

**HERITAGE SURVEY OF THE PROPOSED MILITARY  
VETERAN HOUSING, MSUNDUZI, KZN**

**FOR GREEN SCENE ENVIRONMENTAL &  
ISIKHUNGUSETHU ENVIRONMENTAL SERVICES  
(PTY) LTD**

**DATE: 9 DECEMBER 2019**

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## EXECUTIVE SUMMARY

*The Department of Human Settlements intends to build houses for Military Veterans in the Msunduzi Municipality. Originally, seven plots were noted, but this has now been reduced to four plots.*

*An HIA desktop was undertaken followed by a field survey. The desktop noted human settlements in Erf 1703 dating to the 1930s, and these could have graves. Erf 10 000 (Pietermaritzburg) and Erf 1633 used to have large sheds that could be related to the railways.*

*The field survey noted that the human settlements and buildings no longer existed.*

*A desktop PIA was undertaken. The desktop suggested that a Letter of Exemption be issued.*

*No further HIA mitigation is required.*

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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

The Department of Human Settlements intends to build houses for Military Veterans in the Msunduzi Municipality. Originally, seven plots were noted, but this has now been reduced to four plots.

The policy for housing is as follows (RK and Associates 2018:1-4):

- "... land which is level has had site sizes reduced to 300m<sup>2</sup> which accommodates a 50m<sup>2</sup> house and provides ± 250m<sup>2</sup> of usable level garden area (ie very little of the site is taken up by banks).
- As the land gets steeper more and more of the site is taken up by banks generated by the 72m<sup>2</sup> flat platform that needs to be built to accommodate each 50m<sup>2</sup> house. To compensate those veterans whose land has a steeper slope site sizes have been increased in size to as much as 750m<sup>2</sup>.
- The average site size on medium slopes is 350m<sup>2</sup>.
- *Many of the veterans have physical impairments:*
  - These impairments have been caused by the veterans' active duty during the struggle and they cannot negotiate stairs or steep slopes either within the house or between the road serving the house and the front door.
- *Many of the veterans are elderly:*
  - The same constraints highlighted above apply to the many veterans who are elderly.
- *Other Veterans:*
  - Those veterans who do not suffer from either of the abovementioned issues will suffer from the alignments within the next decade of their life so cognizance of this impending frailty should be taken into account.
- *Importance of level sites:*

- This factor together with the two abovementioned issues has the implication of ensuring that Veteran Villages are located on as level a site as possible. Steep sites will result in steps between the road and house and large banks being generated on each site which the veterans are unable to maintain
- *Creation of level easy walks from the road to each house:*
- *Dependence on Public Transport:*
- Existing General Plans
- Many of the sites, have existing planning permission and general plans already approved. Where it appears that such sites do not trigger an environmental impact assessment and can be logically and functionally included in the new subdivisional layouts this has been achieved. This has an advantage that these sites are capable of immediate commencement of construction of houses.”

Umlando was contracted by Green Scene Environmental to undertake the heritage survey of the proposed project.

The locations of the four sites are shown in Figures 1 – 4.

FIG. 1 GENERAL LOCATION OF THE PROPOSED DEVELOPMENTS

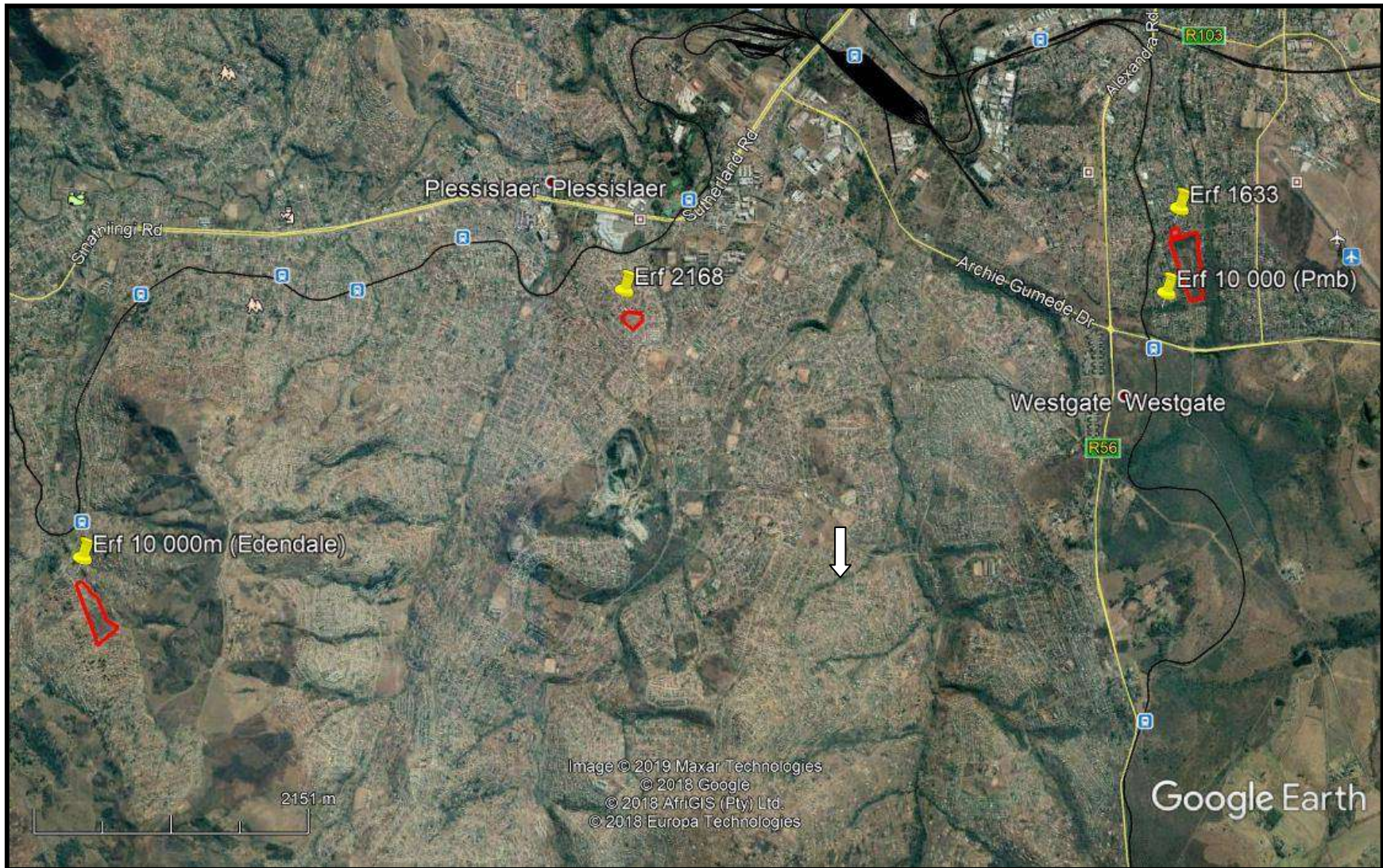


FIG. 2A: AERIAL OVERVIEW OF ERF 10 000 (Edendale)





