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# Umgeni Water

## HERITAGE IMPACT ASSESSMENT

### Augmentation and extension of the Wartburg bulk water system, KwaZulu- Natal

9 October 2007

**Service provider**



MATAKOMA - ARM

**MATAKOMA - ARM**  
HERITAGE CONTRACTS UNIT

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## **EXECUTIVE SUMMARY**

From legislation the surveying, capturing and management of heritage resources is an integral part of the greater management plan laid down for any major development or historic/existing operation.

With the proclamation of the National Heritage Resources Act 1999 (Act 25 of 1999) and the KwaZulu-Natal Heritage Act, 1997, this process has been laid down clearly. This legislation aims to underpin the existing legislation, which only addresses this issue at a glance, and gives guidance to developers and existing industries to the management of their Heritage Resources.

This document forms part of the Environmental Impact Assessment for the proposed Augmentation and extension of the Wartburg Bulk Water Supply Project.

The following outline the findings of the report:

During the survey eight sites of heritage value were found within close proximity to the proposed route alignment and pipeline servitude.

### **2930CB-MHC001**

It is recommended that the cemetery be fenced with a 15 meter buffer to protect it from accidental damage.

The pipeline alignment must take cognisance of the position of the cemetery during construction.

### **2930AD -MHC001**

The routing of the pipeline is considered to utilise the bridge as a crossing point for the pipeline. This crossing point makes an environmentally acceptable option, as the other alternative will require the tunnelling of the pipe underneath the riverbed of the Umgeni River.

It is recommended that the structural integrity of the bridge is investigated.

The pipeline should not hinder traffic flow on the bridge.

The pipe must be constructed over the bridge to be sympathetic to the existing design. These designs can be done with the help of a conservation architects

**2930AD-MHC003**

It is recommended that construction activities be monitored in the area, to identify any further sub-surface deposits and undertake appropriate mitigation where required.

**2930BC-MHC001 and MHC002**

It is recommended that construction activities be monitored in the area, to identify any further sub-surface deposits and undertake appropriate mitigation where required.

**2930BA-MHC001**

Impact on site is seen as possibly a low negative, however the 20 metre servitude for the pipeline provides for conservation of the site. Umgeni Water has indicated that the pipeline will be moved to the other side of the road – some 20 metres to the south.

Fencing with a 15 metre buffer zone.

**2930BD-MHC001**

Fencing with 15 metre buffer zone around cairns. The pipeline alignment to accommodate the cairns will be possible.

If these recommendations are adhered to by Umgeni Water and the associated contractor from a Heritage perspective there is no reason why the development can not commence.

**General**

If during construction any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

***A heritage resources management plan must be developed for managing the heritage resources in the study area during construction and operation of the development. This includes:***

- ***Monitoring program (watching brief) by an archaeologist***
- ***basic training for construction staff on possible finds,***
- ***action steps for mitigation measures, surface collections, excavations and***
- ***Communication routes to follow in the case of a discovery.***

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## **1. INTRODUCTION**

MATAKOMA-ARM Heritage Contracts Unit was contracted by Umgeni Water to conduct an Heritage Impact Assessment for the proposed Augmentation and extension of the Wartburg Bulk Water Supply Project, KwaZulu- Natal.

The aim of the study is to identify all heritage sites, document, and assess their importance within Local, Provincial and National context. From this we aim to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the KwaZulu-Natal Heritage Act, 1997 (Act No. 10 of 1997).

The report outlines the approach and methodology utilised before and during the survey, which includes:

- Phase 1: Information collection from various sources and public consultations;
- Phase 2: Physical surveying of the area on foot and by vehicle, and;
- Phase 3: Reporting the outcome of the study.

During the survey, eight sites associated with the pipeline route were identified. General site conditions and features on sites were recorded by means of photos, GPS location, and description. Possible impacts were identified and mitigation measures are proposed in the following report.

This report must also be submitted to AMAFA AKwaZulu-Natali provincial office for scrutiny.

### **1.1 BACKGROUND**

Umgeni Water has embarked on an initiative to extend its current bulk potable water distribution system to provide a sustainable supply to as many communities as possible. This initiative has been named the KwaZulu-Natal Regional Bulk Water Supply Plan.



The Wartburg bulk supply system has been identified as one of the systems that should be extended. The extension of this system will provide an improved level of service to the communities of Greater Efaye and Oswathini areas and various en-route consumers.

The Wartburg Bulk Water Supply Project forms part of Umgeni Water's upper Umgeni System and supplies water from the DV Harris Water Treatment Plant to the areas of Wartburg, Swayimani, New Hanover, Cool Air, Dalton as well as several en-route consumers.

Water is gravitated from the Belfort Reservoir for approximately 19km and thereafter pumped for 7kms to two adjacent reservoirs in Wartburg. Water is further distributed from the Wartburg Reservoirs to the Dalton Reservoir where the existing system ends.

In order to extend the Wartburg Bulk Water Supply Project from the Dalton Reservoir to supply the areas of Greater Efaye and Oswathini, the existing system has to be augmented. The layout of the proposed project is depicted in the attached map (Figure 1).

