

**HERITAGE IMPACT ASSESSMENT OF THE
PROPOSED, GREATER MTHONJANENI SSA 2
BULK WATER SUPPLY PROJECT WITHIN THE
MTHONJANENI LOCAL MUNICIPALITY,
NORTHERN KWAZULU-NATAL**



ACTIVE HERITAGE cc.

FOR: ACER AFRICA

**Frans Prins
MA (Archaeology)**

**P.O. Box 947
Howick
3290**

activeheritage@gmail.com

Fax: 0867636380

www.activeheritage.webs.com

May 2014

TABLE OF CONTENTS

1	BACKGROUND INFORMATION ON THE PROJECT	5
1.1.	Details of the area surveyed:	6
2	SCOPE OF WORK	8
3	BACKGROUND TO HISTORY OF THE AREA	8
3.1	Archaeology.....	8
3.2	Historical past of the greater Melmoth and Ulundi areas	10
4	BACKGROUND INFORMATION OF THE SURVEY	11
4.1	Methodology	11
4.2	Restrictions encountered during the survey	12
4.2.1	<i>Visibility</i>	12
4.2.2	<i>Disturbance</i>	12
4.3	Details of equipment used in the survey.....	13
5	DESCRIPTION OF SITES AND MATERIAL OBSERVED	13
5.1	Locational data	13
5.2	Description of the heritage sites in the study area	13
6	STATEMENT OF SIGNIFICANCE (HERITAGE VALUE)	13
6.1	Field Rating.....	14
7	RECOMMENDATIONS	15
8	RISK PREVENTATIVE MEASURES ASSOCIATED WITH CONSTRUCTION	15
9	MAPS AND PHOTOGRAPHS	16
9	REFERENCES	18

LIST OF TABLES

Table 1.	Background information.....	5
Table 2.	Field rating and recommended grading of sites (SAHRA 2005)	14

LIST OF ABBREVIATIONS AND ACRONYMS

EIA	Early Iron Age
ESA	Early Stone Age
HISTORIC PERIOD	Since the arrival of the white settlers - c. AD 1820 in this part of the country
IRON AGE	Early Iron Age AD 200 - AD 1000 Late Iron Age AD 1000 - AD 1830
IIA	Intermediate Iron Age
ISA	Intermediate Stone Age
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998 and associated regulations (2006).
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999) and associated regulations (2000)
SAHRA	South African Heritage Resources Agency
STONE AGE	Early Stone Age 2 000 000 - 250 000 BP Middle Stone Age 250 000 - 25 000 BP Late Stone Age 30 000 - until c. AD 200

Details and experience of independent Heritage Impact Assessment Consultant

Consultant: Frans Prins (Active Heritage cc)
Contact person: Frans Prins
Physical address: 33 Buchanan Street, Howick, 3290
Postal address: P O Box 947, Howick, 3290
Telephone: +27 033 3307729
Mobile: +27 0834739657
Fax: 0867636380
Email: Activeheritage@gmail.com

PhD candidate (Historical Studies) North West University
MA (Archaeology) University of Stellenbosch 1991
Hons (Archaeology) University of Stellenbosch 1989

University of KwaZulu-Natal, Honorary Lecturer (School of Anthropology, Gender and Historical Studies).

Association of Southern African Professional Archaeologists member

Frans received his MA (Archaeology) from the University of Stellenbosch and is presently a PhD candidate on Historical Studies at North West University. His PhD research topic deals with indigenous San perceptions and interactions with the rock art heritage of the Drakensberg.

Frans was employed as a junior research associate at the then University of Transkei, Botany Department in 1988-1990. Although attached to a Botany Department he conducted a palaeoecological study on the Iron Age of northern Transkei - this study formed the basis for his MA thesis in Archaeology. Frans left the University of Transkei to accept a junior lecturing position at the University of Stellenbosch in 1990. He taught mostly undergraduate courses on World Archaeology and research methodology during this period.

From 1991 – 2001 Frans was appointed as the head of the department of Historical Anthropology at the Natal Museum, Pietermaritzburg. His tasks included academic research and publication, display conceptualization, and curating the African ethnology collections of the Museum. He developed various displays at the Natal Museum on topics ranging from Zulu material culture, traditional healing, and indigenous classificatory systems. During this period Frans also developed a close association with the Departments of Fine Art, Psychology, and Cultural and Media Studies at the then University of Natal. He assisted many post-graduate students with projects relating to the cultural heritage of South Africa. He also taught post-graduate courses on qualitative research methodology to honours students at the Psychology

Department, University of Natal. During this period he served on the editorial boards of the *South African Journal of Field Archaeology* and *Natalia*.