FIG. 2B: AERIAL OVERVIEW OF ERF 2168

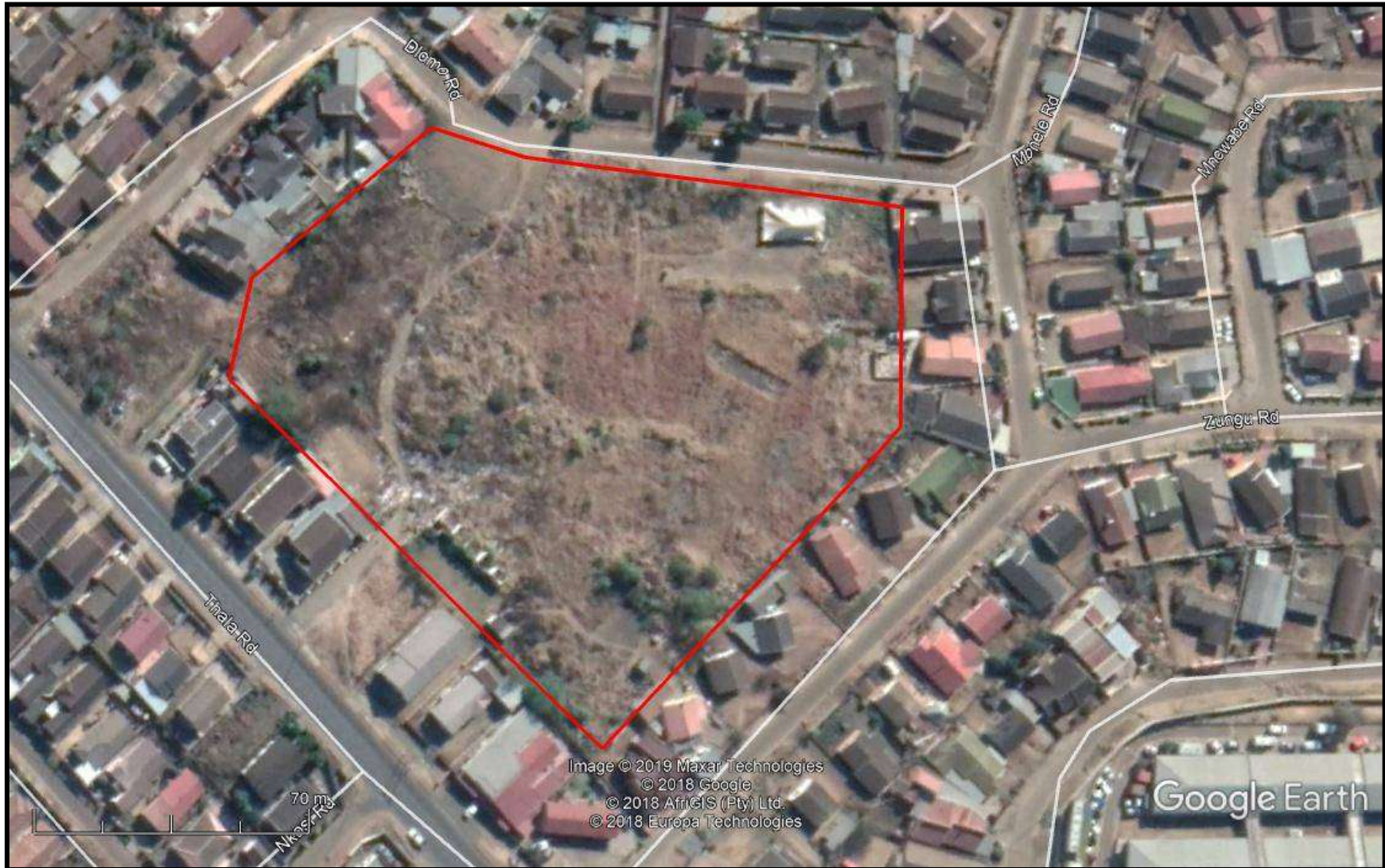


FIG. 2C: AERIAL OVERVIEW OF ERWEN 1633 & 10 000 (Pmb)

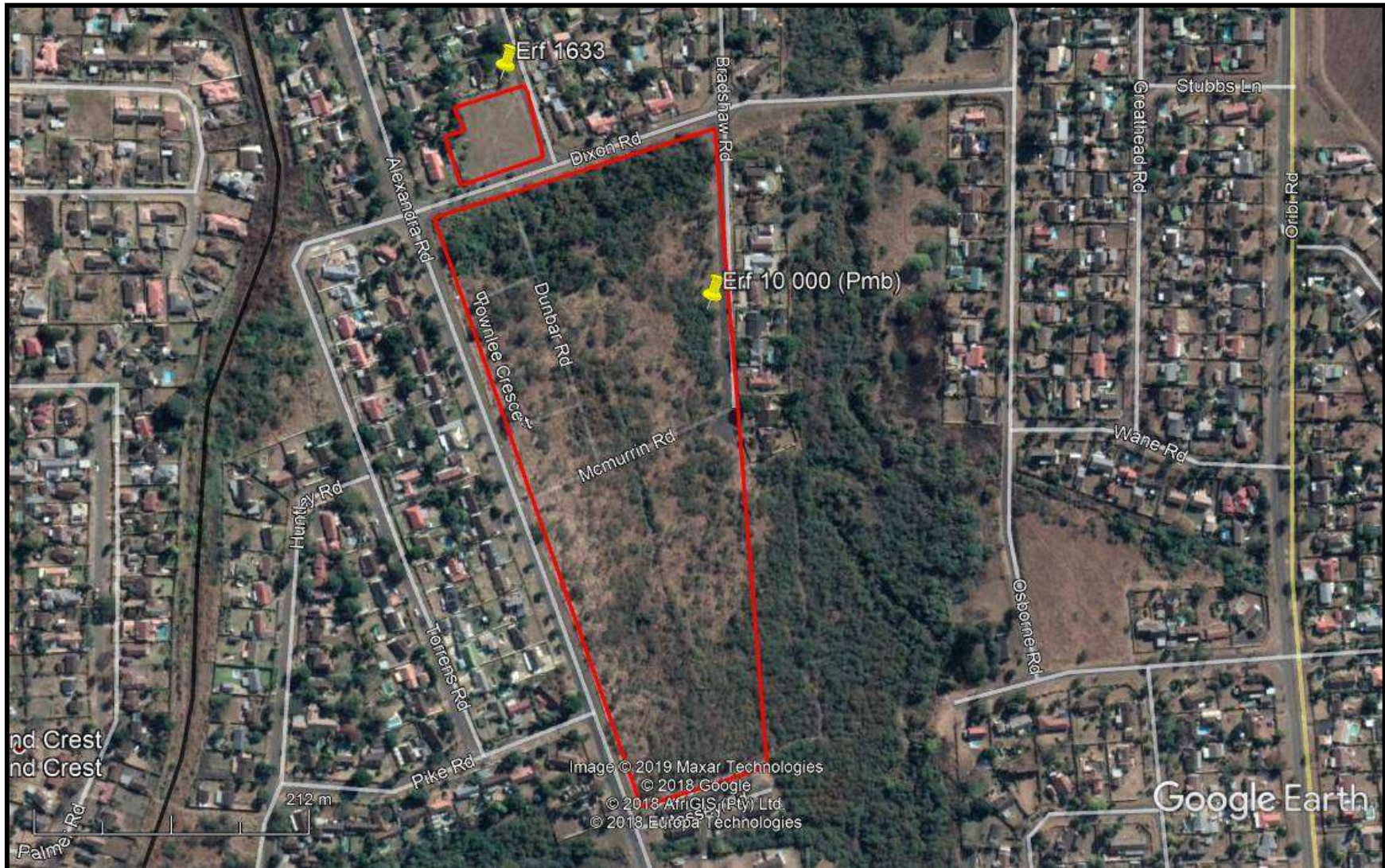


FIG. 3A: TOPOGRAPHICAL MAP OF ERF 10 000 (EDENDALE)

