

**HIA STUDY OF THE PROPOSED CONSTRUCTION OF  
OFFTAKE 6C POTABLE WATER PIPELINE  
SIYAPHAMBILI TO NONOTI, ILEMBE DISTRICT  
MUNICIPALITY, KZN  
A PROJECT OF ILEMBE DISTRICT MUNICIPALITY**

**EDTEA REF NO: DC29/0041**

**FOR TRRIPO4 SUSTAINABLE SOLUTIONS**

**DATE: 22 JANUARY 2015**

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## **INTRODUCTION**

“The proposed construction for Off Take 6C forms part of the Lower Thukela Bulk Water Supply Scheme which is a project of the iLembe District Municipality and co-funded by the Department of Water Affairs. The construction of Off Take 6c is part of the sections of the potable water pipeline that forms part of the broader Bulk Water Supply Scheme in the lower Thukela Region. The proposed pipeline is approximately 6, 9 km in length with an outside diameter of approximately 300-500 mm. The proposed Off Take 6C bulk water pipeline lies immediately outside the road reserve and will flow from the existing Siyaphambili reservoir as the project makes provision for Bulk Supply of Potable water to communities that currently do not have access to reticulated potable water in the Lower Thukela Region.

The locality is approximately 70 km to the north of Durban in the Nonoti area of Northern KwaZulu-Natal. The proposed project, Offtake 6c, falls within the KwaDukuza Local and iLembe District Municipality” (Triplo4 BID 2014)

