

**CONSTRUCTION OF CLEARWATER PIPELINES FROM
SANDILE WATER TREATMENT WORKS TO THE
BURNSHILL AND BRITISH RIDGE RESERVOIRS**

FOR EOH COASTAL ENVIRONMENTAL SERVICES

DATE: 21 AUGUST 2017

By Gavin Anderson

**Umlando: Archaeological Surveys and Heritage
Management**

PO Box 102532, Meerensee, 3901

Phone/fax: 035-7531785 Fax: 0865445631

Cell: 0836585362



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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

“Amatola Water has been appointed by the Department of Water and Sanitation (DWS), on behalf of Ndlambe Municipality, to implement a regional water supply project within the Ndlambe Municipality in the Eastern Cape Province of South Africa. The purpose of the water supply scheme is to augment the existing water supply in the municipality, which is currently under severe strain, particularly in the summer months due to the large influx of tourists to the coastal towns of Port Alfred, Kenton-on-Sea and Boesmansrivier, and others.

It is proposed that the water supply for this augmentation be sourced from the Sandile Dam, on the Keiskamma River. Raw water will be treated at the existing Sandile Water Treatment Works, before it is reticulated to its end point at Cannon Rocks. The main pipeline will be approximately 180 km long, with off-take pipelines reticulating water to each of the major towns along the route.

The pipeline will traverse two large rivers; the Keiskamma River and the Fish River. Smaller rivers affected will include the Kariega, Kasouga, West and East Kleinemonde, Kap, Boesmansrivier, Kowie, and others.

The pipeline from Sandile dam to Cannon Rocks will be approximately 180 km long, with much of the pipeline constructed using pipes with an internal diameter of more than 0.36 meters” (CES BID 2015).

This report deals specifically with the area from British Ridge to Burnside.

The location of the line is shown in Figures 1 – 3.

