



4a Old Main Road, Judges Walk, Kloof, Kwazulu-Natal, South Africa, 3610  
PO Box 819, Gillitts, 3603, South Africa  
Tel: +27 (0) 31 764 7130 Fax: +27 (0) 31 764 7140 Web: www.gcs-sa.biz

# AQUATIC COMPLIANCE STATEMENT ASSOCIATED WITH THE KOUGA SAND MINING PERMIT APPLICATION ON A PORTION OF THE FARM KRUISFONTEIN NO. 193, NEAR HUMANSDORP, EASTERN CAPE PROVINCE

Version - final

March 2022

GCS Project Number: 21-0703





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DOCUMENT ISSUE STATUS

Report Issue	Final		
GCS Reference Number	GCS Ref - 21-0703		
Client Reference			
Title	AQUATIC COMPLIANCE STATEMENT ASSOCIATED WITH THE KOUGA SAND MINING PERMIT APPLICATION ON A PORTION OF THE FARM KRUISFONTEIN NO. 193, NEAR HUMANSDORP, EASTERN CAPE PROVINCE		
	Name	Signature	Date
Author	Magnus van Rooyen		March 2022
Director	Magnus van Rooyen		March 2022

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## 1 INTRODUCTION

GCS Water and Environment (Pty) Ltd has been appointed by Kouga Sand (Pty) Ltd to conduct an Aquatic Assessment of the area associated with their Mining Permit Application. The assessment will be submitted in support of the Application for Environmental Authorisation that will be conducted in accordance with the requirements of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.

## 2 BACKGROUND

The Mining Permit Application has been lodged in accordance with the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002), as such, the application area is limited to a 5ha portion of land within the boundaries of the Remainder of Portion 8 of the Farm Kruisfontein No. 193.

### 2.1 Location and extent

The property is located approximately 15km (direct line of sight) to the northwest of the town of Humansdorp with access to the site being via an existing farm road that turns off an existing gravel Provincial Road. The location of the study area is provided in Figure 1-1. The corner point coordinates of the study area are provided in the table below. The extent of the study site is provided in Figure 1-2.

**Table 2-1: Corner point coordinates of the study site (see Figure 1-2)**

Coordinate	Longitude	Latitude
A	24° 40' 35.36" E	33° 52' 32.49" S
B	24° 40' 37.86" E	33° 52' 27.84" S
C	24° 40' 28.41" E	33° 52' 22.24" S
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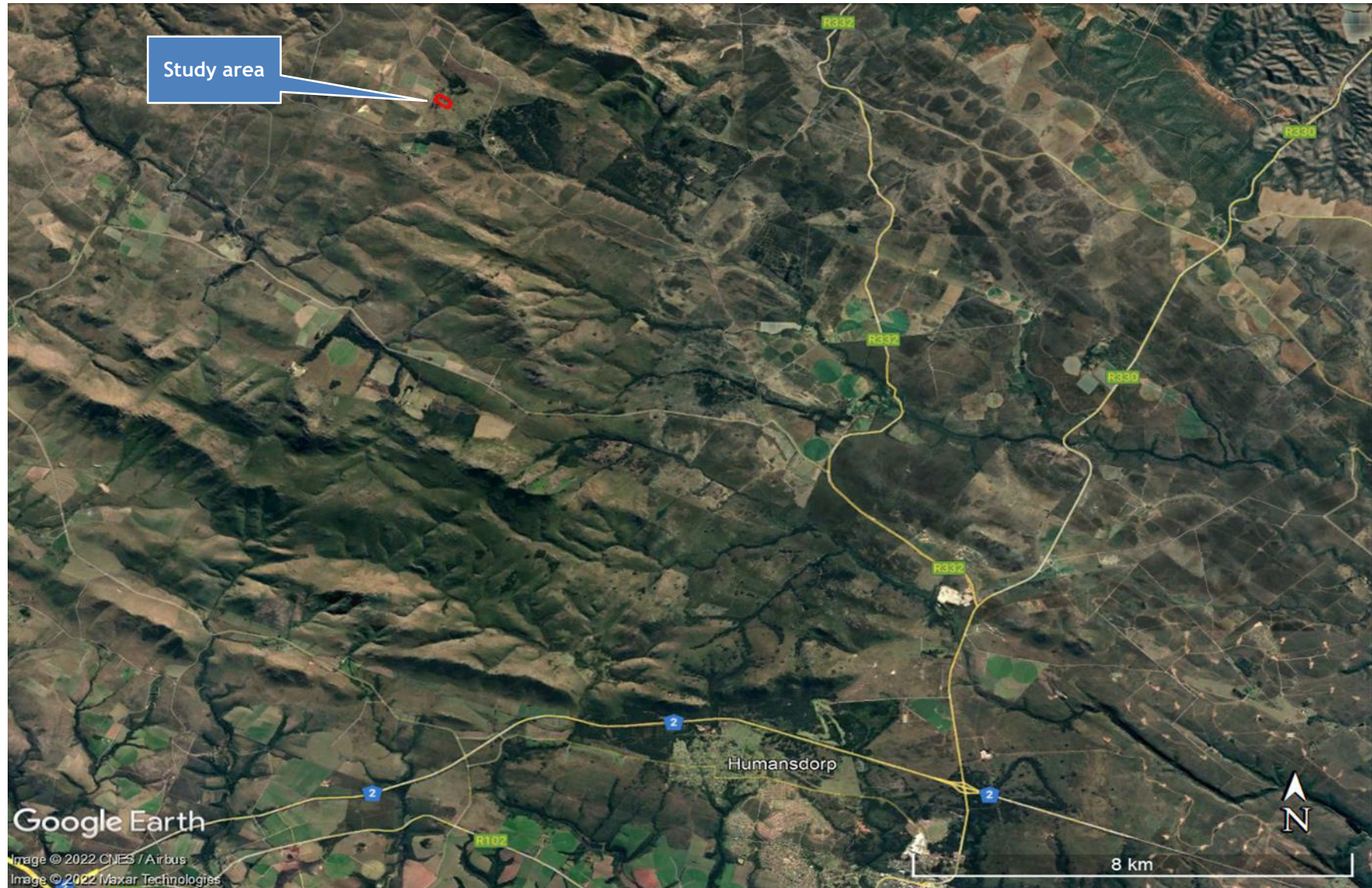


Figure 2-1: Locality map of the study area on the Remainder of Portion 8 of the Farm Kruisfontein No. 193

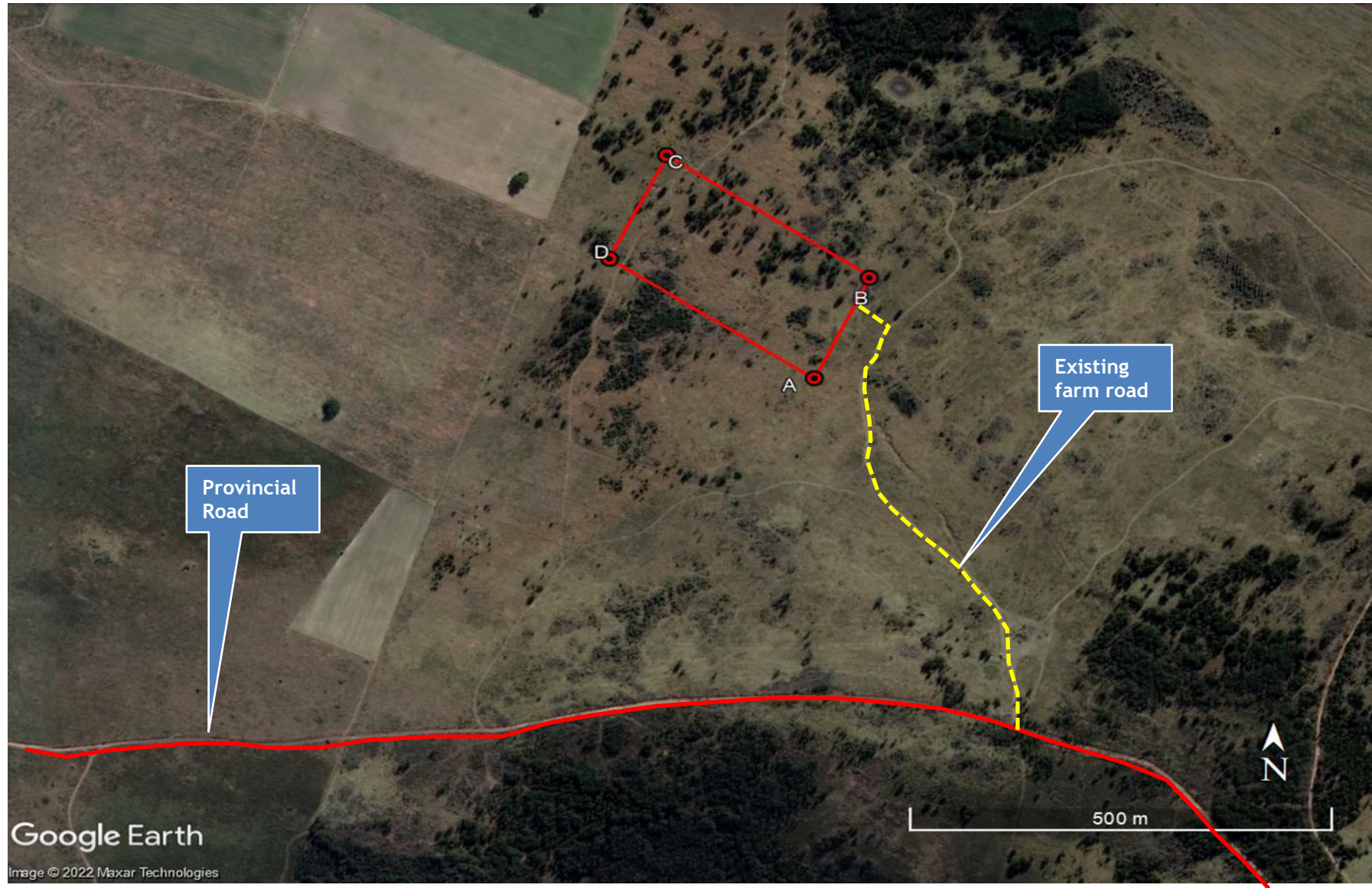


Figure 2-2: Extent of the study area (in red) on the Remainder of Portion 8 of the Farm Kruisfontein No. 193

## 2.2 Proposed development

As mentioned, the study area has an extent of 5ha as regulated by the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) for Mining Permits. The mining of the sand from the study area will be conducted with an excavator which will excavate the sand from the mining area in a concurrent strip-mining process to a depth not exceeding 3m.

The sand will be put through a drum-sieve to remove any plant root material that might be in the sand. The sand will then be stockpiled and loaded on tipper trucks for transport from the site to the point of sale.

## 3 SCOPE OF WORK

The Department of Forestry, Fisheries and Environment's online Screening Tool has indicated that the aquatic conditions on the site has a "low sensitivity" and as such the assessment that deals with this aspect will take the form of a compliance statement. The content of the compliance statement and which sections of the report it can be found is detailed in Table 1-1 below.

**Table 3-1: Contents of the compliance statement and the applicable sections**

Content	Section
Contact details of the specialist, the registration details with the South African Council for Natural Scientific Professions (SACNASP), their field of expertise and a curriculum vitae.	Appendix A
A signed statement of independence.	Appendix B
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment.	Section 4
A baseline profile description of the biodiversity and ecosystems on site.	Section 5
The methodology used to verify the sensitivities of the aquatic biodiversity features on the site, including the equipment and modelling used where relevant.	Section 4
In the case of a linear activity, confirmation from the aquatic biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase.	NA
Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the Environmental Management Programme (EMPr).	Section 7

Content	Section
A description of the assumptions made as well as any uncertainties or gaps in knowledge or data.	Section 4
Any conditions to which this statement is subjected.	Section 7

#### 4 ASSUMPTIONS AND KNOWLEDGE GAPS

The following are assumptions made in the completion of the report:

- The assessment of the potential impacts of the proposed operations, is based on the aquatic features on the site and the operational activities provided. If the development layout and operations is amended, the impact identification and assessment contained in this report may also change.
- The findings of the report are limited to a single day long site visit conducted on 4 January 2022 which is considered to mid-summer. The seasonal timing of the site assessment is not considered to influence / compromise the findings of the assessment.
- The identification and possible delineation of the wetland and riparian areas within the development site was conducted in terms of the procedures as specified by the Department of Water and Sanitation.
- The determination of the Present Ecological State and the Ecological Importance and Sensitivity of the wetland and watercourses that may have been identified would have been conducted by using the WET-Assess Models.
- The classification of any identified aquatic features would have been conducted in accordance with the classification system of inland aquatic ecosystem as prescribed by Ollis *et al.*, 2013.
- The following desktop information was used to augment the finding of the assessment:
  - Electronic biodiversity databases managed by the South African National Biodiversity Institute (SANBI);
  - Available provincial electronic biodiversity databases;
  - Wetland and Riparian Habitat Delineation Document (Department of Water and Sanitation report);
  - Classification system for wetlands and other aquatic ecosystems in South Africa (Inland Systems) (Ollis *et al.*, 2013 - SANBI Biodiversity Series 22); and



## 5 BASELINE PROFILE OF THE STUDY SITE

The section below deals with the baseline conditions on the assessment site and makes provision for desktop findings as well as observations made during the site assessment.

### 5.1 Topography and drainage

The study site is located on a gentle north-easterly facing slope with all surface water runoff from the site taking place in a north-easterly direction. The natural topography of the study site has been altered by the establishment of drainage contours when the area was used for agricultural activities.

From a drainage point of view, the study area falls within the Fish to Tsitsikamma Catchment at the uppermost extreme of the Droekloof River catchment that is a tributary of the Gamtoos River approximately 18km to the northeast of the site.

