Phase 1 Archaeological Impact Assessment on the farm Sassenheim 695 JT regarding the location of graves in the vicinity of an existing water pipeline in Umjindi Trust, near Barberton, Mpumalanga Province.

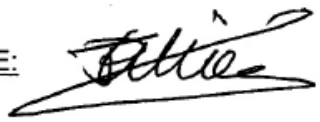
Compiled by:

For **IWR Water Resources Pty Ltd**

Surveyor: Mr JP Celliers

10 August, 2015

I, Jean-Pierre Celliers as duly authorised representative of Kudzala Antiquity CC, hereby confirm my independence as a specialist and declare that neither I nor the Kudzala Antiquity CC have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which the client was appointed as Environmental Assessment practitioner, other than fair remuneration for work performed on this project.

SIGNATURE: 

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Executive summary

Site name and location: The farm Sassenheim 695 JT located near the town Barberton, Mpumalanga Province.

Purpose of the study: An Archaeological and heritage impact assessment in respect of unmarked graves located near a recently installed water pipeline in the Umjindi Trust near Barberton, Mpumalanga.

1:50 000 Topographical Map: 2530 DD (1984)

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Description and findings:

An Archaeological and heritage resource survey was undertaken by Kudzala Antiquity after the discovery of a number of graves which are located next to a recently installed water pipeline in the Umjindi Trust. The graves were reported by the Environmental Control Officer of Rand Water on 19 June 2015. He reported on two grave sites numbering five and two graves respectively which were located very near the recently laid water pipeline. As the pipeline route was made without a proper EIA and Heritage Impact Assessment, it was of concern. Subsequently a formal section 24 (g) application was started in terms of the NEMA and a heritage specialist also contracted to assess the situation. Fortunately no graves were damaged or compromised during the installation of the pipeline but some are however located very close to the installed pipeline and probably in its servitude.

Assistance from the local community, the contractor's (IWR Water Resources) Project Manager, Safety Officer, Community Liason Officer and a community representative, led to the mapping of a few more grave locations along the planned and existing water pipeline route.

Their relative location to the existing and/ or planned pipeline route is discussed in the contents of this report. Recommendations are made in conjunction with inputs from the SAHRA Burial Grounds and Graves Unit.

A total of seven (7) site locations and graves (sites UT 1-7) totalling 15 in number were recorded and documented. All the graves have no headstones and a number of them (UT1, 2, 4-6) are unknown to the current local community, however, information from the community suggests that two graves (site UT 2) date from 1952 which makes them 63 years old. Sites (UT 1 and UT 2)

have graves very near the recently installed water pipeline. At these locations the pipeline is buried beneath the existing road and the graves located very close to the Western and Eastern shoulder of the road (see photos, Appendix D). The remaining grave sites are located at least 7 metres and further away from the existing or planned pipeline route. In terms of significance the graves are considered to be of high local social significance (**LS 3A, table 5.1, 5.2, 5.3, 5.4**).

It is recommended that all the identified grave sites or individual graves be fenced off to prevent further impact on them which includes future maintenance work and that any surviving relatives be allowed access. It is also recommended that further planned routing of any kind be preceded by a survey done by a qualified Archaeologist to ensure the pro-active recording of any heritage resources including graves and grave sites.

In the case where graves are older than 60 years they are protected under section 36 of the NHRA (25 of 1999) and therefore a permit must be issued by SAHRA before the graves may be relocated or exhumed. If the graves are younger than 60 years the Human Tissues Act 65 of 1983 applies whereby a registered funeral undertaker may facilitate exhumation and reburial.

1. Introduction

Kudzala Antiquity CC was commissioned to conduct an Archaeological and Heritage resources Impact Assessment on the farm, Sassenheim 695 JT, Mpumalanga Province. In this report the recording of graves and grave sites are presented and recommendations made. Some of the graves are located very near a recently installed water pipeline (sites UT 1, 2) while others are located a few metres away from the existing and planned water pipeline route. The survey was conducted for IWR Water Resources Pty Ltd.

The National Heritage Resources Act (Act 25, 1999, section 38) and the NEMA (National Environmental Management Act No. 107 of 1998) requires of individuals (engineers, farmers, mines and industry) or institutions to have specialist Heritage Impact or Archaeological Impact Assessment (HIA & AIA) studies undertaken whenever any development activities are planned. This is to ensure that heritage features or sites that qualify as part of the national estate are properly managed and not damaged or destroyed.

Heritage resources considered to be part of the national estate include those that are of Cultural, historical significance or have other special value to the present community or future generations.

The national estate may include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living
- heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and paleontological sites;
- graves and burial grounds including:
    - (i) ancestral graves;
    - (ii) royal graves and graves of traditional leaders;
    - *(iii)* graves of victims of conflict;
    - (iv) graves of individuals designated by the Minister by notice in the *Gazette;*
    - (v) historical graves and cemeteries; and other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to slavery in South Africa;
- movable objects including:

(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;

(ii) objects to which oral traditions are attached or which are associated with living heritage

(iii) ethnographic art and objects;
(iv) military objects
(v) objects of decorative or fine art;
(vi) objects of scientific or technological interest; and
(vii) 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 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Cultural resources are unique and non-renewable physical phenomena (of natural occurrence or made by humans) that can be associated with human (cultural) activities (Van Vollenhoven 1995:3).

These would be any man-made structure, tool, object of art or waste that was left behind on or beneath the soil surface by historic or pre-historic communities. These remains, when studied in their original context by archaeologists, are interpreted in an attempt to understand, identify and reconstruct the activities and lifestyles of past communities. When these items are disturbed from their original context, any meaningful information they possess is lost, therefore it is important to locate and identify such remains before construction or development activities commence.

An AIA consists of three phases, this document deals with the first phase. This (phase 1) investigation is aimed at getting an overview of cultural resources in a given area, thereby assessing the possible impact a proposed development may have on these resources.

When the archaeologist encounters a situation where the planned project will lead to the destruction or alteration of an archaeological site, a second phase in the survey is normally recommended. During a phase two investigation, the impact assessment of development activities on identified cultural resources is intensified and detailed investigation into the nature and origin of the cultural material is undertaken. Often at this stage, archaeological excavation is carried out in order to document and preserve the cultural heritage.

Phase three consists of the compiling of a management plan for the safeguarding, conservation, interpretation and utilization of cultural resources (Van Vollenhoven, 2002).

Continuous communication between the developer and surveyor after the initial report have been compiled may result in the modification of a planned route or development to incorporate into the development or protect existing archaeological sites.

2. Description of surveyed area

The study area falls within the Umjindi Local Municipality, Mpumalanga Province. The survey was carried out in Tribal land which consists of Legogote Sour Bushveld.

Veld type: The vegetation forms part of the Savanna Biome and classed as Legogote Sour Bushveld comprising dense woodland including medium to large shrub. Short thicket occurs on less rocky sites (Mucina and Rutherford, 2009).

Geology: Most of the area is underlain by gneiss and migmatite of the Nelspruit Suite. Archaean granite plains with granite inselbergs and large granite boulders also occur (Mucina and Rutherford, 2009).

3. Methodology

A physical survey of the existing newly installed water pipeline accompanied by a community representative and project officials was conducted.

Social Consultation: During the survey, local residents and the project officials were consulted to establish the exact location of the graves and other sites of possible heritage significance are located in the area. The informants consulted in this regard was Mr. Desmond Barnard, Project Manager, Mrs Thandeka Zulu, Safety Officer and the Community Liason Officer Lizzie Zulu and a gentleman representing the local community.

SAHRA (South African Heritage Resources Agency) and the relevant legislation (Act 25 of 1999, National Heritage Resources Act) require that the following components be included in an Archaeological impact assessment:

- Archaeology
- Shipwrecks
- Battlefields
- Graves
- Structures older than 60 years
- Living heritage
- Historical settlements
- Landscapes
- Geological sites
- Paleontological sites and objects

The *purpose* of the archaeological study is to establish the whereabouts and nature of cultural heritage sites should they occur on the surveyed area. This includes settlements, structures and artefacts and graves which have value for an individual or group of people in terms of historical, archaeological, architectural and human (cultural) development.

The aim of this study is to locate and identify such objects or places in order to assess whether they are of significance and warrant further investigation or protection. This is done by means of foot surveys, a desktop or detailed archival study as well as a study of the results of previous archaeological work in the area.

3.1. Desktop study

The purpose of the desktop study is to compile as much information as possible on the heritage resources of the area. This helps to provide an historical context for located sites. Sources used for this study include published and unpublished documents, archival material and maps. Information obtained from the following institutions or individuals were consulted:

- Published and unpublished archaeological reports and articles
- Published and unpublished historical reports and articles
- Historical maps
- SAHRIS database

3.1.1. Previous Archaeological studies in the area

A number of Archaeological Impact Assessments (AIA) has been done in the vicinity of the proposed development area.

A survey conducted in July 2010 by JP Celliers as part of Sanral's expansion of the existing N4 motorway noted a historically significant site known as Poort City which is located on the western side of the Crocodile Gorge. It was an encampment during the construction of the railway through the gorge to Delagoa Bay and was active in 1891-1892.

A survey conducted in November 2010 by JP Celliers in respect of the Matsulu Township development which is located across the Crocodile River from Kaapmuiden, describes two formal graveyards.