Frans left the Natal Museum in 2001 when approached by a Swiss funding agency to assist an international NGO (Working Group for Indigenous Minorities) with the conceptualization of a San or Bushman museum near Cape Town. During this period he consulted extensively with various San groupings in South Africa, Namibia and Botswana. During this period he also made major research and conceptual contributions to the Kamberg and Didima Rock Art Centres in the UKhahlamba Drakensberg World Heritage Site.

Between 2003 and 2007 Frans was employed as the Cultural Resource Specialist for the Maloti Drakensberg Transfrontier Project – a bilateral conservation project funded through the World Bank. This project involved the facilitation with various stakeholders in order to produce a cultural heritage conservation and development strategy for the adjacent parts of Lesotho and South Africa. Frans was the facilitator for numerous heritage surveys and assessments during this project. This vast area included more than 2000 heritage sites. Many of these sites had to be assessed and heritage management plans designed for them. He had a major input in the drafting of the new Cultural Resource Management Plan for the UKhahlamba Drakensberg World Heritage site in 2007/2008. A highpoint of his career was the inclusion of Drakensberg San indigenous knowledge systems, with San collaboration, into the management plans of various rock art sites in this world heritage site. He also liaised with the tourism specialist with the drafting of a tourism business plan for the area.

During April 2008 Frans accepted employment at the environmental agency called Strategic Environmental Focus (SEF). His main task was to set-up and run the cultural heritage unit of this national company. During this period he also became an accredited heritage impact assessor and he is rated by both Amafa and the South African Heritage Resources Agency (SAHRA). He completed almost 50 heritage impact assessment reports nation-wide during an 18th month period.

Frans left SEF and started his own heritage consultancy called “Active Heritage cc” in July 2009. Although mostly active along the eastern seaboard his clients also include international companies such as Royal Dutch Shell through Golder Associates, and UNESCO. He has now completed almost 400 heritage conservation and management reports for various clients since the inception of “Active Heritage cc”. Amongst these was a heritage study of the controversial fracking gas exploration of the Karoo Basin and various proposed mining developments in South Africa and proposed developments adjacent to various World Heritage sites. Apart from heritage impact assessments (HIA’s) Frans also assist the National Heritage Council (NHC) through Haley Sharpe Southern Africa’, with heritage site data capturing and analysis for the proposed National Liberation Route World Heritage Site and the National Intangible Heritage Audit. In addition, he is has done background research and conceptualization of the proposed Dinosaur Interpretative Centre at Golden Gate National Park and the

proposed Khoi and San Interpretive Centre at Camdeboo, Eastern Cape Province. During 2009 he also produced the first draft dossier for the nomination of the Sehlabathebe National Park, Lesotho as a UNESCO inscribed world heritage site.

Frans was appointed as temporary lecturer in the department of Heritage and Tourism, UKZN in 2011. He is also a research affiliate at the School of Cultural and Media Studies in the same institution.

Frans's research interests include African Iron Age, paleoecology, rock art research, San ethnography, traditional healers in South Africa, and heritage conservation. Frans has produced more than forty publications on these topics in both popular and academic publications. He is frequently approached by local and international video and film productions in order to assist with research and conceptualization for programmes on African heritage and culture. He has also acted as presenter and specialist for local and international film productions on the rock art of southern Africa. Frans has a wide experience in the fields of museum and interpretive centre display and made a significant contribution to the conceptual planning of displays at the Natal Museum, Golden Horse Casino, Didima Rock Art Centre and !Khwa tu San Heritage Centre. Frans is also the co-founder and active member of "African Antiqua" a small tour company who conducts archaeological and cultural tours world-wide. He is a Thetha accredited cultural tour guide and he has conducted more than 50 tours to heritage sites since 1992.

Declaration of Consultants independence

Frans Prins is an independent consultant to Acer Africa and has no business, financial, personal or other interest in the activity, application or appeal in respect of which he was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances whatsoever that compromise the objectivity of this specialist performing such work.

