



**AGES OMEGA: PROPOSED BERLIN NDEVANA BULK WATER  
PIPELINE PROJECT IN THE NDEVANA COMMONAGE,  
BUFFALO CITY MUNICIPALITY, EASTERN CAPE PROVINCE**

**Archaeological Impact Assessment**



Prepared for: **AGES Omega**

Prepared by: **Exigo Sustainability**

## ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) IN THE NDEVANA COMMONAGE FOR THE PROPOSED BERLIN NDEVANA BULK WATER PIPELINE PROJECT, BUFFALO CITY MUNICIPALITY, EASTERN CAPE PROVINCE

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### DOCUMENT HISTORY

Date	Version	Status
27 February 2021	1.0	Draft
24 March 2021	2.0	Final Draft

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**EXECUTIVE SUMMARY**

This report details the results of an Archaeological Impact Assessment (AIA) study subject to an Environmental Basic Assessment (EIA) process for the proposed Berlin Ndevana Bulk Water Pipeline Project in the Ndevana Commonage in the Buffalo City Municipality of the Eastern Cape Province. The project entails the proposed development of a water pipeline from Ndevana to Berlin over an alignment of approximately **12.4km**. The report includes background information on the area’s archaeology, its representation in Southern Africa, and the history of the larger area under investigation, survey methodology and results as well as heritage legislation and conservation policies. A copy of the report will be supplied to the South African Heritage Resources Agency (SAHRA) and recommendations contained in this document will be reviewed.

<b>Project Title</b>	Berlin Ndevana Bulk Water Pipeline Project
<b>Project Location</b>	S32.91457° E27.50325°
<b>1:50 000 Map Sheet</b>	3227CD & 3227DC
<b>Farm Portion / Parcel</b>	Ndevana Commonage
<b>Magisterial District / Municipal Area</b>	Buffalo City Municipality
<b>Province</b>	Eastern Cape Province

A number of archaeological and historical studies have been conducted along the coastal areas of the Eastern Cape Province around the regional center of King William’s Town, most of which infer a varied and rich heritage landscape. The archaeological history of the Eastern Cape Province dates back to about 2 million years and possibly older. Several archaeological sites have been recorded in the landscape around King William’s Town. The Albany Museum database holds limited information of archaeological sites for the Eastern Cape. However, records are held at several institutions including the University of the Transkei (now Walter Sisulu University), the University of Fort Hare, and the Rock Art Research Institute at the University of the Witwatersrand. Rock art research, mainly conducted by researchers from the Rock Art Research Institute, University of the Witwatersrand, have been conducted around the Barkly East, Ugie, Maclear, Dordrecht and other areas in the Southern Drakensberg escarpment of the north-eastern Cape. Middle Stone Age and Later Stone Age sites have also been excavated and researched during the 1970's. The literature shows evidence of an archaeological heritage that spans from the Early Stone Age, Middle Stone Age to the Later- Stone, as well as evidence of pastoralism and Iron Age farmers. Rock paintings are prolific throughout Southern Drakensberg Mountains. The region is also significant historically as a frontier between hunter-gatherers, pastoralists, Nguni-speaking farming communities and European settlers.

An examination of historical aerial imagery and archive maps indicate that the larger project landscape had been altered by large-scale rural settlement, development and agriculture during the last century transforming the project area at large. This inference was confirmed during an archaeological site assessment during which *in situ* archaeological or heritage remains were encountered. The following recommendations are made based on general observations in the proposed Berlin Ndevana Bulk Water Pipeline Project in terms of heritage resources management:

- According to the South African Heritage Resources Agency Information System (SAHRIS) Palaeo Map, the project area fall within a sensitive fossiliferous zone and a Palaeontological Assessment should be considered for the project.
- The possible remnants of a part of a Historical Period trading store (**Site Exigo-BNP-HP01**) are of low significance due to the poor state of preservation of the features. The site is located in close proximity of the alignment for the proposed pipeline it is recommended that any activities occurring at these sites be monitored in order to avoid the destruction of previously undetected heritage remains. Should the site or it features be impacted on by the development, application should be made for destruction permits from the relevant heritage authorities (EC-PHRA), since they are older than 60 years and generally protected under heritage legislation.
- Burial sites identified within or in close proximity of the project area (**Site Exigo-BNP-BP01, Site Exigo-BNP-BP02**) are of high significance and these sites might be impacted on by the proposed project. As a primary measure, the SAHRA Burial Ground and Graves Unit (BGG) often requires a 50m conservation buffer around burial sites but the developer indicated that realignment around the burial sites according to this requirement would prove challenging given terrain constraints. Motivation is therefore made for the implementation of a 20m buffer around all burial sites on the condition that temporary construction barricades be erected around the burial sites for the duration of the development. In addition, it is required that the development progress around the burial sites be monitored on a bi-weekly basis during ground clearing, earth moving and construction phases to detect any impacts on burials at the earliest opportunity. A site management plan detailing strict site management conservation measures should be compiled for all burials in the project area. All burials should be monitored on a bi-monthly basis by an informed ECO or by the heritage Specialist in order to detect any impact on the resource at the earliest opportunity. It should be noted that this motivation of a relaxation of the conservation buffers is subject to approval by the SAHRA BGG unit.
- **Should impact on any human burial prove inevitable, full grave relocations are recommended for these burial grounds. This measure should be undertaken by a qualified archaeologist, and in accordance with relevant legislation, permitting, statutory permissions and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials (see Addendum B).**
- As burial sites have been located in the project area, it is recommended that the BA public participation and social consultative process address the possibility of further graves occurring in the project area.
- Considering the localised nature of heritage remains, the general monitoring of the development progress by an ECO or by the heritage specialist is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately.
- It should be stated that it is likely that further undetected archaeological remains might occur elsewhere in the Study Area along water sources and drainage lines, fountains and pans would often have attracted human activity in the past. Also, since Stone Age material seems to originate from below present soil surfaces in eroded areas, the larger landscape should be regarded as potentially sensitive in terms of possible subsurface deposits. Burials and historically significant structures dating to the Colonial Period occur on farms in the area and these resources should be avoided during all phases of construction and development, including the operational phases of the development.

This report details the methodology, limitations and recommendations relevant to these heritage areas, as well

as areas of proposed development. It should be noted that recommendations and possible mitigation measures are valid for the duration of the development process, and mitigation measures might have to be implemented on additional features of heritage importance not detected during this Phase 1 assessment (e.g. uncovered during the construction process).

**Berlin Ndevana Bulk Water Pipeline Project Heritage Sites Locations**

Site Code	Coordinate S E	Short Description	Mitigation Action
Exigo-BNP-BP01	S32.93102° E27.46970°	Burial Site	<p><b>Site Monitoring:</b> Bi-weekly monitoring during site clearing, digging and construction by the heritage consultant or an ECO familiar with the heritage occurrences of the site.</p> <p><b>Avoidance:</b> Redesign project infrastructure not to encroach on the resource, implement a 20m conservation buffer, implement a site management plan. Erect a construction barricade around the burial sites.</p> <p><b>Grave relocation:</b> Subject to authorisations and permitting if impacted on.</p>
Exigo-BNP-BP02	S32.91260° E27.51046°	Burial Site	<p><b>Site Monitoring:</b> Frequent monitoring during construction by the heritage consultant or an ECO familiar with the heritage occurrences of the site.</p> <p><b>Permitting:</b> Apply for relevant destruction permits if impacted on.</p>
Exigo-BNP-HP01	S32.93860° E27.45225°	Historical Period Site "Bramwell Cottage"	<p><b>Site Monitoring:</b> Frequent monitoring during construction by the heritage consultant or an ECO familiar with the heritage occurrences of the site.</p> <p><b>Permitting:</b> Apply for relevant destruction permits if impacted on.</p>

## NOTATIONS AND TERMS/TERMINOLOGY

**Absolute dating:** Absolute dating provides specific dates or range of dates expressed in years.

**Archaeological record:** The archaeological record minimally includes all the material remains documented by archaeologists. More comprehensive definitions also include the record of culture history and everything written about the past by archaeologists.

**Artefact:** Entities whose characteristics result or partially result from human activity. The shape and other characteristics of the artefact are not altered by removal of the surroundings in which they are discovered. In the Southern African context examples of artefacts include potsherds, iron objects, stone tools, beads and hut remains.

**Assemblage:** A group of artefacts recurring together at a particular time and place, and representing the sum of human activities.

