

Zoological Report:



**ZOOLOGICAL REPORT FOR B.P MHLANGANISO FOR THE
MINING OF DOLERITE ON THE REMAINING EXTENT OF
PORTION 19 OF THE FARM ECOWA 102 IN THE ELLIOT
DISTRICT, DRakensberg DISTRICT COUNCIL, EASTERN CAPE
REGION.**



PREPARED FOR:

***B.P MHLANGANISO
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June 2016

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DETAILS OF THE ZOOLOGIST

i) Details of the Zoologist

Name of the Practitioner: Elzane Fouché Zoologist for Stellenryck Environmental Solutions

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ii) Expertise of the Zoologist

• Qualifications

Elzane Fouché is a Zoologist and Junior Environmental Assessment Practitioner for Stellenryck Environmental Solutions and abridged CV is provided below.

National Senior Certificate (2007)	Framesby High School (Afrikaans, English, Biology, Science, Maths, Home Economics)
B.Sc. 2013 (NMMU)	Zoology & Botany (Botany I, II & III; Zoology I, II & III; Geology I & II; Geography I)
B.Sc. (Hons) 2014 (NMMU)	African wildlife, Conservation Biology, Ecophysiology, Marine top predator
DST-NRF intern (2015)	Centre of African Conservation Ecology
Zoologist & Junior Environmental Practitioner (2016 – Present)	Stellenryck Environmental Solutions

Summary of past experience

She has completed 8 zoological surveys thus far. She started working at Stellenryck Environmental Solutions (SES) February 2016.

Applicant:

Mhlanganiso - Hard Rock

Buchner - Sand

Ferreira - Limestone

Projects done:

Zoological report (Feb 2016)

Zoological report (Mar 2016)

Zoological report (Mar 2016)

CGS Property Trust - Gravel	Zoological report (Apr 2016)
Rupert Gerber Trust - Gravel	Zoological report (Apr 2016)
Irhafu transport - Sand	Zoological report (Apr 2016)
Ross - Sand	Zoological report (May 2016)
Irhafu minerals - Hard Rock	Zoological report (June 2016)

DECLARATION OF INDEPENDENCE

I, E. Fouché declare that -

General declaration:

- I act as the independent Zoologist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have knowledge in conducting zoological reports;
- I will have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing – any decision to be taken with respect to the application by the competent authority; and – the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will provide the competent authority with access to all information at my disposal regarding the application whether such information is favourable to the applicant or not;
- All the particulars furnished by me in this form are true and correct;

Disclosure of Vested Interest (delete whichever is not applicable)

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations.

SCOPE OF REPORT

Zoological report for B.P Mhlanganiso for the mining of Dolerite on the remaining extent of portion 19 of the farm Ecowa 102 in the Elliot District, Drakensberg District Council, Eastern Cape Region.

LIMITATIONS OF THE REPORT

The main limitation of this report was that only two site visits were conducted on 18 February 2016 and 24 May 2016. This limits the number of species recorded on site. Due to the influence of seasonality on migration patterns of some animal species it is possible that some species were not recorded when the site visits were conducted. Another limitation was that only a total of 4 hours were spent on site doing the Zoological survey. Some animals seek shelter or hide when they hear a vehicle approaching and this may also decrease the number of species recorded. Ideally, a site should be visited several times during different seasons to ensure that the full complement of animal species present are captured. However, this sort of sampling is not viable due to time constraints. A further site survey will be conducted during the course of the EIA Process.

SUMMARY

The site is situated at 31°21'18.51"S, 27°50'21.61"E roughly 3 km south west of Elliot in Drakensberg Foothill moist grassland (Gs 10) vegetation.

Thirty six (36) animal species were recorded in the proposed mine area. One invasive species (*Passer domesticus*) were recorded. Two species of special concern (*Gyps coprotheres* - Endangered and *Balearica regulorum* - Endangered) and two South African endemics (*Macronyx capensis* and *Buteo rufofuscus*) were recorded. All other species recorded are classified as species of least concern (LC).

