woodlands. Open Savannah.	Common resident	1		19
White-eyes					
Cape white-eye (<i>Zosterops capensis</i>)	Catholic choice of habitat: Evergreen and coastal forests, fynbos, riverine bush , thickets. Drainage lines. Wooded areas in grassland and alien plantations.	Very common resident and local migrant	4		3
Sparrows					
House Sparrow (<i>Passer domesticus</i>)	<i>Human dwellings.</i>	Very common resident, introduced			
Cape Sparrow (<i>Passer melanurus</i>)	Arid Karoo and grassland biomes: Woody vegetation along drainage lines. Gardens, farms, parks.	Very common resident			
Southern Grey-headed Sparrow (<i>Passer diffusus</i>)	Various woodland types: broadleaved and Acacia . Alien tree populations.	Common to abundant resident and nomad			1
Yellow-throated petronia (<i>Gymnoris supercilialis</i>)	Broadleaved woodland and Savannah.	Mostly common resident			
White-browed Sparrow-Weaver (<i>Plocepasser mahali</i>)	Dry woodland and Savannah. Nests in trees in ecotone – reduced ground cover and good grass cover.	Locally common resident			2
Weavers					
Lesser Masked Weaver (<i>Ploceus intermedius</i>)	Acacia Savannah, bushveld, dry woodland, riverine trees , usually near water. Forages mostly in canopies of trees and by probing flowers. Nests suspended from branch on inside or outside of tree, often over water up to 18m above ground. Sometimes also in reeds or low bushes. In small colonies of 10-20 nests.	Locally common resident			
Spectacled Weaver (<i>Ploceus ocularis</i>)	Tall woodland or other tall vegetation , edge of forest patches and in riverine woodland and thickets.	Fairly common resident.			
Cape weaver (<i>Ploceus capensis</i>)	Nests in reeds and bulrushes along rivers and dams.	Common resident			
Holub's Golden Weaver	Rank vegetation, reeds and bushes along streams and rivers , forest	Uncommon resident; possibly			

<i>(Ploceus xanthops)</i>	edge.	altitudinal migrant in Mozambique highlands.			
Southern Masked weaver <i>(Ploceus velatus)</i>	Nests in reeds, bushes and trees along watercourses . Also in trees near homesteads and in other vegetation away from water.	Common resident			23
Village weaver <i>(Ploceus cucullatus)</i>	Near water; different woodland vegetation types along river valleys. Open thornveld, but not in forests and treeless grasslands. Edges of riverine forests, usually near water. Wide range of woodland types along river valleys.	Very common resident			11
Red-headed Weaver <i>(Anaplectes melanotis)</i>	Woodland, bushveld, Savannah , usually not far from water. Forages off foliage. Nest attached to branch of tree, usually several meters from the ground.	Common to fairly common resident, summer breeding visitor to some areas			1
Thick-billed weaver <i>(Amblyospiza albifrons)</i>	Forest types: riparian forest , reeds or bulrushes near forests. In breeding season at marshes, rivers, with rank grass, reedbeds and papyrus.	Resident but disperse widely after breeding			6
Quelea					
Red-headed Quelea <i>(Quelea erythropis)</i>	Most vegetation types: woodlands , grasslands. Breed in spiny vegetation – Acacia Savannah. Feed on annual grasses.				
Widows					
Fan-tailed Widowbird <i>(Euplectes axillaris)</i>	Open moist grassland, edges of vleis , rank grassy hillsides, marshes, edges of sugarcane fields.	Common resident; nomadic in winter			
White-winged Widowbird <i>(Euplectes albonotatus)</i>	Woodland and grassland: rank growth on the margins of open grassy areas , usually near water. Overgrown edges of cultivated areas. Seasonally inundated floodplains and tall grasslands.	Locally fairly common resident and nomad		2	6
Red-collared Widowbird <i>(Euplectes ardens)</i>	Mosaic of grass and bush: typical of grassland with scattered trees or bushes .	Locally common resident and nomad			
Long-tailed Widowbird <i>(Euplectes progne)</i>	<i>Open grassland habitats: Mixed, Sweet and Sour grasslands. Alpine grassland less.</i>	Locally common resident and nomad			
Bishops					
Yellow bishop <i>(Euplectes capensis)</i>	Fynbos and Alpine Grassland: scrubby fringes of Afromontane forest. Rank grass or marshy places on steep slopes or in valley bottoms in mountainous or hilly country, usually with scattered trees and bushes, often at edge of woodland or patch of forest; also edges of sugarcane and cotton. Damp grassy areas and heathlands.	Locally common resident; nomadic in winter.			
Yellow-crowned bishop <i>(Euplectes afer)</i>	Grassland birds: When breeding, closely associated with marshes or seasonally flooded areas .	Locally common resident and nomad			

Southern red bishop (<i>Euplectes orix</i>)	Primarily grassland birds: Nests in reedbeds. Rarely found far from water ; strikingly absent from areas without permanent surface water. Found in areas cleared for cultivation. Typically where there is access to perennial water.	Very common resident and nomad. Artificial wetlands increased numbers. Common to abundant.			
Finches					
Scaly-feathered Finch (<i>Sporopipes squamifrons</i>)	Low open thornbush particularly Acacia interspersed with grassy patches. Low thickets.	Common resident and nomad			
African Quail-finch (<i>Ortygospiza fuscocrissa</i>)	Open areas of short grassland, floodplains, vleis and surrounding sedges. Grassland close to water.	Common resident and nomad			
Cut-throat Finch (<i>Amadina fasciata</i>)	Drier broadleaved woodland and Savannah.	Uncommon resident and nomad			
Red-headed Finch (<i>Amadina erythrocephala</i>)	Dry open grassland with scattered trees and bushes . Densely wooded thornbush to open grassland.	Common resident and nomad			
Pytilia					
Green-winged Pytilia (<i>Pytilia melba</i>)	Acacia Savannah ; open grassland close to cover; mixed thorn and broadleaved Savannah with thickets. Broadleaved woodland with grassy patches and thickets or thorny shrubs.	Fairly common resident			
Mannikin					
Bronze Mannikin (<i>Lonchura cucullata</i>)	Edge habitats; dependent on water. Moist wooded areas.	Very common resident			
Firefinches & bluebills					
Red-billed Firefinch (<i>Lagonosticta senegala</i>)	Woodland, Savannah, riverine and thicket vegetation – near water.	Common resident and nomad			
African Firefinch (<i>Lagonosticta rubricata</i>)	Moist, wooded habitats. Forest margins and bracken-briar. Riverine forest, bush and thickets.	Common resident			
Jameson's Firefinch (<i>Lagonosticta rhodopareia</i>)	Broadleaved woodlands – open grassy areas with thickets; watercourses. Rank grass, edges of thickets, secondary growth, cultivated lands, edges of riverine forest, bushy gullies and rocky hillsides.	Common resident.			
Waxbills					
Common Waxbill (<i>Estrilda astrild</i>)	Rank grasslands, reedbeds, croplands, coastal estuaries, inland wetlands and dams, along ephemeral and permanent rivers.	Common resident			
Blue Waxbill (<i>Uraeginthus angolensis</i>)	Arid thorn Savannahs. Reliable on availability of surface water.	Common resident. No changes from past distribution; common			5
Violet-eared Waxbill (<i>Granatina granatina</i>)	Shrubland. Acacia, Grewia thickets. Acacia woodland. Open broadleaved woodland with thickets.	Locally common resident			

Swee Waxbill (<i>Estrilda melanotis</i>)	Edges of evergreen forests , exotic plantations, gardens, bushy hillsides, farmyards, thick streamside bush.	Common resident; some seasonal altitudinal movement.			
Black-faced Waxbill (<i>Estrilda erythronotos</i>)	Thornbelt. Dependent on surface water. Dry Acacia thornveld.	Locally common resident			
Orange-breasted Waxbill (<i>Amandava subflava</i>)	Moist grasslands, grassy Savannahs, and marshes of the Afrotropical region. Fallow lands. Mixed, Sweet and Sour grasslands.	Locally common resident and nomad			
Indigobirds					
Village Indigobird (<i>Vidua chalybeata</i>)	Thorn Savannah, edges of broadleaved woodland, riverine scrub and woodland.	Common nomad			
Dusky Indigobird (<i>Vidua funerea</i>)	Edge habitats. Savannah & open woodland. Edges of montane and riverine forests. Moist areas with forest.	Locally common nomad			
Whydahs					
Pin-tailed Whydah (<i>Vidua macroura</i>)	Wide range of open mesic habitats. Edge habitats with man. Wetlands.	Very common resident and nomad			
Long-tailed Paradise-Whydah (<i>Vidua paradisaea</i>)	Semi-arid woodlands and Savannahs – thorn Savannah. Open Acacia Savannah with large grassy areas. Prominent trees.	Very common resident and nomad			
Canaries					
Cape Canary (<i>Serinus canicollis</i>)	Broad spectrum of vegetation types: Grassland, fynbos, Karoo, woodland. Frequents “waste” and “disturbed” ground. Fallow fields. Require trees or shrubs for breeding.	Very common resident and nomad			
Black-throated Canary (<i>Crithagra atrogularis</i>)	Dry country: grassland, Savannah, lightly wooded areas , Acacia thornveld, edges of miombo woodland. Riparian thickets and alien plantations.	Locally common resident			
Yellow-fronted Canary (<i>Crithagra mozambicus</i>)	Wide variety of woodland habitats: lightly wooded thornveld , moist broadleaved woodlands, along river courses. Avoid <i>Acacia</i> woodlands. Alien plantations.	Common resident			2
Brimstone Canary (<i>Crithagra sulphuratus</i>)	Bushy streamside vegetation , coastal bush, thickets, wooded kloofs, forest clearings, montane scrub, gardens, cultivated lands with rank secondary growth.	Uncommon to fairly common resident, nomadic in winter.			

Streaky-headed Seedeater <i>(Crithagra gularis)</i>	Vegetation associated with mountains and hilly topography: Fynbos, wooded valleys. Well-wooded areas; drier deciduous woodland and miombo. Avoids open grassland, arid <i>Acacia</i> woodland. Edges of evergreen forests and scrub on mountain slopes.	Fairly common resident and nomad			
Buntings					
Cinnamon-breasted Bunting <i>(Emberiza tahapisi)</i>	Rocky ridges and hillsides, eroding stony slopes and gullies, bare stony areas. Mountain sides, granite and dolerite outcrops with scattered bushes or trees, almost bare rocky and stony patches in woodlands on hills and plains, eroding stony slopes and gullies, dry watercourses.	Locally common resident			
Cape Bunting <i>(Emberiza capensis)</i>	Dwarf shrublands on plains and on rocky ridges. Hilly and mountainous areas.	Common to fairly common resident.			
Golden-breasted Bunting <i>(Emberiza flaviventris)</i>	Open broadleaved and mixed woodlands and Savannah.	Common resident			1

Appendix 9. MAMMALS: Available habitat, expected occurrence and observed presence of mammal species during surveys (Friedman & Daly 2004).

Mammals expected to occur in the available natural habitats of Portion 7 and 8 of the Farm: Boerboonkraal 353 KT: Burgersfort Area, are listed below. The words in **bold font** represent qualifying habitat (preferred habitat), and *underlined italics* disqualifying habitat (the reason why the organism will not occur in the area). The shaded cells indicate land types that incorporate preferred habitat, and the number inside a cell gives the number of individuals or definite signs detected during surveys.

MAMMAL	HABITAT	Status (SA) 2002	Observed by local inhabitants	Waternal River Riparian	Fallow land	Game Camp
Family: Soricidae						
Dark-footed forest shrew (<i>Myosorex cafer</i>)	Montane grasslands; wet sponges in mistbelt. Dense scrub and grass in damp areas fringing mountain streams. Moist densely vegetated habitat, mountainous country. Nest on bank of stream in heavy overhead cover of grass and undergrowth. Runways of vlei rats.	Data deficient				
Forest shrew (<i>Myosorex varius</i>)	Highveld: In moist, densely vegetated habitat; burrows under rocks and uses rodent/molerat burrows. Dense grass along the banks of streams.	Data deficient				
Greater dwarf shrew (<i>Suncus lixus</i>)	Very little known of this species	Data deficient				
Least dwarf shrew (<i>Suncus infinitesimus</i>)	Commonly associated with termitaria. Terrestrial.	Intermediate				
Lesser dwarf shrew (<i>Suncus varilla</i>)	Reliant on termite mounds.	Data deficient				
Swamp musk shrew (<i>Crocidura mariquensis</i>)	Moist habitats, thick grass along riverbanks, in reedbeds and in swamp. Tangled masses of semi-aquatic grasses along fringes of water. Litter piles deposited by receding floods. Runways of vlei rats. Nests deep in clumps of tussock grasses on slightly raised patches of ground on fringes of swamp.	Data deficient				
Tiny musk shrew (<i>Crocidura fuscomurina</i>)	All latitudes, wide tolerance. Terrestrial. Cover such as debris, fallen trees, wood piles or dense grass clumps.	Data deficient				
Reddish-grey musk shrew (<i>Crocidura cyanea</i>)	Dry terrain: Among rocks, in dense scrub and grass. Grassland and thick shrub bordering streams. Wet vleis with good grass cover.	Data deficient				

Greater red musk shrew (<i>Crocidura flavescens</i>)	Broken country with a dense cover of vegetation, areas of decaying leaf litter in damp places, thick undergrowth in vleis or along the banks of streams.	Least concern. Population trend: Unknown				
Lesser grey-brown musk shrew (<i>Crocidura silacea</i>)	Catholic in habitat requirements; damp places.	Data deficient				
Lesser red musk shrew (<i>Crocidura hirta</i>)	In damp situations along rivers and streams. Low bushes, dense undergrowth, piles of debris and fallen logs.	Data deficient				
Family: Erinaceidae						
South African hedgehog (<i>Atelerix frontalis</i>)	Temperate: Vegetable debris in shady places; dry cover. Dry habitats with ground cover for nesting.	TOPS NEMBA: Protected species. IUCN 2012: Least concern. Population trend: Stable.	Observed			
Family: Chrysochloridae						
Hottentot golden mole (<i>Amblysomus hottentotus</i>)	Grassland, soft ground. Sandy soils or sandy loam, live in burrows.	Endemic. Least concern.				
Family: Pteropodidae						
Wahlberg's epauletted fruit bat (<i>Epomophorus wahlbergi</i>)	Tropical forests and evergreen riverine forests; forests and forest edges in dryer savanna areas, thickets where there are fruit-bearing trees. Penetrate up river valleys carrying evergreen forests. Hang during day in dense canopy of large evergreen trees. Travel several kilometres each night to reach fruiting trees.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.		1		
Peters's epauletted fruit bat (<i>Epomophorus crypturus</i>)	Evergreen forests in higher rainfall areas; evergreen riverine forests and forest edges in dryer savanna areas or in moist woodland where there are fruit-bearing trees. Travel several kilometres each night to reach fruiting trees. Not found in dryer adjacent areas. Hang during day in dense canopy of large evergreen trees. Prefer drier conditions than <i>E. wahlbergi</i> .	IUCN (2010): Least concern. SA Red Data (2004): Data deficient				
Egyptian rousette (<i>Rousettus aegyptiacus</i>)	Almost all habitats. Totally dependent on the presence of caves. Roosts gregariously in caves. Distribution is influenced more by the availability of suitable roosting sites than vegetation associations. Rely on fruiting trees. Nomadic.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Family: Molossidae						
Little free-tailed bat (<i>Chaerephon pumilus</i>)	Wide range of habitats. Lowveld and coastal areas, rarely above 1000m. Savanna, mountainous and arid areas. Rocky environment with an abundance of crevices. Narrow cracks in rocks and trees. Roosts: Crevices in trees, rocks or roofs. Gregarious.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				

Midas free-tailed bat (<i>Mops midas</i>)	Hot, low-lying river valleys and permanent water bodies. Woodland. Narrow cracks in rock, especially on cliff faces; Cracks in tree trunks and hollow trees.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Egyptian free-tailed bat (<i>Tadarida aegyptiaca</i>)	Open grassland: Rock crevices, exfoliating rocks, caves, hollow trees, behind loose bark of trees. Areas with permanent water bodies.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Family: Vespertilionidae						
Natal long-fingered bat (<i>Miniopterus natalensis</i>)	Temperate of sub-tropical. Savannas and grassland. Cave dependent. Migrate between caves.	IUCN (2010): Near-threatened. SA Red Data (2004): Near-threatened.				
Lesser long-fingered bat (<i>Miniopterus fraterculus</i>)	Temperate species. Montane grassland of escarpment. Cave dweller: Caves and subterranean habitats. Wide range of vegetational association.	IUCN (2010): Least concern. SA Red Data (2004): Near-threatened.				
Welwitsch's myotis (<i>Myotis welwitschii</i>)	Savanna woodland; Mountains covered with woodland or woodland forest , sparsely distributed. Furred banana leaves hanging in bushes.	IUCN (2010): Least concern. SA Red Data (2004): Near-threatened.				
Temminck's myotis (<i>Myotis tricolor</i>)	Savannah woodland, mountainous areas: Gregariously cave dweller- availability govern distribution.	IUCN (2010): Least concern. SA Red Data (2004): Near-threatened.				
Kuhl's bat (<i>Pipistrellus kuhlii</i>) = Dusky pipistrelle (<i>Pipistrellus hesperidus</i>)	Diverse habitats: well-watered terrain. Streams and rivers. Vertical narrow cracks in rocks.					
Rusty pipistrelle (<i>Pipistrellus rusticus</i>)	Savanna woodland: riverine associations and open water bodies ; mopane woodland with rocky habitat. Crevices and hollows in trees.	IUCN (2010): Least concern. SA Red Data (2004): Near-threatened.				

Yellow-bellied house bat (<i>Scotophilus dinganii</i>)	Savanna woodland & mixed bushland; coastal forests; lower altitudes: Narrow crevices, holes and in hollow trees. Tied to presence of trees. Avoid open habitat - grassland and karoo scrub.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Green house bat (<i>Scotophilus viridis</i>)	Low-lying, hot savannas and woodland; bushveld habitats; both dry and moist wooded savanna habitats. Avoid open habitats (grassland). Riverine conditions - tall riparian woodland. Various shelters - holes in trees, small colonies in hollow trees, roofs of houses.	IUCN (2014): Least concern. SA Red Data (2004): Not evaluated. IUCN (2010): Least concern. SA Red Data (2004): Least concern. There appear to be no major threats to this species.				
Cape serotine (<i>Neoromicia capensis</i>)	Very broad habitat tolerance, from forest to desert. Low-lying hot savannas; from arid semi-desert to montane grasslands, forests: Under bark of trees, base of aloe leaves. Crevices in rocks. Suburban situations.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Banana bat (<i>Neoromicia nana</i>)	Forest and woodland savanna; well-wooded habitats - riparian vegetation ; forest patches in proximity of water: Near bananas or Strelitzia trees, rolled-up terminal leaves of banana plants; Also other leaves.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Family: Nycteridae						
Egyptian slit-faced bat (<i>Nycteris thebaica</i>)	Open savannah woodland; karoo; avoids open grassland: caves, hollow large trees or holes in the ground. Caves (not deep) and subterranean habitats (aardvark burrows); temperate savanna and shrubland. Man-made structures. Need tree cover.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Family: Rhinolophidae						
Hildebrandt's horseshoe bat (<i>Rhinolophus hildebrandti</i>)	Savanna woodland; roost in caves, mines, disused buildings, cavities in rocks or large hollow trees	IUCN (2010): Least concern. SA Red Data (2004): Near-threatened.				

Darling's horseshoe bat (<i>Rhinolophus darlingi</i>)	Woodland savanna: Caves, and amongst piles of loose boulders. It roosts in caves and subterranean habitats (mine adits) in medium-sized colonies.	IUCN (2010): Least concern. SA Red Data (2004): Near-threatened. Population trend: Unknown				
Geoffroy's horseshoe bat (<i>Rhinolophus clivosus</i>)	Savannah woodland: Forest fringes. Caves, rock crevices. Riparian forests and savanna woodlands. Temperate species. Riverine conditions and with well-watered terrain. Cave dweller. It roosts in caves and subterranean habitats (mine adits) in large colonies.	IUCN (2010): Least concern. SA Red Data (2004): Near-threatened. Population trend: Unknown				
Bushveld horseshoe bat (<i>Rhinolophus simulator</i>)	Savanna woodland; riparian forest and along wooded drainage lines. Dependent on substantial shelter in form of caves, small caverns in rocky outcrops , road culverts and mine adits. Roost in large groups.	IUCN (2010): Least concern. SA Red Data (2004): Least concern.				
Family: Hipposideridae						
Sundevall's leaf-nosed bat (<i>Hipposideros caffer</i>)	Savanna woodland: Wide range of caves, sink holes and subterranean habitats (cavities); anthropogenic roosts: mines and culverts. Colonies - dozen to hundreds. Riparian locations. Forage in and around thickets and well-developed undergrowth vegetation , avoiding open areas. Fly slowly through cluttered environment.	IUCN (2010): Least concern. SA Red Data (2004): Data deficient.				
Percival's short-eared trident bat (<i>Cloeotis percivali</i>)	Savanna woodland. Rest in caves. Sufficient cover in the form of caves and mine tunnels for day roosting. Roost in narrow crevices. A clutter forages (in vegetation).	IUCN (2010): Vulnerable. SA Red Data (2004): Critical. Very sensitive to disturbance				
Family: Lorisidae						
Southern lesser bushbaby (<i>Galago moholi</i>)	Woodland: Nocturnal; arboreal – holes in trees, thick foliage, disused bird nests. Degraded open forest	Least concern	Observed			
Thick-tailed bush baby (<i>Otolemur crassicaudatus</i>)	Forests, thickets and well developed woodland. Penetrate into dry terrain in riverine forests and woodland. During the day - in the thick foliage of trees.		Observed			

Family: Cercopithecidae						
Chacma baboon (<i>Papio ursinus</i>)	Widespread, diurnal: At night - Cliffs & high trees	Least concern	Observed			3
Vervet monkey (<i>Cercopithecus aethiops</i>)	Woodland, diurnal: At night – Heavy foliage in high trees, rocky cliffs	Least concern	Observed	6		
Family: Protelidae						
Aardwolf (<i>Proteles cristatus</i>)	Savannah woodland and in scrub, grassland. Open country, nocturnal, and solitary. Rests in hole in ground. Independent on water. Dependant on availability of termites.	Least concern				
Family: Hyaenidae						
Brown hyaena (<i>Hyaena brunnea</i>)	Semi-desert, open scrub and open woodland savanna. Nocturnal, holes in ground.	TOPS NEMBA: Protected species; IUCN 2012: Near threatened. Population trend: Decreasing.	Observed			
Family: Felidae						
Leopard (<i>Panthera pardus</i>)	Widespread. Broken country or forests. Nocturnal & solitary.	IUCN (2012): NT Near-threatened. TOPS NEMBA: Vulnerable species. Population trend: Decreasing.	Observed			
Caracal (<i>Felis caracal</i>)	Widespread – open scrub & woodland, open vleis and open grassland. Nocturnal & solitary. Litters born in holes in ground.	Least concern	Observed			
African wild cat (<i>Felis lybica</i>)	Widespread – Wide habitat tolerance. Rocky hillsides, underbush, reedbeds, stands of tall grass. Litters born dense underbrush or other substantial cover.	Least concern				
Serval (<i>Felis serval</i>)	Proximity to water essential requirement, coupled with availability of adequate cover; tall grass , underbrush or reed beds - during day. Wet grassland, vleis and reed beds.	TOPS NEMBA: Protected species. IUCN Least concern. Population trend: Stable.	Observed			
Family: Canidae						
Black-backed jackal (<i>Canis mesomelas</i>)	Widespread. Wide habitat tolerance. Open terrain. Litters born in holes in ground.	Least concern	Observed			
Family: Mustelidae						

Cape clawless otter (<i>Aonyx capensis</i>)	Predominantly aquatic; freshwater an essential requirement: Rivers , lakes, swamps and dams. Widespread. Tributaries of rivers into small streams - habitat with food. Litters born in holes in banks of rivers. Estuarine and sea water.	TOPS NEMBA: Protected species. IUCN (2012) Least concern. Population trend: Stable.				
Spotted-necked otter (<i>Lutra maculicollis</i>)	Aquatic, confined to larger rivers , lakes, swamps and dams with extensive areas of open water. Stay close to water edge. Lie up in holes of river banks, in rock crevices or in dense reed.	TOPS NEMBA: Protected species. IUCN Least concern. Population trend: Decreasing.				
African striped weasel (<i>Poecilogale albinucha</i>)	Savannah: Moist grassland. Litters born in burrows.	Least concern				
Striped polecat (<i>Ictonyx striatus</i>)	Widespread. Wide habitat tolerance. Scrub cover, open grassland, and savannah woodland. Holes in the ground.	Least concern				
Honey badger (<i>Mellivora capensis</i>)	Widespread. Not in desert. Use crevices in rocky areas, will also dig refuges. Rocky koppies, scrub sandveld, open grassland, open woodland, riverine woodland and floodplain grassland.	TOPS NEMBA: Protected species. IUCN Least concern. Population trend: Decreasing.				
Family: Viverridae						
Small-spotted genet / Common genet (<i>Genetta genetta</i>)	Widespread. Open arid: Woodland , open scrub and dry grassland or dry vlei areas. Trees. Nocturnal – nests in holes in the ground or in hollow trees.	Least concern				
Large-spotted genet (<i>Genetta tigrina</i>)	Better watered parts: Woodland , open scrub and dry grassland or dry vlei areas. Trees. Nocturnal – nests in holes in the ground or in hollow trees.	Least concern	Observed			
African civet (<i>Civettictis civetta</i>)	Widely distributed – forest and woodland where water is available. Nocturnal & solitary. Litters born in holes or dense underbrush.	Least concern	Observed			
Slender mongoose (<i>Galerella sanguinea</i>)	Widespread. Open areas. Underbrush or holes in the ground, holes in termitaria.	Least concern				1
Meller's mongoose (<i>Rhynchogale melleri</i>)	<i>Montane and tall grassland areas</i>	Least concern				
Water mongoose (<i>Atilax paludinosus</i>)	Well-watered terrain: Rivers, streams, marshes , swamps, wet vleis, dams and tidal estuaries - adequate cover of reed beds or dense stands of semi-aquatic grasses. Coastally in mangrove swamps in brackish water.	Least concern				
Banded mongoose (<i>Mungos mungo</i>)	Wide habitat tolerance. Essential habitat requirement: woodland, underbush, substrate detritus such as fallen logs and other vegetable debris. Acacia woodland.	Least concern				

Dwarf mongoose (<i>Helogale parvula</i>)	Widespread. Dry open woodland and on grassland where there is substrate litter and termitaria. Lives in permanent holes – termitaria, burrows deeply.	Least concern				
Family: Rhinocerotidae						
Black rhino (<i>Diceos bicornis minor</i>)	Adequate food supply and shade to rest.	IUCN (2012): Critically endangered. TOPS NEMA: Endangered species				
White rhino (<i>Ceratotherium simum</i>)	Savanna habitats: Well-watered undulating open woodland with abundant grass.	IUCN (2012): NT Near-threatened. TOPS NEMA: Protected species. Population trend: Decreasing				
Family: Equidae						
Burchell's (Plains) zebra (<i>Equus burchellii</i>)	Open plains to heavily wooded savannas	Least concern	Observed			
Family: Orycteropodidae						
Aardvark / Antbear (<i>Orycteropus afer</i>)	Widespread. Wide habitat tolerance. Open woodland, scrub and grassland. Nocturnal. Lives in extensive burrows.	Least concern				
Family: Procaviidae						
Rock dassie (<i>Procavia capensis</i>)	Widespread where there is rocky habitat. Outcrops of rock – rocky crevices. Krantzes, rocky koppies, hillsides, piles of loose boulders – accompanied with bushes and trees to provide browse. Crannies and crevices provide shelter. Granite formations with piles of huge boulders, from which overlying soil has been washed away. Sandstone krantzes with loose, rocky, overhanging slabs. Erosion gulleys.	Least concern	Observed			
Family: Suidae						
Bushpig (<i>Potamochoerus porcus</i>)	Forests, thickets, riparian underbrush, reed beds or stands of tall grass where there is water. Nests of grass in secluded places.	Least concern	Observed			
Warthog (<i>Phacochoerus aethiopicus</i>)	Open areas of grassland, floodplain, vleis and around waterholes and pans. Deserted antbear holes. Linear forest.	Least concern	Observed			1
Family: Bovidae						
Blue wildebeest (<i>Connochaetes taurinus</i>)	Open short grass plains or lightly wooded open savanna habitats.	Least concern	Observed			4

