

BIODIVERSITY ASSESSMENT: WOLVE KOP MINE, NEAR MIDDELBURG, EASTERN CAPE

June 2021



Mark Berry Environmental Consultants Pr Sci Nat (reg. no. 400073/98) PhD in Botany
Tel: 083 286-9470, Fax: 086 759-1908, E-mail: markberry@webafrica.org.za

TABLE OF CONTENTS

1	INTRODUCTION	2
2	DESCRIPTION OF CURRENT & FUTURE MINING ACTIVITIES	2
3	TERMS OF REFERENCE	3
4	METHODOLOGY	3
5	LIMITATIONS TO THE STUDY	5
6	LOCALITY & SITE DESCRIPTION	5
7	BIOGEOGRAPHICAL CONTEXT.....	7
8	VEGETATION & FLORA	8
9	OBSERVED FAUNA	12
10	CONSERVATION STATUS, THREATS & BIODIVERSITY NETWORK	14
11	IMPACT ASSESSMENT	15
12	SUMMARY & RECOMMENDATIONS.....	17
	REFERENCES.....	18

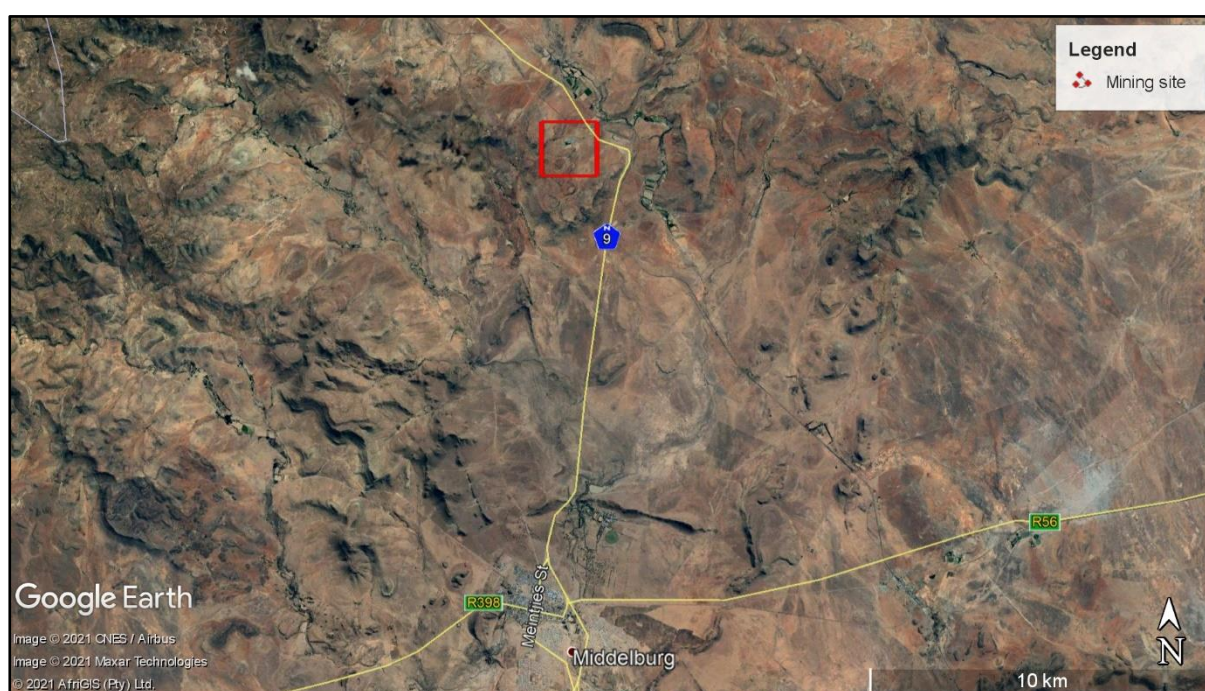
APPENDICES

BRIEF CV OF SPECIALIST

DECLARATION OF INDEPENDENCE

1 INTRODUCTION

This report investigates the biodiversity aspects of an abandoned mining site (stone quarry) on Farm Wolve Kop 12, located 13 km north of Middelburg in the Eastern Cape (see Map 1). The farm itself is an active sheep and guest farm. The site includes one large open cast mining area, an abandoned crushing area and disturbed areas previously used for stockpiling (see Map 2). The biodiversity survey was prompted by the proposed recommencement of mining activities. Intact good quality vegetation was found around a part of the mining area, notably on the western and southern sides. Alien infestation is minimal. According to the 2018 SA Vegetation Map, the mine is located inside Eastern Upper Karoo.



Map 1 Satellite photo showing the location of the mining site (outlined in red) north of Middelburg.

