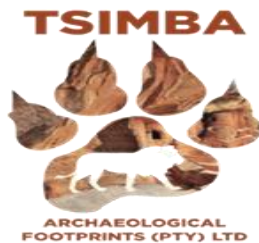


## PHASE ONE (1)

# ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT REPORT APPLICATION FOR ENVIRONMENTAL AUTHORISATION

THE PROPOSED TUGELA FERRY IRRIGATION SCHEME UPGRADES  
LOCATED WITHIN WARDS 3, 4 AND 5 OF THE MSINGA LOCAL  
MUNICIPALITY AND UMZINYATHI DISTRICT MUNICIPALITY

DEVELOPED BY:



ARCHAEOLOGICAL  
FOOTPRINTS (PTY) LTD

DEVELOPED FOR :



ENVIROPRO

IN ASSOCIATION WITH *INKANYEZI VETHU*

FEBRUARY 2023

**TSIMBA**



ARCHAEOLOGICAL  
FOOTPRINTS (PTY) LTD

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## AUTHOR'S CREDENTIALS

The report was authored by Mr. Roy Muroyi, Principal Heritage Specialist and Archaeologist for Tsimba Archaeological Footprints (Pty) Ltd. Roy is a flexible, creative, hard-working and professionally minded cultural heritage specialist with realistic methods. He has over nine years' experience in conducting and compiling Heritage Impact Assessments, Conservation Management Plans and Eco-Tourism Impact Assessments in South Africa, Botswana and Malawi.

Roy holds a Master's Degree in Heritage Studies (University of Witwatersrand ,2022) with a research focus on transformational challenges at post-apartheid interpretation of Mapungubwe Interpretation Centre in Musina – Limpopo Province.

He further holds another Master's Degree in Diversity Studies (University of Witwatersrand ,2021) focusing his research on Zulu Cultural Heritage Collections (in Kwa-Zulu Natal Province) interpretation using a decolonial lens.

Mr. Muroyi is also a holder of an Honours Degree, Archaeology, Cultural Heritage and Museum Studies (Midlands State University, 2014).

His career in Cultural Resources Management kicked off at the Department of National Museums and Monuments of Botswana where he worked as an Archaeological Impact Assessment adjudicating officer in 2013.

After leaving the Department of National Museums and Monuments of Botswana Mr. Muroyi moved to South Africa where he got involved with a number of Cultural Resources Management consulting firms before eventually settling at Tsimba Archaeological Footprints (Pty) Ltd. He has so far conducted over a 100-200 Heritage Impact Assessment reports for proposed Phase 1 and 2 Heritage Impact Assessments for :- Linear developments, Projects with an area over 5000m<sup>2</sup>,Heritage buildings/Old buildings (demolitions and alterations),Old Bridges (demolitions) Water Pipelines, and etc .

He is accredited by Association of Southern African Professional Archaeologists (ASAPA) under the Cultural Resources Management section. He is also accredited by Association of Professional Heritage Professionals (APHP). He further holds membership with the International Association Impact Assessment South Africa (IAIAsa) and KwaZulu-Natal Amafa and Research Institute.

## SPECIALIST DECLARATION OF INDEPENDENCE

I, \_\_\_\_\_ Roy Muroyi \_\_\_\_\_, declare that –

- *I act as the independent specialist in this application;*
- *I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;*
- *I declare that there are no circumstances that may compromise my objectivity in performing such work;*
- *I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;*
- *I will comply with the Act, Regulations and all other applicable legislation;*
- *I have no, and will not engage in, conflicting interests in the undertaking of the activity;*
- *I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;*
- *all the particulars furnished by me in this form are true and correct; and*
- *I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.*

**Signature of the Specialist**



## DOCUMENT INFORMATION

DOCUMENT INFORMATION ITEM	DESCRIPTION
<b>Proposed development and location</b>	The Proposed Tugela Ferry Irrigation Scheme Upgrades. The existing Tugela Ferry Irrigation Scheme which is located within Wards 3, 4 and 5 of the Msinga Local Municipality and Umzinyathi District Municipality.
<b>Purpose of the study</b>	To carry out a Phase 1 Heritage Impact Assessment to determine the presence/absence of archaeological assess their archaeological significance in terms of the NHRA of 1999 the KwaZulu-Natal Heritage Act, 1997 (Act No. 4 of 2008) and SHARA guidelines.
<b>Municipalities</b>	Msinga Local Municipality and Umzinyathi District Municipality.
<b>Client Details</b>	EnviroPro (Pty) Ltd Phone: (+27) 31 765 2942 Email: matthew@enviropro.co.za
<b>Heritage Consultant</b>	Tsimba Archaeological Footprints (Pty) Ltd 24 Lawson Mansions 74 Loveday Street, Johannesburg Gauteng, 2000 E-mail: <a href="mailto:info@tsimba-arch.co.za">info@tsimba-arch.co.za</a> <a href="mailto:rmuroyi23@gmail.com">rmuroyi23@gmail.com</a> Phone : (+27) 813 717 993

## EXECUTIVE SUMMARY

Tsimba Archaeological Footprints (Pty) Ltd was requested by EnviroPro (Pty) Ltd to conduct a Phase two (2) Heritage Impact Assessment (HIA) for the proposed Tugela Ferry Irrigation Scheme Upgrades. The existing Tugela Ferry Irrigation Scheme which is located within Wards 3, 4 and 5 of the Msinga Local Municipality and Umzinyathi District Municipality. The name Msinga refers to the Mpofana-Thukela-Mzinyathi Valley. It is derived from Msinga mountain which lies between the Thukela and Mzinyathi (Buffalo) Rivers. It means a place of open clearness. Msinga lies in the Upper Basin of the Thukela River, about one hundred kilometres from both the Indian Ocean to the east and the Drakensberg Mountains to the west. As of December 2000, Msinga was designated a local municipality covering some 2500 km<sup>2</sup>, but the name has long been used to denote a much larger area. Currently, the municipality is one of four comprising the Umzinyathi District Municipality and it administers six Traditional Authority areas, namely, Qamu, Mchunu, Bomvu, Ngome, Mabaso and Mthembu.

The Survey focused on three objectives:

- ➔ Examine the designated survey areas to identify any archaeological and cultural heritage sites, as defined by the KwaZulu-Natal Heritage Act, 1997 (Act No. 4 of 2008) and section 38 (1) (a, b, c) of the NHRA, No. 25 of 1999.
- ➔ Provide a recording of any sites identified to a standard consistent with a site identification level, including significance assessments, details of the locations and extents of each site; and
- ➔ Assist in the development of site avoidance and management strategies, where necessary.

EnviroPro (Pty) Ltd (hereafter referred to as “the EAP”) have been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed development. A review of a range of cultural heritage information was undertaken as part of the heritage assessment process.

The Phase 2 Cultural Heritage Impact Assessment field survey for the proposed development project identified no site, features or objects of cultural significance in the study area. The survey therefore notes that there would be no impact on cultural heritage resources as a result of the proposed development.