# AUGMENTATION AND EXTENSION OF THE WARTBURG BULK SYSTEM - HIA

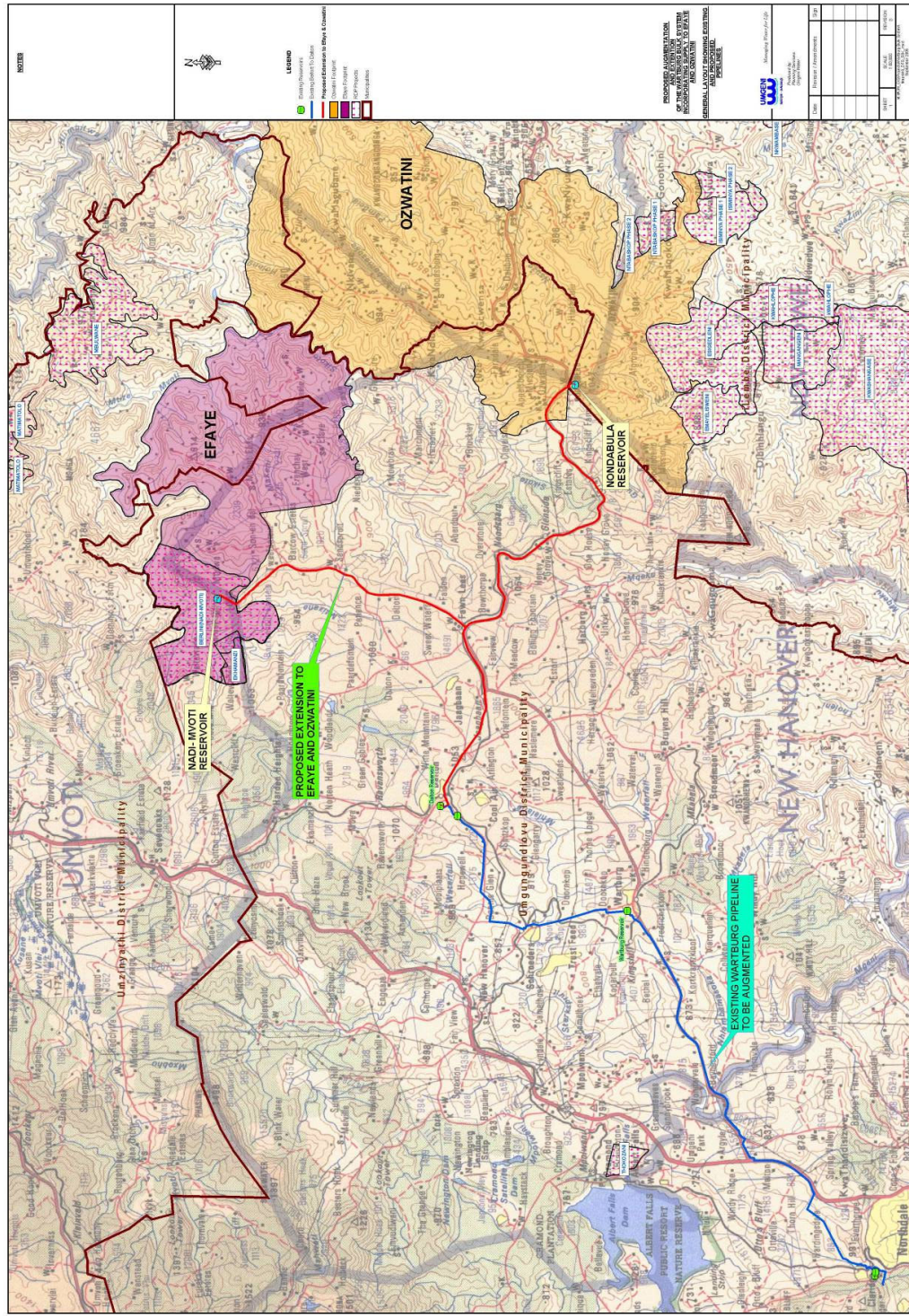


Figure 1: Route Alignment

## **1.2 THE NEED FOR THE PROJECT**

The augmentation and extension of the Wartburg Bulk Water Supply Project, incorporating Water Supply to Greater Efaye and Oswathini areas is in support of government objectives, one of which is service backlog eradication (done in accordance with the Water Services Development Plans and Integrated Development Plans of relevant Water Services Authorities).

## **1.3 PROPOSED PROJECT DESCRIPTION**

The proposed project will entail the following:

- Augmentation (put in second pipeline) of the existing "Wartburg" pipeline from Claridge Reservoir to Dalton (within an existing Umgeni Water Servitude where possible).
- Increasing the size of the existing Umgeni Water Servitude to accommodate the second pipeline.
- Extend the system from Dalton Reservoir to Efaye and Oswathini.
- Acquisition of servitude for the extended pipeline.
- Increase the storage capacity of Wartburg Reservoir (from 1.5 megalitres to 10 megalitres).
- Increase the storage capacity of Dalton Reservoir (from 0.8 megalitres to 5 megalitres).
- Installation of three pumps stations (first between Claridge and Wartburg, second between Wartburg and Dalton, third between Dalton and Oswathini).

## **2. APPROACH AND METHODOLOGY**

The aim of the study is to extensively cover all data available to compile a background history of the study area; this was accomplished by means of the following phases.

## 2.1 PHYSICAL SURVEYING

Due to the nature of cultural remains, the majority occur below the surface, a physical walk through of the route alignment was therefore conducted. Matakoma - ARM Heritage Contract Unit were appointed to conduct a survey of the footprint of the proposed augmentation and extension route. The study area (90km) was surveyed over five days, by means of vehicle and extensive surveys on foot.

Aerial photographs and 1:50 000 maps of the area were consulted and literature of the area were studied before undertaking the survey. The purpose of this was to identify topographical areas of possible historic and pre-historic activity. All sites discovered both inside and bordering the proposed development area was plotted on 1:50 000 maps and their GPS co-ordinates noted. 35mm photographs on digital film were taken at all the sites.

## 3. WORKING WITH LEGISLATION

It is very important that cultural resources be evaluated according to the KwaZulu-Natal Heritage Act, 1997. In accordance with the Act, we have found the following:

*"heritage resource" means any place or object of cultural significance including -*

- (a) places, buildings, structures and equipment;*
- (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;*
- (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 important individuals,*
- (v) historical graves and cemeteries older than 60 years, and*
- (vi) other human remains which are not covered under the Human Tissues Act, 1983 (Act No.65 of 1983 as amended);*
- (h) 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) ethnographic art and objects;*
  - (iii) military objects;*
  - (iv) objects of decorative art;*
  - (v) objects of fine art;*
  - (vi) objects of scientific or technological interest;*
  - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings; and*
  - (viii) any other prescribed categories, but excluding any object made by a living person;*
- i. battlefields;*
- j. traditional building techniques;*

Please refer to Section 9 for Management Guidelines.

## **4. ASSESSMENT CRITERIA**

This chapter describes the evaluation criteria used for the sites listed below.

The significance of archaeological sites was based on four main criteria:

- **site integrity** (i.e. primary vs. secondary context),
- **amount of deposit, range of features** (e.g., stonewalling, stone tools and enclosures),

- **uniqueness** and
- **potential** to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

**A** - No further action necessary;

**B** - Mapping of the site and controlled sampling required;

**C** - Preserve site, or extensive data collection and mapping of the site; and

**D** - Preserve site

Impacts on these sites by the development will be evaluated as follows

## **4.1 IMPACT**

The potential environmental impacts that may result from the proposed development activities.

### **4.1.1 Nature and existing mitigation**

Natural conditions and conditions inherent in the project design that alleviate (control, moderate, curb) impacts. All management actions, which are presently implemented, are considered part of the project design and therefore mitigate against impacts.

## **4.2 EVALUATION**

### **4.2.1 Site Significance**

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	-	Low Significance	Destruction

## 4.2.2 Impact Rating

### *VERY HIGH*

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment, and usually result in **severe** or **very severe** effects, or **beneficial** or **very beneficial** effects.

**Example:** The loss of a species would be viewed by informed society as being of VERY HIGH significance.

**Example:** The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with a VERY HIGH significance.

### *HIGH*

These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.



**Example:** The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

**Example:** The change to soil conditions will impact the natural system, and the impact on affected parties (in this case people growing crops on the soil) would be HIGH.

#### *MODERATE*

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial.

**Example:** The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

**Example:** The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

#### *LOW*

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

**Example:** The temporary change in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

**Example:** The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.

#### *NO SIGNIFICANCE*

There are no primary or secondary effects at all that are important to scientists or the public.



**Example:** A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.

**4.2.3 Certainty**

*DEFINITE:* More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

*PROBABLE:* Over 70% sure of a particular fact, or of the likelihood of impact occurring.

*POSSIBLE:* Only over 40% sure of a particular fact or of the likelihood of an impact occurring.

*UNSURE:* Less than 40% sure of a particular fact or likelihood of an impact occurring.

**4.2.4 Duration**

*SHORT TERM:* 0 to 5 years

*MEDIUM:* 6 to 20 years

*LONG TERM:* more than 20 years

*DEMOLISHED:* site will be demolished or is already demolished

Example  
*Evaluation*

<b>Impact</b>	<b>Impact Significance</b>	<b>Heritage Significance</b>	<b>Certainty</b>	<b>Duration</b>	<b>Mitigation</b>
Negative	Moderate	Grade GP.B	Possible	Short term	B

## 5. HISTORICAL BACKGROUND OF AREA

As heritage surveys deal with the locating of heritage resources in a prescribed cartographic landscape, the study of archival and historical data, and especially cartographic material, can represent a very valuable supporting tool in finding and identifying such heritage resources.

The historical background and timeframe can be divided into the Stone Age, Iron Age and Historical timeframe. These can be divided as follows:

### 5.1 STONE AGE

The Stone Age is divided into Early; Middle and Late Stone Age and refers to the earliest people of South Africa who mainly relied on stone for their tools.

*Earlier Stone Age:* The period from  $\pm$  2.5 million yrs -  $\pm$  250 000 yrs ago. Acheulean stone tools are dominant.

*Middle Stone Age:* Various lithic industries in SA dating from  $\pm$  250 000 yrs – 22 000 yrs before present.

*Later Stone Age:* The period from  $\pm$  22 000-yrs before present to the period of contact with either Iron Age farmers or European colonists.

The area covered for the study comprises some four topographical sheets. The Natal Museum database was consulted and the following Stone Age sites were identified in the larger study area.