Figures 1 – 3 show the location of the pipeline

FIG. 1 GENERAL LOCATION OF THE STUDY AREA

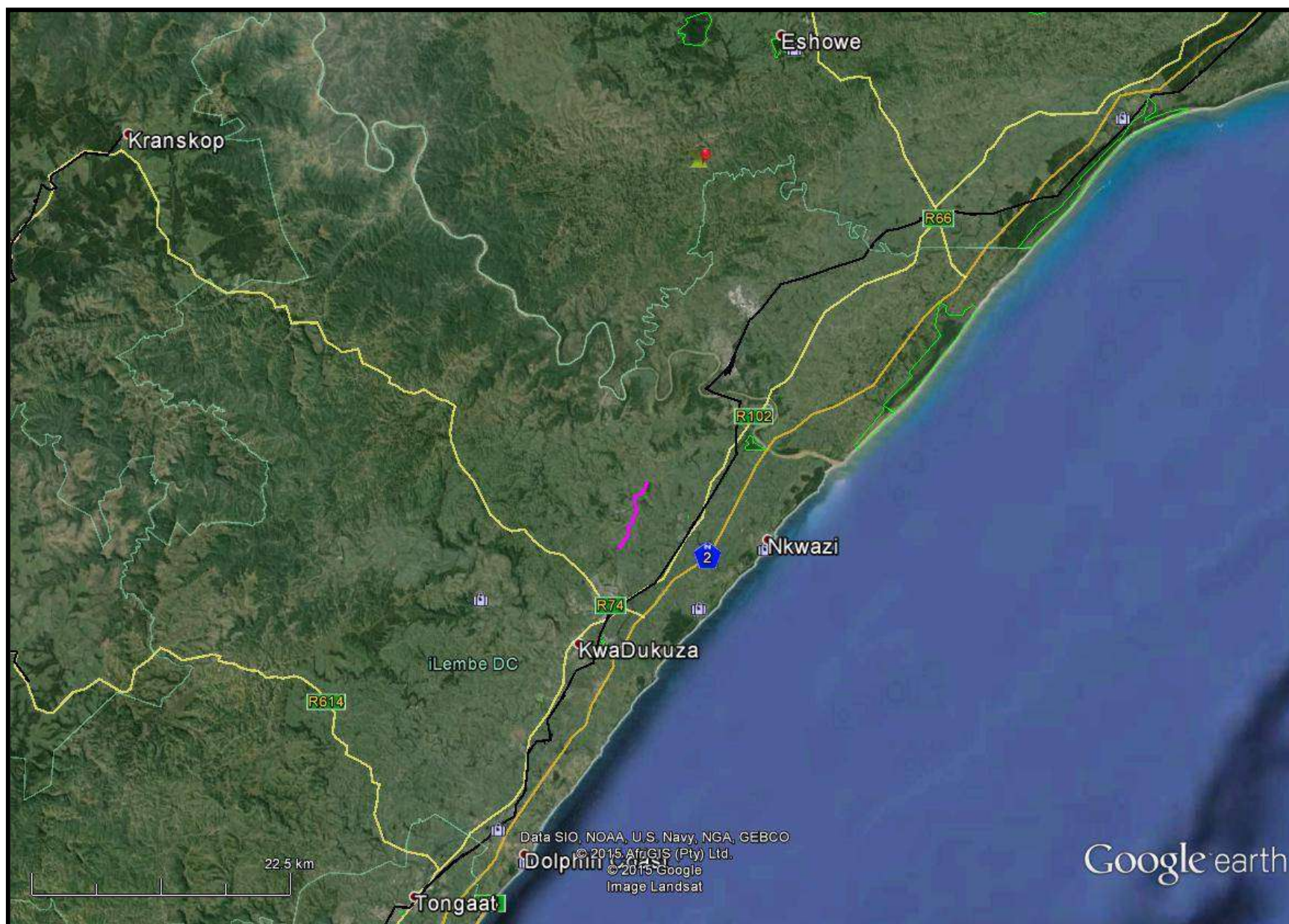




FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA

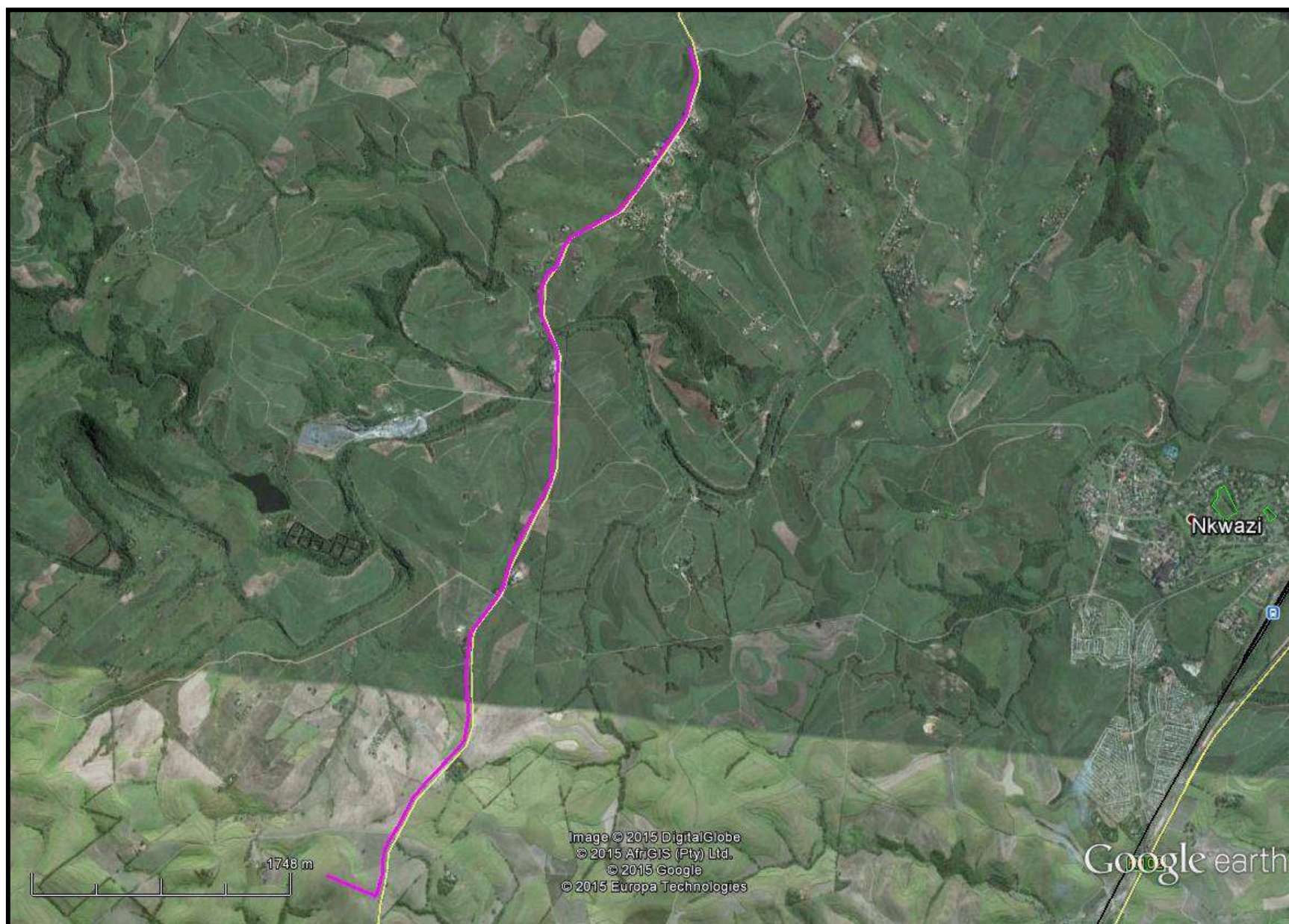
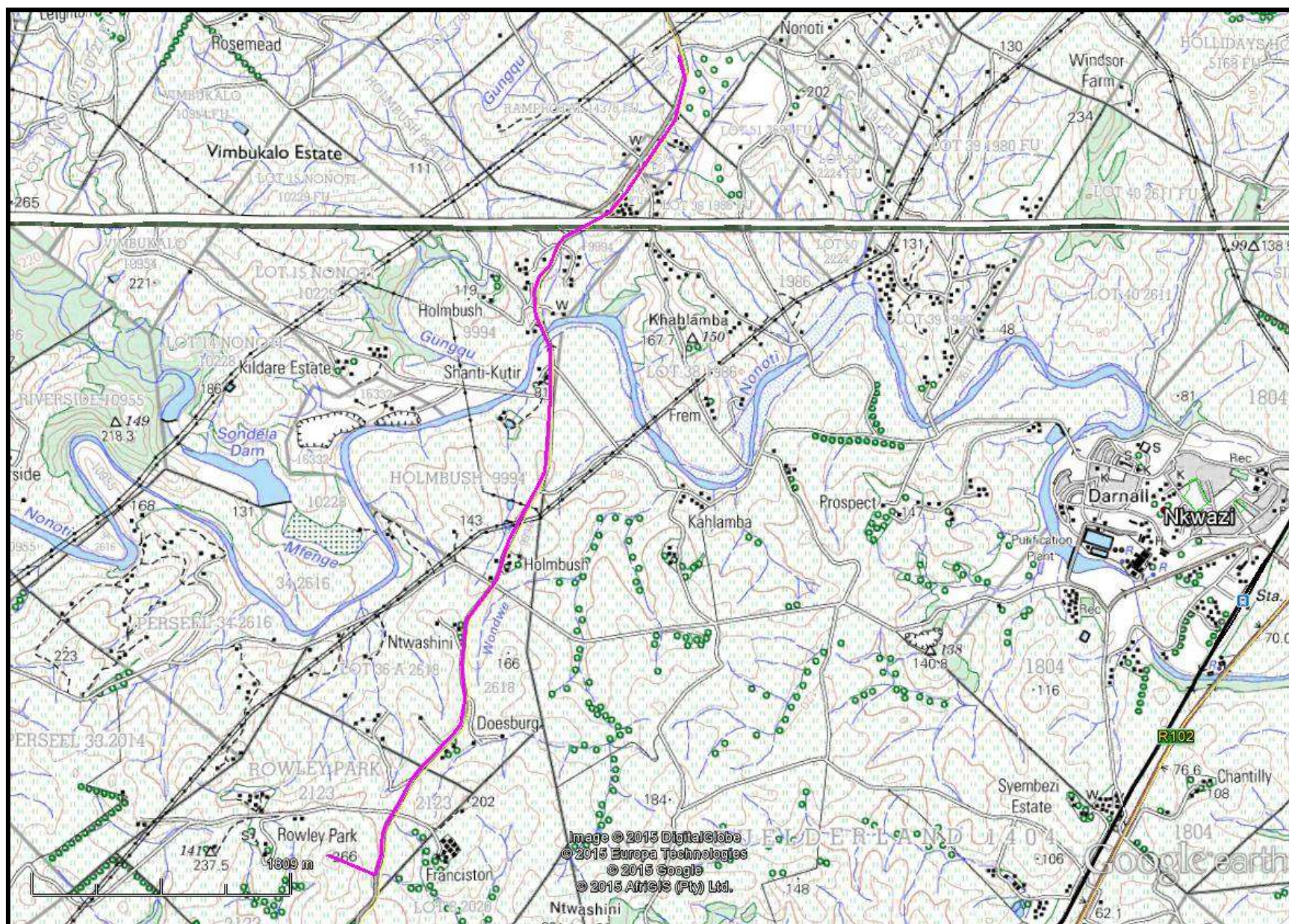