During a similar survey conducted by Mr E. Murimbika in the year 2008 for an Eskom powerline and substation in Matsulu, no sites of archaeological or heritage significance were documented.

As part of the development of a proposed gas pipeline between South Africa and Mozambique in 2002, JA van Schalkwyk documented a few sites where some Iron Age pottery remains were visible and also

commented that there were a number of graves which are of significance. The farm Stentor, located very near and to the south of the Kaapmuiden study area, was surveyed by J.A. van Schalkwyk in 2007. He documented the remains of an historic house and also the location of an unmarked grave.

3.2. Significance of sites

The South African Heritage Resources Agency (SAHRA) formulated guidelines for the conservation of all cultural resources and therefore also divided such sites into three main categories. These categories might be seen as guidelines that suggest the extent of protection a given site might receive. They include sites or features of local (Grade 3) provincial (Grade 2) national (Grade 1) significance, grades of local significance and generally protected sites with a number of degrees of significance.

For practical purposes the surveyor uses his own classification for sites or features and divides them into three groups, those of low or no significance, those of medium significance, those of high significance **(*Also see table 5.2.Significance rating guidelines for sites*).**

Values used to assign significance to a site include:

- **Types of significance**

The site's scientific, aesthetic and historic significance or a combination of these is established.

- **Degrees of significance**

The archaeological or historic site's rarity and representative value is considered. The condition of the site is also an important consideration.

- **Spheres of significance**

Sites are categorized as being significant in the international, national, provincial, regional or local context. Significance of a site for a specific community is also taken into consideration.

It should be noted that to arrive at the specific allocation of significance of a site or feature, the specialist considers the following:

- Historic context
- Archaeological context or scientific value
- Social value
- Aesthetic value
- Research value

More specific criteria used by the specialist in order to allocate value or significance to a site include:

- The unique nature of a site
- The integrity of the archaeological deposit
- The wider historic, archaeological and geographic context of the site
- The location of the site in relation to other similar sites or features
- The depth of the archaeological deposit (when it can be determined or is known)
- The preservation condition of the site
- Quality of the archaeological or historic material of the site
- Quantity of sites and site features

In short, archaeological and historic sites containing data which may significantly enhance the knowledge that archaeologists currently have about our cultural heritage should be considered highly valuable. In all instances these sites should be preserved and not damaged during construction activities. When development activities do however jeopardize the future of such a site, a second and third phase in the Cultural Resource Management (CRM) process is normally advised which entails the excavation or rescue excavation of cultural material along with a management plan to be drafted for the preservation of the site or sites.

Graves are considered very sensitive sites and should never under any circumstances be jeopardized by development activities. Graves and burial grounds are incorporated in the National Heritage Resources Act under section 36 and in all instances where graves are found by the surveyor, the recommendation would be to steer clear of these areas. If this is not possible or if construction activities have for some reason damaged graves, specialized consultants are normally contacted to aid in the process of exhumation and re-interment of the human remains.

4. History and Archaeology

4.1. Historic period

4.1.1. Early History

In Southern Africa the domestication of the environment began only a couple of thousands of years ago, when agriculture and herding were introduced. At some time during the last half of the first millennium BC, people living in the region where Botswana, Zambia and Angola are today, started moving southward, until they reached the Highveld and the Cape in the area of modern South Africa. As time passed and the sub-continent became fully settled, these agro-pastoralists, who spoke Bantu languages, started dominating all those areas which were ecologically suitable for their way of life. This included roughly the eastern half of modern South Africa, the eastern fringe of Botswana and the north of Namibia. Historians agree that the earliest Africans to inhabit in the Lowveld in Mpumalanga were of Sotho, or more particularly Koni-origin.

In J. S. Bergh's source, a map indicates the migration of Swazi tribes from Swaziland in north western and north eastern directions, passing close by the present-day Nelspruit district. This took place during the "Difaqane" period, which occurred roughly from the early 1820's to the late 1830's, when many tribes were displaced throughout South Africa. The Difaqane (Sotho), or Mfecane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's. It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes (Bergh, 1999).

During the first half of the nineteenth century, the Tsetse fly was prolific in this area. It seems logical that pastoralists would have preferred to avoid the moist, low-lying valleys and thickly wooded regions where these insects preferred to congregate. It is unlikely that populations would be dense in areas where malaria and the "sleeping sickness" transferred by Tsetse flies was a constant threat to humans and their stock. Thus large populations of European and native people did not occur during that time.

In his book on the tribes of the Carolina district, A. C. Myburgh speaks of the results of European settlement in this area. The two major results of European settlement was, firstly, that only Europeans could own land, except in two released areas in the extreme east of the district. This left several tribes of note without any sufficient land where they could live undisturbed. The European farmers with cattle required few herdsmen, and were averse to large, permanent black populations on their farms. Vegetable farmers would also employ several workers, including mainly women and children. These people would stay in self-made shelters on the farms. There were also some stable, permanently settled workers on farms. Those black workers with too much cattle were often asked to move from a farm if the farmer felt that his grazing area was threatened. The second result of the European settlement was the institution of a migrant labour system in the area and some workers flocked to the area from beyond the country's borders. (Myburgh 1956).

From 1860 to 1881, the population of Europeans in the central Transvaal was already very dense and the administrative machinery of their leaders was firmly in place. Many of the policies that would lead the apartheid laws later on had already been developed. In November 1864, for example, the broad design of the guidelines concerning the pass-system for blacks, the provision of labour, the obligatory tax and the carrying of firearms, had been published in the Government Gazette. In 1860, the Transvaal was again divided into a number of districts, facilitating the administration of blacks through the instalment of a greater number of officers. While there were only seven districts in 1860, the Transvaal was divided into 15 districts by 1886. Native people in isolated regions would especially feel the threat to their autonomy as European control became increasingly rigid. About half of the black population in the Transvaal was living on private land, owned by Europeans or companies, in 1904. According to the Squatters' Law of 1895, no more than five families of "natives" could live on any farm or divided portion of a farm, without special permission from the Government. This law was however not rigidly enforced in practice and large numbers of blacks still occupied certain places (Bergh 1999; Massie 1905).

The black people living on white-owned properties paid an annual rent in labour or money, varying in amount. Those adult black cultivators living on Crown Lands paid an annual rental of £1, in addition to poll tax. They were, however, not charged for water, wood or grazing, and they were not restricted as to the amount of land that they could cultivate. There are several indications that the Swazi people in the Transvaal had good relations with its European (Boer and British) inhabitants. In 1876, for example, when war broke out between the Republic and the BaPedi under Sekhukuni, Swazi forces assisted the burgher army (Massie 1905; Ross 1995).

Some of the blacks, who used to stay on farms during the first part of the twentieth century, were probably labour tenants. Through the system of labour tenancy, black people could live on farmers' land, whereas a large part of the black population was restricted to the Natives Reserves, as set out in the Natives Land Act of 1913, which established a clear legal distinction between the African Reserves and white farming areas. Though the Natives Land Committee saw labour tenancy as an evil, they acknowledged that it was the only system by means of which the average farmer could develop his land by 1918. Farmers were indeed opposed to any restriction of the system (Union of South Africa 1918).

A large Homeland was located a small distance to the east of Nelspruit, and later became known as Kangwane. This area was proclaimed by the Land Act of 1936. In the Surplus People Project Report, the forced removal of people to the Kangwane area, or homeland, is discussed. This area could be regarded as a "dumping ground" that was allocated to South Africa's Swazis, and consisted of two blocks of land. The first of these, the Nsikazi reserve, was a finger of land stretching along the western boundary of the Kruger National Park, and had been under black occupation for over 50 years. The second block was adjacent to the western and northern boundaries of Swaziland, and consisted of the Nkomazi and Mswati/Mlondozi reserves released under the 1935 Land Act (Bergh 1999; Surplus people project 1983).

4.1.2. History of the Anglo Boer War (1899-1902) in the area

On 17 June 1900 Sergeant L. Von Steinaecker[1] and Colonial Scouts from the British Army blew up a bridge between Kaapmuiden and the Portuguese frontier. Traffic to Delagoa Bay on the line was stopped for about a fortnight, but the Boer forces did not suffer any major inconvenience from the explosion (Joubert, in Amery, 1909).

However, "the large iron bridge which spanned the Crocodile River" at Kaapmuiden was destroyed by the Boers during a guerrilla attack at a later stage in the war. This was major inconvenience for the British as "supplies were conveyed by fatigue parties of the Yorkshire regiment from the train to the bridge-head 150 yards away, whence they were rolled down to the river bed, carried across by natives, and loaded into

[1] Known as Steinaecker's Horse, this British Unit was under command of an ex-Prussian army officer Baron Ludwig von Steinaecker, who fought on the side of the British during the Anglo-Boer War. The unit first operated from Swaziland, but later had its headquarters at Komatipoort and at the Sabie Bridge (Skukuza) as well as several outposts in the southern and central area of the present day Kruger Park. Source: S. Joubert, *The Kruger National Park a history*, Vol 1, p. 15.

wagons. In spite of the intense, steaming heat of the low veld, the fatigue parties labored strenuously night and day at a task as trying as any which [the British] had to deal with during the war". After engineers completed a deviation across the Crocodile River, a supply depot was established at the Kaapmuiden station and the branch line between Kaapmuiden and Barberton was used to send supplies to other British troops in the surrounding territories (Amery, 1909).