National site number	Type Site	Finds	Date
2930AD 002	MSA	Deposit in road cutting	1951 and 1973
2930AD 005	LSA	LSA: blade, hollow scraper, small hollow scraper	1967
2930AD 007	ESA	Probably on surface. In Natal	1960's

		Museum 1 piriform hand-axe of shale; 1 small uniface hand-axe. Farnden also records a small flattish chisel-ended hand-axe	
2930AD 008	ESA	slightly rolled Acheulean picks, choppers, pebble-chopper	1965 and 1973
2930AD 013	MSA, LSA & EIA	Surface deposit	1979 and 1980
2930BC 004	MSA and LIA	Rock Shelter	1981
2930BC 005	MSA, LSA and Rock Art	Rock Shelter	1975, 1980 and 1992
2930BD 003	LSA and Rock Art	Rock Shelter with paintings	

Refer to **Figure 2** for position of sites.

## 5.2 IRON AGE

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. Similar to the Stone Age it can be divided into three periods:

*The Early Iron Age:* Most of the first millennium AD.

*The Middle Iron Age:* 10th to 13th centuries AD

*The Late Iron Age:* 14th century to colonial period.

The area covered for the study comprises some four topographical sheets. The Natal Museum database was consulted and the following Stone Age sites were identified in the larger study area.

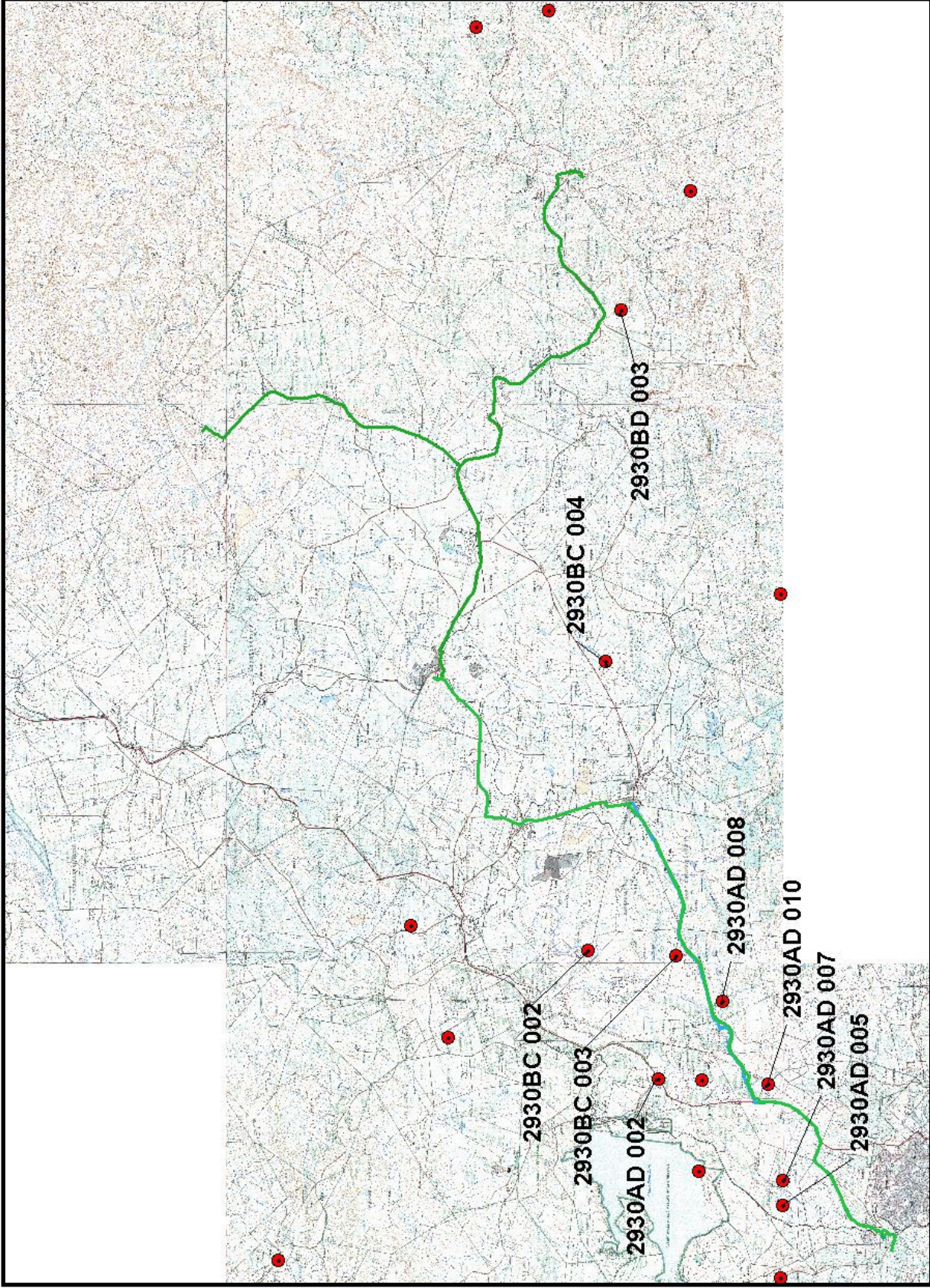
National site number	Type Site	Finds	Date
2930AD 013	MSA, LSA & EIA	Surface deposit	1979 and 1980
2930BC 002	LIA	Rock Shelter with pottery	1980
2930BC 003	LIA	Smelting furnace and cattle kraal	1980
2930AD 010	EIA	Surface deposit of sherds	1977
2930BC 004	MSA and LIA	Rock Shelter	1981

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2930CB 038	IIA	Walling	1980
2930CB 164	LIA and IIA	Iron smelting	1950





• Figure 2: Known archaeological sites in area

## **5.3 HISTORIC TIMEFRAME**

17th Century to present AD (1600 – 2000)

The historic timeframe intermingles with the later parts of the Stone and Iron Age, and can loosely be regarded as times when written and oral recounts of incidents became available.

The following provides an overview of areas where the existing and proposed pipeline crosses.

### **5.3.1 Wartburg**

Wartburg and most of its surrounding town owe their existence to the German Missionaries that came to the area in 1848 and onwards. (Refer to Figure 3 for locality of mission stations).

The Wartburg church and school came in to being in 1892, however other sources indicate that the Wartburg Mission was established in 1855.



