

**HERITAGE SURVEY OF THE PROPOSED JBAY
GRAVEL MINE, PORTION 2 OF MENTOSKRAAL
336, HUMANSDORP, EASTERN CAPE**

**FOR GCS WATER & ENVIRONMENTAL
CONSULTANTS**

DATE: 28 APRIL 2022

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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 the Mentorskraal Familie Trust to conduct the Environmental Authorisation (EA) process for the proposed quarry on Portion 2 of Mentorskraal 336, Humansdorp, Eastern Cape. This application for EA is being undertaken on behalf of JBay Gravel and, as such, will be submitted to the Department of Mineral Resources and Energy (DMRE) as the competent authority. The applicant is the Mentorskraal Familie Trust, who also owns the land. The applicant also holds the mining permit to the existing quarry adjacent to the proposed site (DMRE Reference: EX 30/5/1/3/3/2/1/10310 EM).

The Mining Permit will be used for the mining of gravel aggregate from the application area. The mining will be conducted as an opencast operation with the gravel removed at surface and put through a screen to sort the aggregate sizes. 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 excavator. 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 (100m²);
- Opencast pits (4.5ha); and

Site office (50m²).

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

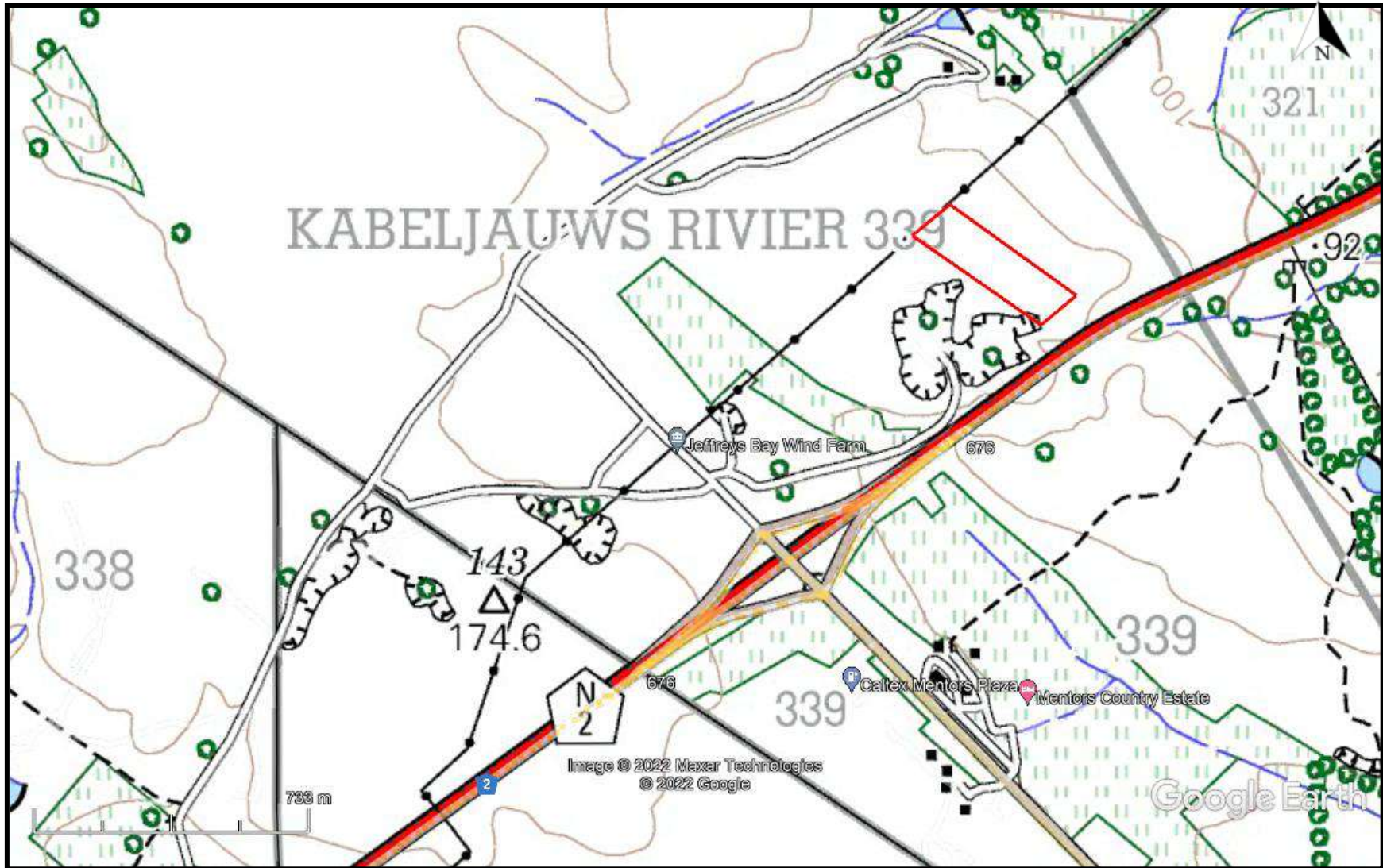
FIG. 1 GENERAL LOCATION OF THE TURBINES & PROPOSED ACCESS ROADS



FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA



FIG. 3: TOPOGRAPHICAL OVERVIEW OF THE STUDY AREA¹



¹ 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 1st and 2nd 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

SITE SIGNIFICANCE	FIELD RATING	GRADE	RECOMMENDED MITIGATION
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	
High / Medium Significance	Generally Protected A		Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B		Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	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 a few archaeological surveys in the past (fig. 5) and none have been within 50m of the study area. Anderson (2010) noted that several of the outcrops along the Melkout transmission line (Humansdorp) were used as quarries in the (Late) Stone Age. This was especially the case if there was quartz, and to a lesser degree quartzite, outcrops. Binneman (2006a, 2006b) surveyed an area just south of the N2, and noted that there are isolated stone tools within the gravel deposits.

The 1946 (fig. 6) and 1953 (fig. 7) topographical maps indicate that the area is open (bush).

The 1961 aerial photograph was the earliest available (<http://www.cdngiportal.co.za/cdngiportal/>). The photograph shows the area is grassland/low bush (fig. 8).