The proposed mine area is characterized by Drakensberg Foothill moist grassland vegetation. The intact grassland vegetation may provide shelter for small mammals and nesting opportunities for bird species and therefore care must be taken to not have any impact on animals that have taken refuge in the grassland when the vegetation is removed before mining commence.

Animals in the proposed mine area would have sufficient time to relocate into adjacent areas after mining activities commence. The noise generated from mining activities and movement of vehicles will cause most animals to move away from the mine area during mining activities. Species diversity will be restored after hours as some animal species have turned nocturnal due to agricultural and human activities. Furthermore animals will move back into the area over weekends and during non-mining periods and therefore the direct impact on animals is of low significance.

Most animals are likely to return to the area once mining and rehabilitation has been completed. The mining area can be restored to suitable vegetation cover if proper

rehabilitation measures is followed after mining has ceased. Therefore no significant impact will be imposed on species diversity, forage patterns or migration patterns of animal species.

SITE DESCRIPTION

The site is situated at 31°21'18.51"S, 27°50'21.61"E roughly 3 km south west of Elliot in Drakensberg Foothill moist grassland (Gs 10) vegetation according to Mucina & Rutherford (2006).

Drakensberg Foothill moist grassland is found at altitudes spanning 880 - 1860 m and is classified as least threatened. This vegetation type is characterized by mountainous terrain with slopes covered in forb-rich grassland dominated by short bunch grasses.

The Drakensberg Foothill moist grassland at the proposed mine area is still fairly intact but is impacted by periodic grazing activities. The landscape surrounding the proposed mine area have been significantly impacted by grazing and vegetation clearing for agricultural land use activities and is therefore mostly transformed. These activities might have caused most animals to relocate to more favorable areas. Furthermore, informal hunting by locals have certainly caused a reduction in species numbers and presence.

The proposed mine area falls within a critical biodiversity area 2 (CBA 2) which means that this area might retain important threatened species despite the fact that it is a highly modified landscape.

There are no important or defined corridors surrounding the proposed mine area. The Slang River is about 1.5 km west of the proposed mine area and could potentially be used as a refuge by some animals. However, most of the area surrounding the river is significantly impacted by agricultural activities. Another potential corridor is a drainage line 1 km to the south of the mine area. Animals can forage and find shelter within these potential corridors or relocate to more suitable areas using these corridors. The mine area *per se* is at an altitude and would most probably be the least favorable area for mammals. However, to the contrary this elevated area could be a niche area for rocky outcrop species such as reptiles and certain bird species.

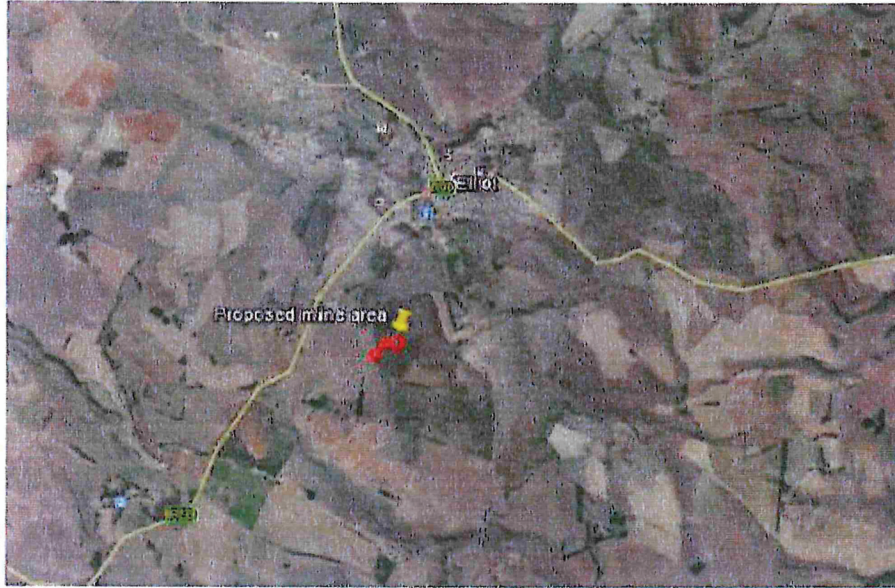


Figure 1: Site locality showed in proximity to Elliot and main roads.



