

**HIA FOR THE PROPOSED MAPHUMULO SEWER  
RETICULATION, ILEMBE DISTRICT  
MUNICIPALITY, KZN**

**FOR K2M ENVIRONMENTAL**

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## TABLE OF CONTENT

INTRODUCTION .....	5
<b>KWAZULU NATAL AMAFA AND RESEARCH INSTITUTE, ACT 05, 2018,</b> .....	10
METHOD .....	13
Defining significance.....	14
RESULTS .....	17
DESKTOP STUDY .....	17
FIELD SURVEY.....	22
MITIGATION.....	22
CONCLUSION.....	22
REFERENCES .....	23
<b>EXPERIENCE OF THE HERITAGE CONSULTANT</b> .....	24
<b>DECLARATION OF INDEPENDENCE</b> .....	24

## TABLE OF FIGURES

FIG. 1 GENERAL LOCATION OF THE PROPOSED DEVELOPMENT .....	6
FIG. 2: AERIAL OVERVIEW OF THE PROPOSED DEVELOPMENT .....	7
FIG. 3: TOPOGRAPHICAL MAP OF THE PROPOSED DEVELOPMENT (2000) .....	8
FIG. 4: SCENIC VIEWS OF THE STUDY AREA .....	9
TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES .....	16
FIG. 5: LOCATION OF KNOWN HERITAGE SITES IN THE GENERAL AREA .....	18
FIG. 6: LOCATION OF THE STUDY AREA IN 1937 .....	19
FIG. 7: LOCATION OF THE STUDY AREA IN 1968 .....	20
FIG. 8: PALAEOLOGICAL SENSITIVITY MAP .....	21

## LIST OF TABLES

TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES.....	16
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## Abbreviations

EIA	Early Iron Age
ESA	Early Stone Age
HIA	Heritage Impact Assessment
HP	Historical Period
IIA	Indeterminate Iron Age
ISA	Indeterminate Stone Age
KZNARI	KwaZulu-Natal Amafa & Research Institute
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency

## INTRODUCTION

The iLembe District has identified the need to provide waterborne sanitation in its area of jurisdiction, specifically in the Maphumulo area. The main of this proposed project is to provide the Maphumulo town and surrounding communities with a sustainable waterborne sanitation system that will promote health, hygiene and will be environmentally sustainable.

The proposed development will entail the construction of pipelines for the bulk transportation of sewage to the proposed Wastewater Treatment Works. The construction of uPVC class 16 raising main pipelines with an internal diameter of 200mm and 110mm, respectively, are proposed for construction. The raising main pipelines have an approximate length of 3.5 km. There are 4 sewerage pump stations proposed for construction, each intended to pump 0.75 ML of wastewater to the wastewater works per day, these pump stations will have a flow volume of 6 litres per second. A 1.5 ML/day wastewater treatment work has also been proposed for development.

The gravity reticulation and raising main pipelines will transect several water courses within the proposed site and will be constructed within 32 metres of a watercourse.

Umlando was requested to undertake the Phase 1 HIA of the proposed development. Figures 1 – 4 show the location of the development.