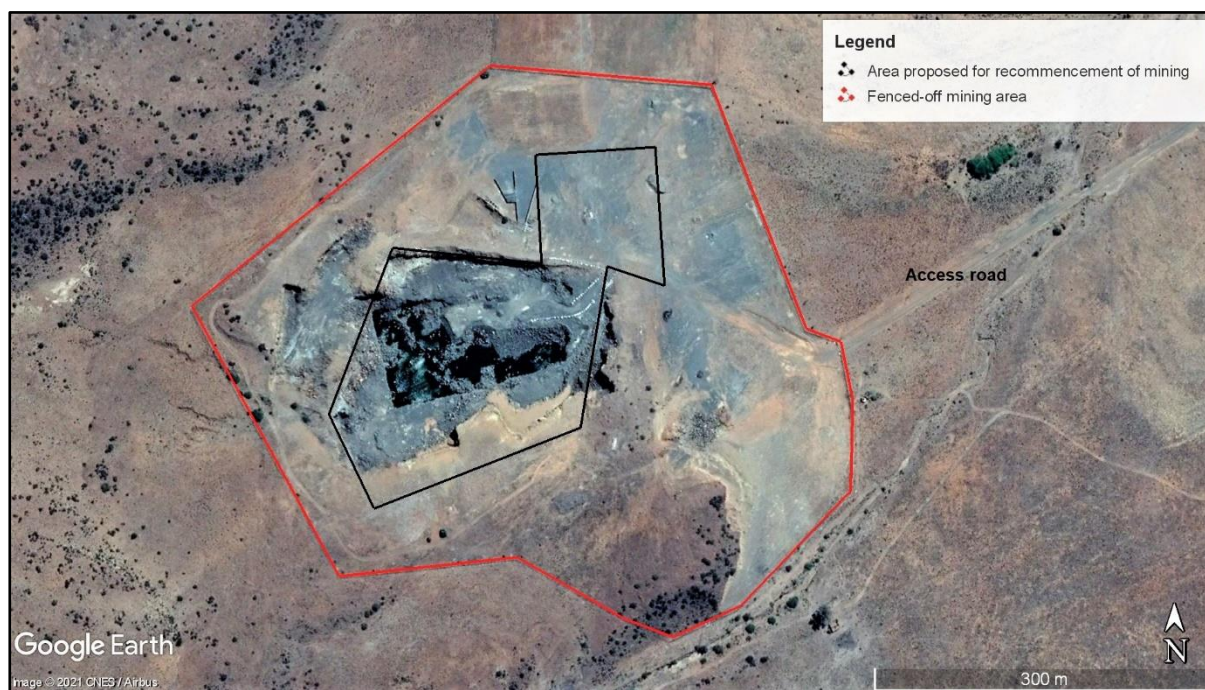
2 DESCRIPTION OF CURRENT & FUTURE MINING ACTIVITIES

Afrimat Shared Services (Pty) Ltd wishes to recommence with mining activities on the site, which is situated in the Middelburg district in the Eastern Cape, close to the boundary with the Northern Cape. Stone aggregate (from dolerite) will be mined, which is used in the building/construction industry. The area indicated for mining is 5 ha, located entirely inside a fenced off area on a sheep farm (see Map 2).

The quarrying process currently involves:

- ❖ Drill and blast the hard rock after the topsoil of the area has been stripped and stockpiled;

- ❖ Load and haul the material out of the excavation to the crushing and screening plants;
- ❖ Rush and screen the recovered material at the crusher plant in order to reduce it to various size aggregate; and
- ❖ Stockpile the aggregate at a stockpile area until it is collected by clients.



Map 2 Satellite photo illustrating the extent of past mining activities on site, as well as the area (outlined in black) proposed for recommencement of mining.

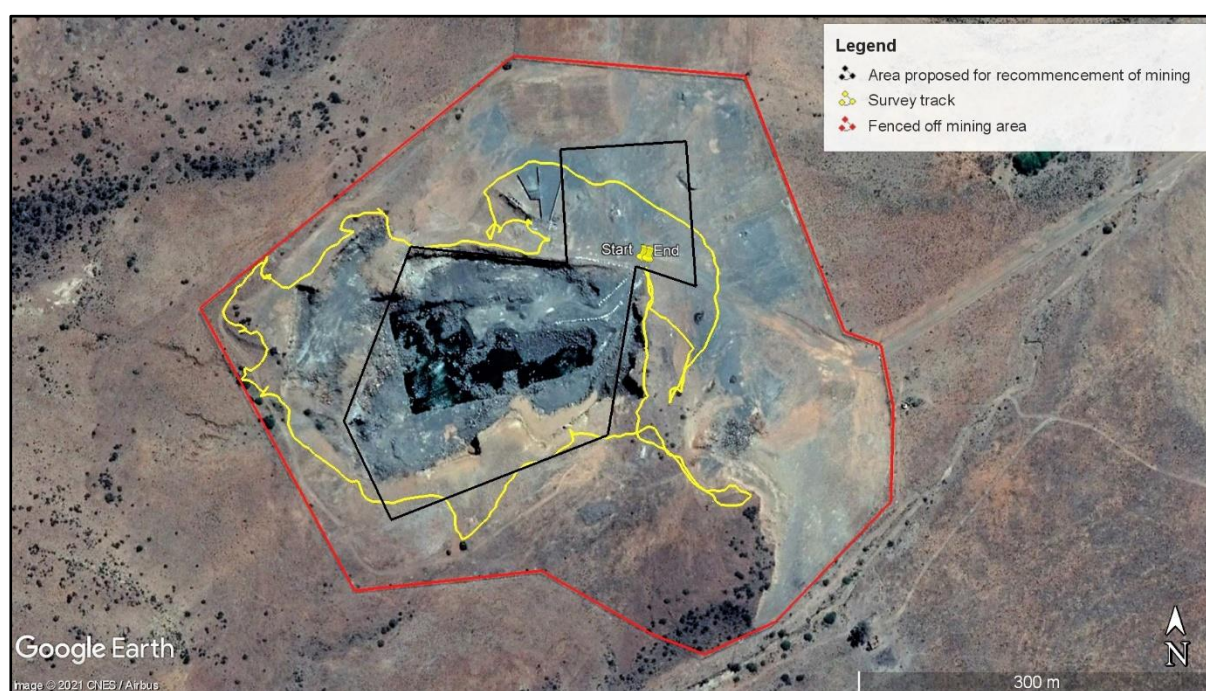
3 TERMS OF REFERENCE

- Identify and describe biodiversity patterns at a community and ecosystem level (main vegetation type, plant communities and threatened/vulnerable ecosystems), at species level (Species of Conservation Concern, protected species, presence of alien species) and in terms of significant landscape features;
- Describe the sensitivity of the site and its immediate surroundings;
- Map or describe the presence of invasive alien plants;
- Review the relevant biodiversity plans compiled in terms of the National Environmental Management Biodiversity Act (Act 10 of 2004); and
- Make recommendations with regards to the protection/management of biodiversity.

4 METHODOLOGY

A botanical survey of the site was undertaken on 6 June 2021 by Mark Berry (see CV attached). A qualitative assessment of the type and condition of affected vegetation on site,

disturbance and presence of alien species, Species of Conservation Concern (SCC) and protected tree species was carried out. The survey track is shown on Map 3. Plant species not identified in the field, were collected and/or photographed and identified at the office and Compton (Kirstenbosch) Herbarium. The 2018 South African Vegetation Map and the latest floristic taxonomic literature and reference books were used for the purpose of this specialist study. Any plants classified as rare or endangered in the Red List of South African Plants online database are highlighted. The assessment follows the relevant national guidelines for biodiversity assessments as listed in the Government Gazette No. 43110 on 20 March 2020.



Map 3 Satellite photo of survey track.

The following information was recorded during the site visit:

1. The condition of the vegetation. Is the vegetation either disturbed or degraded? A disturbed or degraded area could range from agricultural fields (fallow land), or areas previously disturbed by mining activities, to an area that has been severely eroded or degraded as a result of bad land management or alien infestation.
2. The species diversity. This refers to the numbers of different indigenous plant species occurring on site. Indigenous fauna observed was also noted.
3. SCC, endemics, as well as protected tree species occurring on site. This would include rare, vulnerable, endangered or critically endangered species.
4. Identification of the vegetation type(s) and communities (if discernible) on the site. This would include trying to establish the known range of a vegetation type and whether or not this vegetation type is vulnerable, endangered or critically endangered.

