

**HERITAGE SURVEY OF THE PROPOSED
SHAYAMOYA HOUSING DEVELOPOMENT**

FOR SIVEST (PTY) Ltd

DATE: 11 NOVEMBER 2019

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EXECUTIVE SUMMARY

The Greater Kokstad Municipality is undertaking a preliminary environmental investigation for the proposed Shayamoya Housing Development. A desktop assessment has been undertaken to assist the developer in taking significant environmental features into account and to identify any fatal flaws with the proposed development involved in order to enable application for Tranche 1 Housing Board Approval.

The proposed development site is approximately 57ha in extent. The site is located a semi-rural area within the Sisonke District Municipality and the Greater Kokstad Municipality. The property is located immediately north-east of, and adjacent to, the town of Kokstad. The site is surrounded in part by agriculture (including commercial forestry) and semi-rural homesteads.

The HIA survey noted that much of the area has been disturbed. No artefacts or features were noted during the survey.

A PIA desktop study was undertaken. The study noted that the Estcourt Formation (basal unit of the Beaufort Group) is present on this site. This lithology is internationally renowned for palaeontological material and it is highly likely that palaeontological material will be found during excavation of this large area. A “Chance Find” Protocol has been incorporated into this report and MUST be incorporated into the EMP. In mitigation this site is likely to be weathered, reducing the chance of valuable palaeontological material being found.

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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

SiVEST Environmental Division has been appointed by the Greater Kokstad Municipality to undertake a preliminary environmental investigation for the proposed Shayamoya Housing Development.

At the preliminary stages of the planning process, a site development plan for the housing project has not been compiled. Therefore, a desktop assessment has been undertaken to assist the developer in taking significant environmental features into account and to identify any fatal flaws with the proposed development involved in order to enable application for Tranche 1 Housing Board Approval.

The proposed development site is approximately 57ha in extent. The cadastral descriptions were extracted from information available at the time of compilation of the feasibility report. A suitably qualified surveyor will need to verify and confirm that this information is accurate.

The site is located a semi-rural area within the Sisonke District Municipality and the Greater Kokstad Municipality. The property is located immediately north-east of, and adjacent to, the town of Kokstad. The site is situated along Murray Street between two townships (one being Bhongweni), and is surrounded in part by agriculture (including commercial forestry) and semi-rural homesteads. Kokstad is the commercial hub in the area.

The impacts will be:

- Roads
 - One main road and a number of feeder roads
- Sewer
 - A waterborne bulk sewer pipeline and a wastewater treatment works facility already exist in the area.

➤ Bulk Water Supply

- A reservoir is located in the northern sector of the site. This supplies water to the surrounding areas, however the water will need to be reticulated to the individual houses

➤ Stormwater

- No formal stormwater management plan has yet been proposed. However, to mitigate against the impacts of uncontrolled stormwater causing erosion (rills and gullies), platforms will need to be constructed and graded to ensure that run-off from these structures is contained on site.

Umlando was contracted by Sivist (Pty) Ltd to undertake the Heritage Impact Assessment of the proposed development.