FIG. 1 GENERAL LOCATION OF THE PROPOSED DEVELOPMENT

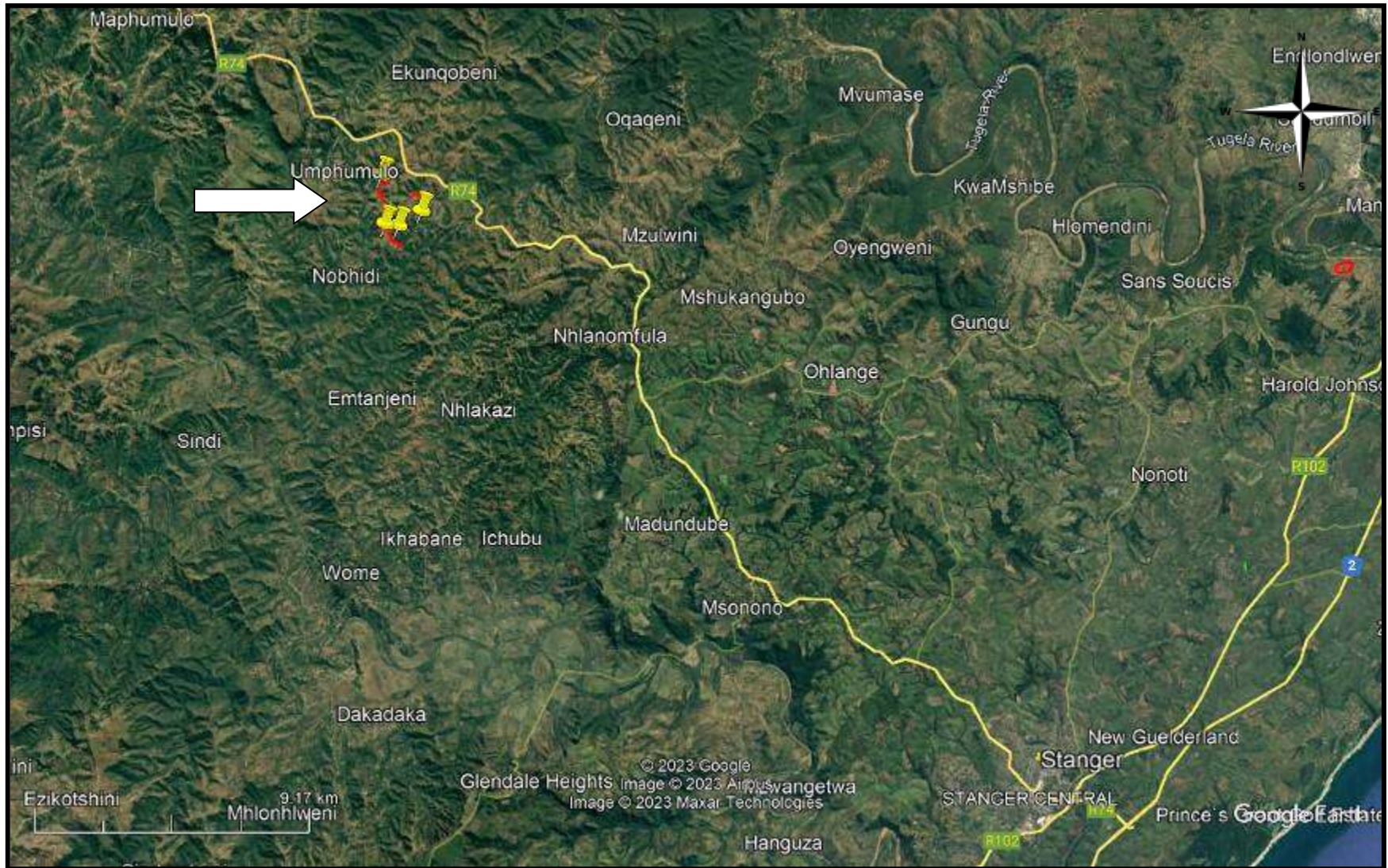


FIG. 2: AERIAL OVERVIEW