EXECUTIVE SUMMARY

A heritage impact assessment and survey of the proposed greater Mthonjaneni SSA 2 Bulk Water Supply Project within the Mthonjaneni Local Municipality produced no heritage sites on the footprint. Twenty eight grave sites were observed in the general project area but none of these occur closer than 50m from the proposed pipeline trajectories. No heritage sites occur in the immediate environs of the proposed Reservoir locations. There is no known archaeological reason why the development may not proceed as planned. However, it should be noted that the general area is rich in archaeological and historical sites. Construction work may expose material and attention is drawn to the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) and the KwaZulu-Natal Heritage Act (Act no 4 of 2008) which, requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.

1 BACKGROUND INFORMATION ON THE PROJECT

Table 1. Background information

Consultant:	Frans Prins (Active Heritage) for Acer Africa: Environmental Management Consultants
Type of development:	<p>The proposed project's primary objectives are to provide potable water to communities within Wards 2 and 3 of the Mthonjaneni Local Municipality in an effort to improve health and hygiene, empower the community, to provide a reliable water source and to promote employment opportunities within the region. Water for the proposed scheme will be sourced from existing reservoirs and bulk water services into which the proposed project will connect. No water abstraction from rivers or streams will be required for this proposed project.</p> <p>The proposed project will include the following project components:</p> <ul style="list-style-type: none"> □ Supply Pumping. The project will entail the construction of two new pump stations within the scheme. □ Bulk Distribution Storage. The project will entail the construction of six reservoirs within the scheme (all smaller than 2 Ml in volume). □ Distribution Network. The project will entail the construction of a steel water pipeline with a maximum pipeline diameter of 450 mm. □ Electrical Infrastructure. This will involve the provision of electricity to the two pump stations (22 kV) and some of the reservoir sites. <p>When selecting the route alignments for the proposed Greater Mthonjaneni SSA 2 Bulk Water Supply Project, the following criteria were taken into account by the engineering team to find the most practical and cost effective alignments:</p> <ul style="list-style-type: none"> □ The placing of the pipelines close to and along existing roads and tracks. □ Following contours. □ Following of ridge lines which will limit impacts on wetlands and sensitive environments. <p>In total, seven pipelines will be constructed during the project and will include the construction of five bulk gravity pipelines and two bulk rising mains. The topography of the supply area is characterised by very steep and hilly terrain, and, as a result, very high pressure heads are generated in the transfer of water to each supply reservoir. As far as possible the</p>

	pipelines will follow existing roadways and tracks. When this is not possible, the pipelines are to follow contours to reduce the steep drops and rises in the pipe work which result in high pressure heads within the pipes. Co-ordinates of the pipeline alignments at 500 m intervals are provided in Appendix 1.
Rezoning or subdivision:	Rezoning
Terms of reference	To carry out a Heritage Impact Assessment
Legislative requirements:	The Heritage Impact Assessment was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and following the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and the KwaZulu-Natal Heritage Act, 1997 (Act No. 4 of 2008).

1.1. Details of the area surveyed:

The project is located to the southwest of Melmoth within the Mthonjaneni Local Municipality which is one of the administrative areas within the uThungulu District Municipality (Figs 1 & 2). The proposed pipeline trajectory is approximately 20km long in total. The footprint is situated within a communal area that is characterized by the dispersed Nguni settlement pattern. Individual homesteads are scattered over the landscape although they are also concentrated adjacent to existing roads. There are evidence for small-scale subsistence activities and the associated transformed landscape. The topography of the study area is characterized by steep and hilly terrain. Because of the topography the proposed pipeline trajectory follows existing roads and tracks. When this is not possible the pipeline trajectory follows existing contours and ridge lines.

The GPS coordinates for the proposed pipeline coordinates at 500m intervals is given in Appendix 1.

1.2. Relevant Legislation:

According to the National Heritage Resources Act, 1999 (NHRA) (Act No. 25 of 1999), the heritage resources of South Africa include:

- a. places, buildings, structures and equipment of cultural significance;
- b. places to which oral traditions are attached or which are associated with living heritage;
- c. historical settlements and townscapes;
- d. landscapes and natural features of cultural significance;
- e. geological sites of scientific or cultural importance;
- f. archaeological and palaeontological sites;
- g. 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
 - vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- h. sites of significance relating to the history of slavery in South Africa;
- i. movable objects, including-
 - i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological 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(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

2 SCOPE OF WORK

This study aims to identify and assess the significance of any heritage and archaeological resources occurring on or adjacent to the proposed development. Based on the significance, the impact of the development on the heritage resources will be determined and appropriate actions to reduce the impact on the heritage resources put forward. In terms of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

- a. its importance in the community, or pattern of South Africa's history;
- b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h. 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
- i. sites of significance relating to the history of slavery in South Africa.