FIG. 1 GENERAL LOCATION OF THE PROPOSED DEVELOPMENT

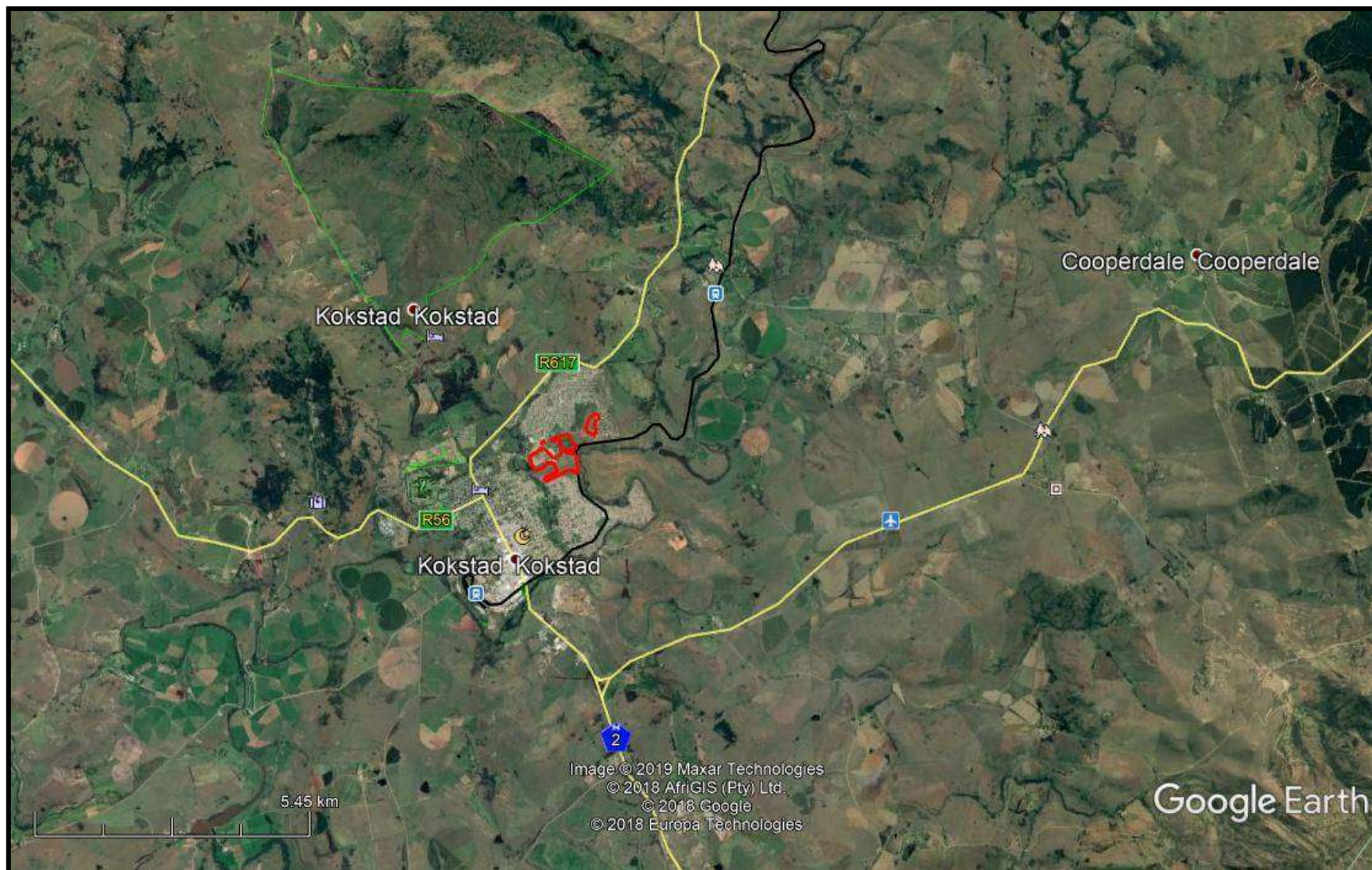


FIG. 2: AERIAL OVERVIEW OF THE PROPOSED DEVELOPMENT



FIG. 3: TOPOGRAPHICAL MAP OF THE PROPOSED DEVELOPMENT

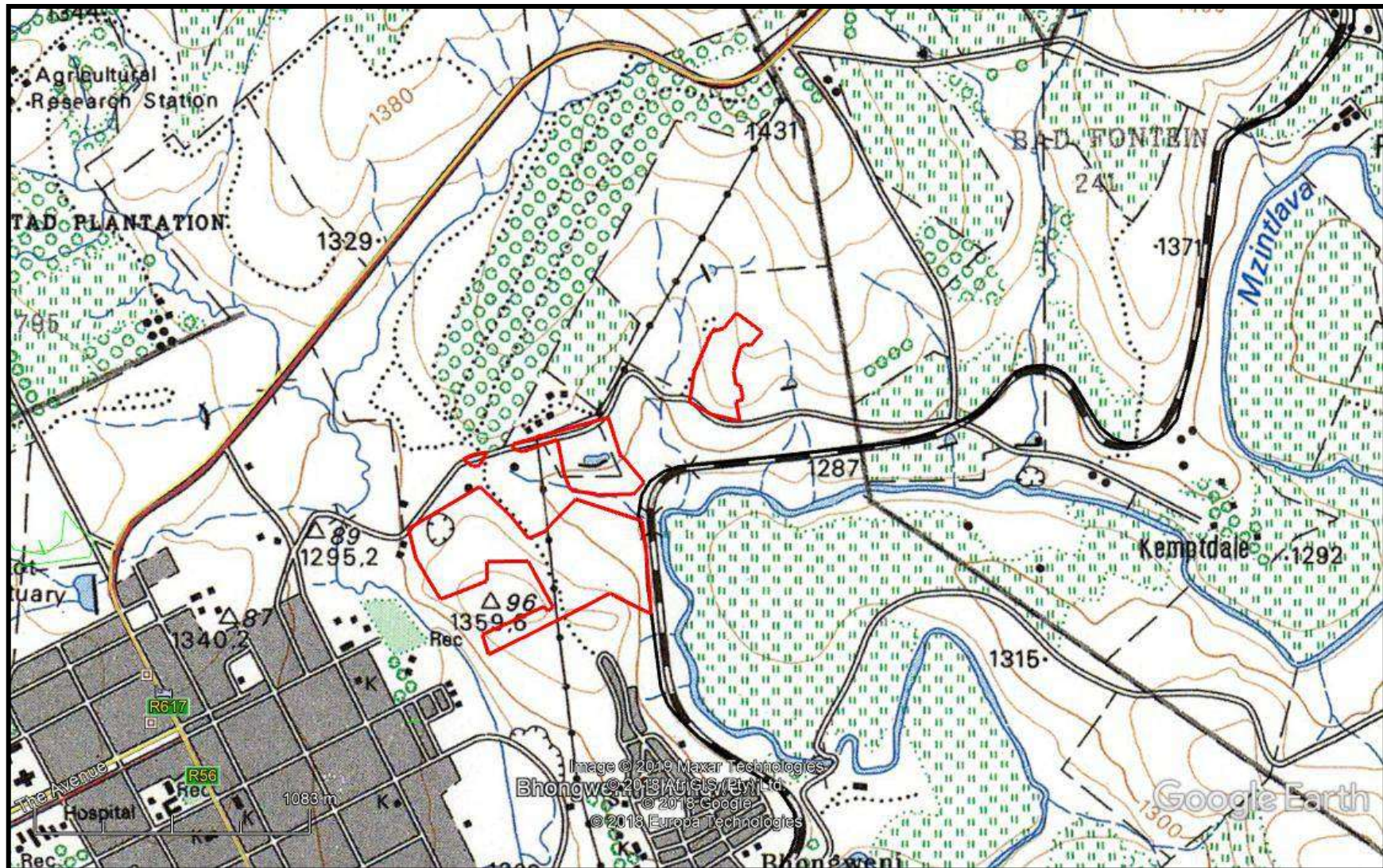


FIG. 4A: SCENIC VIEWS OF THE STUDY AREA



FIG. 4B: SCENIC VIEWS OF THE STUDY AREA



KWAZULU NATAL AMAFA AND RESEARCH INSTITUTE, ACT 05, 2018

“General protection: Structures.—

- No structure which is, or which may reasonably be expected to be older than 60 years, may be demolished, altered or added to without the prior written approval of the Council having been obtained on written application to the Council.
- Where the Council does not grant approval, the Council must consider special protection in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- The Council may, by notice in the *Gazette*, exempt—
- A defined geographical area; or
- defined categories of sites within a defined geographical area, from the provisions of subsection where the Council is satisfied that heritage resources falling in the defined geographical area or category have been identified and are adequately protected in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- A notice referred to in subsection (2) may, by notice in the *Gazette*, be amended or withdrawn by the Council.