No watercourses are present on the study site

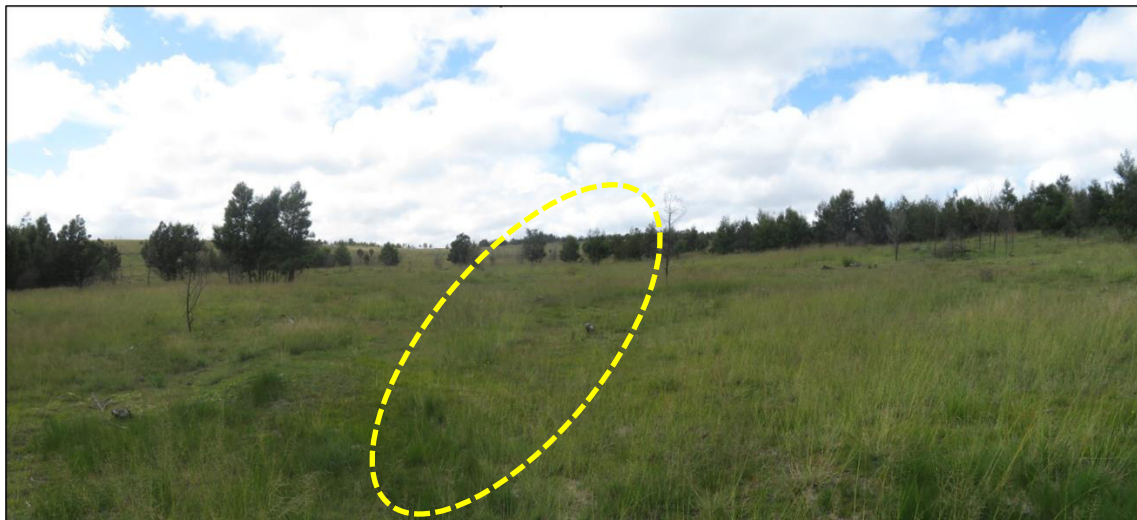


Plate 5-1: View of the altered topography on the site, note the contour in the foreground

### 5.2 Soils

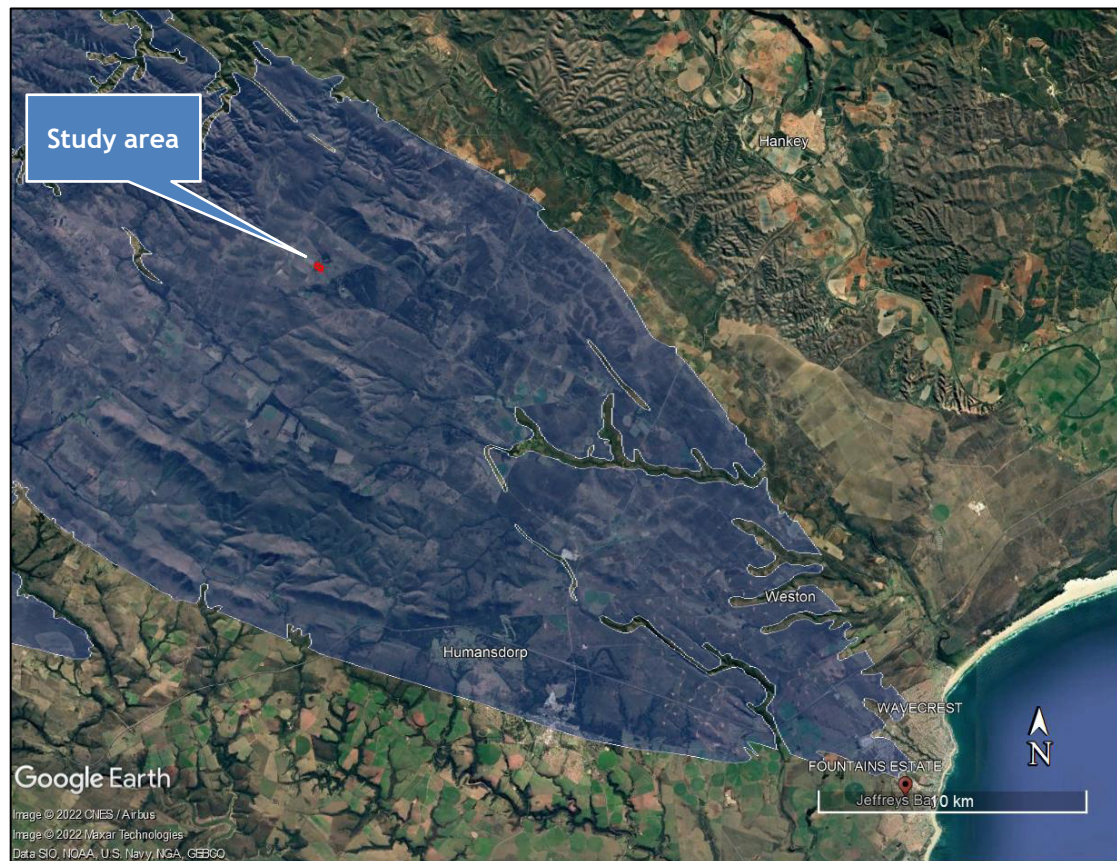
The soils on the study site are imperfectly drained sandy soils, often shallow and often with a hard plinthic horizon at depths varying between 3m to 6m. The soils on the site are yellow to greyish sandy soils with a very thin organic layer at surface.

### 5.3 Aquatic features

The aquatic layer of the Eastern Cape Biodiversity Conservation Plan (2019) (ECBCP) classifies the site to be located in a Freshwater Critical Biodiversity Area 1 (CBA1) as a result of its location in an Ecological Support Area 1 (ESA1) which forms part of the Gamtoos River catchment. The layer confirms the absence of any aquatic features within the study site.

## 5.4 Vegetation

The vegetation on the study area is classified as Kouga Grassy Sandstone Fynbos (FFs28) by National Vegetation Map (2012) managed by the South African National Biodiversity Institute (SANBI). The SANBI reference places the vegetation type in the Eastern Fynbos-Renosterveld Bioregion within the Fynbos Biome and classifies the vegetation type as having a “least threatened” conservation status.



**Figure 5-1: Location of the site in the larger distribution of the Kouga Grassy Sandstone Fynbos (FFs28) vegetation type**

## 5.5 Land use

Historically the study site was cleared for agricultural use (circa 1994) and has subsequently being left to be overgrown by alien invasive *Acacia mearnsii* (Black Wattle) that is systematically cleared from the site by the landowner for the production of firewood. The long term infestation of the alien invasive plant has established a significant seedbed in the soil on the site which results in natural regrowth of the species once cleared.

## 6 AQUATIC FEATURE COMPLIANCE STATEMENT

The dominant aquatic feature in the catchment is the seasonal Droeëkloofrivier that drains the larger area to the north and forms a tributary of the Gamtoosrivier. The upper reaches of the Droeëkloofrivier starts approximately 200m to the north of the permit area.

The upper reaches of a small seasonal, unnamed tributary of the Dieprivier starts approximately 620m to the southeast of the permit area and drains into the Kabeljousrivier.

None of the features indicated above initiate within the boundaries of the permit area or within 100m of the boundaries of the site.

The interrogation of the National Freshwater Ecosystem Priority Areas (NFEPA) (2014) database managed by the South African Biodiversity Institute (SANBI) has not identified any aquatic features (wetlands or watercourses) within the boundaries of the permit area. The dataset does identify two small agricultural dams to the north of the site, 220m and 480m respectively.



**Figure 6-1: Location of the two small farm dams (in green) identified in the NFEPA database (2014)**

The Eastern Cape Biodiversity Sector Plan (2019), which is currently ungazetted, indicates the permit area to be located in an Ecological Support Area 1 and identifies the property as part of an ecologically sensitive catchment. The sector plan goes further to confirm the absence of any wetlands within the permit area.

The site visit that was conducted confirmed the information included in the datasets.

## 7 IMPACT ASSESSMENT

The assessment of the permit area has found that there are no aquatic features (wetlands or watercourses) within the site footprint. As such, the activity will not impact on any such features.

However, as the site is located within a Freshwater CBA 1 due to its location in a Freshwater Ecological Support Area it is highly recommended that provision must be made for the following management measures:

- **Construction phase:** Implementation of stormwater management measures to ensure that no uncontrolled discharge of stormwater from the permit site will take place during the construction phase.
- **Operational phase:** Provision must be made in the stormwater management of the operational mining permit area that no uncontrolled stormwater discharge is to take place into any natural watercourse.

## 8 CONCLUSION

The DFFE Online Screening Tool has indicated that the Aquatic Theme has a LOW sensitivity. The finding of this assessment can confirm this finding as there is no aquatic features present on the site and that the development will pose little or no impact to the catchment that it occurs in, if provision is made for the management measures highlighted in Section 7.

**APPENDIX A**  
**SPECIALIST CURRICULUM VITAE**



## Summary CV



### Name Surname

Magnus van Rooyen

### Personal summary

#### Year of birth:

4 September 1976

#### Nationality:

South African

#### Languages:

- Afrikaans
- English
- German

#### Qualifications:

- MPhil (Environmental Management)
- Post Graduate Certificate in Education (Biology and Science)
- BSc Hons (Botany)
- BSc (Botany and Zoology)

#### Key skills:

- Aquatic Ecologist
- Terrestrial Ecologist

Magnus van Rooyen is a professionally registered Environmental Scientist with the South African Council for Natural Scientific Professions (SACNASP) (Reg. No. 400335/11). Mr van Rooyen has more than 15 years' experience in the environmental sector, both as an terrestrial and aquatic specialist as well as an environmental assessment practitioner. He holds a post-graduate qualification in Botany as well as Environmental Management and an undergraduate degree in Botany and Zoology.

- GCS Water and Environment (Pty) Ltd (2021 – present)
- JG Afrika (Pty) Ltd (2005 – 2020)
- University of Stellenbosch (2002 – 2005)

### Selected projects

#### Project Name: Durban Dig-out Port Biodiversity Baseline Assessment

**Client:** Transnet Capital Project

**Location:** Durban, South Africa

**Date:** 2012 – 2014

**Activities Performed:** Conducted the biodiversity baseline assessment of the site identified for the new Durban Dig-out Port. The biodiversity assessment made provision for the assessment of the terrestrial ecology (mammals, birds, reptiles and vegetation) and the aquatic ecology (wetlands and watercourses occurring on the site to determine the baseline status of these aspects. Specific duties included the assessment of the aquatic features (wetlands and watercourses) as well as the amphibians.

#### Project Name: Riversdale Anthracite Mine Biodiversity and Wetland Assessment

**Client:** Canyon Shared Services

**Location:** Vryheid, South Africa

**Date:** 2019

**Activities Performed:** Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation and the Water Use Licence Application for the Riversdale Anthracite Mine near Vryheid.

#### Project Name: Southport Development Estuarine and Vegetation Assessment

**Client:** Royston Chapman

**Location:** Southport, South Africa

**Date:** 2020

**Activities Performed:** Undertaking of the estuarine and vegetation specialist study in support of the Application for Environmental Authorisation and the Water Use Licence Application for the development of a housing complex in Southport, KwaZulu-Natal.

#### Project Name: KwaHlokohloko Bulk Water Supply Scheme Wetland and Vegetation Assessment

**Client:** Terratest (Pty) Ltd

**Location:** KwaHlokohloko Community, South Africa

**Date:** 2020

**Activities Performed:** Undertaking the wetland and vegetation specialist study in support of the Application for Environmental Authorisation for the implementation of the KwaHlokohloko Bulk Water Supply Scheme near Eshowe in the KwaZulu-Natal.

#### Project Name: Kilimon Bulk Water Supply Wetland and Vegetation Assessment

**Client:** Terratest (Pty) Ltd

**Location:** Kilimon Community, South Africa

**Date:** 2020

**Activities Performed:** Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the Kilimon Bulk Water Supply Scheme near Ixopo in KwaZulu-Natal.

**APPENDIX B**  
**SPECIALIST DECLARATION**

## SPECIALIST DECLARATION

I, Magnus Van Rooyen, declare that:

- I act as an independent specialist;
- Results will be interpreted in an objective manner, even if the viewpoints are not favourable to the applicant;
- I have the relevant expertise to conduct a report of this nature, including knowledge of the National Environmental Management Act (Act 107 of 1998) and the National Water Act (Act 36 of 1998);
- I will comply with the act(s) and other relevant legislation; and
- I understand that any false information published in this document is an offense in terms of regulation 71 and is punishable in terms of Section 24 (f) of the Act.



---

Magnus Van Rooyen  
Environmental Scientist  
Pr.Sci.Nat 400335/11





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### **2.1 Location and extent**

The property is located approximately 15km (direct line of sight) to the northwest of the town of Humansdorp with access to the site being via an existing farm road that turns off an existing gravel Provincial Road. The location of the study area is provided in Figure 1-1. The corner point coordinates of the study area are provided in the table below. The extent of the study site is provided in Figure 1-2.

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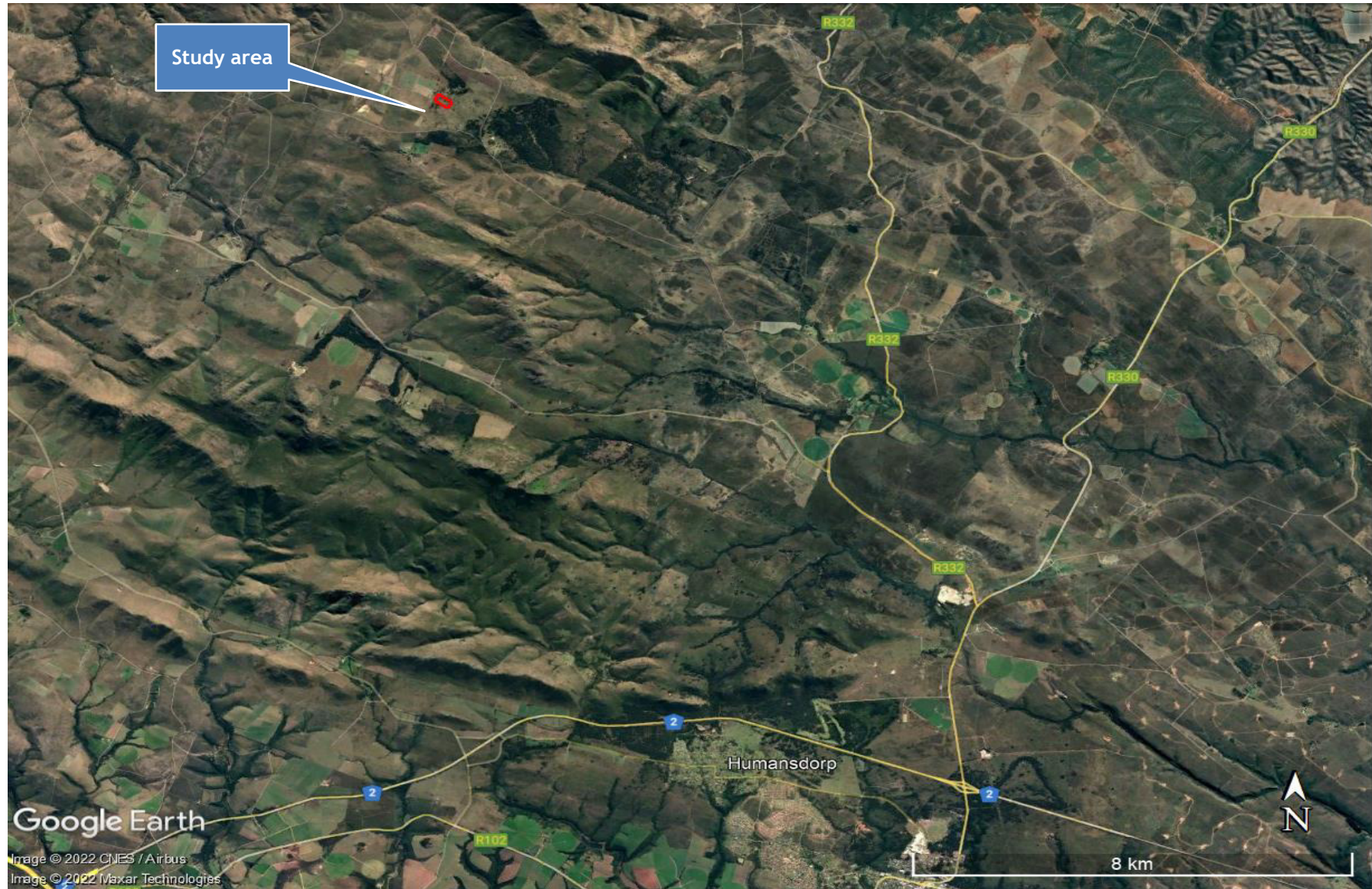


Figure 2-1: Locality map of the study area on the Remainder of Portion 8 of the Farm Kruisfontein No. 193