FIG. 3: TOPOGRAPHICAL MAP OF THE STUDY AREA





## KWAZULU-NATAL HERITAGE ACT NO. 4 OF 2008

### “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.” (KZN Heritage Act of 2008)

## **METHOD**

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. These 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. The archaeological database indicates that there are archaeological sites in the general area (fig. 4). These sites include all types of Stone Age and Iron Age sites. No sites occur in the study area. An Early Iron Age site occurs ~1km southwest of the reservoir, and this suggests that more sites could occur in the area. No national monuments, battlefields, or historical cemeteries are known to occur in the study area. There are several cemeteries outside of the study area.

The 1937 aerial photographs indicate that there are fifteen buildings and human settlements near the pipeline. These include farm buildings, sheds, farm



and labourers' houses. The settlements appear to be in a traditional Zulu design and would thus be associated with have human graves. Most of these have been built over and/or ploughed by 2104. A13 might be well preserved underneath the surface. A13 occurs where a reservoir will be placed.

The 1963 and 1968 topographical maps indicate that there are 16 heritage sites near the route. Most of these have been built over and/or ploughed over by 2104. The site b9 is however visible from recent aerial photographs. These locations are given in Table 1.

**TABLE 1: LCOATION OF DESKTOP HERITAGE SITES**

NAME	LATITUDE	LONGITUDE	DESCRIPTION
a1	-29.245757847	31.324807679	farm buildings
a2	-29.250099128	31.318683694	settlement
a3	-29.251101564	31.319367775	settlement
a4	-29.254379052	31.316066821	buildings
a5	-29.256621867	31.316556384	buildings
a6	-29.282220250	31.309162543	farm house
a7	-29.284916827	31.307474694	farmhouse
a8	-29.285397356	31.307965499	farmhouse
a9	-29.286150789	31.307360268	settlement
a10	-29.287054016	31.305755052	settlement
a11	-29.287388442	31.306870560	settlement
a12	-29.289910745	31.304687225	settlement
a13	-29.289382919	31.300548231	settlement
a14	-29.286127382	31.306305212	settlement
a15	-29.281905420	31.311395769	structure
b1	-29.245992039	31.324420237	farm buildings
b2	-29.250243812	31.318380539	structure
b3	-29.251492637	31.318505682	settlement
b4	-29.252061560	31.316915867	settlement
b5	-29.252517654	31.315505391	settlements
b6	-29.257110003	31.315749050	compounds
b7	-29.259002049	31.316835859	compounds
b8	-29.261135961	31.316949787	railway
b9	-29.271451865	31.313318341	building
b10	-29.271665761	31.314370546	buildings
b11	-29.272862810	31.312813184	buildings
b12	-29.274006601	31.311587582	buildings
b13	-29.275464119	31.310724455	buildings cluster
b14	-29.282792751	31.310888667	compound
b15	-29.286637515	31.305839501	settlement
b16	-29.290419130	31.306395124	settlement