General protection: Graves of victims of conflict.—No person may damage, alter, exhume, or remove from its original position—

- the grave of a victim of conflict;
- a cemetery made up of such graves; or
- any part of a cemetery containing such graves, without the prior written approval of the Council having been obtained on written application to the Council.
- General protection: Traditional burial places.—
- No grave—
- not otherwise protected by this Act; and
- not located in a formal cemetery managed or administered by a local authority, may be damaged, altered, exhumed, removed from its original

position, or otherwise disturbed without the prior written approval of the Council having been obtained on written application to the Council.

The Council may only issue written approval once the Council is satisfied that—

- the applicant has made a concerted effort to consult with communities and individuals who by tradition may have an interest in the grave; and
- the applicant and the relevant communities or individuals have reached agreement regarding the grave.

General protection: Battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite or meteorite impact sites.—

- No person may destroy, damage, excavate, alter, write or draw upon, or otherwise disturb any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- Upon discovery of archaeological or palaeontological material or a meteorite by any person, all activity or operations in the general vicinity of such material or meteorite must cease forthwith and a person who made the discovery must submit a written report to the Council without delay.
- The Council may, after consultation with an owner or controlling authority, by way of written notice served on the owner or controlling authority, prohibit any activity considered by the Council to be inappropriate within 50 metres of a rock art site.
- No person may exhume, remove from its original position or otherwise disturb, damage, destroy, own or collect any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- No person may bring any equipment which assists in the detection of metals and archaeological and palaeontological objects and material, or

- excavation equipment onto any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, or meteorite impact site, or use similar detection or excavation equipment for the recovery of meteorites, without the prior written approval of the Council having been obtained on written application to the Council.
- The ownership of any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site, on discovery, vest in the Provincial Government and the Council is regarded as the custodian on behalf of the Provincial Government.”

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. This databases contains 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.

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. There have been no prior surveys in the study area. The archaeological sites tend to be open Stone Age scatters of low significance (fig. 5). The other sites are HP sites relating to the colonial expansion of The Midlands. Anderson (2012, 2019) undertook surveys nearby and had similar results. These areas tend to have isolated artefacts that are in a secondary context. The artefacts are of low significance.