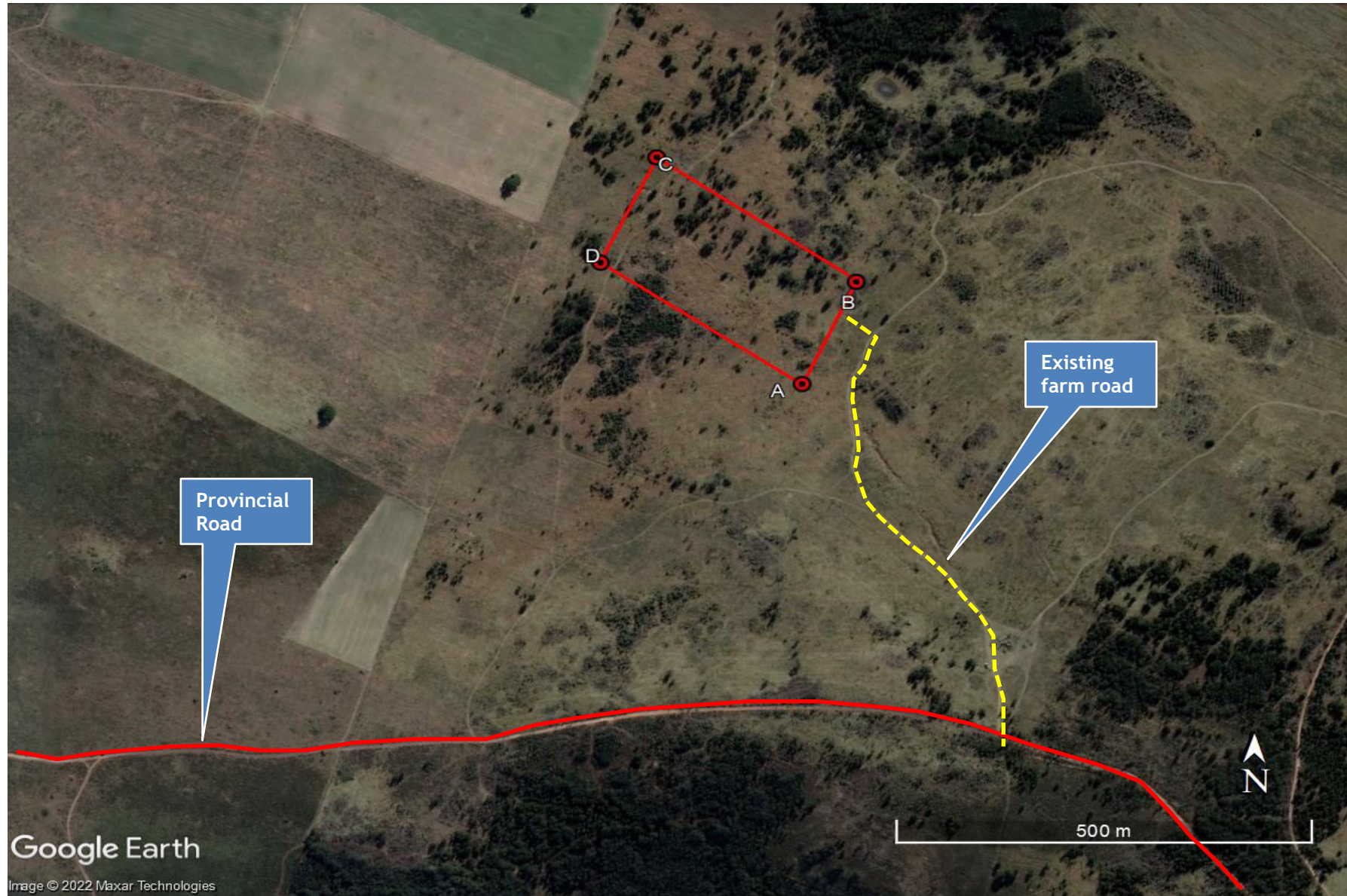


Figure 2-2: Extent of the study area (in red) on the Remainder of Portion 8 of the Farm Kruisfontein No. 193

## 2.2 Proposed development

As mentioned, the study area has an extent of 5ha as regulated by the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) for Mining Permits. The mining of the sand from the study area will be conducted with an excavator which will excavate the sand from the mining area in a concurrent strip-mining process to a depth not exceeding 3m.

The sand will be put through a drum-sieve to remove any plant root material that might be in the sand. The sand will then be stockpiled and loaded on tipper trucks for transport from the site to the point of sale.

## 3 SCOPE OF WORK

This report will be submitted in support of the Application for Environmental Authorisation in accordance with the requirements of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended. As such, the scope of works associated with this report makes provision for compliance with the requirements of these regulations.

The terrestrial biodiversity site sensitivity rating provided by the Department of Forestry, Fisheries and Environment's online Screening Tool is provided in the table below.

**Table 3-1: Site sensitivity ratings as per the DFFE Online Screening Tool**

Theme	Sensitivity	Comments
Animal species	Medium	Potential presence of SCC
Aquatic biodiversity	Low	Absence of any aquatic features
Plant species	Medium	Potential presence of SCC
Terrestrial biodiversity	High	Presence in Ecological Support Area 1

SCC = Species of Conservation Concern

A site sensitivity verification assessment was conducted and has largely refuted the various sensitivity ratings due to the significant transformation that the terrestrial biodiversity on the site has undergone. This transformation has been as a result of the historical clearance of the vegetation from the site for agricultural purposes and the subsequent invasion of the site by alien invasive plant species, *Acacia mearnsii* (Black Wattle).

In accordance with the Gazetted protocol for specialist assessment and minimum report content requirements for environmental impacts terrestrial biodiversity components Compliance Statements must be completed for the biodiversity themes that are identified in the DFFE Online Screening Tool. As such, this Compliance Notice must be read with the information contained in the Site Sensitivity Verification Report.

The sections below provides the Compliance Statements that relate to the terrestrial biodiversity aspects (animals, plants and biodiversity) of the site.



---

## 4 METHODOLOGY

A literature review and desktop analysis were undertaken prior to the site assessment, utilizing various sources including the South African National Biodiversity Institute (SANBI) data and other relevant sources. Recent and historical aerial imagery of the site was reviewed in order to identify points of investigation during the site assessment.

Based on the information generated through the desktop assessment, a site assessment was undertaken to identify the following:

- Sites of geomorphological or topographical variance were identified and subjected to an evaluation of species present identified during the site walkover.
- Signs of Species of Conservation Concern (SCC) identified in the DFFE Online Screening Tool were noted, if present.
- Any additional species of significance, not identified within the DFFE Online Screening Tool were noted.

The site assessment was conducted on 4 January 2022 by Mr Magnus van Rooyen from GCS Water and Environment (Pty) Ltd, who is a registered professional with the South African Council for Natural Scientific Professions (Reg. No. 400335/11).

All data was collected and subjected to evaluation in order to:

- Give overall consideration of the status of the habitat on the study site;
- Identify any habitat anomalies or impacts on the study site that will impact on the habitat status;
- Enable the interpretation of the data in order to prioritize and evaluate the habitat status on the study area.

## 5 ASSUMPTIONS AND KNOWLEDGE GAPS

The following are assumptions made in the completion of the report:

- The assessment of the potential impacts of the proposed development is based on the terrestrial biodiversity features on the development site is based on the project description provide in the sections above. If the project description is amended, the impact identification and assessment contained in this report may also change.
- The findings of the report are limited to a single day long site visit conducted on 4 January 2022 which is considered to be mid-summer. The seasonal timing of the site assessment is not considered to influence / compromise the findings of the assessment.

- The following desktop information was used to augment the finding of the assessment:
  - Electronic biodiversity databases managed by the South African National Biodiversity Institute (SANBI);
  - Available provincial electronic biodiversity databases;
  - Wetland and Riparian Habitat Delineation Document (Department of Water and Sanitation report);

## **6 BASELINE PROFILE OF THE STUDY SITE**

The section below deals with the baseline conditions on the assessment site and makes provision for desktop findings as well as observations made during the site assessment.

### **6.1 Topography and drainage**

The study site is located on a gentle north-easterly facing slope with all surface water runoff from the site taking place in a north-easterly direction. The natural topography of the study site has been altered by the establishment of drainage contours when the area was used for agricultural activities.

From a drainage point of view, the study area falls within the Fish to Tsitsikamma Catchment at the uppermost extreme of the Droekloof River catchment that is a tributary of the Gamtoos River approximately 18km to the northeast of the site.

No watercourses are present on the study site.



**Plate 6-1: View of the altered topography on the site, note the contour in the foreground**

## 6.2 Soils

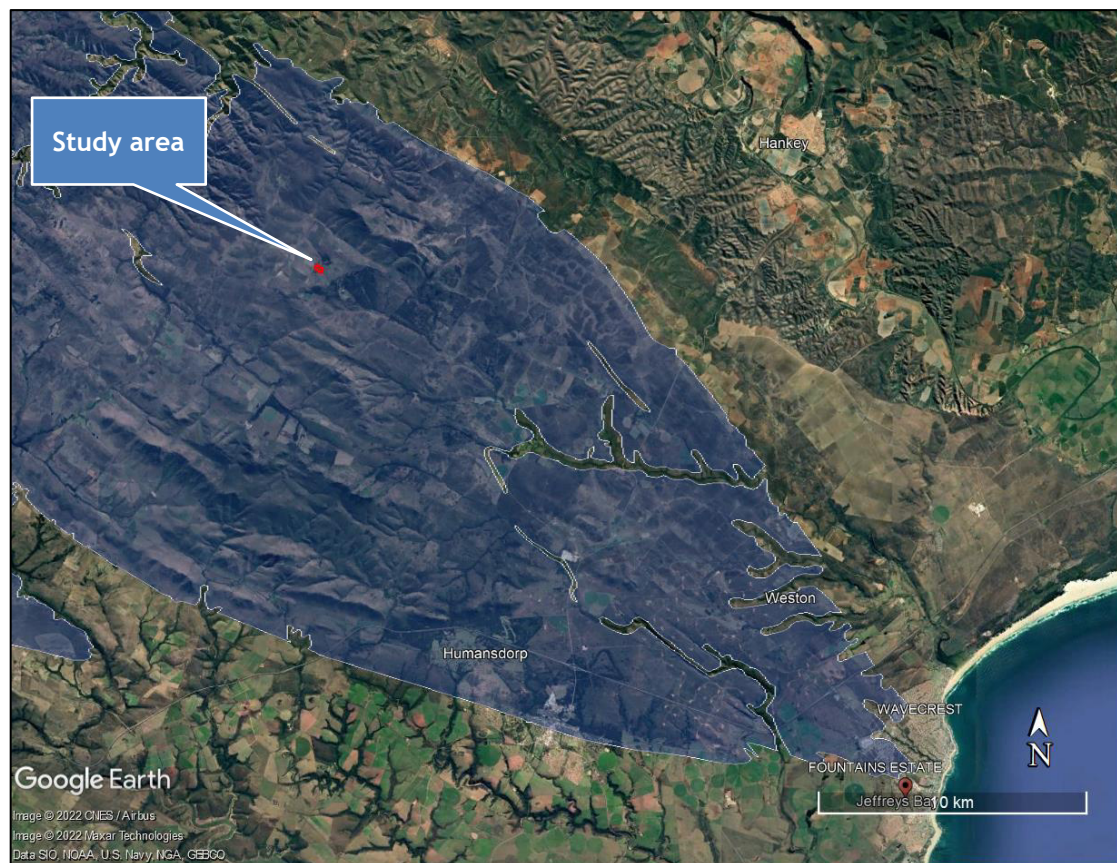
The soils on the study site are imperfectly drained sandy soils, often shallow and often with a hard plinthic horizon at depths varying between 3m to 6m. The soils on the site are yellow to greyish sandy soils with a very thin organic layer at surface.

## 6.3 Aquatic features

The aquatic layer of the Eastern Cape Biodiversity Conservation Plan (2019) (ECBCP) classifies the site to be located in a Freshwater Critical Biodiversity Area 1 (CBA1) as a result of its location in an Ecological Support Area 1 (ESA1) which forms part of the Gamtoos River catchment. The layer confirms the absence of any aquatic features within the study site.

## 6.4 Vegetation

The vegetation on the study area is classified as Kouga Grassy Sandstone Fynbos (FFs28) by National Vegetation Map (2012) managed by the South African National Biodiversity Institute (SANBI). The SANBI reference places the vegetation type in the Eastern Fynbos-Renosterveld Bioregion within the Fynbos Biome and classifies the vegetation type as having a “least threatened” conservation status.



**Figure 6-1: Location of the site in the larger distribution of the Kouga Grassy Sandstone Fynbos (FFs28) vegetation type**

## 6.5 Land use

Historically the study site was cleared for agricultural use (circa 1994) and has subsequently been left to be overgrown by alien invasive *Acacia mearnsii* (Black Wattle) that is systematically cleared from the site by the landowner for the production of firewood. The long term infestation of the alien invasive plant has established a significant seedbed in the soil on the site which results in natural regrowth of the species once cleared.

## 7 PLANT SPECIES COMPLIANCE STATEMENT

As per the DFFE Online Screening Tool, the terrestrial plant theme has been rated with a MEDIUM rating. This rating is based on the following:

- Suspected habitat for Species of Conservation Concern (SCC) based either on there being records for this species collected in the past, prior to 2002, or being a natural area included in a habitat sustainability model; and
- SCC listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable according to the IUCN Red List 3.1. Categories and Criteria and under the national category as Rare.

The plant species that have been identified in the DFFE Online Screening Tool that may occur on the study site are provided in the table below.

**Table 7-1: Sensitive plant species identified as potentially present within the study site**

Scientific name	Sensitivity	Present on site (Y/N)
<i>Argyrobium crassifolium</i>	Medium	N
<i>Argyrobium trifoliatum</i>	Medium	N
<i>Indigofera hispida</i>	Medium	N
<i>Paranomus reflexus</i>	Medium	N
<i>Erica gladulosa</i> subsp. <i>breviflora</i>	Medium	N
<i>Gymnosporia elliptica</i>	Medium	N
<i>Amphiglossa callunoides</i>	Medium	N
<i>Relhania decussata</i>	Medium	N
Sensitive species 315*	Medium	N
<i>Aristea nana</i>	Medium	N
<i>Bobarta macrocarpa</i>	Medium	N
Sensitive species 654*	Medium	N

\*These species are indicated as specific numbers due to their collectable nature

It can be confirmed that the study site falls within the natural distribution of these plant species, but due to the historic clearance of the study site for agricultural activities and the subsequent invasion of the site by alien invasive *Acacia mearnsii* (Black Wattle), none of these species are present on the site.



**Plate 7-1: View of the dense stands of *Acacia mearnsii* (Black Wattle) on the study site, looking in a north-easterly direction across the site**



**Plate 7-2: View of the *Acacia mearnsii* (Black Wattle) on the site, looking in a northerly direction across the site**

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## 8 ANIMAL SPECIES COMPLIANCE STATEMENT

As per the DFFE Online Screening Tool, the terrestrial animal theme has been rated with a MEDIUM rating. This rating is based on the following:

- Suspected habitat for Species of Conservation Concern (SCC) based either on there being records for this species collected in the past, prior to 2002, or being a natural area included in a habitat sustainability model; and
- SCC listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered or Vulnerable according to the IUCN Red List 3.1. Categories and Criteria and under the national category as Rare.

The animal species that have been identified in the DFFE Online Screening Tool that may occur on the study site are provided in the table below.

It can be confirmed that the study site falls within the natural distribution of these animal species, but due to the historic clearance of the study site for agricultural activities and the subsequent invasion of the site by alien invasive *Acacia mearnsii* (Black Wattle), the habitat on the site is not suitable for any of these species. As such, no signs of the presence of these species were observed during the site assessment.