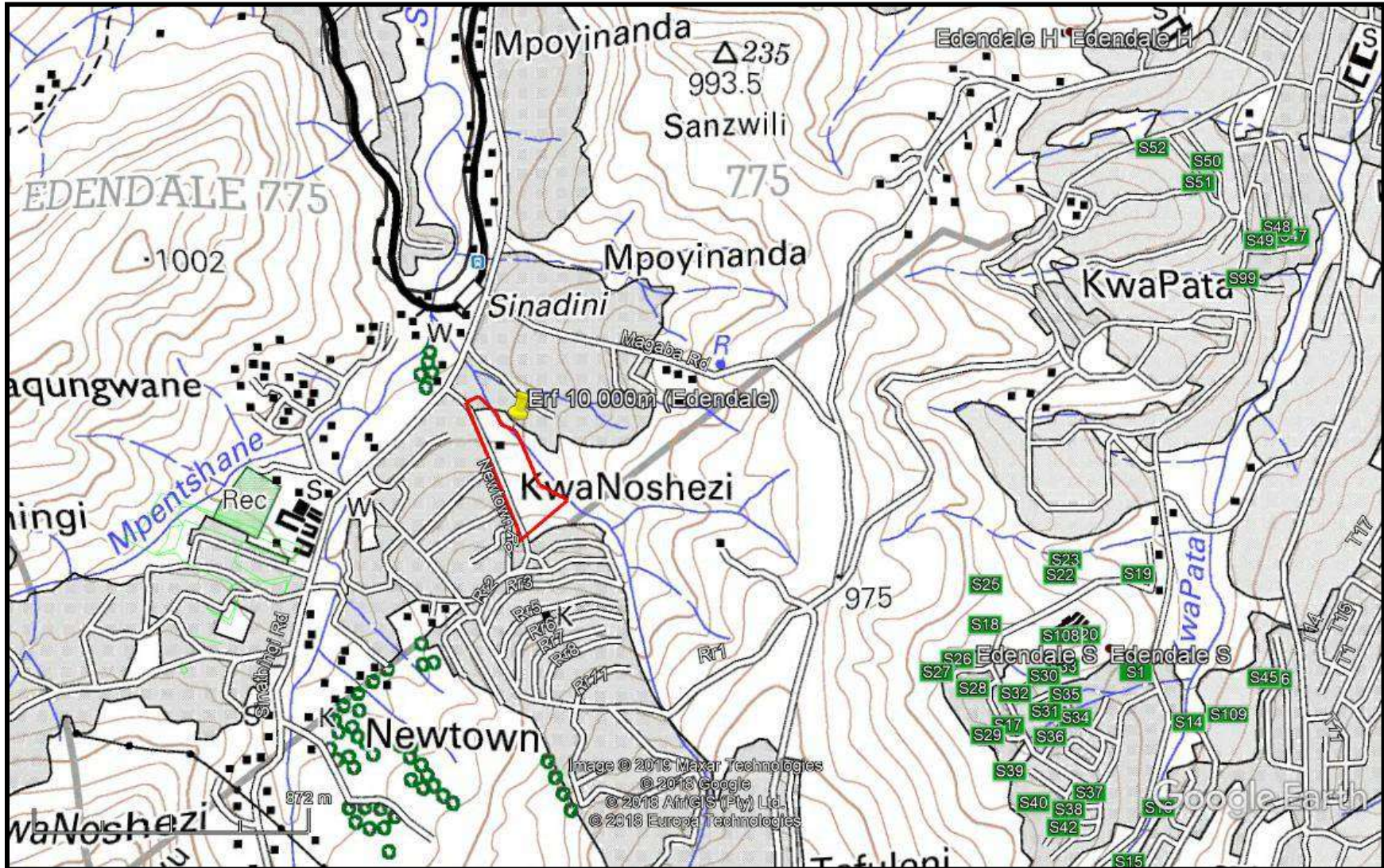


FIG. 3B: TOPOGRAPHICAL MAP OF ERF 2168

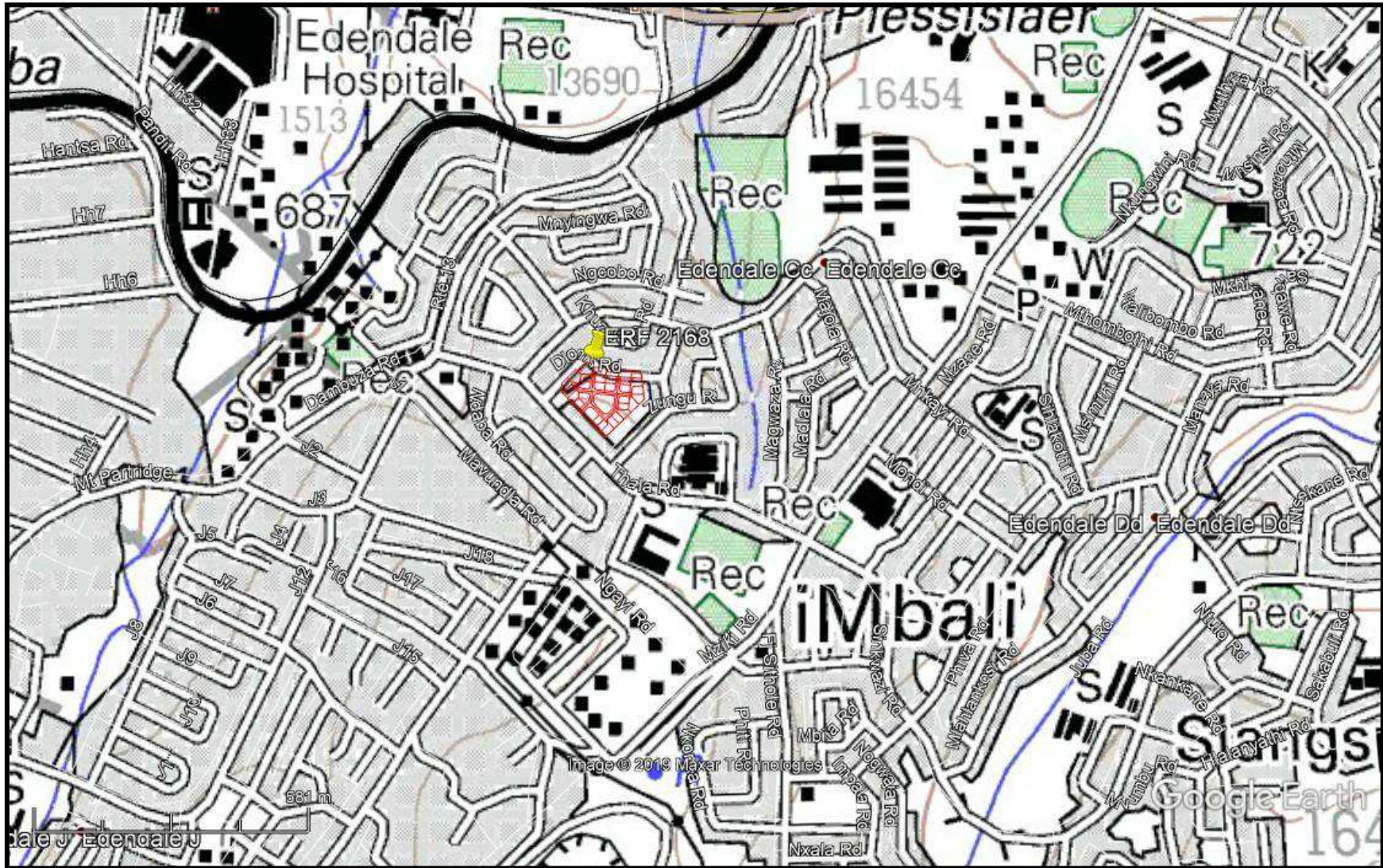


FIG. 3C: TOPOGRAPHICAL MAP OF ERWEN 10 000 (PMB) &1633

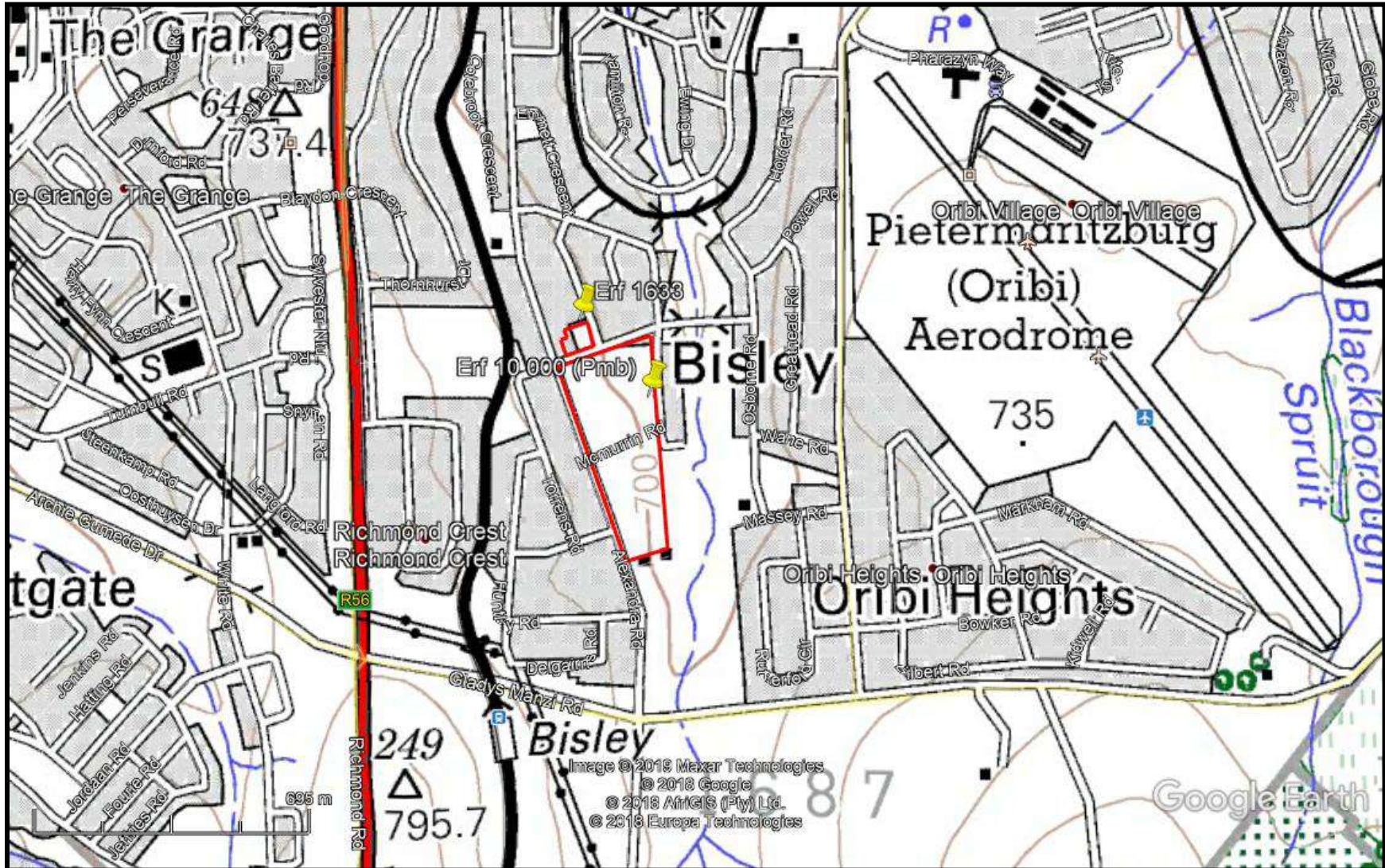


FIG. 4: SCENIC VIEWS OF THE STUDY ERWEN 10 000(EDENDALE), 2168, 10 000 (PMB), 1633 (CLOCKWISE)



**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 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.

## **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, one significant EIA village, cemeteries and Struggle Sites (fig. 5). No known heritage sites occur in any of the study areas.

The 1937 aerial photographs (fig. 7a- c) indicate that only Erf 1703 has three settlements in the study area. These settlements will probably have human graves, although The Range cemetery could have been existence already. The location of these settlements are given in Table 2 and Fig. 6a

**TABLE 2: LOCATION OF SETTLEMENTS IN ERF 1703**

<b>Name</b>	<b>South</b>	<b>East</b>
<b>H1</b>	29°40'37.70"	30°17'47.32"
<b>H2</b>	29°40'39.18"	30°17'46.63"
<b>H3</b>	29°40'31.95"	30°17'43.37"

The 1968 1:50 000 topographical map (fig. 7a-c) indicates that the settlements from Erf 1073 map longer exist. This suggests that there will be not race of them by 2019 unless any graves were clearly marked.

Fig. 7c indicates that Erf 1000 and 1633 have buildings, or sheds constructed on them. These may relate to the railroad storage facilities.

The more recent Google Earth files, from 2006 onwards, indicate that there are no old structures on any of the plots.