**Context:** An artefact's context usually consists of its immediate *matrix*, its *provenience* and its *association* with other artefacts. When found in *primary context*, the original artefact or structure was undisturbed by natural or human factors until excavation and if in *secondary context*, disturbance or displacement by later ecological action or human activities occurred.

**Cultural Heritage Resource:** The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

**Cultural landscape:** A cultural landscape refers to a distinctive geographic area with cultural significance.

**Cultural Resource Management (CRM):** A system of measures for safeguarding the archaeological heritage of a given area, generally applied within the framework of legislation designed to safeguard the past.

**Feature:** Non-portable artefacts, in other words artefacts that cannot be removed from their surroundings without destroying or altering their original form. Hearths, roads, and storage pits are examples of archaeological features

**Impact:** A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

**Lithic:** Stone tools or waste from stone tool manufacturing found on archaeological sites.

**Matrix:** The material in which an artefact is situated (sediments such as sand, ashy soil, mud, water, etcetera). The matrix may be of natural origin or human-made.

**Midden:** Refuse that accumulates in a concentrated heap.

**Microlith:** A small stone tool, typically knapped of flint or chert, usually about three centimetres long or less.

**Monolith:** A geological feature such as a large rock, consisting of a single massive stone or rock, or a single piece of rock placed as, or within, a monument or site.

**Phase 1 CRM Assessment:** An Impact Assessment which identifies archaeological and heritage sites, assesses their significance and comments on the impact of a given development on the sites. Recommendations for site mitigation or conservation are also made during this phase.

**Phase 2 CRM Study:** In-depth studies which could include major archaeological excavations, detailed site surveys and mapping / plans of sites, including historical / architectural structures and features. Alternatively, the sampling of sites by collecting material, small test pit excavations or auger sampling is required. Mitigation / Rescue involves planning the protection of significant sites or sampling through excavation or collection (in terms of a permit) at sites that may be lost as a result of a given development.

**Phase 3 CRM Measure:** A Heritage Site Management Plan (for heritage conservation), is required in rare cases where the site is so important that development will not be allowed and sometimes developers are encouraged to enhance the value of the sites retained on their properties with appropriate interpretive material or displays.

**Provenience:** Provenience is the three-dimensional (horizontal and vertical) position in which artefacts are found. Fundamental to ascertaining the provenience of an artefact is *association*, the co-occurrence of an artefact with other archaeological remains; and *superposition*, the principle whereby artefacts in lower levels of a matrix were deposited before the artefacts found in the layers above them, and are therefore older.

**Random Sampling:** A probabilistic sampling strategy whereby randomly selected sample blocks in an area are surveyed. These are fixed by drawing coordinates of the sample blocks from a table of random numbers.

**Scoping Assessment:** The process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addressed in an impact assessment. The main purpose is to focus the impact assessment on a manageable number of important questions on which decision making is expected to focus and to ensure that only key issues and reasonable alternatives are examined. The outcome of the scoping process is a Scoping Report that includes issues raised during the scoping process, appropriate responses and, where required, terms of reference for specialist involvement.

**Site (Archaeological):** A distinct spatial clustering of artefacts, features, structures, and organic and environmental remains, as the residue of human activity. These include surface sites, caves and rock shelters, larger open-air sites, sealed sites (deposits) and river deposits. Common functions of archaeological sites include living or habitation sites, kill sites, ceremonial sites, burial sites, trading, quarry, and art sites,

**Stratigraphy:** This principle examines and describes the observable layers of sediments and the arrangement of strata in deposits

**Systematic Sampling:** A probabilistic sampling strategy whereby a grid of sample blocks is set up over the survey area and each of these blocks is equally spaced and searched.

**Trigger:** A particular characteristic of either the receiving environment or the proposed project which indicates that there is likely to be an *issue* and/or potentially significant *impact* associated with that proposed development that may require specialist input. Legal requirements of existing and future legislation may also trigger the need for specialist involvement.

