

**HIA STUDY OF THE PROPOSED CONSTRUCTION
OF OFFTAKE 6D POTABLE WATER PIPELINE AS
PART OF THE LOWER THUKELA BULK WATER
SUPPLY, DARNALL, ILEMBE DISTRICT
MUNICIPALITY, KZN**

EDTEA REF NO: DC29/0040/2014

FOR TRRIPO4 SUSTAINABLE SOLUTIONS

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INTRODUCTION

“The proposed construction for Off Take 6D 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 6D 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 located immediately outside the road reserve and is approximately 1.9km in length with an outside diameter of approximately 300 mm. The proposed Off Take 6d bulk water pipeline will feed into two proposed 2.5ML reservoirs. 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 study site is situated approximately 70 km to the north of Durban in the Darnall area of Northern KwaZulu-Natal. The proposed project, Offtake 6d, falls within the KwaDukuza Local and iLembe District Municipality” (Triplo4 BID 2014)

Figures 1 – 3 show the location of the pipeline.

The desktop study will highlight sensitive areas, while a field survey will be

FIG. 1 GENERAL LOCATION OF THE STUDY AREA

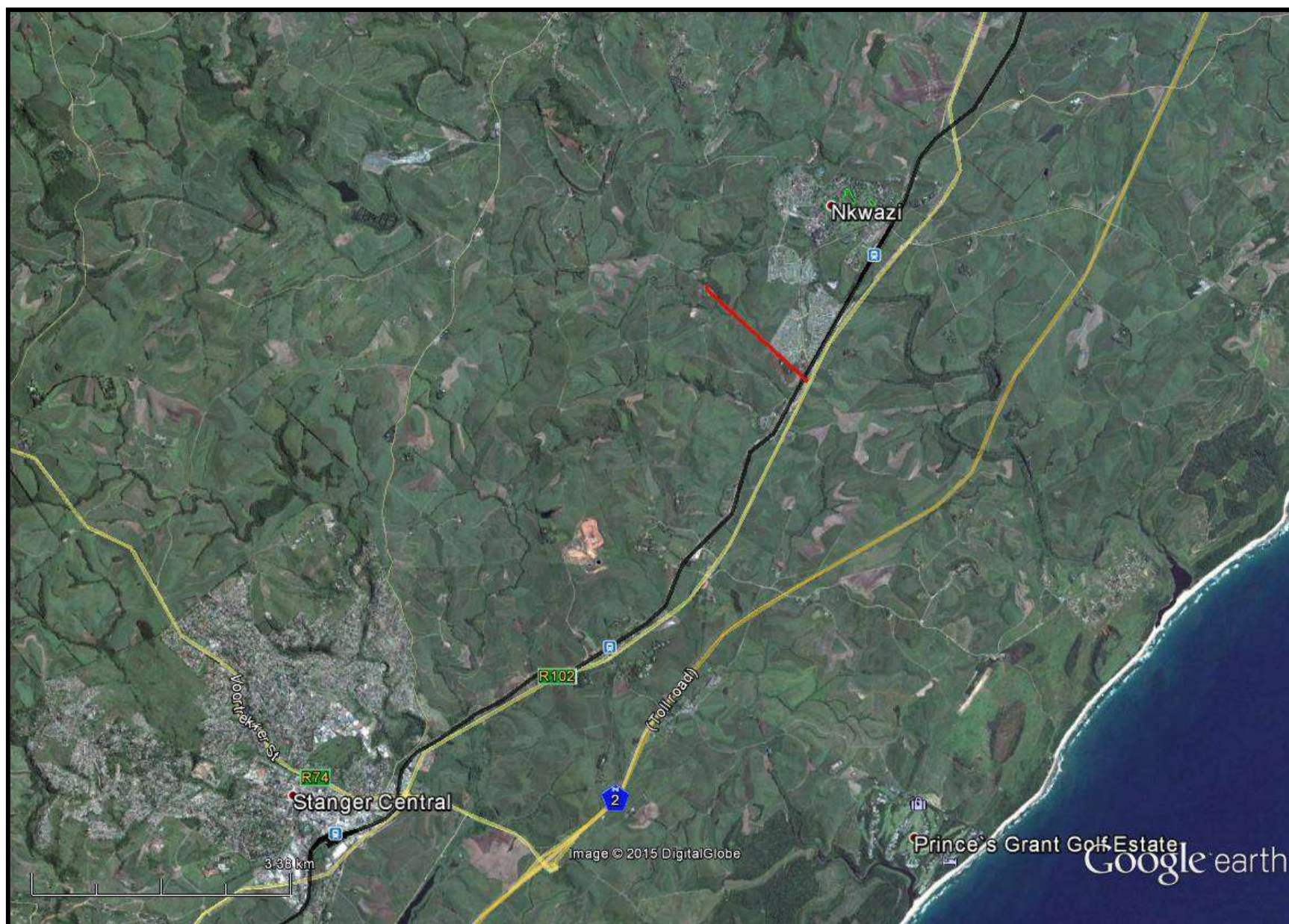
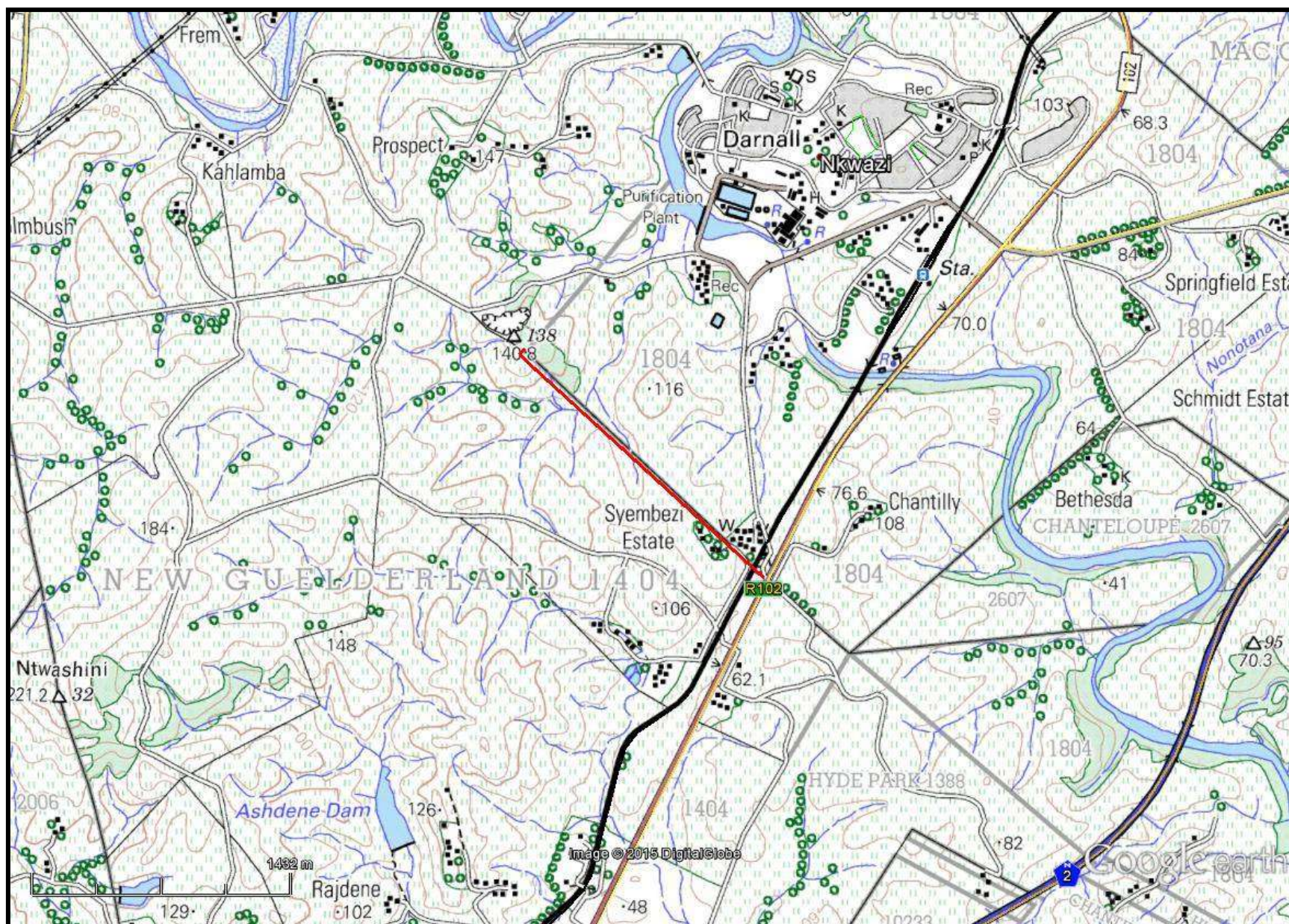


FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA



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 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. 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. I would expect a Late Iron Age site to occur on the hill at the location of the reservoir. 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 three areas that have heritage sites (fig. 6). Two of these are buildings at the base of the hill and are related to the original farmhouse. The third site (a1) is an unknown structure at the top of the hill.

The 1968 topographical map indicates that there are two buildings, of which one is the original farmhouse (fig. 7).

The recent aerial imagery (fig. 2) suggests that the hill where the reservoir will be placed will have a Late Iron Age site. The site would unlikely be in pristine condition due to sugar cane farming practices. If material does occur, then it can be sampled and the site monitored during construction.

Table 1 summarises the locations of the sites.

NAME	LATITUDE	LONGITUDE	DESCRIPTION
b1	-29.287840005	31.356592321	farm buildings
b2	-29.287444040	31.358260292	compound
a1	-29.287545344	31.358587881	buildings
a2	-29.287818248	31.357165875	farm buildings
a3	-29.277649995	31.345826454	structure

PALAEONTOLOGICAL IMPACT ASSESSMENT

The PIA desktop was undertaken by Dr G. Groenewald, of which the report occurs in Appendix A. The footprint of the proposed construction of the Offtake 6D near KwaDukuza, Kwadukuza Local Municipality, Ilembe District Municipality, Kwazulu-Natal Province is underlain by Permian aged Pietermaritzburg shale and Jurassic aged dolerite. Although rare, significant trace fossils have been described from the Pietermaritzburg shale. Since most of the footprint will be underlain by deep soils or weathered rock, a Moderate Palaeontological sensitivity is allocated to the sections of this development underlain by Pietermaritzburg Formation. A Low Palaeontological sensitivity is allocated to areas underlain by dolerite.

A Moderate Palaeontological Sensitivity is therefore allocated to all sections of the development site where fossils might be present and any observation of fossils must be reported to the ECO. Those area that will expose the Pietermaritzburg shale formations need to be noted. A PIA will need to be contracted to inspect these area if they are to be disturbed. This is especially the case where trenching will be deeper than 2m.

The palaeontologically sensitive area are on the southeastern half of the line.