Table 8-1: Sensitive plant species identified as potentially present within the study site

Class	Scientific name	Common name	Sensitivity	Present on site (Y/N)	Comment
Invertebrate	<i>Aneuryphymus montanus</i>	Yellow-winged Agile Grasshopper	Medium	N	The species is associated with fynbos vegetation which is absent on the study site. No habitat is therefore present within which these species can survive.
Aves	<i>Tyto capensis</i>	African Grass Owl	Medium	N	The species favours tall, dense short to medium grassland in the vicinity of vleis. No such habitat is present on the site and as such, the species is absent.
Aves	<i>Notis denhami</i>	Denham's Bustard	Medium	N	The preferred habitat of this species is grassland, shrubland fynbos and agricultural fields. The habitat on the site is therefore suitable for this species, however, none were encountered during the site assessment. It must be noted that the entire area surrounding the study site is considered to be of suitable habitat.
Aves	<i>Circus maurus</i>	Black Harrier	Medium	N	The preferred habitat of this species is fynbos, renosterveld and Karoo shrubland, dry grassland and croplands. The habitat on the study site is not suitable for this species and is therefore considered absent. No sign of this species or any nesting sites were identified during the site visit.
Aves	<i>Sarothrura affinis</i>	Striped Flufftail	Medium	N	The preferred habitat of this species consists of montane grassland, along streams and marshy areas. No such habitat is present on the study site, which correlates with the absence of the species on the site.
Mammalia	<i>Chlorotalpa duthieae</i>	Duthie's Golden Mole	Medium	N	The natural habitat of this species consists of subtropical or tropical moist lowland forest, moist savanna, temperate grassland and arable pastureland. The habitat on the site does not reflect this preferred habitat and nor were any signs of moles (mole hills) observed during the site assessment.
Not specified	Sensitive species 7		Medium	N	

\*These species are indicated as specific numbers due to their collectable nature

## 9 TERRESTRIAL BIODIVERSITY COMPLIANCE STATEMENT

As per the DFFE Online Screening Tool, the terrestrial biodiversity theme has been rated with a VERY HIGH rating. This rating is based on the presence of the site within an Ecological Support Area (ESA) as per the ECBCP (2019). The classification of the site in this ESA relates to the species that may be present on the site (as discussed above) as well as the location of the site in the upper reaches of the Gamtoos River Catchment that is a river identified as a National Freshwater Ecosystem Priority Area.

However, as discussed in the sections above, the habitat as well as the topography of the site has been altered which greatly reduce the sites importance as an ESA.

## 10 IMPACT ASSESSMENT

Likely impacts associated with the proposed mining of sand on the identified terrestrial and biodiversity baseline have been identified through the undertaking of site visits, consultation of published information, comments from the relevant authority and independent assessment by the Environmental Project Team. Impacts have also been identified by the specialist assessments undertaken.

The impact assessment will make provision for the assessment of the following impacts:

- No-go impacts;
- Construction phase impacts;
- Operational phase impacts;
- Decommissioning phase impacts; and
- Cumulative impacts.

Impacts identified were assessed according to the criteria outlined in Appendix B. Each impact was ranked according to extent, duration, magnitude and probability. These criteria are based on the Department of Environmental Affairs and Tourism (DEAT) (now the Department of Environmental Affairs, Forestry and Fisheries) Guideline Document to the EIA Regulations(1998). Where possible, mitigatory measures were recommended for the impacts identified.

### 10.1 No-go impacts

To contextualise the potential impacts of the project's activities and associated infrastructure, the existing impacts (or *status quo*) associated with current terrestrial biodiversity conditions need to be described in terms of the vegetation patterns, structure and composition. This *status quo* should be used as the comparison against which the other project impacts are assessed. The main issues identified with the existing impacts are:

- The presence of alien invasive vegetation will persist on the study area and will proliferate from the site.

Since these existing impacts will continue even if the project is not implemented, they are considered to be “no-go” impacts.

## **10.2 Construction and operational phase impacts**

This section will assess the impacts associated with the implementation of the proposed development on the terrestrial biodiversity on the Mining Permit area. As the construction and operational activities are directly aligned, they are similar and will be assessed as such. The following impacts have been identified:

- Loss of indigenous vegetation.
- Loss of alien invasive vegetation.
- Spreading of alien invasive plant species.
- Contamination of the area by petrochemical spillages.
- Contamination of the area by domestic waste.
- Contamination of the area as a result of leaking portable toilet facilities.

## **10.3 Decommissioning phase impacts**

The mining permit area will be closed and rehabilitated with the expiry of the Mining Permit. The impacts associated with the rehabilitation are as follows:

- Spreading of alien invasive vegetation.
- Loss of alien invasive vegetation.
- Alternation of the catchment drainage regime.

## **10.4 Cumulative impacts**

The following cumulative impacts associated with the mining activities have been identified:

- Loss of indigenous vegetation.
- Loss of alien invasive plant species.
- Spread of alien invasive plant species.
- Disruption of an open space corridor.
- Alternation of the catchment drainage regime.

**Table 10-1: No-go impacts associated with the Mining Permit activities**

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude							S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude					
		S*	E	D	M	P			S	E	D	M	P	
Habitat degradation	The current land use management will persist and as such, the continuous proliferation of the alien invasive plant species from the old agricultural areas will continue.	-	2	4	8	4	Score: 56 Medium Negative	None, as the no-go option reflects the <i>status quo</i> .	-	1	4	6	4	Score: 56 Medium Negative

**Table 10-2: Construction and operational impacts associated with the Mining Permit activities**

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability							S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					
		S*	E	D	M	P			S	E	D	M	P	
Loss of indigenous vegetation.	The surface mining of sand will require the removal of vegetation. The removed vegetation might include some indigenous grass species.	-	1	2	8	4	Score: 44 Medium Negative	Provision must be made for concurrent rehabilitation of the mining operations which will ensure that the permit area is mined in designated sections.  The mined out sections will be rehabilitated and planted with an indigenous grass seed mix in the first growing season after it has been mined out. This will limit the operational area to the current operational area.	-	1	2	6	2	Score: 18 Low Negative
Loss of alien invasive vegetation.	A large component of the vegetation on the site consists of alien species. The mining activities on the site will result in these as well as the associated seedbed to be removed.	+	1	2	8	4	Score: 44 Medium Positive	The removal of the alien invasive vegetation and the associated seedbed in the soil is a positive impact. No mitigation measures are required.	-	1	2	8	4	Score: 44 Medium Positive

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability							S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					
		S*	E	D	M	P			S	E	D	M	P	
Spreading of alien invasive plant species.	The clearance of vegetation from the mining area will provide an opportunity for alien invasive species to settle on the site.	-	2	3	6	3	<b>Score: 44 Medium Negative</b>	A seedbed of alien plants will be present within the cleared soils. This seedbed and the plants that originate from the seedbed must be managed as follows: <ul style="list-style-type: none"> <li>The Mining Permit footprint must be clearly survey and demarcated before any construction or operations is to commence.</li> <li>This must be done to ensure that areas to be cleared limited to only the areas that are necessary for the mining activities.</li> <li>The cleared areas must be regularly monitored for the establishment of alien plant species. These must be cleared when they appear.</li> <li>If alien invasive plant species become a problem on the mining area site, a formal Alien Invasive Management Plan must be set up and implemented. This plant must make provision for the identification and eradication of these species.</li> <li>The rehabilitation of these cleared areas must commence as soon as practically possible after construction activities have ceased.</li> </ul>	-	1	2	3	3	<b>Score: 18 Low Negative</b>

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability							S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					
		S*	E	D	M	P			S	E	D	M	P	
Contamination of the area by petrochemical spillages.	The presence of plant and equipment on the mining area poses a risk to contamination of the environment through any leaks.	-	1	1	4	3	<b>Score: 18 Low Negative</b>	Even though the impact pre-mitigation is considered to be low, the following mitigation measures must be included into the EMPR to further reduce the significance of the impact: <ul style="list-style-type: none"> <li>All plant and equipment that make use of petrochemical substances must be checked leakages on a daily basis before operations commence.</li> <li>All plants and equipment that are found to be leaking must be removed from the property and only returned once the leakages have been addressed.</li> <li>If any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored.</li> <li>All refuelling of plant and equipment must be conducted over a drip-tray.</li> <li>If any plant or equipment is to be parked on the site, these must be parked within the demarcated construction footprint that has been cleared.</li> <li>If any spillages from plant or equipment occur, the spill must</li> </ul>	-	1	1	4	1	<b>Score: 6 Low Negative</b>

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability							S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					
		S*	E	D	M	P			S	E	D	M	P	
								be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.						
Contamination of the area by domestic waste.	The employees associated with the mining activities will generate an amount of domestic waste on the site which could spread from the site and contaminate the areas surrounding the site.	-	1	2	4	3	<b>Score: 21 Medium Negative</b>	Even though the impact pre-mitigation is considered to be low, the following mitigation measures must be included into the EMPR to further reduce the significance of the impact: <ul style="list-style-type: none"> <li>• A designated eating area must be established within the mining area.</li> <li>• Covered domestic waste bins must be present at the eating area to receive all the domestic waste generated by the labour.</li> <li>• The capacity of these domestic waste bins must be monitored on a daily basis to ensure that they are emptied timeously.</li> <li>• The domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker.</li> </ul>	-	1	1	2	2	<b>Score: 8 Low Negative</b>
Contamination of the area as a result of leaking portable toilet facilities.	Portable toilet facilities will be present of the property to	-	1	1	6	4	<b>Score: 32 Medium Negative</b>	The following mitigation measures must be included into the EMPR:	-	1	1	2	2	<b>Score: 8 Low Negative</b>

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability							S = Status; E = Spatial extent; D = Duration; M = Magnitude P = Probability					
		S*	E	D	M	P			S	E	D	M	P	
	<p>service the labour associated with the mining activities.</p> <p>These toilets will pose a risk of leakages and spillages which may impact on the terrestrial biodiversity on the site.</p>							<ul style="list-style-type: none"> <li>Only portable chemical toilets with a sealed reservoir will be allowed on site.</li> <li>The capacity of the reservoirs in the portable chemical toilets must be monitored on a daily basis to ensure that they can be serviced timeously.</li> <li>All removal of the collected sewage waste from the portable chemical toilets must be conducted by a registered service provider for disposal at a municipal waste water treatment facility.</li> </ul>						

**Table 10-3: Decommissioning impacts associated with the Mining Permit activities**

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude							S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude					
		S*	E	D	M	P			S	E	D	M	P	
Spreading of alien invasive vegetation	Alien invasive plant species might settle within the mining area from where these species could spread into the surrounding areas.	-	2	3	6	4	Score: 44 Medium Negative	A seedbed of alien plants will be present within the cleared soils. This seedbed and the plants that originate from the seedbed must be managed as follows:	-	1	2	3	3	Score: 9 Low Negative



Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)	
		S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude							S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude						
		S*	E	D	M	P			S	E	D	M	P		
								<ul style="list-style-type: none"> <li>The Mining Permit footprint must be clearly survey and demarcated before any construction or operations is to commence.</li> <li>This must be done to ensure that areas to be cleared limited to only the areas that are necessary for the mining activities.</li> <li>The cleared areas must be regularly monitored during the decommissioning phase for the establishment of alien plant species. These must be cleared when they appear.</li> <li>If alien invasive plant species become a problem on the mining area site, a formal Alien Invasive Management Plan must be set up and implemented. This plant must make provision for the identification and eradication of these species.</li> </ul>							
Loss of alien invasive plant species	The current impacts in the catchments associated with the aquatic features will persist under the current land use conditions.	-	2	4	8	4	Score: 56 Medium Negative								Score: 56 Medium Negative

Nature of impact	Impact summary	Without mitigation					Significance rating (pre-mitigation)	Proposed mitigation and management measures	With mitigation					Significance rating (post-mitigation)
		S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude							S = Status; E = Spatial extent; D = Duration; P = Probability; M = Magnitude					
		S*	E	D	M	P			S	E	D	M	P	
Alternation of the catchment drainage regime	<p>The excavations associated with the mining activities will influence the baseline topography.</p> <p>This alteration to the topography will be limited to the mining area.</p>	-	1	2	4	5	Score: 35 Medium Negative	The rehabilitation of the site must make provision for a topographical condition that is free draining in the natural drainage direction of the surrounding area.	-	1	1	0	5	Score: 10 Low Negative

**Table 10-4: Cumulative impacts associated with the Mining Permit activities**

Nature of impact	Impact description	Impact rating post mitigation
Loss of indigenous vegetation.	<p>The mining operations will be conducted as an open cast surface mining operation which will result in the removal of the vegetation from the active mining areas. As a result of this clearance, it is likely that some indigenous vegetation will be cleared from the site. However, with the level of alien invasive plant infestation (<i>Acacia mearnsii</i>) the indigenous vegetation will be limited to pioneering grass species that has established on the site as a result of the existing land use.</p> <p>Furthermore, the rehabilitation of the site will make provision for the reestablishment of the same pioneering grasses that would have been removed during the mining activities.</p> <p>This cumulative impact can therefore be successfully managed and mitigated.</p>	Low Negative
Loss of alien invasive plant species.	<p>The mining operations will be conducted as an open cast surface mining operation which will result in the removal of vegetation from the active mining areas. As a result of this clearance, large numbers of alien invasive plant species (<i>Acacia mearnsii</i>) will be removed from the site. In addition to the physical removal of these plants, the associated seedbed of this species will be removed with the removed sand, which will limit the amount of revegetation of the species that might occur.</p> <p>As such, the mining activities is considered to have a medium positive impact on the loss of alien invasive plant species from the area.</p>	Medium Positive

Nature of impact	Impact description	Impact rating post mitigation
Spread of alien invasive plant species.	<p>Due to the existing presence of alien invasive species on the old agricultural areas within the mining site, the risk of these species spreading from the site is present. However, since these species will be removed during the mining activities, the impact is considered to be limited.</p> <p>Furthermore, the management of alien invasive plant species must be included in the EMPR for the operations. The measures included in this plan must have as a goal to reduce the spread of the alien invasive species and to eradicate them from area within the property in which they occur. Similarly, the rehabilitation of the site during the decommissioning phase must make provision for the planting of indigenous pioneering grasses on the site. As such implementation of these plans will result in the improvement of the vegetative biodiversity on the property and result in an improvement of the current biodiversity baseline on the site.</p> <p>This cumulative impact can therefore be successfully managed and mitigated.</p>	<b>Low Negative</b>
Disruption of an open space corridor.	<p>The site that is designated as the mining permit area is currently vacant land. The operations on the site will therefore change this “vacant land” status for the duration of the operations. As Mining Permits issued in terms of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) makes provision for the mining of an area for no longer than 4 years, this disruption will only be present for that duration.</p> <p>The rehabilitation of the site will make provision for the shaping of the mining area to blend in with the surrounding topography and associated drainage as well as for the planting of pioneering grasses that are endemic to the area.</p> <p>This cumulative impact can therefore be successfully managed and mitigated.</p>	<b>Low Negative</b>
Alteration of the catchment drainage regime of the area.	<p>Due to the nature of the open cast mining, the excavation associated with the mining activity will result in an impact to the localised catchment stormwater runoff. However, as the site will be rehabilitated to be free draining in the natural drainage direction, all stormwater runoff from the site will end up in the appropriate catchment. In addition, the relatively small size of the site as well as the position high up in the particular catchment will further limit the impact of the mining activities on the surrounding hydrology.</p> <p>This cumulative impact can therefore be successfully managed and mitigated.</p>	<b>Low Negative</b>

## **11 MANAGEMENT AND MITIGATION MEASURES**

The management and mitigation measure to be included in the Environmental Management Programme Report (EMPR) for the mining activities are provided in tables 10-1 to 10-3, above.

## **12 MONITORING REQUIREMENTS**

It is recommended that an Environmental Control Officer, who meets the requirements of the NEMA: EIA Regulations (2014) as amended, be appointed to conduct biannual audits of the operations for the duration of the project. An audit report must be completed for each audit and be submitted to the Department of Mineral Resources and Energy.

Furthermore, a specialist ecologist should conduct a site visit at the commencement of the rehabilitation phase of the project to ensure that the contractor is adequately informed of the rehabilitation requirements associated with the works.

## **13 REASONED OPINION BY THE SPECIALIST**

Appendix 6 of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended requires that the specialist conducting a specialist study for submission with an Application for Environmental Authorisation provide a reasoned opinion on whether an authorisation should be granted. The following is the specialist's reasoned opinion in this regard.