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

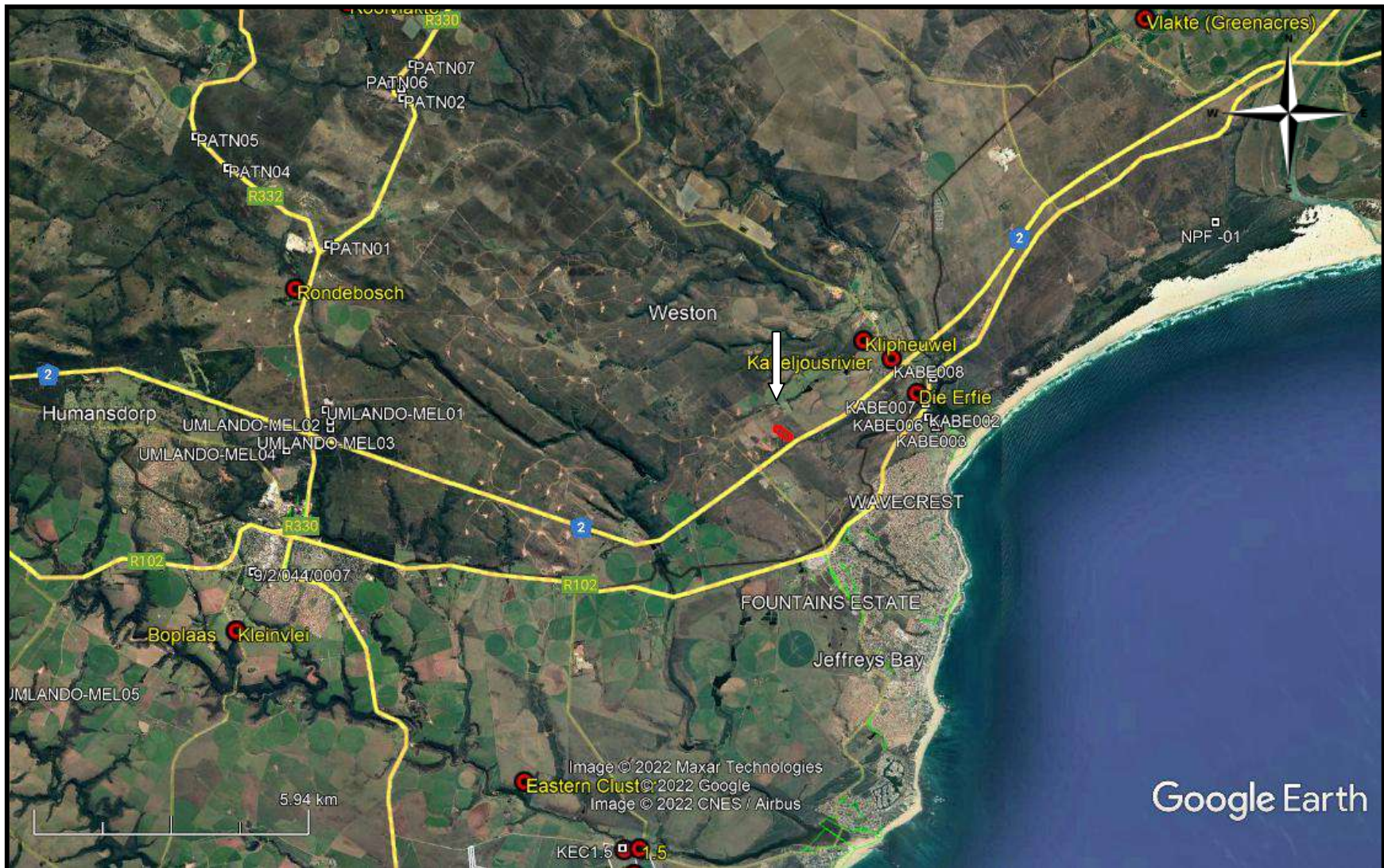
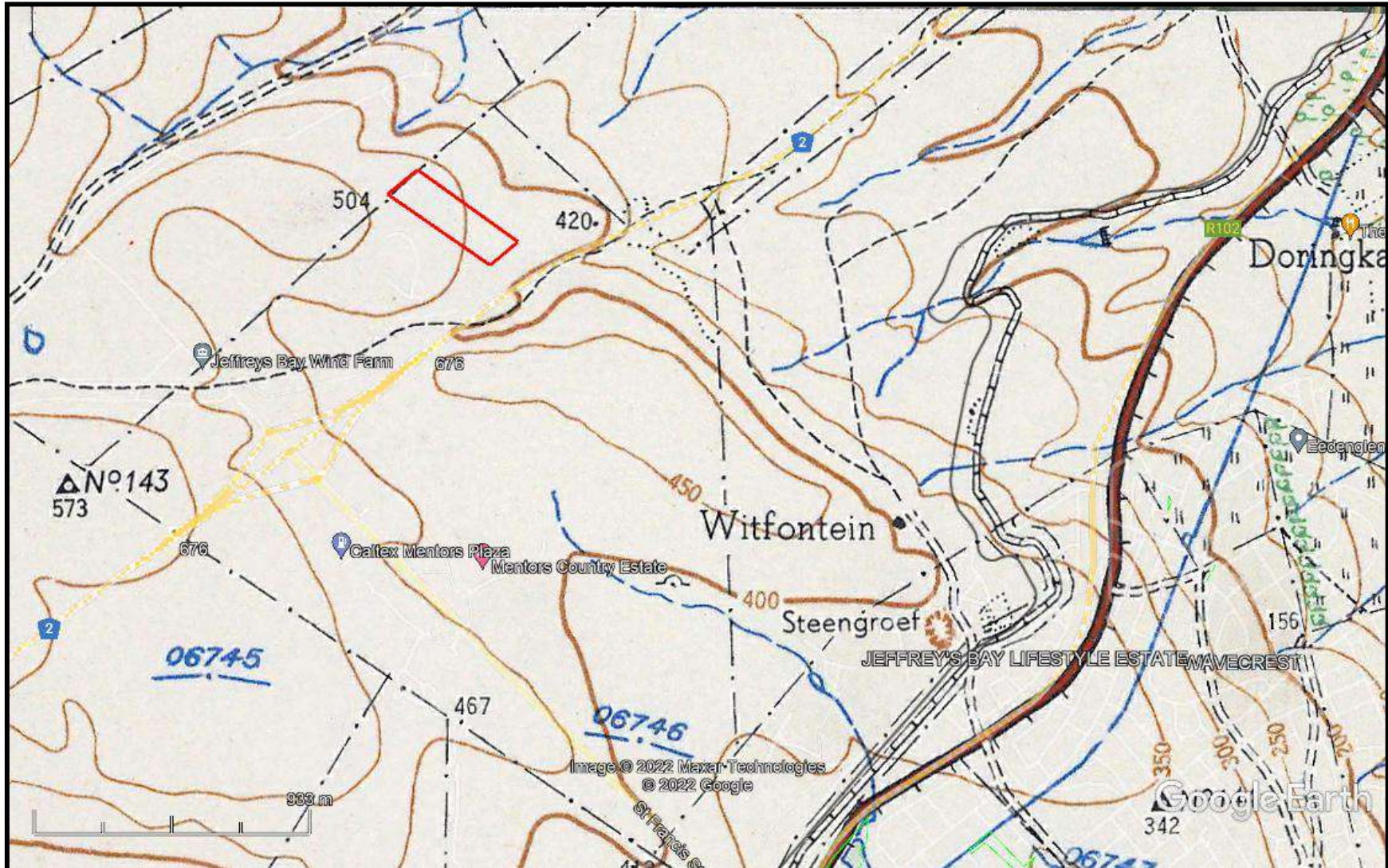