OF THE PROPOSED DEVELOPMENT

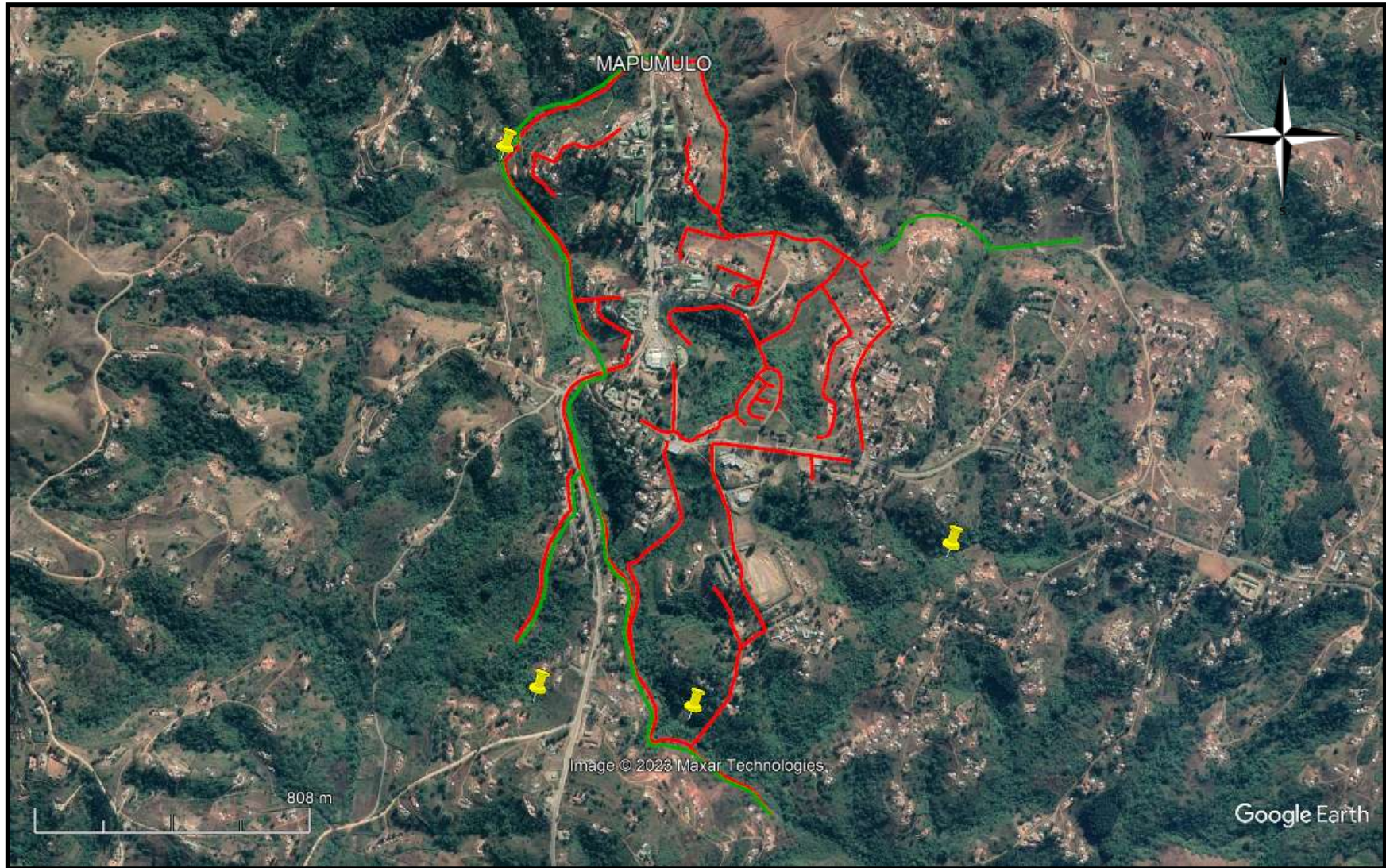
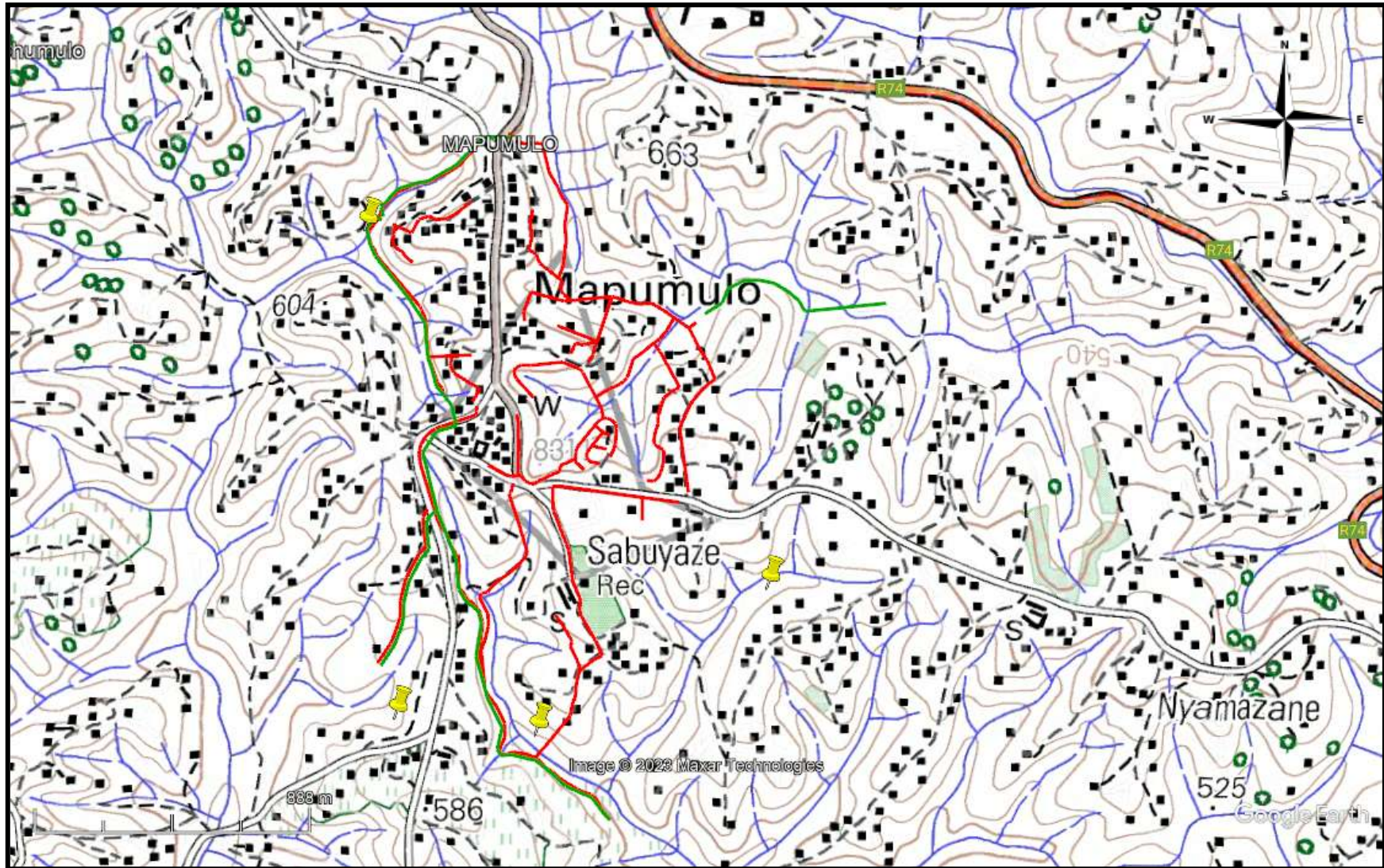