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

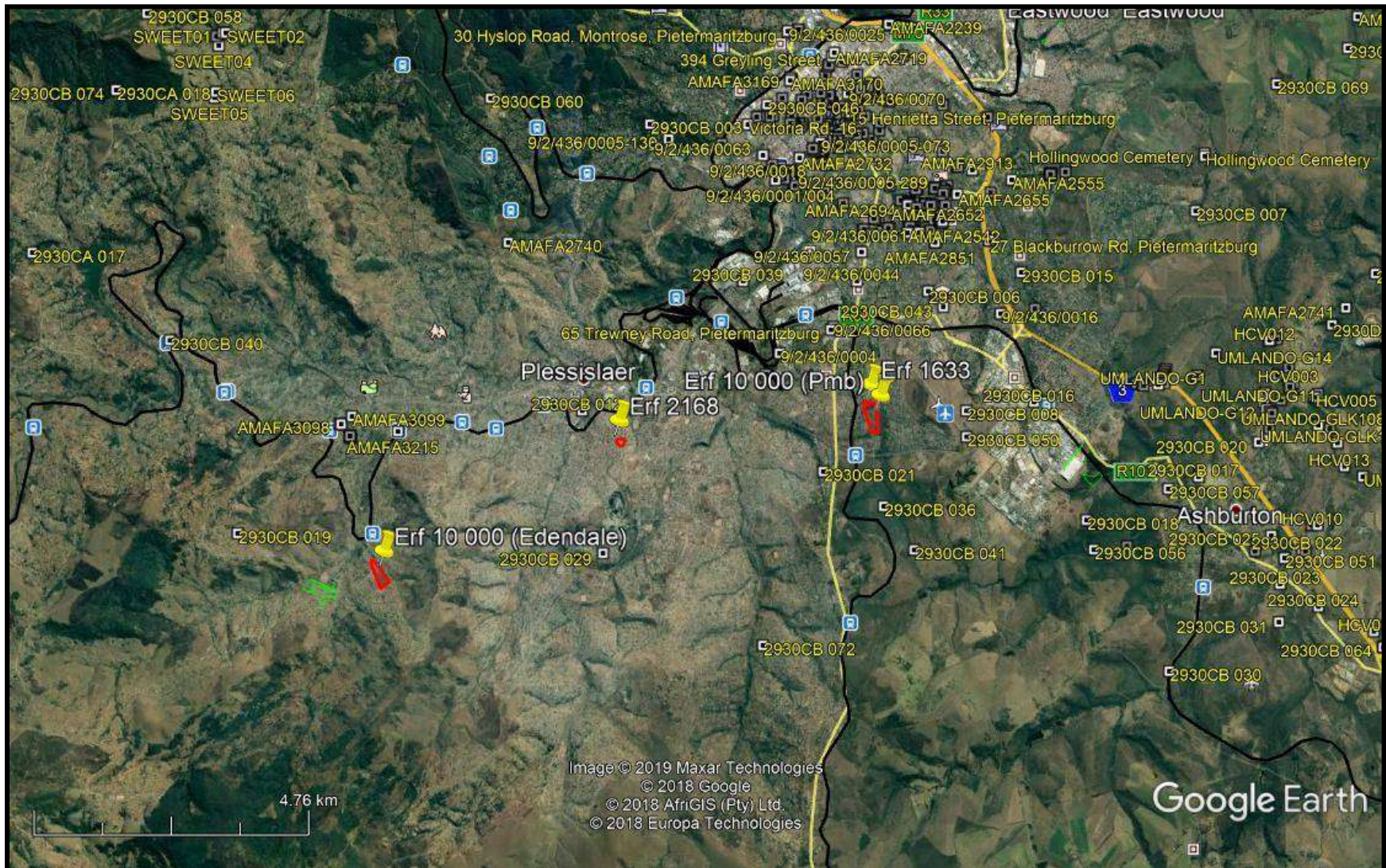


FIG. 6A: LOCATION OF PROPOSED DEVELOPMENT IN ERF 10 000 (EDENDALE) IN 1937



FIG. 6B: LOCATION OF PROPOSED DEVELOPMENT IN ERF 26168 IN 1937

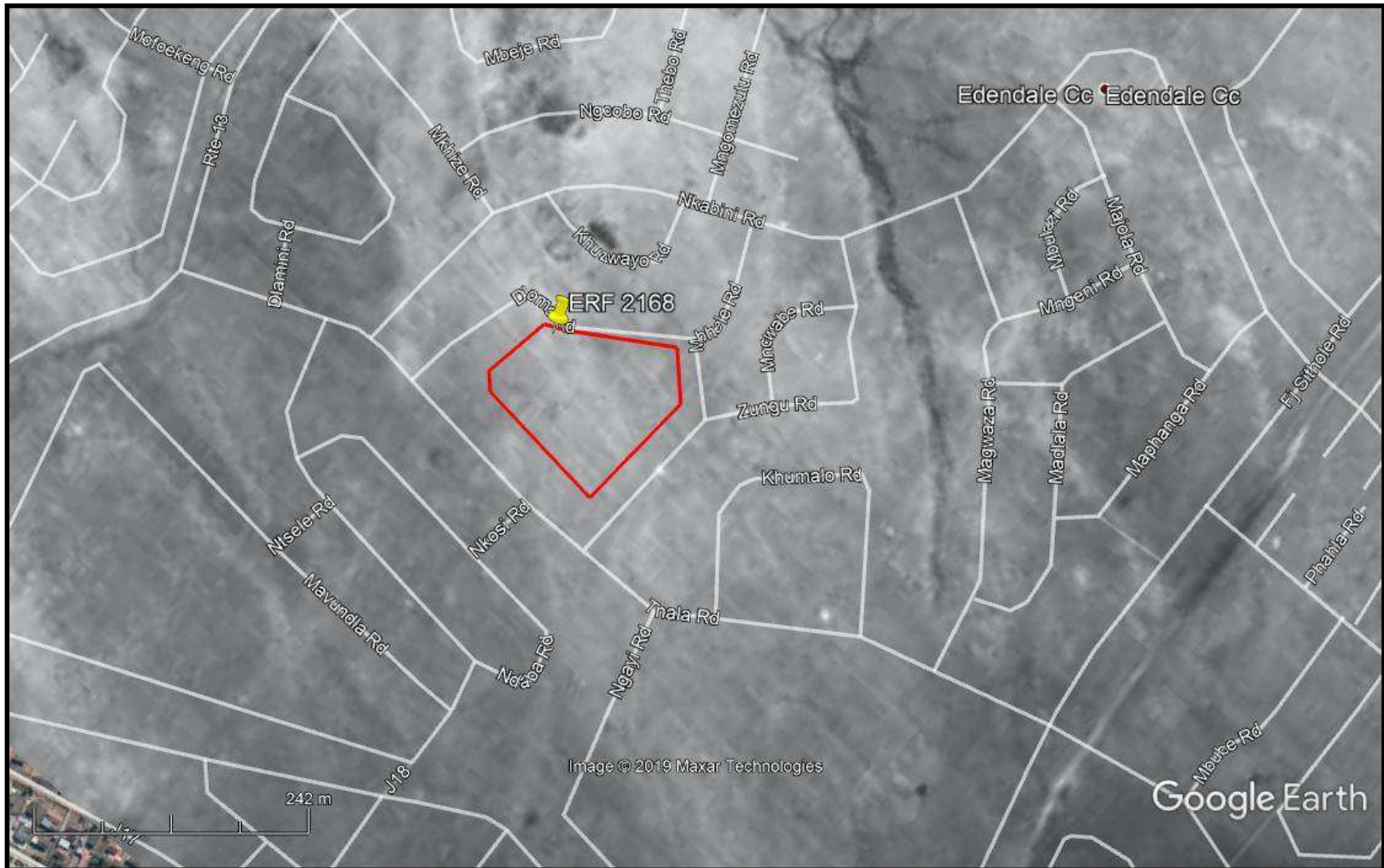




FIG. 6C: LOCATION OF PROPOSED DEVELOPMENT IN ERF 1000 & 1633 IN 1937

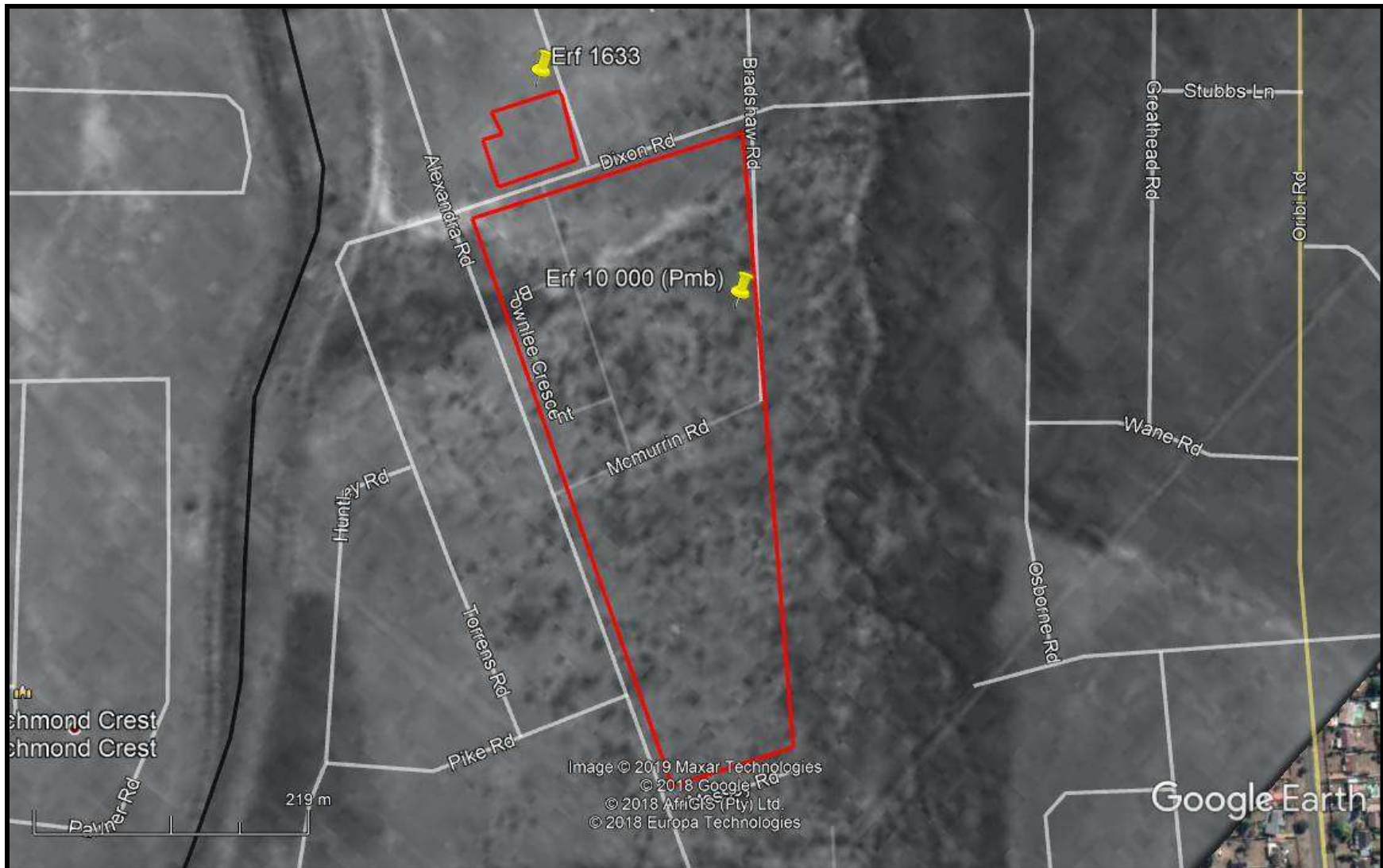


FIG. 7A: LOCATION OF PROPOSED DEVELOPMENT IN ERF 10 000 (EDENDALE) IN 1968

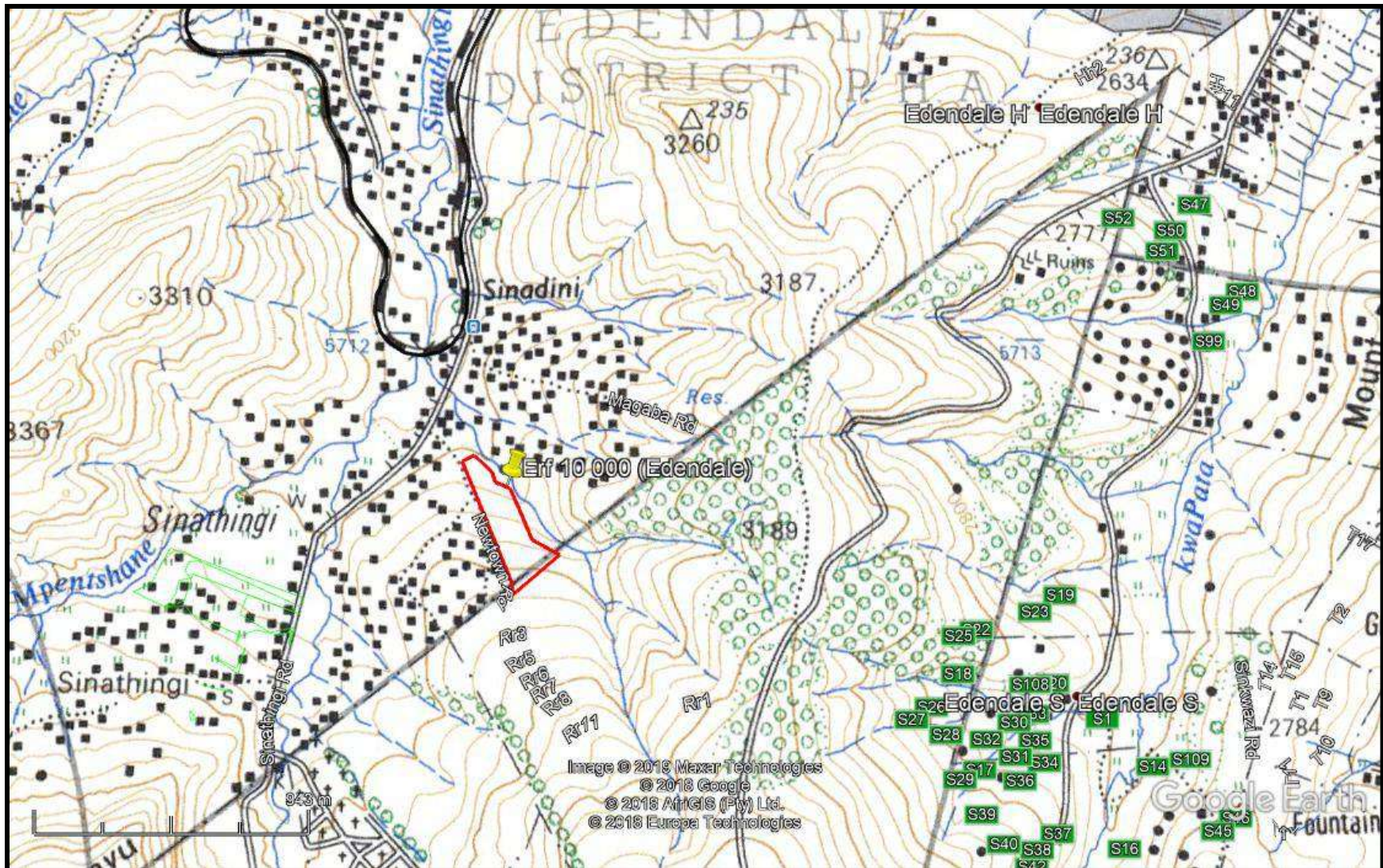


FIG. 7B: LOCATION OF PROPOSED DEVELOPMENT IN ERF 2168 IN 1968

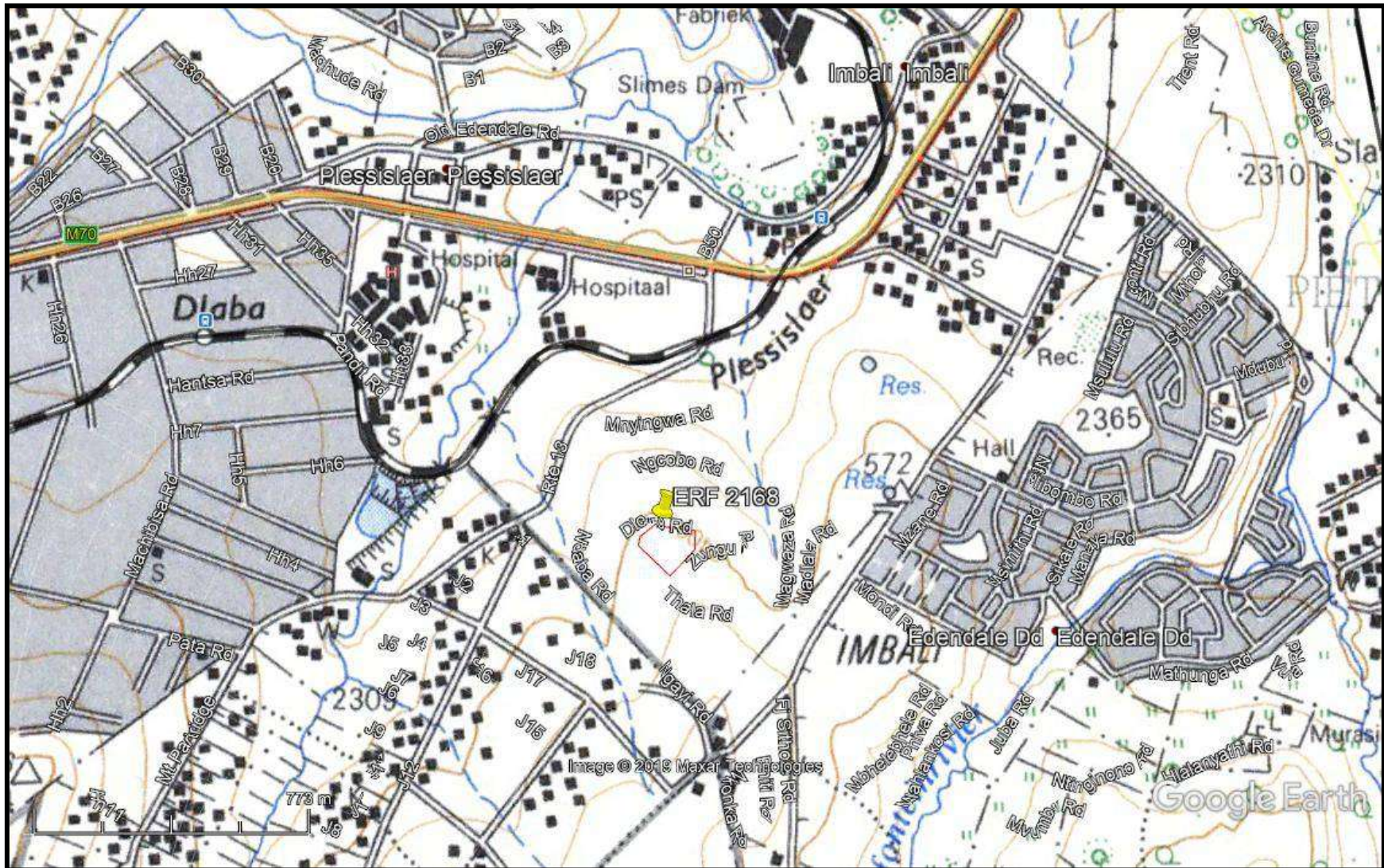


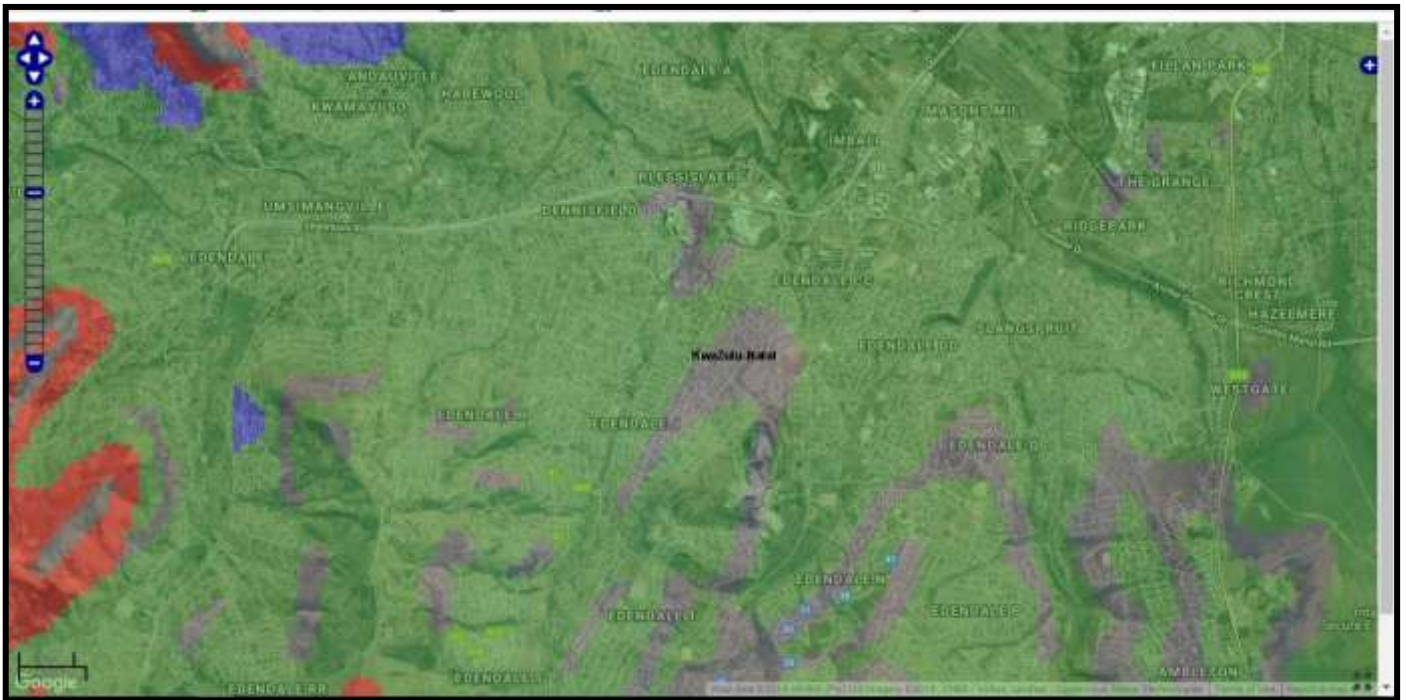
FIG. 7C: LOCATION OF PROPOSED DEVELOPMENT IN ERF 10 000 (PMB) & 1633 IN 1968



## PALAEONTOLOGICAL SENSITIVITY

Erf 1000, 1633, 1703 are in areas of moderate palaeontological sensitivity, while Erf 2168 is of no/low sensitivity (fig. 8). The areas have a Letter of Exemption from Dr A. Smith (Appendix A) as it is highly disturbed. A Chance Find Protocol was initiated for the areas.

**FIG. 8: PALAEONTOLOGICAL SENSITIVITY MAP**



## FIELD SURVEY RESULTS

The field survey was undertaken on 3 December 2019. Visibility in all areas was good, although all areas were highly disturbed. While some areas only required a desktop initially, each of the four sites were visited as they were en route to the next site.

**ERF 10 000 (EDENDALE)**

The Erf is located to the east of Newton Rd. The site consists is located on a sloping hill that has now been contoured, has a soccer field on it, and a clinic (fig. 9). None of the three settlements noted in the desktop study were visible, and are presumably destroyed.