Another event of import in the area was the arrival of the President of the Transvaal, Paul Kruger, in Nelspruit on 29 May 1900, where he received a message saying Lord Roberts had annexed the Transvaal. Kruger declared the annexation illegitimate on 3 September 1900, the same day that Nelspruit was proclaimed the administrative capital of the Transvaal Republic. Kruger left Nelspruit in June of that year and travelled to board a ship to Swaziland (Bergh, 1999).

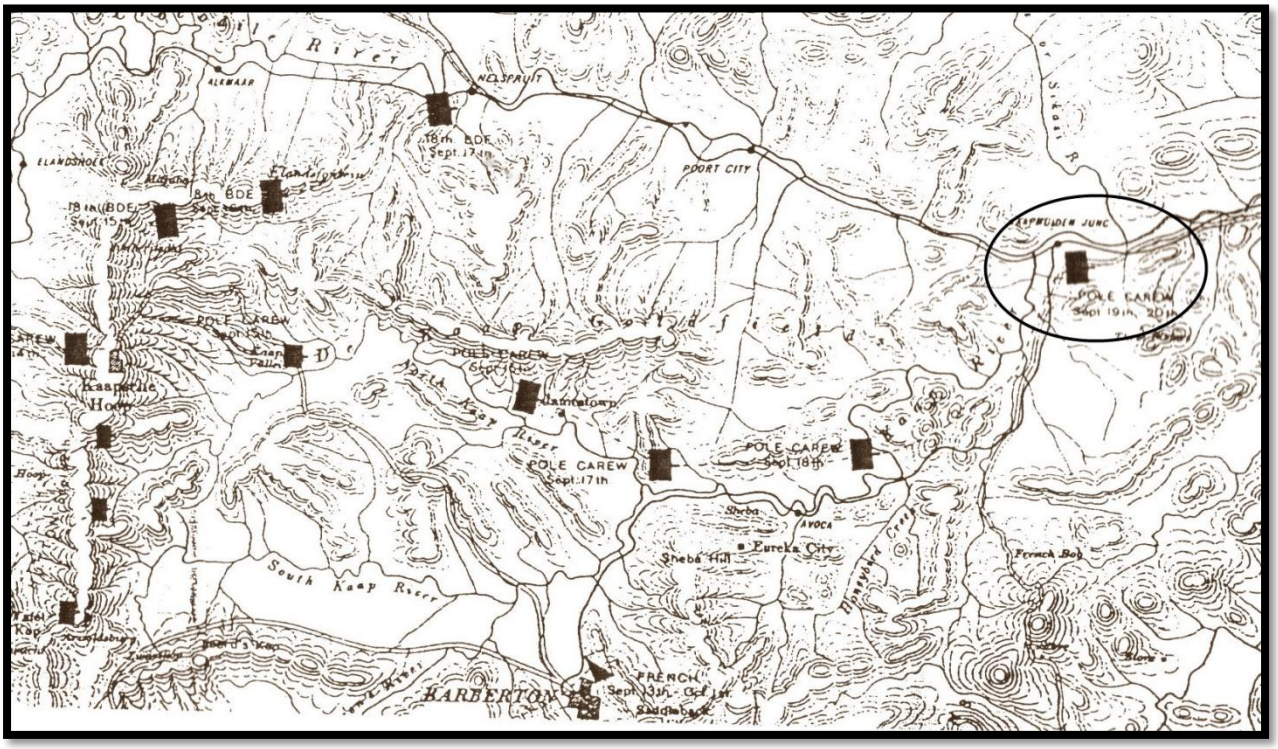

Fig. 4.1. Anglo Boer War map showing "The second stage of the combined advance on Koomati Poort, Sept. 3rd -24th 1900.

4.2. Archaeology

4.2.1. Stone Age

In Mpumalanga Province the Drakensberg separates the interior plateau also known as the Highveld from the low-lying subtropical Lowveld which stretches to the Indian Ocean. A number of rivers amalgamate into two main river systems, the Olifants River and the Komati River. This fertile landscape has provided resources for humans and their predecessors for more than 1,7million years (Esterhuizen & Smith in Delius, 2007).

The initial attraction of abundant foods in the form of animals and plants eventually also led to the discovery of and utilisation of various minerals including ochre, iron and copper. People also obtained foreign resources by means of trade from the coast. From 900AD this included objects which were brought across the ocean from foreign shores.

The Early Stone Age (ESA)

In South Africa the ESA dates from about 2 million to 250 000 thousand years ago in other words from the early to middle Pleistocene. The archaeological record shows that as the early ancestors progressed physically, mentally and socially, bone and stone tools were developed. One of the most influential advances was their control of fire and diversifying their diet by exploitation of the natural environment (Esterhuizen & Smith in Delius, 2007).

The earliest tools date to around 2, 5 million years ago from the site of Gona in Ethiopia. Stone tools from this site shows that early hominids had to cognitive ability to select raw material and shape it for a specific application. Many bones found in association with stone tools like these have cut marks which lead scientists to believe that early hominids purposefully chipped cobblestones to produce flakes with a sharp edge capable of cutting and butchering animal carcasses. This supplementary diet of higher protein quantities ensured that brain development of hominids took place more rapidly.

Mary Leaky discovered tools like these in the Olduwai Gorge in Tanzania during the 1960s. The tools are named after this gorge and is known as the Oldowan industry. These tools, only found in Africa, are mainly simple flakes which were struck from cobbles. This method of manufacture remained for about 1,5 million years. Although there is continuing debate about who made these tools, two hominids may have been responsible. The first of these was an early form of *Homo* and the second was *Parathropus robustus*, which became extinct about 1 million years ago (Esterhuizen & Smith in Delius, 2007).

Some time later, around 1, 7 million years ago more specialised tools known as Acheulean tools, appeared. These are named after tools from a site in France by the name of Saint Acheul, where they were first discovered in the 1800s. It is argued that these tools had their origin in Africa and then spread towards Europe and Asia with the movement of hominids out of Africa. These tools had longer and sharper edges and shapes which suggest that they could be used for a larger range of activities which included the

butchering of animals, chopping of wood, digging roots and cracking bone. *Homo ergaster* was probably responsible for the manufacture of Acheulean tools in South Africa. This physical type was arguably physically similar to modern humans, a larger brain and modern face, body height and proportion are all characteristics which are very similar to us. *Homo ergaster* was able to flourish in a variety of habitats in part because they were dependent on tools. They adapted to drier, more open grassland settings. Because these early people were often associated with water sources such as rivers and lakes, sites where they left evidence of their occupation are very rare. Most tools of these people have been washed into caves, eroded out of riverbanks and washed downriver. An example in Mpumalanga is Maleoskop on the farm Rietkloof where ESA tools have been found. This is one of only a handful of such sites in Mpumalanga.

Middle Stone Age (MSA)

A greater variety of tools with diverse sizes and shapes appeared by 250 000 BP. These replaced the large hand axes and cleavers of the ESA. This technological advancement introduces the Middle Stone Age (MSA). This period is characterised by tools which are smaller in size but different in manufacturing technique (Esterhuizen & Smith in Delius, 2007).

In contrast to the ESA technology of removing flakes from a core, MSA tools were flakes to start with. They were of a predetermined size and shape and were made by preparing a core of suitable material and striking off the flake so that it was flaked according to a shape which the toolmaker desired. Elongated, parallel-sided blades, as well as triangular flakes are common finds in these assemblages. Mounting of stone tools onto wood or bone to produce spears, knives and axes became popular during the MSA. These early humans not only settled close to water sources but also occupied caves and shelters. The MSA represents the transition of more archaic physical type (*Homo)* to anatomically modern humans, *Homo sapiens.*

The MSA has not been extensively studied in Mpumalanga but evidence of this period has been excavated at Bushman Rock Shelter, a well-known site on the farm Klipfonteinhoek in the Ohrigstad district. This cave was excavated twice in the 1960s by Louw and later by Eloff. The MSA layers show that the cave was repeatedly visited over a long period. Lower layers have been dated to over 40 000 BP while the top layers date to approximately 27 000 BP (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

Later Stone Age (LSA)

Early hunter gatherer societies were responsible for a number of technological innovations and social transformations during this period starting at around 20 000 years BP. Hunting of animals proved more successful with the innovation of the bow and link-shaft arrow. These arrows were made up of a bone tip which was poisoned and loosely linked to the main shaft of the arrow. Upon impact, the tip and shaft separated leaving the poisoned arrow-tip imbedded in the prey animal. Additional innovations include bored stones used as digging stick weights to uproot tubers and roots; small stone tools, mostly less than 25mm long, used for cutting of meat and scraping of hides; polished bone tools such as needles; twine made from

plant fibres and leather; tortoiseshell bowls; ostrich eggshell beads; as well as other ornaments and artwork (Esterhuizen & Smith in Delius, 2007).

At Bushman Rock Shelter the MSA is also represented and starts at around 12 000 BP but only lasted for some 3 000 years. The LSA is of importance in geological terms as it marks the transition from the Pleistocene to the Holocene which was accompanied by a gradual shift from cooler to warmer temperatures. This change had its greatest influence on the higher lying areas of South Africa. Both Bushman Rock Shelter and a nearby site, Heuningneskrans, have revealed a greater use in plant foods and fruit during this period (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

Faunal evidence suggests that LSA hunter-gatherers trapped and hunted zebra, warthog and bovids of various sizes. They also diversified their protein diet by gathering tortoises and land snails *(Achatina*) in large quantities.