FIG. 1 GENERAL LOCATION OF THE STUDY AREA

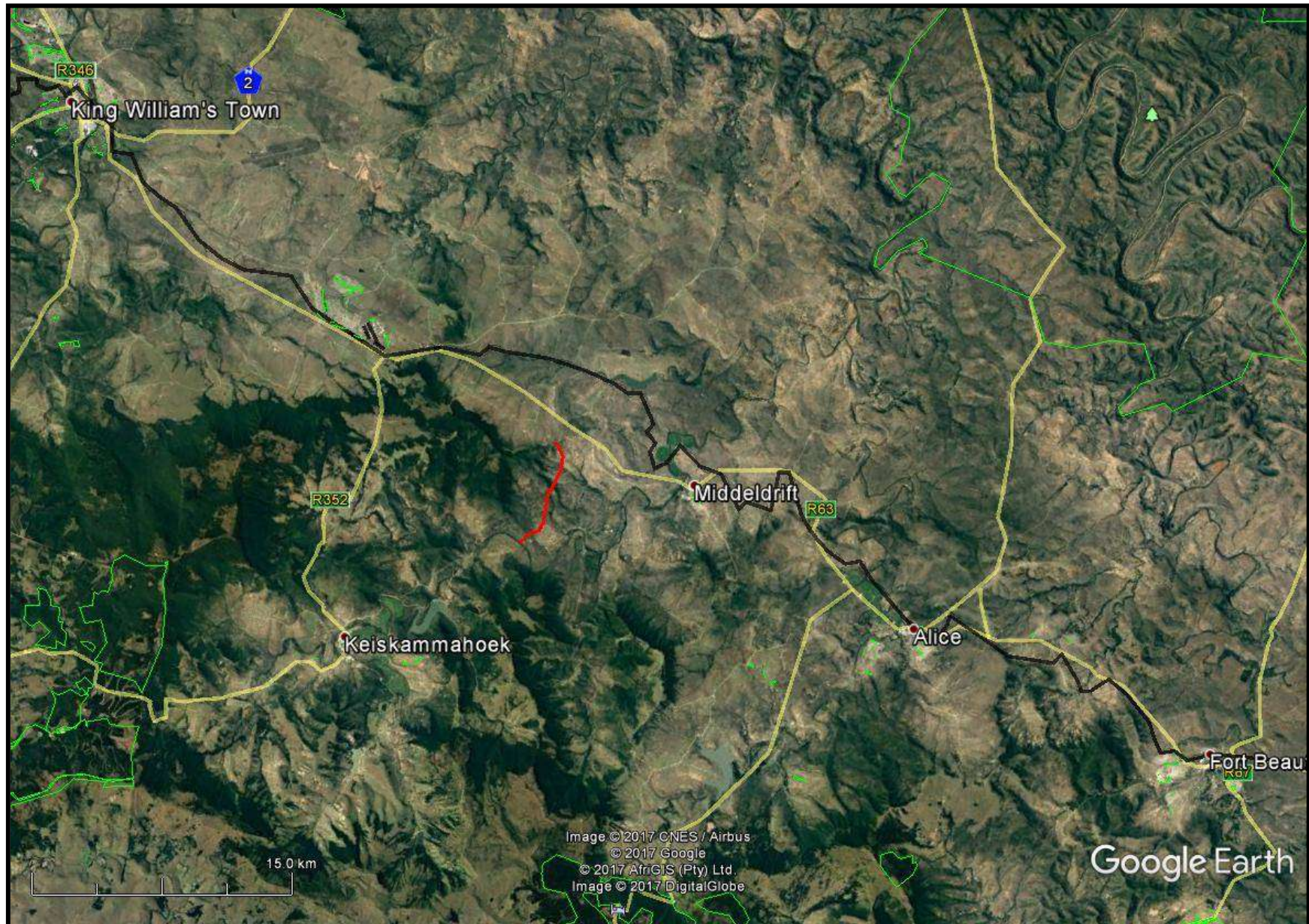
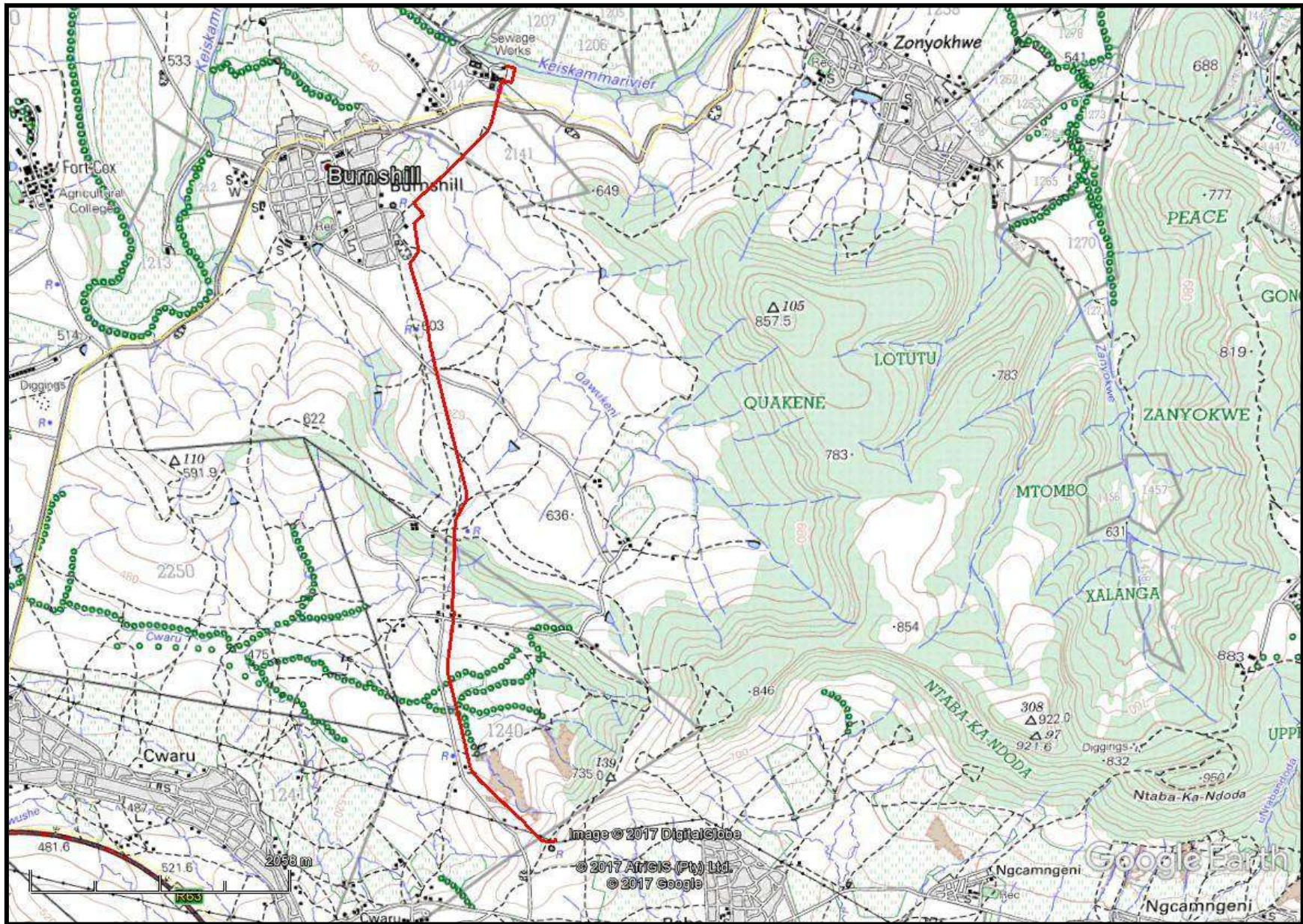


FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA



FIG. 3: TOPOGRAPHICAL MAP OF THE STUDY AREA¹



¹ 3227CC_2002 dimbaza

NATIONAL HERITAGE RESOURCES ACT OF 1999

The National Heritage Resources Act of 1999 (pp 12-14) protects a variety of heritage resources. These resources are defined as follows:

1. “For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
2. Without limiting the generality of subsection (1), the national estate may include—
 - 2.1. Places, buildings, structures and equipment of cultural significance;
 - 2.2. Places to which oral traditions are attached or which are associated with living heritage;
 - 2.3. Historical settlements and townscapes;
 - 2.4. Landscapes and natural features of cultural significance;
 - 2.5. Geological sites of scientific or cultural importance;
 - 2.6. Archaeological and palaeontological sites;
 - 2.7. Graves and burial grounds, including—
 - 2.7.1. Ancestral graves;
 - 2.7.2. Royal graves and graves of traditional leaders;
 - 2.7.3. Graves of victims of conflict;
 - 2.7.4. Graves of individuals designated by the Minister by notice in the Gazette;
 - 2.7.5. Historical graves and cemeteries; and
 - 2.7.6. Other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
3. Sites of significance relating to the history of slavery in South Africa;
 - 3.1. Movable objects, including—

4. Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - 4.1. Objects to which oral traditions are attached or which are associated with living heritage;
 - 4.2. Ethnographic art and objects;
 - 4.3. Military objects;
 - 4.4. objects of decorative or fine art;
 - 4.5. Objects of scientific or technological interest; and
 - 4.6. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).
5. Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—
 - 5.1. Its importance in the community, or pattern of South Africa's history;
 - 5.2. Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
 - 5.3. Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
 - 5.4. Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
 - 5.5. Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
 - 5.6. Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
 - 5.7. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
 - 5.8. Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

5.9. sites of significance relating to the history of slavery in South Africa”

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 database contain 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.

The above significance ratings allow one to grade the site according to SAHRA's grading scale. This is summarised in Table 1.

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 |

ASSUMPTIONS FOR SITE INTERPRETATIONS

Several assumptions are made during the survey, and these are based on my field experience and other anthropological information. These practical and theoretical assumptions allow for better site prediction and interpretations for fieldwork. The area continues with the settlement pattern I have noted elsewhere in the Eastern Cape (Anderson 2009a, 2009b, 2009c, 2010a, 2010b, 2011a-d). That is, there is little evidence of Late Iron Age (LIA) sites, even though it should exist – Early Iron Age sites do exist but in the larger river valleys (see Feeley 1986; Derricourt 1977). This may be partly because of the increase in mechanised ploughing activities that occurred in E. Cape and KwaZulu-Natal from the 1930's onwards. Most of the recorded sites date from the late 18th century onwards. There is also some evidence from the various surveys that there tends to be a continual occupation of the same plot of land over a length of time. Van Ryneveldt (2010, 2011) has noted similar trends I have observed Historical Period stone walled kraals still in use to this day. In this way, the houses are continually reused and fixed, and new ones built gradually as the families expand. A last suggestion for the lack of LIA settlements is that only a few areas used dry stone walling in the Eastern Cape, while the rest use mud bricks for houses and kraal foundations, and plants such as aloes for kraals. These would erode through time without leaving surface evidence. Human graves may also consist of holes in the ground that are covered with soil and then tree branches on the top. Other burial sites may have a small headstone and footstone associated with the grave. These types of features would not last long past 20 years. This method of burial, coupled with agricultural ploughing, would thus destroy LIA and HP settlements.

Lewis and Mrara (2010:375) state:

“During the 19th century the predominant form of rural settlement in Transkei was that of dispersed homesteads. The form of the homesteads tended to differ from tribe to tribe, while the homesteads of various tribal groups were separated

from each other by uninhabited areas, or buffer zones. During the 19th century mission settlements were introduced to Transkei, some of which developed into towns.

In the 20th century, mainly as a result of government action, homesteads have been nucleated into rural settlements and villages and much of the land has been fenced. A few peri-urban and industrial villages also exist in Transkei. Over 95% of the population of Transkei in 1980 were still rural dwellers.”

This would explain the clusters of settlements on various hills that are shown on the older topographical maps. Whether these clusters, or ‘nucleated homesteads’, were originally centred along kinship lines would need further research, but that is not the case for more recent villages.