FIG. 4: LOCATION OF KNOWN HERITAGE SITES NEAR THE STUDY AREA

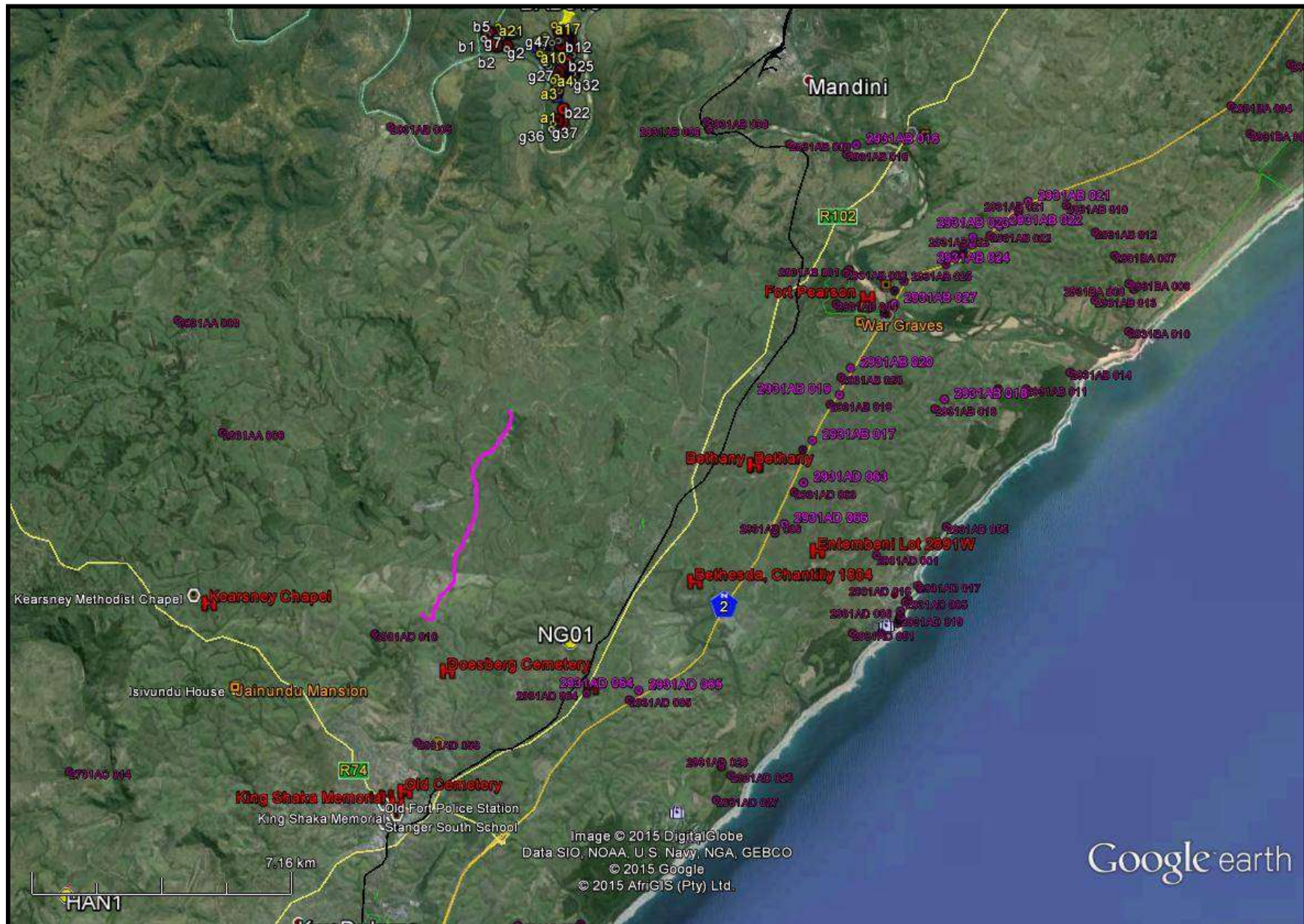