Ostrich eggshell beads were found in most of the levels at these two sites. It appears that there is a gap of approximately 4 000 years in the Mpumalanga LSA record between 9 000 BP and 5 000 BP. This may be a result of generally little Stone Age research being conducted in the province. It is, however, also a period known for rapid warming and major climate fluctuation which may have led people to seek out protected environments in this area. The Mpumalanga Stone Age sequence is visible again during the mid-Holocene at the farm Honingklip near Badplaas in the Carolina district (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

At this location, two LSA sites were located on opposite sides of the Nhlazatshe River, about one kilometre west of its confluence with the Teespruit. These two sites are located on the foothills of the Drakensberg where the climate is warmer than the Highveld but also cooler than the Lowveld (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

Nearby the sites, dated to between 4 870 BP and 200 BP are four panels which contain rock art. Colouring material is present in all the excavated layers of the site which makes it difficult to determine whether the rock art was painted during the mid- or later Holocene. Stone walls at both sites date from the last 250 years of hunter gatherer occupation and they may have served as protection from predators and intruders (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).

4.2.2. Early Iron Age

The period referred to as the Early Iron Age (AD 200-1500 approx.) started when presumably Karanga (north-east African) herder groups moved into the north eastern parts of South Africa. It is believed that these people may have been responsible for making of the famous Lydenburg Heads, ceramic masks dating to approximately 600AD.

Ludwig von Bezing was a boy of more or less 10 years of age when he first saw pieces of the now famous Lydenburg heads in 1957 while playing in the veld on his father's farm near Lydenburg. Five years later von Bezing developed an interest in archaeology and went back to where he first saw the shards. Between

1962 and 1966 he frequently visited the Sterkspruit valley to collect pieces of the seven clay heads. Von Bezing joined the archaeological club of the University of Cape Town when he studied medicine at this institution.

He took his finds to the university at the insistence of the club. He had not only found the heads, but potsherds, iron beads, copper beads, ostrich eggshell beads, pieces of bones and millstones. Archaeologists of the University of Cape Town and WITS Prof. Ray Innskeep and Dr Mike Evers excavated the site where von Bezing found the remains. This site and in particular its unique finds (heads, clay masks) instantly became internationally famous and was henceforth known as the Lydenburg Heads site.

Two of the clay masks are large enough to probably fit over the head of a child, the other five are approximately half that size. The masks have both human and animal features, a characteristic that may explain that they had symbolic use during initiation- and other religious ceremonies. Carbon dating proved that the heads date to approximately 600 AD and was made by Early Iron Age people. These people were Bantu herders and agriculturists and probably populated Southern Africa from areas north-east of the Limpopo river. Similar ceramics were later found in the Gustav Klingbiel Nature Reserve and researchers believe that they are related to the ceramic wares (pottery) of the Lydenburg Heads site in form, function and decorative motive. This sequence of pottery is formally known as the Klingbiel type pottery. No clay masks were found in similar context to this pottery sequence.

Two larger heads and five smaller ones make up the Lydenburg find. The heads are made of the same clay used in making household pottery. It is also made with the same technique used in the manufacture of household pottery. The smaller heads display the modeling of a curved forehead and the back neck as it curves into the skull. Around the neck of each of the heads, two or three rings are engraved horizontally and are filled in with hatching marks to form a pattern. A ridge of clay over the forehead and above the ears indicates the hairline. On the two larger heads a few rows of small clay balls indicate hair decorations. The mouth consists of lips – the smaller heads also have teeth. The seventh head has the snout of an animal and is the only head that represents an animal.

Some archaeological research was done during the 1970's at sites belonging to the EIA (Early Iron Age), location Plaston, a settlement close to White River (Evers, 1977). This site is located on a spur between the White River and a small tributary. It is situated on holding 119 at Plaston.

The site was discovered during house building operations when a collection of pottery shards was excavated. The finds consisted of pottery shards both on the surface and excavated.

Some of the pottery vessels were decorated with a red ochre wash. Two major decoration motifs occurred on the pots:

- Punctuation, using a single stylus and
- Broadline incision, the more common motif

A number of Early Iron Age pottery collections from Mpumalanga and Limpopo may be compared to the Plaston sample. They include Silver Leaves, Eiland, Matola, Klingbiel and the Lydenburg Heads site. The Plaston sample is distinguished from samples of these sites in terms of rim morphology, the majority of rims from Plaston are rounded and very few beveled. Rims from the other sites show more beveled rims (Evers, 1977:176).

Early Iron Age pottery was also excavated by archaeologist, Prof. Tom Huffman during 1997 on location where the Riverside Government complex is currently situated (Huffman, 1998). This site known as the Riverside site is situated a few kilometers north of Nelspruit next to the confluence of the Nelspruit and Crocodile River. It was discovered during the course of an environmental impact assessment for the new Mpumalanga Government complex/ offices. A bulldozer cutting exposed storage pits, cattle byres, a burial and midden on the crest of a gentle slope. Salvage excavations conducted during December 1997 and March 1998 recovered the burial and contents of several pits.

One of the pits contained among other items, pottery dating to the eleventh century (AD 1070 ± 40 BP) this relates the pottery to the Mzonjani and Broederstroom phases. The early assemblage belongs to the Kwale branch of the Urewe tradition.

During the early 1970's Dr Mike Evers of the University of the Witwatersrand conducted fieldwork and excavations in the Eastern Transvaal. Two areas were studied, the Letaba area south of the Groot Letaba River, west of the Lebombo Mountains, east of the great escarpment and north of the Olifants River. The second area was the Eastern Transvaal escarpment area between Lydenburg and Machadodorp.

These two areas are referred to as the Lowveld and escarpment respectively. The earliest work on Iron Age archaeology was conducted by Trevor and Hall in 1912. This revealed prehistoric copper-, gold- and iron mines. Schwelinus (1937) reported smelting furnaces, a salt factory and terraces near Phalaborwa. In the same year D.S. van der Merwe located ruins, graves, furnaces, terraces and soapstone objects in the Letaba area.

Mason (1964, 1965, 1967, 1968) started the first scientific excavation in the Lowveld which was followed by N.J. van der Merwe and Scully. M. Klapwijk (1973, 1974) also excavated an Early Iron Age (EIA) site at Silverleaves and Evers and van den Berg (1974) excavated at Harmony and Eiland, both EIA sites.

Recent research by the National Cultural History Museum resulted in the excavation of an Early Iron Age site in Sekhukuneland, known as Mototolong (Van Schalkwyk, 2007). The site is characterized by four large cattle kraals containing ceramics which may be attributed to the Mzonjani and Doornkop occupational phases.

4.2.3. Late Iron Age

The later phases of the Iron Age (AD 1600-1800's) is represented by various tribes including Ndebele, Swazi, BaKoni, Pedi marked by extensive stonewalled settlements found throughout the escarpment and particularly around Lydenburg, Badfontein, Sekhukuneland, Roossenekal and Steelpoort. The BaKoni were

the architects of the stone-walled enclosures found throughout the escarpment area of Eastern Mpumlanga. These settlement complexes may be divided into three basic features: homesteads, terraces and cattle tracks. Researchers such as Mike Evers (1975) and Collett (1982) identified three basic settlement layouts in this area. Basically these sites can be divided into simple and complex ruins. Simple ruins are normally small in relation to more complex sites and have smaller central cattle byres and fewer huts. Complex ruins consist of a central cattle byre which has two opposing entrances and a number of semi-circular enclosures surrounding it. The perimeter wall of these sites is sometimes poorly visible. Huts are built between the central enclosure and the perimeter wall. These are all connected by track-ways referred to as cattle tracks. These tracks are made by building stone walls which forms a walkway for cattle to the centrally located cattle byres.

Smaller tribes such as the Pai and Pulana who resided in the Lowveld were attacked by and made to flee from the aggressive Swazi, especially during the *mfecane* (difaqane).They (Swazi) were particularly active in the Lowveld during the difaqane period (1820's) and it is well-known that they frequently attacked and ousted smaller herder groups like the Pai and Pulana, especially in the area today known as Low's Creek. They were however prevented from settling in the low-lying areas due to the presence of the tsetse fly and malaria. Consequently there is little evidence of large scale settlement in the Crocodile River valley until the time of colonial settlement (1890's) and later. Small, isolated dry-packed stone-walled enclosures found near Nelspruit and surrounding areas may be attributed to these smaller groups who hid away from the Swazi onslaught. The sites were probably not used for extended periods as they were frequently on the move as a result of the onslaught and therefore small, indistinct and with little associated cultural material.

5. Located sites, description and suggested mitigation

Seven (7) sites were documented. The sites consist of unmarked graves and informal grave sites where two or more graves are located. Each site is numbered UT which are initials for “Umjindi Trust” and a following number for each site.