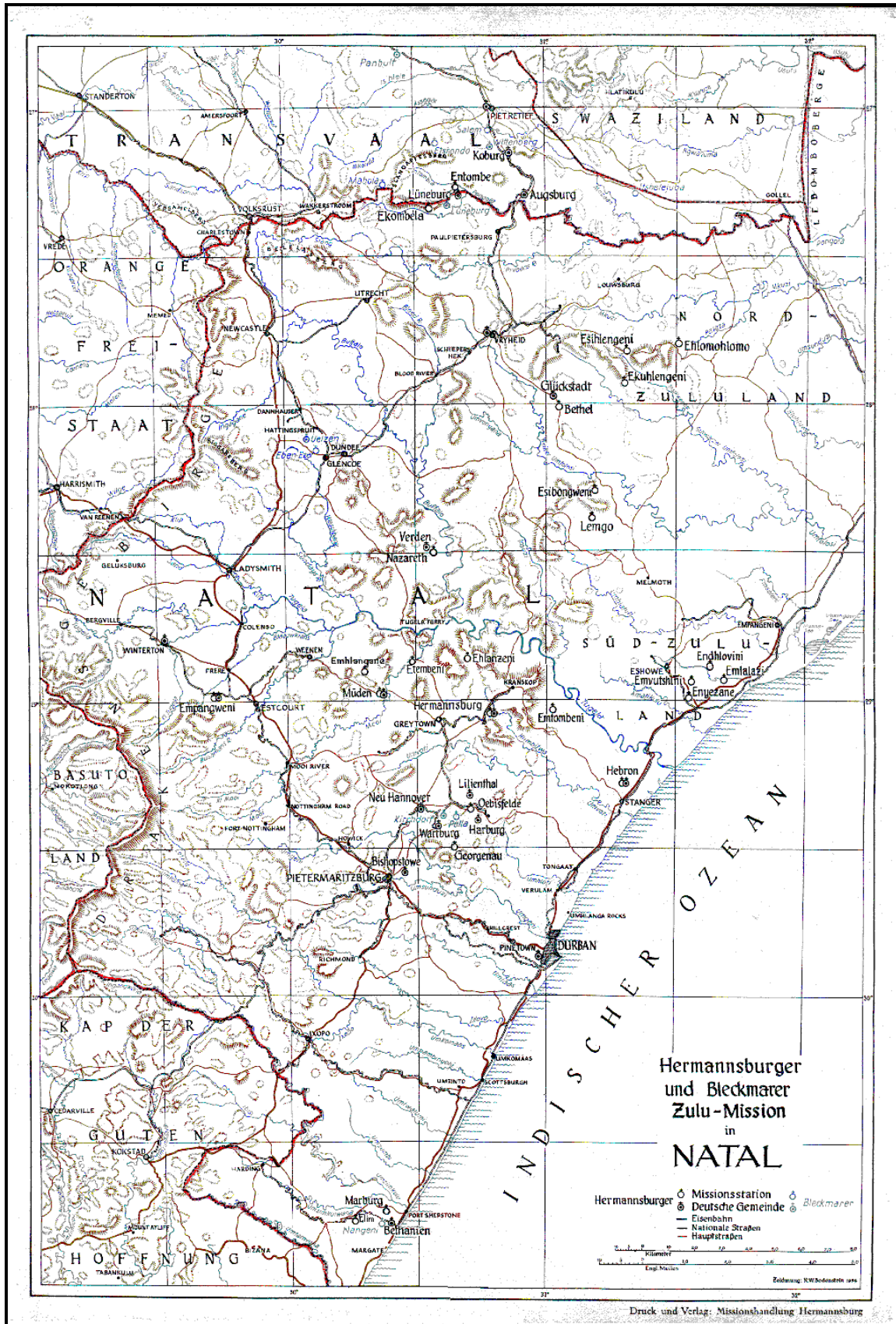


Figure 3: German Missions circa 1880

### **5.3.2 Appelsbosch**

The church of the Swedish Mission in Sweden sent Missionaries to South Africa. The mission at Appelsbosch was founded by Reverend J. Jungquist in 1886.

One of the oldest buildings built in 1886, was used for church services and as a classroom. The second Building built in 1923 and extended in 1951, was to be used as a Matrons – Sister’s Home. This was followed by a garage; Store Room and Mortuary room.

### **5.3.3 Ethnography around Noordsberg**

The Zulu clans from the Noordsberg - Ndwedwe region, have deep roots in pre-colonial and colonial history, being *Nyuswa*, *Qadi*, *Ngcolosi*, *Chili*, *Shangase*, *Maphephetheni*.

The *Nyuswa* and *Qadi* are descended from the Ngcobo ancestor (described in proverb as: uNgcobo lomhle, lotima, lokhanya ngamatinyo - "The Ngcobos, their beautiful black skin, with the shining white teeth"). Also referred to as Debe ("those who cut their faces"), their custom of ascribing tribal membership was by imprinting distinctive markings around the eyes, cheeks and mouth. This is still practised today in some areas.

Dispersed in disputes over succession, *AmaQadi* fled across the Tugela where some settled on the Bluff and others still today occupy part of the Inanda location.

*AmaNyuswa*, during the time of Shaka's father, Senzagakhona, lived on the northern bank of the Tugela opposite Kranskop. As the royal house, *Ama-Nyuswa* traditionally produced the tribal chieftain. Shaka settled a dispute between two sons of the royal kraal over succession by ordering his army to sweep the *Nyuswa* into the Tugela.

The surviving *Nyuswa* took refuge with Zihlandlo, chief of the *Mbo*, until he was overthrown by Dingane Natal. Then they fled with the *Mbo* to Natal. Later, under Sir Theophilus Shepstone, they were offered a more spacious settlement on



the upper UMoná stream and the Noodsberg hills where they still live.

*AbakwaNgcolosi*, early subjects of the Zulu, were once resident on the Tugela (Thukela). Fleeing from an onslaught by Dingane, they took refuge in the Umgeni Valley.

### 5.3.4 Havelock Bridge

The Havelock Bridge was constructed in 1889 over the Umgeni River at Baynes' Drift, to service the Wartburg/Pietermaritzburg road. The river crossing was originally serviced by a ferry crossing in the 1880's.

The original superstructure was constructed from wood and was replaced in 1906 with reinforced concrete. During this construction the scaffolding was seriously damaged by floods in 1907.


## 6. SITES OF SIGNIFICANCE

The larger part of the pipeline route is covered with sugar cane.

### 6.1 2930CB-MHC001

<b>Description of Site:</b>			
<b>Site Number</b>	2930CB-MHC001		
<b>Map reference</b>	<b>Topo-sheet number</b>	<b>Number of Map in report</b>	
	<b>2930CB</b>	<b>Annexure B</b>	
<b>GPS coordinates:</b> <i>Indicate Model and datum - WGS 84</i>	X	Y	
Garmin 38, WGS 84	E30.43499351	S29.50197109	
<b>Site Data</b>	<b>Description</b>		
<b>Type of site</b> (e.g. open scatter; midden, /shelter); shell cave	Historic cemetery consisting of approximately 50 graves. Most of the graves do have headstones and dressings. All aligned East-West		

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<p><b>Site categories</b> (e.g. Earlier Stone Age, Late Iron Age);</p>	<p>Historic, archaeological. The graves date between 1898 and 1974</p>
<p><b>Context</b> (i.e. primary or secondary);</p>	<p>Primary</p>
<p><i>Cultural affinities, approximate age and significant features of the site;</i></p>	<p>Possible association with nearby farming community. The graves date between 1898 and 1974. The families represented in the cemetery are the Alborough, Braithwaite, Mattison, Masson, Baikie, Goodwil, Comins and Jackson families</p>
<p><b>Estimation or measurement of the extent</b> (maximum dimensions) and orientation of the site(s);</p>	<p>The cemetery is approximately 50mx80m</p>
<p><b>Depth and stratification of the site</b> (where shovel test permits have been given), both in the text and through photographs of the sections;</p>	<p>None visible</p>
<p><i>Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.</i></p>	<p>None</p>
<p><b>Photographs and diagrams</b> (Figure numbers)</p>	 <p>• Figure 4: Grave in cemetery</p>

AUGMENTATION AND EXTENSION OF THE WARTBURG BULK SYSTEM - HIA

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<b>Statement of Significance</b> <i>(Heritage Value)</i>	The site is of <b>high</b> heritage significance. As it is linked to early settler communities of the area				
<b>Field Rating</b> <i>(Recommended grading or field significance) of the site:</i>	Generally protected (GP.A)				
<b>Impact Evaluation</b> <i>of development on site</i>	Impact on site is seen as possibly low negative, however the 20 metre servitude for the pipeline provides for conservation of the site				
<b>Recommendations</b> <i>including:</i>	Fencing with 15 metre buffer zone.				
<b>Summary</b>					
<b>Field Rating</b>	<b>Impact</b>	<b>Impact Significance</b>	<b>Certainty</b>	<b>Duration</b>	<b>Mitigation</b>
Grade GP.A	Negative	High	Possible	Long term	C