## TABLE OF CONTENTS

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AUTHOR'S CREDENTIALS .....	2
SPECIALIST DECLARATION OF INDEPENDENCE .....	3
DOCUMENT INFORMATION.....	4
EXECUTIVE SUMMARY .....	5
TABLE OF CONTENTS .....	6
FIGURES AND TABLES .....	7
ABBREVIATIONS .....	8
GLOSSARY .....	9
1.0 INTRODUCTION .....	10
2.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT .....	13
3.0 METHODOLOGY .....	15
4.0 LEGISLATIVE FRAMEWORK.....	17
5.0 ARCHEOLOGICAL BACKGROUND OF THE STUDY AREA .....	19
6.0 HISTORICAL BACKGROUND .....	21
7.0 DISCUSSION OF FINDINGS .....	24
8.0 ASSESSMENT OF SIGNIFICANCE .....	30
10.0 CONCLUSIONS .....	33
11.0 RECOMMENDATIONS .....	34
9.0 REFERENCES .....	35
APPENDIX A: DEFINITION OF TERMS ADOPTED IN THIS HIA .....	36
APPENDIX B: LIKELIHOOD / PROBABILITY OF IMPACT OCCURRING.....	38

## FIGURES AND TABLES

Figure 1: Google earth imagery of the proposed Gabion Walls site .....	13
Figure 2: Google earth image of the bridges .....	14
Figure 6: The Burra Charter process: steps in planning for and managing a place of cultural significance. (Reproduced from Australia ICOMOS 2013).....	18
Figure 4: View of the dilapidated bridge one .....	25
Figure 5: A view of bridge one from a distance .....	25
Figure 6: Stone masonry at bridge one .....	25
Figure 7: View of some land degradation close to the first bridge .....	25
Figure 8: View of the concrete bridge two .....	26
Figure 9: View of the modified /repaired canal .....	26
Figure 10: View of concrete bridge three .....	27
Figure 11: of another old canal.....	27
Figure 12: View of bridge three showing the concrete and stone masonry .....	28
Figure 13: View of the surrounding environment at bridge four .....	28
Figure 14: A closer view of bridge five .....	29
Figure 15: View of a canal passing through some structures at bridge five.....	29
Table 1: Significance of Cultural Landscape Impacts.....	23
Table 2: Site Significance classification .....	30
Table 3: The significance weightings for each potential impact are as follows:.....	31

## ABBREVIATIONS

Acronyms	Description
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environmental Affairs
DRDLR	Department of Rural Development and Land Reform
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
LIA	Late Iron Age
MIA	Middle Iron Age
MSA	Middle Stone Age
SAHRA	South African Heritage Resources Agency



## GLOSSARY

Achievement	<ul style="list-style-type: none"> <li>▪ Something accomplished, esp. by valour, boldness, or superior ability</li> </ul>
Aesthetic	<ul style="list-style-type: none"> <li>▪ Relating to the sense of the beautiful or the science of aesthetics.</li> </ul>
Community	<ul style="list-style-type: none"> <li>▪ All the people of a specific locality or country</li> </ul>
Culture	<ul style="list-style-type: none"> <li>▪ The sum total of ways of living built up by a group of human beings, which is transmitted from one generation to another.</li> </ul>
Cultural	<ul style="list-style-type: none"> <li>▪ Of or relating to culture or cultivation.</li> </ul>
Diversity	<ul style="list-style-type: none"> <li>▪ The state or fact of being diverse; difference; unlikeness.</li> </ul>
Geological (geology)	<ul style="list-style-type: none"> <li>▪ The science which treats of the earth, the rocks of which it is composed, and the changes which it has undergone or is undergoing.</li> </ul>
High	<ul style="list-style-type: none"> <li>▪ Intensified; exceeding the common degree or measure; strong; intense, energetic</li> </ul>
Importance	<ul style="list-style-type: none"> <li>▪ The quality or fact of being important.</li> </ul>
influence	<ul style="list-style-type: none"> <li>▪ Power of producing effects by invisible or insensible means.</li> </ul>
Potential	<ul style="list-style-type: none"> <li>▪ Possible as opposed to actual.</li> </ul>
Integrity	<ul style="list-style-type: none"> <li>▪ The state of being whole, entire, or undiminished.</li> </ul>
Religious	<ul style="list-style-type: none"> <li>▪ Of, relating to, or concerned with religion.</li> </ul>
Significant	<ul style="list-style-type: none"> <li>▪ important; of consequence</li> </ul>
Social	<ul style="list-style-type: none"> <li>▪ Living, or disposed to live, in companionship with others or in a community, rather than in isolation.</li> </ul>
Spiritual	<ul style="list-style-type: none"> <li>▪ Of, relating to, or consisting of spirit or incorporeal being.</li> </ul>
Valued	<ul style="list-style-type: none"> <li>▪ Highly regarded or esteemed</li> </ul>

## 1.0 INTRODUCTION

Tsimba Archaeological Footprints (Pty) Ltd was requested by EnviroPro (Pty) Ltd to conduct a phase two (2) Heritage Impact Assessment (HIA) for the proposed Tugela Ferry Irrigation Scheme Upgrades. The existing Tugela Ferry Irrigation Scheme which is located within Wards 3, 4 and 5 of the Msinga Local Municipality and Umzinyathi District Municipality. The irrigation scheme has been in operation since the 1800s, however due to poor maintenance and the age of the scheme parts of the canal network and related facilities has fallen into disrepair. Therefore, in order to ensure the longevity of the scheme the Tugela Ferry Agriculture Co-Op who have obtained financial backing of the Department of Rural Development and Land Reform (DRDLR) has proposed a number of new works associated with the canal network, with the second phase of development focusing on repairs and construction within Blocks 1 and Block 2.

This phase two HIA follows the work of Frans Prins (2019) who conducted a phase one heritage survey of the proposed upgrade of the Tugela Ferry Irrigation Scheme and identified no archaeological or heritage sites on the footprint. Frans further noted that the area is also not part of any known cultural landscape. The proposed development site is located within a rural setting of Msinga. No cultural heritage resources were recovered within the proposed development footprints. The proposed features for upgrade and construction of erosion protection structures (i.e., gabion walls & reno mattresses) as well as the repairs to canal bridges were also investigated and it was noted that the canals are +100 years old and therefore are protected by Section 34 of the national Heritage and Resources Act of 1999.

This HIA is designed to assist statutory authorities in identifying and preventing the approval of aggressive developments, understood as the development that destroys the cultural significance of heritage properties. The provisions of the National Heritage Resources Act of 1999 and the KwaZulu-Natal Heritage Act (Act no 4 of 2008) furthermore offer comprehensive protection of the cultural heritage of South Africa as a whole. HIA structure an evaluation of the potential damage or benefits that may accrue to the significance of the cultural heritage assets.