FIG. 5: STUDY AREA IN 1937

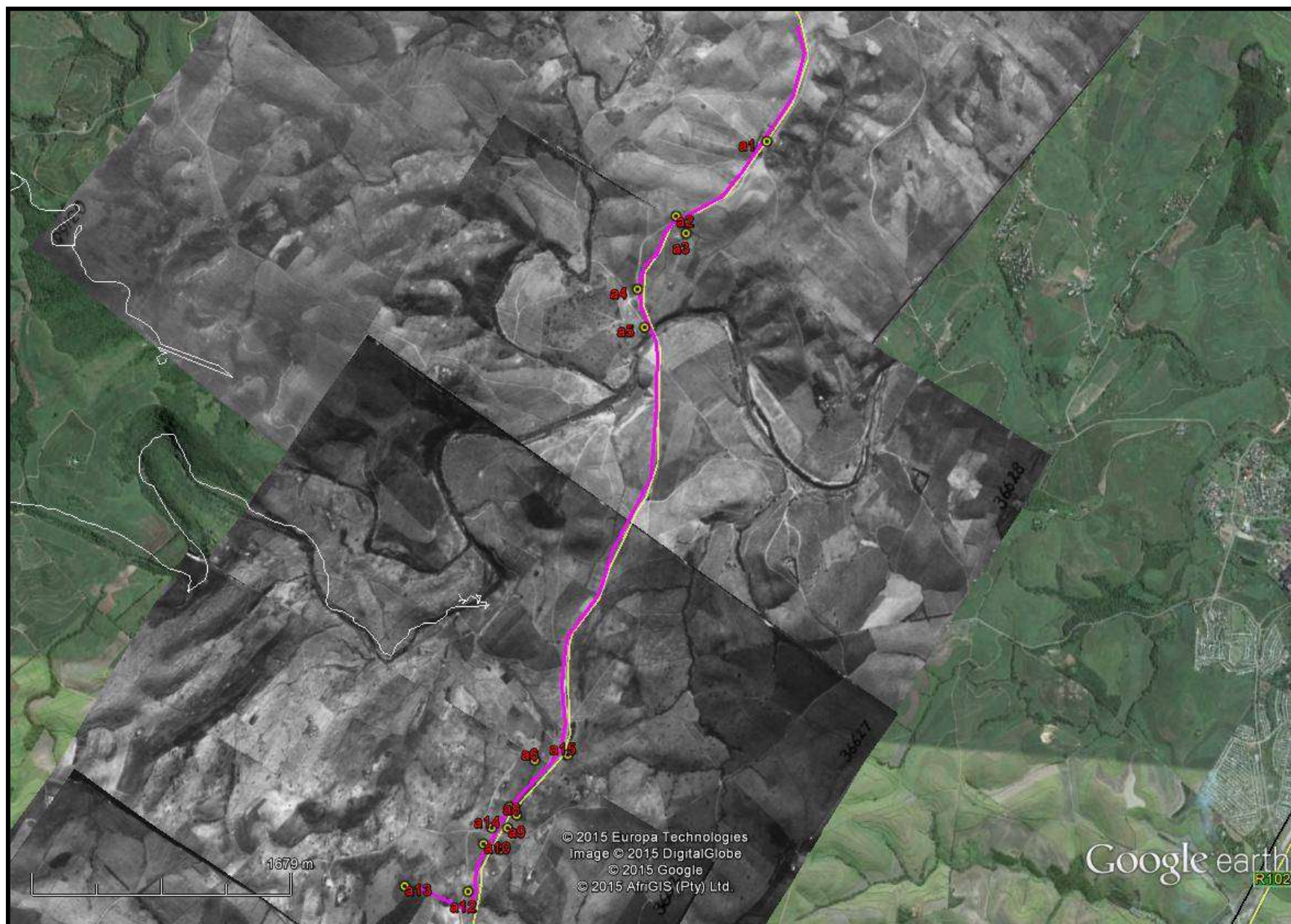
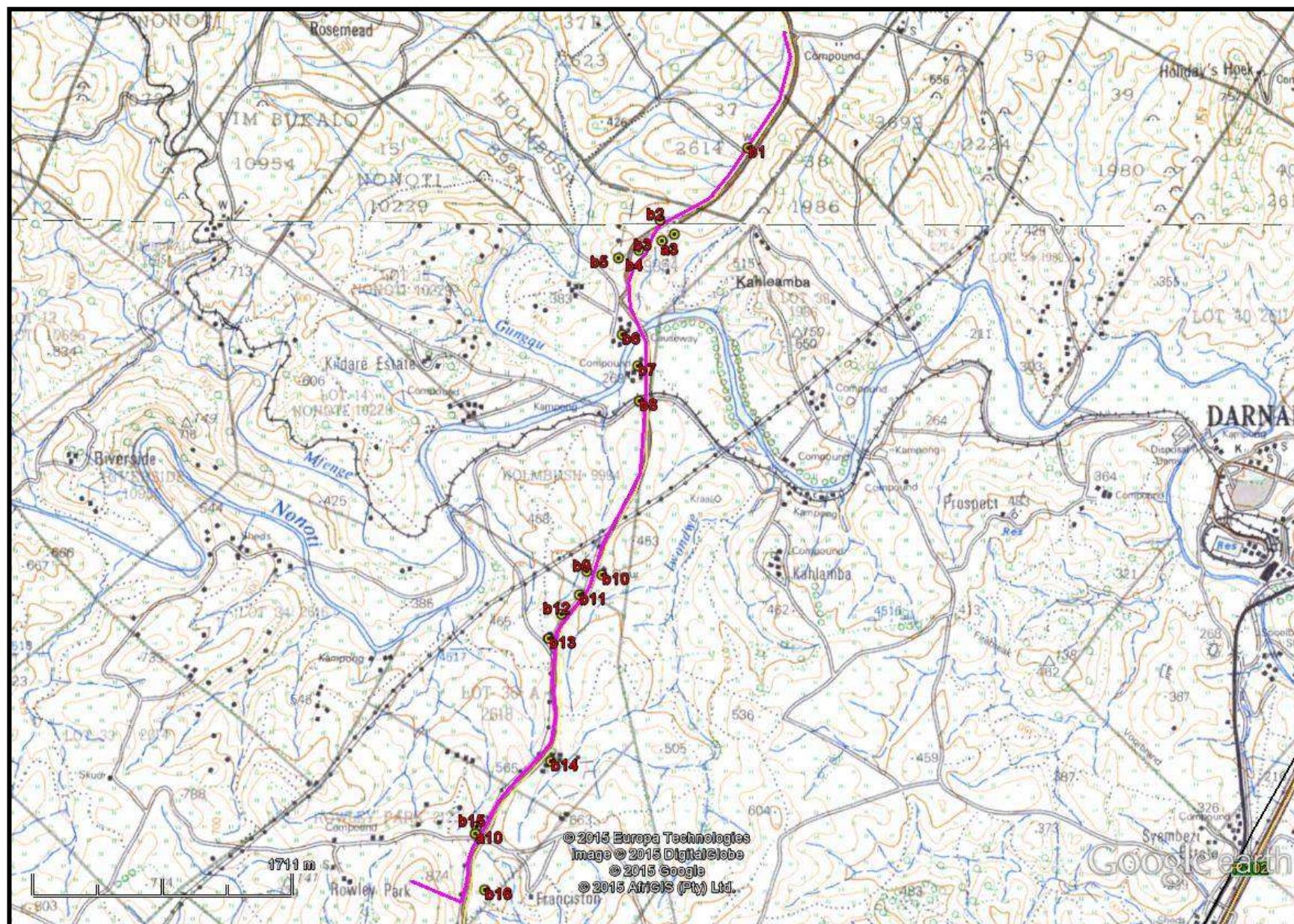