5 LIMITATIONS TO THE STUDY

Fieldwork was carried out early in the winter season, outside the main rainfall and flower season for the area. Flowering plants that only flower during the main rainfall season (i.e. January to March) or at other times of the year, such as certain bulbs, may have been missed. The overall confidence in the completeness and accuracy of the botanical findings is however considered to be moderate to good, given the disturbed/transformed state of a large part of the site. No follow-up survey is deemed necessary.

6 LOCALITY & SITE DESCRIPTION

General location and topography

The site (5 ha) is located on an east-facing hillslope in the Eastern Cape upper Karoo, a high-lying area above the Escarpment. The general topography is undulating or hilly (see Photo 1). Apart from the rocky hills there are no other significant topographical features. The landscape to the northeast flattens out a bit before it rises up again to the hills on the eastern side of the small valley. The topography seems to be largely influenced by resistance to weathering of the base rocks (dolerite and sandstone).



Photo 1 View of mining site showing the general topography of the area.

Climate

The mean annual rainfall for the area, which is located in the Eastern Cape interior, is 327 mm (as per Cape Farm Mapper climatic data for 1950 to 2000). The peak rainfall period are the months of January to March (i.e. summer to autumn), while the driest period is June to August (winter). The study area lies on the edge of the summer rainfall region. Mean monthly maximum and minimum temperatures are 29.6°C and 0.4°C for January and June/July, respectively (as per Cape Farm Mapper data). Incidence of frost is high (Mucina & Rutherford 2006). The Köppen-Geiger climate classification for the Middelburg area is BSk (arid, steppe).

Hydrology

There are no mapped watercourses or NFEPA wetlands on or nearby the mining site. A dry watercourse runs past the south-eastern side of the site towards the Droë River, a NFEPA river located in the valley 1 km northeast of the site. The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports sustainable use of water resources.

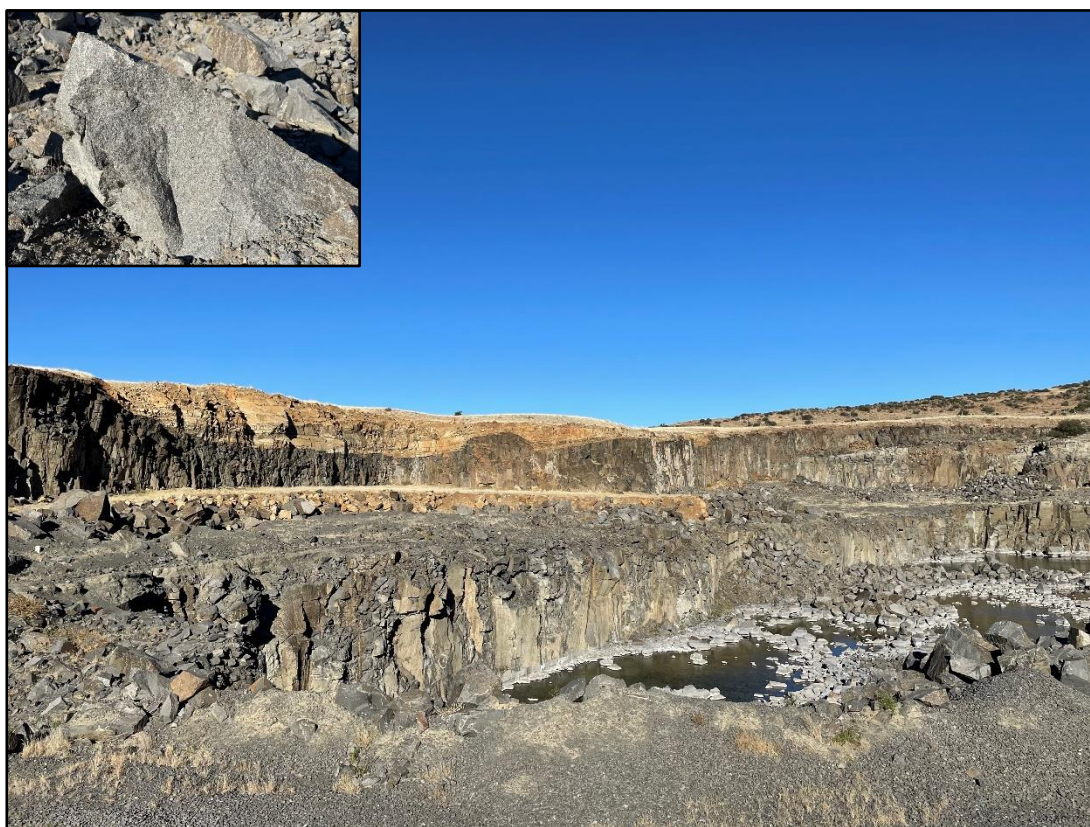


Photo 1 View of quarry. Insert: dolerite rubble near entrance

Geology

According to the Cape Farm Mapper database, the site is underlain by the Karoo dolerite suite,