Black wildebeest (<i>Connochaetes gnou</i>)	<i>Open plains: grassveld and highveld.</i>	TOPS NEMA: Protected species. IUCN: Least concern; Population trend: Increasing.				
Red hartebeest (<i>Alcelaphus caama</i>)	Open grassland and arid scrub. Avoids woodland.	Least concern				
Cape common duiker (<i>Sylvicapra grimmia grimmia</i>)	Widespread. Presence of bush. Woodland with ample underbush, grassland of medium and tall grass. Rest in bushes or tall grass.	Least concern	Observed			1
Oribi (<i>Ourebia ourebi</i>)	<i>Open habitat. Open grassland, flood plain; sparse scattering of trees and bushes.</i>	TOPS NEMA: Endangered species. IUCN Least concern. Population trend: Decreasing.				
Klipspringer (<i>Oreotragus oreotragus</i>)	Restricted to rocky areas. Mountainous areas with krantzes, rocky hills or outcrops, extensive areas of rocky koppies, gorges with rocky sides. Rocky shelter and steep rock faces. Boulder-strewn river beds.	Least concern				
Steenbok (<i>Raphicerus campestris</i>)	Widespread. Open country: Open grassland with stands of tall grass, scattered bushes or scrub and forbs. Avoid densely wooded areas.	Least concern				
Sharpe's grysbok (<i>Raphicerus shapei</i>)	Open forest. Thick woodland, riverine forest, thick bush and broken country with bush cover.	TOPS NEMA: Protected species; IUCN Least Concern				
Impala (<i>Aepyceros melampus</i>)	Woodland savanna: Widespread in light open woodland – surface water.	Least concern	Observed			3
Sable (<i>Hippotragus niger</i>)	Open woodland. Areas with a well developed field layer. Dependent on the availability of water.					
Cape buffalo (<i>Syncerus caffer</i>)	All habitats with a plentiful supply of grass, shade and water.	Least concern				
Kudu (<i>Tragelaphus strepsiceros</i>)	Widespread in savanna woodland. Areas of broken, rocky terrain with woodland cover & open water.	Least concern	Observed			2
Nyala (<i>Tragelaphus angasii</i>)	Dry savanna woodland with mosaic of open ground, thickets and woodland.	Least concern				
Bushbuck (<i>Tragelaphus scriptus</i>)	Riverine and thickets near water.	Least concern	Observed			2
Eland (<i>Taurotragus oryx</i>)	Arid semi-desert areas as well as better-water environments, montane situations and in various types of woodland. Avoid forests and open grasslands	Least concern				
Grey rhebok (<i>Pelea capreolus</i>)	Rocky hills, rocky mountain slopes and mountain plateau with good	Least concern				

	grass cover.					
Reedbuck (<i>Redunca arundinum</i>)	Open water with cover; stands of tall grass or reed beds	TOPS NEMBA: Protected species				
Mountain reedbuck (<i>Redunca fulvorufula</i>)	Dry, grass-covered, stony slopes of hills and mountains ; some form of trees and bushes	Least concern	Observed			
Waterbuck (<i>Kobus ellipsiprymnus</i>)	Savanna habitats with medium and tall grass in the close proximity of water.	Least concern				
Order: Manidae						
Family: Pholidota						
Pangolin (<i>Manis temminckii</i>)	Wide habitat tolerance, absent from forests. Day – piles of leaves or other vegetable debris, holes in the ground	TOPS NEMBA: Vulnerable species. IUCN Least concern. Population trend: Decreasing.				
Family: Hystricidae						
Cape Porcupine (<i>Hystrix africaeaustralis</i>)	Widespread: All types of country apart from swampy areas, very moist forests and barren desert areas. Nocturnal. Shelter - resting in caves, rock cavities, holes in ground. Absent from forest. Use abandoned antbear and other types of holes in the ground or lie up under the roots of trees exposed by erosion.	Least concern	Observed			3
Family: Sciuridae						
Tree squirrel (<i>Paraxerus cepapi</i>)	Widespread in woodland: Savanna woodland including a wide variety of woodland types. Trees with suitable nest holes are favoured. Diurnal – resting in holes in trees.	Least concern	Observed			1
Family: Thryonomyidae						
Greater Canerat (<i>Thryonomys swinderianus</i>)	Forest belts and open woodland wherever there is tall and matted grass or reeds growing in damp or wet places . Reedbeds or areas of dense tall grass with thick reed or cane-like stems. In vicinity of rivers, lakes and swamps - never found far from water. Resting place densest part of reed bed. Cover - matted tussock grasses, holes in stream banks, under root systems of trees adjacent to grass and reeds. Use existing holes or simply use matted vegetation.	Least concern				

Family: Bathyergidae						
Common Molerat (<i>Cryptomys hottentotus</i>)	Loose sandy soils to stony soils and hills to montane and escarpment conditions. Tendency to loose sandy soil - especially alluvial soils along major rivers and streams. Karroid veldtypes, coastal rhenosterbushveld, coastal forests, thornveld, mopaneveld, savanna and pure grassveld, as well as temperate and transitional forests, scrub and bushveld. Savanna, cultivated fields (DRC).	Least concern	Observed			
Family: Crictidae						
Bushveld gerbil (<i>Gerbilliscus leucogaster</i>)	Widespread – Survives regardless of vegetation type or degree of cover present, having been recorded in open grasslands, Acacia woodland or scrub, and mopane woodland. Commonly encountered on old cultivated lands. Occur on hard ground, but prefer light sandy soils or sandy alluvium. Nocturnal and terrestrial. Does not usually excavate its own burrows but uses holes in termitaria or under tree roots, however, can excavate burrows in sandy soils. These burrows are usually found at the base of small shrubs, but also in the open, and they have resting chambers floored with vegetable debris. A fresh ramp of sand is left at the entrances to the burrows in the morning, following night-time activity. Independant of water, but does not tolerate waterless conditions.	Data deficient				
Brants' (Highveld) Gerbil (<i>Gerbilliscus brantsii brantsii</i>)	Widespread – light sandy soils or sandy alluvium substrate with some scrub or grass cover. Peaty soils around marshes and pans. Prefer sandy soils, irrespective of the type of vegetation cover. Nocturnal – lives in burrows under low bushes	Least concern				
Vlei Rat (<i>Otomys irroratus</i>)	Grass-covered ground in proximity to streams and marshes. Associated with wet habitat. Lush grasses, sedges, herbaceous vegetation associated with damp soil in vleis; similar habitat along streams and rivers or on fringes of swamps. Nests: seldom burrow; nest of rising dry ground or in clump of grass	Least concern				
Angoni Vlei Rat (<i>Otomys angoniensis</i>)	Savanna woodlands and grasslands – in drier areas in wet vleis, swamps and swampy areas along rivers. Fringes of rivers with reed beds, sedges and semi-aquatic grasses. Nests in tussock grass near permanent water; above water level on raised ground.	Least concern				
Laminate Vlei Rat (<i>Otomys laminatus</i>)	Tied to moist habitats - grasslands in submontane and coastal areas.	Least concern. Endemic				

Family: Muridae						
Spiny mouse (<i>Acomys spinosissimus</i>)	Widespread – associated with rocky areas/terrain: Nocturnal and terrestrial (single or groups) – rests in rock crevices, under tree roots. More common habitat: among boulders in rocky habitat. Sheltered overhanging rocks, under exfoliated slabs and in other sheltered crannies. Also sandy alluvium along rivers, dry woodland and in thickets; use cover of roots of trees exposed by erosion; or holes in termite mounds. Nests made of grass and other debris in crannies or under foliated slabs of rock.	Least concern				
Striped mouse (<i>Rhabdomys pumilio</i>)	Widespread – grass cover: Diurnal – burrows under grass. Wide variety of habitat types (broad niche species). Prefers grassland, habitat includes bushy and semi-dry vlei country as well as dry riverbeds, high grassveld areas, the edges of forests and the bases of hills.	Least concern				
Water Rat (<i>Dasymys incomtus</i>)	Wet habitat: Streams, rivers, reed beds, swamps and is partially aquatic. Long grass close to water, semi-aquatic grasses, in swampy areas along rivers and streams, or in in grassy or bracken covered areas close to water. Between reeds and among rotting vegetation. Fringes of marshes and backwaters. Nest: Constructed in a depression on the sloping ground bordering the swampy edge of the river.	SA Red Data 2004 (IUCN 2012): Least concern. Population trend: Unknown.				
Pouched mouse (<i>Saccostomus campestris</i>)	Widespread and catholic, wide habitat tolerance: In burrows, sandy soil or sandy alluvium, open short grass fringes of pans, rocky koppies, fringes of lowland forests. Exclusively terrestrial, predominantly solitary and nocturnal.	Least concern				
Grey climbing mouse (<i>Dendromus melanotis</i>)	<i>Grassland with high grass.</i>					
Chestnut climbing mouse (<i>Dendromus mystacalis</i>)	<i>Grassland with high grass.</i>					
Brant's climbing mouse (<i>Dendromus mesomelas</i>)	Tall grass or rank vegetation near water.	Least concern				
Fat mouse (<i>Steatomys pratensis</i>)	Grassland and savannas over sandy soils or sandy alluvium. On sandy ground in scrub or in sandy alluvium on the fringes of swamps, streams and rivers. Open woodland and abandoned cultivated lands.	Least concern				

White-tailed mouse (<i>Mystromys albicaudatus</i>)	<i>Highveld and montane grassland. Nocturnal – lives in burrows or cracks in the ground. Sandy soil with good cover.</i>	IUCN (2012): Endangered. SA Red Data (2004): NT Near- threatened. Population trend: Decreasing.				
Tete Veld Rat (<i>Aethomys ineptus</i>)	Widespread – Grassland with open shrub association, open woodland , fringes of pans. Temperate grassland and savanna: Rocky crevices and piles of boulders. Sandy ground or sandy alluvium, or hard ground – holes or rock crevices and piles of boulders. Associated with cover: rocky crevices, piles of debris, clumps of grass or fallen trees. Dry Acacia scrub, as well as in the fringe vegetation of evergreen forests. Sheltering in burrows under bush on the plains. Lives in burrows with interconnecting runways; may frequent old termite mounds. High reproductive potential under favourable conditions. Not gregarious; shelters are used at most by a pair or a family party.	Least concern				
Red Veld Rat (<i>Aethomys chrysophilus</i>)	Widespread – Grassland with open shrub association, open woodland, fringes of pans. Sandy ground or sandy alluvium, or hard ground – holes or rock crevices. Associated with cover: rocky crevices , piles of debris, clumps of grass or fallen trees. Dry Acacia scrub, as well as in the fringe vegetation of evergreen forests. Sheltering in burrows under bush on the plains. Lives in burrows with interconnecting runways; may frequent old termite mounds. Dry forest, linear forest (DRC). High reproductive potential under favourable conditions. Not gregarious; shelters are used at most by a pair or a family party.	Least concern				
Bushveld Namaqua rockmouse (<i>Micaelamys namaquensis</i> subsp. <i>alborarius</i>)	Widespread – where there are rocky koppies , outcrops or boulder-strewn hillsides - preferred areas. Cracks and rock crevices of rocky koppies or outcrops (prefers crevices and does not burrow), or on piles of stones in the veld, low lying ridges and stony country and is often plentiful in old ruins. In the absence of outcrops, may nest in holes or forks in trees or under bushes. Piles plant debris over the entrances to its shelters. Calcareous outcrops. Nocturnal, terrestrial and communal.	Least concern				
Tree Rat/mouse (<i>Thallomys paedulus</i>)	Acacia woodland: Living in crevices in the trunks, under loose strips of bark or in holes in the ground between the roots of the tree (Especially Acacia). Nocturnal.	Least concern				

Single-striped Mouse (<i>Lemniscomys rosalia</i>)	Savanna woodland to dry open scrub. Common factor: Grassland - excavates burrows under the cover of matted grass.	Data deficient				
Multimammate mouse (<i>Mastomys coucha</i>)	Wide habitat tolerance (pioneer species - drought, burn, ploughing), fond of grassland where there is some cover of low scrub. In dry watercourses or fringes of swamps. In riverine associations running westwards into arid country. Frequents the fringes of pans where there are calcareous outcrops nearby. Partial to sandy ground, overgrown with scrub and grass. Under fallen logs, crevices between rocks, cavities inside pile of stones or debris or even holes in termite mounds. Nocturnal.					
Woodland mouse (<i>Grammomys dolichurus</i>)	Predominantly arboreal: in forests and thickets , usually in damp places; constructs nests of grass or leaves in dense underbrush	Least concern				
Pygmy Mouse (<i>Mus minutoides</i>)	In all types of vegetation. Wide variety of habitats. Nocturnal and terrestrial, not communal. Fairly damp country where there is high grass, bush or other cover. Makes its own burrows in soft ground. Normally finds shelter under piles of debris, fallen tree trunks/logs and similar type of cover, also boulders or holes in termite mounds.	Least concern				
Family: Gliridae						
Rock Dormouse (<i>Graphiurus platyops</i>)	Rocky terrain. A rock-frequenting dormouse. Near or on rocky outcrops. In association with dassies. Also dry scrub thickets or dry riverbeds, frequenting trees when no rocks available. Live in rock crevices, under exfoliation of granite bosses and in piles of boulders.	Data deficient				
Woodland Dormouse (<i>Graphiurus murinus</i>)	Widespread in woodland. Wooded areas. Large trees provide holes for shelter. Live in holes in trees or under loose bark.	Least concern				
Family: Leporidae						
Scrub hare (<i>Lepus saxatilis</i>)	Savannah woodland and in scrub, tall grass. Absent from forest, desert and open grass. Open forest, savanna.	Least concern	Observed			2
Jameson's red rock rabbit (<i>Pronolagus randensis</i>)	Rocky habitat: Rocky terrain; krantzies, rocky kloofs, gorges or boulder-strewn areas – rest deep in rock crevices. Granite and sandstone formations. Shelter - boulders; cover of thick patches of grass in rocky areas.	Least concern				
Hewitt's red rock rabbit (<i>Pronolagus saundersiae</i>)	Top of rocky outcrops	Least concern				
Natal red rock rabbit (<i>Pronolagus crassicaudatus</i>)	Rocky habitat: Rocky terrain or boulder-strewn areas – rest deep in rock crevices	Least concern				
Cape hare (<i>Lepus capensis</i>)	Grassland. Dry open country, open woodlands and especially round cultivated ground.	Least concern				
Family: Macroscelididae						

Short-snouted elephant-shrew (<i>Elephantulus brachyrhynchus</i>)	Favour dry woodland, thicket or the denser vegetation around termite mounds or along water courses or gullies. Sandy ground with scrub or grass cover; fallen logs, piles of debris or holes in ground.	Data deficient				
Rock elephant shrew (<i>Elephantulus myurus</i>)	Rocky areas: Rocky koppies or piles of boulders – sufficient holes crannies and crevices in rocks for shelter. Absent on granite domes. Needs broken and exfoliated granite. Prefer rocky habitat with overhanging ledges or vegetation. Cover from aerial predation. Keep to shady cover of overhanging rocks or bushes/trees.	Least concern				

APPENDIX 10. DEFINITIONS OF IUCN CATEGORIES (taken from IUCN, 2000)

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 naturalised 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 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. 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.

NOT EVALUATED (NE)

A taxon is Not Evaluated when it has not yet been evaluated against the criteria

D.3. Heritage Specialist Report

The contents of this report (spelling and grammar) remain unchanged.

SPECIALIST REPORT

**PHASE 1 ARCHAEOLOGICAL / HERITAGE IMPACT ASSESSMENT FOR PROPOSED
DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE:
PORTIONS 7 AND 8 OF THE FARM BOERBOONKRAAL 353KT
BURGERSFORT
LIMPOPO PROVINCE**

**REPORT COMPILED FOR
RHENGU ENVIRONMENTAL SERVICES**

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NOVEMBER 2014

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EXECUTIVE SUMMARY

A Phase 1 Heritage Impact Assessment (HIA) regarding archaeological and other cultural heritage resources was conducted on the footprint for the proposed alteration of natural as well as historically disturbed land for agricultural use: on portions 7 and 8 of *the farm BOERBOONKRAAL 353KT, Burgersfort*.

The study area is situated on Topographical map, 1:50 000, 2430CD, BUFFELSVLEI, which is in the Limpopo Province. This area falls under the jurisdiction of the Burgersfort District Municipality, and Thaba Chweu Local Municipality.

The National Heritage Resources Act, no 25 (1999) (NHRA), protects all heritage resources, which are classified as national estate. The NHRA stipulates that any person who intends to undertake a development, is subjected to the provisions of the Act.

The applicant, Mr. Cornel van der Merwe / Waterval Citrus, in co-operation with Rhengu Environmental Services, is requesting the alteration of natural as well as historically disturbed land for agricultural purposes (citrus). The application is for 3 sections of natural bush (sections A, B & C), and two disturbed areas (sections D & E) on the farm Boerboonkraal, which is surrounded by existing agricultural lands (wheat and citrus). A total of approximately 90 ha of additional farm land will be developed, to the east and west of the R37. The proposed agricultural development is situated on both sides of the R37 between Mashishing (Lydenburg) and Burgersfort. Sections A, B and C were natural land, and sections D and E were highly disturbed.

The survey revealed the following archaeological material:

Section A (76.96ha): Two grave sites were identified in this section, as well as many recent square clay and stone foundations. Several upper grinders, two lower grinders, red clay potsherds together with glass, porcelain, ceramic and rusted iron were identified throughout this section.

Section B (12.56ha): This section is situated along the Waterfall River. A distinct Late Iron Age (LIA) stone wall, as well as an indistinct circular LIA stone wall and an upper grinder were identified.

Section C (3.82ha), This section was also situated along the Waterfall River but no archaeological material was identified.

Section D (3.12ha): This section is historical agricultural lands. No archaeological, historical structures or material were identified.

Section E (3.18ha): This section is historical agricultural lands and disturbance from previous road infrastructure was also visible. Alien vegetation had infested the northern part of this section. No archaeological, historical structures or material were identified.

It is recommended that the owner be made aware that distinct archaeological material or human remains may only be revealed during the debushing / agricultural operation. Based on the survey and the findings in this report, Adansonia Heritage Consultants state that there are no reasons which may prevent the proposed development to continue in sections C, D and E. Mitigation measures for the two grave yards in section A is recommended before development may continue in this section. Mitigation measures are also recommended for section B, before any development may take place in this section. All earthmoving activities must be monitored by a qualified archaeologist and should any archaeological material be found, an assessment must be done.

Disclaimer: *Although all possible care is taken to identify all sites of cultural significance during the investigation, it is possible that hidden or sub-surface sites could be overlooked during the study. Christine Rowe trading as Adansonia Heritage Consultants will not be held liable for such oversights or for costs incurred by the client as a result.*

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- 1) The results of the project;*
- 2) The technology described in any report;*
- 3) Recommendations delivered to the Client.*

November 2014

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**PHASE 1 ARCHAEOLOGICAL / HERITAGE IMPACT ASSESSMENT FOR PROPOSED
DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE:
PORTIONS 7 AND 8 OF THE FARM BOERBOONKRAAL 353KT, BURGERSFORT,
LIMPOPO PROVINCE**

A. BACKGROUND INFORMATION TO THE PROJECT

The applicant, Mr. Cornell van der Merwe / Bosveld Citrus, in co-operation with Rhengu Environmental Services, is requesting the alteration of natural land for agricultural purposes (citrus) on *portions 7 and 8 of the farm Boerboonkraal 353KT*. The application is for 3 sections of natural bush (sections A, B & C), and two disturbed areas (sections D & E) which is surrounded by existing agricultural lands (wheat and citrus). A total of approximately 90 ha of additional farm land will be developed, east and west of the R37 (see Appendix 1 & Map 5).

Adansonia Heritage Consultants were appointed by *RHENGU ENVIRONMENTAL SERVICES*, to conduct a Phase 1 heritage impact assessment (HIA) on archaeological and other heritage resources on the study area. A literature study, relevant to the study area as well as a foot survey was done, to determine that no archaeological or heritage resources will be impacted upon (see Map 4: 2430CD, Buffelsvlei).

The aims of this report are to source all relevant information on archaeological and heritage resources in the study area, and to advise the client on sensitive heritage areas as well as where it is viable for the development to take place in terms of the specifications as set out in the National Heritage Resources Act no., 25 of 1999 (NHRA). Recommendations for maximum conservation measures for any heritage resources will also be made. The study area is indicated in Maps 1 - 6, and Appendix 1 & 2.

The applicant, Mr. Cornell van der Merwe / Waterval Citrus, in co-operation with Rhengu Environmental Services, is requesting the alteration of natural land for agricultural purposes (citrus). The application is for 3 sections of natural bush (sections A, B & C), and two disturbed areas (sections D & E) on the farm Boerboonkraal. A total of approximately 90 ha of land will be developed, to the east and west of the R37 (see Appendix 1).

- This study forms part of an EIA, Consultant: *RHENGU ENVIRONMENTAL SERVICES.*, P.O. Box 1046, Malelane, 1320, Cell: 0824147088 / Fax: 0866858003 / e-mail: rhengu@mweb.co.za
- Type of development: 90ha, are earmarked for a proposed agricultural development, topographical map, 1:50 000, 2430CD, Buffelsvlei. Sections A, B and C, which are applied for, is currently natural land. Sections D and E are disturbed. All the sections are zoned as agricultural, and no rezoning will take place.
- Location of Province, Magisterial district / Local Authority and Property (farms): This area falls under the jurisdiction of the Burgersfort District Municipality, and Thaba Chweu Local Municipality in the Limpopo Province.
- Land owner: Mr. Cornel van der Merwe, Waterval Citrus.

Terms of reference: As specified by section 38 (3) of the NHRA, the following information is provided in this report.

- a) The identification and mapping of heritage resources where applicable;
- b) Assessment of the significance of the heritage resources;
- c) Alternatives given to affected heritage resources by the development;
- d) Plans for measures of mitigation.

Legal requirements:

The legal context of the report is grounded in the National Heritage Resources Act no. 25, 1999, as well as the National Environmental Management Act (1998) (NEMA):

- In terms of **Government Notice R546**, a basic Environmental Impact Assessment is required for the following listed activities:

Activity 13: The clearance of an area of 300sqm or more of vegetation, where 75% or more of the vegetation cover constitutes indigenous vegetation;

Activity 14: The clearance of an area of 1ha or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.

- **Section 38 of the NHRA**

This report constitutes a heritage impact assessment investigation linked to the environmental impact assessment required for the development. The proposed development is a listed activity in terms of Section 38 (1) of the NHRA. Section 38 (2) of the NHRA requires the submission of a HIA report for authorisation purposes to the responsible heritage resources agency, (SAHRA).

Heritage conservation and management in South Africa is governed by the NHRA and falls under the overall jurisdiction of the South African Heritage Resources Agency (SAHRA) and its provincial offices and counterparts.

Section 38 of the NHRA requires a Heritage Impact Assessment (HIA) to be conducted by an independent heritage management consultant, for the following development categories:

- Any development or other activity which will change the character of a site:
 - exceeding 5000m² in extent;
 - the rezoning of a site exceeding 10 000m² in extent;

In addition, the new EIA regulation promulgated in terms of NEMA, determines that any environmental report will include cultural (heritage) issues.

The end purpose of this report is to alert *RHENGU ENVIRONMENTAL SERVICES*, as well as the client Mr. Cornel van der Merwe / Waterval Citrus, and interested and affected parties about existing heritage resources that may be affected by the proposed development, and to recommend mitigation measures aimed at reducing the risks of any adverse impacts on these heritage resources. Such measures could include the recording of any heritage buildings or structures older than 60 years prior to demolition, in terms of section 34 of the NHRA and also other sections of this act dealing with archaeological sites, buildings and graves.

The NHRA section 2 (xvi) states that a “heritage resource” means any place or object of cultural significance, and in section 2 (vi) that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

Apart from a heritage report assisting a client to make informed development decisions, it also serves to provide the relevant heritage resources authority with the necessary data to perform their statutory duties under the NHRA. After evaluating the heritage scoping report, the heritage resources authority will decide

on the status of the resource, whether the development may proceed as proposed or whether mitigation is acceptable, and whether the heritage resource require formal protection such as a Grade I, II or III, with relevant parties having to comply with all aspects pertaining to such a grading.

- **Section 35 of the NHRA**

Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object. This section may apply to any significant archaeological sites that may be discovered. In the case of such chance finds, the heritage practitioner will assist in investigating the extent and significance of the finds and consult with an archaeologist about further action. This may entail removal of material after documenting the find or mapping of larger sections before destruction. Upper and lower grinders and clay potsherds were found during the survey but they were associated with square clay and stone foundations of recent settlement, and therefore not significant. These objects are still widely used in rural areas today.

- **Section 36 of the NHRA**

Section 36 of the NHRA stipulates that no person may, without a permit issued by SAHRA, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority. It is possible that chance burials might be discovered during development of the road infrastructure or agricultural activities. Two grave sites were identified in section A, which will be impacted upon by the proposed development. Mitigation measures are recommended.

- **Section 34 of the NHRA**

Section 34 of the NHRA stipulates that no person may alter, damage, destroy, and relocate etc, any building or structure older than 60 years, without a permit issued by SAHRA or a provincial heritage resources authority. Square foundations of structures were identified on the entire property. These are badly preserved and disintegrating fast. It is believed that they are of no special significance as the settlement continued to at least 1978. Two Late Iron Age stone walls were identified in section B. Huffman group the LIA stone walls in this area with the Badfontein tradition.¹ Section 34 of the NHRA, do apply and mitigation measures are recommended.

- **Section 37 of the NHRA**

This section deals with public monuments and memorials but does not apply in this report.

- **NEMA**

The regulations in terms of Chapter 5 of the National Environmental Management Act, (107/1998), provides for an assessment of development impacts on the cultural (heritage) and social environment and for specialist studies in this regard.

¹ Huffman, T.N., *Handbook to the Iron Age*, p. 32.

B BACKGROUND TO ARCHAEOLOGY AND HISTORY OF THE STUDY AREA

- Literature review, museum databases & previous relevant impact assessments

The study area, on both sides of the R37, which include *portions 7 and 8 of the farm Boerboonkraal 353KT*, is located approximately 40km north of Lydenburg and 15km south of Burgersfort.

Bushman (or San) presence occurs in the wider area as research by rock art enthusiasts revealed 109 sites in the Kruger National Park,² and over 100 rock art sites at Bongani Mountain Lodge and its immediate surrounds.³ Thirty one rock art sites were recorded on the Mpumalanga Drakensberg Escarpment, which is closer, and more relevant to the study area.⁴ Rock art sites were also recorded in the Ohrigstad area.⁵ Late Iron Age rock engraving sites occur in the Lydenburg area and Boomplaats, 30km south of the study area.

In order to place the areas around Burgersfort and Lydenburg (Mashishing) in an archaeological context, primary and secondary sources were consulted. Ethnographical and linguistic studies by early researchers such as Ziervogel and Van Warmelo shed light on the cultural groups living in the area since ca 1600. Historic and academic sources by Küsel, Meyer, Voight, Bergh, De Jongh, Evers, Myburgh, Thackeray and Van der Ryst were consulted, as well as other historic sources.

Primary sources were consulted from the Pilgrim's Rest Museum Archives for a background on the pre-history and history of the study area. Several circular stone-walled complexes and terraces as well as graves have been recorded in the vicinity of Hazyview⁶, Bushbuckridge, Graskop and Sabie, clay potsherds and upper as well as lower grinders, are scattered at most of the sites.⁷ Many of these occur in caves on the Escarpment, as a result of the Swazi attacks (1900's), on the smaller groups. The 1978 topographical map (2430CD BUFFELSVLEI) indicated remains of houses in the section below the mountain which is section A. Some mud and stone foundations were identified during the survey, but are badly deteriorated. Sections D and E was indicated as previous agricultural fields.

The farm Boerboonkraal is situated at the confluence of the Waterfall and Speckboom rivers. The 1911 topographical map of *Ohrigstad* revealed no historic black settlements in this section (see Map 3).⁸ Section A was located at the foot of a mountain so the area was flat in the western section, rising slightly towards the east (the hills / mountain), and was extremely rocky, in the north, north-eastern parts. Sections B and C was in the floodplain next to the Waterfall River and was flat with no rocky outcrops. Sections D & E was historically disturbed and flat.

The author was also involved in desktop studies and surveys in the area, such as:

- Rowe, C., August 2009, *Phase 1 Archaeological / Heritage Impact assessment: Sections 1a, 1b, 2, 3 & 4 of Leeuwvallei 297KT*, Burgersfort, Limpopo Province;

² English, M. Die Rotskuns van die Boesmans in die NKW, in *De Vos Pienaar, U., Neem uit die Verlede*, p. 18-24.

³ Hampson, et al., The rock art of Bongani Mountain Lodge, SA Archaeological Bulletin 57: p. 15.

⁴ Rowe, C. Heritage Management of Archaeological, Historical and Industrial resources on the Blyde River Canyon Nature Reserve, p. 22.

⁵ Bergh, J., *Geskiedenis Atlas van Suid Afrika*, p. 4.

⁶PRMA: Information file 9/2.

⁷D. Ziervogel, *The Eastern Sotho, A Tribal, Historical and Linguistic Survey*, p. 3.

⁸ Map: 1911 Topographical Map: Ohrigstad no. 14.