Table 5.1. Summary of located sites and their significance

Type of site	**Identified sites**	**Significance**
Graves and graveyards	Seven **(UT1-7)**	High; Local 3A
Late Iron Age	None	N/A
Early Iron Age	None	N/A
Historical buildings	None	N/A
Historical features	None	N/A
Stone Age sites	None	N/A

Table 5.2. Significance rating guidelines for sites

Field Rating	**Grade**	**Significance**	**Recommended Mitigation**
National Significance (NS)	Grade 1		Conservation, nomination as national site
Provincial Significance (PS)	Grade 2		Conservation; Provincial site nomination
Local significance (LS 3A)	Grade 3A	High Significance	Conservation, No mitigation advised
Local Significance (LS 3B)	Grade 3B	High Significance	Mitigation but at least part of site should be retained
Generally Protected A (GPA)		High/ Medium Significance	Mitigation before destruction
Generally Protected B (GPB)		Medium Significance	Recording before destruction
Generally Protected C (GPC)		Low Significance	Destruction

5.2. Description of located sites

5.2.1. Site UT 1.

Location: See Appendix B and D (fig. 1-4).

Description: A cluster of five unmarked graves located on the Western side of the current road under which the newly laid water pipeline is buried. The grave nearest to the road is located approximately 2 metres from the centre of the road where the pipeline is buried. Informants stated that the graves are unknown to the local community.

Impact of the proposed development/ activity:

No immediate impact on the graves yet but future impact may occur

Recommendation:

To minimise further impact on the graves it is recommended that the graveyard be fenced and any surviving relatives be allowed access. If this is not possible, heritage legislation guides alternative options. These graves are by default protected under section 36 of the NHRA (25 of 1999) because they are unmarked and unknown therefore a permit must be issued by SAHRA before the grave may be relocated or exhumed. The Human Tissues Act 65 of 1983 applies to graves younger than 60 years.

5.2.2. Site UT 2.

Location: See Appendix B and D (fig. 5-7).

Description: Two unmarked graves orientated in East-west alignment and located on the Eastern shoulder of the existing dirt road under which a new water pipeline was buried recently.

Impact of the proposed development/ activity:

No immediate impact on the graves yet but future impact may occur

Recommendation:

To minimise further impact on the graves it is recommended that they be fenced and any surviving relatives be allowed access. If this is not possible, heritage legislation guides alternative options. The community indicated that these two graves date to 1952 meaning they are older than 60 years and they are therefore protected under section 36 of the NHRA (25 of 1999). Thus a permit must be issued by SAHRA before the graves may be relocated or exhumed.

5.2.3. Site UT 3.

Location: See Appendix B and D (fig. 8, 9).

Description: Three unmarked graves. This is a family graveyard pointed out by the informants and it belongs to the Tswala family. Three graves are positioned parallel to one another and aligned in a East-west orientation. The existing water pipeline and servitude is located approximately 30 metres to the south of the graves.

Impact of the proposed development/ activity:

The graves will probably not be impacted upon by the remainder of the project operations but future impacts should be avoided.

Recommendation:

To minimise further impact on the graves it is recommended that the graveyard be fenced.

5.2.4. Site UT 4.

Location: See Appendix B and D (fig. 10, 11).

Description: A single unmarked grave located approximately 7 metres south of the existing dirt road winding through the Trust settlement. Informants stated that this grave is unknown to the local community. The planned route of the water pipeline is underneath the current road.

Impact of the proposed development/ activity:

The grave will probably not be impacted upon by the remainder of the project operations but future impacts should be avoided.

Recommendation:

To minimise further impact on the grave it is recommended that it be fenced. Any surviving family should be allowed access. If this is not possible, heritage legislation guides alternative options. This grave is by default protected under section 36 of the NHRA (25 of 1999) because it is unmarked and unknown therefore a permit must be issued by SAHRA before the grave may be relocated or exhumed. The Human Tissues Act 65 of 1983 applies to graves younger than 60 years.

5.2.5. Site UT 5.

Location: See Appendix B and D (fig. 12, 13).

Description: A single grave located South-east of an existing dirt road which winds through the Trust settlement. The planned water pipe will be installed West of this road and thus approximately 7 metres West of the grave. Consultation with the local community showed that this grave is not known to anybody.

Impact of the proposed development/ activity:

The grave will probably not be impacted upon by the remainder of the project operations but future impacts should be avoided.

Recommendation:

To minimise further impact on the grave it is recommended that it be fenced. Any surviving family should be allowed access. If this is not possible, heritage legislation guides alternative options. This grave is by default protected under section 36 of the NHRA (25 of 1999) because it is unmarked and unknown therefore a permit must be issued by SAHRA before the grave may be relocated or exhumed.

5.2.6. Site UT 6.

Location: See Appendix B and D (fig. 14, 15).

Description: Two unmarked graves located approximately 8 metres North-west of the new pipeline route. Informants stated that consultation with the community revealed that nobody knows how old these graves are neither who is buried here.

Impact of the proposed development/ activity:

The graves will probably not be impacted upon by the remainder of the project operations but future impacts should be avoided.

Recommendation:

To minimise further impact on the graves it is recommended that they be fenced. Any surviving family should be allowed access. If this is not possible, heritage legislation guides alternative options. This grave is by default protected under section 36 of the NHRA (25 of 1999) because it is unmarked and unknown therefore a permit must be issued by SAHRA before the grave may be relocated or exhumed.

5.2.7. Site UT 7.

Location: See Appendix B and D (fig. 16-18).

Description: A single unmarked grave located some 10 metres South of the newly laid water pipeline. According to the informants this grave belongs to the family Dlamini whose house is located across the dirt road from the grave. Another already installed pipeline is located approximately 18 metres West of the grave.

Impact of the proposed development/ activity:

The grave will probably not be impacted upon by the remainder of the project operations but future impacts should be avoided.

Recommendation:

To minimise further impact on the graves it is recommended that the grave be fenced.

TABLE 5.3. General Significance of located sites and field rating.

Site No.	Description	Type of significance	Degree of significance	NHRA heritage resource & rating
UT1	Five unmarked graves	Social	Archaeological: None. Historic: Low.	Graves and burial grounds. Local Significance, **LS 3A.**
UT 2	Two unmarked graves	Social	Archaeological: None. Historic: Low.	Graves and burial grounds. Local Significance, **LS 3A.**
UT 3	Three unmarked graves	Social	Archaeological: None Historic: Low.	Graves and burial grounds. Local Significance, **LS 3A.**
UT 4	One unmarked grave	Social	Archaeological: None Historic: Low.	Graves and burial grounds. Local Significance, **LS 3A.**
UT 5	One unmarked grave	Social	Archaeological: None Historic: Low.	Graves and burial grounds. Local Significance, **LS 3A.**
UT6	Two unmarked graves	Social	Archaeological: None Historic: Low.	Graves and burial grounds. Local Significance, **LS 3A.**
UT 7	One unmarked grave	Social	Archaeological: None Historic: Low.	Graves and burial grounds. Local Significance, **LS 3A.**

TABLE 5.4. Site condition assessment and management recommendations.

Site no.	Type of Heritage resource	Integrity of cultural material	Preservation condition of site	Relative location	Quality of archaeological/ historic material	Quantity of site features	Recommended conservation management
UT1	Graves & burial grounds	N/A	Poor	Umjindi Trust.	N/A	5	Fence or exhume & reburial
UT2	Graves & burial grounds	N/A	Poor	Umjindi Trust.	N/A	2	Fence or exhume & reburial
UT3	Graves & burial grounds	N/A	Fair-good	Umjindi Trust.	N/A	3	Fence or exhume & reburial
UT4	Graves & burial grounds	N/A	Poor	Umjindi Trust.	N/A	1	Fence or exhume & reburial
UT5	Graves & burial grounds	N/A	Poor	Umjindi Trust.	N/A	1	Fence or exhume & reburial
UT6	Graves & burial grounds	N/A	Fair	Umjindi Trust.	N/A	2	Fence or exhume & reburial
UT7	Graves & burial grounds	N/A	Fair-good	Umjindi Trust.	N/A	1	Fence or exhume & reburial

6. Findings and recommendations

Recommendations were allocated to each site as discussed in section 5: **Located sites and their description, tables 5.3 and 5.4.**

A total of seven (7) site locations and graves (sites UT 1-7) totalling 15 in number were recorded and documented. All the graves have no headstones and a number of them (UT1, 2, 4-6) are unknown to the current local community, however, information from the community suggests that two graves (site UT 2) date from 1952 which makes them 63 years old. Sites (UT 1 and UT 2) have graves very near the recently installed water pipeline. At these locations the pipeline is buried beneath the existing road and the graves located very close to the Western and Eastern shoulder of the road (see photos, Appendix D). The remaining grave sites are located at least 7 metres and further away from the existing or planned pipeline route. In terms of significance the graves are considered to be of high local social significance (**LS 3A, table 5.1, 5.2, 5.3, 5.4**).
It is recommended that all the identified grave sites or individual graves be fenced off to prevent further impact on them which includes future maintenance work and that any surviving relatives allowed access. It is also recommended that further planned routing of any kind be preceded by a survey done by a qualified Archaeologist to ensure the pro-active recording of any heritage resources including graves and grave sites.
In the case where graves are older than 60 years they are protected under section 36 of the NHRA (25 of 1999) and therefore a permit must be issued by SAHRA before the graves may be relocated or exhumed. If the graves are younger than 60 years the Human Tissues Act 65 of 1983 applies whereby a registered funeral undertaker may facilitate exhumation and reburial.