**LIST OF ABBREVIATIONS**

<b>Abbreviation</b>	<b>Description</b>
ASAPA	Association for South African Professional Archaeologists
AIA	Archaeological Impact Assessment
BP	Before Present
BCE	Before Common Era
BGG	Burial Grounds and Graves
CRM	Culture Resources Management
EIA	Early Iron Age (also Early Farmer Period)
EIA	Environmental Impact Assessment
EFP	Early Farmer Period (also Early Iron Age)
ESA	Earlier Stone Age
GIS	Geographic Information Systems
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
K2/Map	K2/Mapungubwe Period
LFP	Later Farmer Period (also Later Iron Age)
LIA	Later Iron Age (also Later Farmer Period)
LSA	Later Stone Age
MIA	Middle Iron Age (also Early later Farmer Period)
MRA	Mining Right Area
MSA	Middle Stone Age
NHRA	National Heritage Resources Act No.25 of 1999, Section 35
PFS	Pre-Feasibility Study
PHRA	Provincial Heritage Resources Authorities
SAFA	Society for Africanist Archaeologists
SAHRA	South African Heritage Resources Association
YCE	Years before Common Era (Present)



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## 1 BACKGROUND

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### 1.1 Scope and Motivation

Exigo Sustainability (Pty) Ltd (Exigo) was commissioned by AGES Omega to conduct an Archaeological Impact Assessment (AIA) study subject to an Environmental Basic Assessment (EIA) process for the proposed Berlin Ndevana Bulk Water Pipeline Project in the Eastern Cape Province. The rationale of this AIA is to determine the presence of heritage resources such as archaeological and historical sites and features, graves and places of religious and cultural significance in previously unstudied areas; to consider the impact of the proposed project on such heritage resources, and to submit appropriate recommendations with regard to the cultural resources management measures that may be required at affected sites / features.

### 1.2 Project Direction

Exigo's expertise ensures that all projects be conducted to the highest international ethical and professional standards. As archaeological specialist for Exigo Sustainability, Mr Neels Kruger acted as field director for the project; responsible for the assimilation of all information, the compilation of the final consolidated AIA report and recommendations in terms of heritage resources on the demarcated project areas. Mr Kruger is an accredited archaeologist and Culture Resources Management (CRM) practitioner with the Association of South African Professional Archaeologists (ASAPA), a member of the Society for Africanist Archaeologists (SAFA) and the Pan African Archaeological Association (PAA) as well as a Master's Degree candidate in archaeology at the University of Pretoria.

### 1.3 Project Brief

AGES Omega has appointed Exigo Sustainability for an Archaeological Impact Assessment (AIA) for the proposed Berlin Ndevana Bulk Water Pipeline Project in the Buffalo City Municipality in the Eastern Cape Province (hereafter referred to as the "Berlin Ndevana Bulk Water Pipeline Project" or "the project").

The project entails the proposed development of a water pipeline from the Ndevana reservoir to the Berlin reservoir over an alignment of approximately **12.4km** in the Ndevana Commonage.