- Rowe, C. 2009. *Heritage Management of Archaeological, Historical and Industrial resources on the Blyde River Canyon Nature Reserve*, MA dissertation. Pretoria: UP;
- Rowe, C., September 2014, *Phase 2: Report on the Archaeological investigation of a poorly defined Late Iron Age stone wall located on the remainder of Portion 58 of the farm Leeuwvallei 297KT, to be impacted upon by residential development; Site LB/3;*
- Rowe, C., August 2013, *DOCUMENTATION REPORT: LIA stone walled settlements, RDR 1, 2 & 7 within the proposed development area (Morning Tide Complex), on the remainder of portion 7 of the farm Rooidraai 34JT, Mashishing, Mpumalanga;*
- Rowe, C., September 2013, Phase 1, LIA stone walled settlement (RDR 7) within the Morning Tide Complex on the remainder of portion 7 of the farm Rooidraai 34JT, Mashishing (Lydenburg);
- Rowe C., 2013, *SPECIALIST REPORT & MANAGEMENT PLAN: LIA rock engraving site within the proposed development of the Lydenburg Mall (Morning Tide Complex), on the remainder of portion 7 of the farm Rooidraai 34JT, Mashishing, Lydenburg.*
- Rowe C., April 2014: *Relocation of the Rooidraai Rock engraving RDR 8 on the remainder of portion 7 of the farm Rooidraai 34JT, Mashishing, Mpumalanga Province;*

The SAHRA database for archaeological and historical impact assessments was consulted and revealed other Archaeological Impact assessment reports in the area of Lydenburg / Burgersfort:

- Pistorius, J.C.C., February 2005, *A Phase 1 HIA study for the proposed New Burgersfort ext 30 residential and the Burgersfort ext 31 industrial development projects near Burgersfort.*
- Birkholtz, P. 2006, *Phase 1 HIA for the Morning Tide Development Complex, Morning Tide Power Line and Abrina Residential Development, 2007.*
- Pelsler, A., 2014 *Report on the first phase archaeological investigations on LIA stone walled sites located on portion 7 of the farm Rooidraai 34JT to be impacted by commercial and residential developments: sites RDR 7 & 1C, Lydenburg, Mpumalanga.*

Research was conducted by means of collecting primary or secondary literary sources with relevant information on the prehistory and history of the area. In order to place the study area in archaeological context, secondary sources, such as ethnographical and linguistic studies by early researchers such as Ziervogel and Van Warmelo were consulted. Other useful sources were that of Theal (pre-historic), De Jongh (ethnographic and historic information in the area), Bergh (historic), Delius, *Mpumalanga: History and Heritage*, and *The Military History Journal* on the Sekukuni Wars.

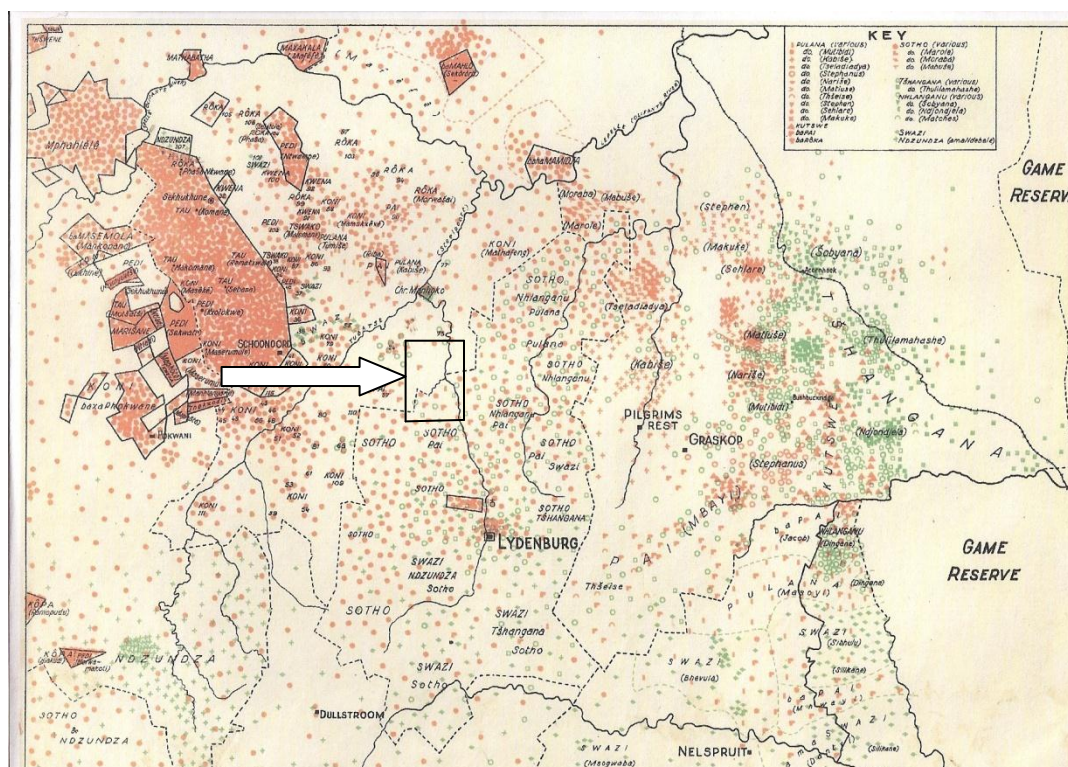
There are no museums in Burgersfort or Steelpoort, and the closest museum with relevant information on the area was the museum in Lydenburg. This museum covers information on the general history and pre-history of the surrounding area, and focuses extensively on the Early Iron Age site of the Lydenburg Heads site.

- Stone Age

Evidence from rock shelters in the Mpumalanga / Limpopo region suggest that the earliest inhabitants in the area were small groups of Stone Age hunter- gatherers. These San people led a nomadic lifestyle and rock paintings found in some of the shelters are an indication of their presence.^{9 10} Unfortunately very little

⁹ Hampson et al., 2002, The rock art of Bongani Mountain Lodge, SA Archaeological Bulletin 57: p. 15.

research in this regard has been conducted, although several rock painting sites have been recorded in the areas of Ohrigstad / Blyderivierspoort Canyon, and rock engravings in the surrounding area of Lydenburg.¹¹ Bergh,¹² did not record any Stone Age sites in the immediate areas of Lydenburg, Burgersfort and Steelpoort. The closest Middle- and Later Stone Age sites have been documented near Ohrigstad. The Bushman Rock Shelter and Heuningneskrans are the most well-known Middle Stone Age sites in the vicinity, dating back to approximately 35000 BP.¹³



MAP 1: 1935 Map of Van Warmelo: The surrounding area of Boerboonkraal, is indicated with sparse habitation of various Sotho groups (baPai or Pulana) and a small presence of Nhlangu – Chr.Manhoko, with Koni towards the north. The area further south was mainly inhabited by Sotho and Swazi groups.

• IRON AGE

Later Bantu-speaking tribes from further north moved into southern Africa, bringing with them a new way of life based on agriculture, pastoralism and metal working. This period is broadly referred to as the Iron Age, starting around AD 200. Cattle played a crucial role in the world-view and social organization of these societies, which is reflected in the layout of their homesteads – referred to as the Central Cattle Pattern. This type of settlement may be recognized archaeologically from centrally located cattle pens associated with high-status burials, grain storage pits, men's assembly areas and evidence of iron-forging.^{14 15}

¹⁰ Rowe C., 2009, Heritage Management of Archaeological, Historical and Industrial resources on the Blyde River Canyon Nature Reserve, p. 22.

¹¹ *Ibid*, p.22.

¹² Bergh 2009 *Geskiedenis Atlas van Suid Afrika*, p.4.

¹³ Voight, E.,1981, *Guide to the Archaeological sites in the Northern and Eastern Transvaal*, p. 115.

¹⁴ Huffman T.N., 2007, *Handbook to the Iron Age*, p.331.

¹⁵ Pelsaer A., 2014, *A Report on the first phase archaeological investigations on LIA stone walled sites located on portion 7 of the farm Rooidraai 34JT to be impacted by commercial and residential developments: sites RDR 7 & 1C*, p. 8.

- **Early Iron Age (EIA)**

Secondary source evidence of Early Iron Age sites is lacking, with only one well known site indicated, the Lydenburg Heads site.¹⁶ The Lydenburg Heads site at Sterkspruit, Lydenburg dated to approximately AD 600. Excavations at the Klingbeil Nature Reserve also revealed direct archaeological evidence that the Early Iron Age people in the area introduced cattle and sheep/goat as well as crop plants. Based on pottery identification, Klingbeil is dated to about AD 1000.¹⁷

- **Late Iron Age (LIA)**

The Late Iron Age spans a period between AD 1300-1840, and is associated with groups like the Ndebele, Bakoni and BaPedi in the study area (see Map 1). Sites in the area are characterized by widespread stone walling such as the Badfontein type that were used to define homestead areas, agricultural land (terracing) and cattle tracks. Maize was introduced into southern Africa by the Portuguese during the Late Iron Age contributing to an increase in population. Its cultivation is linked archaeologically to special grindstones.^{18 19} Huffman,²⁰ place the stone walling in the Burgersfort area into the Badfontein tradition (see Map 2).

The Pedi is the most famous group to have inhabited the Lydenburg / Steelpoort / Burgersfort areas in historic times. The area in which these people settled is historically known as Bopedi but other groups resided here before the Pedi came onto the scene. Among the first of these were the Kwena or Mongatane, who came from the north and were probably of Sotho origin. A second tribe to settle in Bopedi, before the arrival of the Pedi was the Roka, followed by the Koni.²¹

Some Koni entered the area from the east and others from the north-west. According to historians, most Koni trace their origin to Swaziland and therefore claim that they are related to the Nguni. After the first Koni settled in the southern part of Bopedi, the area became known as Bokoni. Many people who were previously known as Roka also adopted the name Koni as the name "Roka" was not always held in esteem by other groups.

Historically the Pedi was a relatively small group who by various means built up a considerable empire. The Pedi are of Sotho origin. They migrated southwards from the Great Lakes in Central Africa some five centuries ago. The names of their chiefs can be traced to a maximum of fifteen generations. Historical events can be deduced reasonably well for the last two centuries, while sporadic events can be described during the preceding centuries.²²

According to oral tradition the BaKoni were already in the area of the escarpment before the arrival of the Pedi (a northern Sotho group), which would indicate a date of before AD 1650 for some of the settlements. Therefore the BaKoni clans were some of the earliest people to settle in what are today the Mpumalanga / Limpopo Provinces. They most likely followed a central route of migration out of northern KwaZulu-Natal, becoming "Sotho-ized" along the way.²³

¹⁶ Bergh J., 2009. *Geskiedenis Atlas van Suid Afrika*, p.8.

¹⁷ Pelsers A., 2014, *A Report on the first phase archaeological investigations on LIA stone walled sites located on portion 7 of the farm Rooidraai 34JT to be impacted by commercial and residential developments: sites RDR 7 & 1C*, p. 8.

¹⁸ Huffman T.N., 2007, *Handbook to the Iron Age*.

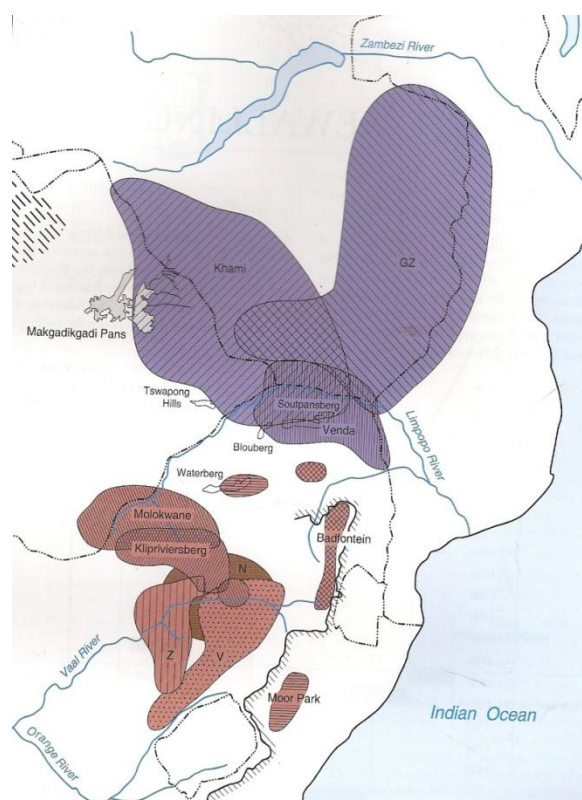
¹⁹ Pelsers A., 2014, *A Report on the first phase archaeological investigations on LIA stone walled sites located on portion 7 of the farm Rooidraai 34JT to be impacted by commercial and residential developments: sites RDR 7 & 1C*, p. 8.

²⁰ Huffman T.N., 2007, *Handbook to the Iron Age*, p. 32.

²¹ E-mail reply: JP Cilliers 2009-06-18

²² E-mail reply: JP Cilliers 2009-06-18

²³ Pelsers A., 2014, *A Report on the first phase archaeological investigations on LIA stone walled sites*



Map 2: Distribution of LIA stone walled complexes (Huffman 2007: 32).

Later on the Badfontein Koni became allied to the Pedi. This is reflected in the archaeological evidence, which shows that ceramics associated with the Badfontein walling are historic Pedi pottery of the Marateng facies. By the late 18th and 19th century the Pedi ruled an extensive area that included areas surrounding Lydenburg / Burgersfort, although Swazi and Ndebele groups also occupied some parts of the region – mainly in caves referred to as refuge sites. They were shortly followed by the first European settlers in the area.²⁴

Recent research has linked the LIA stone walled settlements in the Mpumalanga escarpment more specifically to the Bakoni. During the 16th and 17th centuries the Bakoni built a vast complex of stonewalled settlements in this area. These cities were carefully planned around terraced farms and roads that were built to lead cattle to pasture while keeping the cows out of the gardens. In the late 1700's the sites had populations of between 30 000 to 50 000 people.²⁵

During the Difaqane (a period of great instability and migration in the interior of South Africa) the various groups living in the area were ruthlessly conquered by Mzilikazi, around 1826. At that time the BaKoni were under the chieftainship of Makopole. He was a son of the Pedi chief Thulare. After first warding off an attack led by his brother, Makopole was then faced by the full onslaught of Mzilikazi's Ndebele. The invaders were responsible for destroying the Lydenburg-Ohrigstad settlements of the BaKoni people.²⁶

located on portion 7 of the farm Roodraai 34JT to be impacted by commercial and residential developments: sites RDR 7 & 1C, p. 10.

²⁴ *Ibid.*, p. 10.

²⁵ Rowe, C., August 2013, *DOCUMENTATION REPORT: LIA stone walled settlements, RDR 1, 2 & 7 within the proposed development area (Morning Tide Complex), on the remainder of portion 7 of the farm Roodraai 34JT, Mashishing, Mpumalanga. P. 10*

²⁶ Pelsler A., 2014, *A Report on the first phase archaeological investigations on LIA stone walled sites*

Stone walled ruins are a common feature found across the region and have been extensively mapped and researched, both through archaeological excavations and aerial photography. As a result of these various studies, three settlement types can be identified in the area:

- Simple enclosures – consisting of two concentric circles. The inner one was probably the cattle kraal and the huts were built in the space between the circles;
- Complex enclosures – includes several enclosures generally consisting of a large central one with two opposed entrances and a number of smaller circles around part of, or the whole of, the perimeter. Huts were built between the area of this complex and the outer ring wall;
- The third type of settlement in an agglomeration of small circles. It does not seem to conform to the basic pattern of the first two.

Settlements are characterized by terrace walls, cattle lanes and circular enclosures and are generally referred to as Badfontein walling. The cattle lane (track) would normally lead to a central enclosure (an area for milking and slaughter). On the opposite side an exit provided access to cattle kraals, which were attached to the central wall. Stone walling were used to define homestead areas, agricultural land (terracing) and cattle tracks. Crops were cultivated along the terraces where lines of stones were laid out parallel to the contour of the landscape. In cases of very steep ground proper walls were built. Stone-walled cattle tracks protected crops from being trampled by livestock.²⁷

Two settlement traits from the Badfontein type point to people with Nguni origins. Firstly the circular homestead arrangement emphasized the centre/side axis associated with the Central Cattle Pattern, a characteristic of Nguni people from northern KwaZulu-Natal. Secondly, the Badfontein cattle track leading to a central enclosure with an exit on the opposite side corresponds to the Nguni left-hand / right hand division.²⁸

Pottery types which are associated with the Lydenburg / Burgersfort area settlements, are named Mzonjani (EIA), Doornkop (EIA), Klingbeil (Middle Iron Age and Marateng for the Late Iron Age).²⁹

The LIA Marateng facies pottery, from the Moloko branch of the Urewe tradition, dates most likely from AD 1650-1840. This pottery has incised arcades on the upper shoulder separating black and red colour.³⁰

Metal and iron in particular was an important commodity during the Iron Age. Several metal artifacts have been found in association with the settlements. Collett's excavations at Badfontein revealed metal wire rings, an iron razor, an adze and a spear head. Iron slag was also discovered, pointing to possible metal working in the area. Many stones among the terraces show evidence of metal tools being sharpened on them.³¹

Upper and lower grindstones are commonly associated with Iron Age settlement and several were found during Collett's excavations at the Badfontein site. These are regarded as indirect evidence for agriculture and the two different types may indicate which crops were cultivated.³²

located on portion 7 of the farm Rooidraai 34JT to be impacted by commercial and residential developments: sites RDR 7 & 1C, p. 10.

²⁷ *Ibid.*, p. 10.

²⁸ *Ibid.*, p. 11.

²⁹ Huffman T.N., 2007, *Handbook to the Iron Age* pp 127-207.

³⁰ Pelsaert A., 2014, *A Report on the first phase archaeological investigations on LIA stone walled sites located on portion 7 of the farm Rooidraai 34JT to be impacted by commercial and residential developments: sites RDR 7 & 1C, p. 12.*

³¹ *Ibid.*, p 13.

³² *Ibid.*, p 13.

Beads were a trade commodity and were obtained via long distance trade routes in exchange for metal, ivory and animal skins. The most common types are royal blue hexagonal and round glass beads. Badfontein excavations revealed beads in yellow, blue, white, pink and red with white eyes, a translucent green bead, one made of soapstone as well as a large black wire-wound bead with white spots.³³

Bones of cattle and sheep / goats, found in association with cattle tracks and kraals, underline the pastoral lifestyle of the inhabitants. It also indicated that Iron Age people were responsible for introducing domesticated animals into the area.³⁴

Some 150 years before the *Voortrekkers* entered the area, some battles took place between the Koni (Zulu under Makopole) and Swazi (under Moselekatse). At that time the BaPedi resided in the Steelpoort area. The Bakoni (Koni) were attacked and defeated by the Matabele and their chief, Makopole, was killed. The Matabele, not yet satisfied with their victory, moved further north towards the BaPedi headquarters. At Olifantspoortjie the whole BaPedi regiment was wiped out as well as the sons of Thulare, the BaPedi chief (except for Sekwati who managed to escape).³⁵

After four years, Sekwati together with a few followers who had also managed to escape the Matabele, now slowly started to rise. In 1830 Sekwati invaded some of the smaller groups and eventually the Koni (under Marangrang) were ambushed and defeated. Now the empire of Maruteng (Bapedi) ruled the Koni.

At the beginning of the 19th century, groups such as the Pedi, Roka, Koni and Tau densely populated the immediate areas of Lydenburg, Steelpoort & Burgersfort. This was confirmed by ethnographical and linguistic studies by early researchers such as D. Ziervogel and N.J. Van Warmelo.³⁶ The 1935 map of Van Warmelo, indicated the presence of various Sotho groups (baPai and Pulana) as well as Koni in the area surrounding the town of Burgersfort (including the study area). Van Warmelo also indicated a small presence of Nhlanganu groups (see Map 1).

The Pedi of chief Sekwati (ca 1860) lived at Phiring (near Polokwane). Sekwati lived in constant fear of the Zulus. The country was unsafe and in an attempt to survive, some of the Koni turned to cannibalism.³⁷

This area was heavily under attack during the *Difaqane*. The Ndebele attacked this area in ca 1822, and Zwide (Swazi) attacked the Pedi in ca 1825.³⁸

• European settlement

The *Voortrekkers* passed the northern boundary of the Leolo mountains (Pedi area) in 1837 when Trichardt looked for a route to Delagoa Bay (currently Maputo).³⁹ Trichardt met the Pedi chief Sekwati.⁴⁰ When more Europeans settled in the area from 1845, conflict was inevitable.

The *Voortrekkers* under Andries Hendrik Potgieter, settled at Ohrigstad in 1845. Soon conflicts arose between them and the Pedi leader, Sekwati. The smaller black groups also turned to Sekwati for help against the *Voortrekkers*. Sekwati moved his capital to the Leolo mountains at *Mosego hill*. Eventually they

³³ *Ibid.*, p.13.

³⁴ *Ibid.*, p.13.

³⁵ E-mail reply: JP Cilliers 2009-06-18

³⁶ Van Warmelo, N.J., 1935, *A Preliminary Survey of the Bantu Tribes of South Africa*, p. 111.

³⁷ Van Warmelo, N.J., 1944. *A genealogy of the house of Sekhukhune*, p.47.

³⁸ Bergh J., 2009. *Geskiedenis Atlas van Suid Afrika*, pp.10-28.

³⁹ *Ibid.*, p. 14.

⁴⁰ Theal, G.M., *History of South Africa from 1873 – 1884*, Cape Town, p. 257.

signed a treaty and it was decided that the Steelpoort or Tubatse River, would form the border between the Pedi and the *Voortrekkers*, and peace followed for a while.⁴¹

The conflict in the eastern parts of the country between white and black was of a more forceful nature than in the central areas of the country. The Kopa, Ndzundza-Ndebeles and Pedi were more able to resist European onslaught.

The stressful relationship between the Pedi and Europeans since 1850, continued throughout the 1860's and 70's which lead to war. Sekukune, who took the reign after Sekwati in 1861, played an important role in this. After the Swazi attack on Sekukune in 1869, he moved his capital from *Thaba Mosego* to *Tshate*.⁴²

The relationship between the Pedi and the Afrikaners stayed stressful. In 1876 the Afrikaners attacked the Pedi. A huge part of the Pedi capital was burnt down. In December 1876, the Pedi submitted to the Republic, as it was time to plant their crops and they could not afford to lose this valuable time.⁴³

A plan had to be constructed to secure the borders of Sekukuni's country, by placing volunteer mercenaries at the Steelpoort River. A fort was built within the junction of the Steelpoort and Spekboom Rivers – Fort Burgers, named after President Burgers. The fort was manned by the Lydenburg Volunteer Corps who were placed under the command of Captain von Schlickmann.⁴⁴

On 29 September 1876, Sekukuni attacked Fort Burgers with the object of recovering cattle supposedly looted from the Bapedi. They killed two of the volunteers.⁴⁵ A monument currently at the site, marks graves of the *Voortrekker* era, and the location of the historic site of Fort Burgers is directly towards the west of this monument.⁴⁶

The British under Shepstone took over the Transvaal on 12 April 1877. At first Sekukune pretended to welcome them, but soon started raiding their cattle and other domesticated animals. In November, the British, with the help of the Swazi, attacked the Pedi, and Sekukune's son and heirs were killed. Sekukune fled to a cave in the Leolo mountains, but was later captured and taken prisoner. He was succeeded by Mampuru (Middelburg district) and Ramoroko (Sekukuneland). Sekukune was killed in 1882 by Mampuru, after his release.⁴⁷

Several forts were erected to protect the Europeans during this time. Fort Burgers was only one of these. The area around Fort Burgers, eventually became known as the town of "Burgersfort".⁴⁸

⁴¹ De Jongh, M, (ed)., 1987. Swatini. p.29.

⁴² Bergh J., 2009. *Geskiedenis Atlas van Suid Afrika*, p.31.

⁴³ De Jongh, M, (ed)., 1987. Swatini. p.30.

⁴⁴ <http://samilitaryhistory.org/vol1025hk.html> :3

⁴⁵ <http://samilitaryhistory.org/vol1025hk.html> :3

⁴⁶ Rowe, C., August 2009, *Phase 1 Archaeological / Heritage Impact assessment: Sections 1a, 1b, 2, 3 & 4 of Leeuwvallei 297KT*, Burgersfort, Limpopo Province;

⁴⁷ De Jongh, M, (ed)., 1987. Swatini. p.30.

⁴⁸ Bergh J., 2009. *Geskiedenis Atlas van Suid Afrika*, p. 31.

Very little contemporary research has been done on prehistoric African settlements in the study area, although one Middle Stone Age site (Bushman Rock Shelter, Ohrigstad dating ca 35000 BP)⁴⁹ and one Early Iron Age site (the Lydenburg Heads site at Sterkspruit dating to ca 900 AD), was professionally excavated.⁵⁰ Pelser, Cilliers and Rowe have conducted archaeological excavations close to the study area, which concentrated mainly on the Late Iron Age or historic periods.

Several early ethnographical and linguistic studies by early researchers such as D. Ziervogel and N.J. Van Warmelo, revealed that the study area was mainly inhabited by the Sotho groups, and later Tsonga and Swazi, from before the 18th century.^{51 52 53} (See Map 1: 1935: Map of Van Warmelo). When concentrating on ethnographical history, it is important to include a slightly wider geographical area in order for it to make sense. Van Warmelo based his 1935 survey of *Bantu Tribes of South Africa* on the amount of taxpayers in an area. The survey does not include the extended households of each taxpayer, so it was impossible to actually indicate how many people were living in one area.⁵⁴

The Swazi under Mswati II (1845), commenced large scale raids on the prosperous tribal lands to the north of Swaziland. During their northern expansion they forced the local inhabitants out of Swaziland, or absorbed them.⁵⁵ There is evidence of resistance, but the Eastern Sotho groups who lived in the northern parts of Swaziland, moved mainly northwards.⁵⁶ This appears to have taken place towards the end of the 18th century.⁵⁷

Northern Sotho:

The Pedi (who had their roots in the baKgatla, near the current Pretoria) moved under Thobele (who was banished from the Kgatla) to Sekukuneland in ca 1650, where they settled alongside the baKoni. There was initially peace, but soon the Koni had to submit to the Pedi. In time, the Pedi also ruled over the baRoka, baTau, Matlala, baMohlala, and others. They ruled over the whole of Lydenburg, Pilgrim's Rest, Middelburg and Polokwane (Pietersburg) districts.⁵⁸ Van Warmelo mentioned that the south-eastern sector of the Northern Sotho groups had other tribes that belong to them from ancient times such as the baKoni.⁵⁹

Swazi

The Swazi people descend from the southern Bantu (Nguni) who migrated from central Africa in the 15th and 16th centuries.⁶⁰ The differences between the Swazi and the Natal Nguni were probably never great, their culture as far as is known from the comparatively little research being carried out, does not show striking

⁴⁹ Voight, E., 1981, *Guide to the Archaeological sites in the Northern and Eastern Transvaal*, p 115.

⁵⁰ M.M. Van der Ryst., Die Ystertydperk, in J.S. Bergh (red.), *Geskiedenis Atlas van Suid Afrika: Die vier Noordelike Provinsies*. p. 97.

⁵¹ Rowe, C., 2014, Excavations report Leeuwvallei, LB/3.

⁵² N.J. Van Warmelo, *A Preliminary Survey of the Bantu Tribes of South Africa*. pp. 90-92 & 111.

⁵³ H. S. Webb, The Native Inhabitants of the Southern Lowveld, in *Lowveld Regional Development Association, The South-Eastern Transvaal Lowveld*. p.16.

⁵⁴ N.J. van Warmelo, *A Preliminary Survey of the Bantu Tribes of South Africa*, p.9.

⁵⁵ A.C. Myburgh, *The Tribes of Barberton District*, p. 10.

⁵⁶ N.J. Van Warmelo, *A Preliminary Survey of the Bantu Tribes of South Africa*. p. 111.

⁵⁷ H. S. Webb, The Native Inhabitants of the Southern Lowveld, in *Lowveld Regional Development Association, The South-Eastern Transvaal Lowveld*. p. 14

⁵⁸ De Jongh, M, (ed)., 1987. Swatini. p.28

⁵⁹ Van Warmelo, N.J., 1935, *A Preliminary Survey of the Bantu Tribes of South Africa*. p.114.

⁶⁰ <http://en.wikipedia.org/wiki/Swaziland> p.1.

differences. Their language is a 'Tekeza' variation of Zulu, but through having escaped being drawn into the mainstream of the Zulus of the *Shaka* period, they became independent and their claim to be grouped apart as a culture is now well founded.⁶¹

Tsonga groups: The Nhlanganu and Tšhangana

The Nhlanganu and Tšhangana (also generally known as the Shangaan-Tsonga)⁶² form part of the larger Tsonga group of which the original group occupied the whole of Mozambique (Portuguese East Africa), and it has been recorded that by 1554, they were already living around the Delagoa Bay area (Maputo).⁶³ They fled from the onslaughts of the Zulu (Nguni) nation from the Natal area, and great numbers of emigrants sought safety in the "Transvaal" as recently as the 19th century, especially in the greater Pilgrim's Rest district (including the study area that we are concerned with). The Tsonga also moved west from Mozambique into the "Transvaal". They have never formed large powerful tribes but were mostly always subdivided into loosely-knit units, and absorbed under the protection of whichever chief would give them land.⁶⁴ They were originally of Nguni origin.⁶⁵ The term "Shangaan" is commonly employed to refer to all members of the Tsonga division.⁶⁶

- **History of Burgersfort**

The closest town to the farm Boerboonkraal, is Burgersfort which is located in the Spekboom River valley at the edge of the Bushveld Complex. The town was established around a hexagonal fort that was built in 1876 during the second war against the baPedi, Chief Sekhukune, the British and the Boers. The town was named after the South African President T.F. Burgers. Today, Burgersfort is an important contributor in terms of platinum mining.⁶⁷

⁶¹ N.J. Van Warmelo, *A Preliminary Survey of the Bantu Tribes of South Africa*, p. 83.

⁶² M. De Jongh (ed.), *Swatini*, p. 24.