Environmental impact assessments (EIA) are another analytic approach for evaluating the impacts of development, widely adopted as part of the land use planning system in many countries. Whenever relevant, EIA also include cultural heritage as a factor to be evaluated. Both EIA and HIA adopt a similar approach. In brief, first, the overall scope of the study is defined. Second, a baseline survey is carried out to provide a reference point against which impacts can be measured, including a desktop study and/or field research.

### ***1.2 The Objectives of this HIA study are:***

Heritage impact assessments (hereinafter referred to as HIA) are applied to cultural heritage assets. This is a recent notion grounded in the requirements to perform environmental assessments at the project or more strategic levels. The general objective of the cultural heritage survey is to record and document cultural heritage remains consisting of both tangible and intangible archaeological and historical artefacts, structures (including graves), settlements and oral traditions of cultural significance. As such the terms of reference of this survey are as follows:

- ➔ Identify and provide a detailed description of all artefacts, assemblages, settlements and structures of an archaeological or historical nature (cultural heritage sites) located on the study area,
- ➔ Estimate the level of significance/importance of these remains in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value,
- ➔ Assess any impact on the archaeological and historical remains within the area emanating from the development activities, and
- ➔ Propose recommendations to mitigate heritage resources where complete or partial conservation may not be possible and thereby limit or prevent any further impact

### ***1.3 Cultural Heritage Resources Management Policy Objectives***

- i. To preserve representative samples of the National archaeological resources for the scientific and educational benefit of present and future generations;
- ii. To ensure that development proponents consider archaeological resource values and concerns in the course of project planning; and
- iii. To ensure where decisions are made to develop land, the proponents adopt one of the following actions:
  - ➔ avoid archaeological sites wherever possible;
  - ➔ implement measures which will mitigate project impacts on archaeological sites; or
  - ➔ Compensate the local communities for unavoidable losses of significant archaeological value.

### ***1.4 Proposed Scope of Works***

The following construction activities are proposed for the development:

- 1) Block 1 Embankment Erosion Protection;
  - ➔ Construction of a 90m long, 3,7m high gabion basket wall (inclined at a 6° angle).
  - ➔ Construction of a 90m long, 1m wide reno mattress adjacent to the gabion basket wall.
- 2) Block 2 Canal Bridge Repairs:
  - ➔ Removal, demolition and disposal of the existing concrete, stone pitching and informal wood and steel crossings.
  - ➔ Construction of gabion baskets, approximately 5m long, 1-2m high (site dependant) to replace the deteriorated stone pitching walls.
  - ➔ Construction of reno mattresses at the downstream end of the canal bridges to control erosion.

## 2.0 DESCRIPTION OF THE RECEIVING ENVIRONMENT

The district is distinctively arid and rocky with a wide alluvial plain that rises to the highveld north and south of the Thukela River. Temperature, rainfall and vegetation correspond closely with altitude. The average annual temperature in the valley is higher (20°C) than in the highland areas (14°C). On the whole, the area receives an average of 670 mm of rain per year.

The study area dominated by thin bushveld, but at higher elevations there is a mix of moist or dry grassland, sourveld, sandveld and thornveld. Soils across this landscape are non-arable, shallow reddish-brown calcareous soils of the Sunvalley-Ferry-Weenen series that overlay a lithology characterized by the shale- and sandstone-rich Hutton form of the Msinga Series (van der eyk et al. 1969). The nature of the topography is such that the high hills isolate the municipal area from those immediately surrounding it.