Please note: The bulk of archaeological remains are normally located beneath the soil surface. It is therefore possible that some significant cultural material or remains were not located during this survey and will only be revealed when the soil is disturbed. Should excavation or large scale earth moving activities reveal any human skeletal remains, broken pieces of ceramic pottery, large quantities of sub-surface charcoal or any material that can be associated with previous occupation, a qualified archaeologist should be notified immediately. This will also temporarily halt such activities until an archaeologist have assessed the situation. It should be noted that if such a situation occurs it may have further financial implications.

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Appendix A

Terminology

"Alter" means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or other decoration or any other means.

"Archaeological" means –

- Material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artifacts, human and hominid remains and artificial features or structures;
- Rock Art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
- Wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artifacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; and
- Features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found;

"Conservation", in relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance;

"Cultural significance" means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance;

"Development" means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including –

- construction, alteration, demolition, removal or change of use of a place or a structure at a place;
- carrying out any works on or over or under a place;
- subdivision or consolidation of land comprising, a place, including the structures or airspace of a place;

- constructing or putting up for display signs or hoardings;
- any change to the natural or existing condition or topography of land; and
- any removal or destruction of trees, or removal of vegetation or topsoil;

"Expropriate" means the process as determined by the terms of and according to procedures described in the Expropriation Act, 1975 (Act No. 63 of 1975);

"Foreign cultural property", in relation to a reciprocating state, means any object that is specifically designated by that state as being of importance for archaeology, history, literature, art or science;

"Grave" means a place of internment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place;

"Heritage resource" means any place or object of cultural significance;

"Heritage register" means a list of heritage resources in a province;

"Heritage resources authority" means the South African Heritage Resources Agency, established in terms of section 11, or, insofar as this Act (25 of 1999) is applicable in or in respect of a province, a provincial heritage resources authority (PHRA);

"Heritage site" means a place declared to be a national heritage site by SAHRA or a place declared to be a provincial heritage site by a provincial heritage resources authority;

"Improvement" in relation to heritage resources, includes the repair, restoration and rehabilitation of a place protected in terms of this Act (25 of 1999);

"Land" includes land covered by water and the air space above the land;

"Living heritage" means the intangible aspects of inherited culture, and may include –

- cultural tradition;
- oral history;
- performance;
- ritual;
- popular memory;
- skills and techniques;
- indigenous knowledge systems; and
- the holistic approach to nature, society and social relationships;

"Management" in relation to heritage resources, includes the conservation, presentation and improvement of a place protected in terms of the Act;

"Object" means any moveable property of cultural significance which may be protected in terms of any provisions of the Act, including –

- any archaeological artifact;
- palaeontological and rare geological specimens;
- meteorites;
- other objects referred to in section 3 of the Act;

"Owner" includes the owner's authorized agent and any person with a real interest in the property and –

- in the case of a place owned by the State or State-aided institutions, the Minister or any other person or body of persons responsible for the care, management or control of that place;
- in the case of tribal trust land, the recognized traditional authority;

"Place" includes –

- a site, area or region;
- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
- a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
- an open space, including a public square, street or park; and
- in relation to the management of a place, includes the immediate surroundings of a place;

"Site" means any area of land, including land covered by water, and including any structures or objects thereon;

"**Structure"** means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Appendix B

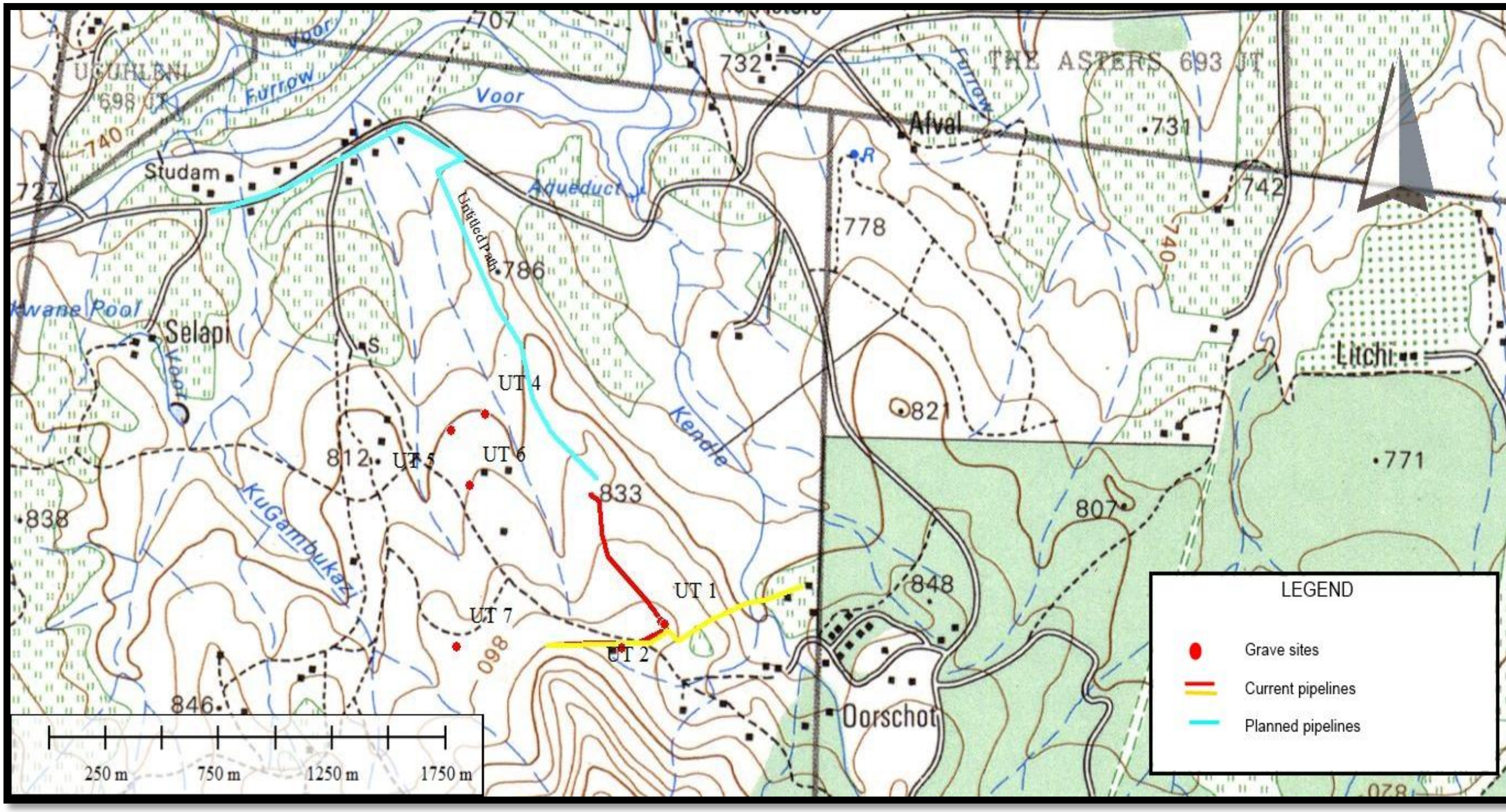
List of located sites

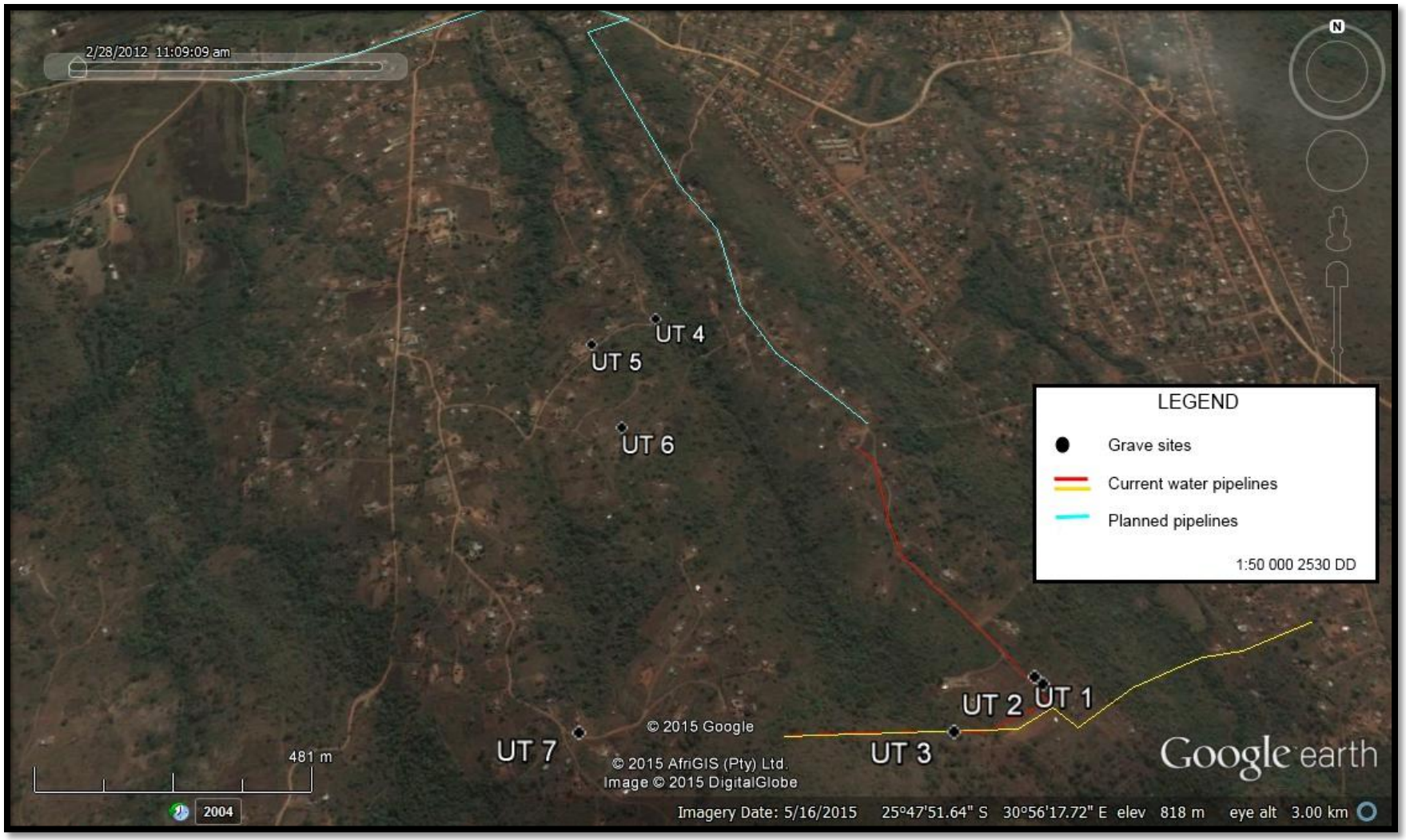
A total of seven sites were located and numbered UT 1-7. The initials “UT” represent Umjindi Trust followed by the number of the site. A spatial location with the aid of a GPS (Global Positioning System) was added to each site.