3 BACKGROUND TO HISTORY OF THE AREA

3.1 Archaeology

The greater Melmoth area, including Mthonjaneni, has been sporadically surveyed for archaeological heritage sites by archaeologists previously employed by the Natal Museum, the Ondini Cultural Museum and Amafa. The most systematic surveys

occurred recently in the Emakhosini Opate Park (Pelsner 2013) to the immediate north of the study area and further south at the Umfolozi-Hluluwe Nature Reserve. It is especially the extensive surveys conducted by Penner (1970), and Hall (1980) but also subsequent research by Feely (1980) and Anderson (1988) that has thrown light on the heritage resources of this nature reserve.

The available evidence, as captured in the KwaZulu-Natal Museum heritage site inventories, indicates that this area contains a wide spectrum of archaeological sites covering different time-periods and cultural traditions. Six Early Stone Age sites have been recorded. These sites date back to between 300 000 and 1.5 million years ago. Most of these are situated in dongas close to water with little in-situ material. An astonishing 59 Middle Stone Age sites have been recorded in the nature reserve. Middle Stone Age sites are associated with anatomically modern people and dates back to approximately 40 000 to 200 000 years ago. The vast majority of Middle Stone Age sites in the nature reserve are open-air sites. They therefore do not occur in archaeological context and have limited excavation value. Later Stone Age sites occur in various localities in the nature reserve. Thirty five Later Stone Age sites have been recorded. Although the majority of these sites are situated in open air context some are also associated with small shelters and caves. These shelters have archaeological excavation potential. The Later Stone Age is usually associated with San hunter-gatherers or their immediate predecessors and dates back to between 200 years and 30 000 years ago. Interestingly, the nature reserve also contains 11 rare examples of Zululand rock art sites. Although not as well known as the rock art of the Drakensberg the art of this region is nevertheless unique as it is probably older and executed in a different style from the Drakensberg art.

Archaeological sites have also been recorded outside of the Umfolozi-Hluluwe Nature Reserve although our knowledge of these is more limited. Early Stone Age tools have been recorded in the greater Ulundi district. One Middle Stone Age open air site has been recorded immediately adjacent to Nongoma in the 1970's. However, this site seems to have been destroyed by development in recent years. Later Stone Age tools, belonging to the San and their immediate ancestors, occur in various localities in Zululand some open air sites have been recorded close to Ulundi. An Iron Age engraving site also occurs in the area but not in the immediate vicinity of the footprint.

Around 1 700 years ago an initial wave of Early Iron Age People settled along the inland foot of the sand dunes on sandy but humus rich soils which would have ensured good crops for the first year or two after they had been cleared. These early agro-pastoralists produced a characteristic pottery style known as Matola. The Matola people also exploited the wild plant and animal resources of the forest and adjacent sea-shore. The communities seems to been small groups of perhaps a few dozen slash-and burn cultivators, moving into a landscape sparsely inhabited by Later Stone Age San hunter-gatherers.

By 1500 years ago another wave of Iron Age migrants entered the area. Their distinct ceramic pottery is classified to styles known as “Msuluzi” (AD 500-700), Ndongondwane (AD 700-800) and Ntshekane (AD 800-900). The vast majority of recorded sites belonging to this period occur in the Tugela River Basin below the 1000m contour to the south of the project area. Some of these, such as the Ndongondwane and Mamba sites have been excavated by archaeologists (Maggs 1989:31; Huffman 2007:325-462).