Figure 2: Proposed mine area.

Table 1: Species that may possibly occur in the proposed mine area and abutting area but were not recorded during the site visits. LC - Least Concern

Species	Common Name	Conservation status
Mammals		
<i>Aethomys namaquensis</i>	Namaqua rock mouse	LC
<i>Amblysomus hottentotus longiceps</i>	Hottentot Golden Mole	LC
<i>Cercopithecus pygerythrus</i>	Vervet monkey	LC
<i>Crocidura cyanea</i>	Reddish-gray musk shrew	LC
<i>Galerella pulverulenta</i>	Small grey mongoose	LC
<i>Ictonyx striatus</i>	Striped polecat	LC
<i>Lepus saxatilis</i>	Scrub Hare	LC
<i>Mastomys natalensis</i>	Natal Multimammate mouse	LC
<i>Mellivora capensis</i>	Honey badger	LC
<i>Mus minutoides</i>	Pygmy Mouse	LC
<i>Mus musculus</i>	House Mouse	Invasive
<i>Mystromys albicaudatus</i>	White-tailed Mouse	Endangered
<i>Otomys sloggetti</i>	Sloggett's Vlei Rat	LC
<i>Papio ursinus</i>	Chacma baboon	LC
<i>Pedetes capensis</i>	Southern African springhare	LC
<i>Rattus rattus</i>	House Rat	Invasive
<i>Rhabdomys pumilio</i>	Four-striped grass mouse	LC
<i>Rhinolophus capensis</i>	Cape Horseshoe Bat	LC
<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat	LC
<i>Saccostomus campestris</i>	Southern African Pouched mouse	LC
Birds		
<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable (TOPS) & endemic to SA
<i>Anthus crenatus</i>	African rock pipit	LC & endemic to SA
<i>Aquila verreauxii</i>	Verreaux's Eagle	LC
<i>Bubo capensis</i>	Cape eagle owl	LC
<i>Cercomela familiaris</i>	Familiar chat	LC
<i>Certhilauda semitorquata</i>	Eastern long-billed lark	LC & endemic in SA
<i>Chaetops aurantius</i>	Drakensberg Rockjumper	LC
<i>Ciconia nigra</i>	Black stork	LC
<i>Circus maurus</i>	Black Harrier	Vulnerable & endemic to SA
<i>Circus ranivorus</i>	African marsh harrier	LC
<i>Cisticola textrix</i>	Cloud cisticola	LC
<i>Dicrurus adsimilis</i>	Fork-tailed Drongo	LC
<i>Erythropygia coryphaeus</i>	Karoo scrub-robin	LC
<i>Falco amurensis</i>	Amur falcon	LC
<i>Falco biarmicus</i>	Lanner Falcon	
<i>Haliaeetus vocifer</i>	African Fish Eagle	LC
<i>Laniarius ferrugineus</i>	Southern Boubou	LC & near-endemic to SA
<i>Lophaetus occipitalis</i>	Long crested eagle	LC
<i>Melierax canorus</i>	Southern pale chanting goshawk	LC
<i>Monticola rupestris</i>	Cape Rock Thrush	LC & endemic to SA
<i>Neotis denhami</i>	Denham's bustard	Near Threatened (TOPS)

<i>Sagittarius serpentarius</i>	Secretary bird	Vulnerable
<i>Saxicola torquatus</i>	African stonechat	LC
<i>Scieroptila afra</i>	Grey-winged francolin	LC & endemic to SA
<i>Serinus symonsi</i>	Drakensberg Siskin	LC & endemic to SA
<i>Sphenoeacus afer</i>	Cape grassbird	LC & near-endemic to SA
<i>Telophorus zeylonus</i>	Bokmakierie	LC & near-endemic to SA
<i>Tyto capensis</i>	African grass owl	LC
<i>Vanellus armatus</i>	Blacksmith lapwing	LC
<i>Vanellus coronatus</i>	Crowned lapwing	LC
Reptiles		
<i>Bitis arietans</i>	Puff adder	LC
<i>Causus rhombeatus</i>	Rhombic night adder	LC
<i>Hemachatus haemachatus</i>	Ringhals	LC & endemic to SA
<i>Naja nivea</i>	Cape cobra	LC
<i>Psammophylax rhombeatus</i>	Spotted skaapsteker	LC
<i>Chamaesaura aenea</i>	Coppery grass lizard	Data deficient
<i>Homopus femoralis</i>	Greater padloper	LC
Amphibians		
<i>Amietophrynus rangeri</i>	Ranger's toad/ Raucous toad	LC
<i>Amietophrynus gutturalis</i>	Guttural toad/ African Common Toad	LC