The term settlement refers to a single-family household. These all follow a similar pattern in terms of layout:

- Row of 3 houses/huts – some have a double row of houses
- A fourth house may occur to the side of the kraal.
- A large agricultural field – often in the front of the kraal
- A small cattle byre (or kraal)
- Graves tend to be located near the byre

The position of the cattle byre varies. Some settlements have the byre (or kraal) in the agricultural field, but near the house, while others have it furthest away from the house. Graves tend to be associated with the cattle byre and are outside of the byre. The entrance to the byre also varies and this may be a spatial or temporal feature. This type of settlement pattern allows one to “read” a site with few visible features, and thus know where certain features should occur. The cemeteries and/or graves in rural areas should be treated the same as cemeteries in the urban areas. Urban cemeteries areas do not have servitudes though or over them, and this should be the case for rural areas. In the past, electricity and telephone lines have been allowed to go over graves and other

types of heritage sites. In some cases, the sites have been damaged during the construction phase, e.g. vehicles driving over graves, the stays being placed on sites, etc. In many cases, this was due to people not observing and respecting graves or ruined kraals, or not knowing that they were protected. It is for this reason that the 20m buffer zone, and the demarcation of sites, was introduced to protect these sites. Graves also have a religious and spiritual component, and this is even more important when ancestral spirits are taken into account. I have worked on several projects where a community has complained about ancestral spirits being 'disturbed' by servitude going over, or near, their graves. Only recent graves (mostly post-1960s) have formal headstones. Earlier graves tend to disappear within a few years of the burial, and are thus "invisible". Community cemeteries appear to be a recent phenomenon. It is for this reason that all settlements should be treated as having potential human remains.

Many of the settlements in the study area are not archaeological sites or even historical sites (in the strictest sense). They are however "sites in the making" and reflect the ways in which people have lived. For example, the changes from circular to rectangular cattle byres, and the move from family orientated settlements, or villages, to more public settlements. These sites are thus informative of the history of the area and should be included in a management plan. One should avoid damaging sites that are not necessarily protected by the legislation². The management plan below aims to preserve these sites, including the graves, from inadvertent damage. It also minimises the chances of a community's ancestral remains from being disturbed. Each region has its own way in which ancestors are revered, and it is thus not possible to set out definitive rules. Communities should be consulted at all times regarding the demarcation of ancestral lands and the location of servitudes near graves.

² The legislation does allow for the protection of built structures older than 60 years, and many of the settlements along the line can be viewed as built structures.

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. I also used various sources for historical information.

PREVIOUS ACHAEOLOGICAL & HERITAGE SURVEYS

No national monuments, battlefields, or historical cemeteries are known to occur along the route. Kruger (2014) undertook a survey for the Sandile WWTW, This occurs on British Ridge.

The 1956 1:50 000 topographical map indicates that there are several old settlements along the southern section of this line (fig. 5). These settlements are no longer visible and thus so are the potential human graves. Table 2 give the location of these settlements. The settlements should have a 50m sensitivity radius placed around them for potential human remains.

TABLE 2: LOCATION OF HUMAN SETTLEMENTS IN 1956

| Name | latitude | longitude |
|--------|---------------|--------------|
| aru146 | -32.811728488 | 27.067269480 |
| aru147 | -32.809749692 | 27.067908087 |
| aru148 | -32.810531842 | 27.066284694 |
| aru149 | -32.792621697 | 27.065383722 |
| aru157 | -32.812060024 | 27.069685576 |