FIG. 6: STUDY AREA IN 1968





## PALAEONTOLOGICAL IMPACT ASSESSMENT

There are falls into the 'not significant' area and thus no PIA is required.

## FIELD SURVEY

The field survey followed the line route. Most of the pipeline occurs just outside of the road reserve, and thus the main part of the pipeline is in already disturbed areas. Many of the sites noted in the desktop study no longer exist. This is due to road works, sugar cane farming and more recent housing. The sites from 1937 and 1968 would have occurred on or near the surface of the land when it was converted to sugar cane farming. Thus, ploughing activity would destroy these sites as opposed to the older sites that occur deeper below the soil.

All sites recorded at the desktop level should be treated as sensitive areas with the possibility of human remains occurring. If any human remains are uncovered during construction, then this will need to be reported to Amafa KZN, SAPS, and the ECO. Sites that are not mentioned in the Field Survey section have been destroyed/damaged.

Table 2 lists the locations of these sites while figure 7 shows their location.

**TABLE 2: LOCATION OF RECORDED HERITAGE SITES**

NAME	LATITUDE	LONGITUDE	DESCRIPTION
ROW01	-29.289790	31.301440	Late Iron Age settlement
ROW02	-29.286946	31.305925	1937 settlement
NON 01	-29.256775	31.317061	Bridge
NON02	-29.242424	31.326528	Indet. Iron Age settlement