3.2 Historical past of the greater Melmoth and Ulundi areas

The greater Ulundi area is particularly well known for its central situation relative to the development of the Zulu state of King Shaka Zulu in the early 1800's. The eMakhosini valley (Valley of the Kings) is situated to the immediate north of the study area between Melmoth and Ulundi. Surrounding the valley are several stone-walled structures associated with the once powerful Buthelezi and Khumalo clans. These clans later played a significant role in the formation of the Zulu kingdom. The famous king, Shaka Zulu, was born in the valley around 1785, and it is here that his forebears, King Nkosinkulu Zulu, King Phunga, King Mageba, King Ndaba, King Jama and King Senzangakhona, lie buried. The graves and royal residences of four Zulu rulers - King Shaka, King Dingane, King Mpande and King Cetshwayo, who ruled in succession from 1816 to 1884 – are located in the area around eMakhosini. The valley is regarded as the ancestral homeland of the Zulu nation as such this valley can also be classified as a cultural landscape. The study area, including KwaNobamba, is centrally situated within the eMakhosini Valley (Derwent 2006). KwaNobamba specifically is the area where both King Jama (King Shaka's grandfather) and King Dinuzulu had homesteads and were buried. Other important sites within the greater eMakhosini Valley includes the kwaGqokli Hill, where King Shaka achieved his first military success against the

powerful Ndwandwe under King Zwide and kwaMatiwane the Hill of Execution. Both the Voortrekker leader Piet Retief and the legendary leader of the amaNdwane people inkosi Matiwane were executed by King Dingane at this locality (Oberholser 1976; Derwent 2006). The Mtonjaneni Springs, approximately 4km to the north of the study area, is a declared provincial heritage site. This is the spring that was used by King Dingane for water collecting.

The colonial history of the area starts around 1820 when early English ivory traders established themselves at Port Natal (Durban). Dutch descendants (i.e. Voortrekkers) moved into the area soon after 1834 and established a short lived Boer republic called Natalia to the south of the Tugela River. However, by 1845 Natal became a British colony. In 1879 Zulu-land was invaded by British forces and the area annexed soon thereafter.

Historical era sites relating to the period of the Anglo-Zulu War of 1879 also occur in the greater Ulundi area to the north of the study area. However, Lord Chelmsford's Camp is situated approximately 2km from the study area (Fig 4). None of the Anglo-Zulu War period sites occur in the immediate environs of the study area.

4 BACKGROUND INFORMATION OF THE SURVEY

4.1 Methodology

A desktop study was conducted of the archaeological databases housed in the KwaZulu-Natal Museum. In addition, the available archaeological literature covering the greater Ulundi and Melmoth areas was also consulted. The SAHRIS website was consulted to obtain background information on previous heritage surveys and assessments in the area.

A ground survey, following standard and accepted archaeological procedures, was conducted. The footprint was surveyed by foot. A band of approximately 25m was surveyed on either side of the proposed pipeline trajectories.

Local community members encountered in the study area was interviewed regarding the possible location of heritage sites and graves in the area.

4.2 Restrictions encountered during the survey

4.2.1 *Visibility*

Visibility was good but may have been compromised by dense vegetation (grass cover) in places.

4.2.2 *Disturbance*

No disturbance of any heritage sites or features was noted.

4.3 Details of equipment used in the survey

GPS: Garmin Etrek

Digital cameras: Canon Powershot A460

All readings were taken using the GPS. Accuracy was to a level of 5 m.

5 DESCRIPTION OF SITES AND MATERIAL OBSERVED

5.1 Locational data

Province: KwaZulu-Natal

Town: Melmoth

Municipality: Mtonjaneni Local Municipality

5.2 Description of the heritage sites in the study area

A band of 25m on either side of the proposed pipeline trajectory was surveyed for heritage sites. None occur on the footprint. The consultant observed twenty eight modern grave sites within the greater project area, however, none of these occur closer than 25m to the proposed pipeline trajectory and associated reservoirs. The steep topography of the footprint most probably contributed to this aspect. Those grave sites that are located further than 50m from the proposed pipeline trajectory are therefore excluded from further analyses and evaluation. Local community members interviewed could not indicate the location of any heritage sites or modern grave sites on the footprint.

6 STATEMENT OF SIGNIFICANCE (HERITAGE VALUE)

As there are no archaeological sites on the footprint the area is not significant in terms of site-related values. Nevertheless there is a slight possibility that excavation and construction work may expose archaeological material. It is also possible that some grave sites may emerge in close association with existing homesteads along the

access roads. It would therefore be a good idea to avoid placing the pipeline trajectory some distance (at least 30m) from any rural homestead. Should archaeological or heritage material been exposed during construction then all development work should stop immediately and the provincial heritage agency, Amafa, must be contacted for further evaluation.