FIG. 4: KNOWN HERITAGE SITES IN THE AREA

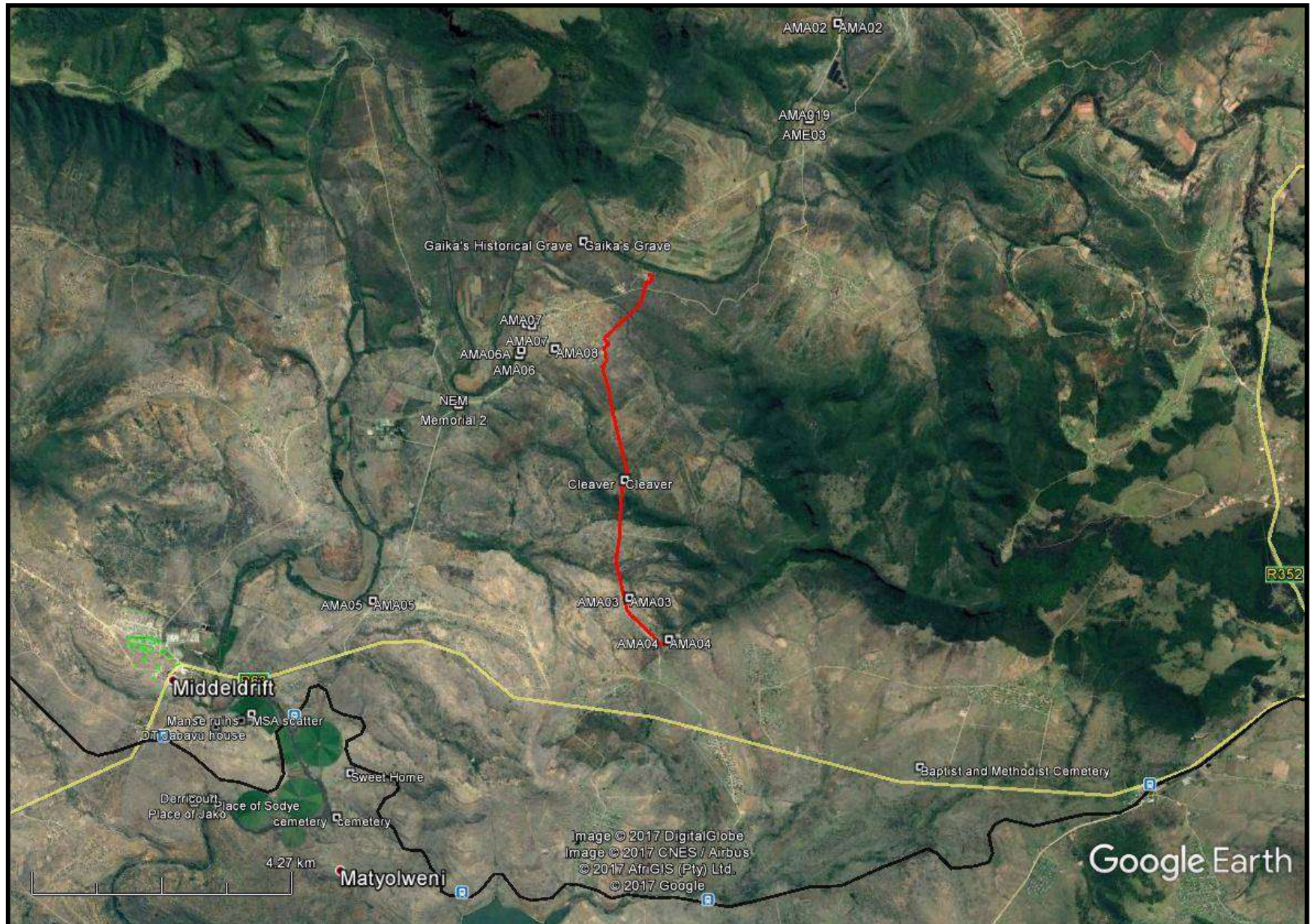
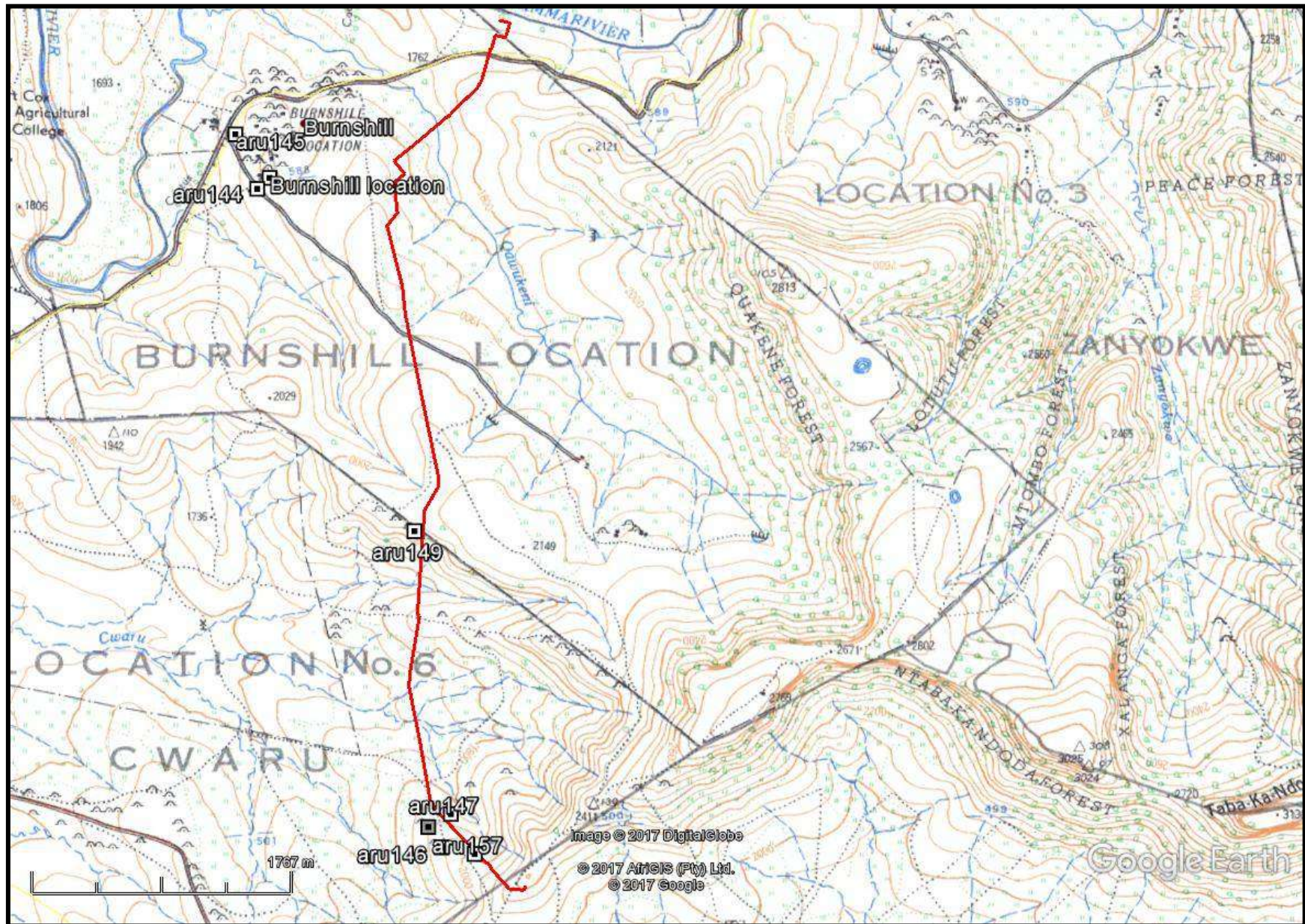