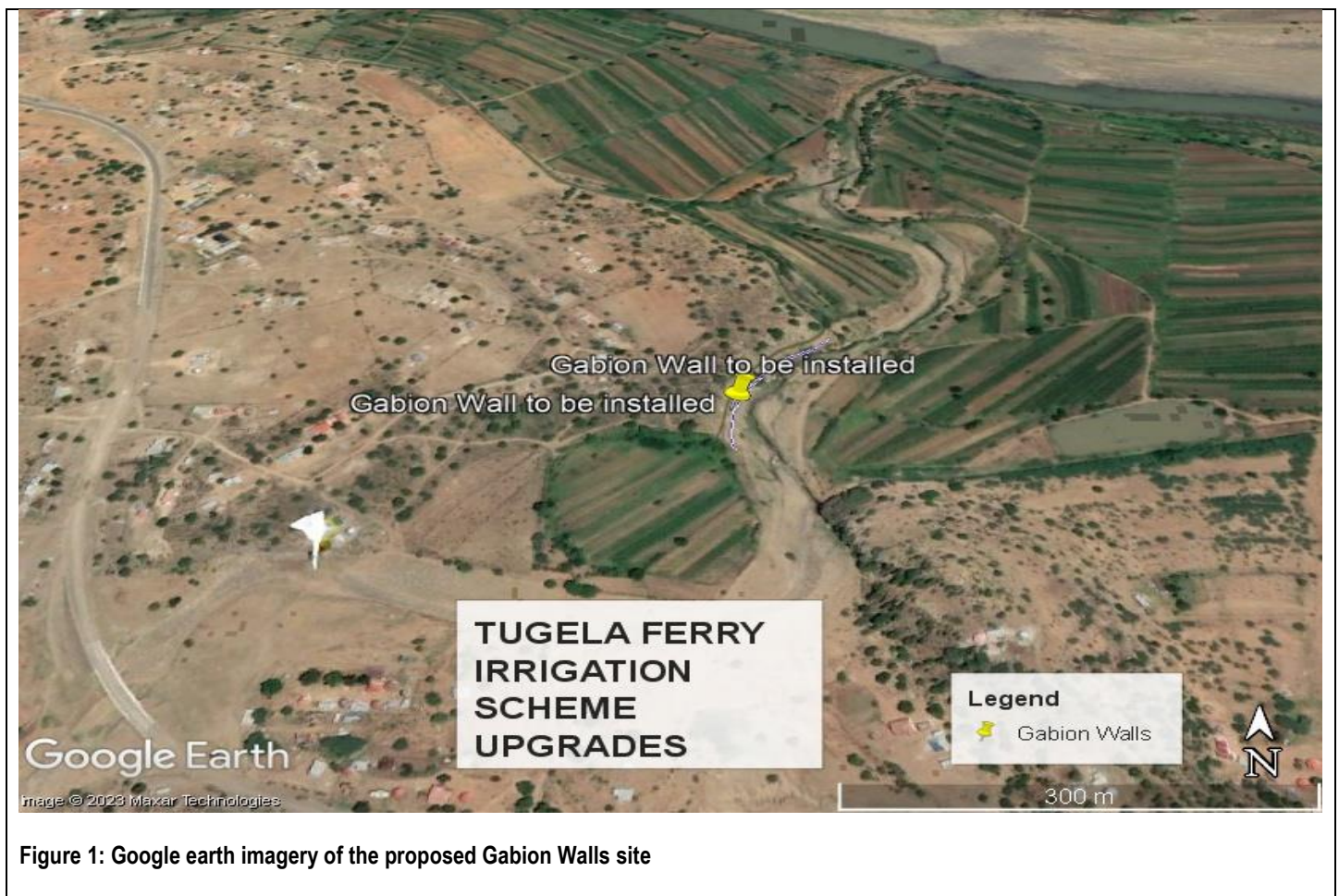


Figure 1: Google earth imagery of the proposed Gabion Walls site

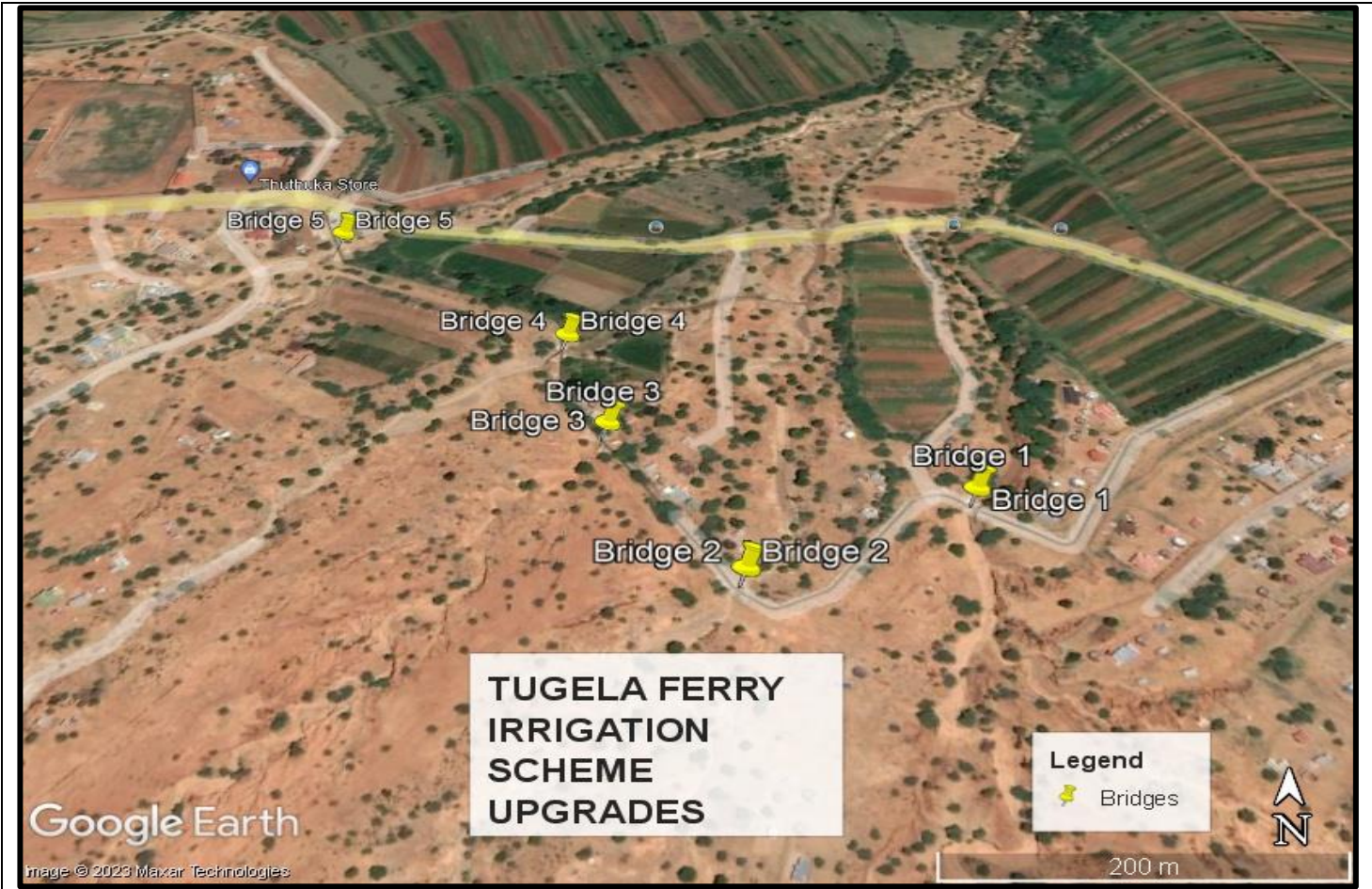


Figure 2: Google earth image of the bridges

## **3.0 METHODOLOGY**

### ***3.1 Literature review***

The methodology used in this HIA is based on a comprehensive understanding of the current or baseline situation; the type, distribution and significance of heritage resources as revealed through desk-based study and additional data acquisition, such as archaeological investigations, built heritage surveys, and recording of crafts, skills and intangible heritage. This is systematically integrated by the use of matrices with information on the nature and extent of the proposed engineering and other works to identify potential. The following tasks were also undertaken in relation to the cultural heritage and are described in this report:

The background information search of the proposed development area was conducted following the site maps from the client. Sources used in this study included:

- Published academic papers and HIA and PIA studies conducted in and around the region where the proposed infrastructure development will take place;
- Available archaeological literature on the study area was consulted;
- The SAHRIS website and the National Data Base were consulted to obtain background information on previous heritage surveys and assessments in the area; and other planning documents.
- Map Archives - Historical maps of the proposed area of development and its surrounds were assessed to aid information gathering of the proposed area of development and its surrounds

### ***3.2 Data Consolidation and Report Writing***

Data captured on the development area (during the field survey) by means of a desktop study and physical survey is used as a basis for this HIA. This data is also used to establish assessment for any possible current and future impacts within the development footprint. This includes the following:

- ✚ Assessment of the significance of the cultural resources in terms of their archaeological, built environment and landscape, historical, scientific, social, religious, aesthetic and tourism value;
- ✚ A description of possible impacts of the proposed development, especially during the construction phase, in accordance with the standards and conventions for the management of cultural environments;
- ✚ Proposal of suitable mitigation measures to minimize possible negative impacts on the cultural environment and resources that may result during construction;

- ✚ Review of applicable legislative requirements that is the NEMA (read together with the 2014 EIA Regulations) the NHRA of 1999 and the KwaZulu-Natal Heritage Act (Act no 4 of 2008).
- ✚ The consolidation of the data collected using the various sources as described above;
- ✚ Acknowledgement of impacts on heritage resources (such as unearthed graves) predicted to occur during construction; and
- ✚ Geological Information Systems mapping of known archaeological sites and maps in the region
- ✚ A discussion of the results of this study with conclusions and recommendations based on the available data and study findings.