## **14 CONCLUSION**

Based on the findings of the assessment it is the opinion of the Specialist that there are no reasons that the development should not be authorised in accordance with the specifications as presented in this assessment. The authorisation must make provision for the various management and mitigation measures detailed in this report.

The following considerations were taken for the generation of the reasoned opinion regarding the potential terrestrial biodiversity impacts of the proposed mining operations associated with the mining area:

- The nature and extent of the proposed activities to be undertaken on the site;
- The location of any terrestrial biodiversity areas within the study area.
- The location of these activities to any sensitive terrestrial biodiversity areas on the site.

- The assessment of the potential impacts and risks on these terrestrial biodiversity features posed by the mining operations.

Based on the above considerations as well as the site verification that was conducted (attached in Appendix C), no sensitive terrestrial biodiversity features were encountered on the Mining Permit footprint. As such, the impacts that are associated with the mining activities on the terrestrial biodiversity with applying mitigation measures are low. It is also considered that with the appropriate rehabilitation measures implemented, the mining area can be returned to the current ecological status at the end of the validity period of the permit.

It is therefore the specialist's opinion that the authorisation for the project should be granted.

## 15 CONCLUSION

The DFFE Online Screening Tool has indicated that the Terrestrial Biodiversity Theme has a VERY HIGH sensitivity. However, the findings of this assessment as well as the Site Verification does not agree with this rating. As such the impacts on the current terrestrial biodiversity mining area is considered to be acceptable, especially if consideration is given to the management and mitigation measures as highlighted in this report.

## 16 REFERENCES

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**APPENDIX A**  
**SPECIALIST CURRICULUM VITAE**



## Summary CV



### Name Surname

Magnus van Rooyen

### Personal summary

#### Year of birth:

4 September 1976

#### Nationality:

South African

#### Languages:

- Afrikaans
- English
- German

#### Qualifications:

- MPhil (Environmental Management)
- Post Graduate Certificate in Education (Biology and Science)
- BSc Hons (Botany)
- BSc (Botany and Zoology)

#### Key skills:

- Aquatic Ecologist
- Terrestrial Ecologist

Magnus van Rooyen is a professionally registered Environmental Scientist with the South African Council for Natural Scientific Professions (SACNASP) (Reg. No. 400335/11). Mr van Rooyen has more than 15 years' experience in the environmental sector, both as an terrestrial and aquatic specialist as well as an environmental assessment practitioner. He holds a post-graduate qualification in Botany as well as Environmental Management and an undergraduate degree in Botany and Zoology.

- GCS Water and Environment (Pty) Ltd (2021 – present)
- JG Afrika (Pty) Ltd (2005 – 2020)
- University of Stellenbosch (2002 – 2005)

### Selected projects

#### Project Name: Durban Dig-out Port Biodiversity Baseline Assessment

**Client:** Transnet Capital Project

**Location:** Durban, South Africa

**Date:** 2012 – 2014

**Activities Performed:** Conducted the biodiversity baseline assessment of the site identified for the new Durban Dig-out Port. The biodiversity assessment made provision for the assessment of the terrestrial ecology (mammals, birds, reptiles and vegetation) and the aquatic ecology (wetlands and watercourses occurring on the site to determine the baseline status of these aspects. Specific duties included the assessment of the aquatic features (wetlands and watercourses) as well as the amphibians.

#### Project Name: Riversdale Anthracite Mine Biodiversity and Wetland Assessment

**Client:** Canyon Shared Services

**Location:** Vryheid, South Africa

**Date:** 2019

**Activities Performed:** Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation and the Water Use Licence Application for the Riversdale Anthracite Mine near Vryheid.

#### Project Name: Southport Development Estuarine and Vegetation Assessment

**Client:** Royston Chapman

**Location:** Southport, South Africa

**Date:** 2020

**Activities Performed:** Undertaking of the estuarine and vegetation specialist study in support of the Application for Environmental Authorisation and the Water Use Licence Application for the development of a housing complex in Southport, KwaZulu-Natal.

#### Project Name: KwaHlokohloko Bulk Water Supply Scheme Wetland and Vegetation Assessment

**Client:** Terratest (Pty) Ltd

**Location:** KwaHlokohloko Community, South Africa

**Date:** 2020

**Activities Performed:** Undertaking the wetland and vegetation specialist study in support of the Application for Environmental Authorisation for the implementation of the KwaHlokohloko Bulk Water Supply Scheme near Eshowe in the KwaZulu-Natal.

#### Project Name: Kilimon Bulk Water Supply Wetland and Vegetation Assessment

**Client:** Terratest (Pty) Ltd

**Location:** Kilimon Community, South Africa

**Date:** 2020

**Activities Performed:** Undertaking the wetland and biodiversity specialist study in support of the Application for Environmental Authorisation for the Kilimon Bulk Water Supply Scheme near Ixopo in KwaZulu-Natal.

**APPENDIX B**  
**SPECIALIST DECLARATION**



## SPECIALIST DECLARATION

I, Magnus Van Rooyen, declare that:

- I act as an independent specialist;
- Results will be interpreted in an objective manner, even if the viewpoints are not favourable to the applicant;
- I have the relevant expertise to conduct a report of this nature, including knowledge of the National Environmental Management Act (Act 107 of 1998) and the National Water Act (Act 36 of 1998);
- I will comply with the act(s) and other relevant legislation; and
- I understand that any false information published in this document is an offense in terms of regulation 71 and is punishable in terms of Section 24 (f) of the Act.



---

Magnus Van Rooyen  
Environmental Scientist  
Pr.Sci.Nat 400335/11

**APPENDIX C**  
**SITE VERIFICATION REPORT**



4a Old Main Road, Judges Walk, Kloof, Kwazulu-Natal, South Africa, 3610  
PO Box 819, Gillitts, 3603, South Africa  
Tel: +27 (0) 31 764 7130 Fax: +27 (0) 31 764 7140 Web: [www.gcs-sa.biz](http://www.gcs-sa.biz)

# SITE SENSITIVITY VERIFICATION ASSOCIATED WITH THE KOUGA SAND MINING PERMIT APPLICATION AREA ON A PORTION OF THE FARM KRUISFONTEIN NO. 193 NEAR HUMANSDORP, EASTERN CAPE PROVINCE

Version - final

March 2022

GCS Project Number: 21-0703

Client Reference:





**SITE SENSITIVITY VERIFICATION ASSOCIATED WITH THE KOUGA SAND MINING PERMIT  
APPLICATION AREA ON A PORTION OF THE FARM KRUIFFONTEIN NO. 193 NEAR  
HUMANSDORP, EASTERN CAPE PROVINCE**

Version - final

March 2022

DOCUMENT ISSUE STATUS

Report Issue	Final		
GCS Reference Number	GCS Ref - 21-0703		
Client Reference			
Title	SITE SENSITIVITY VERIFICATION ASSOCIATED WITH THE KOUGA SAND MINING PERMIT APPLICATION AREA ON A PORTION OF THE FARM KRUIFFONTEIN NO. 193 NEAR HUMANSDORP, EASTERN CAPE PROVINCE		
	Name	Signature	Date
Author	Magnus van Rooyen		March 2022
Director	Magnus van Rooyen		March 2022

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# SITE SENSITIVITY VERIFICATION ASSOCIATED WITH THE KOUGA SAND MINING PERMIT APPLICATION AREA ON A PORTION OF THE FARM KRUISFONTEIN NO. 193 NEAR HUMANSDORP, EASTERN CAPE PROVINCE

## 1 INTRODUCTION

GCS Water and Environment (Pty) Ltd has been appointed by Kouga Sand (Pty) Ltd to conduct a Vegetation Assessment of the area associated with their Mining Permit Application. The assessment will be submitted in support of the Application for Environmental Authorisation that will be conducted in accordance with the requirements of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.

## 2 BACKGROUND

The Mining Permit Application has been lodged in accordance with the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002), as such, the application area is limited to a 5ha portion of land within the boundaries of the Remainder of Portion 8 of the Farm Kruisfontein No. 193.

### 2.1 Location and extent

The property is located approximately 15km (direct line of sight) to the northwest of the town of Humansdorp with access to the site being via an existing farm road that turns off an existing gravel Provincial Road. The location of the study area is provided in Figure 1-1. The corner point coordinates of the study area are provided in the table below. The extent of the study site is provided in Figure 1-2.

**Table 2-1: Corner point coordinates of the study site (see Figure 1-2)**

Coordinate	Longitude	Latitude
A	24° 40' 35.36" E	33° 52' 32.49" S
B	24° 40' 37.86" E	33° 52' 27.84" S
C	24° 40' 28.41" E	33° 52' 22.24" S
D	24° 40' 25.82" E	33° 52' 27.05" S

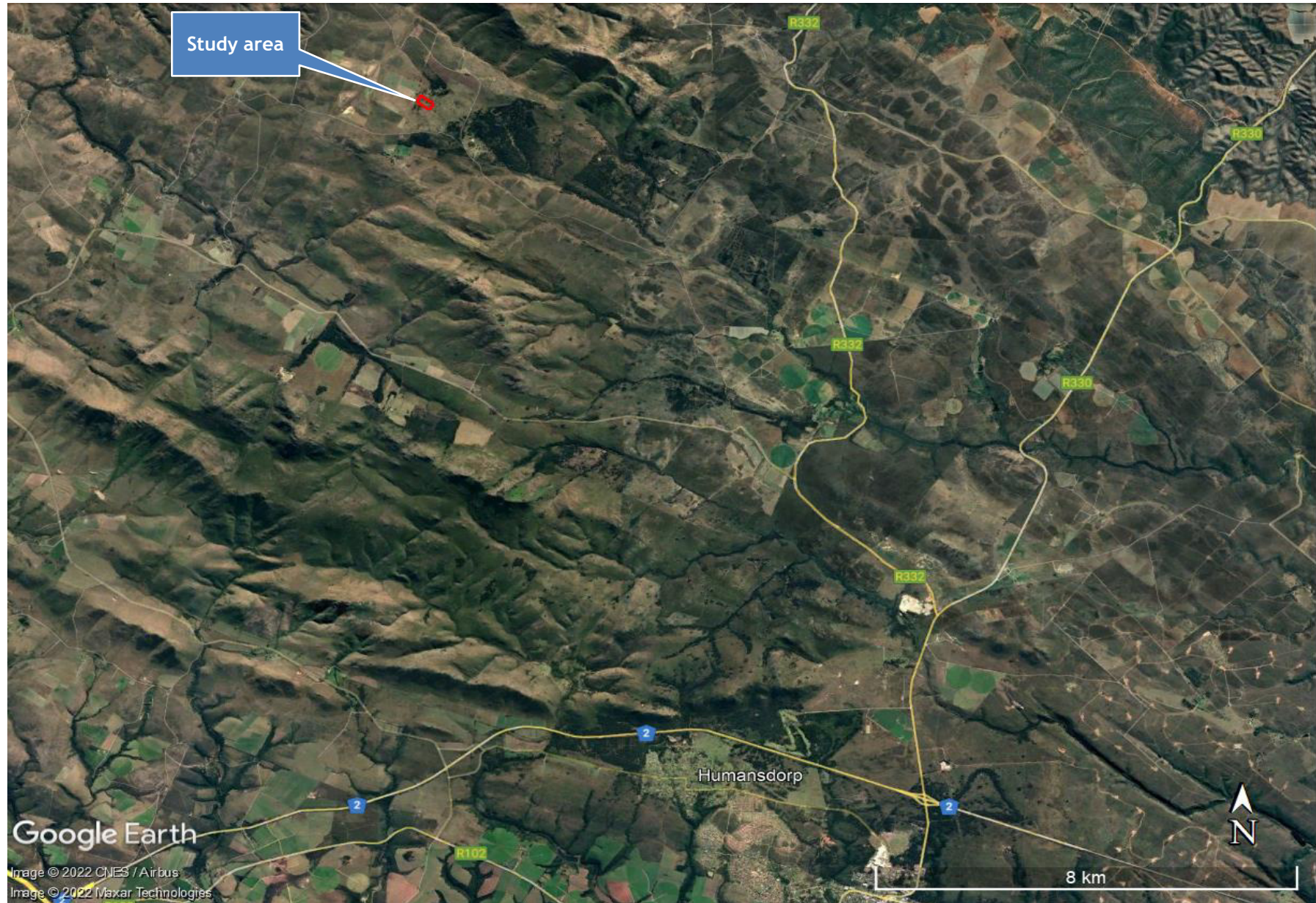


Figure 2-1: Locality map of the study area on the Remainder of Portion 8 of the Farm Kruisfontein No. 193

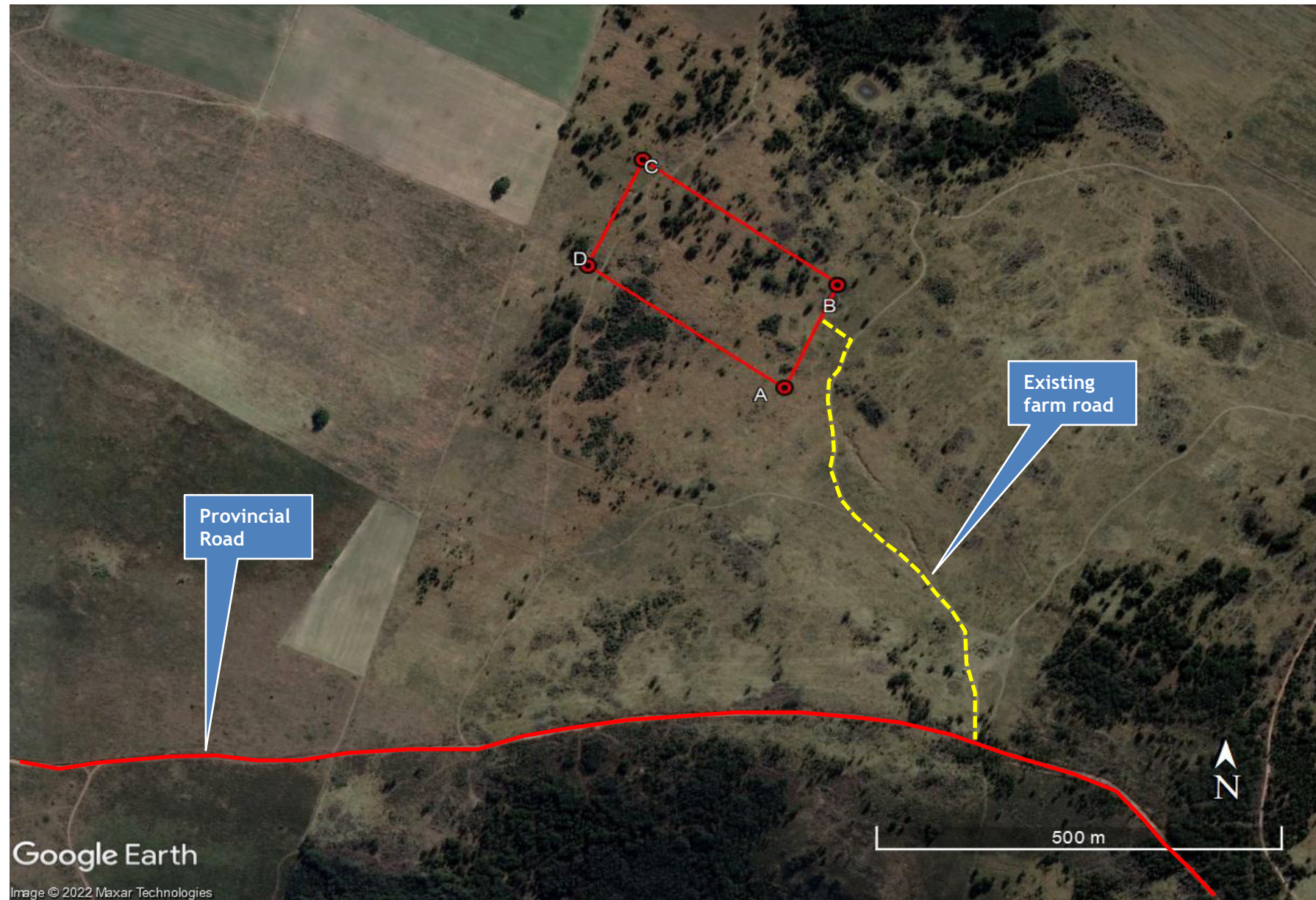


Figure 2-2: Extent of the study area (in red) on the Remainder of Portion 8 of the Farm Kruisfontein No. 193



## 2.2 Proposed development

As mentioned, the study area has an extent of 5ha as regulated by the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) for Mining Permits. The mining of the sand from the study area will be conducted with an excavator which will excavate the sand from the mining area in a concurrent strip-mining process to a depth not exceeding 3m.