6.1 Field Rating

The field rating criteria as formulated by SAHRA (Table 2) does not apply to any archaeological sites on the footprint as none have been identified.

Table 2. Field rating and recommended grading of sites (SAHRA 2005)

Level	Details	Action
National (Grade I)	The site is considered to be of National Significance	Nominated to be declared by SAHRA
Provincial (Grade II)	This site is considered to be of Provincial significance	Nominated to be declared by Provincial Heritage Authority
Local Grade IIIA	This site is considered to be of HIGH significance locally	The site should be retained as a heritage site
Local Grade IIIB	This site is considered to be of HIGH significance locally	The site should be mitigated, and part retained as a heritage site
Generally Protected A	High to medium significance	Mitigation necessary before destruction
Generally Protected B	Medium significance	The site needs to be recorded before destruction
Generally Protected C	Low significance	No further recording is required before destruction

7 RECOMMENDATIONS

- The proposed construction of the Mthonjaneni Bulk Water Supply may proceed in terms of heritage values as no sites are in any danger of being destroyed or altered. All the observed grave sites within the greater project are situated more than 50m from the proposed development and there is no danger that they may be altered or destroyed. However, the developer must follow the existing pipeline trajectory as presented in the TOR. Any drastic deviation from this trajectory (more than 50m deviation) calls for another heritage impact assessment of the affected area.
- No alternative access roads may be constructed without a new heritage survey of the affected area.
- It should also be pointed out that the KwaZulu-Natal Heritage Act requires that operations exposing archaeological and historical residues, including modern graves, should cease immediately pending an evaluation by the heritage authorities.

8 RISK PREVENTATIVE MEASURES ASSOCIATED WITH CONSTRUCTION

- Construction work and excavations may yield archaeological material. If any heritage features are exposed by construction work then all work should stop immediately and the provincial heritage agency, Amafa, should be contacted for further evaluation.
- It is advisable to avoid contemporary Zulu Homesteads when aligning the pipeline trajectory as such homesteads often contain graves.
- Grave relocation is a longwinded and expensive process and it is advisable to avoid – where possible (Appendix 2).
- Do not deviate from existing roads, access roads and tacks.

9 MAPS AND PHOTOGRAPHS



Figure 1. Google aerial photograph showing the location of the study area relative to Melmoth.