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

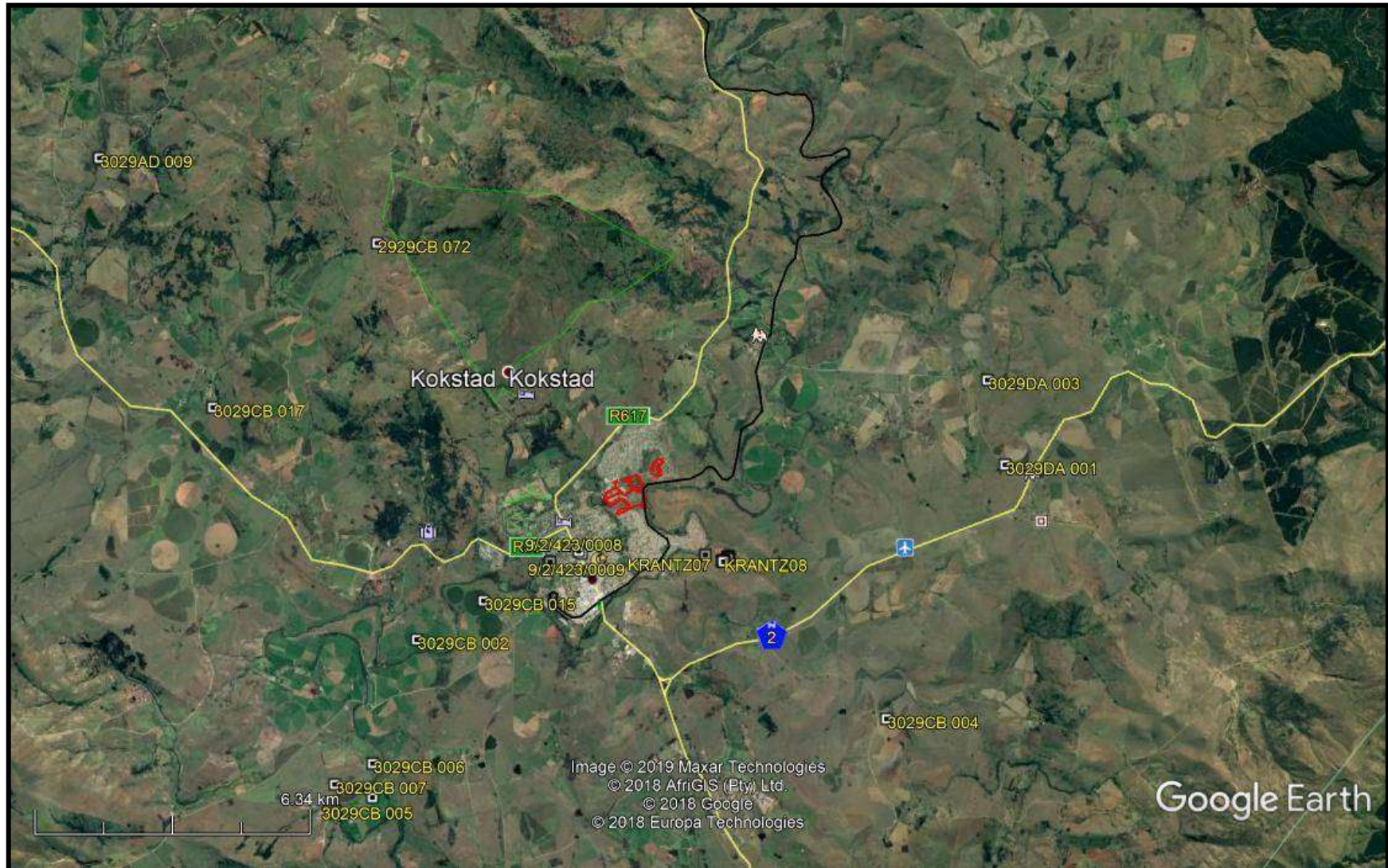


FIG. 6: LOCATION OF PROPOSED DEVELOPMENT IN 1937

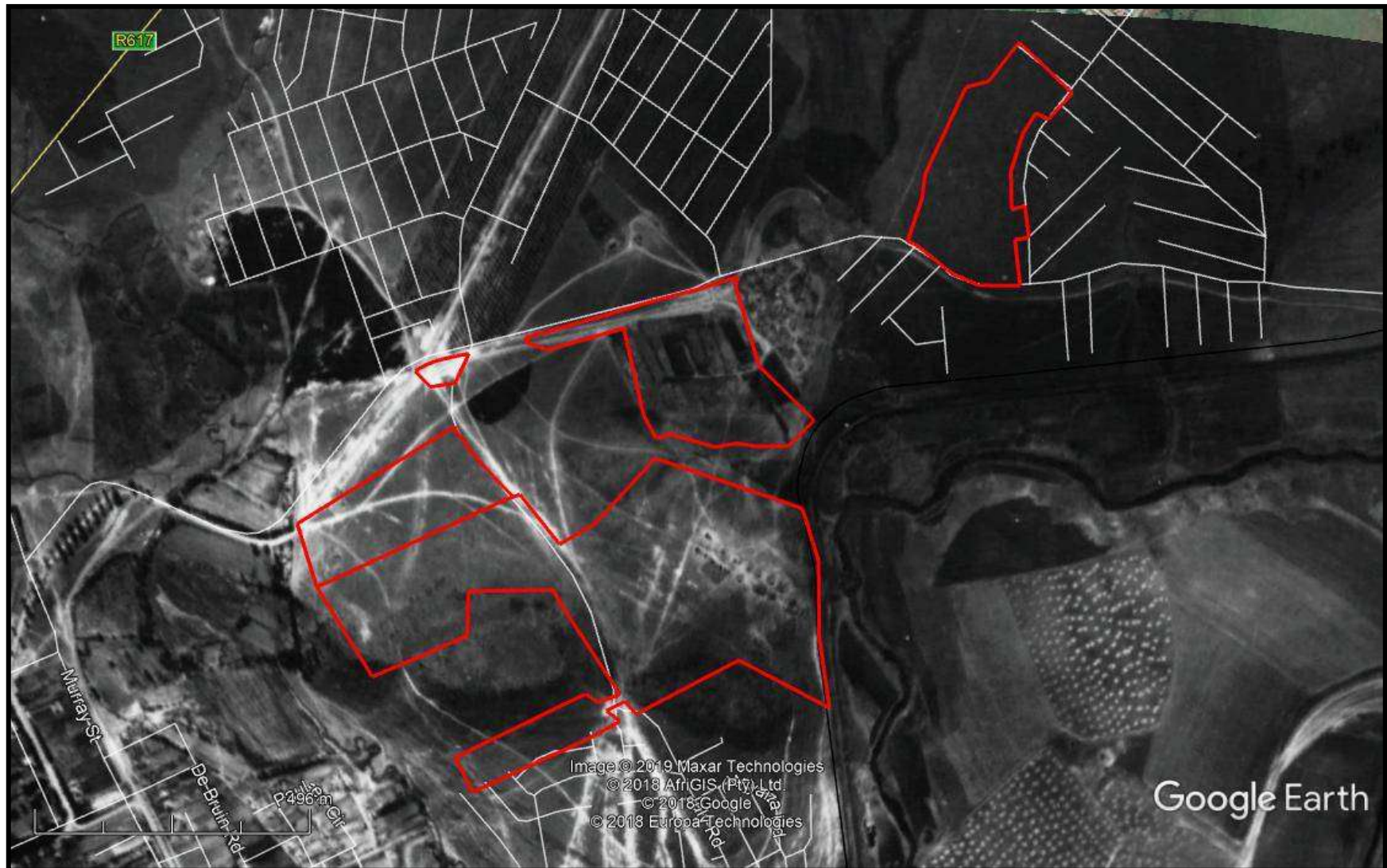
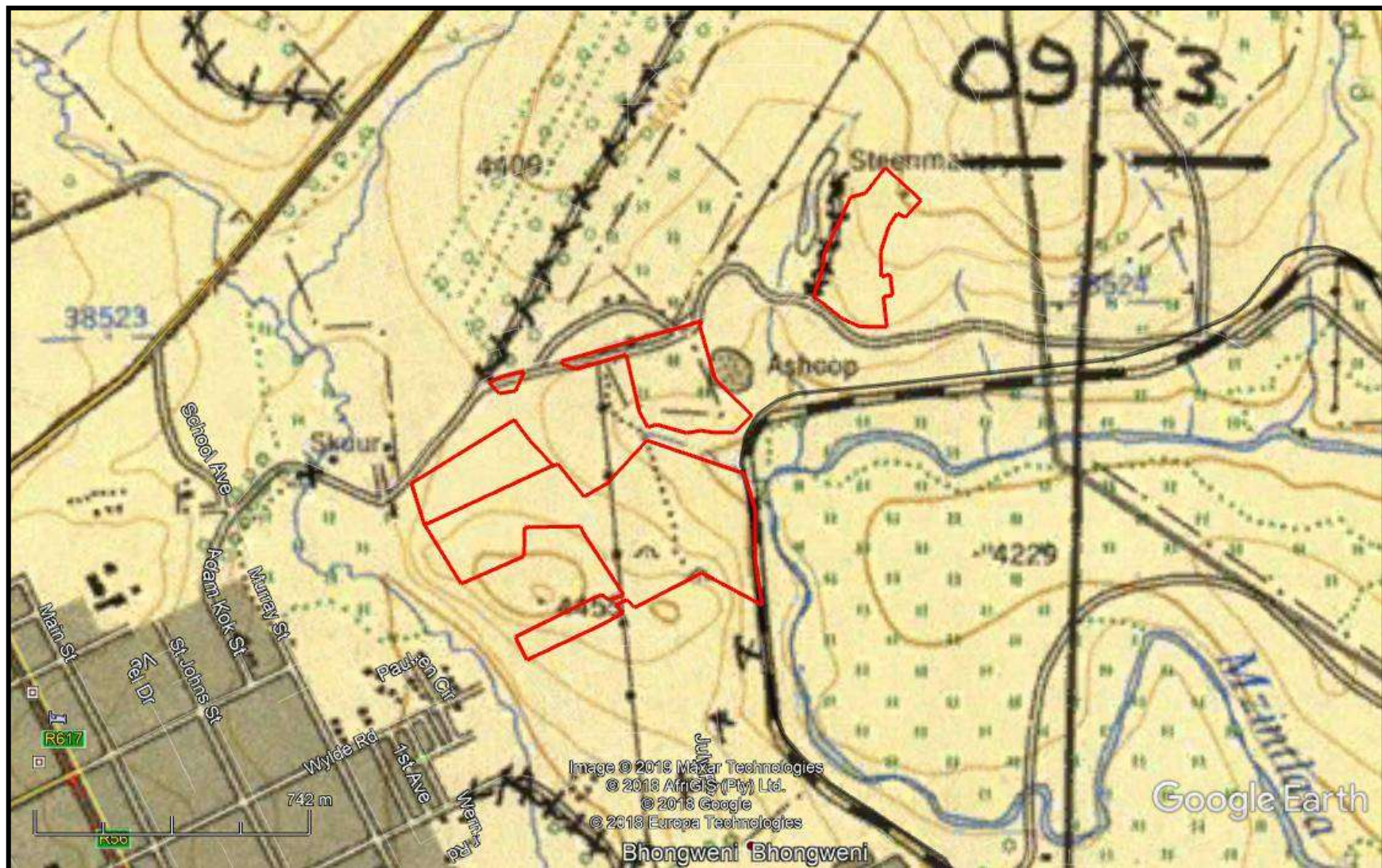