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

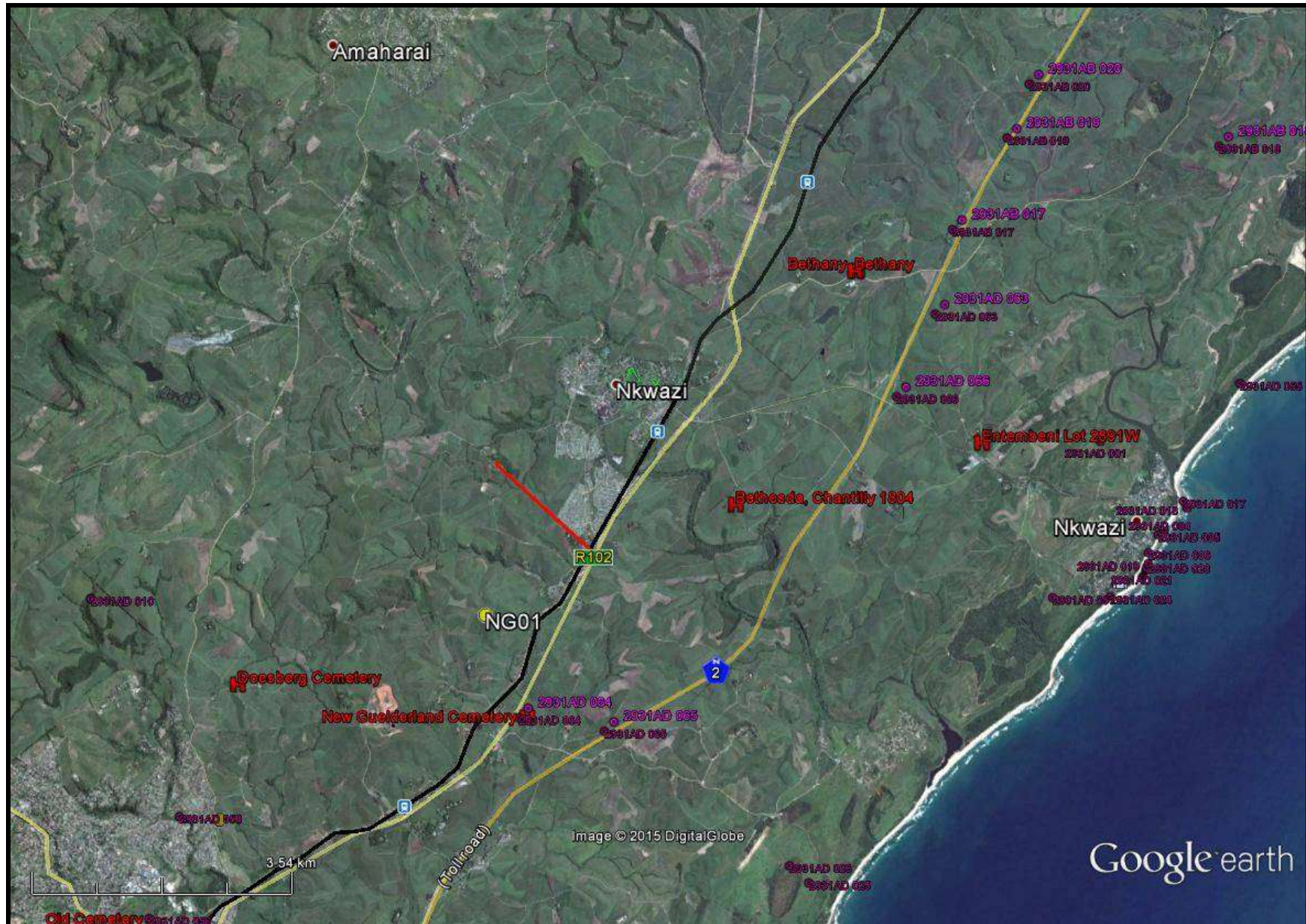