## 4.0 LEGISLATIVE FRAMEWORK

### 4.1 National Heritage Resources Act (No 25 of 1999)

The appointment of Tsimba Archaeological Footprints (Pty) Ltd is in terms of the National Heritage Resources Act (NHRA), No. 25 of 1999 red together with the KwaZulu-Natal Heritage (Act No. 4 of 2008). The HIA is completed in accordance to requirements of Section 38(1) of the South African Heritage Resources Act (25 of 1999) requires that a heritage study is undertaken for:

- (a) Construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;*
- (b) Construction of a bridge or similar structure exceeding 50 m in length; and*
- (c) Any development, or other activity which will change the character of an area of land, or water – (1) Exceeding 10 000 m<sup>2</sup> in extent; (2) Involving three or more existing erven or subdivisions thereof; or (3) Involving three or more erven, or subdivisions thereof, which have been consolidated within the past five years; or*
- (d) The costs of which will exceed a sum set in terms of regulations; or*
- (e) Any other category of development provided for in regulations.*

While the above describes the parameters of developments that fall under this Act., Section 38 (8) of the NHRA is applicable to this development to heritage resources that are protected in terms of sections 33, 34, 35, and 36 of the KwaZulu-Natal Heritage Act (No. 4 of 2008) as well as sections 34, 35, and 36 of the NHRA.

### 4.2 The Burra Charter of 1964

This study is further guided by the Burra Charter which offers a framework for heritage management in which multiple—sometimes conflicting—heritage and other values can be understood and explicitly addressed. The Burra Charter is based on the International Charter for the Conservation and Restoration of Monuments and Sites 1964 and was adopted by the Australian International Council on Monuments and Sites (ICOMOS) in 1979. The Burra Charter sets a standard of practice for those who provide advice, make decisions about or undertake works to places of cultural significance and is applicable to all places of cultural significance including natural, indigenous and historic places of cultural value. The Burra Charter provides for a flow chart that sets out the sequence underlining the process of heritage assessment (*Figure 6*).

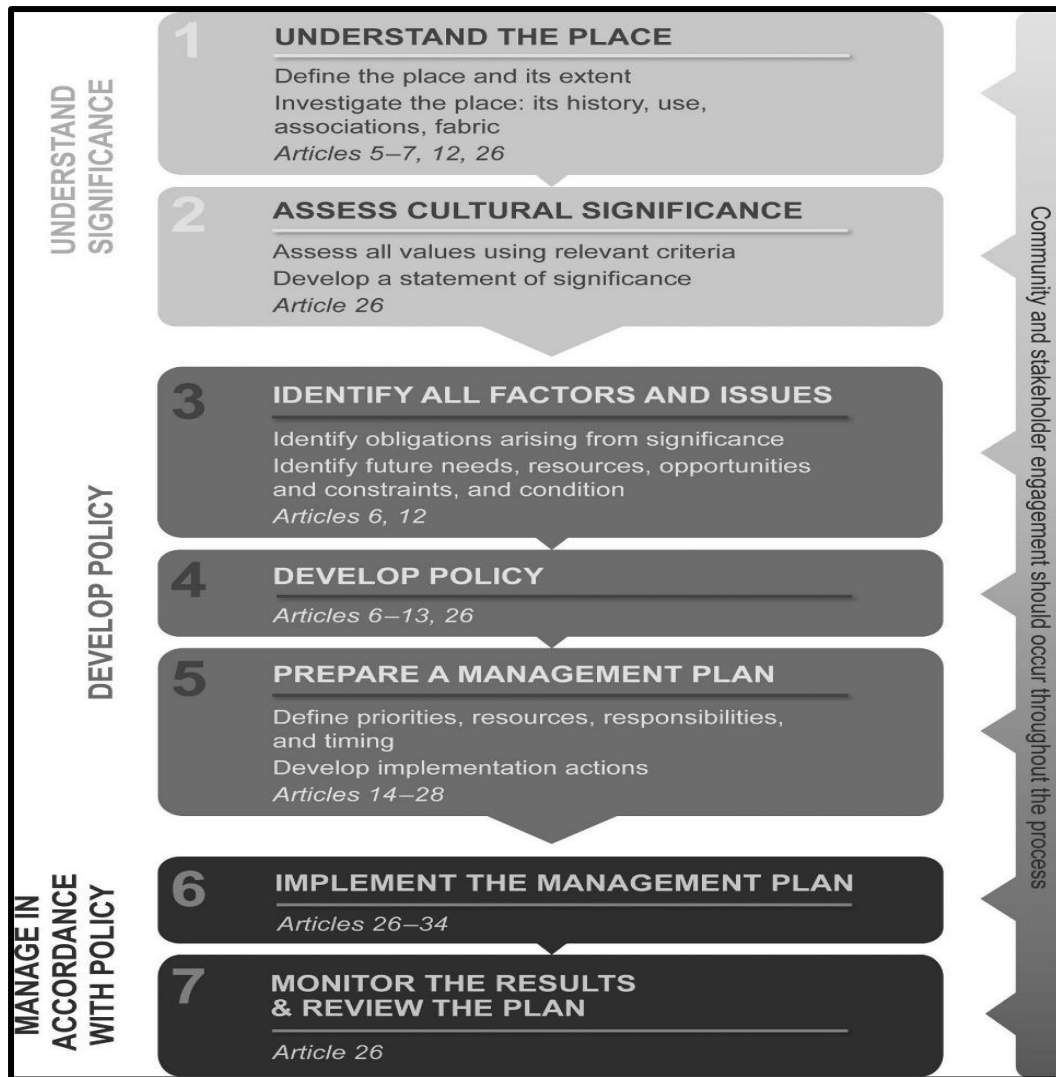


Figure 3: The Burra Charter process: steps in planning for and managing a place of cultural significance. (Reproduced from Australia ICOMOS 2013)

## 5.0 ARCHEOLOGICAL BACKGROUND OF THE STUDY AREA

In terms of archaeology, South Africa's prehistory has been broken down into a number of stages based on general technological tendencies. The main distinction is between using stone tools that have been chipped and flaked (the Stone Age), being able to work iron (the Iron Age), and the Colonial Period, which is characterized by the invention of writing and in southern Africa is primarily linked to the first European explorers (Mitchell 2002). The Stone Age in Southern Africa, which spans a significant portion of human history, is further broken down into three distinct periods: the Early Stone Age, or Paleolithic Period (roughly 2,500,000–150,000,000 years ago), the Middle Stone Age, or Mesolithic Period (roughly 500,000,000–30,000,000 years ago), and the Late Stone Age, or Neolithic Period (roughly 30,000–2,000,000,000 years ago).

The Early Stone Age (2.5 million to 250 000 years ago), Middle Stone Age (250 000 to 20 000 years ago), and Late Stone Age are all represented in this region (22 000 – 200 years ago). Additionally, sites from the San and Khoekhoen cultural eras have rock art in this region's Late Stone Age. groups. There aren't many Early to Middle Stone Age sites in this region, although rock-art sites and Late Stone Age sites are far more well-known. Modern man, or Homo sapiens, developed during the Middle Stone Age, 200 000 years ago, producing a greater variety of tools with more sophisticated technology than those from preceding eras. This made it possible for knowledgeable hunter-gatherer tribes to adapt to many surroundings.