FIG. 7: LOCATION OF PROPOSED DEVELOPMENT IN 1963



The 1937 aerial photograph of the general study area indicates that it was mostly grassland with some agriculture (fig. 6). There are no buildings visible on this map.

The 1963 topographical map indicates that there is one settlement and an “Ash heap” the study area. The settlement might have a grave associated with it. The area is still mostly grassland with some cultivated lands in the north.

PALAEONTOLOGICAL SENSITIVITY

A PIA desktop study was undertaken by Dr A. Smith (Appendix A). The study noted that the Estcourt Formation (basal unit of the Beaufort Group) is present on this site. This lithology is internationally renowned for palaeontological material and it is highly likely that palaeontological material will be found during excavation of this large area. The sensitive layers will probably occur around 2m below surface. Any excavations deeper than 2m would then require palaeontological inspection.

A “Chance Find” Protocol has been incorporated into this report and MUST be incorporated into the EMP. In mitigation this site is likely to be weathered, reducing the chance of valuable palaeontological material being found.

FIG. 8: PALAEONTOLOGICAL SENSITIVITY MAP



FIELD SURVEY

A field survey was undertaken in October 2019. Much of the area is heavily degraded, or eroded. Other parts were in the process of being levelled by heavy mobile machinery. The central area consists of eroded and/or disturbed grasslands. The “ash heap” and settlement from the 1963 map no longer exist, and that specific area now consists of erosion gullies and/or disturbed ground.

The sites are shown in Figures 4a – b.

No heritage sites were noted during the survey. There are thus no heritage impacts. No further HIA mitigation is required.

The area with the settlement has been built over with other housing.

CONCLUSION

A heritage survey was undertaken for the proposed Shayamoya housing development for the Greater Kokstad Municipality. Approximately 57 hectares will be developed to provide low cost housing and related infrastructure.

No heritage sites were noted during the survey. This is a result of much of the area being already disturbed. There are thus no heritage impacts.

The palaeontological desktop noted that the area is of very high sensitivity. However, much of the deposits will be weathered and thus contain very little palaeontological remains. If any excavations are deeper than 2m, then a suitably qualified palaeontologist will need to inspect the excavations.

REFERENCES

Anderson, G. 2012. Heritage Survey Of The Proposed Landfill Site, For The Greater Kokstad Municipality Kwa-Zulu Natal. For ICANDO

Anderson, G. 2019. Heritage Survey Of The Proposed Horseshoe, Erf 258, Cemetery Site, Kokstad, KZN. For Bizycon (Pty) Ltd.

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 'G. Anderson', with a stylized flourish above the name.