The sand will be put through a drump-seive to remove any plant root material that might be in the sand. The sand will then be stockpiled and loaded on tipper trucks for transport from the site to the point of sale.

## 3 SCOPE OF WORK

This report will be submitted in support of the Application for Environmental Authorisation in accordance with the requirements of the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended. As such, the scope of works associated with this report makes provision for compliance with the requirements of these regulations.

The site sensitivities identified in the Department of Forestry, Fisheries and Environment's (DFFE) Online Screening Tool are provided in the table below.

**Table 3-1: Site sensitivity ratings as per the DFFE Online Screening Tool**

Theme	Sensitivity	Comments
Animal species	Medium	Potential presence of species of conservation concern
Aquatic biodiversity	Low	Absence of any aquatic features
Plant species	Medium	Potential presence of species of conservation concern
Terrestrial biodiversity	High	Presence in Ecological Support Area 1

As such, in accordance with the Gazetted protocols for the specialist assessment and minimum report content requirements for environmental impact on various biodiversity themes, a site verification assessment must be conducted to confirm or refute the findings of the DFFE Online Screening Tool.

The site verification was conducted by using the applying the following activities:

- a desktop analysis incorporating the use of satellite imagery;
- a preliminary site inspection; and
- other relevant geographical information that might be available.

The outcome of the site sensitivity verification must be recorded in a report form that:

- Confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change of biodiversity status, etc.;

- Contains a motivation and evidence (e.g. photographs) of either the verified or different use of land and environmental sensitivity; and
- Is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

### 3.1 Desktop analyses of the physical attributes of the study area

The vegetation on the study area is classified as Kouga Grassy Sandstone Fynbos (FFs28) by National Vegetation Map (2012) managed by the South African National Biodiversity Institute (SANBI). The SANBI reference places the vegetation type in the Eastern Fynbos-Renosterveld Bioregion within the Fynbos Biome and classifies the vegetation type as having a “least threatened” conservation status.

The reference describes the vegetation type to consist of low shrubland with sparse, emergent tall shrubs and sominated by grasses in the undergrowth, or grassland with scattered ericoid shrubs.



**Figure 3-1: Location of the site in the larger distribution of the Kouga Grassy Sandstone Fynbos (FFs28) vegetation type**

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) does not identify any “critically endangered” or “endangered” ecosystems that overlap the study site. While the ungazetted Eastern Cape Biodiversity Sector Plan (2019) indicates that the study site contains no forest stands and that the site forms the upper reaches of a natural catchment. The plan further classifies the site as a Conservation Biodiversity Area (CBA) 1.

An evaluation of date historical imagery of the site, it has become clear that the site has been disturbed by the establishment of agricultural fields as far back as 1985. These agricultural practices on the site persisted until 1994, confirmed by the images below.



Figure 3-2: Aerial photo of the study area, dated 1985



Figure 3-3: Aerial photo of the study area, dated 1994



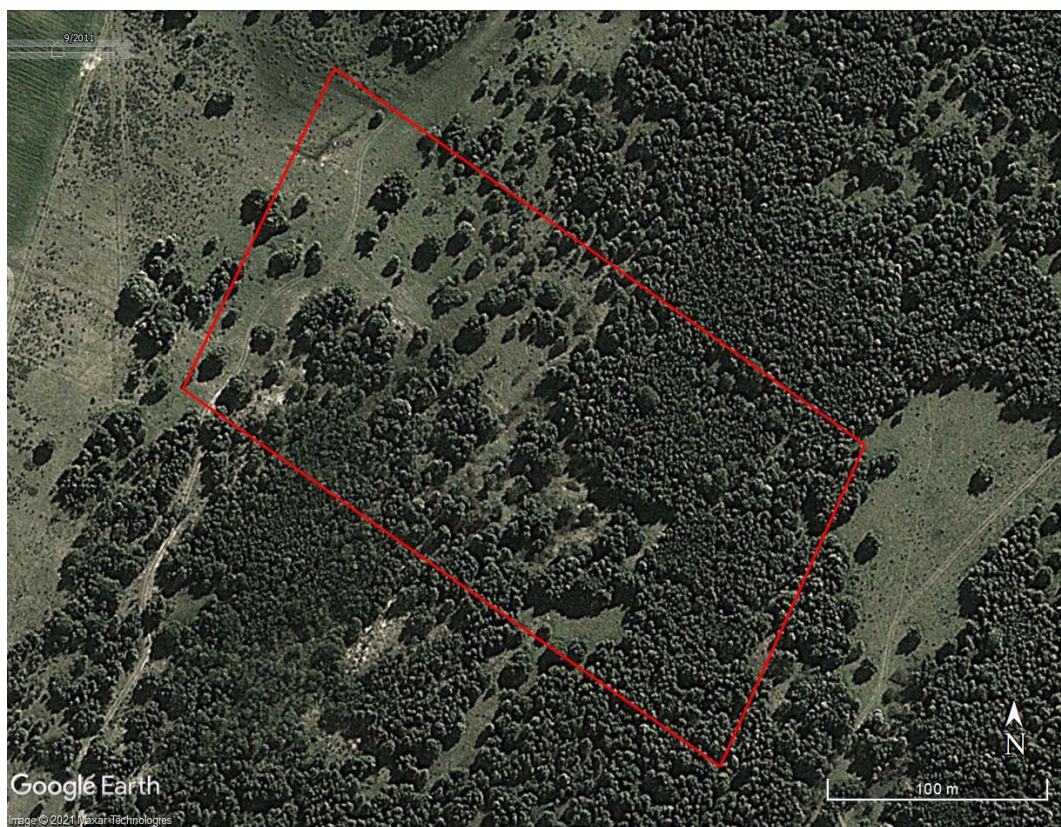
Figure 3-4: Aerial photograph of the study area, dated 2003

The agricultural activities ceased between 1994 and 2003 when the study area was overgrown by dense stands of alien invasive *Acacia mearnsii* (Black Wattle). This alien plant species forms a substantial seedbank in the soil in the areas that it grows from where the next generation of plants germinate.

The landowner is currently in the process of using the stands of Black Wattle trees as a source of commercial firewood and as such is in the process of clearing these trees from the study site. However, as mentioned above, the rejuvenation of the trees from the seedbank in the soil results in the infestation of these aliens persisting on the site. The gradual clearing of these trees is visible on sequential aerial images of the study site.



**Figure 3-5: Aerial photograph of the study site, dated 2003, showing the stand of *Acacia mearnsii* (Black Wattle)**



**Figure 3-6: Aerial photograph of the study site, dated 2011, showing the stand of *Acacia mearnsii* (Black Wattle)**



**Figure 3-7: Aerial photograph of the study site, dated 2013, showing the stand of *Acacia mearnsii* (Black Wattle)**





**Figure 3-8: Aerial photograph of the study site, dated 2016, showing the stand of *Acacia mearnsii* (Black Wattle)**



**Figure 3-9: Aerial photograph of the study site, dated 2020, showing the stand of *Acacia mearnsii* (Black Wattle)**

### 3.2 Preliminary site assessment

The site assessment was conducted on 4 January 2022 by Mr Magnus van Rooyen from GCS Water and Environment (Pty) Ltd. The findings of the site assessment confirmed the following:

- The topography on the study area shows clear signs of disturbance as a result of the agricultural activities that historically took place on the property.
- The stands of *Acacia mearnsii* (Black Wattle) still proliferate over the site as well as large parts of the surrounding areas.
- The indigenous vegetation is limited to indigenous pioneer grasses that establish after each clearfelling event associated with the current land use on the site.
- No ericoid plant species or typical fynbos species were present on the site, likely as a direct result of the previous disturbance of the site and the subsequent invasion by the stands of *Acacia mearnsii* (Black Wattle).
- No signs of any aquatic features are present on the study site.
- No signs of any animals or any bird nesting sites were found on the site.

The above findings are illustrated in the photos of the site.



**Plate 3-1: View of the dense stands of *Acacia mearnsii* (Black Wattle) on the study site, looking in a north-easterly direction across the site**



**Plate 3-2: View of the *Acacia mearnsii* (Black Wattle) on the site, looking in a northerly direction across the site**



**Plate 3-3: View of the dense stands of *Acacia mearnsii* (Black Wattle) on the site with the germinating seedlings in the foreground**



**Plate 3-4: View of the altered topography on the site, note the contour in the foreground**

The historical clearance of the natural vegetation from the study site as well as the heavy infestation of *Acacia mearnsii* (Black Wattle) has resulted in current vegetation on the site being severely transformed and consists of isolated wattle trees and pioneer grasses that is typical to the surrounding areas. The severe alteration of the vegetation on the property has significantly impacted on the other terrestrial biodiversity components of the study site.

#### 4 CONCLUSION

The findings of the site verification assessment has refuted the HIGH sensitivity rating for the Terrestrial Biodiversity Theme, the MEDIUM Plant and Animal Theme as the site has undergone current and historical disturbances as a result of agricultural activities, which resulted in the invasion of alien plant species. These alien *Acacia mearnsii* (Black Wattle) are activity management and cleared from the site, but re-establishes when cleared as a result of the substantial seedbed present in the soil.

#### 5 SPECIALIST DECLARATION

I, Magnus Van Rooyen, declare that:

- I act as an independent specialist;
- Results will be interpreted in an objective manner, even if the viewpoints are not favourable to the applicant;
- I have the relevant expertise to conduct a report of this nature, including knowledge of the National Environmental Management Act (Act 107 of 1998) and the National Water Act (Act 36 of 1998);
- I will comply with the act(s) and other relevant legislation; and
- I understand that any false information published in this document is an offense in terms of regulation 71 and is punishable in terms of Section 24 (f) of the Act.



---

Magnus Van Rooyen  
Environmental Scientist  
Pr.Sci.Nat 400335/11

**APPENDIX D**  
**IMPACT ASSESSMENT METHODOLOGY**



## IMPACT ASSESSMENT METHODOLOGY

Likely impacts associated with the proposed development on the identified aquatic and terrestrial biodiversity baseline have been identified through the undertaking of site visits, consultation of published information, comments from Interested and Affected Parties, comments from the relevant authority and independent assessment by the Environmental Project Team. Impacts have also been identified by the specialist assessments undertaken.

The impact assessment will make provision for the assessment of the following impacts:

- No-go impacts;
- Planning and design phase impacts;
- Construction phase impacts;
- Operational phase impacts;
- Decommissioning phase impacts; and
- Cumulative impacts.

Impacts identified were assessed according to the criteria outlined below. Each impact was ranked according to extent, duration, magnitude and probability. These criteria are based on the Department of Environmental Affairs and Tourism (DEAT) (now the Department of Environmental Affairs, Forestry and Fisheries) Guideline Document to the EIA Regulations(1998). A significance rating was calculated as per the methodology outlined below. Where possible, mitigatory measures were recommended for the impacts identified.

### *Status of the Impact*

The impacts were assessed as having either of the following:

**Table 1: Impact status classification**

Classification	Definition
Negative effect	at a cost to the environment
Positive effect	a benefit to the environment
Neutral	Neutral effect on the environment

### *Extent of the Impact*

The extent of each impact was rated as being one of the following:

**Table 2: Impact extent classification**

Classification	Definition
1	Site - within the boundaries of the development site

2	Local - the area within 5 km of the site
3	Municipal - the Local Municipality
4	Regional - The Province
5	National - South Africa
6	International - Southern Africa

### ***Duration of the Impact***

The duration of each impact was rated as being one of the following:

**Table 3: Impact duration classification**

Classification	Definition
1	Immediate - > 1 year
2	Short term - 1 to 5 years
3	Medium term - 6 to 15 years
4	Long Term - the impact will cease when the operation stops
5	Permanent - no mitigation measure will reduce the impact after construction

### ***Magnitude of the Impact***

The intensity or severity of each impact was rated as being one of the following:

**Table 4: Impact severity classification**

Classification	Definition
0	None - where the aspect will have no impact on the environment
2	Minor - where the impact affects the environment in such a way that natural, cultural and social functions / processes are not affected
4	Low - where the impact affects the environment in such a way that the natural, cultural and social functions / processes are slightly affected
6	Moderate - where the affected environment is altered but natural, cultural and social functions / processes continue, albeit in a modified way
8	High - natural, cultural or social functions / processes are altered to the extent that they will temporarily cease

10	Very high / unknown - natural, cultural or social functions / processes are altered to the extent that they will permanently cease
----	--

### ***Probability of Occurrence***

The likelihood of the impact actually occurring is indicated as either:

**Table 5: Impact probability classification**

Classification	Definition
0	None - the impact will not occur
1	Improbable - the possibility of the impact materialising is very low as a result of design, historic experience or implementation of adequate corrective actions
2	Low - there is a probability that the impact will occur
3	Medium - the impact may occur
4	High - it is most likely that the impact will occur
5	Definite / unknown - the impact will occur regardless of the implementation of any prevention or corrective actions, or it is not known what the probability will be, based on a lack of published information

### ***Significance of the Impact***

Based on the information contained in the points above, the potential impacts have been assigned a significance weighting (S). This weighting is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact.

$$S = (E+D+M)*P$$

The significance weightings are ranked as:

**Table 6: Impact significance rating**

Impact rating	Definition
< 30	Low - the impact would not have a direct influence on the decision to develop in the area;
30 - 60	Medium - the impact could influence the decision to develop in the area unless it is effectively managed / mitigated;
> 60	High - the impact must have an influence on the decision-making process for development in the area.

**HERITAGE SURVEY OF THE PROPOSED KOUGA  
SAND MINE, PORTION 8 OF KRUISFONTEIN  
NO. 193, HUMANSDORP, EASTERN CAP**

**FOR GCS WATER & ENVIRONMENTAL  
CONSULTANTS**

**DATE: 28 APRIL 2022**

**By Gavin Anderson**

**Umlando: Archaeological Surveys and Heritage  
Management**

**PO Box 10153, Meerensee, 3901**

**Phone/fax: 035-7531785 Fax: 0865445631**

**Cell: 0836585362**



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## Abbreviations

HP	Historical Period
IIA	Indeterminate Iron Age
LIA	Late Iron Age
EIA	Early Iron Age
ISA	Indeterminate Stone Age
ESA	Early Stone Age
MSA	Middle Stone Age
LSA	Late Stone Age
HIA	Heritage Impact Assessment
PIA	Palaeontological Impact Assessment

## INTRODUCTION

GCS Water and Environmental Consultants (Pty) Ltd (GCS) was appointed by Kouga Sand (Pty) Ltd (Kouga Sand) to conduct the Environmental Authorisation (EA) process for the proposed mining of sand on Portion 8 of Kruisfontein No. 193, Humansdorp, Eastern Cape. This application for EA is being undertaken on behalf of Kouga Sand (the applicant) and, as such, will be submitted to the Department of Mineral Resources and Energy (DMRE) as the competent authority.

The mining will be conducted as an opencast operation with the sand removed at surface and put through a screen to remove all root material from the sand.