FIG. 5: STUDY AREA IN 1956³



³ 3227CC Dimbaza 1956

FIELD SURVEY

The field survey was undertaken in February 2015. Parts of the line adjoining had been previously surveyed (Anderson 2012 a-c). Most of the line follows the existing road reserve. In some areas it crosses farmlands, rivers and river valleys. The line links up to several reservoirs of which some have already been built. Table 3 summarises these sites while Figure 6 shows their location.

AMA03

AMA03 is a cemetery on the eastern side of the road (fig. 7). The cemetery occurs ~100m from the pipeline. The cemetery will thus not be affected by the current position of the pipeline footprint.

Significance: The site is of high significance

Mitigation: A minimum of a 25m buffer needs to be erected. The pipeline should not be moved from its current position.

SAHRA Rating: 3A

AMA04

AMA04 is located on the slopes of a hill leading to the British Ridge Reservoir. British Ridge itself is located ~1km to the southwest. The slopes have been surveyed by Kruger (2014) who noted that several features had already been destroyed by the construction of the reservoir. The features that I observed were anti-erosion walls and/or supports for terracing (on the lower slopes). In one area, the terracing leads down to a small historical dam, and thus some of the terracing may have been used to direct water flow to the dam. The terracing is low stone walling often with a single row of stones (fig.8). The pipeline will be missing the rest of the features as recorded by Kruger (fig. 9)

Significance: The site is of low significance.

Mitigation: No mitigation required as these have already been mapped.