From that point forward, rock shelters and caves were occupied for extended periods of time before being abandoned. According to McCrossin, (1994). the Middle Stone Age (MSA) was considered as a technological transition from core tools to flake tools, and it was believed to represent a stage in between the Earlier and Later Stone Ages (LSA). Radial and discoidal varieties, together with single and double platform specimens, predominated in cores, and the MSA was defined by triangular flakes with convergent dorsal scars and faceted butts. The worked flake point was regarded as the "type fossil."

It has been challenging to integrate all MSA assemblages within Goodwin and Van Riet Lowe's criteria due to the relatively large time range covered by the MSA (c. 250 000–20 000 BP) and the considerable degree of regional diversity. With varying degrees of success, other recent attempts have been undertaken to reevaluate the MSA's definition ((McCrossin, 1994). As a result, it is still challenging to locate and comprehend the end of the MSA. In southern Africa, there is disagreement about four key points: 1) the definition of final MSA technology; 2) the existence of a transitional MSA/LSA industry; 3) the timing of the MSA/LSA transition; and 4) the existence of an Early LSA (McCrossin, 1994).

The Middle Stone Age (MSA) through the Later Stone Age (LSA), including the MSA/LSA transition, and early LSA microlithic bladelet assemblages, were covered by a lengthy and intricate series of stone artifacts discovered during Kaplan's dig at Umhlatuzana rock shelter in Natal in 1985. Between 35 000 and 25 000 BP, the transition from the MSA to the start of the LSA occurred. Umhlatuzana's recovery of Robberg-like assemblages marks the beginning of positively identifying them in Natal. They demonstrate that assemblages of this kind were created earlier and later in Natal than elsewhere in the nation, predating 18 000 BP and postdating 12 000 BP. Middle Stone Age and Late Stone Age distinctions based on backed blades, according to recent research by Wadley on the Middle Stone Age at Sibudu Cave north of Durban, may be deceptive (Wadley, 2005). Despite the paucity of research on MSA sites, this study highlights the potential benefits of further examining stone age sites in KZN.

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The EIA sites in KZN date to around AD 500 to AD 900. Extensive research in the province, in the greater Weenen and Muden areas, of this period led to it being divided in the following time lines according to ceramic styles (Maggs, 1989; Huffman 2007): Msuluzi (AD 500); Ndongondwane (AD 700 – 800); Ntshokane (AD 800 – 900). The archaeological data base of the KwaZulu-Natal Museum indicates that ten Early Iron Age sites occur in the Tugela Valley catchment area

## 6.0 HISTORICAL BACKGROUND

The table below outlines the notable historical events that took place within the area surrounding the proposed development footprint:

Date	Events in the historical period
1830	Oral tradition holds that King Shaka gave Inkosi Jobe Sithole the land bounded by the uNdi (Biggarsberg) Heights, Thukela, and Mzinyathi (Buffalo) Rivers. King Shah had accepted Inkosi Jobe as his subordinate. King Shaka easily beat Amakhosi Ngoza Mvelase and Macingwane Mchunu when they rose up against him, and they fled with their subjects.
1835-46	Dutch farmers who were dissatisfied with British administration in Cape Town made the decision to travel towards the interior of the nation to seek refuge from British rule. A few groups settled in the Orange Free State and the Transvaal, while others continued on from the Eastern Cape. Piet Retief and Gerrit Maritz led a large group of people that crossed the Drakensberg into Natal. They came across the Zulus here, who mercilessly slaughtered several of them after luring them into a trap. The white settler expeditions in the frontier regions had many other failures, and when the horrific news reached the Cape, fresh troops were dispatched to exact revenge
1838	There were other conflicts, but the Battle of Blood River in 1838, in which the Boers destroyed the Zulus, is remembered most. As a result, the Zulu danger to the white settlers was eliminated, and Natal saw the establishment of a formal, long-term settlement.
1839	King Shaka was very moved by Inkosi Jobe's loyalty. That marked the start of a close alliance between the Zulu Royal family and the Sithole isizwe. The people of Sithole were not drawn to the Thukela-Mzinyathi valley. They preferred the region's northern region. As a result, Msinga as we know it now is essentially empty. It was simple for the aMachunu.
1850	The aBathembu in 1850 to settled in the then-broad Thukela-Mpofana valley. The Sithole people were initially unaffected by Captain Struben's work in the tenement they were then living in. A few years later, problems arose
1856	Prince Cetshawyo, the unquestioned heir to the Zulu Monarchy, had defeated Prince Mbuyazi in a battle at Ndondakusuka.

1857	<p>Inkosi Matshana was a great friend and admirer of Prince Cetshwayo kaMpande. Two of Inkosi Matshana's wives were sisters of Prince Cetshwayo. Therefore the ties of friendship between the Zulu Royal family and the Sithole traditional leader were even stronger during the reign of Inkosi Matshana. By 1857 the health condition of King Mpande had deteriorated to a large extent</p>
1858	<p>The Sithole people have been involved in ongoing land disputes with the aMaqamu since Inkosi Matshana Sithole fled in 1858. Even now, the Matshana incident is still a problem that has not been resolved. It would be required to provide a brief history of Inkosi Matshana kaMondise Sithole to demonstrate the seriousness with which Sir Theophilus Shepstone took his notion of tribal responsibility.</p> <p>The reasons why the events in KwaZulu are included here is that it is obvious that they had an impact on Inkosi Matshana's actions, which led to a contentious argument between him and Sir Theophilus Shepstone in 1858</p>
1879	<p>The Zulu kingdom, however, maintained its independence for a while. The British invaded the Zulu nation in 1879 in addition to annexing the Republic of Natalia in 1845. (Wright &amp; Hamilton, 1989). An important event in the Anglo-Zulu War occurred at Keates Drift and Jamesons Drift, close to the project area, when a few British soldiers attempted to cross the Tugela River following their defeat at the battle of Isandlwana. This event is well-documented in the history of the conflict.</p>
1890	<p>The history of the Natal transport lines built in the 1890s by the British in their search for territory during the Anglo-Zulu and Anglo-Boer Wars is more recent than the history of the inhabitants of the wider Msinga area. Greytown was the destination of the major railway line from Pietermaritzburg, from which supplies had to be brought by wagon or cart to remote places. On the way to the project area, to the towns of Pomeroy and Dundee, the wagon route through Msinga crossed the Tugela by pontoon or ferry (where the town Tugela Ferry is located).</p>
1906	<p>The surrounding terrain is still infused with the significance of this significant time in KwaZulu-colonial Natal's history even if no remnants or artifacts from this encounter have survived. Numerous incidents related to the Bambata Rebellion of 1906 happened near to the project area. Perhaps the most significant is the Bambata Rock Ambush.</p>