**Significance:** The area is of no/low significance

**Mitigation:** The developer should be made aware of the possibility of human remains within a 50m radius of the three settlements. If any remains are found then it needs to be reported to KZN Amafa and Research Institute and the SAPS immediately.

**SAHRA Rating:** N/A

**FIG. 9: ERF 10 000(EDENDALE)**



**ERF 2168**

The site is located in the middle of a built up area. The site consists of a plot of land that has been disturbed and used as a dumping site (fig. 10).

**Significance:** The area has no significance

**Mitigation:** None

**SAHRA Rating:** N/A

**FIG. 10: ERF2168**



### **ERF 10 000 (PMB)**

The site is located within a residential area between Alexandra Rd and the Fox Spruit River. . The site consists of apparently cleared area with Acacia spp. regrowth. (fig. 11). The desktop noted two large sheds occurring along the border of Alexandar Rd. These have been demolished with only a few bricks remaining. To the east of the locations of the sheds is a large trench that runs parallel with Alexandra Rd (fig. 12). If the sheds are linked to the railways, then this cutting could have been for the railways. The rest of the property is not pristine and would have been disturbed by the activities.

I was informed about a bricked “bridge” over a stream on the northern part of the site. The vegetation was too dense in this area to locate the structure during the survey. The vegetation was also too dense to photograph according to the informant. It probably relates to the other structures that were on this site.

**Significance:** The area is of no significance

**Mitigation:** No mitigation required

**SAHRA Rating:** N/A

### **ERF 1633**

The site is located to the north of Erf 1000. The site consists of a grassed open area (fig. 14). The property has been cleared of the shed and no evidence of the building was visible. Subsurface features may exist.

**Significance:** The area is of no significance

**Mitigation:** No mitigation required

**SAHRA Rating:** N/A



FIG. 11: ERF 10 000 (PMB)



FIG. 12: CUTTINGS AT ERF 10 000 (PMB)