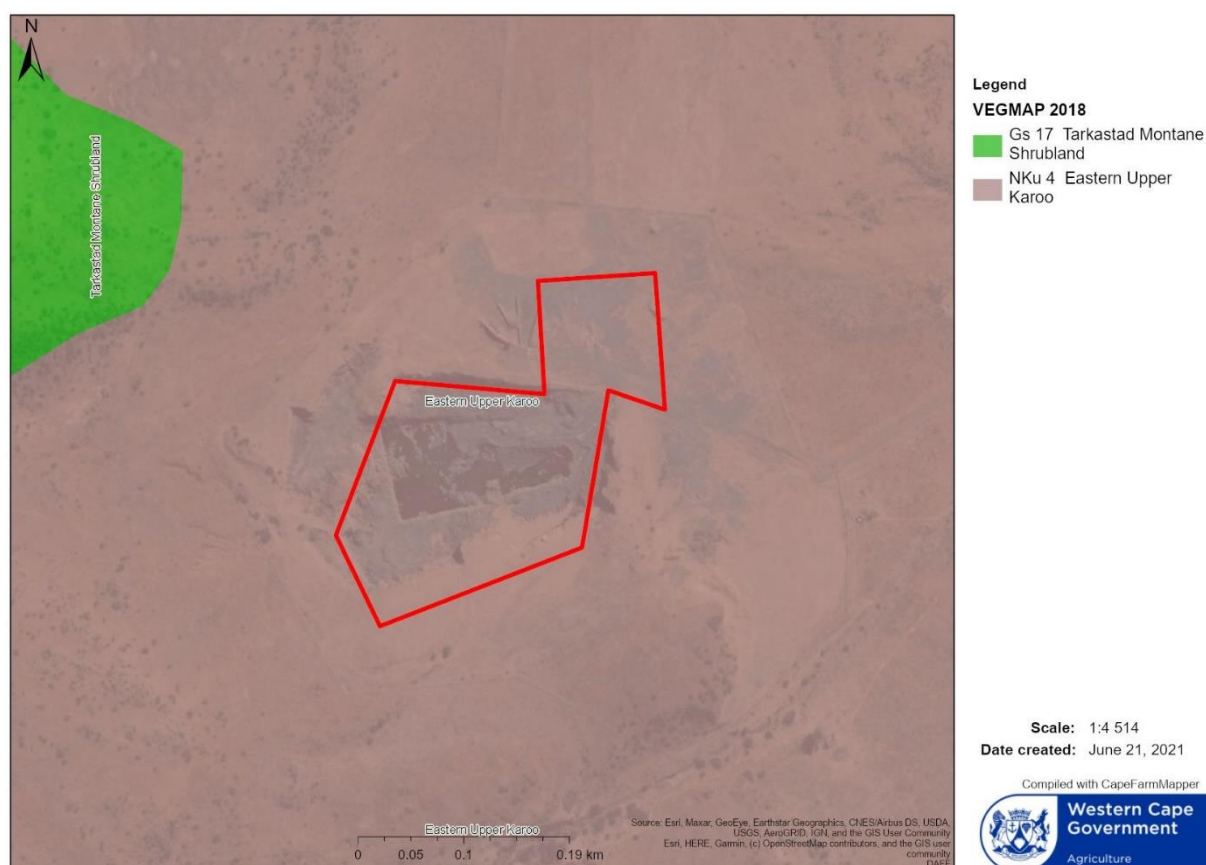
comprising dolerite and minor ultrabasic rocks. The former is the source of mining activities on site (see Photo 1 above). Tarkastad Formation (upper Beaufort Group) sediments (fine- to medium-grained sandstones and mudstones) were also noted outside the site to the northeast (see Photo 2). These sediments were deposited after the major 250-million-year extinction and contain fossils of mammal-like reptiles (Norman & Whitfield 2006). The sandstone and dolerite exposures support a higher diversity of succulents than the sandy areas in between.



Photo 2 Exposed Tarkastad Formation sandstone northeast of the mining site.

7 BIOGEOGRAPHICAL CONTEXT

The site is located inside Eastern Upper Karoo, a Nama-Karoo vegetation type distributed in the Northern Cape, Eastern Cape and Western Cape Provinces, roughly inland of the Great Escarpment (see Map 4). It occurs on flats and gently sloping plains at an altitude between 1000 and 1700 masl, interspersed with hills and rocky areas of Upper Karoo Hardeveld in the west and grassland vegetation types in these parts, such as Tarkastad Montane Shrubland (Mucina & Rutherford 2006). It is dominated by dwarf small-leaved shrubs, with grasses of the genera *Aristida* and *Eragrostis*. Common shrub species include *Eriocephalus ericoides*, *Chrysocoma ciliata*, *Helichrysum dregeanum*, *Pentzia incana*, *Lycium horridum* and *Selago* species (Mucina & Rutherford 2006).



Map 4 Extract of the 2018 SA Vegetation Map, showing the position of the site (outlined in red) inside Eastern Upper Karoo.

8 VEGETATION & FLORA

The natural vegetation found on site and the surrounding area is described as Eastern Upper Karoo. It comprises a prominent grass layer (<1 m tall), with a few emerging shrub/tree species (see Photos 3 & 4). Structurally it can be described as a low to short closed grassland, following Edward's (1983) classification. The area shown as good quality vegetation on Map 5 is in a fair to good condition, but a few farm/mine tracks and removed built structures were noted. The rest of the site (inside the fenced-off area) is clearly transformed or affected by past mining activities, but still supports a fair grass cover in places (see Photo 5). Diversity is obviously higher in the relatively undisturbed areas on the western and southern sides.

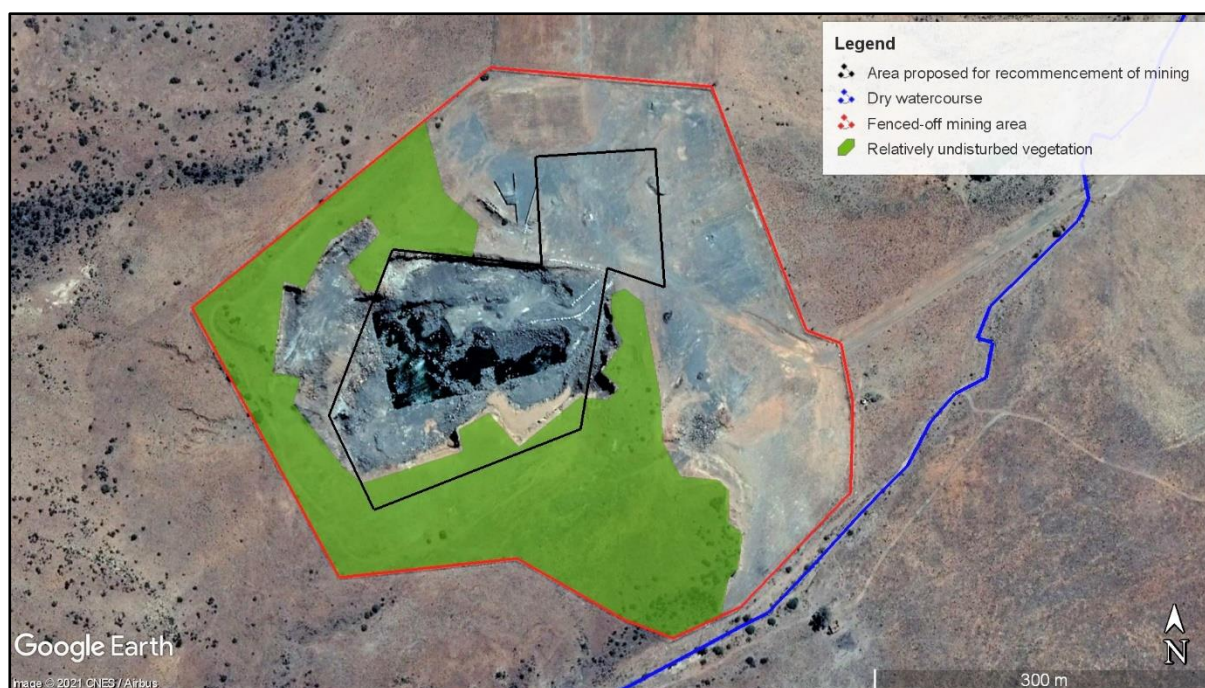
A greater diversity of species was encountered outside the fenced-off area, notable on the hill slope above the site and on the rocky exposures on northern side. Dominant grass species encountered include *Eragrostis chloromelas*, *Aristida diffusa*, *A. congesta* and *Hyparrhenia hirta*. Emergent tree and shrub species recorded include *Searsia erosa*, *S. burchellii*, *Lycium horridum*, *Diospyros lycioides* and an alien ornamental tree *Schinus molle* (see Photo 7).