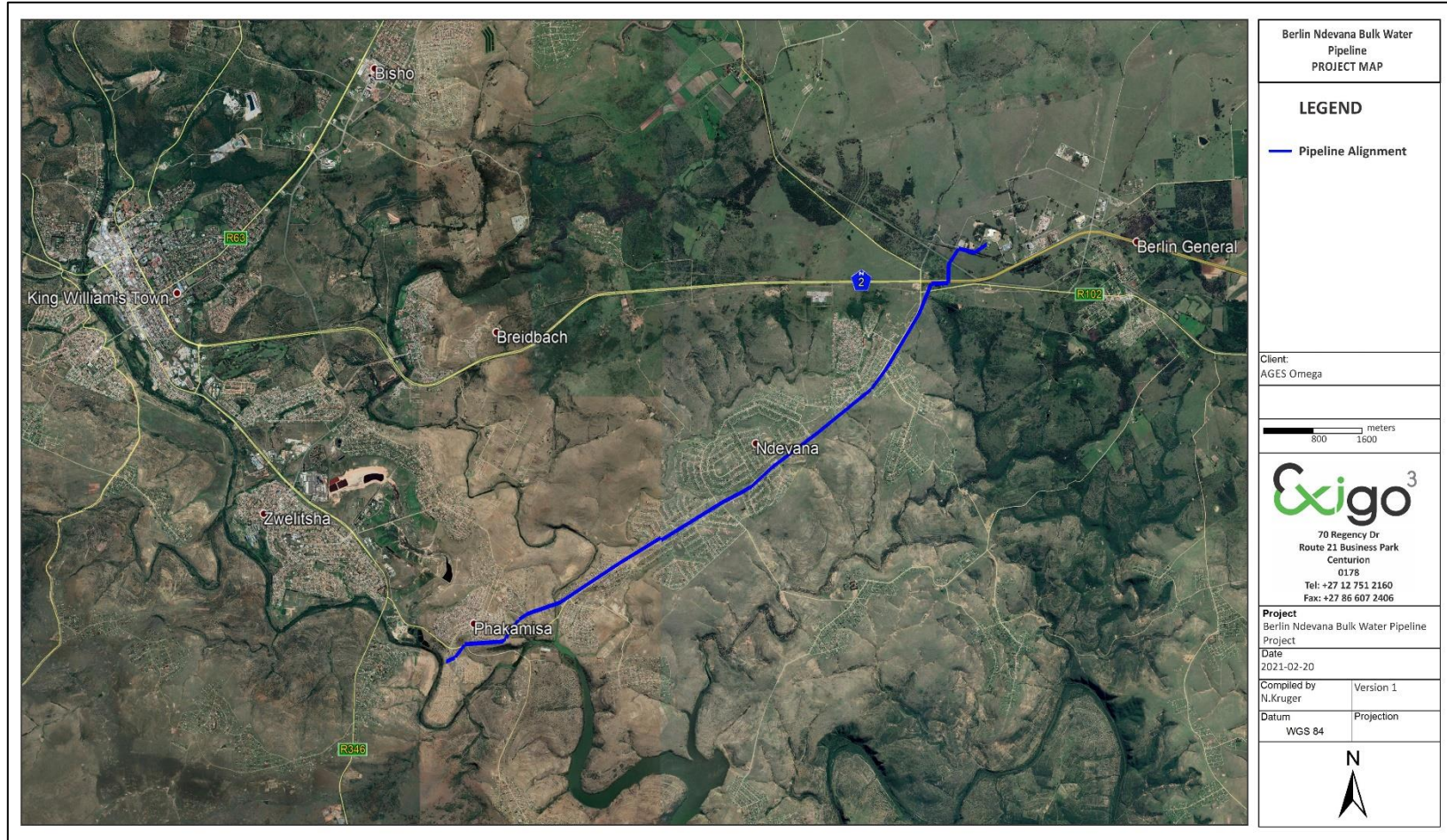


Figure 1-1: Project map indicating the proposed Berlin Ndevana Bulk Water Pipeline Project.

## 1.4 Terms of Reference

Heritage specialist input into the Environmental Impact Assessment (EIA) process is essential to ensure that, through the management of change, developments still conserve our heritage resources. It is also a legal requirement for certain development categories which may have an impact on heritage resources. Thus, EIAs should always include an assessment of heritage resources. The heritage component of the EIA is provided for in the **National Environmental Management Act, (Act 107 of 1998)** and endorsed by section 38 of the **National Heritage Resources Act (NHRA - Act 25 of 1999)**. In addition, the NHRA protects all structures and features older than 60 years, archaeological sites and material and graves as well as burial sites. The objective of this legislation is to ensure that developers implement measures to limit the potentially negative effects that the development could have on heritage resources. Based hereon, this project functioned according to the following **terms of reference** for heritage specialist input:

- *Provide a detailed description of all archaeological artefacts, structures (including graves) and settlements which may be affected, if any.*
- *Assess the nature and degree of significance of such resources within the area.*
- *Establish heritage informants/constraints to guide the development process through establishing thresholds of impact significance;*
- *Assess and rate any possible impact on the archaeological and historical remains within the area emanating from the proposed development activities.*
- *Propose possible heritage management measures provided that such action is necessitated by the development.*
- *Liaise and consult with the South African Heritage Resources Agency (SAHRA). A Notification of Intent to Develop (NID) will be submitted to SAHRA at the soonest opportunity.*

## 1.5 CRM: Legislation, Conservation and Heritage Management

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

### 1.5.1 Legislation regarding archaeology and heritage sites

The South African Heritage Resources Agency (SAHRA) and its provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. It is therefore vitally important to adhere to heritage resource legislation at all times.