⁶³ N.J. Van Warmelo, Grouping and Ethnic History, in Schapera I., *The Bantu-Speaking Tribes of South Africa. An Ethnographical survey*, p. 55.

⁶⁴ N.J. Van Warmelo, *A Preliminary Survey of the Bantu Tribes of South Africa*, pp. 90-91.

⁶⁵ N.J. Van Warmelo, Grouping and Ethnic History, in Schapera I., *The Bantu-Speaking Tribes of South Africa. An Ethnographical survey*, p. 55.

⁶⁶ N.J. Van Warmelo, *A Preliminary Survey of the Bantu Tribes of South Africa*, p. 92

⁶⁷ <http://www.sa-venues.com/attractionsmpl/burgersfort.pnf>.

C. DESCRIPTION OF THE AREA TO BE AFFECTED BY THE PROPOSED DEVELOPMENT

The proposed project will involve the following:

- Approximately 90ha are earmarked for the proposed agricultural development, including a farm road network to access the various fields.
- The five sections which are proposed for the agricultural development, is indicated in Appendix 1.

Sections A, B and C is currently natural land, and sections D and E, is highly disturbed. Sections A (12.56ha) and B (3.82ha) is situated along the Waterfall river and is covered by riverine vegetation. Visibility in these two areas was restricted. Section C (76.96ha) is situated east of the R37 and visibility was mostly excellent from the entrance gate to the south. The section from the entrance gate to the north was denser and visibility was restricted. The area was mostly flat and accessible, with a network of paths and roads. Section A is at the foot of a mountain and goes slightly uphill especially in the northern section. There are two prominent drainage lines in section A which enters the section from the east (see map 5). Large sections surrounding the property are commercial citrus farms (see map 7).

The farm Boerboonkraal is situated in the Ohrigstad Mountain Bushveld vegetation type, positioned in the steep valley and mountain slopes south of Burgersfort. The vegetation type is classified as sourish mixed Bushveld and mixed Bushveld – North-eastern mountain grassland. It is primary on quartzite and shale, weathering to shallow rocky soils.

The area next to the Waterfall River (B, C, D, & E), represents elements of the subtropical freshwater wetlands vegetation type. Vegetation and landscape features consist of flat topography supporting low beds dominated by reeds, sedges and rushes as well as waterlogged meadows dominated by grasses. *Ficus sycomorus* was also observed.⁶⁸

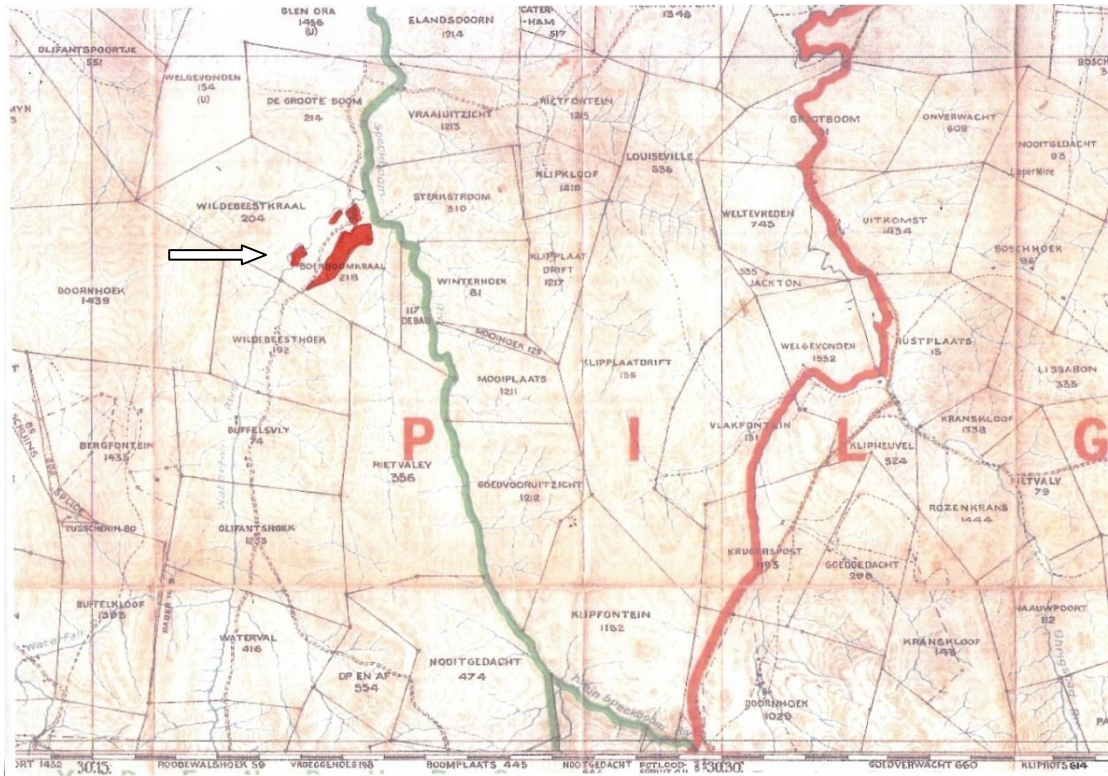
Section A (south) consists of woodland on a flat slope with low rock and tree cover. The vegetation is dominated by *Acacia tortillis* and *Dichrostachys cinerea*. Section A (north) is woodland on a flat slope with rock cover as well as high tree and grass cover. The vegetation type is dominated by *Acacia tortillis*, *Aloe* species and *Grewia* species. Towards the mountain it is described as woodland on a steep slope with high rock and tree cover, and the vegetation is dominated by *Acacia nigrescens*, *Commiphora mollis*, *Commiphora pyracanthoides*, *Euphorbia ingens*, *Grewia* species and *Dichrostachys cinerea*.^{69 70}

The 1911 topographical map *Ohrigstad* (Map 3), does not indicate any historic black settlements in the study area as well as along the two rivers (Waterfall and Speckboom), which join just towards the north of the farm *Boerboonkraal*.

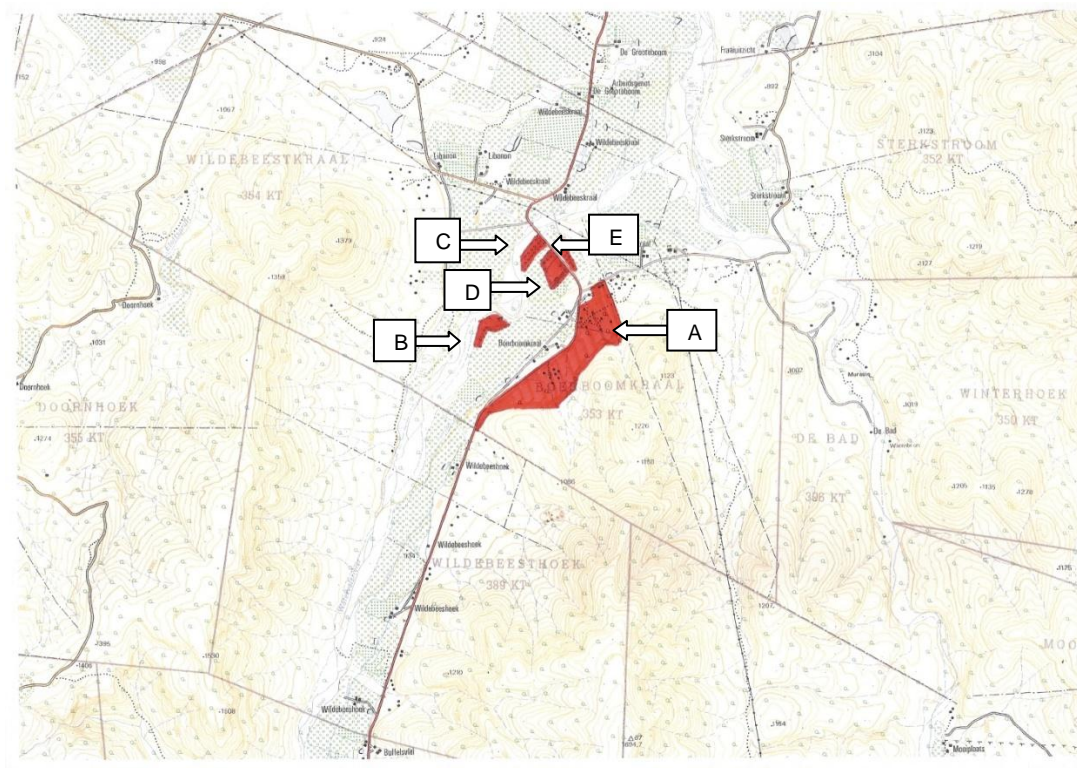
⁶⁸ Deacon, A.R., 2014. Ecological Assessment: Alteration of virgin natural land for agricultural use – portion 7 and 8 of the farm Boerboonkraal 353KT, Burgersfort area. p. 1-3.

⁶⁹ *Ibid*, p. 1-3.

⁷⁰ Van Wyk, B., & Van Wyk P., Field Guide to Trees of Southern Africa, 1997.



MAP 3: 1911 map. The study area is indicated in red (see arrow).



MAP 4: 1976 Topographical Map: 2430CD, BUFFELSVLEI, indicates the study area. Note the historic / recent settlements in section A.

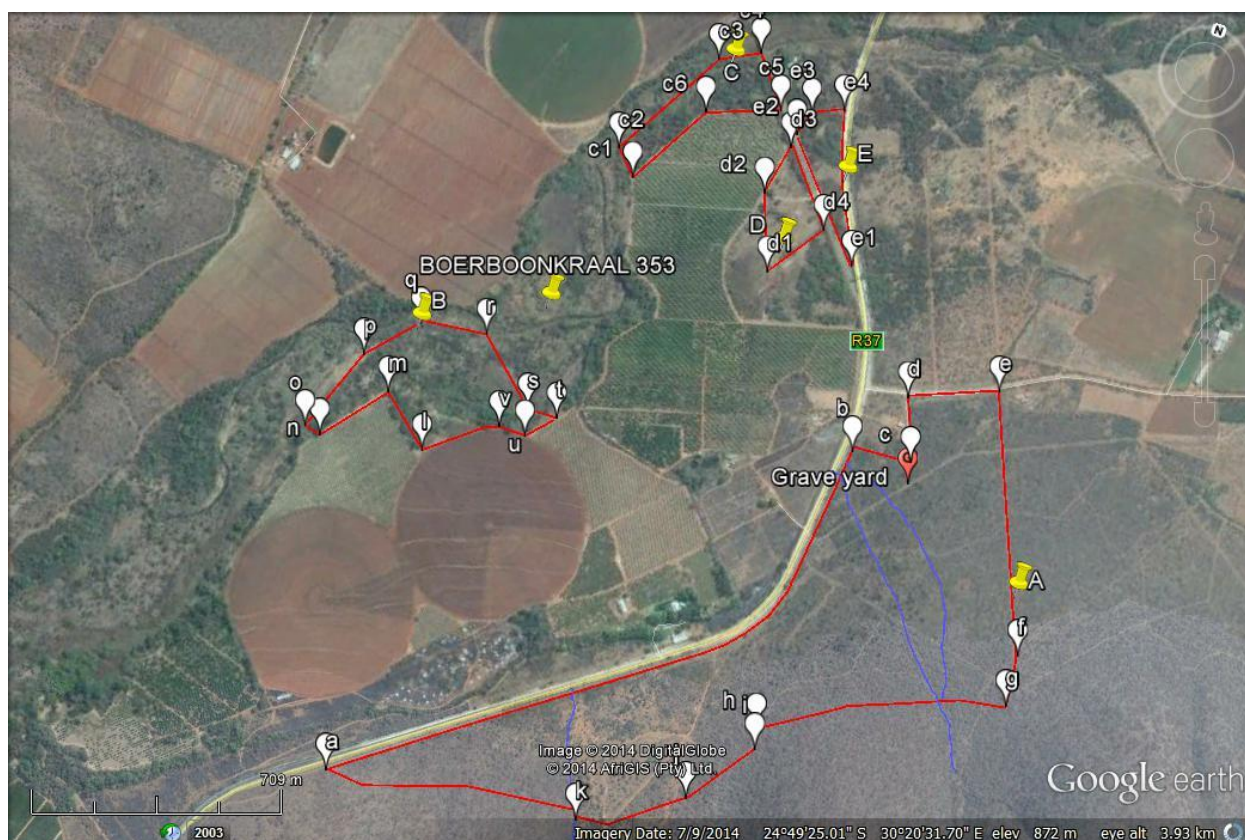
D. LOCALITY

The proposed project site is located on the farm *BOERBOONKRAAL 353 KT*. It is located on the R37 between Mashishing (Lydenburg) and Burgersfort. Sections A, B and C are currently natural land, and sections D and E are highly disturbed.

- Section A (76.96ha), is situated east of the R37 and visibility was excellent from the entrance gate

to the south. The area from the entrance gate to the north was dense and visibility was restricted. Section A is at the foot of a mountain which rises slightly uphill especially in the northern part.

- Sections B (12.56ha) and C (3.82ha) are situated along the Waterfall river and is covered by mostly natural but also alien vegetation. Visibility in these two areas was restricted.
- Section D (3.12ha) was historically disturbed agricultural lands (see Map 4), and visibility was excellent.
- Section E (3.18ha) was also historically disturbed agricultural lands (see Map 4), and alien vegetation had infested the northern half of the section, where visibility was restricted. Visibility in the south was however excellent. The entire property is zoned as agricultural, and no rezoning will take place. The area was mostly flat and accessible, with a network of paths and roads.



Map. 5: The study area is situated on both sides of the R37, between Lydenburg and Burgersfort.

The study area is situated on Topographical map, 1:50 000, 2430CD, BUFFELSVLEI, which is in the Limpopo Province. This area falls under the jurisdiction of the Burgersfort District Municipality, and Thaba Chweu Local Municipality.

- **Description of methodology:**

The 1976 topographical map, 2430CD, BUFFELSVLEI), as well as a 1911 map (Map 3), and Google images of the site (Map 5, 6 & 7), indicate the study area of the proposed development. These were intensively studied to assess the current and historically disturbed areas and infrastructure. In order to reach a comprehensive conclusion regarding the cultural heritage resources in the study area, the following methods were used:

- The desktop study consists mainly of archival sources studied on distribution patterns of early

African groups who settled in the area since the 17th century, and which have been observed in past and present ethnographical research and studies.

- Literary sources, books and government publications, which were available on the subject, have been consulted, in order to establish relevant information.
- Several specialists currently working in the field of anthropology and archaeology have also been consulted on the subject.

-Literary sources: A list of books and government publications about prehistory and history of the area were cited, and revealed some information;

-The archaeological database of SAHRA as well as the National Cultural History Museum was consulted. Heritage Impact Assessment reports of specialists who worked in the area were studied and are quoted in section B.

- The five sections (total of 90ha), which are applied for, is natural land as well as disturbed land, which belongs to Mr. Cornel van der Merwe (Waterval Citrus). Section A is game fenced.
- A site visit with the environmental practitioner and the ecologist was held and features of interest were pointed out during the visit, such as the grave sites.
- The fieldwork and survey was conducted extensively with two people on foot and with a vehicle. Tracks and paths criss-cross the farm and were mainly used to access areas (See Appendix 3).
- The terrain was mostly flat, even and accessible and visibility was good, except for the northern part in section A which was rocky, and vegetation was dense. Visibility was more restricted in this section.
- The relevant data was located with a GPS instrument (Garmin Etrex) datum WGS 84, and plotted. Co-ordinates were within 4-6 meters of identified sites.
- Evaluation of the resources which might be impacted upon by the footprint, was done within the framework provided by the National Heritage Resources Act, no. 25 (1999);
- Personal communication with relevant stakeholders on the specific study area, were held, such as the farm manager, Mr. Albert Winterbach⁷¹, ecologist Dr. A. Deacon⁷² and environmental practitioner Mr. R. Kalwa.⁷³
- GPS co-ordinates were used to locate the perimeters and any heritage features within the study area (Co-ordinates provided by RHENGU Environmental Services): (see Map 5).

GPS CO-ORDINATES		
Section A	South	East
a Elev 923m	S 24° 50' 02.39"	E 30° 20' 14.16"
b Elev 874m	S 24° 49' 19.87"	E 30° 20' 53.32"
c Elev 878m	S 24° 49' 19.44"	E 30° 20' 59.41"
d Elev 868m	S 24° 49' 13.82"	E 30° 20' 56.98"
e Elev 868m	S 24° 49' 10.72"	E 30° 21' 05.43"
f Elev 916m	S 24° 49' 33.15"	E 30° 21' 14.90"
g Elev 937m	S 24° 49' 37.62"	E 30° 21' 15.07"

⁷¹ Personal information: Mr. A. Winterbach, 2014-11-03.

⁷² Personal information: Dr. A. Deacon, 2014-11-03.

⁷³ Personal information: Mr. R. Kalwa, 2014-11-03.

h Elev. 919m	S 24° 49' 46.48"	E 30° 20' 52.99"
i Elev. 925m	S 24° 49' 48.55"	E 30° 20' 53.03"
j Elev. 924m	S 24° 49' 54.48"	E 30° 20' 48.35"
k Elev. 925m	S 24° 49' 59.57"	E 30° 20' 38.77"

GPS CO-ORDINATES		
Section B	South	East
l Elev. 873m	S 24° 49' 32.97"	E 30° 20' 12.34"
m Elev. 875m	S 24° 49' 29.01"	E 30° 20' 07.21"
n Elev. 878m	S 24° 49' 34.68"	E 30° 20' 02.05"
o Elev 876m	S 24° 49' 34.38"	E 30° 20' 00.33"
p Elev 872m	S 24° 49' 26.46"	E 30° 20' 03.55"
q Elev 870m	S 24° 49' 21.98"	E 30° 20' 08.07"
r Elev 867m	S 24° 49' 21.16"	E 30° 20' 14.61"
s Elev. 869m	S 24° 49' 26.42"	E 30° 20' 21.01"
t Elev. 871m	S 24° 49' 26.11"	E 30° 20' 24.05"
u Elev. 871m	S 24° 49' 28.66"	E 30° 20' 21.62"
v Elev. 870m	S 24° 49' 28.66"	E 30° 20' 18.90"

GPS CO-ORDINATES		
Section C	South	East
C1 Elev. 858m	S 24° 49' 02.93"	E 30° 20' 23.41"
C2 Elev. 860m	S 24° 49' 00.78"	E 30° 20' 21.16"
C3 Elev. 856m	S 24° 48' 50.03"	E 30° 20' 27.87"
C4 Elev 853m	S 24° 48' 48.25"	E 30° 20' 31.65"
C5 Elev 855m	S 24° 48' 52.59"	E 30° 20' 35.41"
C6 Elev 856m	S 24° 48' 55.03"	E 30° 20' 28.34"

Section D	South	East
D1 Elev. 857m	S 24° 49' 07.14"	E 30° 20' 39.46"
D2 Elev. 854m	S 24° 49' 00.35"	E 30° 20' 36.61"
D3 Elev. 854m	S 24° 48' 55.55"	E 30° 20' 37.67"
D4 Elev. 857m	S 24° 49' 01.83"	E 30° 20' 43.46"

Section E	South	East
E1 Elev. 857m	S 24° 49' 04.11"	E 30° 20' 47.37"
E2 Elev. 854m	S 24° 48' 54.21"	E 30° 20' 37.89"
E3 Elev. 853m	S 24° 48' 51.82"	E 30° 20' 38.58"
E4 Elev. 853m	S 24° 48' 50.60"	E 30° 20' 41.54"

E. DESCRIPTION OF IDENTIFIED SITES

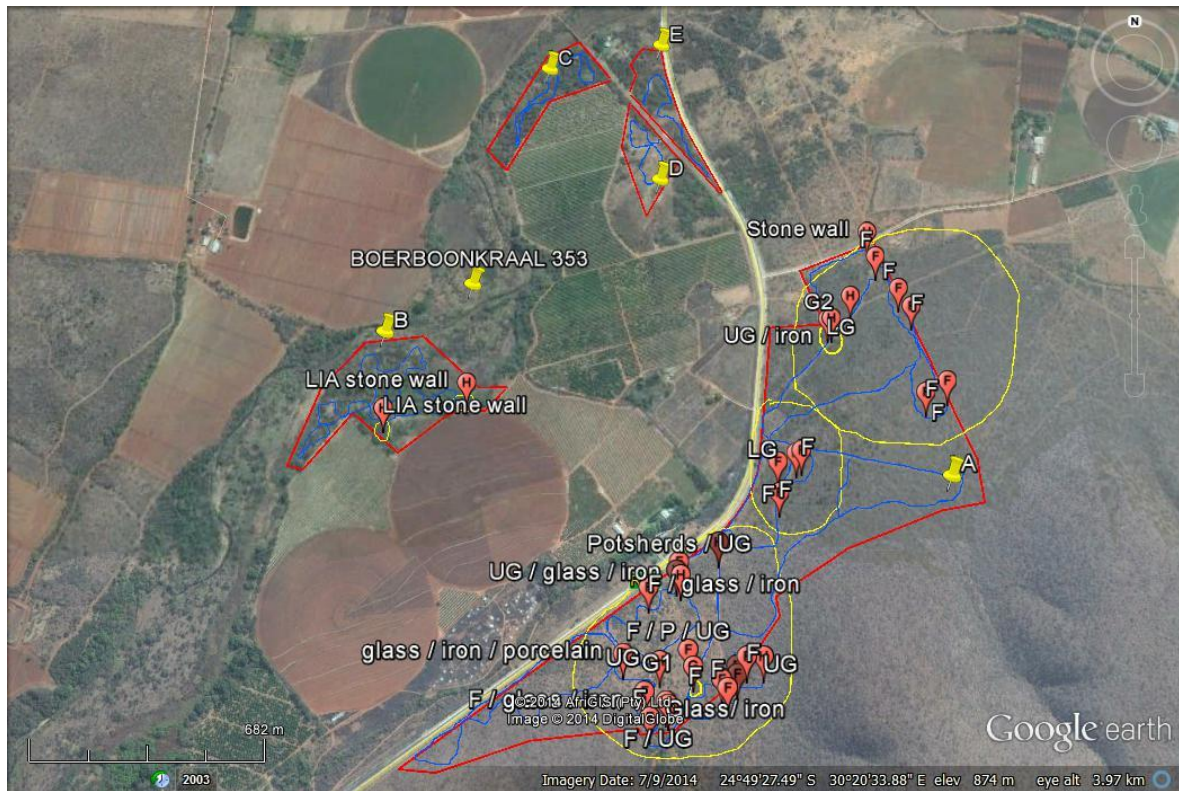
The alteration of natural land for agricultural purposes (citrus), is requested by the applicant. An area of 90ha is proposed to be developed for agriculture (citrus) with a farm road network, to access the various fields (see Appendix 1 for the suitable areas to be developed).

The study area is between Lydenburg and Burgersfort, between the Waterfall and Speckboom rivers, which are well-known for agricultural farming (see Map 7 Google image of wider area). Modern topographical maps also clearly show extensive farming activities in the surrounding area (see Map 4). The 1911 topographical map (see Map 3) does not indicate any historic settlements directly in the study area. The 1935 map by Van Warmelo indicated the groups living in the area as mainly Sotho (see Map 1).

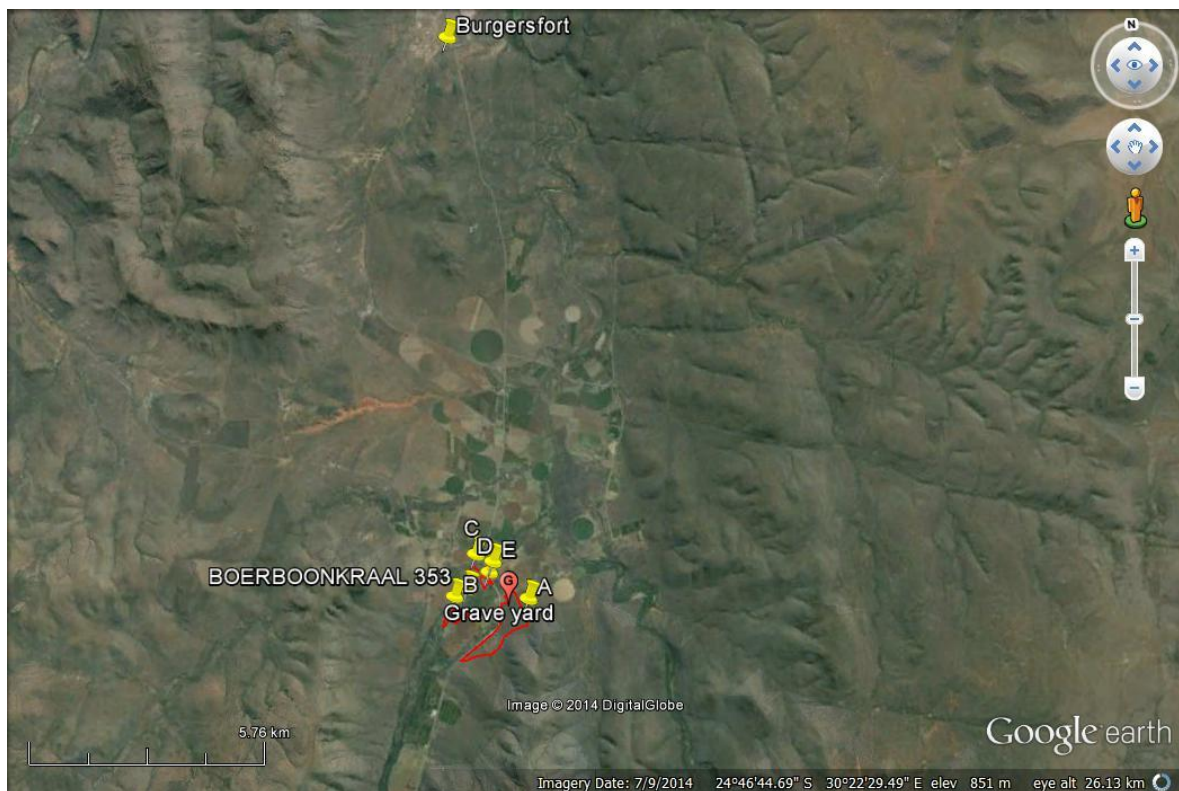
The study area is indicated in Maps 4 & 5. The terrain was mostly even and visibility good apart from the northern parts of section A, which was rocky with dense vegetation and visibility more restricted (see fig. 5, 6, 7, 8 & 48). The sections were however accessible by many existing paths and roads, and was surveyed on foot and per vehicle.

In terms of archaeological material, Later Iron Age (LIA) walls were identified in section B (Fig. 56 - 60). Section A revealed recent settlements (square) which were still inhabited during the 1970's (Fig. 20 - 53). Some clay potsherds, upper and lower grinders, fragments of glass, porcelain, ceramics and iron were identified at the recent settlements (Fig. 31 - 34). Two large, neglected grave sites are also present on the site. (Fig. 9 - 19), and mitigation measures are recommended. The LIA stone walls are disturbed but still have significance and mitigation measures are recommended. The recent square settlements and potsherds, upper and lower grinders and fragments of glass etc. which were associated with the settlements, do not have any historic or cultural value which will be impacted upon by the proposed development (See Map 6: Heritage features).

According to the manager, Mr. Albert Winterbach, the graves are visited by family members. Some of the graves have headstones with dates, but most are unmarked (Fig. 9, 18 & 19).



Map 6: Heritage and other features on the study area.



Map 7: Google image: Boerboonkraal in the wider area.

A quarry in section C, next to the Waterfall River (Fig. 63), was also investigated but revealed no archaeological material. All comments should be studied in conjunction with the maps, figures and appendices, which indicate the study area, and which corresponds with the summary below. Photographs in Appendix 2 show the general view of the study area. The only sites of significance, were the stone walls which were identified in section B, as well as the grave sites. The recent square structures and associated material, were of no archaeological significance.

Heritage features (See Map 6):

Section A (72ha) Heritage Feature	Description / Comments	Site Location
Upper grinder	Found in disturbed section in road	Elev. 878m S24° 49' 44.0" E30° 20' 47.1" Fig. 21
Grave site (southern section) (G1)	Neglected grave site with approximately 40 graves of which some have marble head stones. Some head stones of rock, were painted. <ul style="list-style-type: none"> • Prince Mkhonto (stone headstone) • M. Hendrek Mokwena, 15-12-1959; • M. Josaya Mokwena, 18-08-1947; • Moses Mancanza Mbuyane – no date. 	Elev. 904m S24° 49' 55.4" E30° 20' 44.5" Fig. 9, 10, 11, 12, 13 & 14.
Recent square mud and stone house foundations	Badly deteriorated foundations of recent settlement. Outside of proposed development area.	Elev. 921m S24° 49' 57.3" E30° 20' 47.6" Fig. 20
Recent square mud and stone house foundations	Badly deteriorated and eroded foundations of recent settlement. Outside of proposed development area.	Elev. 920m S24° 49' 56.5" E30° 20' 47.1"
Recent square mud and stone house foundations; Upper grinder within walls; Bottle top.	Badly deteriorated and eroded foundations of recent settlement. Outside of proposed development area.	Elev. 923m S24° 49' 56.1" E30° 20' 48.6"
Recent square mud and stone house foundations; Upper grinder within walls; Bottle top.	Badly deteriorated and eroded foundations of recent settlement. Outside of proposed development area.	Elev. 923m S24° 49' 56.1" E30° 20' 48.6"
Upper grinder near above house foundations	Small oval upper grinder near the above house foundations; Outside of proposed development area.	Elev. 927m S24° 49' 54.4" E30° 20' 51.4"
Recent square mud and stone house foundations; Metal pegs / barbed wire and drums	Badly deteriorated and eroded foundations of recent settlement. Outside of proposed development area.	Elev. 924m S24° 49' 54.4" E30° 20' 49.6"
Upper grinder	Upper grinder in open section associated with recent settlements	Elev 916m S24° 49' 54.9" E30° 20' 40.7" Fig. 22
Recent square foundations Clay Potsherds Upper grinder	Indistinct stone foundations of a recent square house. Potsherds (red) and an upper grinder were identified.	Elev. 868m S24° 49' 53.9" E30° 20' 43.6" Fig. 24, 25 & 26.