The excavation will be conducted with an excavator with the saleable product being removed off site with tipper trucks. The tipper trucks will be loaded by a single TLB.

An access road to the application area already exists in the form of a farm road.

The following infrastructure will be positioned on site:

- Product stockpile (100m<sup>2</sup>);
- Opencast pits (4.5ha); and
- Site office (50m<sup>2</sup>).

Umlando was requested to undertake an HIA for the proposed mine. Figures 1 – 4 show the location of the proposed mine.

FIG. 1 GENERAL LOCATION OF THE TURBINES & PROPOSED ACCESS ROADS

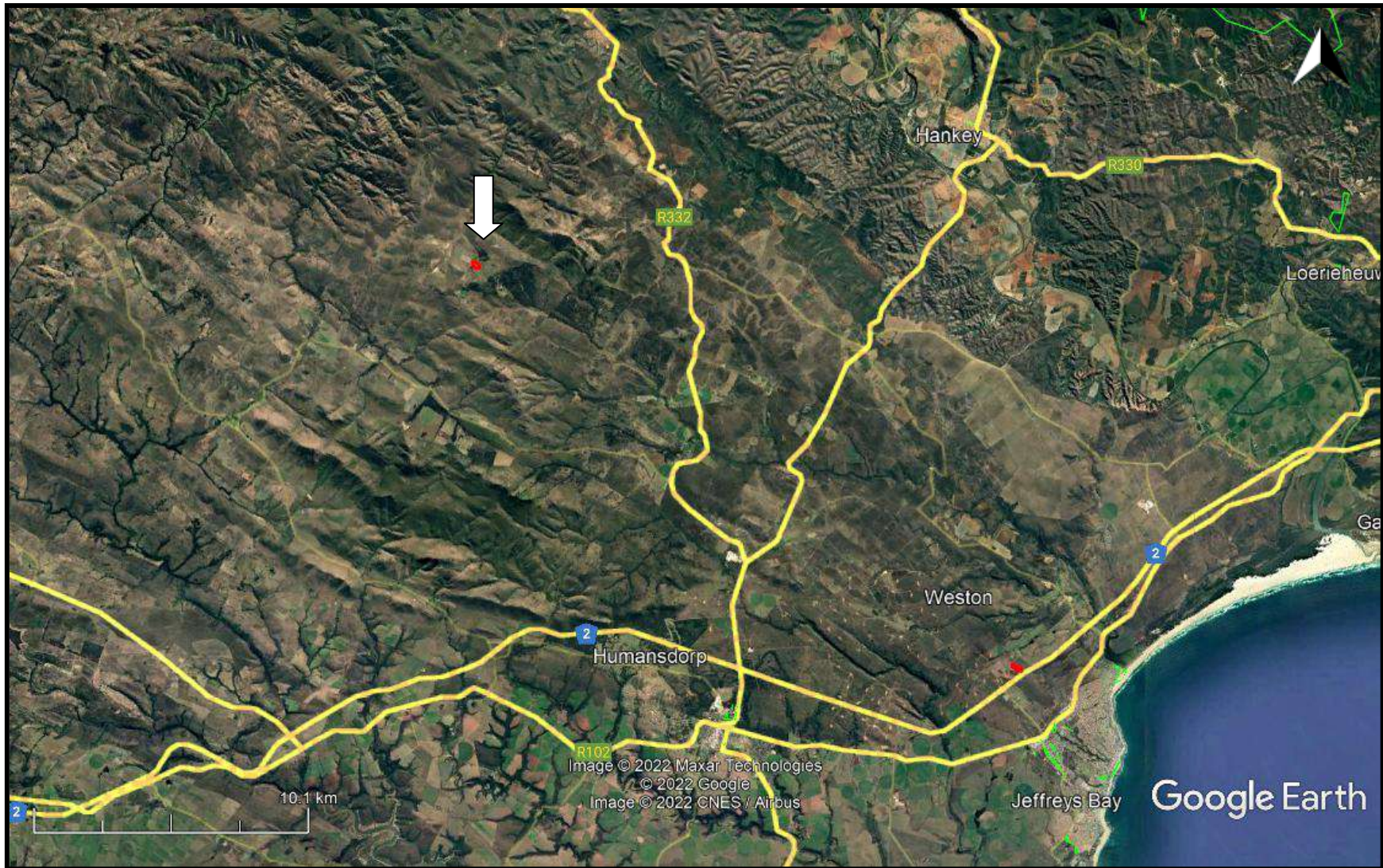
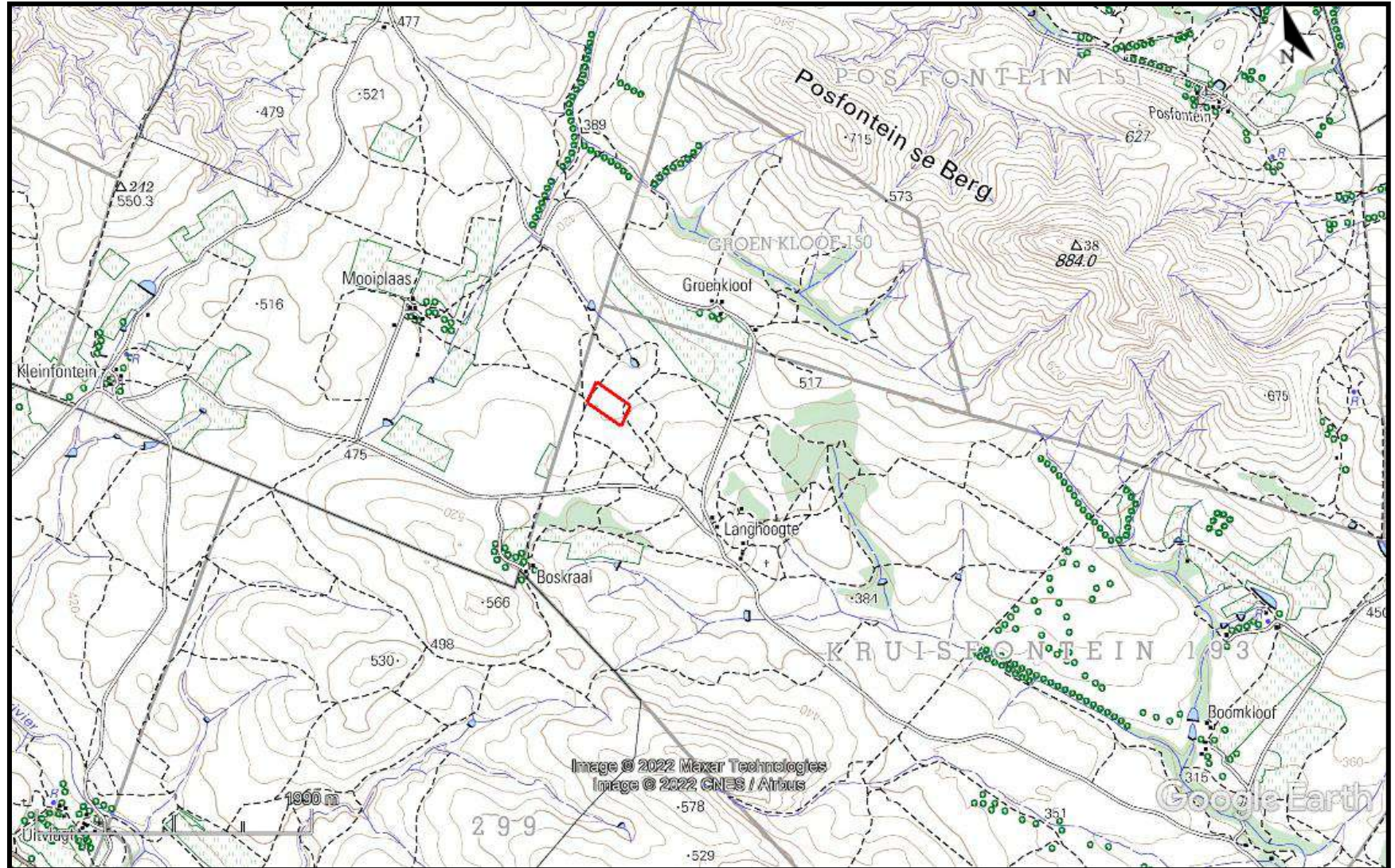




FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA



FIG. 3: TOPOGRAPHICAL OVERVIEW OF THE STUDY AREA<sup>1</sup>



<sup>1</sup> 3324DC

FIG. 4: SCENIC VIEWS OF THE STUDY AREA



## NATIONAL HERITAGE RESOURCES ACT OF 1999

The National Heritage Resources Act of 1999 (pp 12-14) protects a variety of heritage resources. These resources are defined as follows:

1. “For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
2. Without limiting the generality of subsection (1), the national estate may include—
  - 2.1. Places, buildings, structures and equipment of cultural significance;
  - 2.2. Places to which oral traditions are attached or which are associated with living heritage;
  - 2.3. Historical settlements and townscapes;
  - 2.4. Landscapes and natural features of cultural significance;
  - 2.5. Geological sites of scientific or cultural importance;
  - 2.6. Archaeological and palaeontological sites;
  - 2.7. Graves and burial grounds, including—
    - 2.7.1. Ancestral graves;
    - 2.7.2. Royal graves and graves of traditional leaders;
    - 2.7.3. Graves of victims of conflict;
    - 2.7.4. Graves of individuals designated by the Minister by notice in the Gazette;
    - 2.7.5. Historical graves and cemeteries; and
    - 2.7.6. Other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
3. Sites of significance relating to the history of slavery in South Africa;
  - 3.1. Movable objects, including—

4. Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
  - 4.1. Objects to which oral traditions are attached or which are associated with living heritage;
  - 4.2. Ethnographic art and objects;
  - 4.3. Military objects;
  - 4.4. objects of decorative or fine art;
  - 4.5. Objects of scientific or technological interest; and
  - 4.6. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).
5. Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—
  - 5.1. Its importance in the community, or pattern of South Africa's history;
  - 5.2. Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
  - 5.3. Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
  - 5.4. Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
  - 5.5. Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
  - 5.6. Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
  - 5.7. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
  - 5.8. Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

5.9. sites of significance relating to the history of slavery in South Africa”

## METHOD

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. These database contain archaeological site locations and basic information from several provinces (information from Umlando surveys and some colleagues), most of the national and provincial monuments and battlefields in Southern Africa (<http://www.vuvuzela.com/googleearth/monuments.html>) and cemeteries in southern Africa (information supplied by the Genealogical Society of Southern Africa). We use 1<sup>st</sup> and 2<sup>nd</sup> edition 1:50 000 topographical and 1937 aerial photographs where available, to assist in general location and dating of buildings and/or graves. The database is in Google Earth format and thus used as a quick reference when undertaking desktop studies. Where required we would consult with a local data recording centre, however these tend to be fragmented between different institutions and areas and thus difficult to access at times. We also consult with an historical architect, palaeontologist, and an historian where necessary.

The survey results will define the significance of each recorded site, as well as a management plan.

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts or features. Sites of medium significance have diagnostic artefacts or features and these sites tend to be sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling usually

occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features.

### **Defining significance**

Heritage sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

#### **1. State of preservation of:**

- 1.1. Organic remains:
  - 1.1.1. Faunal
  - 1.1.2. Botanical
- 1.2. Rock art
- 1.3. Walling
- 1.4. Presence of a cultural deposit
- 1.5. Features:
  - 1.5.1. Ash Features
  - 1.5.2. Graves
  - 1.5.3. Middens
  - 1.5.4. Cattle byres
  - 1.5.5. Bedding and ash complexes

#### **2. Spatial arrangements:**

- 2.1. Internal housing arrangements
- 2.2. Intra-site settlement patterns
- 2.3. Inter-site settlement patterns

#### **3. Features of the site:**

- 3.1. Are there any unusual, unique or rare artefacts or images at the site?

3.2. Is it a type site?

3.3. Does the site have a very good example of a specific time period, feature, or artefact?

**4. Research:**

4.1. Providing information on current research projects

4.2. Salvaging information for potential future research projects

**5. Inter- and intra-site variability**

5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?

5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

**6. Archaeological Experience:**

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

**7. Educational:**

7.1. Does the site have the potential to be used as an educational instrument?

7.2. Does the site have the potential to become a tourist attraction?

7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

**8. Other Heritage Significance:**

8.1. Palaeontological sites

8.2. Historical buildings

8.3. Battlefields and general Anglo-Zulu and Anglo-Boer sites

8.4. Graves and/or community cemeteries

8.5. Living Heritage Sites

8.6. Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.



The more a site can fulfill the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. This occurs in Phase 2. These test-pit excavations may require further excavations if the site is of significance (Phase 3). Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts.

The above significance ratings allow one to grade the site according to SAHRA's grading scale. This is summarised in Table 1.

**TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES**

<b>SITE SIGNIFICANCE</b>	<b>FIELD RATING</b>	<b>GRADE</b>	<b>RECOMMENDED MITIGATION</b>
<b>High Significance</b>	National Significance	Grade 1	Site conservation / Site development
<b>High Significance</b>	Provincial Significance	Grade 2	Site conservation / Site development
<b>High Significance</b>	Local Significance	Grade 3A / 3B	
<b>High / Medium Significance</b>	Generally Protected A		Site conservation or mitigation prior to development / destruction
<b>Medium Significance</b>	Generally Protected B		Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
<b>Low Significance</b>	Generally Protected C		On-site sampling monitoring or no archaeological mitigation required prior to or during development / destruction

## RESULTS

### DESKTOP STUDY

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. The general area has very archaeological surveys in the past (fig. 5) and none have been within 50m of the study area.

The 1953 topographical map indicates that the area is covered by grassland with some agricultural activity to the north (fig. 9). Several agricultural fields and built structures are noted on the map, but none occurs within the study area.

The 1961 aerial photograph was the earliest available (<http://www.cdngportal.co.za/cdngportal/>). The photograph shows the area is grassland/low bush, with erosion area (fig. 10). In the southwestern corner, there is a circular feature just outside of the study area.