Table A. Site Locations.

Site Name	Date of compilation	GPS Coordinates		Photo figure No.
UT 1	25/07/2015	S25°48'10.34"	E030°56'39.38"	1-4
UT 2	25/07/2015	S25°48'10.76"	E030°56'39.86"	5-7
UT 3	25/07/2015	S25°48'13.63"	E030°56'33.70"	8, 9
UT 4	25/07/2015	S25°47'44.11"	E030°56'14.18"	10, 11
UT 5	25/07/2015	S25°47'46.28"	E030°56'09.28"	12, 13
UT 6	25/07/2015	S25°47'53.19"	E030°56'11.90"	14, 15
UT 7	25/07/2015	S25°48'13.49"	E030°56'09.94"	16-18

Appendix C


LEGEND
Grave sites
Current pipelines
Planned pipelines
UT 1
UT 2
UT 4
UT 5
UT 6
UT 7
250 m
750 m
1250 m
1750 m
Selapi
Studam
Afval
Litchi
Oorschot
Kendle
Aqueduct
Voor
Furrow
THE ASTERS 693 JT
Untitled Path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UT 4
UT 5
UT 6
UT 7
UT 3
UT 2
UT 1
LEGEND
Grave sites
Current water pipelines
Planned pipelines
1:50 000 2530 DD
© 2015 Google
© 2015 AfriGIS (Pty) Ltd.
Image © 2015 DigitalGlobe
481 m
2004
Google earth
Imagery Date: 5/16/2015 25°47'51.64" S 30°56'17.72" E elev 818 m eye alt 3.00 km

Appendix D

Fig. 1. Site UT 1. Photo of the graves as indicated and where the water pipeline is currently buried. Photo taken in South-east direction.

Fig. 2. Site UT 1. Close-up photo of the graves indicated by the black arrows. Photo taken West.

Fig. 3. Site KP 2. Black arrows indicate the location of graves. Photo taken in south-western direction.

Fig. 4. Site UT 1. Graves located close to the dirt road. Photo taken in South-western direction.

Fig. 5. Site UT 2. Two unmarked graves next to the existing road and close to new water pipeline.. Photo taken in Southern direction.

Fig. 6. Site UT 2. Two unmarked graves. Photo taken in South-eastern direction.

Fig. 7. Site UT 2. Two unmarked graves very close to the existing road and water pipleine. Photo taken in southern direction.

Fig. 8. Site UT 3. Three graves of the Tswala family. Photo taken in South-western direction.

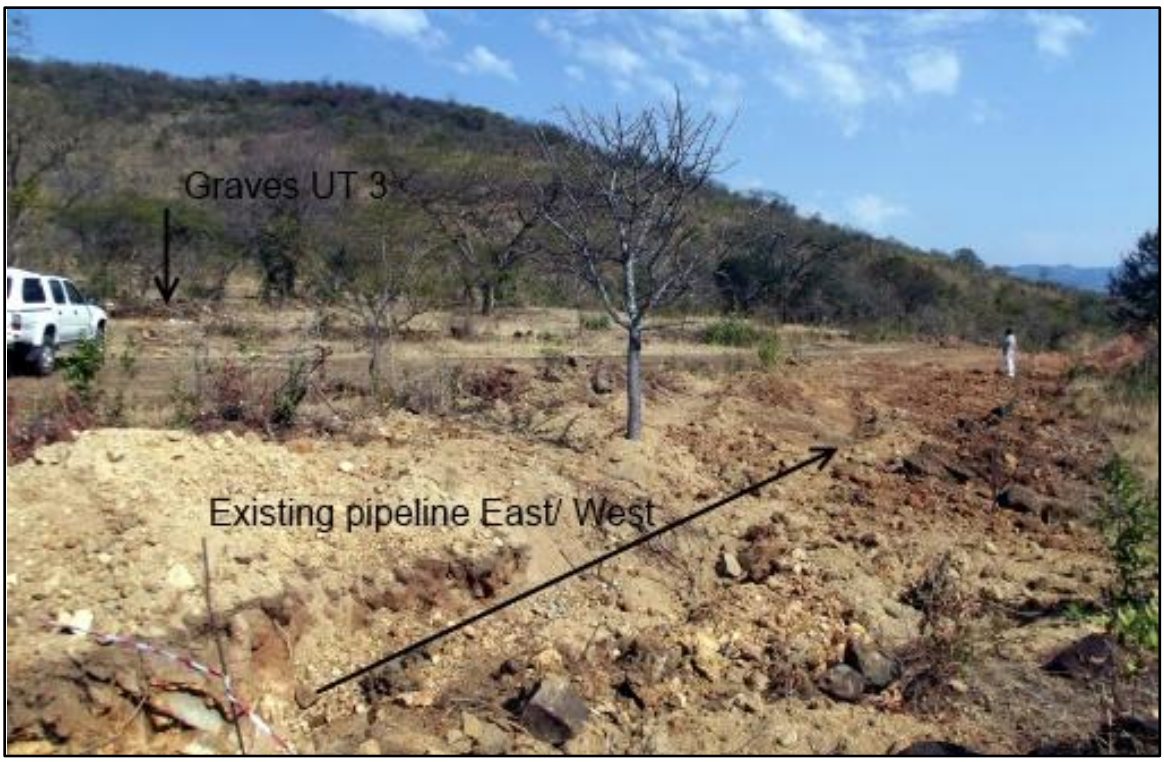

Fig. 9. Site UT 3. Three graves of the Tswala family and their relative location to the water pipeline. Photo taken in South-western direction.

Fig. 10. Site UT 4. Single unmarked grave. Photo taken in South-western direction.

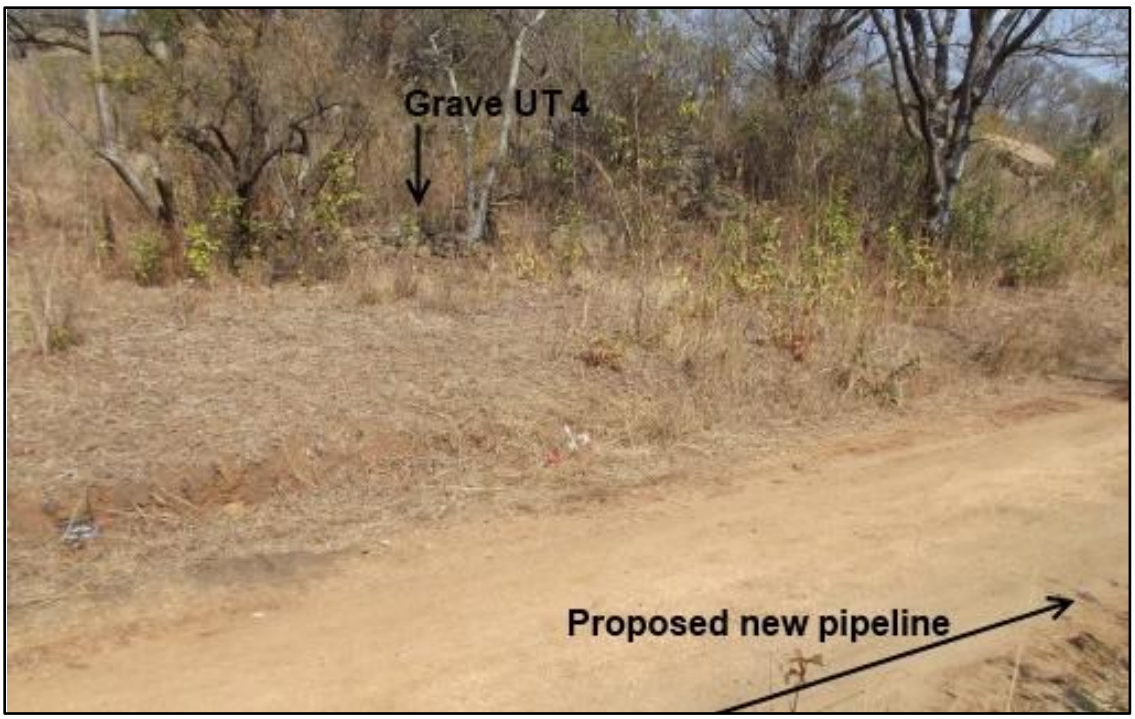

Fig. 11. Site UT 4. The single grave and proposed pipeline route. Photo taken in South-western direction.