SAHRA Rating: 3C

FIG. 6: LOCATION OF RECORDED SITES

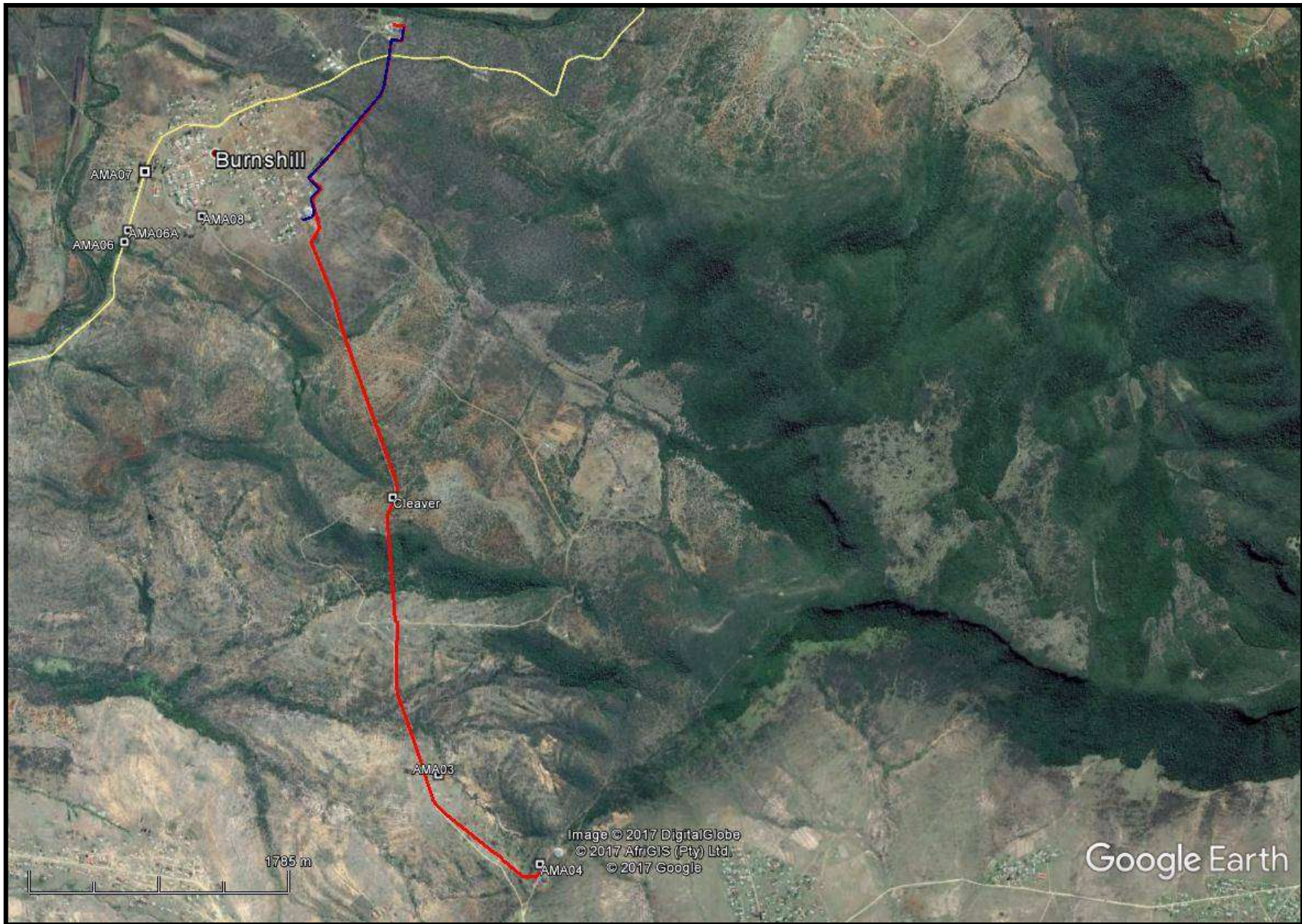


FIG. 7: CEMETERY AT AMA03



FIG. 8: TERRACING AT AMA04



FIG. 9: LOCATION OF FEATURES RECORDED BY KRUGER (2014)