FIG. 3: TOPOGRAPHICAL MAP OF THE PROPOSED DEVELOPMENT (2000)<sup>1</sup>



<sup>1</sup>2931 AA Maphumulo 2000



FIG. 4: SCENIC VIEWS OF THE STUDY AREA



**KWAZULU NATAL AMAFA AND RESEARCH INSTITUTE, ACT 05, 2018,**

The KwaZulu Natal Amafa And Research Institute, Act 05, 2018, Chapter 8 (pp 29 – 32) defines heritage resources.

**“General protection: Structures.**

37.(1)(a) 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 Institute having been obtained on written application to the Council.

(b) Where the Institute does not grant approval, the Institute must consider special protection in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.

The Institute may, by notice in the *Gazette*, exempt—

- (a) A defined geographical area; or
- (b) defined categories of sites within a defined geographical area, from the provisions of subsection where the Institute 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.

(3) 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.**

38. No person may damage, alter, exhume, or remove from its original position

- (a) the grave of a victim of conflict;
- (b) a cemetery made up of such graves; or
- (c) any part of a cemetery containing such graves, without the prior written approval of the Institute having been obtained on written application to the Council.

**General protection: Informal and private burial grounds**

39.(1) or burial ground older than 60 years, or deemed to be of heritage significance by a heritage authority -

- (a) not otherwise protected by this Act; and
- (b) 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 Institute having been obtained on written application to the Council.

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

- (a) the applicant has made a concerted effort to consult with communities and individuals who by tradition may have an interest in the grave; and
- (b) 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.—**

40 (1) 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 Institute having been obtained on written application to the Council.

(2) 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 Institute without delay.

(3) The Institute 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 Institute to be inappropriate within 50 metres of a rock art site.

(4) 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 Institute having been obtained on written application to the Council.

(5) 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 Institute having been obtained on written application to the Council.

(6)(a) 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, vests in the Provincial Government and the Institute is regarded as the custodian on behalf of the Provincial Government.

(b) The Institute may establish and maintain a provincial repository or repositories for the safekeeping or display of —

- (i) archaeological objects;
- (ii) palaeontological material;
- (iii) ecofacts;
- (iv) objects related to battlefield sites;
- (v) material cultural artefacts; or
- (vi) meteorites,

(7) The Institute may, subject to such conditions as the Institute may determine, loan any object or material referred to in subsection (6) to a national or provincial museum or institution.

(8) No person may, without the prior written approval of the Institute having been obtained on written application to the Institute, trade in, export or attempt to export from the Province ~

- (a) any category of archaeological object;

- {b) any palaeontological material;
- (c) any ecofact;
- {d) any object which may reasonably be regarded as having been recovered from a battlefield site;
- (e) any material cultural artefact; or
- {f) any meteorite.