Table 1: Significance of Cultural Landscape Impacts

Assessment of significance of the cultural landscape impacts		Landscape receptor sensitivity			
		High	Medium /medium	low	
<ul style="list-style-type: none"> <li>Red cells represent significant adverse impacts</li> <li>Yellow cells represent significant beneficial impacts</li> <li>Blue cells represent impacts that are not significant</li> </ul>		Landscape with National heritage significance Status sites and cultural Landscapes with Provincial heritage Significance Status	Regional or Local Significance Heritagesites valued characteristics reasonably tolerant of changes of the type proposed.	A relatively unimportant cultural landscape with few features of value or interest, potentially tolerant of substantial change of the type proposed.	
Magnitude of landscape impact	Major adverse	Significant adverse changes, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness for more than 2 years	High adverse significance	High/Medium adverse significance	Medium adverse significance
	Moderate adverse	Noticeable but not significant adverse changes for more than 2 years or significant adverse changes for more than 6 months but less than 2 years, over a significant area, to key characteristics or features or to the landscape's character or distinctiveness.	High/Medium adverse significance	Medium adverse significance	Low adverse significance
	Slight adverse	Noticeable adverse changes for less than 2 years, significant adverse changes for less than 6 months, or barely discernible adverse changes for any length of time.	Medium adverse significance	Low adverse significance	Neutral
	Neutral	Any change would be negligible, unnoticeable or there are no predicted changes.	Neutral	Neutral	Neutral
	Slight benefit	Noticeable beneficial changes for less than 2 years, significant beneficial changes for less than 6 months, or barely discernible beneficial changes for any length of time.	Medium beneficial significance	Low beneficial significance	Neutral
Msinga Cultural landscape		Regional or Local Significance Heritage sites valued characteristics reasonably tolerant of changes of the type proposed.			
Proposed development site cultural landscape		A relatively unimportant cultural landscape with few features of value or interest, potentially tolerant of substantial change of the type proposed			

## 7.0 DISCUSSION OF FINDINGS

The field survey observed the existence of the at least five bridges and canals within the proposed development footprint. No other cultural heritage resources were observed within the entire proposed development footprint the canals are more than 100 years old, there has been a lot of alteration and repairs around them. These repairs cover the much older canal bridges. Most of the materials used in the bridge's construction is cast concrete. Although it had been employed to some extent before that, the latter approach only became popular during World War two because iron, and by extension all metals, was considered a strategic resource. Iron was used sparingly and only for guide rails and other railings, as well as concrete reinforcing.

The history of concrete bridges development is described by Liebenberg et al (1984). The history of concrete development in the area is very similar to that of other parts of the world. With the invention of pre-stressed and reinforced concrete, it became much easier to build huge numbers of shorter span bridges at a lower cost than with iron or steel. While the bridges and the canals may have been older than 60 years old, it is impossible for us to make meaning of any heritage significance that they may have had due to the alterations and modifications that the structures have seen over time.





Figure 4: View of the dilapidated bridge one



Figure 5: A view of bridge one from a distance



Figure 6: Stone masonry at bridge one

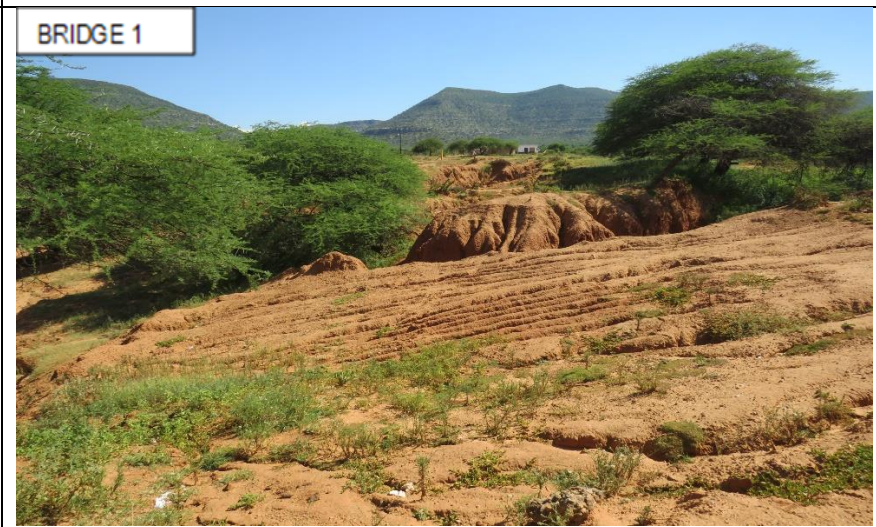


Figure 7: View of some land degradation close to the first bridge



Figure 8: View of the concrete bridge two



Figure 9: View of the modified /repaired canal



Figure 10: View of concrete bridge three



Figure 11: of another old canal



Figure 12: View of bridge three showing the concrete and stone masonry



Figure 13: View of the surrounding environment at bridge four



BRIDGE 5

Figure 14: A closer view of bridge five



BRIDGE 5

Figure 15: View of a canal passing through some structures at bridge five

## 8.0 ASSESSMENT OF SIGNIFICANCE

One of the reasons archaeological resources are regarded as significant is because 'they constitute a unique, non-renewable data base for reconstructing the cultural past and for testing propositions about human behaviour' (Moratto and Kelly 1978p.5). As such, archaeological site significance can be gauged principally in terms of the representativeness of a site and the potential of site to address research questions at a local, regional and national level. Article 26(2) of the Burra Charter emphasizes that written statements of cultural significance for heritage resources should be prepared, justified and accompanied by supporting evidence. Site significance classification standards prescribed by SAHRA (2006), and acknowledged by ASAPA for the SADC region, were used for the purposes of this report.

Table 2: Site Significance classification

SAHRA's Site significance minimum standards			
Filed Rating	Grade	Classification	Recommendation
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.A)		Low Significance	Destruction

### Site Significance calculation formula

Site significance is calculated by combining the following concepts in the given formula.  $S = (E+D+M) P$

S = Significance weighting E = Extent

D = Duration

M = Magnitude P = Probability

The significance weightings for each potential impact are as follows:

Table 3: The significance weightings for each potential impact are as follows:

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short term	1
	Medium term	3
	Long term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8

Table 4: Impact Significance

<b>Nature: During the construction phase activities resulting in disturbance of surfaces and/or sub-surfaces may destroy, damage, alter, or remove from its original position archaeological material or objects.</b>		
	Without Mitigation	With Mitigation
Extent	Site (2)	Local (1)
Duration	Permanent (5)	Permanent (5)
Magnitude	Low (8)	Low (6)
Probability	Not Probable (4)	Not probable (2)
Significance	Medium (39)	Low (18)
Status	Negative	Negative
Reversibility	Not irreversible	Not irreversible
Irreversible loss of resources	No resources were recorded	No resources were recorded
Can impacts be mitigated?	Yes, a chance find procedure should be implemented.	Yes



## 10.0 CONCLUSIONS

This report is an independent view and makes recommendations to Amafa Research and institute based on its findings. The authority will consider the recommendations and make a decision based on conservation principles.