FIG. 5: SURVEYOR GENERAL DIAGRAM OF GRANT: 1857

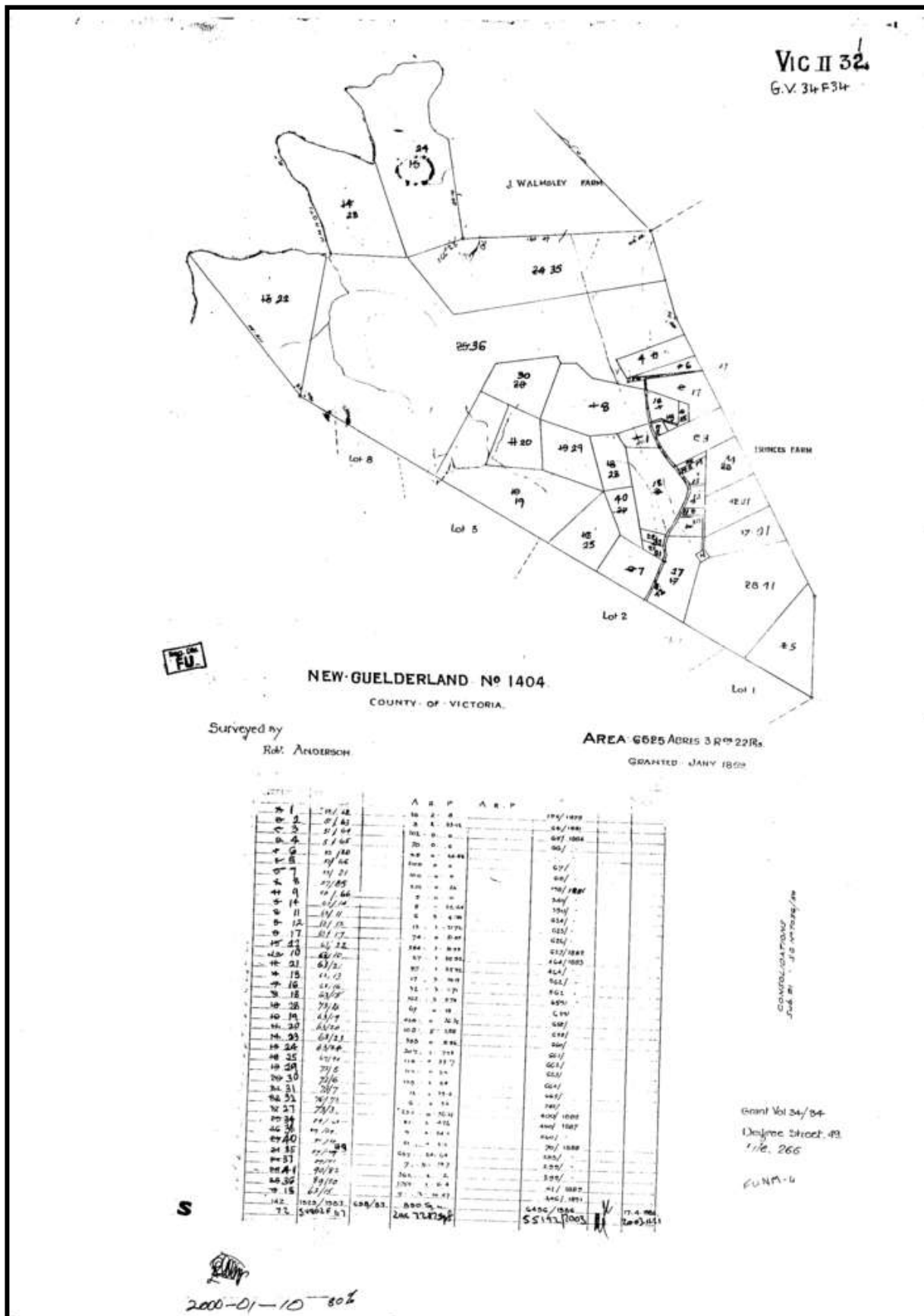