## 6.2 2930AD -MHC001

<b>Description of Site:</b>			
<b>Site Number</b>	2930AD-MHC002		
<b>Map reference</b>	<b>Topo-sheet number</b>	<b>Number of Map in report</b>	
	<b>2930AD</b>	<b>Annexure B</b>	
<b>GPS coordinates:</b> <i>Indicate Model and datum - WGS 84</i>	X	Y	
Garmin 38, WGS 84	S29.47460719	E30.47013581	
<b>Site Data</b>	<b>Description</b>		
<b>Type of site</b> (e.g. open scatter; shell midden, cave /shelter);	Historic – archaeological reinforced concrete bridge. The Havelock Bridge was constructed in 1889.		
<b>Site categories</b> (e.g. Earlier Stone Age, Late Iron Age);	Historic-archaeological		
<b>Context</b> (i.e. primary or secondary);	Primary		
<i>Cultural affinities, approximate age and significant features of the site;</i>	Early 1900 to mid 1900's		
<b>Estimation or measurement of the extent</b> (maximum dimensions) and orientation of the site(s);	The bridge spans the Umgeni River crossing at Baynes' Drift on the Pietermaritzburg-Wartburg road		
<b>Depth and stratification of the site</b> (where shovel test permits have been given), both in the text and through photographs of the sections;	None visible		
<i>Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.</i>	Archival resources indicate superstructure of bridge was initially wood, after which it was replaced in 1906 with reinforced concrete.		

**Photographs and diagrams** (Figure numbers)



Figure 5: Southern view of bridge




Figure 6: Memorial plaque on bridge

<p><b>Statement of Significance</b> <i>(Heritage Value)</i></p>	<p>The site is of <b>high</b> heritage significance</p>				
<p><b>Field Rating</b> <i>(Recommended grading or field significance) of the site:</i></p>	<p>Generally protected (GP.A)</p>				
<p><b>Impact Evaluation</b> <i>of development on site</i></p>	<p>The routing of the pipeline is considered to utilise the bridge as a crossing point for the pipeline. This crossing point makes an environmentally acceptable option as the other alternative will require the tunnelling of the pipe underneath the riverbed of the Umgeni River.</p>				
<p><b>Recommendations</b> <i>including:</i></p>	<p>It is recommended that the structural integrity of the bridge is investigated.</p> <p>The pipeline should not hinder traffic flow on the bridge.</p> <p>The pipe must be constructed over the bridge to be sympathetic to the existing design. These designs can be done with the help of a conservation architects.</p>				
<p><b>Summary</b></p>					
<p><b>Field Rating</b></p>	<p><b>Impact</b></p>	<p><b>Impact Significance</b></p>	<p><b>Certainty</b></p>	<p><b>Duration</b></p>	<p><b>Mitigation</b></p>
<p>Grade GP.A</p>	<p>Negative</p>	<p>Low to medium</p>	<p>Possible</p>	<p>Long term</p>	<p>C</p>

## 6.3 2930AD-MHC002

<b>Description of Site:</b>			
<b>Site Number</b>	2930AD-MHC001		
<b>Map reference</b>	<b>Topo-sheet number</b>	<b>Number of Map in report</b>	
	<b>2930AD</b>	<b>Annexure B</b>	
<b>GPS coordinates:</b> <i>Indicate Model and datum - WGS 84</i>	X	Y	
Garmin 38, WGS 84	S29.46561106	E30.48649192	
<b>Site Data</b>	<b>Description</b>		
<b>Type of site</b> (e.g. open scatter; shell midden, cave /shelter);	Low density scatter of Early Iron Age ceramics.		
<b>Site categories</b> (e.g. Earlier Stone Age, Late Iron Age);	Early Iron Age		
<b>Context</b> (i.e. primary or secondary);	Primary and Secondary erosion deposit		
<i>Cultural affinities, approximate age and significant features of the site;</i>	Decoration of potsherd not definitive for identification .		
<b>Estimation or measurement of the extent</b> (maximum dimensions) and orientation of the site(s);	Site stretches over some hundred metres on exposed and eroded dirt road. A larger concentration of ceramic deposit occurs upslope from the start of the deposit		
<b>Depth and stratification of the site</b> (where shovel test permits have been given), both in the text and through photographs of the sections;	None visible		
<i>Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.</i>	None		




<p><b>Photographs and diagrams</b> (Figure numbers)</p>	 <p>• Figure 7: Conditions on find site</p>				
<p><b>Statement of Significance</b> (Heritage Value)</p>	<p>The site is of <b>low</b> heritage significance</p>				
<p><b>Field Rating</b> (Recommended grading or field significance) of the site:</p>	<p>Generally protected (GP.C)</p>				
<p><b>Impact Evaluation</b> of development on site</p>	<p>Impact on site is seen as possibly low negative, through possible destruction of site</p>				
<p><b>Recommendations</b> including:</p>	<p>It is recommended that construction activities be monitored in the area, to identify any further sub-surface deposits and undertake appropriate mitigation where required</p>				
<p><b>Summary</b></p>					
<p><b>Field Rating</b></p>	<p><b>Impact</b></p>	<p><b>Impact Significance</b></p>	<p><b>Certainty</b></p>	<p><b>Duration</b></p>	<p><b>Mitigation</b></p>
<p>Grade GP.C</p>	<p>Negative</p>	<p>Low</p>	<p>Possible</p>	<p>Long term</p>	<p>B</p>



## 6.4 2930AD-MHC003

<b>Description of Site:</b>			
<b>Site Number</b>	2930AD-MHC003		
<b>Map reference</b>	<b>Topo-sheet number</b>	<b>Number of Map in report</b>	
	<b>2930AD</b>	<b>Annexure B</b>	
<b>GPS coordinates:</b> <i>Indicate Model and datum - WGS 84</i>	X	Y	
Garmin 38, WGS 84	S29.48616215	E30.44074953	
<b>Site Data</b>	<b>Description</b>		
<b>Type of site</b> (e.g. open scatter; shell midden, cave /shelter);	Low density scatter of ceramics		
<b>Site categories</b> (e.g. Earlier Stone Age, Late Iron Age);	Iron Age, probably Late Iron Age		
<b>Context</b> (i.e. primary or secondary);	Primary		
<i>Cultural affinities, approximate age and significant features of the site;</i>	Possible Late Iron Age, no decoration visible		
<b>Estimation or measurement of the extent</b> (maximum dimensions) and orientation of the site(s);	The site is situated in a ploughed flood plain.		
<b>Depth and stratification of the site</b> (where shovel test permits have been given), both in the text and through photographs of the sections;	None visible		
<i>Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.</i>	The site is situated some 900 metres down stream to the south of a documented Early Iron Age site ( <b>2930AD 010</b> ).		

<p><b>Photographs and diagrams</b> (Figure numbers)</p>	 <p>• Figure 8: General view of area</p>				
<p><b>Statement of Significance</b> (Heritage Value)</p>	<p>The site is of <b>low</b> heritage significance</p>				
<p><b>Field Rating</b> (Recommended grading or field significance) of the site:</p>	<p>Generally protected (GP.A)</p>				
<p><b>Impact Evaluation</b> of development on site</p>	<p>Impact on site is seen as possibly low negative, through possible destruction of site</p>				
<p><b>Recommendations</b> including:</p>	<p>It is recommended that construction activities be monitored in the area, to identify any further sub-surface deposits and undertake appropriate mitigation where required</p>				
<p><b>Summary</b></p>					
<p><b>Field Rating</b></p>	<p><b>Impact</b></p>	<p><b>Impact Significance</b></p>	<p><b>Certainty</b></p>	<p><b>Duration</b></p>	<p><b>Mitigation</b></p>
<p>Grade GP.C</p>	<p>Negative</p>	<p>Low</p>	<p>Possible</p>	<p>Long term</p>	<p>B</p>