Gavin Anderson
Archaeologist/Heritage Impact Assessor

APPENDIX A
PALAEONTOLOGICAL DESKTOP STUDY

SHAYAMOYA HOUSING DEVELOPMENT, KOKSTAD: DESK-TOP PALAEOONTOLOGICAL IMPACT ASSESSMENT

FOR

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November 2019

EXECUTIVE SUMMARY

The Estcourt Formation (basal unit of the Beaufort Group) is present on this site. This lithology is internationally renowned for palaeontological material and it is highly likely that palaeontological material will be found during excavation of this large area. A “Chance Find” Protocol has been incorporated into this report and MUST be incorporated into the EMP. In mitigation this site is likely to be weathered, reducing the chance of valuable palaeontological material being found.

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1. BACKGROUND AND PROPOSED PROJECT

The Shayamoya Housing Development is located within Kokstad (Fig. 1). This proposed site is the Remainder of the Erf 1, Kokstad (Fig. 1). This proposed development site is approximately 57ha in extent. The site is located on a semi-rural area within the Sisonke District Municipality and the Greater Kokstad Municipality (Fig. 2). The property is located immediately north-east of, and adjacent to, the town of Kokstad. The site is situated along Murray Street between two townships, and is surrounded in part by agriculture and semi-rural homesteads. Kokstad is the commercial hub in the area (Ndlovu, 2015).



Figure 1: Location Map (Image source Umlando & GoogleEarth).



Figure 2: Location zoomed in.

2. GEOLOGY

The geology of this proposed development site comprises basal Beaufort Group rocks which are Upper Permian- in age and Karoo Dolerite (Fig. 3).

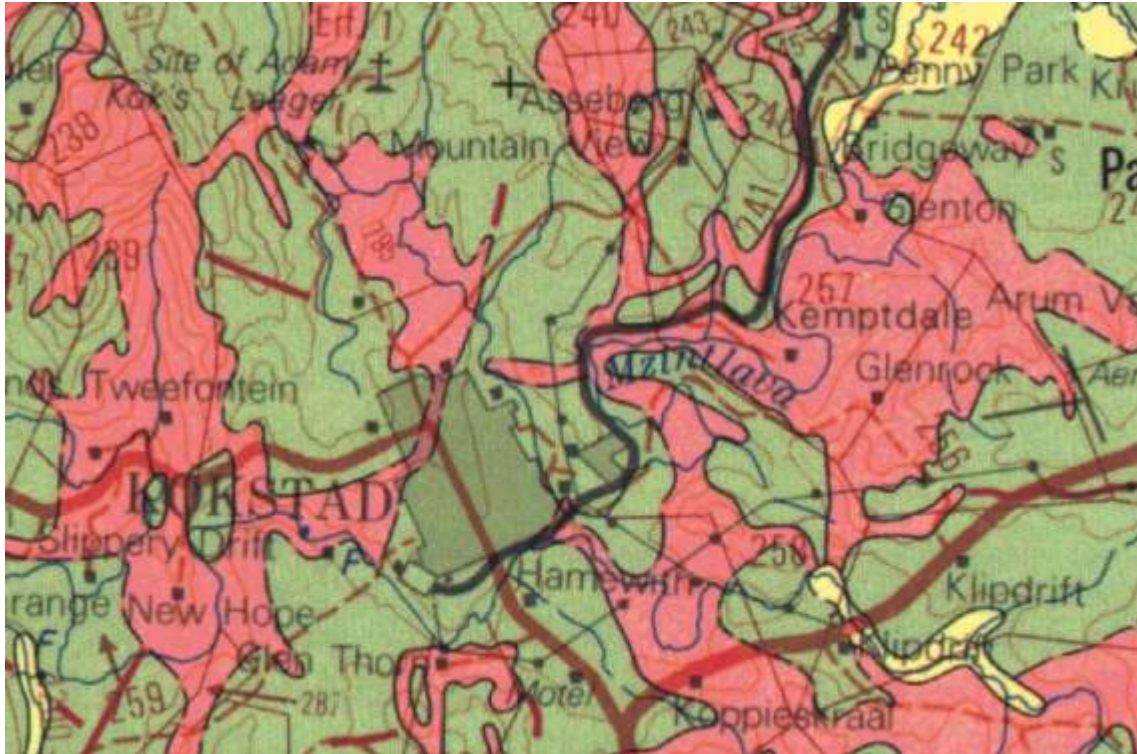


Figure 3 (a): Extract from the Kokstad 3038 1: 250 000 Geological Map. Grey (Pa) is the Estcourt Formation and red is Karoo Dolerite.

At this locality the Beaufort Group is represented by the Upper Permian Estcourt Formation (Fig.3). The Estcourt Formation is flagged as red in Sahr's Palaeontological sensitivity map (Fig. 4). The Estcourt Formation is considered as being the basal unit of the Beaufort-aged Adelaide Subgroup, itself a part of the Karoo Supergroup (Green, 1998). The Adelaide Subgroup is a sequence of fluvio-lacustrine sedimentary rocks that accumulated in a landlocked, intra-cratonic foreland basin in SW Gondwana during the Middle Permian to Middle Triassic (Neveling et al., 2005). The Estcourt Formation is usually weathered (Fig. 5) but may be fresher at depth (>2m deep).