There are a few species in the table above that are species of special concern. This table is species that might occur in the area and have not been recorded during the site visits (Table 1).

The White-tailed Mouse (*Mystromys albicaudatus*) is listed as endangered and inhabits shrubland and grassland areas. This species is threatened due to habitat loss as a result of grazing and agriculture.

The Blue Crane (*Antropoides paradiseus*) is a large vulnerable bird species that inhabits grasslands and also frequently agricultural lands. Blue cranes are vulnerable due to the poisoning on agricultural land and collision with power-lines and wind turbines. The Black Harrier (*Circus maurus*) is a vulnerable bird species and this is mainly due to agriculture, urbanization and alien vegetation. This species prefers highland grasslands and Karoo sub desert scrub. The Denham's bustard (*Neotis denhami*) is classified as Vulnerable according to NEMBA (TOPS) and as Near Threatened according to the IUCN Red Data List. This species is threatened due to hunting pressure and also because of the conversion of natural vegetation to grassland by agriculture and livestock pressure. The Secretary bird (*Sagittarius serpentarius*) is a common resident of savanna and open grassland and is also found in agricultural areas. This species is vulnerable due to burning of grasslands, human disturbance, poisoning and collision with power-lines.

If any of the above species are encountered in the proposed mine area they have to be dealt with as specified in the recommendations discussed further below.

METHODOLOGY

➤ SITE VISIT AND SPECIES IDENTIFICATION:

Two site visits were conducted on 18 February 2016 at 09:00 and 24 May 2016 at 09:15. A total of four (4) hours were spent on site doing a walk-through of the site and recording the animal species in the proposed mine area by using binoculars and photographic field guides. A limited period of time was also spent driving through the abutting areas.

Animal species were identified using various sources of literature: Picker *et al.* (2004), Alexander & Marais (2007), Sinclair & Ryan (2009), Prenter (2010), Gutteridge & Liebenberg (2013), Walker (2013), Griffiths *et al.* (2015), Stuart & Stuart (2015).

Some animals were identified using tracks and signs in the proposed mine area. The scats/droppings, burrows and spoor of the animals were used to identify some animal species.

A list of animal species that may possibly occur in the area has been provided in Table 1. Therefore, these species were not recorded in the proposed mine area. This species list was determined based on animal distributions and habitat preferences.

The species lists was then cross-referenced with all relevant lists from applicable legislation to determine which species are classified as protected, threatened or endangered. The conservation status of each species was determined using the online version of the Red Data List available on the International Union for Conservation of Nature website (www.iucnredlist.org/?) and Red Data Books.

RESULTS

Since the proposed mine area is surrounded by human activities (agriculture) most of the animals in the area may have relocated to more suitable areas. The number of species recorded on site was very low. Furthermore, about 77 % of the animals recorded on site were bird species. This is not indicative thereof that more animals species is not present or frequent the areas but that they may have mostly turned nocturnal due to anthropogenic pressures and would therefore not be significantly affected by mining operations.

Thirty six (36) animal species were recorded in the proposed mine area of which 3 are mammal species, 28 are bird species, 2 are reptile species and 3 insect species. One invasive species (*Passer domesticus*) were recorded. Two species of special concern (*Gyps coprotheres* - Endangered and *Balearica regulorum* - Endangered) and two South African endemic (*Macronyx capensis* and *Buteo rufafuscus*) were recorded. All other species recorded are classified as species of least concern (LC).