## 6.5 2930BC-MHC001 AND MHC002

<b>Description of Site:</b>			
<b>Site Number</b>	2930BC-MHC001 and MHC002		
<b>Map reference</b>	<b>Topo-sheet number</b>	<b>Number of Map in report</b>	
	<b>2930BC</b>	<b>Annexure B</b>	
<b>GPS coordinates:</b> <i>Indicate Model and datum - WGS 84</i>	X	Y	
Garmin 38, WGS 84	S29.45783266 S29.45912012	E30.50422132 E30.50262809	MHC001 MHC002
<b>Site Data</b>	<b>Description</b>		
<b>Type of site</b> (e.g. open scatter; shell midden, cave /shelter);	Low density ceramic and iron slag scatter		
<b>Site categories</b> (e.g. Earlier Stone Age, Late Iron Age);	Possible Late Iron Age		
<b>Context</b> (i.e. primary or secondary);	Primary		
<i>Cultural affinities, approximate age and significant features of the site;</i>	Possible Late Iron Age, as some 500 metres to the north a known Late Iron Age site ( <b>2930BC 003</b> ) is situated.		
<b>Estimation or measurement of the extent</b> (maximum dimensions) and orientation of the site(s);	None		
<b>Depth and stratification of the site</b> (where shovel test permits have been given), both in the text and through photographs of the sections;	Ceramics and iron slag exposed by planting of telephone poles and animal activity on embankment along road. Further investigation indicates ceramics and slag present around rocky outcrop to the north of the site.		
<i>Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.</i>	None		

**Photographs and diagrams** (Figure numbers)



• *Figure 9: General view of site*



*Figure 10: Exposed ceramics through animal activity*

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<b>Statement of Significance</b> <i>(Heritage Value)</i>	The site is of <b>low</b> heritage significance				
<b>Field Rating</b> <i>(Recommended grading or field significance) of the site:</i>	Generally protected (GP.A)				
<b>Impact Evaluation</b> <i>of development on site</i>	Impact on site is seen as possibly low negative, through possible destruction of site				
<b>Recommendations</b> <i>including:</i>	It is recommended that construction activities be monitored in the area, to identify any further sub-surface deposits and do appropriate mitigation where required				
<b>Summary</b>					
<b>Field Rating</b>	<b>Impact</b>	<b>Impact Significance</b>	<b>Certainty</b>	<b>Duration</b>	<b>Mitigation</b>
Grade GP.C	Negative	Low	Possible	Long term	B

## 6.6 2930BA-MHC001

<b>Description of Site:</b>			
<b>Site Number</b>	2930BA-MHC001		
<b>Map reference</b>	<b>Topo-sheet number</b>	<b>Number of Map in report</b>	
	<b>2930BA</b>	<b>Annexure B</b>	
<b>GPS coordinates:</b> <i>Indicate Model and datum - WGS 84</i>	X	Y	
Garmin 38, WGS 84	E29.24721488	S30.73557794	
<b>Site Data</b>	<b>Description</b>		
<b>Type of site</b> (e.g. open scatter; shell midden, cave /shelter);	Cemetery consisting of ten stone packed graves		
<b>Site categories</b> (e.g. Earlier Stone Age, Late Iron Age);	Historic		
<b>Context</b> (i.e. primary or secondary);	Primary		
<i>Cultural affinities, approximate age and significant features of the site;</i>	Association with nearby community. Mr Themba Nkobani, a family member, indicated that the ages of the graves varies between 7 and 30 years.		
<b>Estimation or measurement of the extent</b> (maximum dimensions) and orientation of the site(s);	30mx20m		
<b>Depth and stratification of the site</b> (where shovel test permits have been given), both in the text and through photographs of the sections;	None visible		
<i>Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.</i>	None		

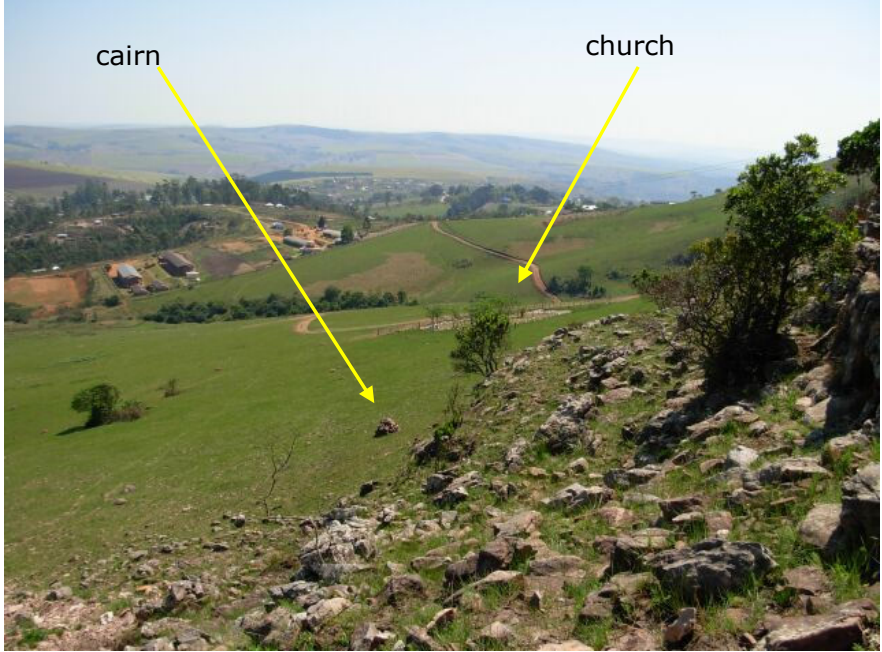


<p><b>Photographs and diagrams</b> (Figure numbers)</p>	 <p>• Figure 11: Grave in cemetery</p>				
<p><b>Statement of Significance</b> (Heritage Value)</p>	<p>The site is of <b>high</b> heritage significance</p>				
<p><b>Field Rating</b> (Recommended grading or field significance) of the site:</p>	<p>Generally protected (GP.A)</p>				
<p><b>Impact Evaluation</b> of development on site</p>	<p>Impact on site is seen as possibly low negative, however the 20 metre servitude for the pipeline provides for conservation of the site. Umgeni Water has indicated that the pipeline will be moved to the other side of the road – some 20 metres to the south.</p>				
<p><b>Recommendations</b> including:</p>	<p>Fencing with 15 metre buffer zone.</p>				
<p><b>Summary</b></p>					
<p><b>Field Rating</b></p>	<p><b>Impact</b></p>	<p><b>Impact Significance</b></p>	<p><b>Certainty</b></p>	<p><b>Duration</b></p>	<p><b>Mitigation</b></p>
<p>Grade GP.A</p>	<p>Negative</p>	<p>High</p>	<p>Possible</p>	<p>Long term</p>	<p>C</p>

## 6.7 2930BD-MHC001

<b>Description of Site:</b>			
<b>Site Number</b>	2930BD-MHC001		
<b>Map reference</b>	<b>Topo-sheet number</b>	<b>Number of Map in report</b>	
	<b>2930BD</b>	<b>Annexure B</b>	
<b>GPS coordinates:</b> <i>Indicate Model and datum - WGS 84</i>	X	Y	
Garmin 38, WGS 84	S29.39875432 S29.39957508	E30.85225403 E30.85207701	Start End
<b>Site Data</b>	<b>Description</b>		
<b>Type of site</b> (e.g. open scatter; shell midden, cave /shelter);	Stone packed cairns		
<b>Site categories</b> (e.g. Earlier Stone Age, Late Iron Age);	Historic - Recent		
<b>Context</b> (i.e. primary or secondary);	Primary		
<i>Cultural affinities, approximate age and significant features of the site;</i>	The seven stone cairns are associated with the nearby open air church. Mr Wonderboy Matondo indicated that the cairns were packed during church gatherings that happen annually.		
<b>Estimation or measurement of the extent</b> (maximum dimensions) and orientation of the site(s);	The seven stone cairns are packed at the foot of the Noordsberg mountain at Appelsbosch – Oswathini over a stretch of 150 metres.		
<b>Depth and stratification of the site</b> (where shovel test permits have been given), both in the text and through photographs of the sections;	None visible		
<i>Possible sources of information about past environments, such as stalactites/ stalagmites, flowstone, dassie middens, peat or organic rich deposits.</i>	None		