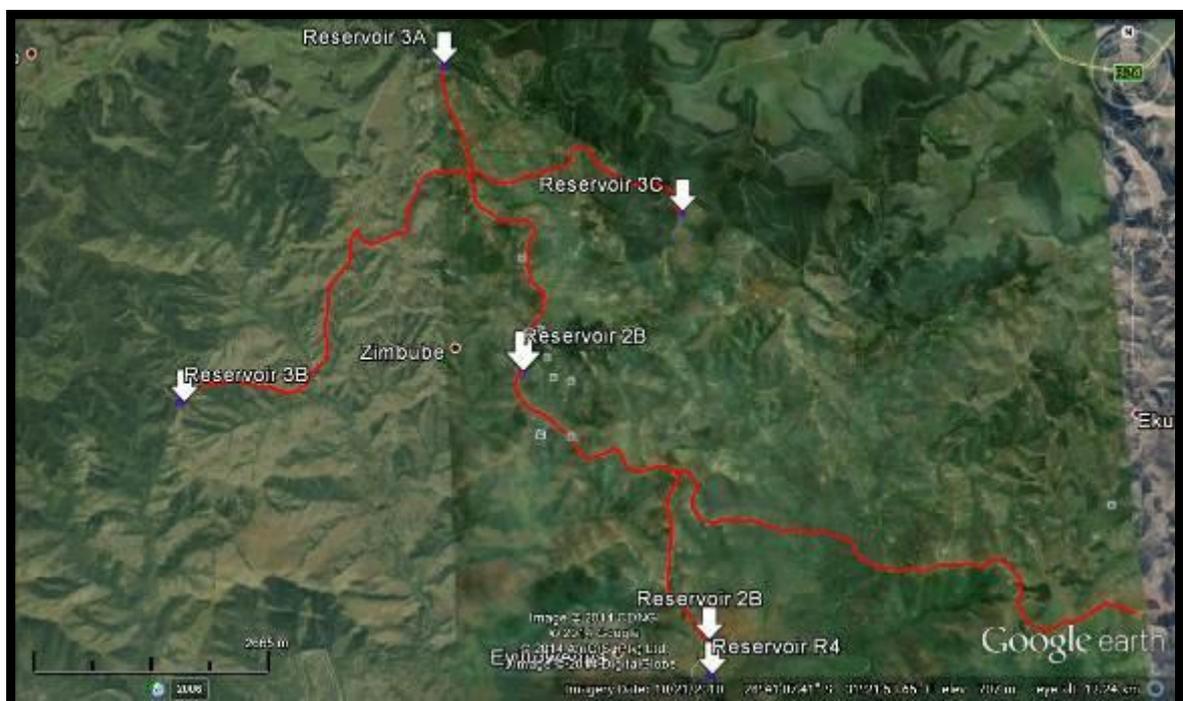


Figure 2. Google aerial photograph showing the location of the proposed pipelines and associated reservoirs.



Figure 3. The very steep and hilly terrain of the study area may explain the absence of heritage sites on the footprint.



Figure 4. Modern homesteads and associated graves are situated some distance from the proposed pipeline trajectory and associated reservoirs.

9 REFERENCES

Anderson, G. 1988. *Archaeological Survey of the Hluluwe Game Reserve*. Unpublished Report.

Booth, C, & Wezel, A. 2013. *a Phase 1 archaeological impact assessment (AIA) for the proposed mining right application for the mining of dolomite, limestone, sand (general), stone aggregate, gravel and sand on portions of portion 17 and the remainder of the farm Lombard's post 289, Bathurst, Eastern Cape Province*. Unpublished report submitted to SAHRA.

Derwent, S. 2006. *KwaZulu-Natal Heritage Sites: A Guide to Some Great Places*. David Phillips: Cape Town

Feely, J. 1980. *Archaeological survey Mfolozi Park*. Unpublished Report.

Hall, M. 1980. *Field Survey: The Ecology of the Iron Age*. Unpublished report

Huffman, T. N. 2007. *Handbook to the Iron Age: The Archaeology of Pre-colonial Farming Societies in Southern Africa*. University of KwaZulu-Natal Press. Pietermaritzburg.

James, B. 2004. *Thanda Private Game Reserve. Guests Information Guide*. Brousse-James & Associates, Howick.

James, B. 2014. *Bid Document: KwaNobamba Royal Residence*. Brousse-James & Associates.

Maggs, T. The Iron Age farming communities. In Duminy, A. and Guest, B. 1989. *Natal and Zululand: from Earliest Times to 1910. A New History*. Pg. 28-46. University of Natal Press. Pietermaritzburg.

Mitchell, P. 2002. *The Archaeology of Southern Africa*. Cambridge University Press: Cambridge

Oberholser, J. J. 1872. *The Historical Monuments of South Africa*. National Monuments Council, Cape Town.

Penner, D. 1970. *Archaeological Survey in Zululand Game Reserves*. Natal Parks Board. Unpublished Report.

Pelser, P. J. 2013. *Report on a heritage survey on the farm Koningskroon 447, eMakosini Ophathe Heritage park Area, near Ulundi, KZN*. Unpublished report submitted to Amafa; Pietermaritzburg.

SAHRA, 2005. *Minimum Standards for the Archaeological and the Palaeontological Components of Impact Assessment Reports, Draft version 1.4.*

APPENDIX 1.

Coordinates of the proposed pipeline trajectory at 500m intervals.