**FIG. 13: APPROXIMATE LOCATION OF SMALL BRIDGE**



**FIG. 14: ERF 1633**



## **MANAGEMENT PLAN**

All four Erwen have no heritage value. Erf 1703 is unlikely to have human graves; however, the developer should note the possibility that they could still occur. If any graves are uncovered during the course of development then the SAPS and KZN Amafa & Research Institute, need to be informed immediately. All work within a 20m radius of the remains needs to stop and the area cordoned off until the relevant authorities have made a decision.

The PIA desktop noted that no further mitigation is required.

## **CONCLUSION**

A heritage survey was undertaken for the proposed military veterans housing project in the Msunduzi Municipality. Four areas were demarcated for the project and a desktop and field survey was undertaken. The desktop noted that two properties had potential heritage sites. The field survey confirmed that these heritage sites no longer existed and had been destroyed/cleared by other activity.

The PIA desktop noted that the areas are too disturbed to warrant further mitigation.

No further heritage mitigation is required

## **REFERENCES**

2930 CB Pietermaritzburg 1968, 2000

117B\_015\_39543

117B\_017\_39515

117B\_017\_39516

### **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 large, stylized initial 'A'.

Gavin Anderson  
Archaeologist/Heritage Impact Assessor

**APPENDIX A  
PIA DESKTOP**

**PROPOSED MILITARY  
VETERAN HOUSING, MSUNDUZI, KZN: Desk-  
Top Palaeontological Impact Assessment**

**FOR**

**UMLANDO: Archaeological Surveys & Heritage Management  
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**19 December 2019**

## EXECUTIVE SUMMARY

The possibility of finding fossils is very low, however a “Chance Find” Protocol has been inserted into this report as the possibility of finding palaeontological material is NOT zero. This Protocol will only commence if palaeontological material is found.