FIG. 6: LOCATION OF THE STUDY AREA IN 1946²

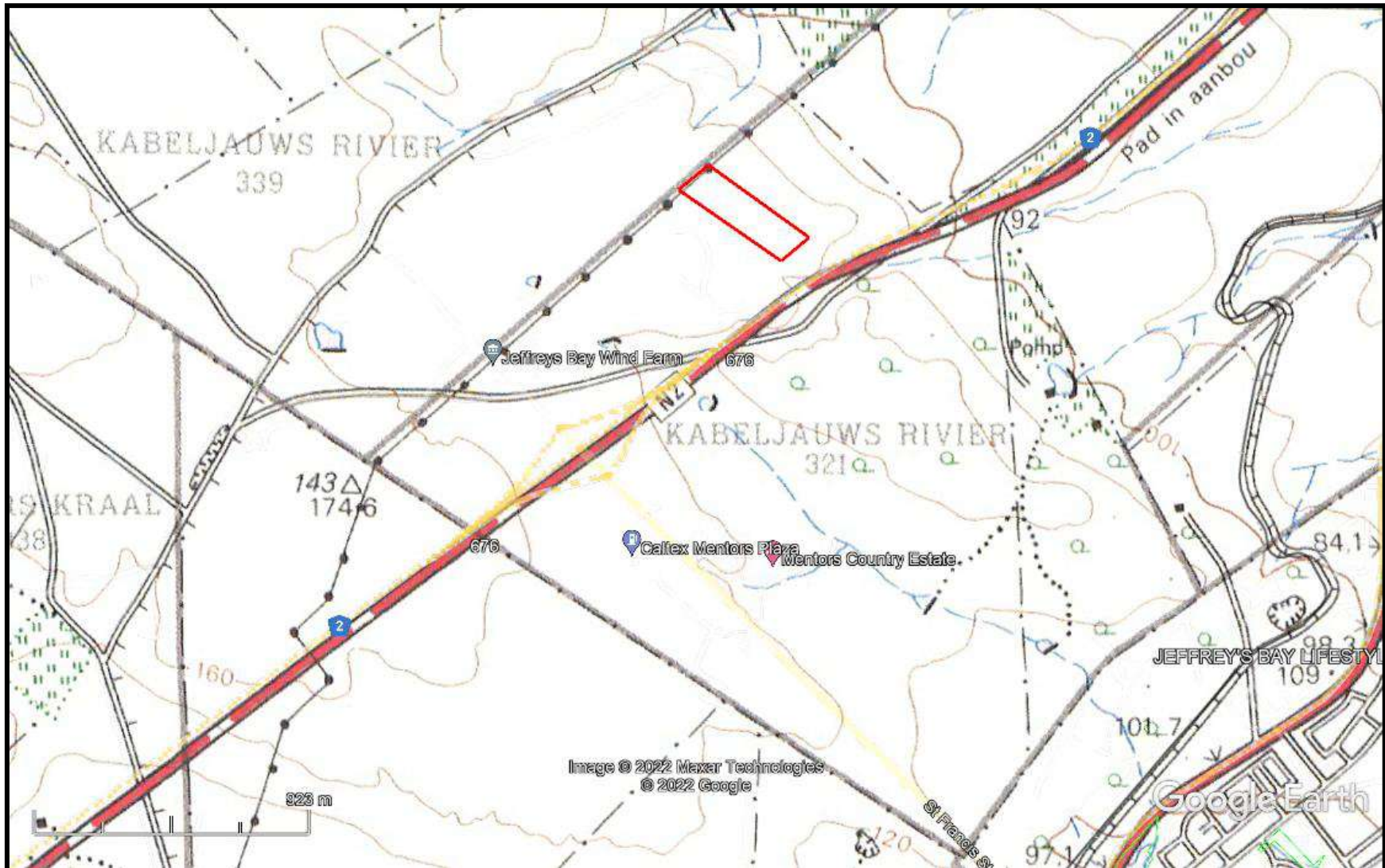


² 3324DC Andrieskraal

FIG. 7: AERIAL OVERVIEW FIOT EH STUDY AREA IN 1961



FIG. 8: LOCATION OF THE STUDY AREA IN 1971³



³ 3424BB Humandorp

PIA PALAEOLOGICAL SENSITIVITY

The mine is in an area of mostly low sensitivity, while the northern part is of medium sensitivity according to the SAHRIS map (Fig. 9). The PIA desktop was undertaken by Dr. Alan Smith (Appendix A). He states that the area is an area of low, or no, sensitivity and no further mitigation is required in terms of palaeontology.

FIG. 9: 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.

FIELD SURVEY

The field survey was undertaken in April 2022. Ground visibility was very good despite the appearances of the photos in fig. 4. The geotechnical excavation pits, rocky outcrops and erosion areas were enough to make an assessment of the proposed mining area.

Three types of heritage material were noted:

1. stone tools in secondary context
2. small Stone Age quarries
3. stone walling

STONE TOOLS

Isolated stone tools were noted all over the study area. Some were located near the geological pits, others on the surface. There is no archaeological deposit and the tools appear to be mixed with the gravel in the study area. The stone tools are mostly middle Stone Age flakes and cores made from quartz and quartzite (fig. 10). One hammer stone was noted. The stone tools are of low significance and have low archaeological value.

STONE AGE QUARRIES

Two in-situ quartz rocks in a rock outcrop were used as quarries to make stone flakes (fig. 11). They appear to be very weathered and are probably associated with the MSA tools on the hill. The quarried rocks have four to six flakes removed, and appear to be more opportunistic than a main source raw material source.

FIG. 10: VARIETY OF STONE TOOLS WITHIN THE STUDY AREA



FIG 11: "QUARRIES"



STONE WALLING

One stone walled feature was noted (S34 00' 27.18", E24 53' 31.35"). The wall is rectangular in shape and approx. 5m x 3m in size. It does not form a complete enclosure and some of the walling has collapsed (fig. 12). There is no deposit within the feature. The walling appears to be recent in origin (i.e. 20th century).

The stone walling is of low significance and no further mitigation is required. The walling is outside of the study area.