<p><b>Photographs and diagrams</b> (Figure numbers)</p>	 <p>• Figure 12: Stone cairn in middle with open air church to right</p>				
<p><b>Statement of Significance</b> (Heritage Value)</p>	<p>The site is of <b>medium</b> heritage significance</p>				
<p><b>Field Rating</b> (Recommended grading or field significance) of the site:</p>	<p>Generally protected (GP.B)</p>				
<p><b>Impact Evaluation</b> of development on site</p>	<p>Impact on site is seen as possibly medium negative, through possible destruction of site</p>				
<p><b>Recommendations</b> including:</p>	<p>Fencing with 15 meter buffer zone around cairns. The alignment of the pipeline to accommodate the cairns will be possible</p>				
<p><b>Summary</b></p>					
<p><b>Field Rating</b></p>	<p><b>Impact</b></p>	<p><b>Impact Significance</b></p>	<p><b>Certainty</b></p>	<p><b>Duration</b></p>	<p><b>Mitigation</b></p>
<p>Grade GP.B</p>	<p>Negative</p>	<p>Medium</p>	<p>Possible</p>	<p>Long term</p>	<p>B</p>

## **7. ASSUMPTIONS AND LIMITATIONS**

Due to the nature of cultural remains that occur, in most cases, below surface, the possibility remains that some cultural remains may not have been discovered during the survey. Although MATAKOMA-ARM surveyed the area as thoroughly as possible, it is incumbent upon the developer to inform the relevant heritage agency should further cultural remains be unearthed or laid open during the process of development.

A large part of the proposed pipeline route is currently covered by sugar cane fields and physical surveying of these areas was impossible. Where access to the route was at all possible these alignments were surveyed.

## **8. LEGAL AND POLICY REQUIREMENTS**

In areas where there has not yet been a systematic survey to identify conservation worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been done and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In the new legislation, permits are required to damage, destroy, alter, or disturb them. People who already possess material are required to register it.

The management of heritage resources are integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves, which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas), are protected. The legislation protects the interests of

communities that have interest in the graves: they may be consulted before any disturbance takes place.

The graves of victims of conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the developer's cost. Thus developers will be able to proceed without uncertainty about whether work will have to be stopped if a heritage resource is discovered.

## **9. ASSESSMENT AND RECOMMENDATIONS**

*A locality map is provided in **Annexure A** and Heritage Sites in **Annexure B***

A summary of the recommendations for each of the main heritage sites follows:

During the survey eight sites of heritage value were found within the close proximity to the proposed route alignment and servitude of the pipeline.

### **2930CB-MHC001**

It is recommended that the cemetery be fenced with a 15 metre buffer to protect it from accidental damage.

The pipeline alignment must take cognisance of the position of the cemetery during construction.

### **2930AD -MHC001**

The routing of the pipeline is considered to utilise the bridge as a crossing point for the pipeline. This crossing point makes an environmentally acceptable option as the other alternative will require the tunnelling of the pipe underneath the riverbed of the Umgeni River.

It is recommended that the structural integrity of the bridge is investigated.

The pipeline should not hinder traffic flow on the bridge.

The pipe must be constructed over the bridge to be sympathetic to the existing design. These designs can be done with the help of a conservation architects.

**2930AD-MHC003**

It is recommended that construction activities be monitored in the area, to identify any further sub-surface deposits and undertake appropriate mitigation where required.

**2930BC-MHC001 and MHC002**

It is recommended that construction activities be monitored in the area, to identify any further sub-surface deposits and undertake appropriate mitigation where required.

**2930BA-MHC001**

Impact on site is seen as possibly low negative, however the 20 metre servitude for the pipeline provides for conservation of the site. Umgeni Water has indicated that the pipeline will be moved to the other side of the road – some 20 metres to the south.

Fencing with 15 metre buffer zone.

**2930BD-MHC001**

Fencing with a 15 metre buffer zone around cairns. The alignment of the pipeline to accommodate the cairns will be possible.

If these recommendations are adhered to by Umgeni Water from a Heritage point of view there is no reason why the development can not commence.

## **General**

If during construction any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

***A heritage resources management plan must be developed for managing the heritage resources in the study area during construction and operation of the development. This includes***

- ***Monitoring program (watching brief) by an archaeologist***
- ***basic training for construction staff on possible finds,***
- ***action steps for mitigation measures, surface collections, excavations and***
- ***communication routes to follow in the case of a discovery.***

## 10. LIST OF PREPARES

Wouter Fourie, BA (Hon) Archaeology (UP)  
Jaco van der Walt, BA (Hon) Archaeology (Wits)

## 11. REFERENCES

### 11.1 ARCHIVAL RESEARCH

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[http://home.intekom.com/southafricanhistoryonline/pages/to  
wn&c/mission-stations/stations.htm](http://home.intekom.com/southafricanhistoryonline/pages/to<br/>wn&c/mission-stations/stations.htm)

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[http://www.geocities.com/Heartland/meadows/7589/hmiss\\_e  
n.html](http://www.geocities.com/Heartland/meadows/7589/hmiss_e<br/>n.html)

Hermannsburg Missionaries

[http://www.geocities.com/Heartland/meadows/7589/hmbmiss  
\\_en.html](http://www.geocities.com/Heartland/meadows/7589/hmbmiss<br/>_en.html)

Evangelical Lutheran Church of Southern Africa (ELCSA N-T)

<http://www.elcsant.org.za/congregations/>

#### ***Fawn Leas***

SAB BAO, VOLUME\_NO 4/2816, REFERENCE

GB6/8/1/2/G36/1

NAB CSO VOLUME\_NO 1713 REFERENCE 1902/7316

NAB CSO VOLUME\_NO 1501 REFERENCE 1897/

NAB PMG VOLUME\_NO 40 REFERENCE GPO893/1893

#### ***Oswathini – Appelsbosch***

History of Appelsbosch hospital -

<http://www.kznhealth.gov.za/appels/history.htm>

Stig-Magnus Thorsén, School of Music and Music Education,  
Göteborg University.

Paper presented at SSARN-seminar Pretoria 26-27/11 2002

Swedish mission and music education in Southern Africa.

The Swedish mission in east South Africa

[http://www.hsm.gu.se/digitalAssets/848798\\_Swedishmission\\_SSARN02.pdf](http://www.hsm.gu.se/digitalAssets/848798_Swedishmission_SSARN02.pdf)

### **Havelock Bridge**

NAB MJPW VOLUME\_NO 126 REFERENCE MPW1246/1907

NAB PWD VOLUME\_NO 2/ REFERENCE PWD2793/

NAB PWD VOLUME\_NO 2/166 REFERENCE PWD987

NAB VOLUME\_NO 29 REFERENCE T557/1880

## **11.2 CULTURAL HERITAGE PAPERS**

Australia ICOMOS. The Burra Charter (The Australian ICOMOS charter for places of cultural significance). 2002.

Standard and Guidance for Archaeological Desk-Based Assessment. 1994.