Recent square foundation (below dam)	Very indistinct square stone foundations	Elev 918m S24° 50' 00.2" E30° 20' 39.6" Fig. 27
Recent square mud foundations; 2 x Upper grinders; Bottles, iron, tins.	Several recent square mud and stone foundations – very deteriorated and indistinct, with 2x upper grinders. Several pieces of glass, bottle fragments, rusted iron and tins.	Elev 918m S24° 49' 58.8" E30° 20' 41.6" Fig. 29, 30, 31 & 32.
Recent square house foundations (middle section). Clay Potsherds; Glass and porcelain.	Square house foundations of stone and clay as well as cement and clay bricks. Iron basket, fragments of glass, gramophone, bottles and porcelain.	Elev 907m S24° 49' 48.2" E30° 20' 39.5" Fig. 37, 38, 39.
Clay Potsherds; Upper grinder; 1 x potsherd lip (bowl)	Potsherds (red) and upper grinder in vicinity of square house foundations. One potsherd lip represents a bowl.	Elev 903m S24° 49' 45.6" E30° 20' 42.9" Fig. 40, 41.
Upper grinder; Bottles; Iron; Tins.	Upper grinder together with bottles, glass, rusted iron and tins.	Elev 903m S24° 49' 46.6" E30° 20' 43.1" Fig. 35, 36.
Clay potsherds; Glass; Tins.	Clay potsherds (red) and slightly thicker than average; Glass and tins are scattered in area.	Elev 904m S24° 49' 46.5" E30° 20' 42.4"
Grave site (G2)	Access road cuts through this grave yard. Impossible to determine extent because of dense vegetation cover. Power line along road. Estimate 40 – 60 graves. Marble grave stone indicated: <ul style="list-style-type: none"> Aporiane Jephris Maphanga 1958 – 1978. 	Elev 884m S24° 49' 21.3" E30° 20' 59.6" Fig. 15, 16, 17, 18 & 19.
Lower grinder (broken)	Lower grinder (broken) on side of road – (disturbed area).	Elev 884m S24° 49' 19.0" E30° 21' 02.4" Fig. 43.
Recent square house foundations.	Recent square house foundations in a large open area – very indistinct.	Elev 879m S24° 49' 14.4" E30° 21' 05.5" Fig. 44.
Stone wall – possible kraal.	Stone wall built with large stones - disturbed. Dense vegetation cover restricted visibility – but it is most probably associated with recent settlements.	Elev 874m S24° 49' 11.6" E30° 21' 05.4" Fig. 45.
Recent square stone foundations	Recent square foundations with terrace walls – difficult to identify a layout – extensive area and consistent towards next GPS point.	Elev 887m S24° 49' 18.0" E30° 21' 07.6" Fig. 46.
Recent square stone foundations	Extensive area – very indistinct – consistent towards next GPS point	Elev 891m S24° 49' 20.1" E30° 21' 09.2"

		Fig. 47.
Recent square stone foundations	This entire area forms part of the settlement. Indistinct square stone foundations in entire section.	Elev 903m S24° 49' 28.3" E30° 21' 12.7" Fig. 48.
Recent square stone foundations	This entire area forms part of the settlement. Indistinct square stone foundations in entire section.	Elev 911m S24° 49' 28.9" E30° 21' 09.8"
Lower grinder; Recent square foundations; Broken upper grinder	Lower grinder found in disturbed section but the indistinct remains of square foundations are still visible closely; Broken upper grinder.	Elev 904m S24° 49' 35.0" E30° 20' 55.4" Fig. 49, 50.
Recent square stone and mud foundations	Recent house foundations, badly deteriorated.	Elev 908m S24° 49' 38.8" E30° 20' 53.5" Fig. 52.
Recent square stone and mud foundations	Recent house foundations, badly deteriorated.	Elev 905m S24° 49' 35.6" E30° 20' 53.7" Fig. 53.

Section B (12ha) Heritage Feature	Description / Comments	Site Location
LIA circular stone walls; Upper grinder.	Badly damaged LIA circular stone walls, from the Badfontein tradition. Alien and indigenous vegetation grow through it.	Elev 816m S24° 49' 30.98" E30° 20' 10.8" Fig. 56, 57, 58.
LIA stone walls.	Late Iron age stone wall (approximately 40m), from the Badfontein tradition. Badly damaged by vegetation and the extent is not clear. Approximately 1m wide	Elev 827m S24° 49' 28.57" E30° 20' 19.70" Fig. 59, 60.

The study area was surveyed on foot and per vehicle for any remains of archaeological or historical nature. The terrain was mostly even but the vegetation cover was dense in sections. Paths and roads made the sections accessible for the survey. A quarry in Section C was investigated for any visible archaeological remains (see fig. 63). The area was mostly flat with scattered trees and dense scrub. The northern part of section A is rocky and forms the foot of a mountain. The soil types are dominantly Clovelly and Hutton.⁷⁴

Section A was almost entirely covered with recent square clay and stone houses which is currently badly deteriorated and indistinct. These settlements were indicated on the 1976 topographical map (Map 4). Artifacts such as upper and lower grinders, red clay potsherds, glass, bottles, porcelain, ceramics, rusted iron and tin as well as leather were found in association with the settlements. The use of upper and lower grinders as well as clay pots together with glass, porcelain and plastic ware, is still common practise in rural areas. Two large grave yards were identified on the property, and some dates were recognizable. The dates indicated that people lived on this section from at least 1948 to 1978.

⁷⁴ Booyens H.B (et al)., 2014, Voorlopige grondkarteringsverslag vir die plaas Boerboonkraal, p. 4.

F. DISCUSSION ON THE FOOTPRINT OF THE PROPOSED DEVELOPMENT

ACT	COMPO- NENT	IMPLICATION	RELEVANCE	COMPLIANCE
NHRA	S 34	Impact on buildings and structures older than 60 years	Section B: LIA stone walls	Mitigation measures are recommended.
NHRA	S35	Impacts on archaeological and palaeontological heritage resources	Clay potsherds, upper and lower grinders were associated with recent settlement and therefore of no significance.	None
NHRA	S36	Impact on graves	Two grave sites were identified and are of high significance.	Mitigation measures are recommended
NHRA	S37	Impact on public monuments	None present	None
NHRA	S38	Developments requiring an HIA	Development is a listed activity	HIA done
NEMA	EIA regulations	Activities requiring an EIA	Development is subject to an EIA	HIA is part of EIA

- **Summarised identification and cultural significance assessment of affected heritage resources: General issues of site and context:**

Context		
Urban environmental context	No	NA
Rural environmental context	No	NA
Natural environmental context	No	Section A = virgin land, game fenced. Section B & C = virgin land;
Formal protection (NHRA)		
(S. 28) Is the property part of a protected area?	No	NA
(S. 31) Is the property part of a heritage area?	No	NA
Other		
Is the property near to or visible from any protected heritage sites	No	NA

Context		
Is the property part of a conservation area of special area in terms of the Zoning scheme?	No	NA
Does the site form part of a historical settlement or townscape?	No	NA
Does the site form part of a rural cultural landscape?	No	NA
Does the site form part of a natural landscape of cultural significance?	No	NA
Is the site adjacent to a scenic route?	No	NA
Is the property within or adjacent to any other area which has special environmental or heritage protection?	No	NA
Does the general context or any adjoining properties have cultural significance?	No	NA

Property features and characteristics		
Have there been any previous development impacts on the property?	Yes	Sections D & E was cultivated (see 1976 topo map) and therefore highly disturbed.
Are there any significant landscape features on the property?	No	NA
Are there any sites or features of geological significance on the property?	No	NA
Does the property have any rocky outcrops on it?	No	NA
Does the property have any fresh water sources (springs, streams, rivers) on or alongside it?	Yes	Sections B & C is next to the Waterfall river;

Heritage resources on the property		
Formal protection (NHRA)		
National heritage sites (S. 27)	No	NA
Provincial heritage sites (S. 27)	No	NA

NHRA	ELE-	INDICATORS OF HERITAGE SIGNIFICANCE										RISK	
Landscape of cultural significance	No	-	-	-	-	-	-	-	-	-	-	-	-
Geological site of scientific/ cultural importance	No	-	-	-	-	-	-	-	-	-	-	-	-
Archaeological / palaeontological sites	Yes	-	-	-	-	-	-	-	-	-	-	-	Clay potsherds – without decoration or shape; Upper grinders; Lower grinders Associated with recent settlement
Grave / burial grounds	Yes	-	-	-	-	-	-	-	-	-	-	-	Two grave sites are of high significance
Areas of significance related to labour history	No	-	-	-	-	-	-	-	-	-	-	-	-
Movable objects	No	-	-	-	-	-	-	-	-	-	-	-	-

- **Summarised recommended impact management interventions**

NHRA S (3)2 Heritage resource category	SITE	IMPACT SIGNIFICANCE		Impact management	Motivation
		Cultural significance rating			
		Cultural significance	Impact significance		
Buildings / structures of cultural significance	Yes	Yes	Yes	LIA stone walls – Will be impacted upon	Mitigation measures are recommended
Areas attached to oral traditions / intangible heritage	No	None	None	-	-
Historical settlement/ townscape	No	None	None	-	-

NHRA S (3)2 Heritage	SITE	IMPACT SIGNIFICANCE		Impact management	Motivation
		Cultural significance rating			
Landscape of cultural significance	No	None	None	-	-
Geological site of scientific/cultural importance	No	None	None	-	-
Archaeological / palaeontological sites	Yes	Yes	No	No impact	Potsherds, upper and lower grinders associated with recent settlement and believed to be of no significance.
Grave / burial grounds	Yes	Yes	Yes	G1 & G2 Will be impacted upon by proposed development	Mitigation measures recommended
Areas of significance related to labour history	No	None	None	-	-
Movable objects	No	None	None	-	-

ACT	COMPONENT	IMPLICATION	RELEVANCE	COMPLIANCE
NHRA	S 34	Impact on buildings and structures older than 60 years	LIA stone walls	Yes – mitigation measures
NHRA	S35	Impacts on archaeological and palaeontological heritage resources	Potsherds, upper and lower grinders – associated with recent settlement	None
NHRA	S36	Impact on graves	G1 & G2 – high significance	Yes – mitigation measures
NHRA	S37	Impact on public monuments	None present	None
NHRA	S38	Developments requiring an HIA	Development is a listed activity	Full HIA
NEMA	EIA regulations	Activities requiring an EIA	Development is subject to an EIA	HIA is part of EIA

G. STATEMENT OF SIGNIFICANCE & EVALUATION OF HERITAGE RESOURCES

Section 38 of the NHRA, rates all heritage resources into National, Provincial or Local significance, and proposals in terms of the above is made for all identified heritage features.

• Evaluation methods

Site significance is important to establish the measure of mitigation and / or management of the resources. Sites are evaluated as *HIGH (National importance)*, *MEDIUM (Provincial importance)* or *LOW, (local importance)*, as specified in the NHRA. It is explained as follows:

• National Heritage Resources Act

The National Heritage Resources Act no. 25, 1999 (NHRA) aims to promote good management of the national estate, and to enable and encourage communities to conserve their legacy so that it may be bequeathed to future generations. Heritage is unique and it cannot be renewed, and contributes to redressing past inequities.⁷⁵ It promotes previously neglected research areas.

All archaeological and other cultural heritage resources are evaluated according to the NHRA, section 3(3). A place or object is considered to be part of the national estate if it has cultural significance or other special value in terms of:

- (a) its importance in the community, or pattern of South Africa's history;
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.⁷⁶

• Graves

SAHRA Policy on burial grounds

NHRA Sections 27 & 36: The policy is that graves and cemeteries should be left undisturbed, no matter how inaccessible and difficult they are to maintain. It is our obligation to empower civil society to nurture and conserve our heritage. It is only when essential developments threaten a place of burial, that human remains should be disinterred to another cemetery or burial ground.

From a historical point of view and for research purposes, it is vital that burial sites are not disturbed. The location and marking of an individual's grave tells a life story, possibly where he / she died defending (or attacking) a particular place or situation and makes it easier to understand the circumstances of his / her death.⁷⁷

• The significance and evaluation of the archaeological and cultural heritage features in the

⁷⁵National Heritage Resources Act, no. 25 of 1999. p. 2.

⁷⁶National Heritage Resources Act, no. 25 of 1999. pp. 12-14

⁷⁷SAHRA, Burial sites, <http://www.sahra.org.za/burial.htm>, Access, 2008-10-16.

study area, can be summarised as follows:

<i>Site no</i>	<i>Cultural Heritage features</i>	<i>Significance</i>	<i>Measures of mitigation</i>
Grave sites: G1 & G2	Section A: G1 (southern section) and G2 (northern section).	High	The graves must be fenced off and access must be allowed for visitation / Alternatively it may be negotiated to relocate the graves
Clay potsherds	Section A: Associated with recent settlement: No archaeological sites near or in the vicinity	No significance	They are associated with recent settlement and not believed to have any significance and will not be impacted upon by the proposed development.
Upper & Lower grinders	Section A: Associated with recent settlement: No archaeological sites near or in the vicinity	No significance	They are associated with recent settlement and not believed to have any significance and will not be impacted upon by the proposed development.
LIA stone walls (Badfontein tradition)	Section B: Visible but badly deteriorated	Low significance	Will be impacted upon by the proposed development – mitigation measures are recommended.

- **Field rating:**

The field rating is viewed in terms of the NHRA (25, 1999) sections 3 (3) a, c, g & h.

The recent square clay and stone foundations are of no significance. The archaeological material (potsherds, upper and lower grinders), which were identified during the survey, were all associated with recent settlement and not believed to have any significance which will be negatively impacted upon by the proposed agricultural development. There is no cultural value to these objects which could link them as of outstanding importance to a certain community (NHRA 3.3a); or its potential to yield social, cultural or spiritual information or to link it to a particular community which may contribute to an understanding of South Africa's cultural heritage (NHRA 3.3c & g).

The two grave sites in section A, which were identified during the survey, are rated as **High** and of outstanding significance as specified by the NHRA 3.3 (h), and need to be preserved. Mitigation measures are recommended. Mitigation measures are necessary to avoid a negative impact on these sites.

The LIA stone walls of the Badfontein tradition, which were identified in section B, are of low significance and should the planned development continue in this section, mitigation measures are necessary in terms of the NHRA 3.3 (g).

No archaeological material was identified in sections C, D and E, and from a heritage perspective, development may continue in these sections.

H. RECOMMENDATIONS & CONCLUSION

The five sections for proposed development, on portions 7 and 8 of *the farm BOERBOONKRAAL 353KT, Burgersfort*, ranged from sections of natural habitats (A, B and C), to highly disturbed agricultural land (D & E).

The archaeological material found in section A (eg. fragments of clay potsherds, upper and lower grinders) were found in association with recent clay and stone foundations (settlement possibly up to 1978 - as a date at G2 indicated), and they are not believed to have any historic or cultural value. These features are not close to or in the vicinity of any visible archaeological sites.

The two grave sites (G1 & G2) which were identified in section A, are of high significance and it is recommended that the site be cleaned, the area of the graves be fenced off and maintained and that the families of the deceased be allowed access to the site. Alternatively, the client may negotiate with the family members to relocate the graves. The relocation is however an extremely costly exercise and it is recommended that the first option be considered.

Two LIA stone walls were identified in section B. The walls are of low or local significance and it is recommended that the walls be further researched to establish the scientific value thereof. The walls should be surveyed and drawn to determine a layout plan, which will show the units with surface artifacts and features. Areas best suited for archaeological test excavations should be identified. An application should be made to SAHRA for a phase 2 excavation and destruction permit.

Archaeological material or graves are not always visible during a field survey and therefore some significant material may only be revealed during debushing and other activities of the proposed development. It is recommended that the owner be made aware that distinct archaeological material or human remains may only be revealed during the debushing / agricultural operations. Based on the survey and the findings in this report, Adansonia Heritage Consultants state that there are no reasons which may prevent the proposed development to continue in sections C, D and E. Mitigation measures for the two grave sites in section A is recommended before development may continue in this section. Mitigation measures are recommended for section B, before any development may take place in this section. All earthmoving activities must be monitored by a qualified archaeologist and should any archaeological material be found, an assessment must be done.

Adansonia Heritage Consultants cannot be held responsible for any archaeological material or graves which were not located during the survey.

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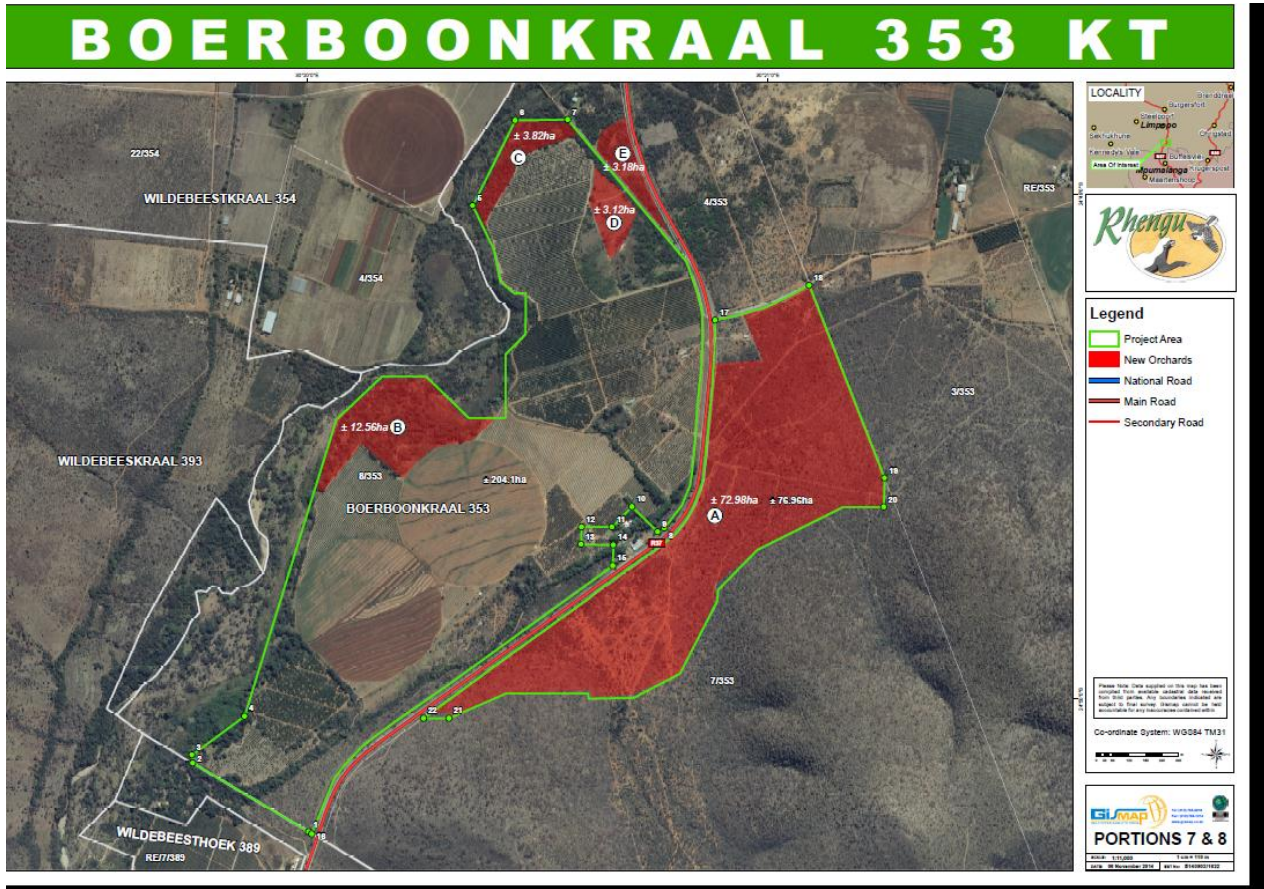
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-

Appendix 1:



APPENDIX 2: BOERBOONKRAAL: PHOTOGRAPHIC DOCUMENTATION

SECTION A (76.96ha): General visibility of the southern, middle and northern sections:



Fig. 1: Visibility in the middle area of Section A was excellent as the vegetation was sparse after winter.



Fig. 2: General view of the middle area of Section A with excellent visibility.



Fig. 3: Section A: The area on the far south was denser although visibility was fair.



Fig. 4: Another view of the southern area of section A.



Fig. 5: Section A: The northern parts of this section rises slightly towards the hills in the background. The vegetation was denser and visibility was more restricted in places.



Fig. 6: Another view of the northern parts of Section A.



Fig. 7: The entire section was indicated on the topographical map as a rural settlement. Remains of stone and mud foundations can be seen, although most are indistinct.



Fig. 8: View from the eastern border towards the west (in the northern part of Section A).

Two burial sites were identified during the survey: G 1 is located in the middle section:



Fig. 9: General view of the burial site G1, in the middle part of Section A. The stones are scattered in the area. There are approximately 40 graves.



Fig. 10: One of the graves in G1 with the grave dressing and marble headstone, still visible.



Fig. 11: A stone headstone with "Prince Mkhonto", painted in yellow.



Fig. 12: A slate headstone: "Moses Mancanza Mbuyane"



Fig. 13: A concrete grave dressing with a slate headstone: "M. Hendrek Mokwena, 1959."



Fig. 14: A concrete grave dressing with a slate headstone: "M. Josaya Mokwena, 1947."

The burial site G2 is located in the northern part of Section A:



Fig. 15: This burial site in the northern part of Section A was already impacted upon by a power line. A road and power line cuts the burial site in two.



Fig. 16: One of the slate headstones: "Aporiane Jephris Maphanga 1958 – 1978."



Fig. 17: The burial site is badly neglected. Some graves have stones for headstones.



Fig. 18: A general view of the overgrown state of the burial site.



Fig. 19: Graves on the other side of the dirt road. It is estimated that there are between 40 and 60 graves, but visibility in this section is restricted.

Cultural material which was identified during the survey in Section A:



Fig. 20: Several foundations such as seen above, with cultural material such as upper grinders, iron, glass and bottles, porcelain and ceramics, were identified in the middle part of Section A, at the foot of the mountain. This settlement forms part of the historic settlement as indicated on the 1976 topographical map, but falls just outside the proposed development.



Fig. 21: Upper grinder which was found in disturbed road section.



Fig. 22: Upper grinder found in middle section in an open space opposite the dam.

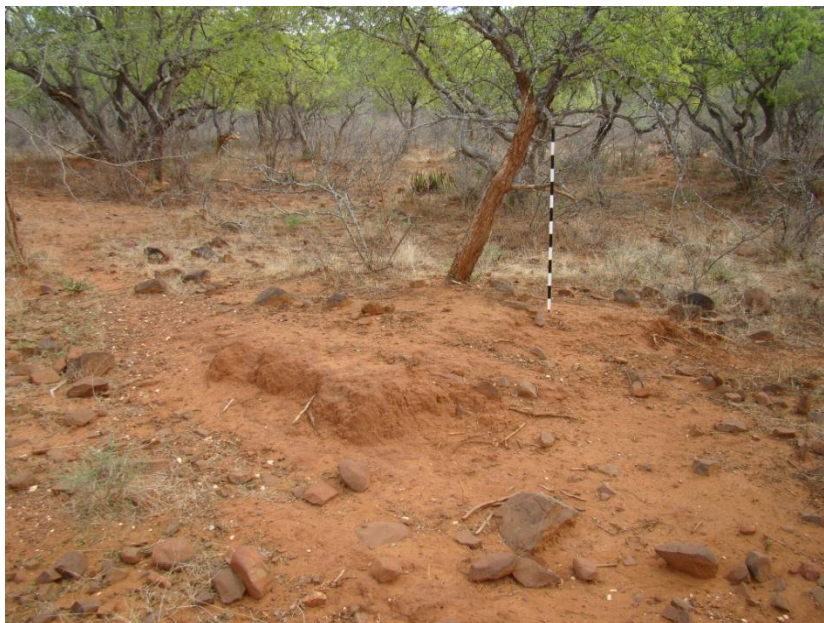


Fig. 23: The general condition of the stone and mud foundations were indistinct and severely deteriorated throughout the study area.



Fig. 24: Some foundations, such as above, are indistinct and almost unidentifiable, was it not for a few stones which remained in a straight line, or cultural material in the vicinity.



Fig. 25: Upper grinder found at the remains of the foundation, above.



Fig. 26: Red clay potsherds found at the indistinct foundation above, are evidence of previous habitation on the site.



Fig. 27: Foundations in the far south section (along drainage line) are indistinct and deteriorated.



Fig. 28: Some foundations are only possible to be identified by a remaining row of stones.



Fig. 29: Some clay foundations in the middle and southern sections are almost completely deteriorated.



Fig. 30: Upper grinder.



Fig. 31: Upper grinder.



Fig. 32: Fragments of porcelain, glass and iron are found on the entire site.



Fig. 33: Stone foundation in the southern part of Section A next to the drainage line.



Fig. 34: Many red clay potsherds are visible in the southern and middle sections.



Fig. 35: A grouping of recent cultural material such as rusted iron, chains, wire, glass, and plastic items are visible at the foundations.



Fig. 36: Upper grinders and clay potsherds are associated with recent settlement.



Fig. 37: One of the house foundations that is not completely deteriorated. A porcelain cup is visible to the left. Moulded concrete bricks were also found at this site.



Fig. 38: An upper grinder which was found near the foundation above.



Fig. 39: This rusted gramophone was found near the foundations, above (fig. 37).



Fig. 40: Numerous fragments of red clay potsherds and upper grinders were found in the middle section.



Fig. 41: One red clay potsherd (lip) represents a small bowl.

Northern section:



Fig. 42: An upper grinder was identified near the burial site (G2).



Fig. 43: A broken lower grinder was found in the disturbed dirt road area.



Fig. 44: Stone foundations are still visible in the northern section of the farm. Some are distinct while others are indistinct.



Fig. 45: A stone wall of recent date was identified near the northern border of section A.



Fig. 46: Numerous stone foundations similar to the one above, were found during the survey.



Fig. 47: Stone foundation in the northern part which is at the foot of the mountain.



Fig. 48: View of the remains of stone foundations in the northern section. Many distinct as well as indistinct foundations is found in this entire section.



Fig. 49: Lower grinder identified in the northern section.



Fig. 50: A broken upper grinder.



Fig. 51: Visibility in the northern section varied from open and clear to dense.



Fig. 52: Remains of a stone foundation.



Fig. 53: The general condition of foundations which were identified in the northern section. They were generally indistinct and only a few foundation stones were visible.

SECTION B (12.56ha):

Fig. 54: Section B is situated next to the Waterfall River. The area was dense with indigenous as well as alien vegetation. A power line runs through this section.



Fig. 55: The middle area of Section B.



Fig. 56: A poorly defined LIA stone wall was identified in the southern part near the entrance gate.



Fig. 57: An upper grinder was identified within the stone walls.



Fig. 58: The LIA stone wall is damaged by alien vegetation.



Fig. 59: Another LIA stone wall was identified in the eastern part of Section B. Dense vegetation made it impossible to determine a layout pattern.



Fig. 60: The LIA stone wall in this section is approximately 40m long.

SECTION C (3.82ha):



Fig. 61: Section C is also situated next to the Waterfall river. The vegetation was mostly dense.



Fig. 62: Visibility was fair in the northern parts of section C.



Fig. 63: A sand quarry in section C was investigated for archaeological or cultural material, but none was found.

SECTION D (3.12ha):

Fig. 64: Section D is historically disturbed land. The above photo is taken in the middle of this section facing south-west.



Fig. 65: South-eastern view of Section D. No archaeological or cultural material was found in this section.



Fig. 66: North-western view of Section D. No archaeological or cultural material was found in this section.

SECTION E (3.18ha):



Fig. 67: Section E is a narrow strip situated between two roads and was also historically disturbed land.



Fig. 68: The middle part of section E. Previous agricultural activities as well as road infrastructure disturbed this section.



Fig. 69: No archaeological or cultural material was found in Section E.

APPENDIX 3:

Google Map of Tracks and Paths

APPENDIX E:
PUBLIC PARTICIPATION PROCESS
ISSUES AND RESPONSES REPORT
INTERESTED AND AFFECTED PARTIES REGISTER
COPIES OF ADVERTISEMENTS, NEWSPAPER NOTICES AND MINUTES
COPIES OF E-MAIL CORRESPONDENCE
COPIES OF NOTIFICATIONS AND REPORT SUBMISSIONS

ISSUES AND RESPONSES REPORT:

DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE: PORTION 7 AND 8 OF THE FARM BOERBOOMKRAAL 353 KT AT BURGERSFORT WITHIN THE GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT, LIMPOPO PROVINCE.