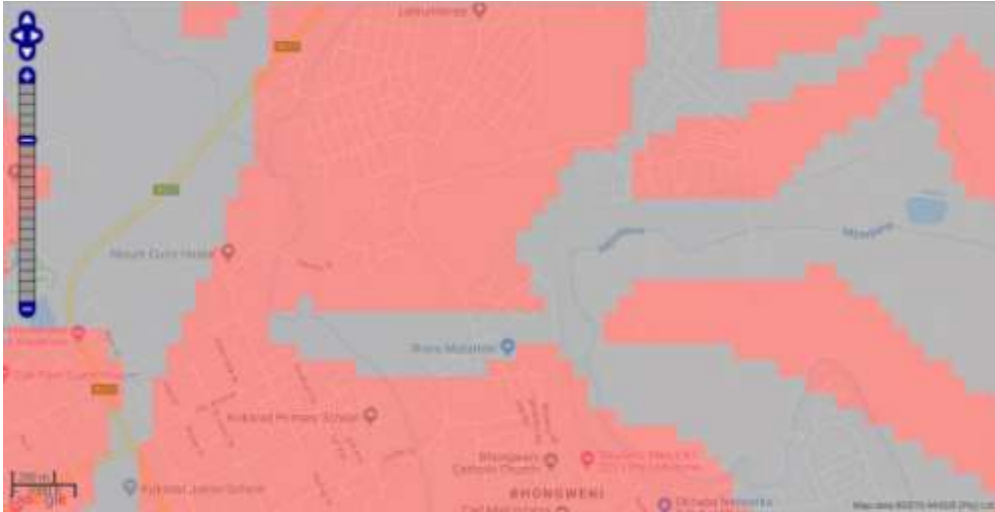


Figure 4: Extract from SAHRIS PalaeoSensitivity Map. Red = very high and blue = low (<https://sahris.sahra.org.za/map/palaeo>). The red area corresponds to the Estcourt Formation.



Fig. 5: An example of the Estcourt Formation as it could occur in the proposed development area. However this lithology is expected to be deeply weathered on this site, but there could be fresh rock at depth (>2m).

Karoo dolerite intrusions (these are 184 million years (Ma) old) and represent the onset of the break-up of the Gondwana Supercontinent (Hastie et al (2014). According to Watkeys

(2006), Gondwana rifting commenced between 155 and 135 Ma. Karoo Dolerite is an igneous intrusive rock and by definition cannot be fossiliferous (Fig. 6).



Fig. 6: An example of dolerite as it could occur at the proposed site.

3. PALAEOLOGY

3.1 Trace fossils

Evidence of bioturbation is ubiquitous within the Estcourt Formation siltstones and mudstones, however the various trace fossil (ichnofossil) types are not always identifiable. In general, trace fossils are very common within the Beaufort Group.

3.2 Body fossils

The Beaufort Group is known internationally for its palaeontological content (Cisneros et al., 2008). The Estcourt Formation contains plant- and body- fossils. The latter include the mammal-like reptiles such as the Upper Permian- *Dicynodon* (Neveling et al., 2005) and trace fossils (Green, 1998) (Fig. 7).

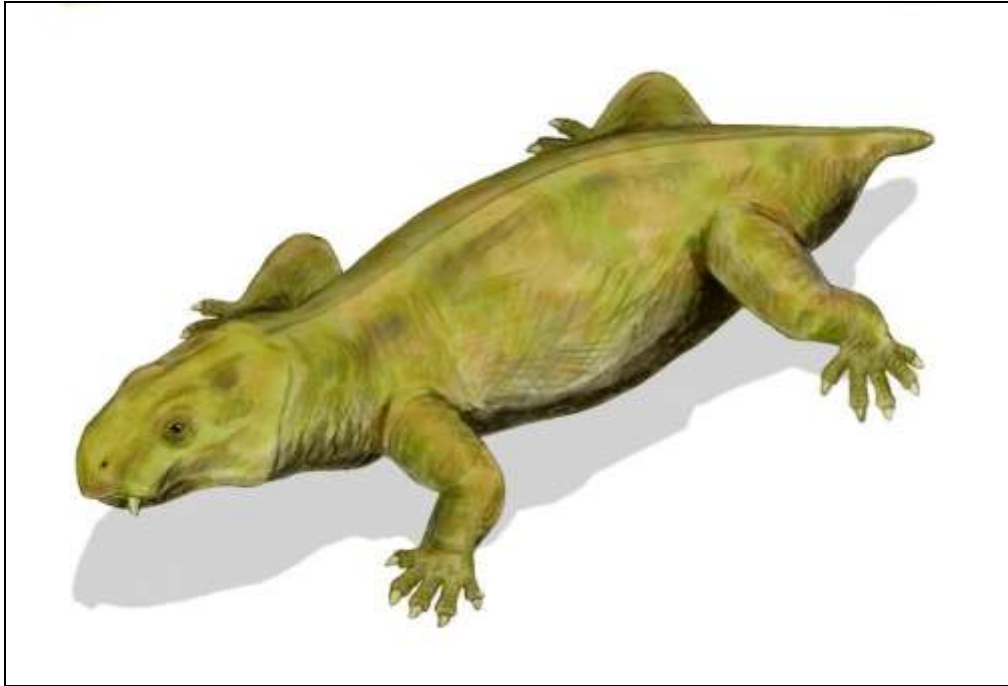


Fig. 7: Dicynadon reproduction (image source Wikipedia).

4. CHANCE FIND PROTOCOL

As this site includes areas flagged red on the SAHRIS PalaeoSensitivity Map (Fig. 4), a “Chance Find Protocol” is Recommended. This Protocol is based on that of Groenevald (2017).

In the case of any unusual finds, 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, 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 characterise 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 in the sample archive at the Museum in Pietermaritzburg (labels, boxes, shelving and, if necessary, specifically-tasked temporary employees) as specified by or agreed with AMAFA. 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.

Functional responsibilities of the appointed palaeontologist

1. Establishment of a representative collection of fossils and a contextual archive of appropriately documented and sampled palaeoenvironmental and sedimentological geodata at the Museum in Pietermaritzburg.