The faces of the existing quarry was thoroughly inspected and there was no signs of fresh nesting sites. However, white necked ravens was observed at the excavation but these birds will fly away once mining activities commence. Furthermore, the Rock dassie and Hewitt's red rock hare was observed on the rocky outcrops of the existing quarry and these species will also move away from the mine area once mining activities commence.

➤ SPECIES OF SPECIAL CONCERN (SSC)

Chapter 4, Part 2 of the NEMBA provides the definitions of classes used to describe the special concern species:

"Listing of species that are threatened or in need of national protection

56. (a) critically endangered species, being any indigenous species facing an extremely high risk of extinction in the wild in the immediate future;
- (b) endangered species, being any indigenous species facing a high risk of extinction in the wild in the near future, although they are not a critically endangered species;
- (c) vulnerable species, being any indigenous species facing an extremely high risk of extinction in the wild in the medium-term future, although they are not a critically endangered species or an endangered species; and
- (d) protected species, being any species which are of such high conservation value or national importance that they require national protection, although they are not listed in terms of paragraph (a), (b) or (c)."

DISCUSSION AND RECOMMENDATIONS

Animals in the proposed mine area would have sufficient time to relocate into adjacent areas after mining activities commence. The noise generated from mining, drilling and blasting activities and movement of vehicles will also cause most animals to relocate to other areas during mining activities. Migration patterns of animals and to large extent species diversity within the immediate abutting land will be restored after hours as some animal species have turned nocturnal due to agricultural and human activities. Furthermore animals will move back into abutting areas over weekends and during the non-mining periods and will cause the direct impact on animals to be of low significance.

Two endangered bird species occur in this area, the Cape vulture and Grey crowned crane. The Cape vulture (*Gyps coprotheres*) is classified as Endangered according to the IUCN Red Data List and NEMBA (TOPS). This species is mainly threatened due to a shortage in the

amount of food supply (carrion), contamination (poisoning) of their food supply, electrocution on powerlines or collision with cables, loss of foraging habitat and unsustainable harvesting for traditional uses or perceived medicinal and psychological benefits.

A vulture restaurant (feeding site) which is provided by Andrews's abattoir is situated about 1.3 km south-east of the proposed mine area. This restaurant is not managed properly as there are pieces of plastic and decomposing animals (dogs and cattle) in the feeding area. Furthermore, some of the cattle carcasses had ear tags that was not removed before placing out the carcass (Fig 3). It should also be noted that cattle treated with drugs, for example diclofenac (non-steroidal anti-inflammatory drug) is fatal to Cape vultures when ingested. Even though this restaurant is not managed properly Cape vultures still visit this area to feed.

The Cape vultures would not abandon the vulture restaurant as a result of mining activities since the mine area is 1.3 km away from the restaurant. The noise impact from blasting would only last a second but the impact of air overpressure and air waves might linger a few seconds longer (much like rolling thunder after lightning). Blasting will initially take place once a month during upgrading of the roads and thereafter blasting will take place once a trimester. Furthermore, blasting will take place in the afternoon and since vultures mainly feed in the morning blasting would not have an effect on them. A detailed report on the impact of mining on Cape vultures is provided by Kate Webster.