PROJECT NUMBER: 12/1/9/3-GS 5

<u>Interested and Affected Party:</u>	<u>Response</u>
<p>Note: Questions/queries posed by all parties during meetings, discussions and informal conversations are listed below and included in the report.</p>	
<p>1. LJ: How much water has been allocated to the farming operations and is this adequate for the envisaged expansion?</p>	<p>1. MN: The farm has an allocated entitlement of 124 ha. Currently it has access to water from an irrigation canal and on site dams. Some of this infrastructure is in poor condition. These facilities will be repaired and all leaks will be addressed. Together with improvements in the irrigation systems (drip line systems etc.) available to farmers currently the applicant has calculated that he can accommodate a sustainable expansion in the citrus production. Other members confirmed that all farmers sharing the canal are committed to improving the condition of the canal and repairing all problem areas where applicable. The canal would then supply water on a more reliable, sustainable basis.</p>
<p>2. CG: A portion of the project area falls within a game camp which is used for recreational hunting purposes. This game camp is permitted by the Province and the applicant and CG share ownership of this camp. Will the expansion of the citrus production affect the future of the game camp in any way and what can be done to accommodate both land uses?</p>	<p>1. MN: Approximately 15% of the game camp will be used for citrus production and the future of the game camp will thus remain largely unchanged. The citrus orchards will be fenced off. MN and CG will meet to discuss operational details of the game camp to ensure both parties are satisfied with the on-going arrangements and to secure co-operation into the future.</p>
<p>3. GJ: 3 plants of special significance are known to grow in the project area in the game camp. The plants, <i>Eulophia leichii</i>, <i>Eulophia petersii</i> and <i>Ceropegia distincta</i> could be threatened by the removal of the natural bush and GJ is concerned that the future of these populations would not be secured. He requests that the project team take note of these plants and that a survey of the affected population is undertaken during the assessment process. Should some of these plants be affected GJ is prepared to be involved in the relocation process to suitable habitat sites. The future of <i>Ceropegia</i> is of special concern.</p>	<p>1. RK: GJ and RK have discussed this issue in a number of e mails to date. After the meeting GJ took various members of the meeting and project team to the site and showed them where some of these plants are found. AD (Project Ecologist) will assess the impact of the proposed activity on the plant populations discussed and submit recommendations to mitigate the impact of the activity on the future of these plants. GJ will also assist with identification of site populations and will liaise with AW for access to the site.</p> <ul style="list-style-type: none"> • Update: GJ and his team have assessed the presence and distribution of the plants listed. Dr. Andrew Deacon (Project

	Ecologist) has verified their findings and submitted applicable mitigation measures in the Biodiversity Study to ensure a sustainable protection of these plants in the project area. Mr. Gabriel and his team are thanked for their participation in this regard.
4. GJ: The Game Camp was classified as a Private Nature Reserve? Is this still the case?	1. RK: We are unsure of the classification of the game camp. RK will investigate the status of the game camp and inform the I&AP's of the outcome of the query. Members must however take note that sustainable utilisation of natural resources is an objective of all game reserves and provided the use is permitted under applicable legislation the activity may continue.
5. AC: What happens to the protected trees found in the project area?	1. RK: The removal of protected trees will have to be permitted by the Department of Forestry and Fisheries. Where applicable mitigation measures and recommendations will be submitted in the EIA to ensure a sustainable approach to the use of the protected trees and or the replacement thereof.
6. WV: Must the applicant apply for a "plough-out" permit?	1. RK: I am not aware that a "plough-out" permit is required. The Department of Agriculture will receive copies of the EIA and should this be required necessary applications will be submitted.

List of Participants in Discussions and Queries listed above:

- Casper le Grange (CG) I&AP.
- Cathy de Jager (CJ) I&AP.
- Werner van Vreden (WV) I&AP.
- Lodewyk de Jager (LJ) I&AP.
- Gabriel Joubert (GJ) I&AP.
- Wynand Kirchner (WK) I&AP.
- Frans Labuschagne (FL) I&AP.
- Andrew Cooper (AC) I&AP.
- Marinus Neethling (MN) Applicant.
- Yolandie Pretorius (YP) Manager: Watervalsitrus Farm.
- Albert Winterbach (AW) Manager: Watervalsitrus Farm.
- Dr. Andrew Deacon (AD) Project Ecologist.
- Ralf Kalwa (RK) Rhengu Environmental Services: EAP

PUBLIC PARTICIPATION AND ROLEPLAYERS REGISTER:

**DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE ON PORTIONS 7 AND 8 OF THE FARM BOERBOOMKRAAL 353 KT AT
BURGERSFORT: BURGERSFORT AREA.
PROJECT REFERENCE: 12/1/9/3-GS5**

Name; Company, Department	Postal Address	E Mail	Fax	Telephone or Cell Number	Attended Public Information Meeting
Cooper, Andrew	P. O. Box 105, Lydenburg, 1120	andrew@indigofruit.co.za	086 612 4857	082 564 7485	Yes
De Jager, Cathy	P. O. Box 278, Burgersfort, 1150	bbkboerdery@gmail.com	013 231 7585	083 951 5550	Yes
De Jager, Lodewyk	P. O. Box 57, Lydenburg, 1120	info@plmboerdery.co.za	NA	083 236 5870	Yes
Joubert, Gabriel	P. O. Box 1006, Lydenburg, 1120	Berghaan0@gmail.com	086 617 1402	082 793 2070	Yes
Kirchner, Wynand	P. O. Box 258 Steelpoort, 1133	liezl@lionval.co.za	NA	079 524 2073	Yes
Labuschagne, Frans	P. O. Box 282, Burgersfort	frans.dor72@gmail.com	NA	082 541 3459	Yes
Le Grange, Casper	P. O. Box 199 Lydenburg, 1120	rika.l@lantic.net	013 231 7819	082 352 0408 082 708 9512 013 231 7819 072 718 1003	Yes
Neethling, Marinus	Thankerton Farm, Hectorspruit, 1330	marinus@bosveldsitrus.co.za	NA	082 495 5266	Yes
Pretorius, Yolandie	P. O. Box 430, Burgersfort, 1150	watervalsitrus@gmail.com	NA	078 451 6082	Yes
Van Vreden, Werner	P. O. Box 501, Lydenburg, 1120	werner@naranja.co.za	NA	082 042 2534	Yes
Winterbach, Albert	P. O. Box 430 Burgersfort, 1150	waterval.albert@gmail.com	NA	079 508 3960	Yes
Government Department	Postal Address	E Mail	Fax	Telephone or Cell Number	Attended Public Information Meeting
Egan, Vincent LEDET, Directorate: Biodiversity Management	Private Bag 9484 Polokwane, 0700	<u>EganVT@ledet.gov.za</u> ; vince.egan@gmail.com	NA	082 412 7247	No
Hine, Phillip South African Heritage Resources Agency	P. O. Box 4637, Cape Town, 8000	phine@sahra.org.za	021 462 4509	021 462 4502	No

Mathase, Tshifhiwa Department of Agriculture, Forestry and Fisheries	NA	Mathaset@dwa.gov.za	NA	082 068 3052	No
Ntabeleng, Department of Agriculture	NA	NA	NA	083 345 7579	No
Radzilani, Olga Department of Economic Development, Environment and Tourism	Private Bag X 9484, Polokwane, 0700	RadzilaniKO@ledet.gov.za	015 295 5015	015 290 7154	No
Sekgobela, SJ Tubatse Municipality	P. O. Box 206, Burgersfort, 1150	sjsekgobela@tubatse.gov.za	NA	013 231 1000 082 403 5238	No
Shabangu, Sampie Department of Water Affairs and Sanitation	Private Bag X 11259, Nelspruit, 1200	ShabanguS@dwa.gov.za	013 759 7460	013 759 7419	No

**MINUTES OF THE PUBLIC PARTICIPATION AND INFORMATION MEETING/DISCUSSION
HELD ON SITE: DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE ON
PORTIONS 7 AND 8 OF BOERBOOMKRAAL 353 KT NEAR BURGERSFORT AREA,**

**LIMPOPO PROVINCE:
4 February 2015 at 10H00
Project Nr. 12/1/9/3-GS5**

1. Participants:

- | | | |
|----------------------|------|------------------------------------|
| • Casper le Grange | (CG) | I&AP. |
| • Cathy de Jager | (CJ) | I&AP. |
| • Werner van Vreden | (WV) | I&AP. |
| • Lodewyk de Jager | (LJ) | I&AP. |
| • Gabriel Joubert | (GJ) | I&AP. |
| • Wynand Kirchner | (WK) | I&AP. |
| • Frans Labuschagne | (FL) | I&AP. |
| • Andrew Cooper | (AC) | I&AP. |
| • Marinus Neethling | (MN) | Applicant. |
| • Yolandie Pretorius | (YP) | Manager: Watervalsitrus Farm. |
| • Albert Winterbach | (AW) | Manager: Watervalsitrus Farm. |
| • Dr. Andrew Deacon | (AD) | Project Ecologist. |
| • Ralf Kalwa | (RK) | Rhengu Environmental Services: EAP |

Note: I&AP = Interested and Affected Party.

2. Apologies:

No apologies were received. All the direct neighbours and relevant Government Officials were invited to the meeting.

3. Welcome, Introductions and Procedures

• **Welcome:**

Ralf thanked the participants on behalf of the Project Team for the opportunity to meet.

• **Reason for the Meeting/Information Session:**

Ralf indicated that the purpose of this Meeting was specifically planned to:

- Inform the participants of the implications of the proposed project, and
- To allow the participants an opportunity to submit their requests/ideas and queries in order to ensure that the Project Team take cognisance of these aspects during the Environmental Impact Assessment (EIA) process.

A detailed Background Information Document (BID) was submitted to each participant/department/neighbour via e mail and made available at the meeting in hard copy format. This BID sets out the General Information, Project Description, Planned Infrastructure- and Project Specifics and Public Participation of the project. BID documents were also submitted via e-mail to other Interested and Affected Parties (I&AP's) and Government Officials prior to the meeting.

Introduction of Team Members:

Ralf introduced the team members to the meeting:

Marinus Neethling: Applicant.

Yolandie Pretorius and Albert Winterbach: Managers at Watervalsitrus.

Dr. Andrew Deacon: Project Ecologist.

Ralf Kalwa – Environmental Assessment Practitioner (EAP).

• **Signing of Attendance Register:**

Ralf instructed those present to sign the attendance register and to ensure that names and e-mail addresses are indicated clearly to ensure that all participants are copied with minutes of this meeting and future reports and newsletters.

- **EIA Process: Interested and Affected Parties (I&AP's) Role:**

Ralf explained the EIA process and the necessity of conducting an EIA. He emphasised the fact that an EIA consists of three components (environmental, - social and economic). These components should receive adequate attention during the assessment process resulting in a balanced, sustainable approach to problem solving. The process is also geared towards assessing potential impacts which the activity (in this case debushing natural land) may trigger and to propose solutions to minimise/mitigate or address these impacts where applicable.

All Interested and Affected Parties will be kept up to date with the assessment process and progress of the EIA. Participants will be sent draft copies or notifications of all important EIA documents/minutes and Ralf requested the participants to please comment on these documents as the contribution by participants remains vital to the success or the failure of the project.

Ralf also informed the meeting that interested parties not present are welcome to join the process at a later stage. Although the various applicable Acts and Regulations set prescribed time periods within which to respond, Ralf indicated to the meeting that he will be flexible within limits with regards to compliance in terms of such periods.

- 4. **Public Advertisements:**

The proposed project and the Environmental Impact Assessment process was advertised in a Regional Newspaper (The Lowvelder) and in a Local Newspaper (The Steelburger). Advertisements and Site Notices have been placed on site and at the Library in Burgersfort. Neighbours and Government Officials also received e mail copies of the site notices.

- 5. **Additional meetings:**

If required, additional meetings will be scheduled and communicated to the participants and those parties that have registered their intentions to participate.

- 6. **Comments, Queries and Issues:**

The attached queries, comments and issues were raised by the participants and answered where possible by the project team during the meeting. Unanswered queries/issues will be investigated further and addressed during the assessment phase of the project.

Issue	Response and Action
<p>1. LJ: How much water has been allocated to the farming operations and is this adequate for the envisaged expansion?</p>	<p>1. MN: The farm has an allocated entitlement of 124 ha. Currently it has access to water from an irrigation canal and on site dams. Some of this infrastructure is in poor condition. These facilities will be repaired and all leaks will be addressed. Together with improvements in the irrigation systems (drip line systems etc.) available to farmers currently the applicant has calculated that he can accommodate a sustainable expansion in the citrus production. Other members at the meeting confirmed that all farmers sharing the canal are committed to improving the condition of the canal and repairing all problem areas where applicable. The canal would then supply water on a more reliable, sustainable basis.</p>
<p>2. CG: A portion of the project area falls within a game camp which is used for recreational hunting purposes. This game camp is permitted by the Province and the applicant and CG share ownership of this camp. Will the expansion of the citrus production affect the future of the game camp in any way and what can be done to accommodate both land uses?</p>	<p>1. MN: Approximately 15% of the game camp will be used for citrus production and the future of the game camp will thus remain largely unchanged. The citrus orchards will be fenced off. MN and CG will meet to discuss operational details of the game camp to ensure both parties are satisfied with the on-going arrangements and to secure co-operation into the future.</p>
<p>3. GJ: 3 plants of special significance are known to grow in the project area in the game camp. The plants, <i>Eulophia leichii</i>, <i>Eulophia petersii</i> and <i>Ceropegia distincta</i> could be threatened by the removal of the natural bush and GJ is concerned that the future of these populations would not be secured. He requests that the project team take note of these plants and that a survey of the affected population is undertaken during the assessment process. Should some of these plants be affected GJ is prepared to be involved in the relocation process to suitable habitat sites. The future of <i>Ceropegia</i> is of special concern.</p>	<p>1. RK: GJ and RK have discussed this issue in a number of e mails to date. After the meeting GJ took various members of the meeting and project team to the site and showed them where some of these plants are found. AD (Project Ecologist) will assess the impact of the proposed activity on the plant populations discussed and submit recommendations to mitigate the impact of the activity on the future of these plants. GJ will also assist with identification of site populations and will liaise with AW for access to the site.</p>
<p>4. GJ: The Game Camp was classified as a Private Nature Reserve? Is this still the case?</p>	<p>1. RK: We are unsure of the classification of the game camp. RK will investigate the status of the game camp and inform the I&AP's of the outcome of the query. Members must however take note that sustainable utilisation of natural resources is an objective of all game reserves and provided the use is permitted under applicable legislation the activity may continue.</p>
<p>5. AC: What happens to the protected trees found in the project area?</p>	<p>1. RK: The removal of protected trees will have to be permitted by the Department of Forestry and Fisheries. Where applicable mitigation measures and recommendations will be submitted in the EIA to ensure a sustainable approach to the use of the protected trees and or the replacement thereof.</p>
<p>6. WV: Must the applicant apply for a "plough-out" permit?</p>	<p>1. RK: I am not aware that a "plough-out" permit is required. The Department of Agriculture will receive copies of the EIA and should this be required necessary</p>

applications will be submitted.

7. Closing:

Ralf thanked the members of the meeting for their participation and reassured them that all will be kept informed and updated on the progress of the project. The meeting was adjourned at 11h30.

COPIES OF NEWSPAPER ADVERTISEMENTS:
LOWVELDER

1995 that makes provision for the lodging of written objections or representation in respect of the application. Such objections or representations should be lodged with the Chief Executive Officer, Mpumalanga Gambling Board, Private Bag X9908, White River, Mpumalanga, 1240, within one month from 14 November 2014.

AC007856

NOTICE

Please note that MR B.S. LUBISI intends on making application to the Commissioner of the CIPC for the restoration of TINSHONSHA TRADING with registration number: 2008/182939/23. Any objections to this application to this application must be lodged with the Commissioner of the CIPC within 21 days of publication hereof.

CIPC
PO Box 429
Pretoria
0001
Tel: 012-394-9973

AC007902

NOTICE

FOR PUBLIC COMMENTS IN APPLYING FOR A LIQUOR LICENCE IN TERMS OF SECTION 35(2)(a) OF THE MPUMALANGA LIQUOR LICENSING ACT, 2006
PERSONAL DETAILS
I, Anton Erasmus with ID No: 610428 5106 088, under Power of Attorney for Christine Wilhelmin Hammann with ID No: 691 107 0440 088, an adult female, hereby invite written public comments concerning my application for a liquor licence to the Mpumalanga Liquor Authority to trade under the name of "The Art of Food" I make this application on behalf of Christine Wilhelmin Hammann.
LICENCE TYPE
The retail sale of liquor for consumption on the premises where the liquor is sold;
BUSINESS PREMISES
Physical address: Shop 1,

Power of Attorney for Tradevest 221 CC with Registration Number: CK 2002/068292/23, a juristic person, hereby invite written public comments concerning my application for a liquor licence to the Mpumalanga Liquor Authority to trade under the name of Rango's. I make this application on behalf of the juristic person: Tradevest 221 CC
LICENCE TYPE
The retail sale of liquor for consumption on the premises where the liquor is sold;
BUSINESS PREMISES
Physical address: 8 Wildberry Street, Riverside Park, Nelspruit, 1200 situated within the Mbombela Local Municipality, being an address within the Republic of South Africa and within the borders of the Mpumalanga Province.
Postal address: P.O. Box 26304, Nelspruit, 1200.
ADDRESSES TO WHICH COMMENTS MUST BE SUBMITTED
Comments should be made in writing and be addressed to the municipality concerned and a copy to the applicant, to reach the said address within thirty (30) days of this publication.
MUNICIPALITY'S ADDRESS:
Civic Center, 1 Nel Street, P.O. Box 45, Nelspruit, 1200.
APPLICANT'S ADDRESS:
Desmond Bowman, P.O. Box 26304, Nelspruit, 1200.

AC007824

NOTICE

INVITATION FOR PUBLIC COMMENTS IN APPLYING FOR A LIQUOR LICENCE IN TERMS OF SECTION 35(2)(a) OF THE MPUMALANGA LIQUOR LICENSING ACT, 2006
PERSONAL DETAILS
I, Anton Erasmus with ID No: 610428 5106 088, under Power of Attorney for K2013175773 (Pty) Ltd with Reistration Number: 2013 /175773/07, a juristic person, hereby invite written public comments concerning my application for a liquor licence to the Mpumalanga Liquor Authority to trade under the name of Panarottis

AC007823

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT PROCESS PUBLIC PARTICIPATION PROCESS INVITATION TO PARTICIPATE

Notice is given in terms of Regulation 54 of the Environmental Impact Regulations published in Government Notice R 545 in Government Gazette No. 33306 of 18 June 2010, under Section 24 (5) of the National Environmental Management Act, 1998 (Act. 107 of 1998), as amended, to carry out the following activities:
Project Reference: 12/1/9/1-GS 112 & LIM/EIA/0000984/2014: Department of Economic Development, Environment and Tourism (Limpopo Provincial Government).
Property Description and Location: Debushing of Natural Land for Agricultural Use: Portions 7 and 8 of Boerboonkraal 353 KT; Burgersfort Area, Limpopo. Following discussions with the Department of Economic Development, Environment and Tourism (Limpopo Provincial Government) and in terms of Government Notice R 546 a Basic Environmental Impact Assessment is required in terms of the following listed activities: Government Notice: 546 of 18 June 2010 Gazette Number: 33306:
Listing Notice 3:
Activity 12: The clearance of an area of 300 sqm or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.
Project Specifics include:
- Portions 7 and 8 of Boerboonkraal 353 KT; Burgersfort Area, Limpopo Province has been identified for the production of citrus.
- Project details are as follows:
- Currently the applicant is operating a successful citrus agricultural business on the farm.
- The applicant wishes to expand on this operation and clear away approximately 90ha of natural bush/virgin land. The final size of the new expansion will depend on the results of the ecological investigation and the suitability of the soils for citrus farming.
- The new project area is home to indigenous trees and bush and used for game farming and personal recreation.
- Link roads (less than 3.5 metres wide) will be constructed to provide access to each citrus orchard.
The purpose of this assessment process is to investigate the impact of implementing such activities at the Farm: Portions 7 and 8 of Boerboonkraal 353 KT Burgersfort Area, Limpopo Province.
Proponent/Applicant: Waterval Sitrus
Mr. Cornel van der Merwe
Private Bag X 507
Hectorspruit
1330
Cell: 082 784 7859 2168
Fax: Not Available
E-Mail: cornel@bosveldsitrus.co.za
Consultant and Contact Person: Rhengu Environmental Services
Contact Person: Ralf Kalwa
P.O. Box 1046
Malelane
1320
Cell: 082 414 7088
Fax: 086 685 8003
E-Mail: rhengu@mweb.co.za
In order to ensure that you are identified/registered as an interested and/or affected party please submit your name, contact information (e-mail; telephone; fax number) and interest in the matter in writing to the contact person on or before 20 December 2014.
Date of Notice: 14 November 2014.

AC007876

PORTION 18 OF ERF 3364 NELSPRUIT, EXTENSION 29 TOWNSHIP REGISTRATION DIVISION J.U., PROVINCE OF MPUMALANGA IN EXTENT: 474 (FOUR HUNDRED AND SEVENTY FOUR) SQUARE METRES HELD BY DEED OF TRANSFER T. 3859/2008 SUBJECT TO THE CONDITIONS CONTAINED THEREIN AND SPECIALLY SUBJECT TO THE CONDITIONS IN FAVOUR OF THE NORTHVIEW HOMEOWNERS ASSOCIATION WITH REGISTRATION NUMBER

2005/032238/08 (A COMPANY INCORPORATED IN TERMS OF SECTION 21 OF THE COMPANY'S ACT 1973) The physical address of the property supra is known as 18 NORTH VIEW STREET, NELSPRUIT.
ZONED: RESIDENTIAL IMPROVEMENTS - (Not guaranteed)
MAIN DWELLING:
1X ENTRANCE HALL
1X LOUNGE
1X DINING ROOM
1X KITCHEN
1X SCULLERY
3X BEDROOMS
2X BATHROOMS
2X SHOWERS
2X W/C
2X OUT GARAGE
Nothing in this regard is guaranteed.
THE PROPERTY IS ZONED: RESIDENTIAL

1. The sale shall be subject of the terms and conditions of the High Court Act and the Rules made thereunder.
2. The Purchaser shall pay a deposit of 10% (TEN PER CENT) of the purchase price and the auctioneer's commission in cash immediately after the sale and the balance against transfer to be secured by a Bank or Building Society Guarantee, to be furnished to the Plaintiff's attorneys within 14 (FOURTEEN) days after the date of sale, to be approved by the Plaintiff's Attorneys.
3. Transfer shall be effected by the attorneys for the Plaintiff and the Purchaser shall pay all transfer dues, including transfer duty, current and/or arrear levies /rates and/or Value Added Tax and other necessary charges to effect transfer upon request by the sale attorneys.
4. The full conditions of sale may be inspected at THE SHERIFF MBOMBELA, 99 JACARANDA STREET, WEST ACRES. DATED at NELSPRUIT this 22ND day of OCTOBER 2014. SEYMORE DU TOIT & BASSON ATTORNEYS
Plaintiff's Attorneys
14 Murray Street
Nelspruit
P.O. Box 8997
Nelspruit, 1200
Docex 42, Nelspruit
Tel: 013-752-4459
Fax: 013-755-3897 / 086-658-5185
E-mail: wianca@sdblav.co.za
Ref: Mirelle van der Hoven/wb /FE0003
CARE OF ROOTH & WESSELS ATTORNEYS
Walker Creek Office Park
Second Floor, Walker Creek 2
90 Florence Ribeiro Street
Muckleneuk
Pretoria
Tel: 012-452-4053
Fax: 086-619-6752
E-mail: quintinb@roothwessels.co.za
Reference: Mr. Quintin Badenhorst

AC007894

**CP DE JAGER
INTERESTED AND AFFECTED PARTIES
APPLICATION - MIDDENIN 109 JU,
NELSPRUIT**

I for a Mining Permit (Application accepted by the Mineral and Petroleum Resources Development Act (an amendment of Section 27 of Act no. 28 of 1994) for sand mining on a portion of the remaining Middenin 109 JU in the Magisterial District of

the proposed mining operation must be based on the reference number

the proposed mining operation must be based on the reference number

AP to:

Tel: 013-243-0542
Fax: 086-632-4936
E-mail: geovicon@iafrica.com
Cell: 082-359-5604
Contact Person: Riana Bate

NTAL (Pty) Ltd

Tel 013-754-1669

Friday November 14, 2014

COPY OF SITE NOTICE:

SITE NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT
PROCESS
PUBLIC PARTICIPATION PROCESS
INVITATION TO PARTICIPATE

Notice is given in terms of Regulation 54 of the Environmental Impact Regulations published in Government Notice R 545 in Government Gazette No. 33306 of 18 June 2010, under Section 24 (5) of the National Environmental Management Act, 1998 (Act. 107 of 1998) , as amended, to carry out the following activities:

Project Reference: 12/1/9/1-GS 112 & LIM/EIA/0000984/2014: Department of Economic Development, Environment and Tourism (Limpopo Provincial Government).

Property Description and Location: Debushing of Natural Land for Agricultural Use: Portions 7 and 8 of Boerboonkraal 353 KT: Burgersfort Area, Limpopo.

Following discussions with the Department of Economic Development, Environment and Tourism (Limpopo Provincial Government) and in terms of Government Notice **R 546** a **Basic Environmental Impact Assessment** is required in terms of the following listed activities:

Government Notice: 546 of 18 June 2010 Gazette Number: 33306: Listing Notice 3:

Activity 12: The clearance of an area of 300 sqm or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.

Project Specifics include:

- **Portions 7 and 8 of Boerboomkraal 353 KT: Burgersfort Area,** Limpopo Province has been identified for the production of citrus.
- **Project details** are as follows:
- Currently the applicant is operating a **successful citrus agricultural business** on the farm.
- The applicant wishes to **expand** on this operation and clear away **approximately 90ha** of natural bush/virgin land. The final size of the new expansion will depend on the results of the ecological investigation and the suitability of the soils for citrus farming. See Map attached.
- The new project area is home to **indigenous trees and bush** and used for game farming and personal recreation.
- Link roads (less than 3.5 metres wide) will be constructed to provide access to each citrus orchard.

The purpose of this assessment process is to investigate the impact of implementing such activities at the Farm: Portions 7 and 8 of Boerboonkraal 353 KT Burgersfort Area, Limpopo Province.

Proponent/Applicant:

Waterval Sitrus

Mr. Cornel van der Merwe
Private Bag X 507
Hectorspruit
1330

Cell: 082 784 7859 2168

Fax: Not Available

E-Mail: cornel@bosveldsitrus.co.za

Consultant and Contact Person:

Rhengu Environmental Services

Contact Person: Ralf Kalwa

P. O. Box 1046

Malelane

1320

Cell: 082 414 7088

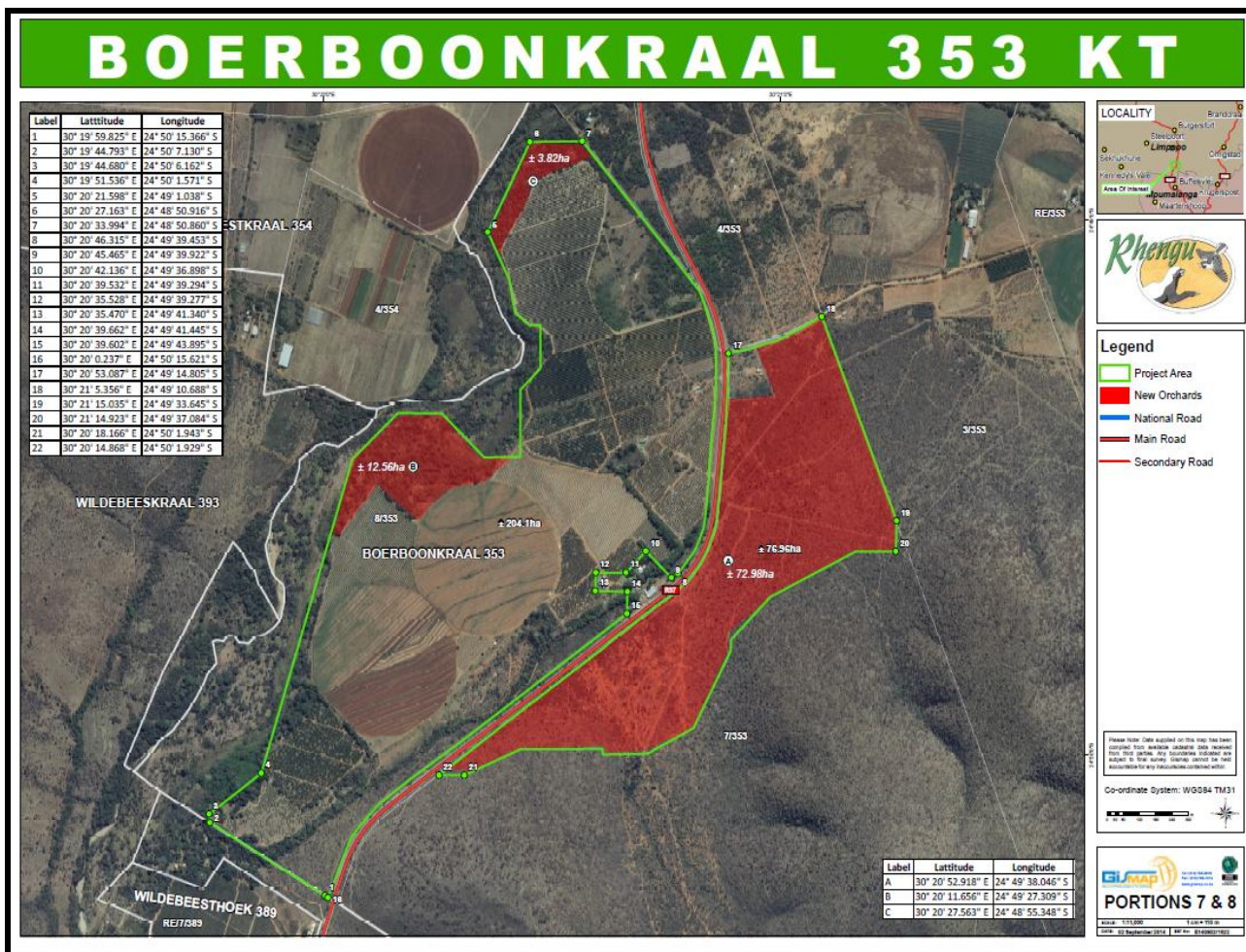
Fax: 086 685 8003

E-Mail: rhengu@mweb.co.za

In order to ensure that you are identified/registered as an **Interested and/or Affected Party** please submit your name, contact information (e-mail; telephone; fax number) and interest in the matter in writing to the contact person on or before **20 December 2014**.