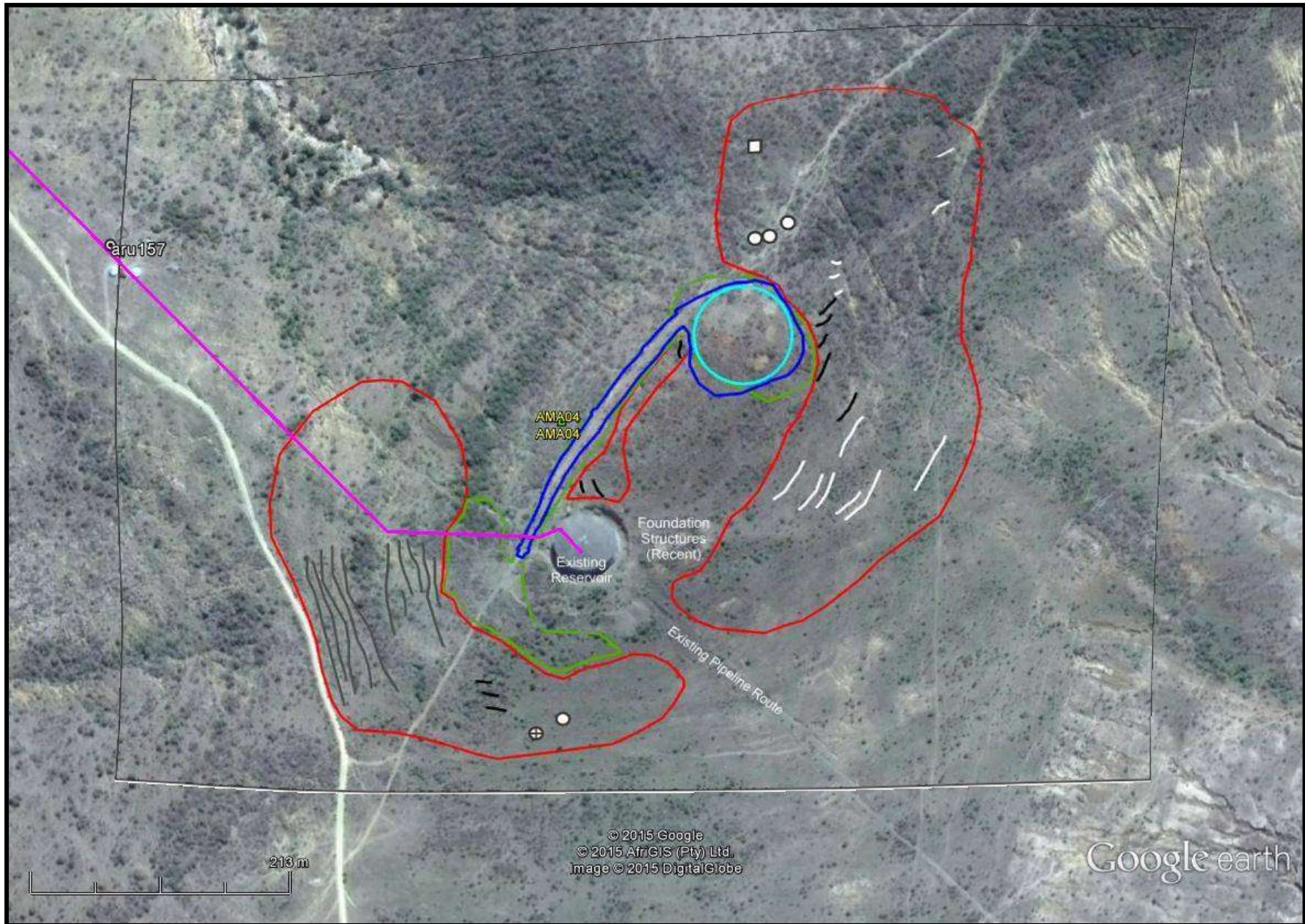


TABLE 3: LOCATION OF RECORDED SITES

| NAME | LATITUDE | LONGITUDE | DESCRIPTION | Significance | Mitigation |
|-------|---------------|--------------|-------------|--------------|------------|
| AMA03 | -32.807429004 | 27.066978011 | Cemetery | High | 25m buffer |
| AMA04 | -32.813346963 | 27.073570965 | Terracing | Low | None |

GENERAL STONE TOOLS

The stone tools are open scatters and often disturbed and in a secondary context. They do not form sites rather general occurrences of tools. At times they are isolated artefacts otherwise they may be a small group of tools exposed by a cutting, or a scatter of tools at the base of a hill. The stone tools along the route date to the Early Stone Age, Middle Stone Age and Late Stone Age. A cleaver was recorded near the side of the road along the pipeline. There are general stone tools on all of the hills in the area.

Significance: These scatters are of low significance and do not constitute a site *per se*.

Mitigation: No further mitigation is required.

SAHRA Rating: 3C

FIG. 34: GENERAL STONE TOOLS ALONG THE ROOT



MANAGEMENT PLAN

Cemeteries

There needs to be a 25m buffer between the edge of the cemetery, or grave, and the edge of the pipeline footprint. All cemeteries/graves within 50m of the footprint need to be clearly demarcated before construction begins. The demarcation needs to be placed 5m from the edge of the cemetery.

Stone walling

The stone walling is of low significance and will not be affected by the pipeline.

CONCLUSION

A heritage survey was undertaken for the Ndlambe British Ridge to Burnshill pipeline. This survey formed part of a larger pipeline that went from Sandile Dam to Cannon Rocks; however, Umlando was requested to undertake a separate report for this project.

Only two heritage sites and a scatter of stone tools were recorded along this pipeline route. Neither of the sites will be directly affected by the pipeline. No further mitigation is required for this project.

If any artefacts and/or graves are exposed during construction, then the contractor needs to inform ECPHRA immediately regarding these items.

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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 horizontal line underneath.

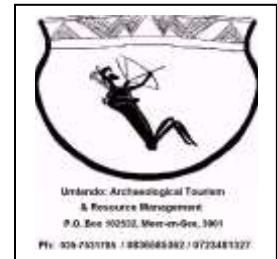
Gavin Anderson
Archaeologist/Heritage Impact Assessor

**APPENDIX A
SITE RECORD FORMS**

UMLANDO ARCHAEOLOGICAL SITE RECORD FORM

SITE CATEGORY: (X where applicable)

Stone Age:
Early Iron Age:
Late Iron Age:
Historical Period: x



Recorder's Site No.: AMA03
Official Name: Location No. 6 Cwaru
Local Name:
Map Sheet: 3227CC_1956 Dimbaza
GPS reading: S32 48 26.7 E27 04 01.1

DIRECTIONS TO SITE: SKETCH OR DESCRIPTION.

Drive South from the BP Garage in Keiskammahoek then turn left onto the R352 after 657m. Follow the R352 for 19.8km then turn right onto the R63. After 10.6km turn right and then right again after 1.1km. AMA03 is located 1.6km from here, on the eastern side of the road

SITE DESCRIPTION:

Type of Site:

Merits conservation: The site is of high significance

A minimum of a 25m buffer needs to be maintained. The pipeline should not be moved from its current position.

Threats: The cemetery occurs ~100m from the pipeline. The cemetery will thus not be affected by the current position of the pipeline footprint.

What threats: None, currently

RECORDING:

Graphic record: Yes

Digital pictures: x

Tracings :

Re-drawings:

Recorder/Informant: Name: Gavin and Louise Anderson

Address: PO Box 102532, Meerensee, 3901

Date: 13/02/2015

Owner:

References:

Description of site and artefactual content.

Site consists of a cemetery