FIG. 7: LOCATION OF RECORDED SITES

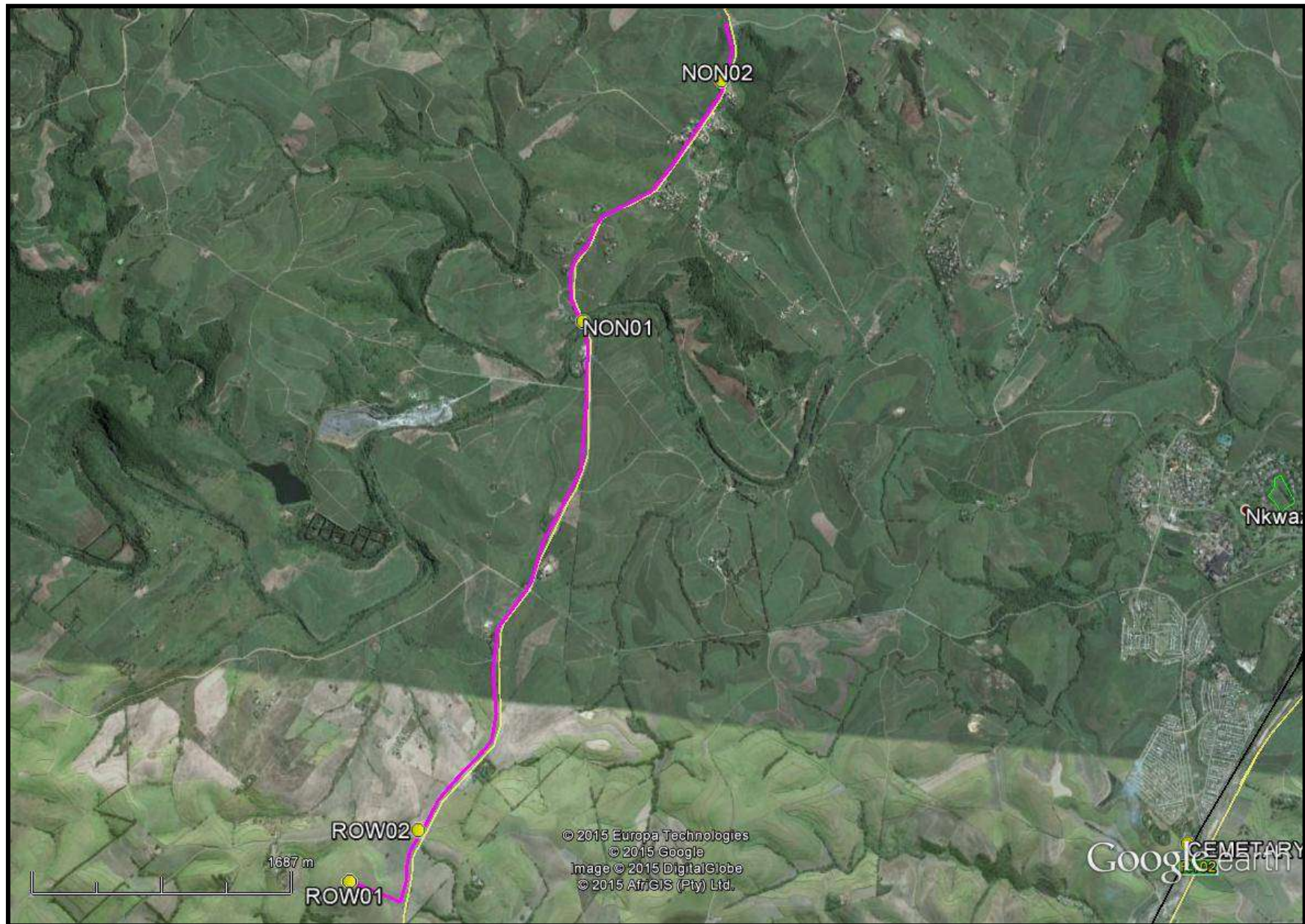


FIG. 8: SCENIC VIEWS OF THE OFF TAKE 6C PIPELINE





## ROW01

ROW01 is located on the top of a hill where a reservoir will be built (fig. 8 – top left). The main site is on the top of the hill where the deposit is deeper and with soil that is more fertile. The site consists of an extensive scatter of Late Iron Age pottery of various colours and thickness (fig. 9) over an area of 150m x 150m. I did not observe any decorated pottery sherds, although some fragments had rims and lips. A few upper grinding stones were noted. The deposit appears to have been effected by sugar cane farming and it is unlikely that intact features would occur below the surface. There is however a possibility that human remains could occur on the site.

The site 'a13' from the 1937 historical map also occurs on this hill. However, the pottery sherds appear to be older than this site. No artefacts directly related to 'a13' could be found.

Significance: The site is of low significance unless human remains occur.

Mitigation: No further mitigation is required. The client will need to apply for a permit from Amafa KZN to damage the site.

**FIG. 9: POTTERY SHERDS AT ROW01**





## ROW02

ROW02 is located near the base of the hill for ROW01. The site is on a relatively flat area. The soil is not deep and there has been extensive sugar cane farming. This would have destroyed most of the deposit and features. Very few artefacts were noted in the area, except for European ceramics (fig. 10). Two of the ceramics had transfer print designs and appear to be from plates. One porcelain teacup fragment and two general plate fragments were noted.

Significance: The site is of low significance.

Mitigation: No further mitigation is required. A permit will be required to go through the remains of the site.

**FIG. 10: EUROPEAN CERAMICS AT ROW02**



## **NON01**

NON01 is a bridge over the Nonoti River on the P107. The bridge occurs on the 1937 aerial photographs and the 1968 topographical map. The current bridge is a concrete structure that dates to 1987 (fig. 11). The bridge is less than 60 years in age and is thus not protected by heritage legislation.

Significance: The site is of low significance.

Mitigation: No mitigation is required.

**FIG. 11: BRIDGE ON THE P107 OVER THE NONOTI RIVER**



## **NON02**

NON02 is located at the northern end of Off take 6C, where a presumed reservoir will be built. The site is on a hill, with shallow soils and sugar cane. The site has an area of ~70m x 80m. The site consists of an ephemeral scatter of Indeterminate Iron Age sherds. The sherds are orange-brown and brown in colour and are mostly thin-walled. This suggests they are probably Late Iron Age or Historical Period sherds. A few upper grinding stones form quartzite river pebbles were also noted. The artefacts are shown in fig. 12.

Significance: The site is of low significance. The soil is too shallow to have an intact archaeological deposit

Mitigation: No further mitigation is required. The client will need to apply for a permit to damage the site.

**FIG. 12: ARTEFACTS AT NON02**





## **MANAGEMENT PLAN**

The recorded heritage sites are all of low significance and do not require further management. All archaeological sites that are to be damaged, or disturbed by the pipeline and reservoirs will require a permit from Amafa KZN.

## **CONCLUSION**

A desktop heritage survey was undertaken for the Offtake 6C pipeline. Several heritage sites were noted to have occurred near the proposed pipeline footprint. These sites include built structures and human settlements. The area was also noted for having low palaeontological significance, and requiring at least a desktop study. The human settlements probably have human graves; however, these will be outside of the footprint.

A field survey will determine the extent of the buildings and settlements in relation to the pipeline footprint. The field survey will also determine if archaeological and other heritage sites occur within or near the footprint.

It is highly unlikely that any archaeological or palaeontological site will occur within the footprint, or nearby, to warrant a red flag. The area has been severely disturbed by road works and unlikely to leave significant sites intact. If any sensitive areas do exist within the footprint, then the line can be altered accordingly.