Date of Notice: 21 November 2014.

In order to ensure that you are identified/registered as an **Interested and/or Affected Party** please submit your name, contact information (e-mail; telephone; fax number) and interest in the matter in writing to the contact person on or before **20 December 2014**.
Date of Notice: 21 November 2014.



COPIES OF E MAILS, NOTIFICATIONS AND RECEIPT OF DOCUMENTS

From: Ralf Kalwa [mailto:rhengu@mweb.co.za]

Sent: 16 November 2014 06:00 AM

To: 'liezl@lionval.co.za'; 'casper@bfwisp.com'; 'andrew@indigofruit.co.za'

Cc: 'Ralf Kalwa'; 'Cornel van der Merwe'; 'Marinus Neethling'; 'Yolandie Pretorius'; 'Albert Winterbach'; 'RadzilaniKO'; 'Andrew Deacon'; 'Christine Rowe'

Subject: ENVIRONMENTAL IMP[ACT ASSESSMENT BOERBOONKRAAL

PROJECT REFERENCE NUMBER: 12/1/9/1-GS 112 & LIM/EIA/0000984/2014

Dear Interested and Affected Party

1. Please find attached an invitation to participate in the **Public Participation Process** for an Environmental Impact Assessment which will be undertaken in your area shortly.

2. The advertisement attached appeared in the local press (Steelburger and Lowvelder **14 November 2014**) and on-site notices will be placed at strategic points and focus areas on the farm and in town during this week.

3. Please register back to me by return mail and or any other form of correspondence as per the advertisement attached.

Please feel free to contact me on **Cell: 082 414 7088** at any time to discuss aspects that you would like to raise and or clarity on at this early stage of the process.

Kind regards,

Ralf Kalwa

Environmental Assessment Practitioner

Rhengu Environmental Services

PS: U is welkom om in Afrikaans met my te skakel. Baie Dankie.

From: Ralf Kalwa [rhengu@mweb.co.za]

Sent: 13 January 2015 12:51

To: 'Ralf Kalwa'; vince.egan@gmail.com; 'Egan V T';
andrew@indigofruit.co.za; 'Berghaan'; liezl@lionval.co.za;
casper@bfwisp.com; 'Mariagrazia Galimberti'; mathaset@dwa.gov.za;
'RadzilaniKO'; sjsekgobela@tubatse.gov.za; shabanguh@dwa.gov.za;
'Albert Winterbach'; 'Waternal Sitrus'; 'Cornel van der Merwe'; 'Marinus
Neethling'; 'Andrew Deacon'; 'Christine Rowe'
Cc: 'Stefenie Botha'
Subject: ENVIRONMENTAL IMPACT ASSESSMENT
Attachments: BID BOERBOONKRAAL.docx

**PROJECT REFERENCE NUMBER: 12/1/9/1-GS 112 &
LIM/EIA/0000984/2014**

Dear Interested and Affected Party and Government Officials

- 1. Public Meeting:** All Interested and Affected Parties and Government Officials are requested to attend an **Information Meeting** pertaining to the specifics of the proposed project attached at **10h00 on 4 February 2015 on site at GPS S 24°49'43.5" E 030°2'41.3"**.
- 2. Directions:** Take the Burgersfort-Lydenburg Road. Approximately 15km from Burgersfort you will find the Waternal Sitrus Farm on your right hand side. Please phone me at 082 414 7088 for any queries in this regard?
- 3. Please RSVP** before **31 January 2015** to confirm your attendance?

Kind regards,

Ralf Kalwa
Environmental Assessment Practitioner
Rhengu Environmental Services

PS: U is welkom om in Afrikaans met my te skakel. Baie Dankie.

From: Rhengu Environmental Services [mailto:rhengu@mweb.co.za]

Sent: 05 February 2015 02:11 PM

To: 'Ralf Kalwa'; 'rika.l@lantic.net'; 'bbkboerdery@gmail.com'; 'werner@naranja.co.za'; 'info@plmboerdery.co.za'; Berghaan (berghaan0@gmail.com); 'frans.dor72@gmail.com'; andrew@indigofruit.co.za; 'Marinus Neethling' (marinus@bosveldsitrus.co.za); 'Cornel van der Merwe' (cornel@bosveldsitrus.co.za); Albert Winterbach (waterval.albert@gmail.com); 'Yolandie Pretorius' (watervalsitrus@gmail.com); Andrew Deacon (andrewd@mpu.co.za); 'EganVT@ledet.gov.za'; 'vince.egan@gmail.com'; 'Mathaset@dwa.gov.za'; RadzilaniKO (RadzilaniKO@ledet.gov.za); 'sjsekgobela@tubatse.gov.za'; 'ShabanguS@dwa.gov.za'

Subject: COPY OF MINUTES BOERBOOMKRAAL EIA

PROJECT REFERENCE NUMBER: 12/1/9/1-GS 112 & LIM/EIA/0000984/2014

Dear Interested and Affected Party and Government Officials

1. Thank you for attending the site meeting yesterday and your participation to date.
2. Please find attached a copy of the minutes.
3. Please peruse the contents thereof for correctness and submit changes to me by close of business on **Monday 9 February 2015**. Thereafter I will assume that the minutes are correct and include them in the EIA documents.

Kind regards,

Ralf Kalwa
Environmental Assessment Practitioner
Rhengu Environmental Services

From: Berghaan [mailto:berghaan0@gmail.com]

Sent: 05 February 2015 08:25 AM

To: rhengu@mweb.co.za

Subject: Kontak nommers

Importance: High

Goeie More Ralf,

Baie dankie vir `n aangename bymekaarkom gister.

Ons wil `n paar kerels (Vrywilligers) probeer bymekaarmaak om Saterdag en of dalk Sondag daardie velde te gaan stap.

Ons het egter nie kontak nommers nie.

Ons Benodig Mnr Winterbach se nommer vir Toestemming.

Ook wil ons vir Andrew van Naranja nooi, (sou hy beskikbaar wees) want hy het groot belangstelling getoon en hy ken van ons Orgidee mense.

Hy het dadelik gister Eulophia Speciosa in die veld gesien en kon identifiseer as Eulophia.

Moontlik sal Dr Deacon ook belangstel.

As u van hulp kan wees sal ek baie dankbaar wees.
Hartlike Groete,

Gabriel.

From: Mathase Tshifiwa (POT) [mailto:MathaseT@dwa.gov.za]
Sent: 09 February 2015 08:56 AM
To: Rhengu Environmental Services
Subject: RE: COPY OF MINUTES BOERBOOMKRAAL EIA

Thank you for the minutes. I should have attended the meeting but due to unforeseen circumstance I couldn't make it. My apology.

From: Mathase Tshifiwa (POT) [mailto:MathaseT@dwa.gov.za]
Sent: 09 February 2015 09:27 AM
To: Rhengu Environmental Services
Subject: RE: COPY OF MINUTES BOERBOOMKRAAL EIA

Thank you for sending me the minutes. I am happy that you consider conducting EIA to ensure balance in the environment. The protected trees are part of the environment and if the project will have an impact on them, you need to apply for a license.

My contact no is 082 068 3052/ 083 285 4340

From: Berghaan [mailto:berghaan0@gmail.com]
Sent: 10 February 2015 05:15 PM
To: rhengu@mweb.co.za
Cc: Andrew Deacon
Subject: PROJECT REFERENCE NUMBER: 12/1/9/1-GS 112 & LIM/EIA/0000984/2014
Importance: High

Dear Mr Kalwa,

Please find attached the KML file which contains our recorded data and our report regarding the vulnerable species distribution on the Boerboomkraal farm.

Kind Regards,

Gabriel Joubert.

From: Rhengu Environmental Services [mailto:rhengu@mweb.co.za]
Sent: 16 February 2015 06:37 AM
To: 'Berghaan'
Subject: RE: PROJECT REFERENCE NUMBER: 12/1/9/1-GS 112 & LIM/EIA/0000984/2014

Report Received.

Thanks,
Ralf Kalwa

APPENDIX F:
Environmental Management Programme

DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE: PORTION 7 AND 8 OF THE FARM BOERBOOMKRAAL 353 KT AT BURGERSFORT WITHIN THE GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT, LIMPOPO PROVINCE.

PROJECT NUMBER: 12/1/9/3-GS 5

1. ENVIRONMENTAL MANAGEMENT PROGRAMME: DEVELOPMENT ACTIVITIES

1. The environmental management programme will address the development phase of the proposed activity. This will include the harvesting of all trees and plants of commercial value by wood carvers; builders; carpenters and nurserymen. Furthermore it will included the preparation of the fields/orchards and the installation of services (irrigation).

2. The EMP will primarily be used by the applicant/bush clearing teams under the guidance of the ECO. For this purpose the EMPr must serve a number of functions. These are:

- Instructions and conditions included in the EMPr must be written in a clear, down to earth language.
- All aspects of the EMPr must be practical and unambiguous.
- Instructions and conditions must be concise and to the point.
- Aspects of the EMPr must reflect the recommendations and mitigation measures listed in the Environmental Impact Assessment Report/s.
- Aspects of the EMPr must reflect the recommendations and mitigation measures listed in the Specialist Studies.
- The EMPr must be used to monitor compliance to the conditions stipulated in the Authorisation of the Project as issued by LEDET.
- Aspects of the EMPr can be referred to in an Operational Management Programme (OMP) during future Environmental Audit Assessments.
- The EMPr must ensure the protection of the natural environment and cover all aspects of rehabilitation/sustainable preparation of the impacted sites.
- The EMPr will guide the process from initiation until sign off the project.
- **Note:** The EMPr will remain a dynamic document which can be updated with approval by LEDET.

3. The implementation of the EMPr will be guided by an Ecological Control Officer (ECO) (Ecological Site Officer).

- The applicant/developer is responsible for the appointment of the ECO.
- The name and contact details of the ECO must be submitted to LEDET once the project commences.
- All Interested and Affected Parties (I&AP's) must be informed of the name and contact details of the ECO.

1.1. Monitoring and Auditing

The Environmental Control Officer (ECO) will ensure that all the **conditions** as set out in the **Environmental Authorisation (EA) and any other requirements as issued by LEDET or any other applicable Department, e.g. DWA**, are met and implemented as stipulated.

The ECO must submit to LEDET, a **monthly audit report** on the activities of the development. Monthly audit reports will be made available to I&AP's on request.

The role of the ECO and independent audit teams are well defined in the framework of Integrated Environmental Management (IEM). The developer, together with the ECO will ensure **compliance** in terms of this process.

1.2. Initial Roleplayers: Contact Details:

- | | |
|----------------------------------------------|------------------------|
| 1. Developer/Applicant: Cornel van der Merwe | Cell: 082 784 7859 |
| 2. ECO: To be appointed | Cell: To be confirmed. |
| 3. EAP: Ralf Kalwa | Cell: 082 414 7088 |

2. DEVELOPMENT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

This programme must be read in conjunction with the **Contract Documents** for the project. This environmental management programme will address the development/preparation phase of the proposed development site as described in the Basic Assessment Report.

KEY ISSUES: EMP

This programme is designed for the entire development period, and includes the rehabilitation of areas where development/storage activities took place.

The Contractor (debushing agent), together with the Environmental Control Officer (ECO) will be responsible to ensure that all construction workers, sub-contractors, suppliers and relevant personnel associated with the development:

- Understand the contents of the Environmental Management Programme (EMPr).
- Ensure that all the debushing personnel are fully aware of all environmental issues relating to the development activities.
- Adhere to all the precautionary and mitigating measures described in the EMPr.
- Ensure that all the construction personnel understand the implications and stipulations of the Environmental Rules and Regulations described in the Development Contract.
- The ECO shall instruct the Applicant/Developer to suspend the works if the Contractor and/or any Sub-Contractors do not comply with the contents of the EMPr.
- The ECO will submit monthly audit reports to LEDET, the Contractor and the Developer.
- The EMPr describes the responsibilities of all the staff during the development phase.
- The ECO will oversee the operations and ensure compliance with the EMPr.

Non Compliance: The Contractor is deemed NOT to have complied with the EMPr, the Environmental Authorisation and the EIA if:

- Within the boundaries of the site, site extensions and haul/access roads there is evidence of contravention of the Specifications of the EMPr;
- Environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the ECO within a specific time;
- The Contractor fails to respond adequately to complaints from the public;

Prior to construction: The Contractor/Debushing Team, in liaison with the ECO will submit a final layout plan of the development site indicating all of the following: storage areas, hazardous substances storage area (if applicable), different stockpile areas, material stores, waste disposal areas, on site offices, workshops, ablutions, access roads, no go areas etc. This construction site layout plan must be submitted to LEDET and the ECO prior to site establishment. Once the layout is approved by the ECO the Contractor will be required to sign acceptance of the EMPr and commence with the development. **Note:** Contractor = Debushing Agent/Installation of Irrigation etc.

DEVELOPMENT ENVIRONMENTAL MANAGEMENT PROGRAMME: The ECO will monitor compliance of this EMP.		
ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
<p>1. Site Establishment and Logistics. Note: Contractor to stay off site. In exceptional circumstances where this is not possible the following conditions will apply.</p>	<p>1. Site Office and Logistics: Establish a site office for the development. The Farmer's Office can serve this purpose. The following procedures and equipment must be made available at the office:</p> <ul style="list-style-type: none"> • Copies of the EIA and the EMP. • Copy of the Environmental Authorisation. • Copies of the Development/Site Layout Plan. • A Complaints Register. • A Corrective Actions and Site Instruction Register. • An Emergency/Evacuation Procedure. • A Monitoring- and Audit Register. • Emergency Contact Numbers including but not limited to telephone contact details for medical doctors; hospitals; emergency helicopters; emergency fire management; the ECO and Project/Site Manager. • Fire Extinguishers. • First Aid Kit. • A register of all applicable Standard Operational Procedures and Method Statements (e.g. handling of hazardous materials) of materials and equipment that are used and stored on site. 	<p>Contractor or Debushing Agent.</p>
	<p>2. Final Walk Inspection (Pre-Construction): A final walk through the site with the ECO to point out the presence sensitive areas, e.g. Special Plants/Habitat/Botanical Reserve, or any other aspect which requires protection has to be undertaken prior to site establishment.</p>	
	<ul style="list-style-type: none"> • All staff must be trained to respect the importance of rare/conservation significant plants and artefacts. This is specifically applicable to the no go area around the Botanical Reserve and the Grave Sites. 	
	<ul style="list-style-type: none"> • Special features (rocky outcrops; large indigenous trees; rivers; etc.) must be indicated on the development map and demarcated on site prior to construction. Damage to such features must be rehabilitated to the satisfaction of the ECO and the developer. 	
	<ul style="list-style-type: none"> • The entire Botanical Reserve and the Grave Sites must be demarcated to ensure that all machinery is kept out of these zones. 	
	<ul style="list-style-type: none"> • Timing: All development should take place in the period February-September. 	
	<p>3. Demarcation: Demarcate the boundaries of the total development site for management purposes using steel droppers/standards spaced at regular intervals with a combination of nylon rope/barrier tape between the droppers. The Shepherd Trees on the southern boundary of Project Area A will serve as a demarcation boundary.</p>	

	<ul style="list-style-type: none"> • The Contractor shall maintain the demarcation line and ensure that materials used for construction on site do not blow away or move outside the site or pose a threat to any neighbours or adjoining property owners. • Where applicable, structures must be located in such a manner as to reduce visual intrusion and minimal disturbance to neighbouring properties. Make use of coloured netting or corrugated cladding to hide unsightly features. • Construction activities are restricted within these boundaries, thus all construction equipment, materials and personnel will remain within this demarcated area at all times. • Ensure that access to the site including related infra-structure and machinery is restricted to authorised personnel only. <p>4. Site Control: Limit the construction/development site to existing infrastructure and or to disturbed areas.</p> <ul style="list-style-type: none"> • Ensure that only approved workers and Sub-Contractors are accommodated and allowed access to the site. <p>5. Site Facilities: The construction site and storage areas must be safeguarded against fire.</p> <ul style="list-style-type: none"> • Ensure that the Contractors Site is fully functional in terms of water and sewerage supply (temporary toilets) prior to the contractors coming on site. • Contractor to be held responsible for providing construction-, drinking-, and washing water for all the activities on site. <p>6. Access Routes and Control: No temporary access routes and haul roads are required for this activity.</p> <ul style="list-style-type: none"> • Existing access routes and roads will suffice for the duration of the project. • No vehicle movement outside demarcated areas/routes/existing roads is permitted without authorisation from the ECO. • Dust control measures, i.e. dampening access routes with water, must be implemented where necessary. • Damage to any existing roads as a result of construction activities will be repaired to the satisfaction of the ECO and the Developer. 	
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	<p>7. Storage- and Material Laydown Areas: The need for laydown/storage areas will be minimal however irrigation piping, pumps etc. will require a dedicated site when these materials are delivered and until these items are installed.</p> <ul style="list-style-type: none"> • All equipment, materials; pipelines etc. must be stored at the entrance gate (Project Area A). <p>8. Site Closure: The debushing programme should be completed within 28 days. Once the development period is completed the following conditions will apply:</p> <ul style="list-style-type: none"> • The Contractor shall ensure that all temporary structures/facilities, equipment, materials and waste used for construction activities are removed off site after completion of development. • The contractor shall clear and clean the construction/development site to the satisfaction of the ECO and the developer upon completion of the development. • Remove all components of demarcation when the development phase is completed. • Rehabilitate disturbed areas, e.g. storage site at the gate. This will include but not be limited to: <ul style="list-style-type: none"> • Break up any hardened soil surfaces allowing seeds and rainwater an opportunity to penetrate the soil surface. • Brush pack/landscape bare areas and reduce the potential run off of water. • Shape/level off any unnatural areas to fit in with the surrounding landscape. <p>Site Closure: Should the site be closed for a period of more than one week, a report on compliance will be lodged with the ECO, and the following will be confirmed:</p> <ul style="list-style-type: none"> • Stores will be left at as low a volume as practically possible, with no visible leaks. • The store area will be secure and locked. • Fire extinguishers will be serviced and accessible. • The area will be secure from accidental damages. • Emergency- and contact numbers will be available and displayed prominently. • Toilets will be empty and secured. • Refuse bins will be empty and secured. • Access to the site must be limited to authorised personnel only. • Security staff will patrol and guard the site. 	
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ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
<p>2. Site Biodiversity Management. (The ECO must be consulted at all times during this process).</p>	<p>1. Vegetation Management: Vegetation clearing must be undertaken in a judicious and responsible manner. The following approach will apply:</p>	<p>Contractor or Debushing Agent and ECO where applicable.</p>
	<ul style="list-style-type: none"> • Six weeks prior to the vegetation being cleared all Protected Tree Species must be clearly marked by the ECO and DAFF Permits (Protected Trees), LEDET Permits (where applicable) must be obtained to ensure permitted removals and translocations. 	
	<ul style="list-style-type: none"> • Local nurseries will be informed to remove all commercial plants at own cost. 	
	<ul style="list-style-type: none"> • The developer will translocate all applicable plants/trees to the Game Camp as required. 	
	<ul style="list-style-type: none"> • All other parties, e.g. carpenters, wood carvers etc.will be given an opportunity to remove wood for building, carving and woodcraft purposes. 	
	<ul style="list-style-type: none"> • The debushing agent will remove all the remaining vegetation and clear the land for the orchards. 	
	<ul style="list-style-type: none"> • Plants of Special Concern: The Botanical Reserve will be clearly demarcated to ensure protection of all special plants. 	
	<ul style="list-style-type: none"> • Vegetation Clearing: During the clearing of vegetation in the project area most vertebrates will move away from the project site. During this activity the project team may encounter slow moving reptiles and smaller mammals. These animals should be allowed to move away unharmed or be assisted and relocated to the Game Camp Area. 	
	<ul style="list-style-type: none"> • Riparian Corridor: Project Aras B and C will be kept intact. The riparian zone will act as a corridor for migrating fauna of all species. 	
	<p>2. Alien Invader Plants: Control of alien invasive species will be undertaken on the development footprint in line with the requirements of the Conservation of Agricultural Resources Act. The ECO will identify plants (where applicable) which require removal and management.</p>	
<ul style="list-style-type: none"> • Alien invasive plant material will be preferably removed through mechanical means (e.g. chainsaw, hand-pulling of smaller specimens). 		

	<ul style="list-style-type: none"> • Chemical control is only required as a last resort or as a support mechanism to control coppicing and sprouting. 	
	<ul style="list-style-type: none"> • All exotic/alien invasive plants must be identified and earmarked for removal. The ECO will assist with identifications (where applicable). 	
	<ul style="list-style-type: none"> • A number of workers must be used to remove the vegetation i.e. 4/6 workers. ECO to monitor. 	
	<ul style="list-style-type: none"> • If during the establishment period, any noxious or excessive weed growth occurs, such vegetation will be removed by the contractor. 	
	<p>3. Fauna and Flora Management: Collection of firewood/seeds/fruit/plants/animals or any biological material (where applicable) is strictly prohibited.</p>	
	<ul style="list-style-type: none"> • No animals including snakes should be killed or injured by workers during the construction- and or the operational phases of the project. 	
	<ul style="list-style-type: none"> • No poaching will be allowed on site. 	
	<ul style="list-style-type: none"> • The Contractor is not allowed to deface, paint or mark and/or damage natural features/vegetation on the site. 	
	<p>4. Topsoil Protection: Topsoil will have to be removed/moved from all areas where pipelines are to be installed.</p>	
	<ul style="list-style-type: none"> • Topsoil to be handled twice only; once to strip and stockpile (in low heaps of 1m) in the Right of Way (ROW) next to the trench, and secondly to replace along the contour, level, shape and scarify. 	
	<ul style="list-style-type: none"> • The topsoil must be replaced as soon as possible. 	
	<ul style="list-style-type: none"> • Topsoil may not be compacted, nor should any object be stored or stockpiled upon it. 	
	<ul style="list-style-type: none"> • No vehicle traffic will be allowed on the top soil. 	
	<ul style="list-style-type: none"> • The Contractor shall prevent pollution incidents on the top soil. ECO to monitor. 	

ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
3. Project Specifics and Excavation and Management: Trenching; Backfilling and Levelling.	1. Excavation: During excavation topsoil has to be stockpiled as specified in low 1m heaps next to the trench in the ROW.	Contractor or Debushing Agent and ECO where applicable.
	<ul style="list-style-type: none"> • Excavation of soil to solid ground to be done carefully and to ensure proper drainage. 	
	<ul style="list-style-type: none"> • Remove soil/sand, debris and expose all rocky material. 	
	<ul style="list-style-type: none"> • Excess (spoil) excavated rocky material (rock and boulders) to be used for erosion control/cladding where applicable or for purposes of landscaping. 	
	2. Backfilling: The Contractor shall backfill according to the requirements of progressive reinstatement, i.e. reinstatement of disturbed areas to topsoil profile on an ongoing basis, immediately after selected construction activities e.g. installation of pipelines, are completed, which will allow for passive rehabilitation.	
	<ul style="list-style-type: none"> • All soils must be returned into the trench in the sequence in which they were excavated. 	
	3. Levelling: Excess sand/soil (after construction) must be filled in and landscaped into natural sandbanks blending in with the topography of the surroundings.	
	<ul style="list-style-type: none"> • Excess stockpiled building material must be removed completely and all areas levelled. 	
	<ul style="list-style-type: none"> • Excess sand and soil resulting from levelling activities of the work area to be stored in low heaps on the access road or already disturbed areas. 	
	<ul style="list-style-type: none"> • Excess topsoil to be spread evenly over the area in a manner that blends in with the natural topography. 	
	<ul style="list-style-type: none"> • When the bulk of material stockpiles have been cleared, the disturbed areas are to be levelled and cleared of any unnatural foreign material manually using shovels and rakes. 	
	4. Trenching: This activity is limited to the pipeline installations to the new orchards.	
	<ul style="list-style-type: none"> • Trenching will be minimised through the use of single trenches. 	
	<ul style="list-style-type: none"> • Planning and selection of trench routes will be indicated on the Site Development Plan. 	
<ul style="list-style-type: none"> • Trench routes with permitted working areas will be clearly defined and marked with painted stakes prior to excavation. 		
<ul style="list-style-type: none"> • All trenches must be clearly marked (Flags; coloured posts; reflective banners; lights) in order to alert people to the potential hazard thereof. 		
<ul style="list-style-type: none"> • All open trenches must be patrolled on a minimum of a daily basis to ensure that animals, e.g. lizards, small rodents, have not become trapped. Such animals will be removed and released. A log must be placed at strategic spots each afternoon to allow any animal that accidentally falls into the trench an opportunity to escape. 		
<ul style="list-style-type: none"> • Stripping and separation of topsoil will occur as stipulated by the EMP above. 		

	<ul style="list-style-type: none"> • Soil will be excavated and used for re-filling trenches using the rollover method, i.e. progressive re-instatement: This entails the following approach: • Soil from the first trench section will be stockpiled. • Soil excavated from subsequent trench lengths will be used to backfill once the services have been laid on an ongoing basis. • The final trench length will be re-filled using the originally stockpiled soil. 	
	<ul style="list-style-type: none"> • Trench lengths will be kept as short as practically possible. 	
	<ul style="list-style-type: none"> • Trenches will be re-filled to the same level as, or slightly higher to allow for settlement of the surrounding land surface to minimise erosion. Excess soil will be stockpiled in an appropriate manner. 	
	<ul style="list-style-type: none"> • Immediately after refilling, the disturbed areas will be stabilised. 	
	<p><u>5.Irrigation Methods/Equipment:</u></p> <ul style="list-style-type: none"> • The efficient use of water and the implementation of a site specific irrigation system will go a long way towards the sustainable use of irrigation water in the new orchards. • It is therefore essential that a cost effective system is used which optimises the use of water and prevents run-off and erosion. For this reason the dripline irrigation method is proposed for consideration. • Also install a Gulf Irrigation Controller (RICO) System and Rain Sensor probes. This will ensure adequate control of water supply, when and where it is required. The long metal probes measure the soil's moisture content at the root zone. Basic sensors turn off the system when water is adequate and turns the system on to maintain correct moisture levels 	<p>Debushing Agent.</p>

ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
4. Waste Management: Solid Waste. (Waste will be channelled into the existing farm schedule and waste management programme).	1. Litter and Builders Waste: All waste to be disposed of off-site at an approved landfill site in Burgersfort.	Contractor or Debushing Agent.
	<ul style="list-style-type: none"> • Contractor not to dispose of any waste and or construction debris through burning or by burying. 	
	<ul style="list-style-type: none"> • Contractor to supply tamper proof waste bins throughout the site at locations where construction workers are working. 	
	<ul style="list-style-type: none"> • Tamper-proof refuse bins to be emptied on a daily basis. Refuse bins not to be used for any other purpose. 	
	<ul style="list-style-type: none"> • Contractor has to designate specific areas for staff to enjoy their lunches and tea and he must provide for access to adequate refuse bins at these sites. 	
	<ul style="list-style-type: none"> • All litter must be removed off site daily and deposited at the designated waste collection point near the Site Entrance. 	
	<ul style="list-style-type: none"> • Waste includes cigarette boxes, cigarette butts, paper, plastic bags, tin, glass, wires, cable ties, and organic waste e.g. peels and bones. 	
ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
5. Waste Management: Liquid Waste.	1. Construction Water: Construction water refers to all water affected by construction activities.	Contractor or Debushing Agent.
	<ul style="list-style-type: none"> • No River/Stream/Natural Drainage Line must be used for cleaning of tools and equipment. This includes the washing of clothes and bathing/recreational purposes. 	
	<ul style="list-style-type: none"> • All washing of equipment to be undertaken at the designated facilities in the Watervals Citrus Farm Maintenance Yard. 	
	<ul style="list-style-type: none"> • Water and slurry to be contained to prevent the pollution of the ground surrounding the mixing and/or disposal points. 	
	<ul style="list-style-type: none"> • No spills to be channelled into natural environment. Contractor to take reasonable precautions to prevent pollution of the ground and water resources. 	
	<ul style="list-style-type: none"> • Contractor to ensure that no fuels (petrol/diesel), oils, lubricants and or other chemicals are discarded onto the ground. Use drip trays in all potentially risky situations, e.g. refuelling a mobile generator. 	
	2. Sewerage Management: Adequate temporary (e.g. Enviro-loos) ablution facilities to be put in place on sites located near to working areas.	
	<ul style="list-style-type: none"> • 1 Enviro-loo per 10 workers. 	
	<ul style="list-style-type: none"> • Toilet paper must be provided by the contractor. 	
	<ul style="list-style-type: none"> • All toilets must be checked daily and serviced accordingly by an accredited service provider. 	
<ul style="list-style-type: none"> • No spillages into the surrounding environment will be allowed. 		

ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
<p>6. Waste Management: Hazardous Waste (The use of hazardous materials are not envisaged during the development phase, however unforeseen events may occur which are not known to the EAP at this stage of the process. This aspect is therefore included as a precautionary measure).</p>	<ul style="list-style-type: none"> The entrances to the toilets must be adequately screened from public view. <p>1. Hazardous Waste Process: The EAP has not been made aware of any hazardous substances that may be used during the development construction process. To ensure that the EMP maximises the implications of the precautionary approach the following conditions are included in the event that substances such as fuel (mobile generator); paints; varnishes; chemicals for alien plant control etc. are used at any stage of the development.</p> <ul style="list-style-type: none"> A Contractor staff member must be designated to manage and control this process. 	<p>Contractor or Debushing Agent.</p>
	<ul style="list-style-type: none"> Contractor to comply to all national, regional, and local legislation with regards to the storage, transport, use and disposal of petroleum, chemicals, harmful- and hazardous materials and substances. 	
	<ul style="list-style-type: none"> Contractor to provide the ECO with a list of all petroleum, chemical, harmful- and hazardous materials and substances on site, together with all the storage, handling and disposal procedures for these materials. A register must be kept at the site office containing all the written/prescribed handling procedures. 	
	<ul style="list-style-type: none"> Contractor to be responsible for training and education of workers that will be working with these materials. Training to include the proper use, handling and disposal of the substances. 	
	<ul style="list-style-type: none"> Storage of chemicals to be safe, tamper proof and under strict control. 	
	<ul style="list-style-type: none"> Storage and handling of fuels, lubricants, chemicals and other hazardous substances to be protected by placing these items on an impermeable liner, e.g. bund beneath the above ground storage containers in order to prevent accidental contamination of the soil. 	
	<ul style="list-style-type: none"> The contractor will ensure that there is a supply of absorbent material (or absorption blankets) readily available on site to absorb, break down and where possible control any spillages that may occur. The amount and type of absorbent material must be appropriate to the volumes of hazardous liquids on site. 	
	<ul style="list-style-type: none"> Any accidental chemical/fuel spills to be addressed and reported immediately to the ECO. The ECO will inform the applicable authorities and initiate a containment- and control programme as applicable. 	
	<ul style="list-style-type: none"> Contractor to be responsible for establishing an emergency procedure for dealing with spills/releases of fuels, chemicals, hazardous substances and medical emergencies. All spills/accidents to be recorded (in the Incident Register) and reported to the ECO. The clean up of spills and any damage caused shall be for the Contractor's account. 	

ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
7. Access Roads	<p>1. Existing Roads: The farm is well serviced with all weather- and farm roads to the various sections and facilities on the property. The proposed project and all deliveries will make use of these existing access routes.</p>	Contractor or Debushing Agent.
	<ul style="list-style-type: none"> • Adhere to the local speed limit on the farm (40km/h) at all times. 	
	<ul style="list-style-type: none"> • Contractors to limit the number of deliveries where possible through appropriate advance planning. 	
	<ul style="list-style-type: none"> • Contractors will be required to submit a delivery timetable to the ECO. 	
	<ul style="list-style-type: none"> • Construction personnel should only use authorised paths and roads. 	
	<ul style="list-style-type: none"> • Any damage caused by the construction activities to any access or public roads must be rehabilitated thoroughly upon completion of the construction. 	
	<p>2. New Roads (Less than 3.5m wide): All roads created for the purposes of the development must be designed and planned in advance with the ECO.</p>	
	<ul style="list-style-type: none"> • Road access will be required to each orchard. These roads must be designed to incorporate adequate drainage and water attenuation structures. 	
	<ul style="list-style-type: none"> • Where applicable the road must be stabilised in patches with all weather gravel (patch gravelling). 	
	<ul style="list-style-type: none"> • Stabilise/All Weather Access: Although these farm roads will not carry significant loads of traffic on a daily basis access to the orchards will be required during the harvesting process. The road surfaces must thus be stabilised for all weather use. 	
<ul style="list-style-type: none"> • Prevention of Erosion: Erosion problems on roads must be addressed immediately as and when these occur. This must be done by installing humps across the roads at regular intervals, in order to redirect the water away from the road or track. 		
<ul style="list-style-type: none"> • Humps must be large enough to withstand storm water events. They must be constructed across the entire width of the road (from side to side and into the adjoining vegetation). The humps must be at least 50cm higher than the surrounding ground level. This will ensure that run-off of water is directed out of the road and not down the road. 		
<ul style="list-style-type: none"> • Mitre Drain: All water run-off from the roads must be channelled into mitre drains. These drains must be kept open (free of vegetation and blockages). All drains must be opened by end of September annually. 		

ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
8. Construction Staff	<p>1. Staff Management: The Code of Conduct for Contractors as described in the Contract Document will apply to all Construction Staff.</p> <ul style="list-style-type: none"> • The EMP will be included as a condition of the Contract Document. • Contractor must adhere to all conditions of the Occupational Health and Safety Act. • A Safety Plan must be submitted to the ECO prior to the commencement of construction. • No contractor staff will be housed on the development site. • All contractor staff will abide with the Rules and Regulations of the Thankerton Farm. This includes all aspects to gate entrance and to exit the property. • All staff must use the water- and sewerage facilities judiciously and keep these facilities neat and clean. • All staff must remain within the development footprint and behind the demarcated boundaries. • No open fires will be allowed for cooking and or heating purposes. • Staff must supply their own lunches and refreshments. No cooking will be allowed on site. • Staff must respect the surrounding environment and prevent all littering and damage to fauna and flora. • Site Specifics: Induction Courses: All staff will undergo an intensive induction course on worker safety and safety procedures for the various sections of the site. • EMP: The conditions of the Environmental Management Programme must be explained to all workers and staff on site. • All staff on site must sign an acceptance of understanding the EMPr form prior to being allowed on site. 	Contractor or Debushing Agent.

ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
9. Fire.	<p>1. Fire Management: Contractor to take all the necessary precautions to ensure that no fires are caused as a result of activities on site.</p> <ul style="list-style-type: none"> • A Contractor staff member must be designated to manage this process. • Contractor to supply all facilities, site offices, workshop areas, storage areas, with approved fire-fighting equipment. • All staff on site will be made aware of general fire prevention and control methods and the name of the responsible person to alert to the presence of a fire. • The Contractor will advise the relevant authority of a fire outside of a demarcated area as soon as it starts and will not wait until he can no longer control it. • All fire fighting equipment to be maintained in good operating order. • No open fires for heating or cooking are allowed on site. 	Contractor or Debushing Agent.
ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
10. Accidents.	<p>1. Staff Safety: Contractor to comply with the Occupational Health and Safety Act (OHASA) and any other regulations with regard to labour safety on site.</p> <ul style="list-style-type: none"> • Contractor to provide an Occupational Health and Safety Management Plan to the ECO for approval prior to the commencement of works in terms of the Construction Regulations. • A Contractor staff member must be designated to manage this process. • Where applicable, fencing and barriers will be in place in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993). • Applicable notice boards and hazard warning notices will be put in place and secured. Night hazards, e.g. open trenches, will be suitably indicated (e.g. reflectors, lighting, and traffic signage). • No unauthorised firearms or weapons of any kind will be permitted on the site. • Contractor to ensure that all staff are familiar with all the emergency procedures. • All staff must undergo a basic First Aid Course. • Contractor to ensure that lists of all emergency telephone numbers/contact people are available and are posted at relevant locations, e.g. site office, at all times; and that they are updated regularly. • Contractor to be responsible for establishing an emergency procedure for dealing with medical emergencies. All incidents to be recorded (in the Incident Register) and reported to the ECO. 	Contractor or Debushing Agent.

ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
11. Adverse Weather Conditions and Erosion Protection.	1. Wet Weather: Overflows and Erosion Protection: Development on this project will take place during the autumn/winter season.	Contractor or Debushing Agent.
	<ul style="list-style-type: none"> Rainfall events are rare in winter however the following mitigation measures are listed as a precautionary measure: 	
	<ul style="list-style-type: none"> Contractor to set up a procedure for rapidly emptying any collection points to prevent them filling with rainwater. 	
	<ul style="list-style-type: none"> Contractor to ensure that no sumps (where applicable) are emptied unnecessarily. Special care to be taken during rainy periods/adverse weather conditions to prevent contents from overflowing. 	
	<ul style="list-style-type: none"> Contractor to ensure that a procedure is established for dealing with potentially polluted rainwater. Procedures/method statements must be filed in the register in the site office. 	
	<ul style="list-style-type: none"> Stockpiles of fine material such as sand, topsoil, etc. to be protected from rain runoff and wind. 	
	<ul style="list-style-type: none"> During construction, Contractor to protect all areas susceptible to erosion by installing all the necessary temporary and permanent drainage works ASAP. Contractor must also prevent water scouring of the slopes, embankments (where applicable) and any other areas. Correct any cause of erosion at the onset thereof through the most appropriate mechanism. Discuss any remedial actions with the resident ECO. 	
ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
12. Noise, Visual and Dust Impacts.	1. Noise Impacts: Contractor to use the equipment that is appropriate to the task in order to minimise the extent of damage to the environment and minimise the noise levels.	Contractor or Debushing Agent.
	<ul style="list-style-type: none"> The provisions of SABS 1200A will apply to all areas within audible distance of the site. 	
	<ul style="list-style-type: none"> Noise levels to be kept within acceptable limits for a conservation/agricultural area, and not to be of such a nature as to detract from the experience of persons in the area. 	
	<ul style="list-style-type: none"> No amplified music will be allowed. 	
	<ul style="list-style-type: none"> Construction activities generating output levels of 85dB or more will be confined to the hours 07h00 to 17h00 Mondays to Fridays. 	
	<ul style="list-style-type: none"> Where applicable, the Contractor will take preventative measures (e.g. screening, muffling, timing, pre-notification of affected parties) to minimise complaints regarding noise and vibration nuisances from high impact construction activities. 	
2. Dust: Dust to be controlled on site at all times.		

	<ul style="list-style-type: none"> Dust emissions may occur during the clearing of vegetation and delivery of equipment and supplies on the farm roads to the project area. Contractor must control dust emissions using a water tanker as and when the impact arises. 	
ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
13. Cultural Artefacts.	<p><u>1. Handling of Unexpected Cultural Finds:</u></p> <ul style="list-style-type: none"> Sensitise the Contractor/labourers to be aware of the importance of cultural artefacts and implement the recommended procedure below in the event that such a discovery is made accidentally during construction. Should any artefact or historical site be discovered during excavations for irrigation trenches as well as in future, all works must cease with immediate effect. The find must be reported to the ECO and the Applicant/Project Manager for the project. These representatives will initiate an Action Plan (Contact SAHRA and the Project Archaeologist) to address the management and handling of the find. Grave Sites: Fence off both Grave Sites in Project Area A. Clean and maintain the sites. Do not develop Project Areas B and C. 	Contractor or Debushing Agent or Applicant.
ACTIVITY	MANAGEMENT/MITIGATION ACTION	RESPONSIBLE PERSON
14. Site Clean Up and Closure.	<p><u>1. Removal and Clearance:</u> Contractor to ensure that all temporary structures, materials, water and waste facilities used for construction activities are removed upon completion of the project.</p> <ul style="list-style-type: none"> All signs of disturbance and contractor activity must be rehabilitated to a state as on day of site handover. All toilets must be removed. All left over stock and bits and pieces of materials must be removed. All waste bags must be deposited at the waste management facility. <p><u>2. Rehabilitation:</u> It is not envisaged that major rehabilitation efforts will be required, however applying the precautionary approach the following conditions are placed on record:</p> <ul style="list-style-type: none"> All re-seeding activities will be undertaken at the end of the wet season (middle to end April) to ensure optimal conditions for germination and rapid vegetation establishment. When ripping for rehabilitation, e.g. site /laydown yard the contractor will rip to refusal or a minimum of 300 mm. The rehabilitated and seeded areas must be harrowed after spreading the topsoil and fertiliser uniformly. Inspect rehabilitated area at three monthly intervals during the first and second growing season to determine the efficacy of rehabilitation measures. 	Contractor or Debushing Agent and the ECO.

	<ul style="list-style-type: none">• Take appropriate remedial action where vegetation establishment has not been successful or erosion is evident.	
	<ul style="list-style-type: none">• Only indigenous vegetation commensurate with the Hectorspruit landscape is to be used in any landscaping/reseeding process which may be undertaken.	
	<p>3. Project Sign Off: The ECO must sign off the works and the site during a Final Audit Assessment. The Audit Report will be submitted to LEDET for approval and verification.</p>	

PROTECTION OF THE ENVIRONMENT:
DECLARATION OF UNDERSTANDING: CONTRACTOR TO SIGN:

The Contractor will not be given right of access to the Site until this form has been signed.

I / we, _____ {Contractor} record as follows:

I / we, the undersigned, do hereby declare that I / we am / are aware of the increasing requirement by society that construction activities shall be carried out with due regard to their impact on the environment.

In view of this requirement of society and a corresponding requirement by the Employer with regard to this Contract, I / we will, in addition to complying with the letter of the terms of the Contract dealing with protection of the environment, also take into consideration the spirit of such requirements and will, in selecting appropriate employees, plant, materials and methods of construction, in-so-far as I / we have the choice, include in the analysis not only the technical and economic (both financial and with regard to time) aspects but also the impact on the environment of the options.

In this regard, I / we recognize and accept the need to abide by the “precautionary principle” which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive construction approach in the face of uncertainty with regard to the environmental implications of construction.

I / we have signed the Declaration of Understanding with respect to the Environmental Management Programme.

I / we acknowledge and accept the right of the Employer to deduct, should they so wish, from any amounts due to me / us, such amounts (hereinafter referred to as fines) as the Construction Manager shall certify as being warranted in view of my / our failure to comply with the terms of the Contract dealing with protection of the environment, subject to the following:

The Project Manager, in determining the amount of such fine, shall take into account inter alia, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance / non-compliance, the extent of the Contractor's overall compliance with environmental protection requirements and, in particular, the extent to which he/she considers it necessary to impose a sanction in order to eliminate / reduce future occurrences.

The Construction Manager shall, with respect to any fine imposed, provide me / us with a written statement giving details of the offence, the facts on which the Construction Manager has based their assessment and the terms of the Contract (by reference to the specific clause) which has been contravened.

Signed _____
 Date _____



RHENGU ENVIRONMENTAL SERVICES

P O Box 1046

Cell: 082 414 7088

MALELANE

Fax: 086 685 8003

1320

E-mail: rhengu@mweb.co.za

ACCEPTANCE OF EMP: Portions 7 and 8: Boerboomkraal 353 KT
Debushing Project:

DECLARATION

I/We, the undersigned as the proponent/s/person/s responsible for the above-proposed activity undertake to abide by the above-designated EMP and associated conditions.

Name: _____

Signature: _____

Date: _____

Name: _____

Signature: _____

Date: _____

CHECKED BY ENVIRONMENTAL CONTROL OFFICER

Name: _____

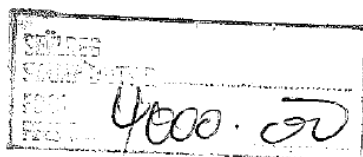
Signature: _____

Date: _____

APPENDIX G:

G. 1: Title Deed and CC Document**24**

DÖMAN WEITSZ
 Joe Hannastraat 2
 Witrivier
 1240



Opgestel deur my,

~~TRANSPORTEESORGER~~
 PETRUS JOHANNES STRYDOM

U.O.P

VINBERG	
WA 28	750 000.00
B 35 825/14	
07 08 14	1 Bed

T 14 56322

AKTE VAN TRANSPORT

HIERMEE WORD BEKEND GEMAAK

DAT LERINA BOTHA

voor my die REGISTRATEUR VAN AKTES verskyn het te PRETORIA, die genoemde Komparant synde behoorlik daartoe gemagtig deur 'n Volmag aan hom/haar verleen deur

WATERVAL SITRUS BOERDERY EIENDOMS BEPERK
 Registrasie Nommer 1995/010564/07

gedateer MOSELBAAI

en geteken te 26 MEI 2014

DÖMAN WEITSZ



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Bladsy 2

EN genoemde Komparant het verklaar dat die gesegde **WATERVAL SITRUS BOERDERY EIENDOMS BEPERK** die ondergemelde eiendom op **18 Februarie 2014** waarlik en wettiglik verkoop het en dat hy/sy in sy/haar voornoemde hoedanigheid hierby sedeer en transporteer aan en ten gunste van:

QUANTRE INVESTMENTS EIENDOMS BEPERK
Registrasie Nommer 2013/199221/07

die ampsovolgers in titel of regsverkrygendes in volkome en vrye eiendom:

GEDEELTE 8 VAN DIE PLAAS BOERBOOMKRAAL 353
 REGISTRASIE AFDELING K.T.
 PROVINSIE LIMPOPO
 GROOT: 262,6930 (TWEË HONDERD TWEË EN SESTIG KOMMA SES NEGE DRIE NUL) HEKTAAR

AANVANKLIK geregistreer en steeds gehou kragtens Sertifikaat van Verenigde Titel T72731/2004 met kaart LG nr 5565/2003 wat daarop betrekking het

ONDERHEWIG AAN DIE VOLGENDE VOORWAARDES:

Die voormalige Gedeelte 2 (n gedeelte van Gedeelte 1) van die plaas Boerboomkraal, aangedui deur die figuur a middel van Watervalsrivier bl M N P Q R S T U V W X Y a op Kaart LG Nr 5565/2003, is onderhewig aan die volgende voorwaardes:

- A. Het mits dezen getransporteerd eigendom tezamen met zeker Resterend gedeelte van het Zuid-Westelike gedeelte van voormelde plaats, groot als zulks 161,4563 hektaar, getransporteerd op 8 Augustus 1929 onder Akte van Transport No 9384/1929, is gerechtigd tot een servituut van waterleiding uit de twee bestaande watervoren over zeker Noordelike gedeelte van de leningsplaats WILDEBEESTHOEK No 192, distrikt Lydenburg, groot 1246,6281 hektaar zoals getransporteerd onder Akte van Transport No 8397/1929.

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- B. Het eigendom mits dezen getransporteerd is onderworpen aan een servituut van waterbewaring in de bestaande dam en van waterleiding uit de twee bestaande watervoren ten faveure van het voorzeggd Resterend gedeelte van het Zuid Westelike gedeelte van de plaats BOERBOOMKRAAL No 353, Registrasie Afdeling K T, distrik Lydenburg, groot als zulks 161,4563 hektaar, getransporteerd als voormeld.

Die voormalige Gedeelte 1 van die plaas Boerboomkraal, aangedui deur die figuur b middel van Watervalsrivier c D E F G H J K L I b op Kaart LG No 5565/2003, is onderhewig aan die volgende

- C. Het eigendom mits dezen getransporteerd tezamen met zeker gedeelte van voormelde plaats, groot 642,3990 Hektaar, zoals getransporteerd onder Akte van Transport Nr 9383/1929, is gerechtigd tot een servituut van waterleiding uit de twee bestaande watervoren over zeker Noordelike gedeelte van die leningsplaat "Wildebeesthoek" Nr 192, distrik Lydenburg, groot 1246,6281 Hektaar, zoals getransporteerd onder Akte van Transport Nr 8397/1929.
- D. Het mits dezen getransporteerd eigendom is verder gerechtigd tot een servituut van waterbewaring in de bestaande dam en van waterleiding uit de twee bestaande watervoren over voorzeggd gedeelte van het Zuid-Westelike gedeelte van de plaats "Boerboomkraal" Nr 353 (voorheen Nr 218) Registrasie Afdeling K.T., distrikt Lydenburg, groot 642,3990 Hektaar, getransporteerd als voormeld.
- E. Kragtens Notariële Akte Nr 401/1962-S, gedateer die 8ste Mei 1962, is die reg aan ELEKTRISITEITSVOORSIENINGSKOMMISSIE verleen om elektrisiteit oor die hierinvermelde eiendom te vervoer, tesame met bykomende regte en onderhewig aan kondisies, soos meer volledig sal blyk uit gesegde Akte en kaart.

EN VERDER ONDERHEWIG aan al sodanige voorwaardes as in genoemde Aktes vermelde staan of na verwys word.

DÖMAN WEITSZ

WESHALWE die Komparant afstand doen van al die regte, titel en belang wat die gesegde **WATERVAL SITRUS BOERDERY EIENDOMS BEPERK** voorheen op genoemde eiendom gehad het en gevolglik ook erken dat hy geheel en al van die besit


daarvan onthef en nie meer daartoe geregtig is nie, en dat, kragtens hierdie akte, bogenoemde **QUANTRE INVESTMENTS EIENDOMS BEPERK**, die ampsopvolgers in titel of regsverkrygendes tans en voortaan daartoe geregtig is, ooreenkomstig plaaslike gebruik, behoudens die regte van die Staat en erken hy ten slotte dat die koopprys van die eiendom wat hiermee getranspoteer word die bedrag van **R24 000 000.00 (VIER VIER EN TWINTIG MILJOEN RAND)** is.

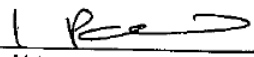
TEN BEWYSE WAARVAN EK, die genoemde Registrateur van Aktes, tesame met die Komparant hierdie Akte onderteken en dit met die Ampseël bekragtig het.

ALDUS GEDOEN EN VERLY op die kantoor van die REGISTRATEUR VAN AKTES te PRETORIA op

07 08 14

In my teenwoordigheid


q.q. Handtekening van komparant


Registrateur van Aktes

G 2: Water Rights and Permits

WATERVALSRIVIER BESPROEINGSRAAD

Posbus 501
Lydenburg
1120

Datum: 2014-02-20

Boereboomkraal353KT waterlesensie

Waterval Sitrus Boerdery (Edms) Bpk

Vir wie dit mag aangaan:

Die Watervalsrivier Besproeiingsraad bevestig hiermee dat Plaas Boereboomkraal 353KT, ingelys is onder die Watervalsrivier Besproeiingsgebied vir: 121.28 Hektaar

Indien enige navrae kontak:

Neil van Rooyen 078 391 7857



Neil van Rooyen
(Sekretaris van Watervalsrivier Besproeiingsraad)

WATERVALSRIVIER BESPROEINGSRAAD
Tel 013 2317940
Faks 0862358498
Sel 0783917857

G 3: Documentation with LEDET



LIMPOPO
PROVINCIAL GOVERNMENT
 REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref: 12/1/9/1-GS112 Enq: Ms. K. O. Radzilani Tel: (015) 290 7154 Fax: (015) 295 5015 E-mail: RadzilaniKO@ledet.gov.za

Rhengu Environmental Services
 P. O. Box 1046
MALELANE
 1320

Tel no: (013) 790 0553

Fax no: 086 685 8003

E-mail: rhengu@mweb.co.za

For attention: Ralf Kalwa

RE: PROPOSED DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE ON PORTION 7 AND 8 OF THE FARM BOERBOONKRAAL 353 KT AT BURGERSFORT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT

1. The Department of Economic Development, Environment and Tourism ("the Department") hereby acknowledges receipt of the amended application form for the above-mentioned development on **30 October 2014**.
2. The application has been allocated Reference Numbers: **12/1/9/1-GS112 & LIM/EIA/0000984/2014**, kindly quote this numbers in all future correspondences regarding this application.
3. You may proceed with the Basic Assessment Process as required by the GN R. 543 of Environmental Impact Assessment Regulations of 2010 promulgated in terms of the National Environmental Management Act (Act 107 of 1998) as amended.
4. Kindly bring to the attention of the applicant the fact that this development must not commence prior to the Department issuing a decision on this application for an Environmental Authorisation.

For any queries in this regard please contact Ms. Radzilani K.O on the above given contact details.

Yours faithfully,

MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT

DATE: 31 10 2014

Cc: Waterval Sitrus

Attention: Mr. Cornel van der Merwe
 E-mail: cornel@bosveldsitrus.co.za

Tel: (013) 007 0301

Corner Suid & Dorp Street, Polokwane, 0699, Private Bag X 9484, Polokwane, 0700
 (Switchboard) Tel: +2715 290 7000 Website: www.ledet.gov.za

The heartland of southern Africa - development is about people!



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref: 12/1/9/1-GS112 Enq: Ms. Radzilani K.O Tel: (015) 290 7154 Fax : (015) 295 5015
E-mail: RadzilaniKO@ledet.gov.za NEAS Ref No: LIM/EIA/0000984/2014

Rhengu Environmental Services
P O Box 1046
MALELANE
1320

Tel: (013) 790 0553 Fax: 086 685 8003 E-mail: rhengu@mweb.co.za

For attention: Ralf Kalwa

REMINDER LETTER: APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR THE PROPOSED DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE ON PORTION 7 AND 8 OF THE FARM BOERBOONKRAAL 353 KT AT BURGERSFORT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT.

The application for an Environmental Authorisation in terms of National Environmental Management Act (NEMA) received by the Department on 30 October 2014 refers.

1. The Department in its letter dated 31 October 2014 advised you to proceed with Basic Assessment Report and submit a draft Basic Assessment Report (BAR) subsequent to adherence to the requirements of the EIA Regulations R. 543 of 2010.
2. Due to the fact that the new Environmental Impact Assessment (EIA) Regulations of 2014 have come into effect on 08 December 2014, the Department has decided to process and finalise all the current applications for Environmental Authorisation submitted in terms of the EIA Regulations of 2010 by 30 September 2015.
3. In light of the above, you are required to submit three (3) hard copies and one (1) soft copy of the final BAR instead of the draft on/or before 30 April 2015.
4. You are required to notify the interested and affected parties (I&APs) of the Department's decision in this regard. Should the I&APs have any comments in this regard, such must be incorporated within the report for consideration by the Department.
5. In a case where the draft BAR had not been subjected for public review, it must be subjected for public review as a final BAR prior to submission to the Department. The public participation report must incorporate all the issues/comments on the final BAR raised by the I&APs and the responses thereof. The responses must adequately address all the comments raised.


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(Switchboard) Tel: +2715 290 7000 Website: www.ledet.gov.za

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6. Please be advised that failure to submit the required final BARs within the stipulated timeframe will result in your application being deemed to have been closed. Should this be the case, you will be required to lodge a new application in terms of the new EIA Regulations of 2014 promulgated in the National Environmental Management Act, No. 107 of 1998.
7. Kindly bring to the attention of the applicant the fact that this development must not commence prior to the Department deciding on this application.

Should you have any queries in regard to this matter, please do not hesitate to contact the Department.

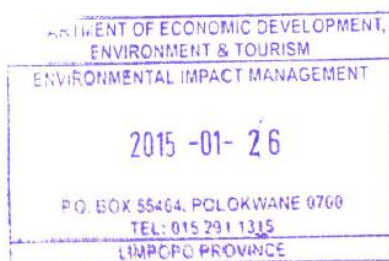
Yours faithfully,


MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT
DATE: 26.01.2015

CC: Ezekhaya Investment Holdings

Attention: Mr. Kgampi Bapela
E-mail: kgampi@gmail.com

Tel: (015) 299 4081





LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ECONOMIC DEVELOPMENT, ENVIRONMENT & TOURISM

Ref: 12/1/9/3-GS5 Enq: Ms. Radzilani K. O. Tel: (015) 290 7154 Fax: (015) 295 5015
E-mail: Radzilani@ledet.gov.za NEAS Ref No: LIM/EIA/0000984/2014

Rhengu Environmental Services
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For attention: Ralf Kalwa

RE: PROPOSED DEBUSHING OF NATURAL LAND FOR AGRICULTURAL USE ON PORTION 7 AND 8 OF THE FARM BOERBOONKRAAL 353 KT AT BURGERSFORT WITHIN GREATER TUBATSE LOCAL MUNICIPALITY OF SEKHUKHUNE DISTRICT

1. The amended application form received on 30 October 2014 has reference
2. This application for the above development was initially allocated reference number: 12/1/9/1-G112 and NEAS reference number: LIM/EIA/0000984/2014 in the letter dated 31 October 2014
3. The Department would like to inform you that this application has been allocated a new Reference Number which is **12/1/9/3-GS5**. This is due to internal Departmental processes. Kindly quote this number in all future correspondences regarding this application. The NEAS number has not been changed.

Kindly bring to the attention of the applicant the fact that this development must not commence prior to the Department issuing a decision on this application for an Environmental Authorisation.

For any queries in this regard please contact the responsible officer on the above given contact details.

Yours faithfully,

MANAGER
ENVIRONMENTAL IMPACT MANAGEMENT
DATE: 04 / 03 / 2015



Cc: Waterval Sitrus For attention: Mr. Cornel van der Merwe E-mail: cornel@bosveldsitrus.co.za

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