Photo 3 Grassy veld on the southern side of quarry.



Photo 4 Rocky slope with an emergent *Searsia erosa* on the eastern side of quarry.



Map 5 Aerial photograph showing the biodiversity attributes of the mining site.



Photo 5 Transformed part of the mining site, with derelict mining infrastructure.

Smaller shrub species and weeds recorded include *Felicia hirsuta*, *Eriocephalus ericoides*, *Chrysocoma ciliata*, *Helichrysum zeyheri*, *Melolobium calycinum*, *Selago saxatilis*, *Melianthus comosus*, *Withania somnifera*, *Monsonia camdeboensis*, *Asparagus suaveolens*, *Salsola kali*,

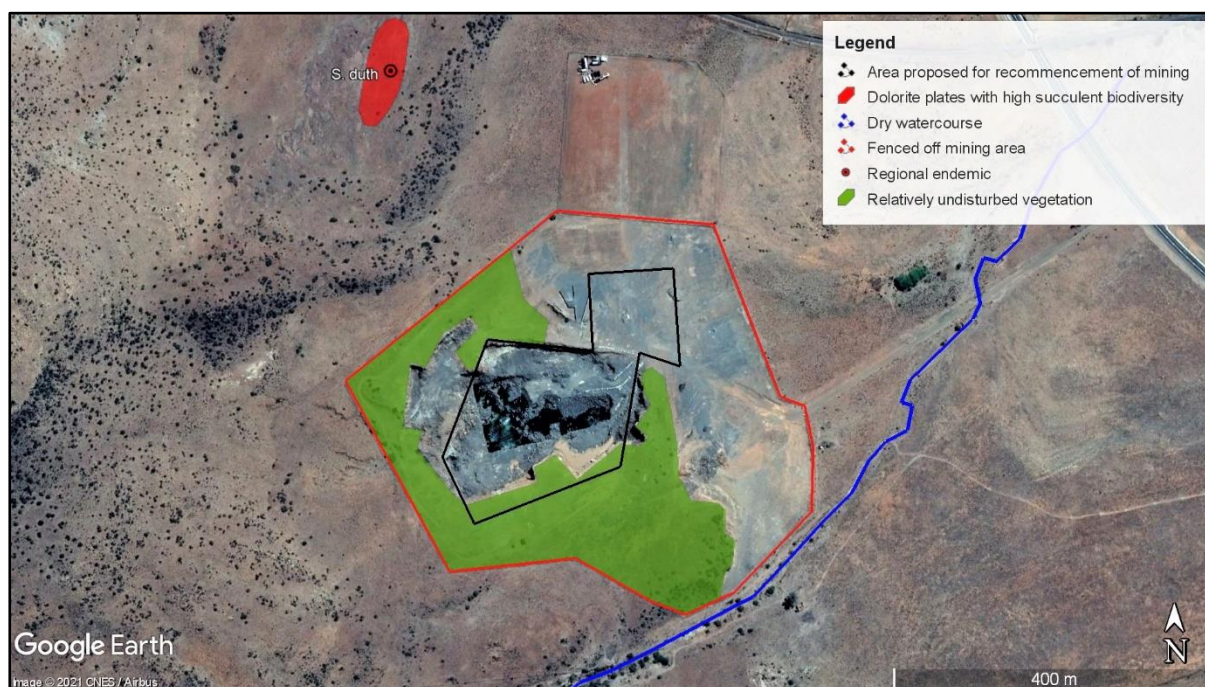
Aizoon namaense (= *Galenia procumbens*), *Jamesbrittenia tysonii* and *Nemesia fruticans*. The small rock fern *Cheilanthes eckloniana* was also noted on exposed dolerite on the western side of the quarry. The more interesting flora was recorded outside the fenced-off mining area, notably on or adjacent to dolerite and sandstone exposures. Species recorded here include *Ruschia cradockensis* ssp *cradockensis*, *Trichodiadema* sp, *Chasmatophyllum musculinum*, *Stomatium duthiae*, *Crassula corallina*, *Anacampseros albidiflora*, *Euclea undulata*, *Geigeria filifolia*, *Gomphocarpus fruticosus*, *Pentzia punctata* and *Crassothonna cf patula*. See Photo 6 for some of the flora encountered. *Stomatium duthiae* and *Melolobium calycinum* are regional endemics. *S. duthiae* is typically associated with low-angled dolerite plates (see Map 6). No SCC were recorded.



Photo 6 A few indigenous species recorded, with *Helichrysum zeyheri* (top left), *Cheilanthes eckloniana* (top right), *Stomatium duthiae* (bottom left) and *Geigeria filifolia* (bottom right).

Only three notable invasive species were recorded, namely *Opuntia ficus-indica*, *Datura stramonium* and *Salsola kali* (see Photo 7). All of them are listed as Category 1b invaders in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) Alien and Invasive Species List (2016). *Datura stramonium* and *Salsola kali* are serious agricultural

pests, with the latter an aggressive invader, being able to rapidly take over new areas (Bromilow 2010). Its “only benefit is that it can act as an anti-erosion agent in bare areas” (Bromilow 2010). A small patch of *Yucca* sp was also recorded on site.



Map 6 Aerial photograph showing notable biodiversity features outside the fenced-off mining area.



Photo 7 A few alien species recorded, with *Opuntia ficus-indica* (left) and *Yucca* sp (right).

9 OBSERVED FAUNA

A fair number of mammal species have been recorded in the area by the landowner (farmer). As for grazing fauna, the following were recorded (habitat and distribution information from Skinner & Smithers 1990):

- Steenbok (*Raphicerus campestris*), a widespread small antelope species. Either a steenbok or grey rhebok was observed on the access road to the mine by the author. It moved away too quickly to make a positive identification.
- Grey rhebok (*Pelea capreolus*), widespread on rocky hills and mountain slopes.
- Springbok (*Antidorcas marsupialis*), originally an arid region and open grassland species, subsequently introduced to other parts of the country.
- Kudu (*Tragelaphus strepsiceros*), a savanna woodland species, common in the Eastern Cape interior.

Predators recorded, include:

- Bakoorjakkal (*Otocyon megalotis*), known from the arid parts of the Cape provinces.
- Cape fox (*Vulpes chama*), widespread, especially in grassveld types, coastal scrub or semi-desert scrub.
- Black-backed jackal (*Canis mesomelas*), widespread with a wide habitat tolerance.