FIG. 12: STONE WALLING



The locations of the various artefacts are shown in fig. 13.

FIG. 13: LOCATION OF HERITAGE FEATURES WITHIN THE STUDY AREA



MANAGEMENT PLAN

The artefacts and features within the study area are of low significance. Examples of these are found on most of the hills in the general area. The scatter of stone tools does not constitute an archaeological site *per se*, nor do the two small quarries. I would argue that a permit is not required for these features.

No further mitigation is required

CONCLUSION

A HIA was undertaken for the proposed JBay Gravel mine. A few isolated ESA/MSA stone tools and two small quarries were noted on the edge of the study area were noted within the study area. These have low significance and do not require further mitigation.

The palaeontology is of low/no significance and no further mitigation is required.

REFERENCES

459_013_08155

3324DC Andrieskraal 1953,

Anderson, G. 2010. Heritage Survey Of The Proposed Melkhout-Oyster Bay Transmission Line. For C.E.S.

Binneman, J. 2006a. Phase One Archaeological Heritage Impact Assessment For The Proposed Development Of The Remainder Of Erf 328, Jeffrey's Bay. For Integrated Environment Management Unit.

Binneman, J. 2006b. Phase One Archaeological Heritage Impact Assessment For The Proposed Development Of The Remainder Of Portion 6 of Erf 336, Portion of Erf 321 and Portion 32 of Erf 321, Jeffrey's Bay.

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.

A handwritten signature in black ink, appearing to read 'Gavin Anderson', with a horizontal line underneath.

Gavin Anderson
Archaeologist/Heritage Impact Assessor

**APPENIDX A
PIA DESKTOP**



**Dr Alan Smith
Alan Smith Consulting
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phone (035)7531785 fax: 0865445631
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Email:umlando@gmail.com**

Letter of Exemption from Palaeontological Impact Assessment for:

**JEFFRIES BAY 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 blue in the Sahrís Map. This is a small site (130 X 400m) and to be constructed on agricultural land. No palaeontological investigation is required, but a protocol for finds is required.

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



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.