### Literature review conclusions

- (i) The province of KZN is renowned for the prolific San rock painting sites concentrated in the Drakensberg. Rock art sites do occur outside the Drakensberg including the Msinga area
- (ii) Msinga ceramics show how Most of what we know about Zulu pottery production has been gained from potters in the Thukela Basin of KwaZulu-Natal in South Africa through ceramics discovered in the Msinga area.
- (iii) The archaeological data base of the KwaZulu-Natal Museum indicates that ten Early Iron Age sites occur in the Tugela Valley catchment area.
- (iv) Later Iron Age sites have been recorded in the greater Tugela Valley catchment area. The majority of these were most probably inhabited by early Nguni-speaking agropastoralists before the Shakan (Shaka's rule) era in the beginning of the 19th century.

### Field survey conclusions

Naturally, have a significant impact on local economies. Based on what is known about the bridges and canals and their current state the following conclusions can be made

- (i) The bridges may be 60 years old since the canals area dated to +100 years old.
- (ii) Due to neglect, the deliberate removal of constituent elements, modifications/alterations or as a result of vandalism, the integrity of the bridges and the canals has been totally compromised;
- (iii) The bridges and canals show no unique features, either in its design or construction; and
- (iv) No important person or event can be associated with these bridges or the canals.

## 1 1.0 RECOMMENDATIONS

(i) The bridges and the canals are therefore rated to be:

Local/Grade 4B: Low significance and should be recorded before destruction. Basic documentation (photographic and descriptive) of the main features of these structures was done and is contained in this report. It has also been shown in this report that bridges of similar construction and age are to be found in a number of places all over the Kwa-Zulu Natal Province. Fortunately, most of them are in good condition due to continued use.

(ii) No other cultural heritage resources were observed within the entire proposed development footprint. However, In the event that any cultural heritage resources are discovered operations exposing archaeological and historical residues, including modern graves, should cease immediately pending an evaluation by the Amafa research and Institute.

(i) The potential impact of the development on archaeological resources is LOW, therefore a field survey or further mitigation or conservation measures are necessary if cultural heritage resources are found (according to SAHRA protocol). A Chance Finds Procedure should be implemented and a qualified archaeologist must be called on site if cultural heritage resources are found during construction. The following indicators of unmarked sub-surface sites could be encountered;

- Bone concentrations, either animal or human
- Ceramic fragments such as pottery shards either historic or pre-contact
- Stone concentrations of any formal nature

*Tsimba Archaeological Footprints (Pty) Ltd requests the Amafa Research and Institute to offer an approval for the proposed project.*

## 9.0 REFERENCES

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## APPENDIX A: DEFINITION OF TERMS ADOPTED IN THIS HIA

- The terminology adopted in this document is mainly influenced by the NHRA of South Africa (1999) and the Burra Charter (1979).

**Adaptation:** Changes made to a place so that it can have different but reconcilable uses.

**Artefact:** Cultural object (made by humans).

**Buffer Zone:** Means an area surrounding a cultural heritage which has restrictions placed on its use or where collaborative projects and programs are undertaken to afford additional protection to the site.

**Co-management:** Managing in such a way as to take into account the needs and desires of stakeholders, neighbours and partners, and incorporating these into decision making through, amongst others, the promulgation of a local board.

**Conservation:** In relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance as defined. These processes include, but are not necessarily restricted to preservation, restoration, reconstruction and adaptation.

**Contextual Paradigm:** A scientific approach which places importance on the total context as catalyst for cultural change and which specifically studies the symbolic role of the individual and immediate historical context.

**Cultural Resource:** Any place or object of cultural significance

**Cultural Significance:** Means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance of a place or object for past, present and future generations.

**Feature:** A coincidental find of movable cultural objects.

**Grading:** The South African heritage resource management system is based on a grading system, which provides for assigning the appropriate level of management responsibility to a heritage resource.

**Heritage Resources Management:** The utilization of management techniques to protect and develop cultural resources so that these become long term cultural heritage which are of value to the general public.

**Heritage Resources Management Paradigm:** A scientific approach based on the Contextual paradigm, but placing the emphasis on the cultural importance of archaeological (and historical) sites for the community.

**Heritage Site Management:** The control of the elements that make up the physical and social environment of a site, its physical condition, land use, human visitors, interpretation etc. Management may be aimed at preservation or, if necessary at minimizing damage or destruction or at presentation of the site to the public.

**Historic:** Means significant in history, belonging to the past; of what is important or famous in the past.

**Historical:** Means belonging to the past, or relating to the study of history.

**Maintenance:** Means the continuous protective care of the fabric, contents and setting of a place. It does not involve physical alteration.

**Object:** Artefact (cultural object)

**Paradigm:** Theories, laws, models, analogies, metaphors and the epistemological and methodological values used by researchers to solve a scientific problem.

**Preservation:** Refers to protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary. Preservation is appropriate where the existing state of the fabric itself constitutes evidence of specific cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out.

**Protection:** With reference to cultural heritage resources this includes the conservation, maintenance, preservation and sustainable utilization of places or objects in order to maintain the cultural significance thereof.

**Place :** Means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.

**Reconstruction:** To bring a place or object as close as possible to a specific known state by using old and new materials.

**Rehabilitation:** The repairing and/ or changing of a structure without necessarily taking the historical correctness thereof into account.

**Restoration:** To bring a place or object back as close as possible to a known state, without using any new materials.

**Site:** A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artefacts, found on a single location.

**Sustainable:** Means the use of such resource in a way and at a rate that would not lead to its long-term decline, would not decrease its historical integrity or cultural significance and would ensure its continued use to meet the needs and aspirations of present and future generations of people

## APPENDIX B: LIKELIHOOD / PROBABILITY OF IMPACT OCCURRING

	Description	Criteria	Score
<b>Probability</b>	<b>Almost Certain</b>	The impact is expected to occur; Consequence is likely to be of a high frequency; > 90% chance.	<b>3</b>
	<b>Don't Know</b>		
	<b>Highly Likely</b>	The impact will probably occur or has occurred elsewhere before; Likely occurrence/consequence within a 12-month period; > 50% chance of occurrence in this period.	<b>3</b>
	<b>Likely</b>	The impact will occur under certain circumstances; Likely occurrence/consequence within a 12-month period; Approx. 30 - 50% chance of occurrence this period.	<b>2</b>
	<b>Unlikely</b>	The impact could occur under certain circumstances; Consequence could occur within a one-to-five-year timeframe; < 30% chance of occurrence in this period.	
	<b>Rare</b>	Consequence may occur in exceptional circumstances; Consequence has rarely occurred in the industry and is not expected in the life of the project; < 5% chance of occurrence.	<b>1</b>

***The risk assessment matrix is used to determine the overall significance of environmental and social impacts, based on the overall consequence and probability of each impact.***

***The assessment approach considers the impact prior to any potential management controls or mitigation measures, and then assesses the residual impact following the implementation of controls and mitigation strategies.***