Fig. 12. Site UT 5. Single grave and proposed pipeline route. Photo taken in Southern direction.

Fig. 13. Site UT 5. The Safety Officer indicates where the grave is located next to the road.

Fig. 14. Site UT 6. Two unmarked graves. Photo taken in southern direction.

Fig. 15. Site UT 6. Two unmarked graves and the location of the water pipe. Photo taken in Western direction.

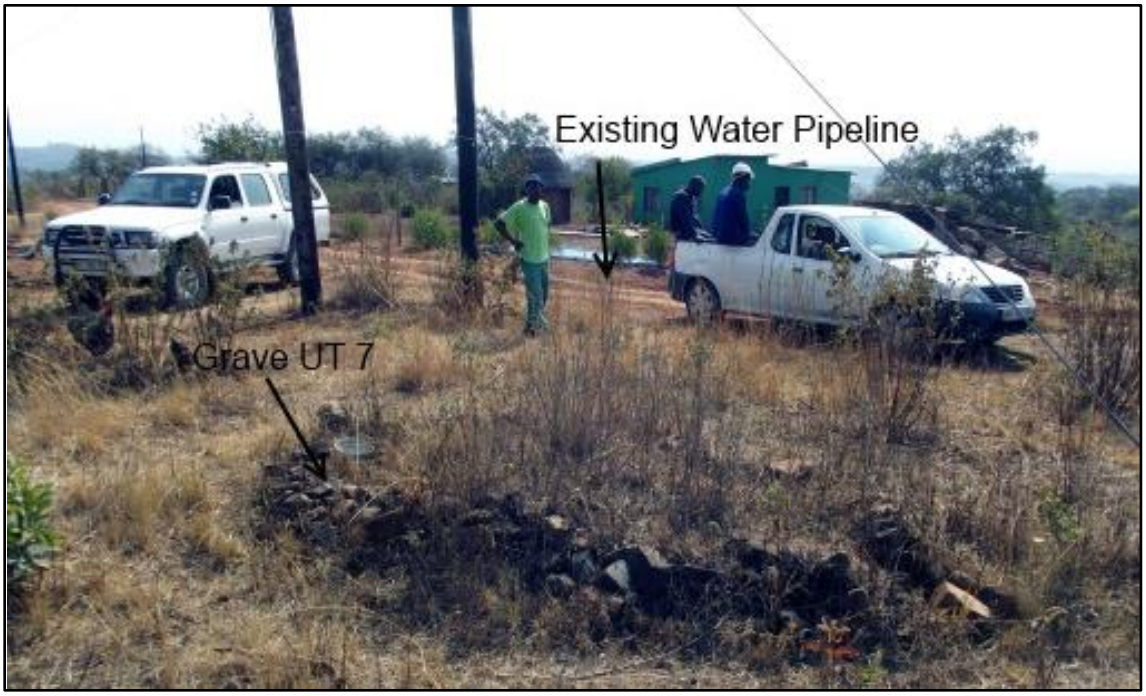

Fig. 16. Site UT 7. The Dlamini grave. Family home in backround. Photo taken in northern direction.

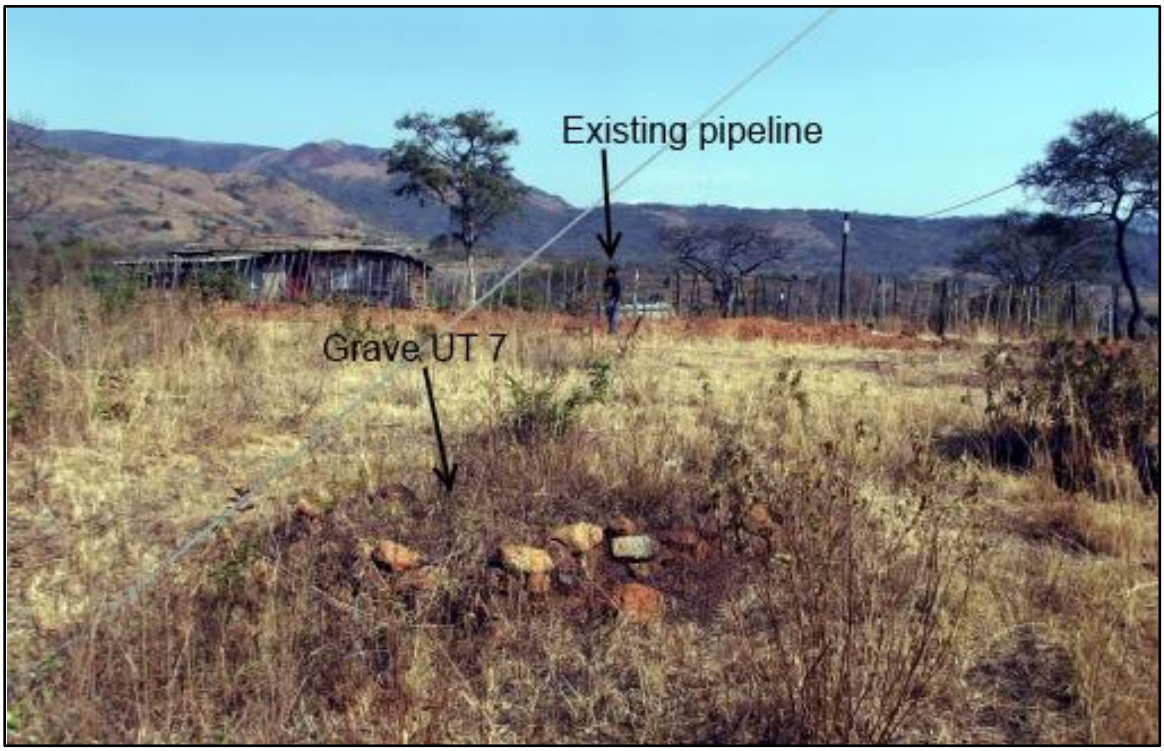

Fig. 17. Site UT 7. Grave and existing pipeline. Photo taken in Western direction.

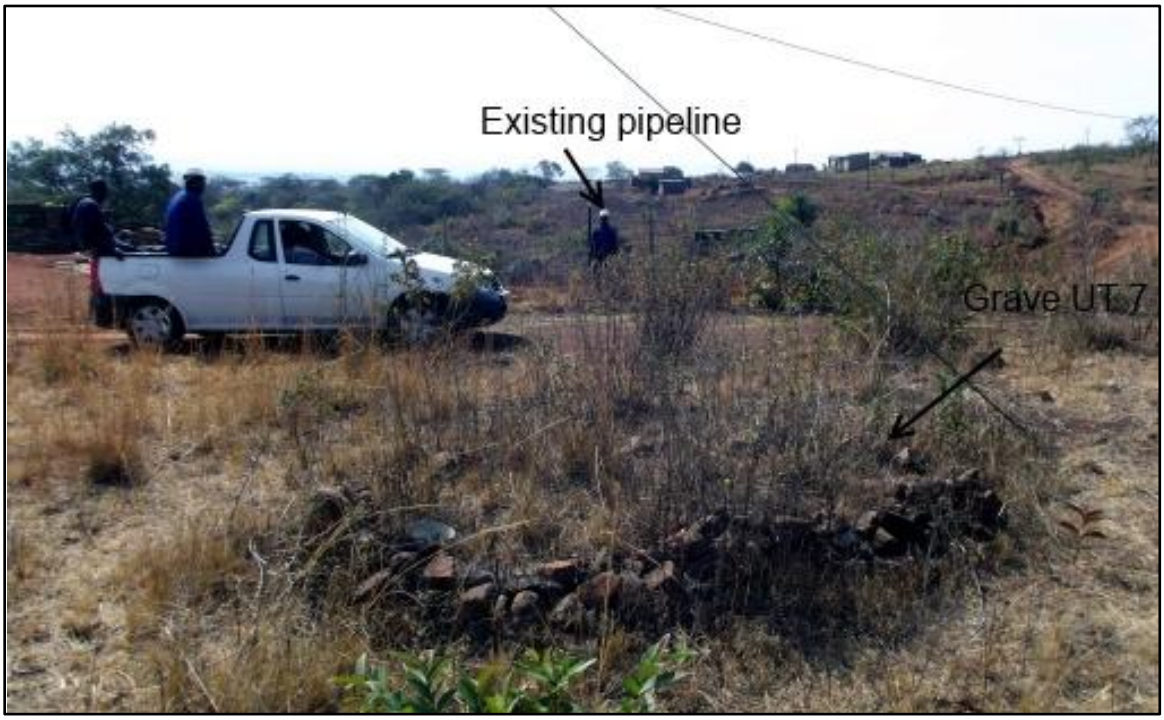

Fig. 18. Site UT 7. The grave and existing pipeline. Photo taken in North-eastern direction.