Omnivores and rodents recorded, include:

- Aardvark (*Orycteropus afer*), widespread with a wide habitat tolerance. Aardvark burrows noted on site by the author.
- Springhaas (*Pedetes capensis*), widespread in grassveld areas.
- Rock hyrax (*Procavia capensis*), widespread in rocky habitats, observed by the author inside the quarry.
- Porcupine (*Hystrix africaeaustralis*), widespread, scat noted on site by the author (see Photo 8).

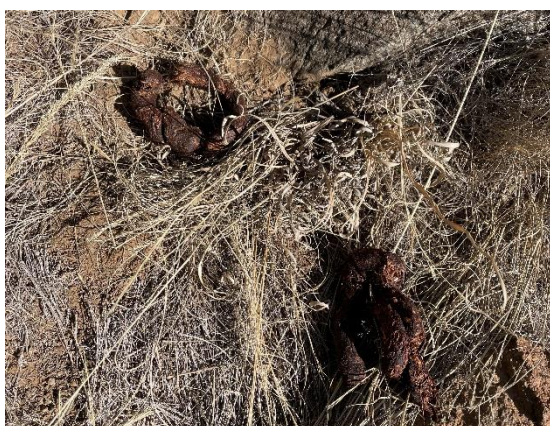


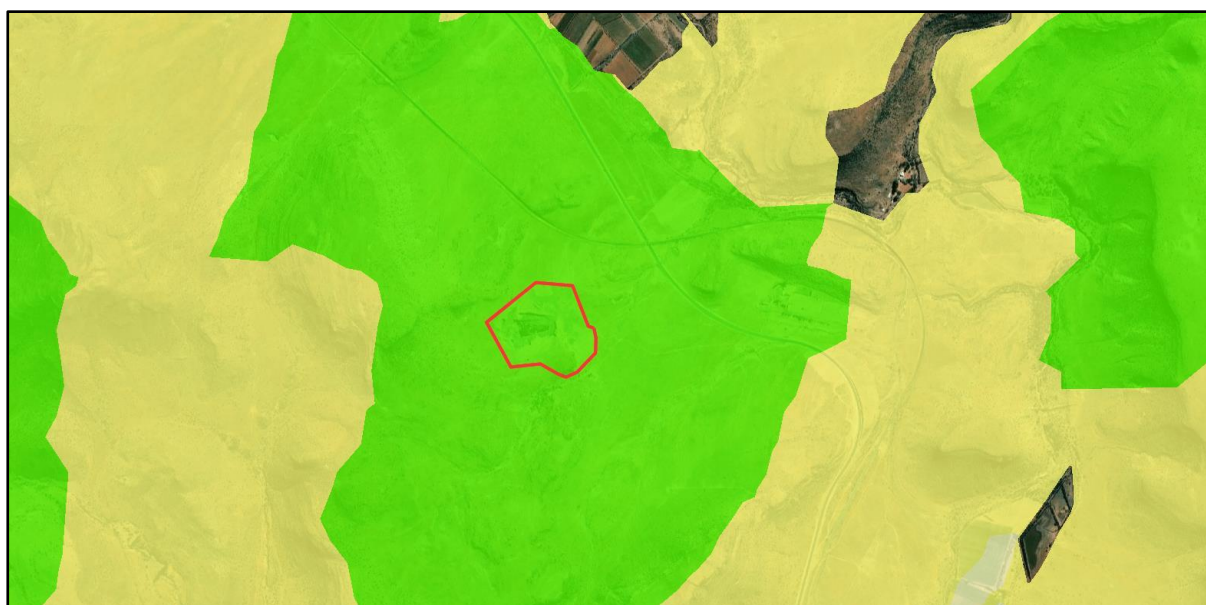
Photo 8 Porcupine scat (left) and a harvester termite mound (right).

Significant termite activity (harvester termite mounds) was also noted (see Photo 8 above). No threatened terrestrial fauna species are known from the area. The Screening Report,

generated on 1 March 2021 by Ntsanko Ndlovu of Afrimat, list two sensitive avifauna species, namely *Aquila verreauxii* (black eagle, VU) and *Neotis ludwigii* (Ludwig's bustard, EN). There is an iNat observation of the former from the hills 10 km southwest of the mining site¹. It is likely that it will use the air space above the mine. There are no iNat observations of Ludwig's bustard, a bird species in the bustard family, from the area. It is listed as endangered and threatened by collisions with telephone lines (and powerlines), hunting and poisoning².

10 CONSERVATION STATUS, THREATS & BIODIVERSITY NETWORK

Eastern Upper Karoo is not listed as a threatened vegetation type in National Environmental Management: Biodiversity Act (Act 10 of 2004) (DEA 2011) or in the recent 2018 National Biodiversity Assessment (Skowno *et al.* 2019). It is listed as Least Concern in the latter. Only about 3% is transformed (Skowno *et al.* 2019), mainly due to the building of dams (Mucina & Rutherford 2006). Its conservation status is poor, with only 2% is formally conserved in the Mountain Zebra and Karoo National Parks, as well as in Oviston, Rolfontein, Commando Drift and Gariiep Dam Nature Reserves.



Map 7 Extract of the 2019 Eastern Cape Biodiversity Conservation Plan, with the mining site outlined in red and located entirely inside a critical biodiversity area (CBA2, green).

The mining site falls inside the Eastern Cape biodiversity network (see Map 7 above). More specifically, it falls inside an area mapped as a critical biodiversity area (CBA2). Reasons given

¹ [Aquila verreauxii \(Verreaux's Eagle\) from Glen 3125_2455 - Middelburg on May 17, 2017 at 01:33 PM by Gigi Laidler · iNaturalist](#)

² [SANBI](#)

for its mapped status appear to be species and vegetation type related, and the possible presence of expert areas and special habitats. Further away, the area around the CBA has been mapped as an ESA1. The CBA2 extends through and well beyond the boundary of the mining site. It is unlikely that continued mining activities, as presented, will increase the impact on the CBA2 significantly. Its mapped status, however, suggests that protection or conservation is the ultimate goal for the area. CBA's are defined as areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure (Skowno *et al.* 2019). Many of these areas support known occurrences of threatened plant species, and/or may be essential elements of designated ecological corridors. Loss of designated CBA's is therefore not recommended.