FIG. 6: STUDY AREA IN 1937

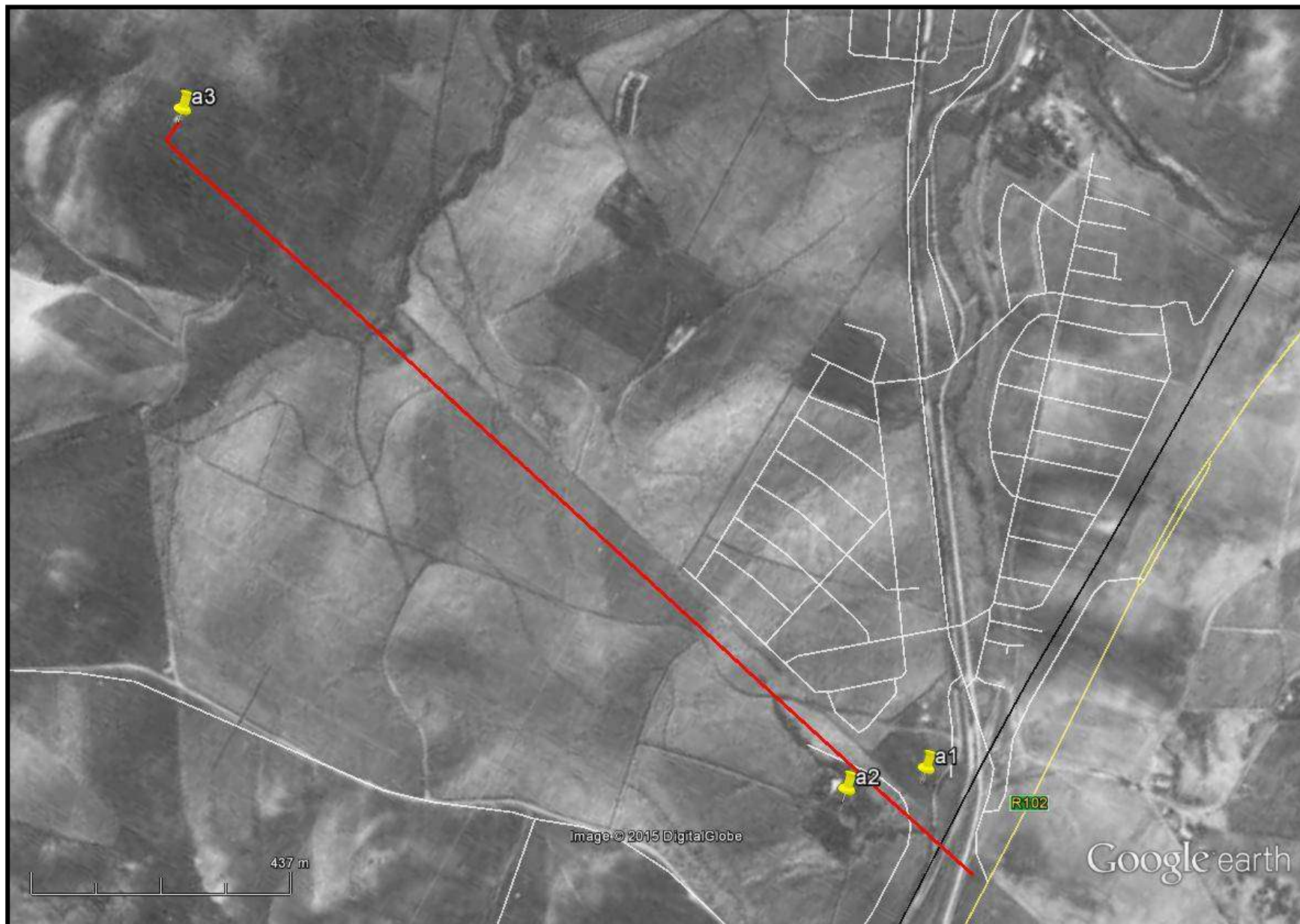
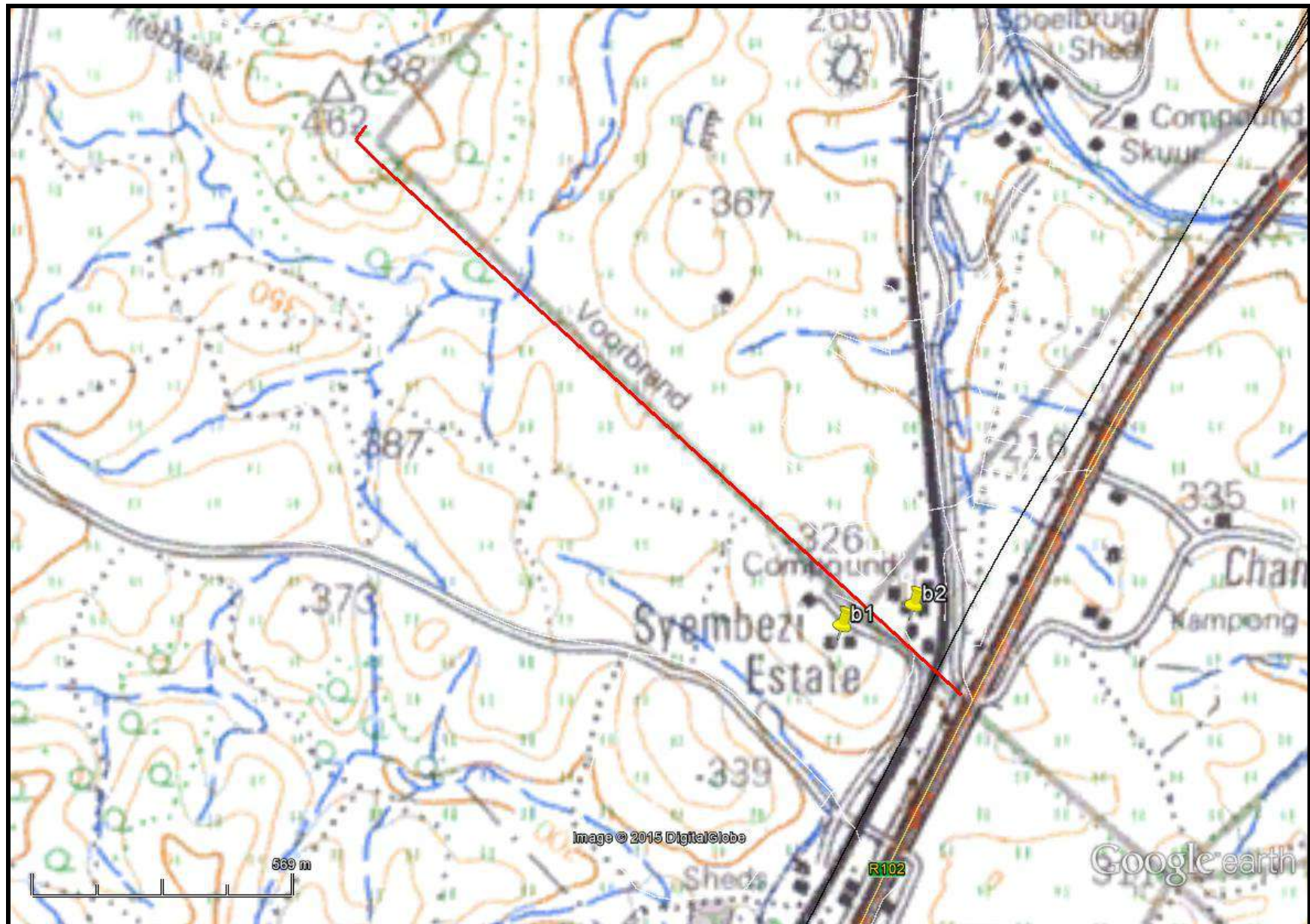