## 1. BACKGROUND

The Department of Human Settlements intends to build houses for Military Veterans in the Msunduzi Municipality. This will take place in three locations within the Msunduzi Municipality (Fig. 1):

- Erf 1633 and Erf 10 000 (PMB) (Fig. 2)
- Erf 2168 (Fig.3)
- Erf 10 000 (Edendale) (Fig 4)<sup>1</sup>



**Figure 1: Location map of proposed Military Vet Housing Project (Image source Google Earth & Anderson, 2019).**

<sup>1</sup> The Erf name 1703 refers to Erf 10 000 (Edendale); Erf 1000 Refers to Erf 10 000 (Pmb)



**Fig. 2: Erf 1633 and Erf 10 000 (Edendale)**



**Fig. 3: Erf 2168**

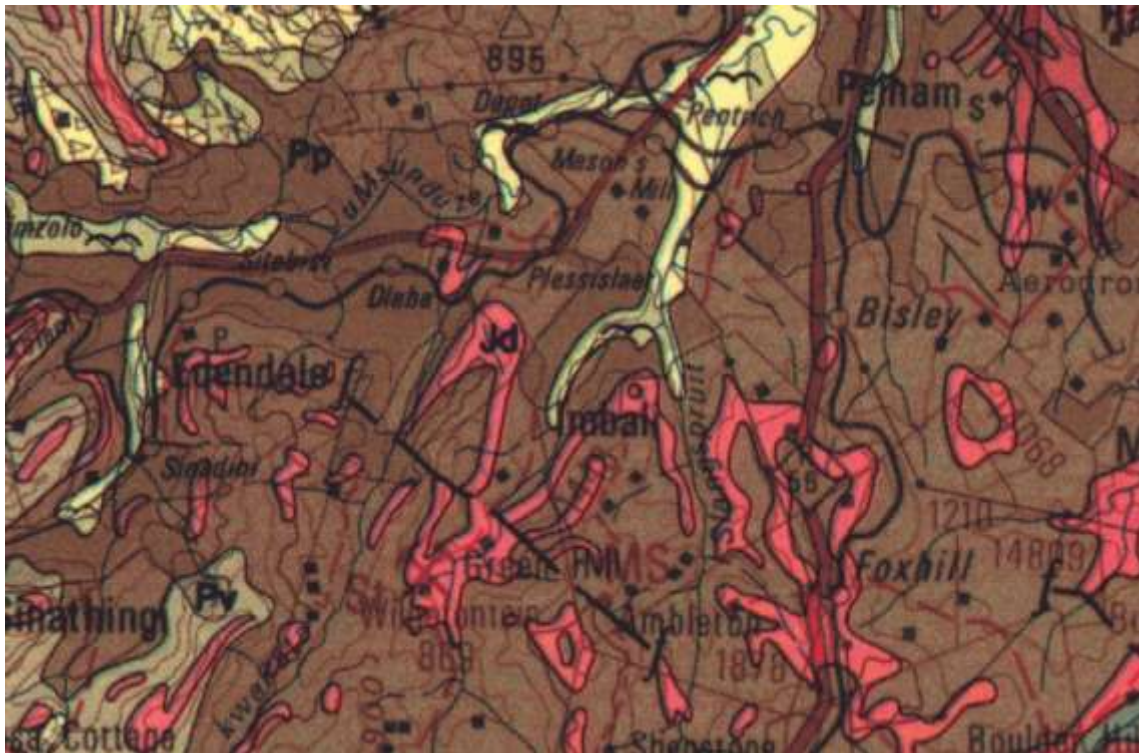


*Fig. 4: Erf 10 000 (Pmb)*

### 3. GEOLOGY

Perusal of the Durban 29303 1: 250 000 geological map indicates the presence of Pietermaritzburg Formation and Karoo Dolerite within this area (Fig. 5). The Pietermaritzburg Formation is very dark blue (when fresh) and crops out as a massive siltstone (Fig. 6). These rocks belong to the Karoo Sequence. The Pietermaritzburg Formation is Lower Permian in age and was deposited within the Karoo Sea in the centre of the Gondwana Supercontinent. This unit was deposited under low energy conditions (Bordy et al., 2017).

The Karoo Dolerite is an intrusive igneous rock emplaced in 184 Ma (Hastie et al. 2014). This was part of the Karoo volcanism event which was the prelude to the break up of the Gondwana Supercontinent into the southern hemisphere continents we know today.



*Figure 5: Extract from the Durban 29303 1: 250 000 scale Geological Map. Pp is Pietermaritzburg Formation. Red (Jd) is Karoo intrusive volcanic rocks. Area of interest is boxed.*



*Fig. 6: Example of what the Pietermaritzburg Formation might look like in this area.*

#### **4. PALAEOLOGY**

The Pietermaritzburg Formation may contain scattered, fragmentary plant fossils and invertebrate trace fossils, all of which are diagnostic of marine conditions (eg. *Helminthopsis*) (Bordy et al., 2017). Potentially it could contain body fossils, but to the writer's knowledge none have been found. The chances of finding Palaeontological Material is VERY LOW, but NOT zero, consequently a chance find protocol has been included in this report.

Karoo Dolerite may be present but this is an igneous rock and is not fossiliferous.

#### **5. CHANCE FIND PROTOCOL**

This protocol is based on that of Groenevald (2017). This Protocol will ONLY kick-in if palaeontological material is found.

In the case of any unusual structures, the 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 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 in the sample archive at the Museum in Durban (labels, boxes, shelving and, if necessary, specifically-tasked temporary employees) as specified by or agreed with AMAFA. Documentary record of palaeontological occurrences

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 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
10. Establishment of a representative collection of fossils and a contextual archive of appropriately documented and sampled palaeoenvironmental and sedimentological geodata at the Museum in Durban.
11. Undertake an initial evaluation of potentially affected areas and of available exposures in excavations.
12. On the basis of the above, and evaluation during the early stages of excavation development, in collaboration with the contractor management team, more detailed practical strategies to deal with the fossils encountered routinely during excavation, as well as the strategies for major finds.
13. Informal on-site training in responses applicable to “normal” fossil finds must be provided for the ECO and environmental staff by the appointed specialist.
14. Transport of material from the site to the Museum in Durban.
15. 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.
16. Reasonable participation in publicity and public involvement associated with palaeontological discoveries. 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:
17. The appointed specialist or alternates (AMAFA, SAHRA; 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.
18. 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 from the ESI at WITS University, or its designated representatives at AMAFA, have had reasonable opportunity to investigate the find. Such work will be at the expense of the Developer.

## 6. CONCLUSIONS & RECOMMENDATIONS

The possibility of finding fossils is very low, however a “Chance Find” Protocol has been inserted into this report as the possibility of finding palaeontological material is very low but NOT zero.

## 7. REFERENCES

**Anderson, 2019. Heritage Survey of the Proposed Military Veteran Housing, Msunduzi, KZN. Umlando: Archaeological Surveys & Heritage Management, PO Box 102532, Meerensee, KwaZulu-Natal 3901**

Bordy EM, Spelman S, Cole DI & Mtbembi P (2017). Lithostratigraphy of the Pietermaritzburg Formation (Ecca Group, Karoo Supergroup), South Africa. South African Journal of Geology 120: 293-302

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.



## 8. DETAILS OF SPECIALIST

**Dr Alan Smith Pr. Sc. Nat., I.A.H.S.**

**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:**

- MSc in stromatolites (University of KwaZulu-Natal)
- PhD in Geology (University of KwaZulu-Natal).
- 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: 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.