**APPENDIX A  
SITE RECORD FORMS**



## UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

### SITE CATEGORY:

<b>Stone Age</b>	ESA:		MSA		ESA		ISA	
<b>Rock Art</b>	Paintings		Engravings		Other			
<b>Iron Age</b>	EIA:		LIA	X	IAI			
<b>Historical</b>	Historical Period:	?	Recent Past (last 60 yrs):					

Recorder's Site No.: ROW01

Official Name: Rowley Park 2123

Local Name:

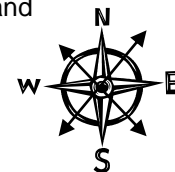
Map Sheet: 2931 AD Stanger

GPS reading: S29 17.428 E31 18.139

Altitude: 261m

### DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

From N2 turn to Stanger and take right into P107. Drive for 6.8km to an intersection. Turn left and take 1<sup>st</sup> left up the hill. Site is on top of hill



### SITE DESCRIPTION:

Type of Site: Open

Merits conservation: No

Threats: Yes

What threats: Reservoir

### RECORDING:

Digital pictures #: yes

Tracings :

Drawings:

Recorder/Informant: Name: Gavin Anderson

Address: PO Box 102532, Meerensee, 3901

Date: January 2015

Owner: Private

References: -

### DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

Diameter:

Length:

Width:

Depth

Height

ROW02 is located near the base of the hill for ROW01. The site is on a relatively flat area. The soil is not deep and there has been extensive sugar cane farming. This would have destroyed most of the deposit and features. Very few artefacts were noted in the area, except for European ceramics. Two of the ceramics had transfer print designs and appear to be from plates. One porcelain teacup fragment and two general plate fragments were noted.

The site is of low significance. Mitigation: No further mitigation is required. A permit will be required to go through the remains of the site.





## UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

### SITE CATEGORY:

<b>Stone Age</b>	ESA:		MSA		ESA		ISA	
<b>Rock Art</b>	Paintings		Engravings		Other			
<b>Iron Age</b>	EIA:		LIA		IAI			
<b>Historical</b>	Historical Period:	X	Recent Past (last 60 yrs):					

Recorder's Site No.: ROW2

Official Name: Rowley Park 2123

Local Name:

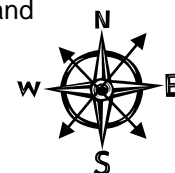
Map Sheet: 2931 AD Stanger

GPS reading: S29 17.214 E31 18.356

Altitude: 190m

### DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

From N2 turn to Stanger and take right into P107. Drive for 6.8km to an intersection. Turn left and stop. Site is on the right just above the intersection.



### SITE DESCRIPTION:

Type of Site: Open

Merits conservation: No

Threats: Yes

What threats: Pipeline

### RECORDING:

Digital pictures #: X

Tracings :

Drawings:

Recorder/Informant: Name: Gavin Anderson

Address: PO Box 102532, Meerensee, 3901

Date: January 2015

Owner: Private

References: -

### DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

Diameter:

Length:

Width:

Depth

Height

ROW02 is located near the base of the hill for ROW01. The site is on a relatively flat area. The soil is not deep and there has been extensive sugar cane farming. This would have destroyed most of the deposit and features. Very few artefacts were noted in the area, except for European ceramics. Two of the ceramics had transfer print designs and appear to be from plates. One porcelain teacup fragment and two general plate fragments were noted. The site is of low significance. No further mitigation is required.



## UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

### SITE CATEGORY:

<b>Stone Age</b>	ESA:		MSA		ESA		ISA	
<b>Rock Art</b>	Paintings		Engravings		Other			
<b>Iron Age</b>	EIA:		LIA	?	IAI	X		
<b>Historical</b>	Historical Period:		Recent Past (last 60 yrs):					

Recorder's Site No.: NON02  
 Official Name: Ramprotal 4378  
 Local Name:  
 Map Sheet: 2931AB  
 GPS reading: S29 14.553 E31 19.577. Altitude: 170m

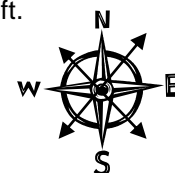
### DIRECTIONS TO SITE: SKETCH OR DESCRIPTION

From N2 turn to Stanger and take right into P107. Drive for 11.9km to an access road on the left.

### SITE DESCRIPTION:

Type of Site: Open  
 Merits conservation: No  
 Threats: Yes

What threats: Reservoir



### RECORDING:

Digital pictures #: X

Tracings :

Drawings:

Recorder/Informant: Name: Gavin Anderson  
 Address: PO Box 102532, Meerensee, 3901  
 Date: January 2015  
 Owner: Private  
 References: -

### DESCRIPTION OF SITE AND ARTEFACTUAL CONTENT.

Diameter: Length: 70m Width: 80m Depth <10cm Height

NON02 is located at the northern end of Off take 6C, where a presumed reservoir will be built. The site is on a hill, with shallow soils and sugar cane. The site has an area of ~70m x 80m. The site consists of an ephemeral scatter of Indeterminate Iron Age sherds. The sherds are orange-brown and brown in colour and are mostly thin-walled. This suggests they are probably Late Iron Age or Historical Period sherds. A few upper grinding stones from quartzite river pebbles were also noted.

The site is of low significance. The soil is too shallow to have an intact archaeological deposit. No further mitigation is required.