(9){a) A person or institution in possession of an object or material, referred to in paragraphs (a) ~(f) of subsection (8), must submit full particulars of such object or material, including such information as may be prescribed, to the Institute.

{b) An object or material referred to in paragraph (a) must, subject to paragraph (c) and the directives of the Institute, remain under the control of the person or institution submitting the particulars thereof.

(c) The ownership of any object or material referred to in paragraph (a) vests in the Provincial Government and the Institute 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. Table 1 lists the grading system.

**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. There are no known heritage surveys in the study area. Isolated stone tools are expected and these form part of the general open stone tool deposits in KZN.

The general area is not known for its high number of archaeological sites and few surveys have been undertaken (fig. 5). Most of the terrain is also not suitable for human occupation.

The 1937 aerial photograph indicates that there are no settlements within the study area (fig. 7).

The 1968 1:50 000 topographical map indicates that there are structures within the study area, but not within the pipeline footprint. One building occurs within the study area; however, it has been subsequently demolished. A few settlements occur near the road, but these will not be affected by the pipeline footprint (fig. 8).

In summary, the desktop study indicates that there few heritage sites within the study area and these are of low significance. There are no heritage sites within the footprint.

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

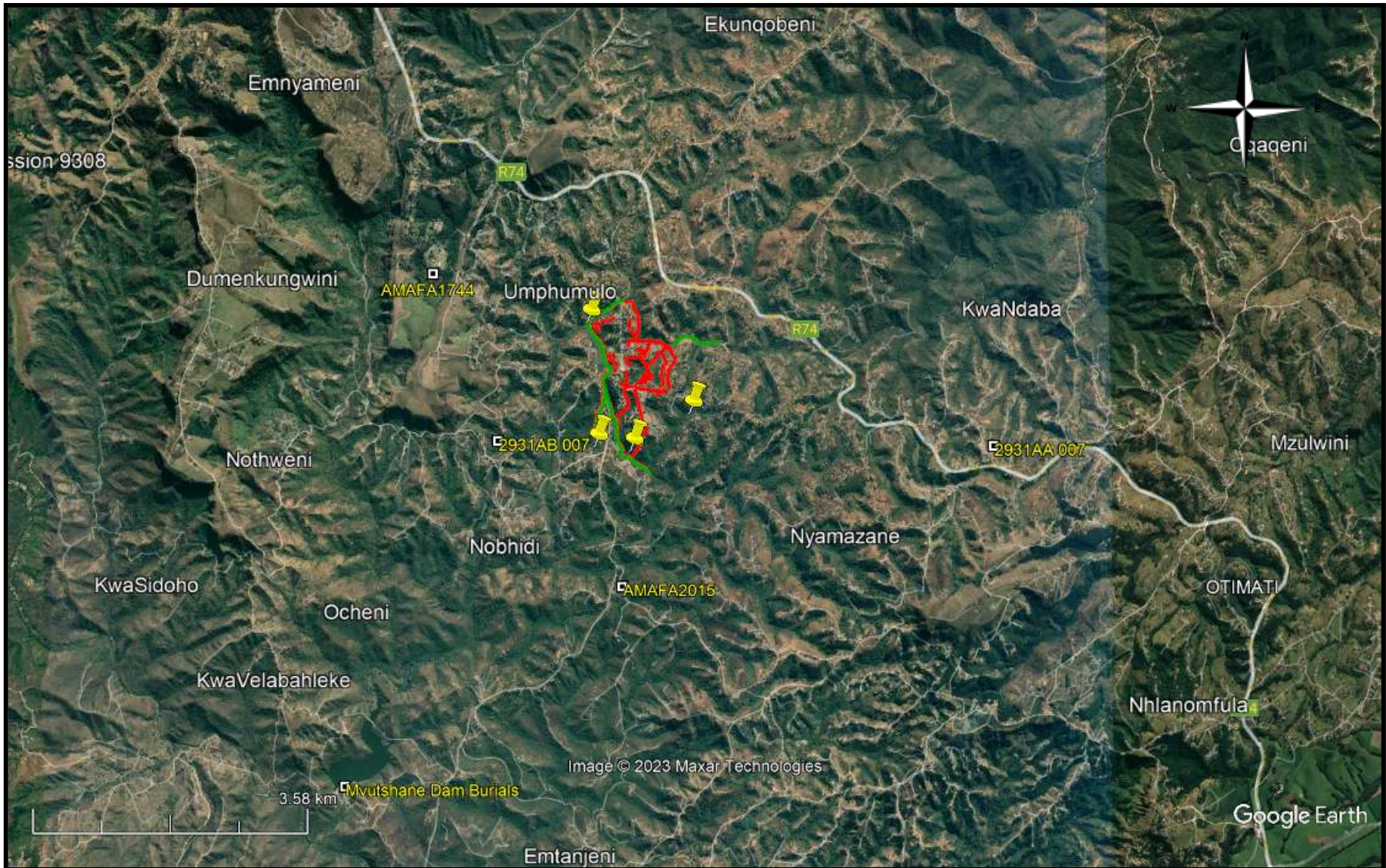
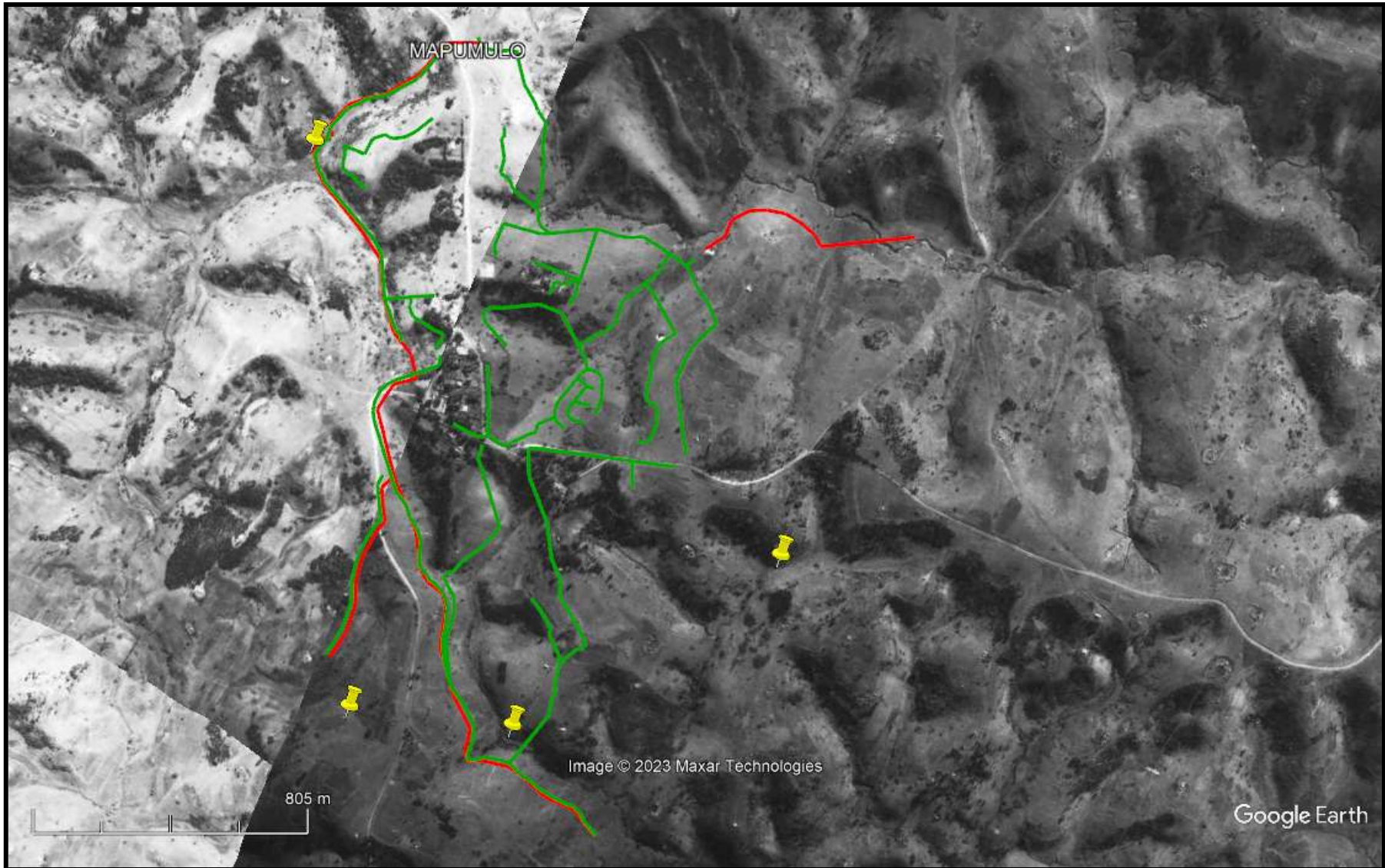
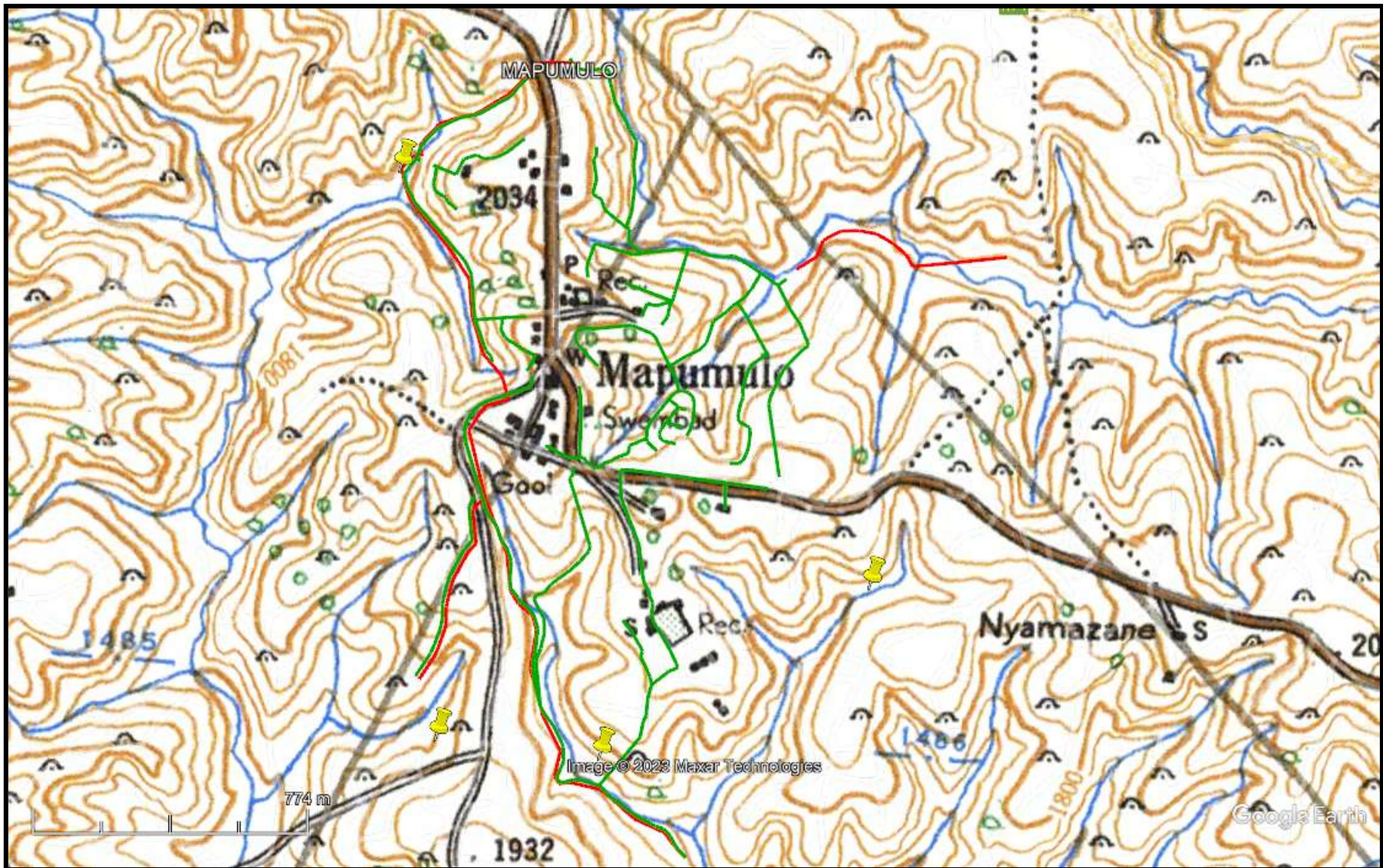