2. Undertake an initial evaluation of potentially affected areas and of available exposures in excavations.
3. On the basis of the above, and evaluation during the early stages of excavation development, in collaboration with the contractor management team, devise more detailed, practical strategies to deal with the fossils encountered routinely during excavation, as well as the strategies for major finds.
4. Informal on-site training in responses applicable to “normal” fossil finds must be provided for the ECO and environmental staff by the appointed specialist.
5. Respond to significant finds and undertake appropriate mitigation.
6. Initially, for the first three months of operation, at least two weekly visits to “touch base” with the monitoring progress, process and document interim Page 10 of 14 GBDBWSS Development Harry Gwala District Municipality 06/01/2017 “normal” finds and to undertake an inspection and documentation of new excavation faces. A strategy for further visits during the life of the excavation must then be determined.
7. Transport of material from the site to the Museum in Pietermaritzburg.
8. Reporting on the significance of discoveries, as far as can be preliminarily ascertained. This report is in the public domain and copies of the report must be deposited at ESI, AMAFA, and the South African Heritage Resources Authority (SAHRA). It must fulfill the reporting standards and data requirements of these bodies.
9. Reasonable participation in publicity and public involvement associated with palaeontological discoveries.

Exposure of palaeontological material

In the event of construction exposing new palaeontological material, not regarded as normative/routine as outlined in the initial investigation, such as a major fossil plant find, the following procedure must be adhered to:

1. The appointed specialist or alternates (AMAFA, SAHRA; ESI WITS University) must be notified by the responsible officer (e.g. the ECO or contractor manager) of major or unusual discoveries during excavation found by the Contractor Staff.
2. Should a major in situ occurrence be exposed, excavation will immediately cease in that area so that the discovery is not disturbed or altered in any way until the appointed specialist or scientists, or its designated representatives at AMAFA, have had reasonable opportunity to investigate the find. Such work will be at the expense of the Developer.

5. CONCLUSIONS

The Beaufort Group Estcourt Fm geology is flat-lying. Based on the geology and extent of the development area, palaeontological material is **VERY** likely to be found on this

site. It is more likely to be found in mudstone and siltstone lithologies. Palaeontological material is less likely to be found in the sandstones, but is still possible. A mitigating factor is that this rock is generally weathered, however at depth (>2m) it is likely to be fresher.. Whether any of this palaeontological material is rare or significant, only time will tell. A “Chance Find” Protocol has been incorporated into this report and this MUST be incorporated into the EMP. Due to the specialization of this field, this should include regular site inspections by a qualified person.

6. REFERENCES

Cisneros, J. C., Rubidge, B. S., Mason, R. & Dube, C. (2008). "Analysis of millerettid parareptile relationships in the light of new material of *Broomia perplexa* Watson, 1914, from the Permian of South Africa. *Journal of Systematic Palaeontology*, 6, 453-462". *Journal of Systematic Palaeontology*. 6(4): 453–462.

Groenevald, G (2017). Chance find protocol “for the proposed Greater Bulwer DonnyBrook Bulk Water SupplyA Scheme (GBDBWSS): Harry Gwala district Municipality, KwaZuluNatal.

Hastie, WW; Watkeys, MK; Aubourg, C (2014). Magma flow in dyke swarms of the Karoo LIP: Implications for the mantle plume hypothesis. *Gondwana Research* 25 (2014) 736–755.

<https://sahris.sahra.org.za/map/palaeo>

Neveling, P.J. Hancox & B.S. Rubidge (2005) Biostratigraphy of the lower Burgersdorp Formation (Beaufort Group; Karoo Supergroup) of South Africa – implications for the stratigraphic ranges of early Triassic tetrapods. *Palaeont. afr.*) 41: 81–87.

Ndlovu, L. (2015)Shayamoya Housing Development: Preliminary Environmental Investigation Report (2015). Sivest SA (Pty) Ltd.

Watkeys, M.K., 2006. Gondwana break-up: a South African perspective. In: M.R. Johnson, C.R. Anhaeusser and R.J. Thomas (Editors), *The Geology of South Africa*, Geological Society of South Africa, Johannesburg/Council for Geoscience, Pretoria, 531-539.

APPENDIX 1: 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 more than 50 journal articles with 360 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.
- Desktop PIA: Zuka valley, Ballito. Client: Mike Webster, HSG Attorneys.
- Mevamhlope proposed quarry palaeontology report. Client: Enviropo.
- 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.

DECLARATION OF INTEREST BY SPECIALIST



Provincial Reference Number:	(For official use only)
NEAS Reference Number:	KZN / EIA /
Waste Management Licence Number (if applicable):	
Date Received by Department:	

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Submitted in terms of section 24(2) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) or for a waste management licence in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

KINDLY NOTE:

1. This form is current as of **October 2019**. It is the responsibility of the Applicant / Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the form have been released by the Department.

PROJECT TITLE

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DISTRICT MUNICIPALITY

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1. SPECIALIST INFORMATION

Specialist name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Professional affiliation(s)
(if any)

Umlando: Archaeological Surveys and Heritage Resources Management		
Gavin Anderson		
PO Brix 10153, Meerensee		
3901	Cell:	0836585362
0357531785	Fax:	
umlando@gmail.com		
ASAPA		

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DECLARATION OF INTEREST BY SPECIALIST

Project Consultant / EAP:	Gavin Anderson		
Contact person:	Gavin Anderson		
Postal address:	PO Biox 10153, Meerensee		
Postal code:	3901	Cell:	0836585362
Telephone:	0357531785	Fax:	
E-mail:	umlando@gmail.com		

2. DECLARATION BY THE SPECIALIST

I, Gavin Anderson are that --

General declaration:

- I act as the independent specialist in this application;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).



Signature of the specialist:

Umlando: Archaeological Surveys and Heritage Resources Management

Name of company:

12/3/2021

Date:

Department of Economic Development, Tourism & Environmental Affairs, KwaZulu-Natal	Details of the Specialist and Declaration of Interest	Oct 2019 V1
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