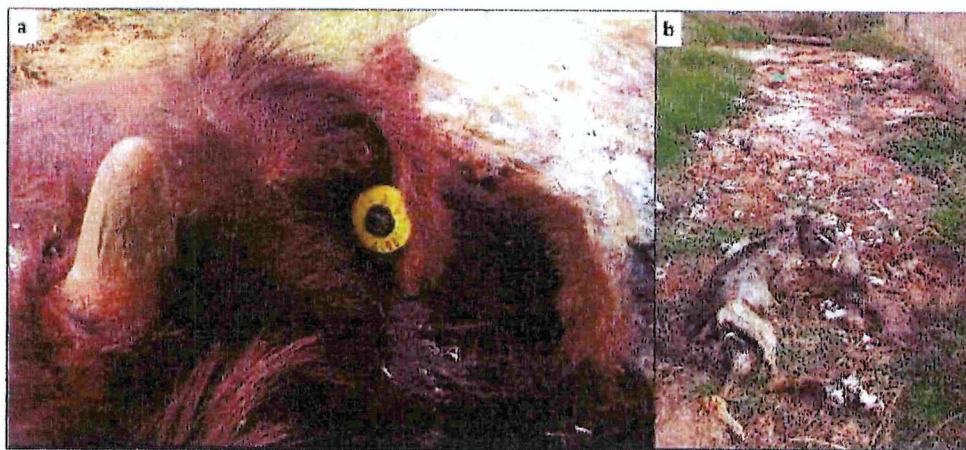


Figure 3: a) Decomposing cow with drug releasing (growth hormone) ear tag and b) decomposing dog and plastic at feeding restaurant.

The Grey crowned crane (*Balearica regulorum*) is classified as Endangered according to the IUCN Red Data List and NEMBA (TOPS) because of threats such as habitat loss, degradation of wetland breeding areas, electrocution and collision with power lines, the illegal hunting of birds and removal eggs from the wild and the use of agricultural pesticides. This species inhabits wetlands, marshes and irrigated areas adjacent to grasslands and agricultural lands. This species will not be impacted by the proposed mine activity as they prefer agricultural lands and grasslands adjacent to wetlands to forage and margins of wetlands for breeding.

Habitat loss and fragmentation (severing) of habitats are the two main contributors to current species diversity declines across the landscape. Therefore, wildlife corridors are very important to ensure connectivity between remaining habitats and are therefore critical for allowing the movement of animals from one area to another whilst being sheltered. Corridors also facilitate in migration and colonization of new areas and as such are provided with protection from humans and predators. These corridors can be linear bush clumps, the riparian zone along river margins or riverbeds/drainage lines.

There are no important or defined corridors surrounding the proposed mine area. Approximately 1.5 km west of the proposed mine area is the Slang River and the riparian zone of this river may provide protection and forage to some animals. However, this river is surrounded by agricultural activities and is mostly transformed. Another potential corridor is a drainage line 1 km to the south of the mine area. A small artificial wetland habitat is also about 500 m north-west of the proposed mine area and may provide refuge for some animals that may occur at the site. Furthermore, about 300 m south-west of the proposed mine area is an area with bushes or trees that may provide shelter and forage to some animal species. These are not defined corridors but rather possible refuge areas.

➤ RECOMMENDATIONS:

- Attention must be given to reptiles and slow-moving animals (tortoises) that might occur on the mining area. Before the topsoil is removed in a certain phase someone must walk through the site to ensure that there are no animals that could be harmed by the excavator. Reptiles that occur in the proposed mine area should be chased away and tortoises should be appropriately captured and relocated to abutting areas.
- Some bird species might built a nest of grass and twigs on the ground or construct a nest between grass tufts. Some of these nests may contain chicks or eggs, therefore care must be taken to carefully relocate the nests to areas outside the mine area before mining commence or if possible to relocate chicks or eggs to bird sanctuaries.
- Some animals take shelter and live in burrows. Burrowing animals are able to detect prey items using seismic cues and therefore these animals would be able to use the vibrations of vehicles and excavators to realize their potential vulnerability and relocate to other

areas away from danger by using their long burrow systems (Skinner & Chimimba, 2005). However care must be taken not to injure these burrowing animals when the excavator is used in the proposed mine area.