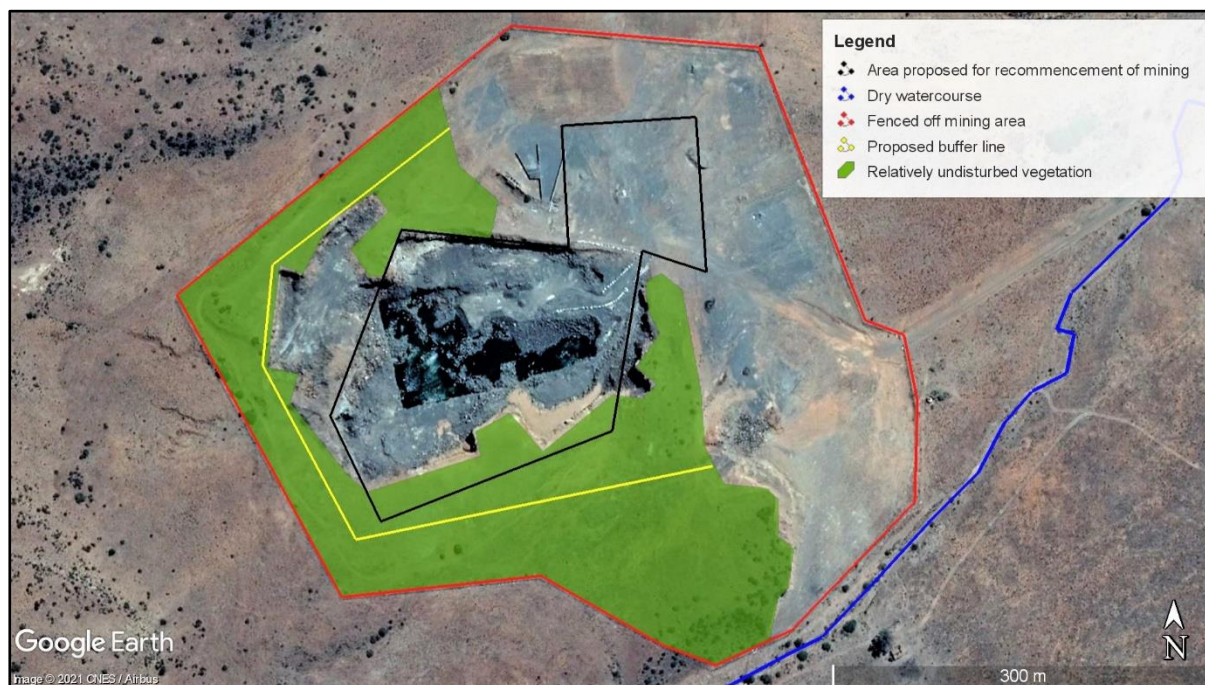
11 IMPACT ASSESSMENT

The proposed mining area, as presented, is well contained inside a fenced-off area and largely on land previously disturbed by mining activities. Only a narrow strip (0.5 ha) of fair quality veld on the southern side of the quarry will need to be cleared to allow for expansion of mining in that direction. The surrounding natural vegetation on the western and southern sides seems to be in a good condition and should be protected as far as possible. Although a fair grass cover was noted in certain places in the previously disturbed areas, diversity in those areas is noticeably poor. Alien infestation from past mining activities is fortunately minimal, with only a few invasives recorded here and there. No significant erosion was noted on the mining site.

Eastern Upper Karoo is well represented in the region and the impact on vegetation type *per se* is of a low concern. Nevertheless, a 30-50 m wide buffer should be allowed for and maintained along the boundary of the fenced-off area and no mining activities should encroach onto the boundary (see Map 8). This will allow the movement of fauna around the edges of the mine and prevent the undermining of the rest of the CBA. The impact on flora is similarly of little concern. Areas of high botanical interest (dolerite plates and sandstone exposures) are located outside the fenced off mining area and will not be impacted by mining activities. The impact on the biodiversity (CBA) network is of a slightly greater concern, but is probably of the same order as for the vegetation. Impact on biodiversity is summarized in Table 1.

Where tracks are needed on steep slopes, berms and/or stormwater cutoff trenches are recommended to prevent erosion. Karoo soils are susceptible to erosion and take decades to recover if allowed to rehabilitate. In undisturbed veld there are two features that protect the soil and enrich them, namely the biogenic crust and plant litter mulch (Jacobs & Jangle 2008). These protect the soil against erosion and provide the ideal conditions for seeds to germinate.

Disturbance and reduction of vegetation cover lead to destruction of the biogenic crust and subsequent erosion (Jacobs & Jangle 2008). Plant litter also slows the water flow and allows for infiltration.



Map 8 Aerial photograph showing the proposed buffer line in relation to the proposed mining area.

Table 1 Impact of mining activities on vegetation type, SCC/regional endemics, fauna and the biodiversity network.

Mitigation	Spatial extent	Duration	Intensity	Probability of occurrence	Significance	Confidence
Without mitigation	Extension of mining area	Long term to perm	Med-high	High	Med (-)	Med-high
With mitigation	Extension of mining area	Long term to perm	Med-high	High	Low (-)	Med-high
Mitigation measures: <ul style="list-style-type: none"> During mining, avoid the unnecessary disturbance of the surrounding vegetation by means of demarcation, especially on the western and southern sides. A 30-50 m wide buffer should be allowed for and maintained along the boundary of the fenced-off area and no mining activities should encroach onto the boundary. Position mining infrastructure and stockpile area in areas previously disturbed by mining activities. Avoid the steeper, rocky slopes. Minimise the construction of new roads by using existing ones. Strict control must be exercised to avoid the harming/catching of wildlife. 						

Probably of a lesser concern would be the invasion of disturbed areas by invasive species.

Invasive plants in the Karoo are mainly annuals that were brought into the region with fodder from other parts of the world, and of which many have been naturalised over the centuries (Van der Merwe *et al.* 2008). The presence of alien species on the mining site, such as *Opuntia ficus-indica*, *Datura stramonium* and *Salsola kali*, will exacerbate this impact. Alien weeds have the potential to diminish the local biodiversity by outcompeting indigenous species. As an operational phase impact, alien control may be required as an ongoing management concern. The spread of aliens into the adjacent area must be prevented.

Most of the area disturbed during mining, such as the stockpile areas, crusher plant, offices and roads, can be rehabilitated post mining. This can be achieved by means of hydro-seeding and the re-establishment of suitable indigenous species. Most of the plant material (seeds and cuttings) needed can be sourced from plants in the surrounding vegetation or suitable indigenous plant nurseries. The prevention of erosion and trapping of runoff would be critical during the rehabilitation phase.

12 SUMMARY & RECOMMENDATIONS

The natural vegetation found on site and the surrounding area is described as Eastern Upper Karoo. With about 97% of its original extent remaining, it is still well represented in the region and not listed as threatened. The mining site falls inside the Eastern Cape biodiversity network, in an area mapped as a critical biodiversity area (CBA2), and therefore considered to be of high conservation value. Reasons given for its mapped status appear to be species and vegetation type related, and the possible presence of expert areas and special habitats. No Species of Conservation Concern (SCC) were recorded on site or in the adjacent area.