Line 1				Line 2				Line 3			
Distance (m)	Degree (°)	Minutes (')	Seconds (")	Distance (m)	Degree (°)	Minutes (')	Seconds (")	Distance (m)	Degree (°)	Minutes (')	Seconds (")
0	S 28	39	15,68	0	S 28	41	13,68	0	S 28	41	50,84
0	E 31	20	55,73		E 31	18	58,81		E 31	22	24,61
500	S 28	39	31,20	500	S 28	41	8,92	500	S 28	42	4,51
	E 31	21	38,26		E 31	19	13,99		E 31	22	20,86
1000	S 28	40	46,51	1000	S 28	41	10,82	1000	S 28	42	18,95
	E 31	21	4,32		E 31	19	30,75		E 31	22	18,95
1500	S 28	40	2,20	1500	S 28	41	10,00	1500	E 31	22	20,72
	E 31	21	6,18		E 31	19	49,50		S 28	42	34,96
2000	S 28	40	13,43	2000	S 28	40	59,40	2000	E 31	22	19,22
	E 31	21	18,16		E 31	19	59,15		S 28	42	47,84
2500	S 28	40	19,83	2500	S 28	40	44,00	2500	E 31	22	28,66
	E 31	21	30,17		E 31	20	0,81		E 31	22	43
3000	S 28	40	35,17	3000	S 28	40	31,46	3000	S 28	43	1,42
	E 31	21	28,29		E 31	20	5,32		E 31	22	35,01
3500	S 28	40	49,45	3500	S 28	40	17,84	3500	S 28	43	3,79
	E 31	21	32,29		E 31	20	13,02		E 31	22	33,84
4000	S 28	41	3,37	4000	S 28	40	19,37	4000	S 28	43	
	E 31	21	26,43		E 31	20	24,00		E 31	22	
4500	S 28	41	16,75	4500	S 28	40	11,89	4500	S 28	43	
	E 31	21	19,84		E 31	20	37,64		S 28	43	
5000	S 28	41	27,94	5000	S 28	39	56,98	5000	S 28	43	
	E 31	21	32,20		E 31	20	44,27		S 28	43	
5500	S 28	41	39,62	5500	S 28	39	54,27	5500	S 28	43	
	E 31	21	43,87		E 31	21	0,47		S 28	43	
6000	S 28	41	41,33	6000	S 28	39	58,64	6000	S 28	43	
	E 31	21	58,59		E 31	21	15,96		S 28	43	
6500	S 28	41	49,74	6500	S 28	39	57,04	6500	S 28	43	
	E 31	22	11,84		E 31	21	33,27		S 28	43	
7000	S 28	41	50,89	7000	S 28	39	52,78	7000	S 28	43	
	E 31	22	29,31		E 31	21	47,68		S 28	43	
7500	S 28	42	5,05	7500	S 28	39	50,56	7500	S 28	43	
	E 31	22	31,07		E 31	21	57,26		S 28	43	
8000	S 28	42	10,30	8000	S 28	40	2,43	8000	S 28	43	
	E 31	22	45,93		E 31	22	13,99		S 28	43	
8500	S 28	42	14,00	8500	S 28	40	6,00	8500	S 28	43	
	E 31	22	3,30		E 31	22	31,03		S 28	43	
9000	S 28	42	17,10	9000	S 28	40	14,24	9000	S 28	43	
	E 31	23	20,60		E 31	22	33,19		S 28	43	
9500	S 28	42	21,09	9500	S 28	40	14,24	9500	S 28	43	
	E 31	23	38,30		E 31	22	33,19		S 28	43	
10000	S 28	42	31,03	10000	S 28	40	14,24	10000	S 28	43	
	E 31	23	51,07		E 31	22	33,19		S 28	43	
10500	S 28	42	32,10	10500	S 28	40	14,24	10500	S 28	43	
	E 31	24	8,82		E 31	22	33,19		S 28	43	
11000	S 28	42	30,88	11000	S 28	40	14,24	11000	S 28	43	
	E 31	24	26,20		E 31	22	33,19		S 28	43	
11500	S 28	42	32,09	11500	S 28	40	14,24	11500	S 28	43	
	E 31	24	24,99		E 31	22	33,19		S 28	43	
12000	S 28	42	46,84	12000	S 28	40	14,24	12000	S 28	43	
	E 31	24	43,41		E 31	22	33,19		S 28	43	
12500	S 28	42	55,54	12500	S 28	40	14,24	12500	S 28	43	
	E 31	24	56,57		E 31	22	33,19		S 28	43	
13000	S 28	42	50,63	13000	S 28	40	14,24	13000	S 28	43	
	E 31	25	13,70		E 31	22	33,19		S 28	43	
13500	S 28	42	51,54	13500	S 28	40	14,24	13500	S 28	43	
	E 31	25	31,19		E 31	22	33,19		S 28	43	

APPENDIX 2

Relocation of Graves

Burial grounds and graves are dealt with in Article 36 of the NHR Act, no 25 of 1999. Below follows a broad summary of how to deal with grave in the event of proposed development.

- If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.
- If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.

- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any items found in the grave