FIG. 5: LOCATION OF KNOWN HERITAGE SITES IN THE GENERAL AREA

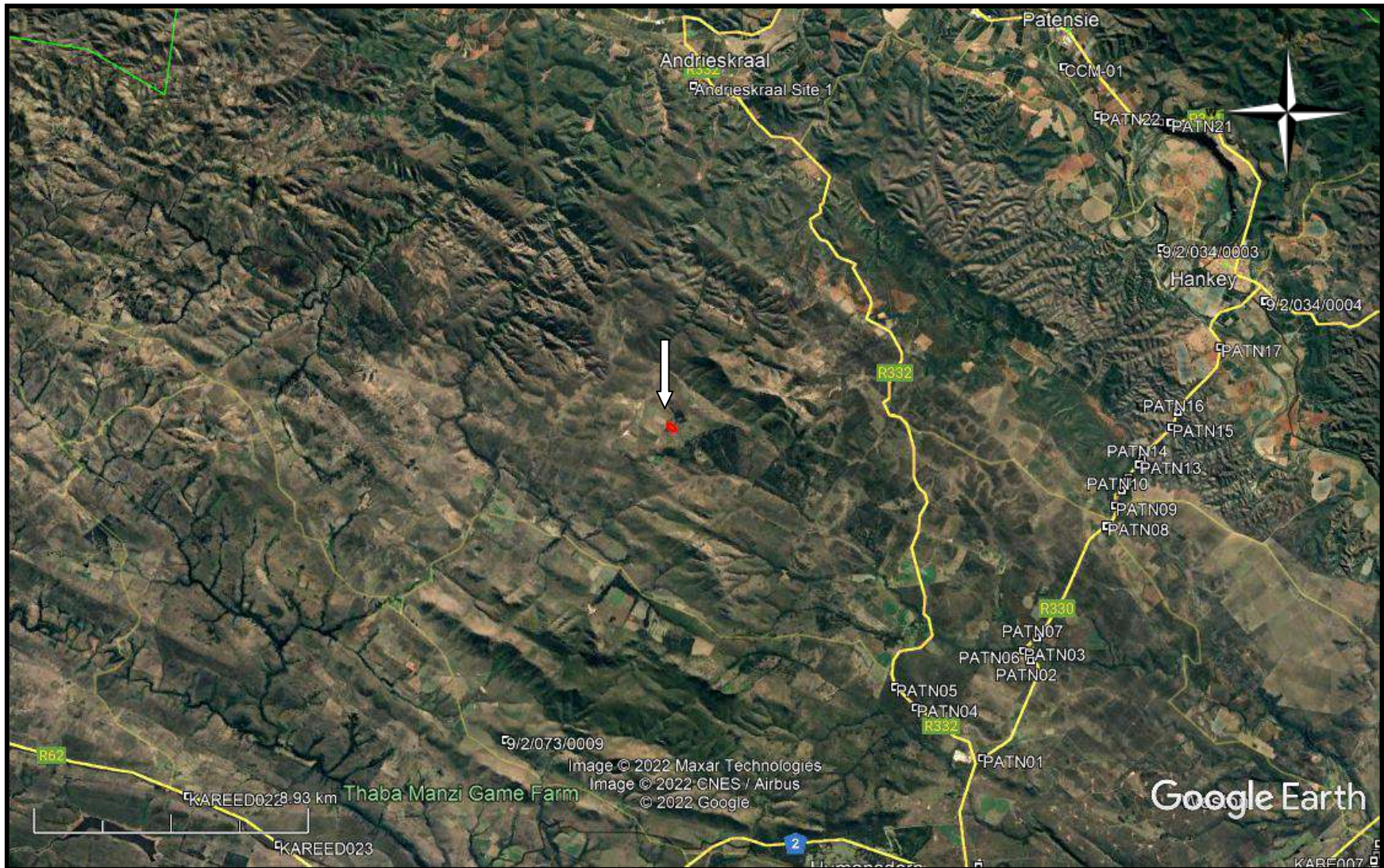
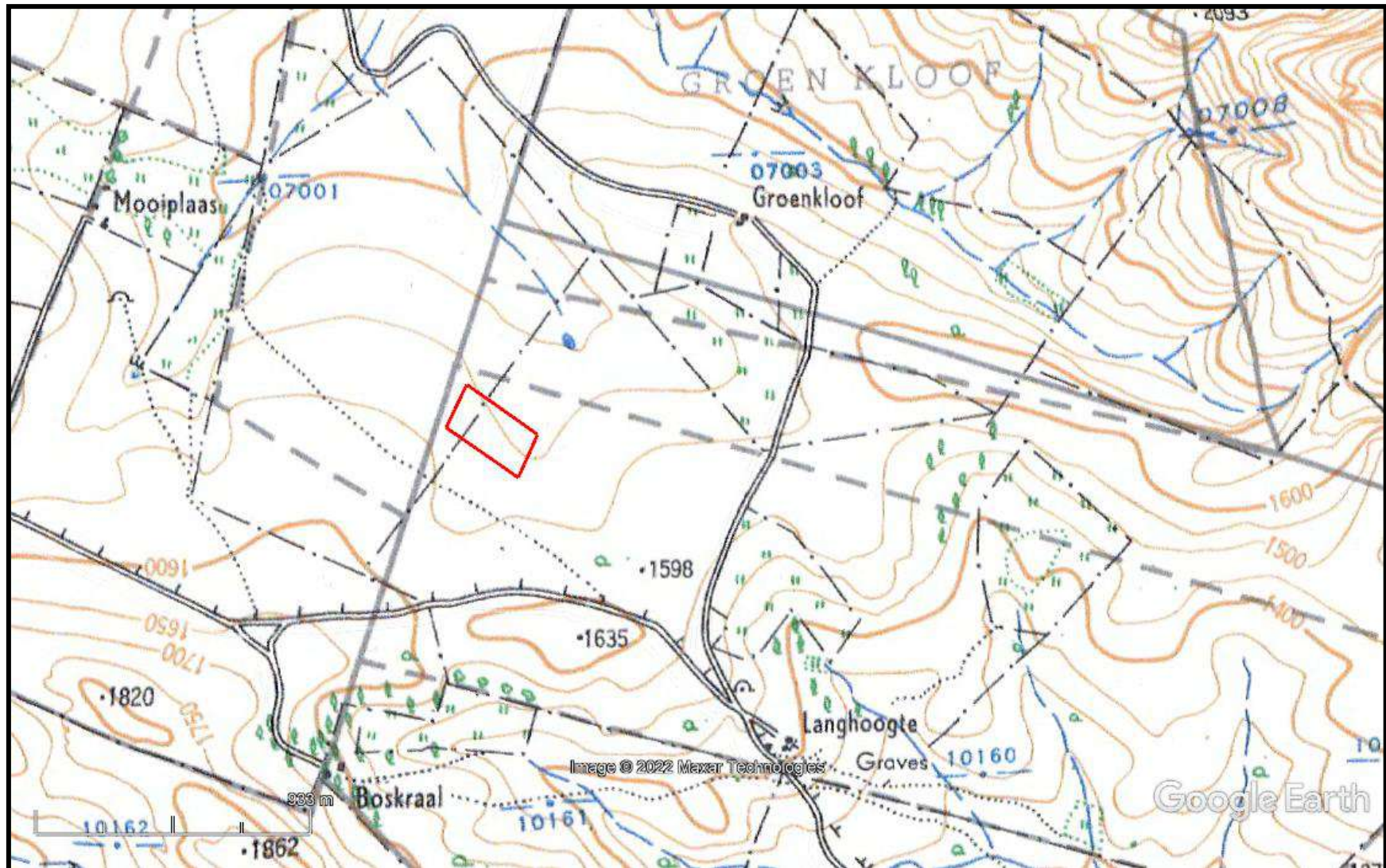


FIG. 6: LOCATION OF THE STUDY AREA IN 1953<sup>2</sup>



<sup>2</sup> 3324DC Andrieskraal

FIG. 7: LOCATION OF THE STUDY AREA IN 1967<sup>3</sup>



<sup>3</sup> 459\_013\_08155

## PIA PALAEOLOGICAL SENSITIVITY

The mine is in an area of high sensitivity, and thus a desktop study was initially undertaken (fig. 8). The PIA desktop was undertaken by Dr. Alan Smith (appendix A). He states:

“The proposed sand mining operation will take place in rocks colour coded yellow in the SAHRIS Map. This is a small site (150 X 300m) and to be constructed on agricultural land. The underlying rock is Peninsula Formation of the Table Mountain Group. Trace fossils may be found but these are not significant. No significant palaeontological finds have been made in this lithology.

Consequently there is no reason to conduct a PIA for this project. Exemption from Palaeontological Impact Assessment (PIA) is requested for this project. However a “Chance Find Protocol” is attached to cover any chance find.”

**FIG. 8: PALAEOLOGICAL SENSITIVITY MAP**



COLOUR	SENSITIVITY	REQUIRED ACTION
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required

WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.
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## FIELD SURVEY

The field survey was undertaken in April 2022. Ground visibility was very good and parts of the area had been recently burnt. The erosion gullies and various aardvark holes also gave an indication to the type of soil and deposit in that specific area, as well as potential artefacts. The study area was surveyed and there are noticeable areas of previous earthmoving activity. This is in the form of semi-terracing. Alternatively, it is the result of continual aardvark holes over the decades.

The circular feature noted on the 1961 aerial photograph is a natural quartz outcrop (fig. 9). One ESA/MSA core was noted near the outcrop (fig. 10). The outcrop could have been used as a quarry in the remote past; however, no definite signs of quarrying were noted. The outcrop is outside of the study area and will not be affected.

No other artefacts or heritage features were noted within the study area, or on its borders.

No further HIA mitigation is required.

**FIG. 9: QUARTZITE OUTCROP**



**FIG 10: QUARTZITE CORE**





## CONCLUSION

A HIA was undertaken for the proposed Kouga Sands mine. An isolated ESA/MSA stone core was noted as well as a potential quartzite quarry. The quarry is outside of the study area.

No other artefacts or features were noted within the study area. No further heritage mitigation is required.

The 'Chance Find Protocol' for the palaeontological material needs to form part of the EMPr

## REFERENCES

459\_013\_08155  
3324DC Andrieskraal 1953,

### **EXPERIENCE OF THE HERITAGE CONSULTANT**

Gavin Anderson has a M. Phil (in archaeology and social psychology) degree from the University of Cape Town. Gavin has been working as a professional archaeologist and heritage impact assessor since 1995. He joined the Association of Professional Archaeologists of Southern Africa in 1998 when it was formed. Gavin is rated as a Principle Investigator with expertise status in Rock Art, Stone Age and Iron Age studies. In addition to this, he was worked on both West and East Coast shell middens, Anglo-Boer War sites, and Historical Period sites.

### **DECLARATION OF INDEPENDENCE**

I, Gavin Anderson, declare that I am an independent specialist consultant and have no financial, personal or other interest in the proposed development, nor the developers or any of their subsidiaries, apart from fair remuneration for work performed in the delivery of heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.



Gavin Anderson  
Archaeologist/Heritage Impact Assessor

APPENIDX A  
PIA DESKTOP

DRAFT



**Dr Alan Smith  
Alan Smith Consulting  
29 Browns Grove  
Sherwood  
Durban  
4091**

**UMLANDO: Archaeological Surveys & Heritage  
Management  
PO Box 102532, Meerensee, KwaZulu-Natal 3901  
phone (035)7531785 fax: 0865445631  
cell: 0836585362 / 0723481327  
Email:umlando@gmail.com**

**Letter of Exemption from Palaeontological Impact Assessment for:**

**KOUGA SAND MINING: KOUGA LOCAL MUNICIPALITY, EASTERN CAPE.**

**Dear Sir**

Dr Alan Smith was asked by UMLANDO: Archaeological Surveys & Heritage Management to conduct a PIA for the above named project.

The proposed sand mining operation will take place in rocks colour coded yellow in the SAHRIS Map. This is a small site (150 X 300m) and to be constructed on agricultural land. The underlying rock is Peninsula Formation of the Table Mountain Group. Trace

fossils may be found but these are not significant. No significant palaeontological finds have been made in this lithology.

Consequently there is no reason to conduct a PIA for this project. Exemption from Palaeontological Impact Assessment (PIA) is requested for this project. However a “Chance Find Protocol” is attached to cover any chance find.

Should any of the proposed plans change then the project will need to be reassessed in terms of a PIA

**Dr Alan Smith.**  
**Alan Smith Consulting**  
**19 April, 2022**



**DRAFT**

## CHANCE FIND PROTOCOL

This Chance Find Protocol must be included in the site EMPr.

If any fossils are found, a Palaeontologist must be notified immediately by the ECO and/or EAP and a site visit must be arranged at the earliest possible time with the Palaeontologist.

In the case of the ECO or the Site Manager becoming aware of suspicious looking palaeo-material:

- The construction must be halted in that specific area and the Palaeontologist must be given enough time to reach the site and remove the material before excavation continues.
- Mitigation will involve the attempt to capture all rare fossils and systematic collection of all fossils discovered. This will take place in conjunction with descriptive, diagrammatic and photographic recording of exposures, also involving sediment samples and samples of both representative and unusual sedimentary or biogenic features. The fossils and contextual samples will be processed (sorted, sub-sampled, labeled, and boxed) and documentation consolidated, to create an archive collection from the excavated sites for future researchers.

### Functional responsibilities of the Developer

1. At full cost to the project, and guided by the appointed Palaeontological Specialist, ensure that a representative archive of palaeontological samples and other records is assembled to characterize the palaeontological occurrences affected by the excavation operation.
2. Provide field aid, if necessary, in the supply of materials, labour and machinery to excavate, load and transport sampled material from the excavation areas to the sorting areas, removal of overburden if necessary, and the return of discarded material to the disposal areas.
3. Facilitate systematic recording of the stratigraphic and palaeo-environmental features in exposures in the fossil-bearing excavations, by described and measured geological sections, and by providing aid in the surveying of positions where significant fossils are found.

4. Provide safe storage for fossil material found routinely during excavation operations by construction personnel. In this context, isolated fossil finds in disturbed material qualify as “normal” fossil finds.
5. Provide covered, dry storage for samples and facilities for a work area for sorting, labeling and boxing/bagging samples.
6. Costs of basic curation and storage until collected. Documentary record of palaeontological occurrences must be done.
7. The contractor will, in collaboration with the Palaeontologist, make the excavation plan available to the appointed specialist, in which appropriate information regarding plans for excavations and work schedules must be indicated on the plan of the excavation sites. This must be done in conjunction with the appointed specialist.
8. Initially, all known specific palaeontological information will be indicated on the plan. This will be updated throughout the excavation period.
9. Locations of samples and measured sections are to be pegged, and routinely and accurately surveyed. Sample locations, measured sections, etc., must be recorded three-dimensionally if any “significant fossils” are recorded during the time of excavation.

## DETAILS OF SPECIALIST

### **Dr Alan Smith**

**Private Consultant:** Alan Smith Consulting, 29 Brown's Grove, Sherwood, Durban, 4091

&

**Honorary Research Fellow:** Discipline of Geology, School of Agriculture, Earth and Environmental Sciences, University of KwaZulu-Natal, Durban.

**Role:** Specialist Palaeontological Report production

### **Expertise of the specialist:**

- PhD in Geology (University of KwaZulu-Natal), Pr. Sc. Nat., I.A.H.S.
- Expert in Vryheid Formation (Ecca Group) in northern KZN, this having been the subject of PhD.
- Scientific Research experience includes: Fluvial geomorphology, palaeoflood hydrology, Cretaceous deposits.
- Experience includes understanding Earth Surface Processes in both fluvial and coastal environments (modern & ancient).
- Alan has published in both national and international, peer-reviewed journals. He has published + 50 journal articles with 497 citations (detailed CV available on request).
- Attended and presented scientific papers and posters at numerous international and local conferences (UK, Canada, South Africa) and is actively involved in research.

Selected recent palaeo-related work includes:

- Desktop PIA: Proposed middle income housing units on Portion 23 of Farm Lot H Weston 13026, Bruntville, Mpofana Local Municipality. Client: UMLANDO.
- Desktop PIA: Proposed ByPass Pipeline for Ulundi bulk water pipeline upgrade. Client: UMLANDO.
- Fieldwork PIA: Bhekuzulu Epangweni KZN water reticulation project, Cathkin Park. Client: Mike Webster, HSG Attorneys.
- Fieldwork PIA: Mpungoze water supply scheme, Empangeni. Client: Enviropro.
- Fieldwork PIA: Helpmekaar Dam. Client: Afzelia environmental consultants.
- Desktop PIA: Zuka valley, Ballito. Client: Mike Webster, HSG Attorneys.
- Mevamhlope proposed quarry palaeontology report. Client: Enviropro.



- Desktop PIA: Proposed Lovu Desalination site. Client: eThembeni Cultural Heritage.
- Desktop PIA: Tinley Manor phase 2 North & South banks: eThembeni Cultural Heritage
- Desktop PIA: Tongaat. Client: eThembeni Cultural Heritage.
- Palaeontological Assessment Reports (3) to Scatec Solar SA (Pty) Ltd on an Appraisal of Inferred Palaeontological Sensitivity for a Potential Photo Voltaic Park at (1) Farm Rooilyf near Groblershoop, N Cape; (2) Farm Riet Fountain No. Portions 1 and 6, 18km SE of De Aar, N Cape; and (3) Dreunberg, near Burgersdorp, Eastern Cape. Client: Sustainable Development Projects.

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