The proposed mining area is well contained inside a fenced-off area and largely on land previously disturbed by mining activities. Only a narrow strip (0.5 ha) of fair quality veld on the southern side of the quarry will need to be cleared to allow for expansion of mining in that direction. The surrounding natural vegetation on the western and southern sides seems to be in a good condition and should be protected as far as possible. With mitigation, the impact of mining on biodiversity will be of a low order. It is therefore recommended that that mining activities be allowed to proceed subject to certain mitigation measures.

Please consider the following mitigation measures with regards to the proposed mining activities:

- During mining, avoid the unnecessary disturbance of the surrounding vegetation by means of demarcation, especially on the western and southern sides.

- A 30-50 m wide buffer should be allowed for and maintained along the boundary of the fenced-off area and no mining activities should encroach onto the boundary.
- Position mining infrastructure and stockpile area in areas previously disturbed by mining activities. Avoid the steeper, rocky slopes.
- Minimise the construction of new roads by using existing ones.
- Strict control must be exercised to avoid the harming/catching of wildlife.
- As an operational phase impact, alien control is required as an ongoing management concern. The spread of aliens into the adjacent area must also be prevented. Weeds, such as *Datura stramonium* and *Salsola kali*, can be easily controlled by hand-pulling or by using herbicides. Certain species, such as *Opuntia ficus-indica*, requires the removal and destruction of the entire plant.
- The area disturbed by mining activities, such as the stockpile areas, crusher plant, offices and roads, should be rehabilitated post mining. This can be achieved by means of hydro-seeding and the re-establishment of suitable indigenous species. Most of the plant material (seeds and cuttings) needed can be sourced from plants in the surrounding vegetation or suitable indigenous plant nurseries. A budget should be allocated for this purpose.

REFERENCES

Bredenkamp, C.L. 2019. Flora of the Eastern Cape Province. Strelitzia 41. Volume 1-3. South African National Biodiversity Institute, Pretoria.

Bromilow, C. 2010. Problem Plants and Alien Weeds of South Africa. Briza Publications, Pretoria.

DEA 2011. National List of Ecosystems that are threatened and in need of protection. *Government Gazette* No. 34809, Government Notice No. 1002. National Printer, Pretoria.

ECBCP 2019. Eastern Cape Biodiversity Conservation Plan Handbook. Department of Economic Development & Environmental Affairs, King Williams Town. Compiled by G. Hawley, P. Desmet & D. Berliner.

Edwards, D. 1983. A broad-scale structural classification of vegetation for practical purposes. *Bothalia* 14: 705-712.

Jacobs, K. & Jangle, R. 2008. Karoo Ecosystem Management Plan: Western Cape.

Unpublished, The Nature Conservation Corporation, Cape Town.

Mucina, L. & Rutherford, M.C. (eds) 2006. The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.

Norman, N. & Whitfield, G. 2006. Geological Journeys: a traveller's guide to South Africa's rocks and landforms. Struik Nature, Cape Town.

Skinner, J.D. & Smithers, R.H.N. 1990. The mammals of the Southern African Subregion. University of Pretoria, Pretoria.

Skowno, A.L., Raimondo, D.C., Poole, C.J., Fizzotti, B. & Slingsby, J.A. (eds) 2019. South African National Biodiversity Assessment 2018 Technical Report Volume 1: Terrestrial Realm. South African National Biodiversity Institute, Pretoria.

APPENDICES

Brief CV of specialist

M.G. (Mark) BERRY

BIODIVERSITY SPECIALIST & ENVIRONMENTAL CONSULTANT

Address: 14 Alvin Crescent, Somerset West, 7130, Western Cape

Tel: 083 286-9470 **Fax:** 086 759-1908 **E-mail:** markberry@webafrica.org.za

PROFESSIONAL STATEMENT

Environmental assessment professional and biodiversity specialist with over 20 years of experience mainly in the Western Cape Province, but also in the Northern Cape, Eastern Cape and Free State. Experience in Environmental Impact Assessments (EIA's), biodiversity assessments, Environmental Management Programmes (EMPr's), Environmental Control Officer (ECO) duties and environmental due diligence investigations.

WORK EXPERIENCE

- 1989-1990** Served as a Nature Conservation Officer in the South African Air Force, based at Langebaan Road Air Force Base.
- 1997-2005** Employed as principal environmental specialist at Planning Partners, a multi-disciplinary consultancy specialising in town and regional planning, environmental planning and landscape architecture. Duties included the conducting of EIA's, compiling EMPr's, ECO duties, biodiversity surveys and status quo environmental assessments for spatial development frameworks.
- 2000-2006** Examiner for the Board of Control for Landscape Architects (BOCLA), responsible for the setting up and marking of the Environmental Planning Section of exam paper.
- 2005-current** Started Mark Berry Environmental Consultants in June 2005. Responsibilities include office management, seeking tenders, conducting EIA's, compiling EMPr's, construction site environmental audits, biodiversity surveys, etc. A relationship is maintained with previous employer, and, among other, undertook land-use surveys and reporting for the Eskom's site safety reports for three proposed nuclear power plants in the Western and Eastern Cape Provinces.

QUALIFICATIONS

- BSc (1988) University of Stellenbosch

- BSc-Hons in Botany (1991) University of Stellenbosch
- MSc in Botany (1993) Nelson Mandela Metropolitan University
- PhD in Botany (2000) Nelson Mandela Metropolitan University.

PROFESSIONAL MEMBERSHIP

Professional member (reg. no. 400073/98) of the South African Council for Natural Scientific Professions (SACNASP).

REFERENCES

Dr John Manning (Compton Herbarium, Kirstenbosch)

Phone: (021) 799-8660, e-mail: J.Manning@sanbi.org.za

Warren Manuel (Environmental Manager at Mossel Bay Municipality)

Phone: (044) 606-5163, e-mail: wmanuel@mosselbay.gov.za

John Sharples (Sharples Environmental Services, George)

Phone: (044) 873-4923, e-mail: john@sesc.net

Andrew Cleghorn (civil engineer and branch manager at Knight Piesold (Pty) Ltd)

Phone: (021) 555-0400, e-mail: acleghorn@knightpiesold.com

Prof Eileen Campbell (Department of Botany, Nelson Mandela Metropolitan University)

Phone: (041) 504-2329, e-mail: Eileen.Campbell@nmmu.ac.za

DECLARATION OF INDEPENDENCE

I Mark Gerald Berry, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
 - **other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity;** or
 - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 (as amended).

Signature of the Specialist:



Name of Company:

Mark Berry Environmental Consultants

Date:

29 June 2021