- The Drakensberg Foothill moist grassland vegetation at the proposed mine area may provide shelter for small animals or nesting opportunities for some species and therefore care must be taken to not have any impact on animals that has taken refuge in the vegetation.
- It is crucial that no animal species that enters the mining area will be harmed in any way. Animals that may be injured from mining activities should be relocated carefully to a secure area outside the mine area. This must be discussed with employees on site.
- Animals entering or residing in the mine area should not be disturbed. No capturing, hunting or poaching of animals will be allowed inside or outside the mine area. Employees caught interfering with animals must be removed from the mine site by the owner or manager immediately. This aspect to be included in the Environmental Awareness Programme.
- No trespassing on the landowners property may occur and employee access must be restricted to the approved mine areas.
- No person may carry out a restricted activity in terms of the List of Threatened or Protected species (TOPS) regulations i.e. killing, catching, hunting by any method or device including searching, injuring with intent to hunt, catch or kill any such specimen involving a TOPS specimen without a TOPS permit. The applicant will take full responsibility for any animals that is proved to be killed by a member of quarry staff. The applicant will implement an environmental awareness programme and ensure all employees are coherent in the above regard.
- An expert who holds a Competency Certificate to handle dangerous and venomous reptiles should be contracted to remove any animals that may cause harm to employees at the mine site.
- Communication channels must be set up between the abattoir and the explosive personnel with regards to when blasting will take place so that no food is placed out at the restaurant to attract the vultures on that day.
- Veld fires should be prevented by not allowing open fires or smoking near the mine area. If need be fires should be kept in an enclosed area on a hard surface. Fires are critical in grassland vegetation especially in winter and could be detrimental for wild and indigenous fauna. Therefore a fire break should be created around the quarry area

and Fire Fighting protocol should be compiled. A fire extinguisher should also be kept at the quarry at all times.

- The quarry area should be fenced off due to the dangers of the high production faces to ensure that it does not hold any threat to animals including cattle and other livestock.
- Proper housekeeping with emphasis on waste management should be applied. Plastic and wire could be lethal to cattle and other animals and should therefore be controlled. Household waste disposal will be through depositing waste in strategically positioned containers fitted with scavenger proof lids.
- Quarry staff will not poison scavengers or varmints.
- Electrical wires should be isolated to prevent any animals from being shocked.
- Fuel transport to drainage lines and the river will be prevented so as to not have an effect on aquatic species. Therefore fuel control protocols will be in place.

➤ IMPACT ON FAUNA:

The impacts of the mining operation on the environmental parameters are assessed in this section in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998).

	CONSTRUCTION	WEIGHT	OPERATIONAL (no mitigation)	WEIGHT	OPERATIONAL (with mitigation)	WEIGHT	CLOSURE	WEIGHT
Extent	Site Specific	1	Local	2	Site Specific	1	Site Specific	1
Duration	Short Term	1	Long term	3	Long term	3	Medium Term	2
Intensity	Low	2	High	6	Low - medium	3	Low	2
Probability	Probable	2	Definite	4	Likely	3	Probable	2
Cumulative Impact	None		Very Low		None		None	
Status	Negative		Negative		Negative		Neutral	
Confidence	High		High		High		High	
Significance	Very Low	8	Moderate - High	44	Low	21	Very low	10

CONCLUSION

The impact of mining will be temporary and most animals are likely to return to the area once mining and rehabilitation has been completed. The impact of mining on animals will be much higher (Moderate-High) without mitigation than with mitigation (low). Therefore a limited impact is expected if the above-mentioned recommendations (mitigations) is followed. The mining area can be restored to suitable vegetation cover if proper rehabilitation measures is followed after mining has ceased. Therefore, no significant impact will be imposed on species diversity, forage patterns or migration patterns of animal species. At closure the post rehabilitation topography will resemble a depression in the landscape. Over time water will collect in this depression and will create an alternative niche for aquatic species such as fish, frogs and water birds. The production faces will be profiled to ensure that it does not hold any danger to animals. The profiled quarry faces will create nesting areas and protection for some bird species, for example raptors, ravens and pigeons.

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LAWS AND LISTS

NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT 2004 (ACT NO, 10 OF 2004) Alien and invasive species lists, August 2014.

NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT 10 OF 2004): Amendment of critically endangered, endangered, vulnerable and protected species list, December 2007.

NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT 10 OF 2004): List of Threatened or Protected species (TOPS), March 2015.

NATURE AND ENVIRONMENTAL CONSERVATION ORDINANCE (NO. 19 OF 1974) (PNCO).