FIG. 7: STUDY AREA IN 1968



FIELD SURVEY

The field survey was undertaken in late January 2015. The pipeline starts near the R102, crosses underneath the railway, and then follows an existing road to the top of a hill. Most of the land has shallow soils and has been disturbed by sugar cane farming (fig. 8). The line will not affect any existing buildings.

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 9 shows their location.

TABLE 2: LOCATION OF RECORDED HERITAGE SITES

NAME	LATITUDE	LONGITUDE	DESCRIPTION
CHAN1	-29.288126	31.358769	Cemetery

FIG. 8: SCENIC VIEWS OF THE AREA



FIG. 9: LOCATION OF RECORDED SITES



CHAN01

CHAN01 occurs in the southwestern corner of Chantilly. The site is a cemetery with an enclosed wall (fig. 10). The cemetery is modern and occurs ~20m from the pipeline. The walling is an existing buffer.

Significance: The site is of high significance.

Mitigation: No part of the cemetery should be effected.

FIG. 10: CEMETERY AT CHAN01



CONCLUSION

A desktop heritage survey was undertaken for the Offtake 6D pipeline. Several older buildings were noted from the desktop study. It appears that these buildings still exist; however they will not be affected by the pipeline.

The area was also noted for having low and moderate palaeontological sensitivity. A qualified palaeontologist will need to be appointed if the trenches are more than 2m deep and/or expose shale deposits. A permit for the damage to fossil formation will be required.

APPENDIX A
PIA DESKTOP REPORT