FIG. 6: LOCATION OF THE STUDY AREA IN 1937<sup>2</sup>



<sup>2</sup> 117B\_031\_54368 - 117B\_031\_54369, 117B\_033\_03901

FIG. 7: LOCATION OF THE STUDY AREA IN 1968<sup>3</sup>

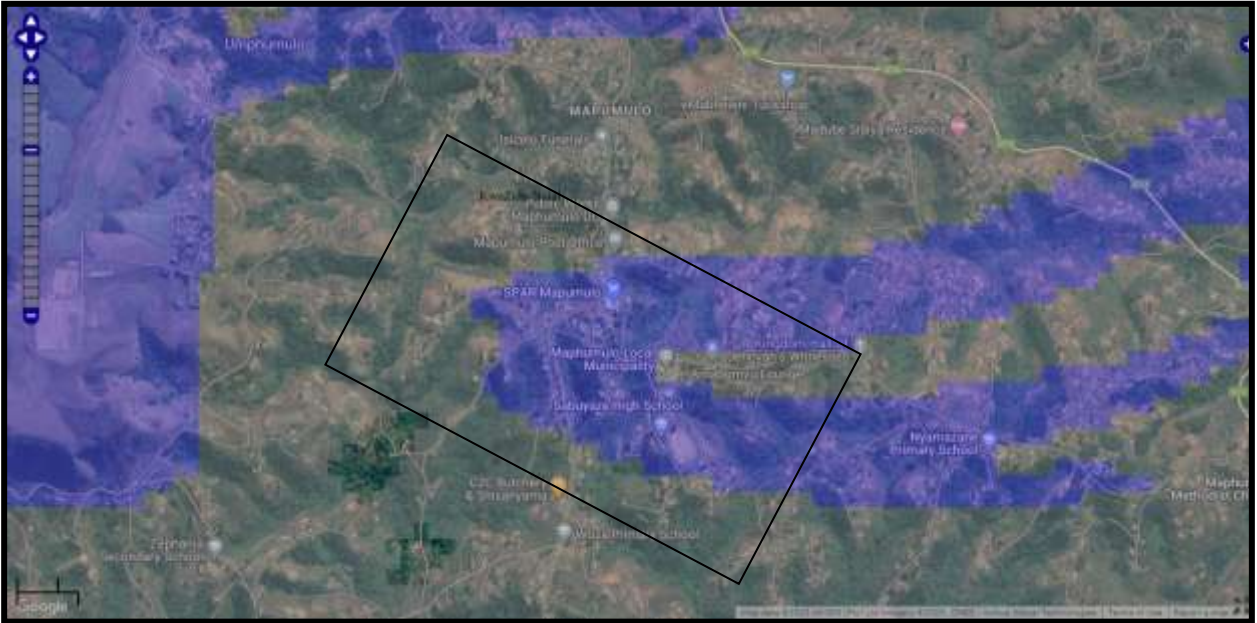


<sup>3</sup> 2831AA Maphumulo 1968

## PALAEONTOLOGICAL SENSITIVITY

The area is mostly in an area of no/low palaeontological sensitivity (fig. 8). No further mitigation is required.

**FIG. 8: PALAEONTOLOGICAL 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**

A field survey was undertaken on the 18 June 2023. The proposed pipelines follow the road servitude and occur near rivers that are on steep gradients. These are areas that will not have heritage sites, especially those that are within 35m of a river. Occasional flooding would also result in any potential heritage sites being washed away. The 2022 floods in KZN in this area were strong enough to collapse part of the R74. It is highly unlikely that houses and graves would be placed that close to these rivers.

In those areas where the Rising Mains were on flat surfaces, the ground had been severely disturbed by building and servitudes.

One grave was noted at a house, but this was 500m+ from the proposed footprints.

There is a Shembe Shrine near the Rising Main (S29.159743, E31.068450). The pipeline will not affect this area.

In summary, no heritage sites or features occur within the study area.

## **MITIGATION**

No further mitigation is required. If any subsurface heritage sites or features are located during the construction, then KZNARI needs to be informed immediately.

## **CONCLUSION**

A heritage survey was undertaken for the proposed Maphumulo sewer reticulation. The desktop study noted there were very few heritage sites in the general area and none within the footprint. The field survey noted isolated MSA

tools, a single grave and a Shembe Temple in the general vicinity of the pipeline, but not within the footprint.

The proposed pipelines are mostly in road reserves and 32m from rivers. These areas will not have heritage sites.

No further HIA or PIA mitigation is required.

## REFERENCES

### Maps:

2931AA Maphumulo 1968, 2000

117B\_031\_54368

117B\_031\_54369

117B\_033\_03901

### Database

KZN Museum

SAHRA

Umlando

### **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