SPECIES LIST

Table 1: Species list for the proposed mining area and abutting area. LC - Least Concern

FAMILY	Genus	species	Common name	Conservation status
Mammals				
Herpestidae	<i>Cynictis</i>	<i>penicillata</i>	Yellow mongoose	LC
Leporidae	<i>Pronolagus</i>	<i>saundersiae</i>	Hewitt's Red Rock Hare	LC
Procaviidae	<i>Procavia</i>	<i>capensis</i>	Rock Dassie/Rock Hyrax	LC
Birds				
Accipitridae	<i>Buteo</i>	<i>vulpinus</i>	Steppe buzzard	LC
Accipitridae	<i>Buteo</i>	<i>rufofuscus</i>	Jackal buzzard	LC & endemic to SA
Accipitridae	<i>Elanus</i>	<i>caeruleus</i>	Black-shouldered kite	LC
Accipitridae	<i>Gyps</i>	<i>coprotheres</i>	Cape vulture	Endangered (TOPS)
Alaudidae	<i>Calandrella</i>	<i>cinerea</i>	Red-capped Lark	LC
Apodidae	<i>Tachymarptis</i>	<i>melba</i>	Alpine Swift	LC
Ardeidae	<i>Ardea</i>	<i>melanocephala</i>	Black-headed heron	LC
Ardeidae	<i>Bubulcus</i>	<i>ibis</i>	Cattle Egret	LC
Ciconiidae	<i>Ciconia</i>	<i>ciconia</i>	White Stork	LC
Columbidae	<i>Streptopelia</i>	<i>capicola</i>	Cape turtle dove	LC

Columbidae	<i>Columba</i>	<i>guinea</i>	Speckled Pigeon	LC
Corvidae	<i>Corvus</i>	<i>albus</i>	Pied Crow	LC
Corvidae	<i>Corvus</i>	<i>capensis</i>	Cape crow	LC
Corvidae	<i>Corvus</i>	<i>albicollis</i>	White necked raven	LC
Gruidae	<i>Balearica</i>	<i>regulorum</i>	Grey crowned crane	Endangered (TOPS)
Hirundinidae	<i>Hirundo</i>	<i>cucullata</i>	Greater striped swallow	LC
Hirundinidae	<i>Hirundo</i>	<i>abyssinica</i>	Lesser striped swallow	LC
Hirundinidae	<i>Hirundo</i>	<i>spilodera</i>	South African Cliff Swallow	LC
Hirundinidae	<i>Hirundo</i>	<i>rustica</i>	Barn swallow	LC
Laniidae	<i>Lanius</i>	<i>collaris</i>	Common fiscal	LC
Motacillidae	<i>Macronyx</i>	<i>capensis</i>	Cape Longclaw	LC & endemic to SA
Motacillidae	<i>Anthus</i>	<i>cinnamomeus</i>	African pipit	LC
Passeridae	<i>Passer</i>	<i>domesticus</i>	House sparrow	Invasive
Ploceidae	<i>Euplectes</i>	<i>progne</i>	Long-tailed widowbird	LC
Ploceidae	<i>Ploceus</i>	<i>velatus</i>	Southern masked weaver	LC
Sturnidae	<i>Sturnus</i>	<i>vulgaris</i>	Common Starling	LC
Threskiornithidae	<i>Threskiornis</i>	<i>aethiopicus</i>	African sacred ibis	LC
Threskiornithidae	<i>Bostrychia</i>	<i>hagedash</i>	Hadedash ibis	LC
Reptiles				
Cordylidae	<i>Cordylus</i>	<i>cordylus</i>	Cape girdled lizard	LC
Scincidae	<i>Trachylepis</i>	<i>punctatissima</i>	Montane Speckled Skink	LC
Insects				
Pyrgomorphidae	<i>Dictyophorus</i>	<i>spumans</i>	Koppie foam grasshopper	LC
Acrididae	<i>Acrida</i>	<i>acuminata</i>	Common Stick Grasshopper	LC
Pyrgomorphidae	<i>Zonocerus</i>	<i>elegans</i>	Elegant grasshopper	LC

Species of special concern that might occur in the mine area and abutting areas.



Figure 4: a) Grey crowned crane - Endangered, b) Cape vulture - Endangered, c) Blue Crane - Vulnerable, d) Secretary bird - Vulnerable.