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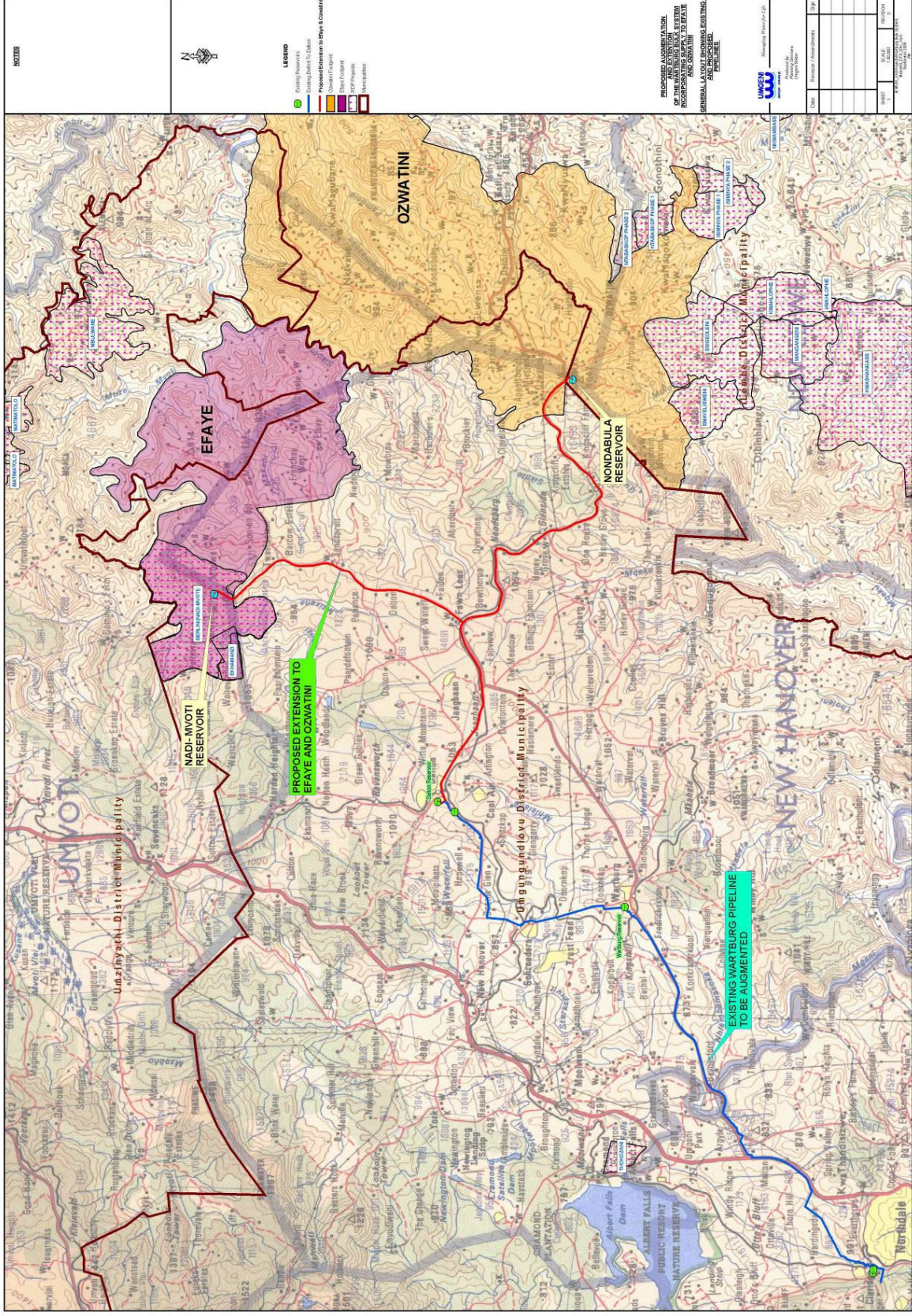
International Council of Monuments & Site Documents. Guidelines to the Burra Charter: Cultural Significance. 1984.

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# **ANNEXURE A: Locality Map**

# AUGMENTATION AND EXTENSION OF THE WARTBURG BULK SYSTEM – HIA



# **ANNEXURE B:**

# **Heritage Sites**



# Heritage Site Distribution Grouping 1

**Legend**

- Heritage Sites
- Umgeni\_Wartburg route
- Proposed route

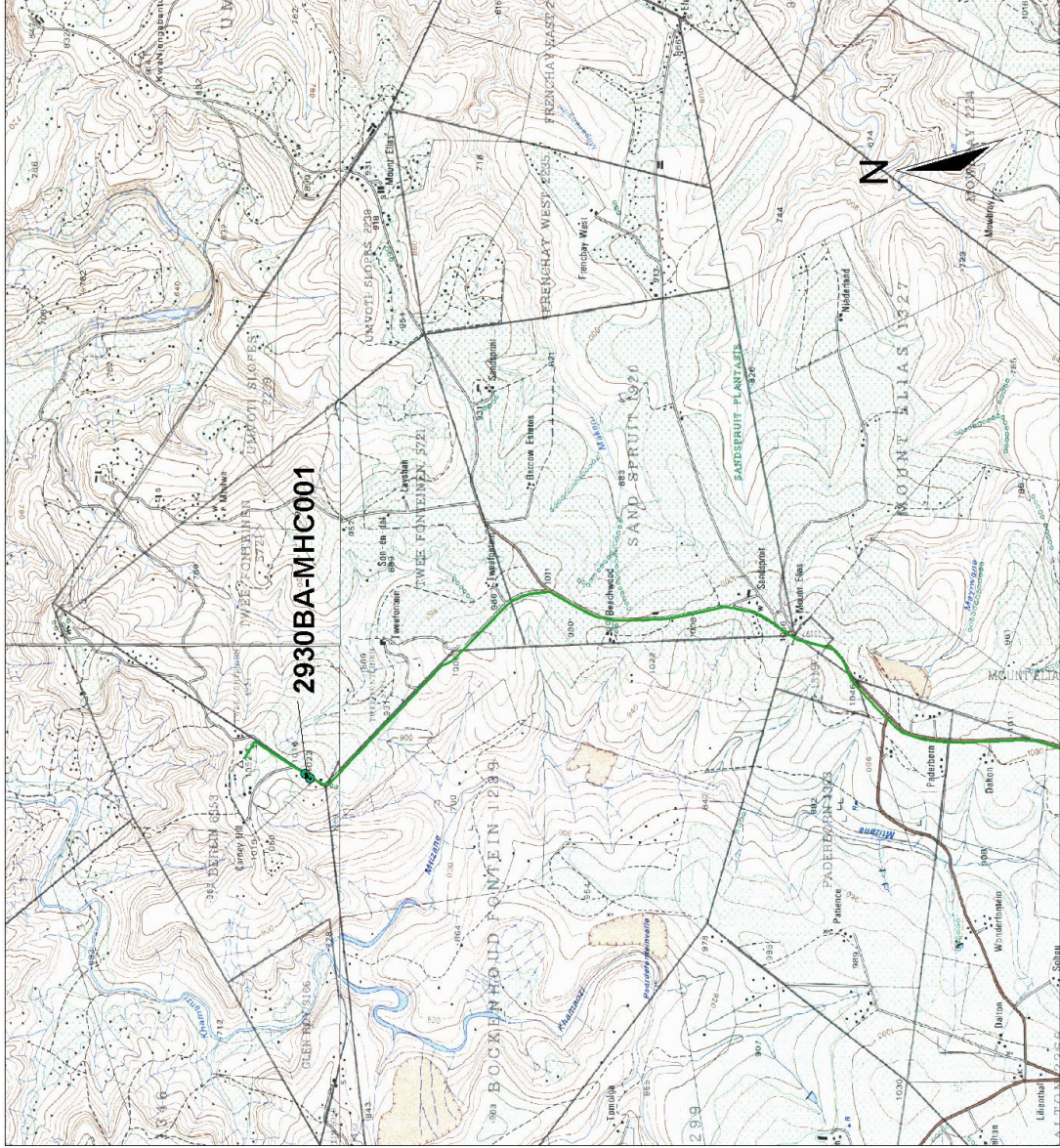




# Heritage Site Distribution Grouping 2

**Legend**

- Heritage Sites
- Umgeni\_Wartburg route
- Proposed route



3000 0 3000 6000 Meters



## Heritage Site Distribution Grouping 3