#### a. National Heritage Resources Act No 25 of 1999, section 35

According to the National Heritage Resources Act No 25 of 1999 (section 35) the following features are protected as cultural heritage resources:

- a. Archaeological artefacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography

- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

In addition, the national estate includes the following:

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Archaeological and paleontological sites
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, paleontological, meteorites, geological specimens, military, ethnographic, books etc.)

With regards to activities and work on archaeological and heritage sites this Act states that:

*“No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority.” (34. [1] 1999:58)*

and

*“No person may, without a permit issued by the responsible heritage resources authority-*

- (a) *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;*
- (b) *destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;*
- (c) *trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or*
- (d) *bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58).”*

and

*“No person may, without a permit issued by SAHRA or a provincial heritage resources agency-*

- (a) *destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;*
- (b) *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;*
- (c) *bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60)."*

#### **b. Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925**

Graves and burial grounds are commonly divided into the following subsets:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and Ordinance on Excavations (Ordinance no. 12 of 1980) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments.

#### **c. National Heritage Resources Act No 25 of 1999, section 35**

This act (Act 107 of 1998) states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of the environment, will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made. Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

#### **1.5.2 Background to HIA and AIA Studies**

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. Heritage sites are frequently threatened by development projects and both the environmental and heritage legislation require impact assessments (HIAs & AIAs) that identify all heritage resources in areas to be developed. Particularly, these assessments are required to make recommendations for protection or mitigation of the impact of the sites. HIAs and AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of developed and (b) make recommendations for protection or mitigation of the impact on the sites.

**A detailed guideline of statutory terms and requirements is supplied in Addendum 1.**

## 2 REGIONAL CONTEXT

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### 2.1 Area Location

The proposed Berlin Ndevana Bulk Water Pipeline Project occurs on Ndevana Commonage in the Buffalo City Municipality, Eastern Cape Province. The project area is situated approximately 35km west of the town of East London and 10km east of King William's Town between the Ndevana and Berlin settlements. Access to the site is from the Ndevana access road which connects to the N2 and the R346.

The study areas appear on 1:50000 map sheet 3227CD & 3227DC (see Figure 2-1) and a key location point for the project is:

- **S32.91457° E27.50325°**

### 2.2 Area Description: Receiving Environment

The project area is situated on the inland coastal plains of the Eastern Cape grasslands south of the Drakensberg. The ecological landscape is defined as a combination of mixed grasslands and forest / scrub forest, typically dominated by mixed grassveld and forests at differing altitudes. The annual rainfall ranges between 1150 to over 1300mm per annum. The geology of the larger region is constituted by mudstones and sandstones of the Beaufort group and towards the coast, shales, mudstones and sandstones of the Ecca group, with exposures of dolerite intrusions mostly in the higher lying areas, are found. Soils in the area are moderate to deep and vary between sandy loams in the upper half to clayey loam in the downstream half. Coastal landforms include rocky platforms, sandy beaches, sub-tidal rocky reefs and sub-tidal sandy benthos. Considerable sections of the coast comprise stabilised dunes, which are sensitive to disturbance and unsuitable for the construction of roads and tourism infrastructure. The East London area is underlain by a horizontally orientated formation forming part of the Karoo Sequence. The formation consists mainly of the Ecca Group (shales, mudstones and sandstones) and but the Beaufort Group (bluish-grey fine-grained sandstone and bluish grey, greenish grey or reddish mudstone) occurs in the south west. Dolerite sheets are found throughout the area. Soil types range from deep sandy loam to loamy clay soil over eroded shales. The grasslands in the area are similar to the sourveld grasslands found across the southern parts of the Wild Coast. The Buffalo River passes the project area to the south.

### 2.3 Site Description

The project area is situated along gradually rolling hills and plains within rural residential zones along the villages of Ndevana, Phakamisa, Kwa Klifu, Izeleni, Ilitha and Berlin. The general landscape is sparsely overgrown with grasslands, pioneering species and riparian and hilltop vegetation. Portions of the general landscape has been transformed by agriculture and ruralisation in past years but original vegetation remains intact along rivers and water courses, particularly the Buffalo River which forms the eastern boundary of the project site. For the largest part the pipeline alignment follows the main road through Ndevana to the N2 with some deviations through residential areas and open fields. As such, much of the project area is constituted out of road servitude areas, crop fields and open public spaces.



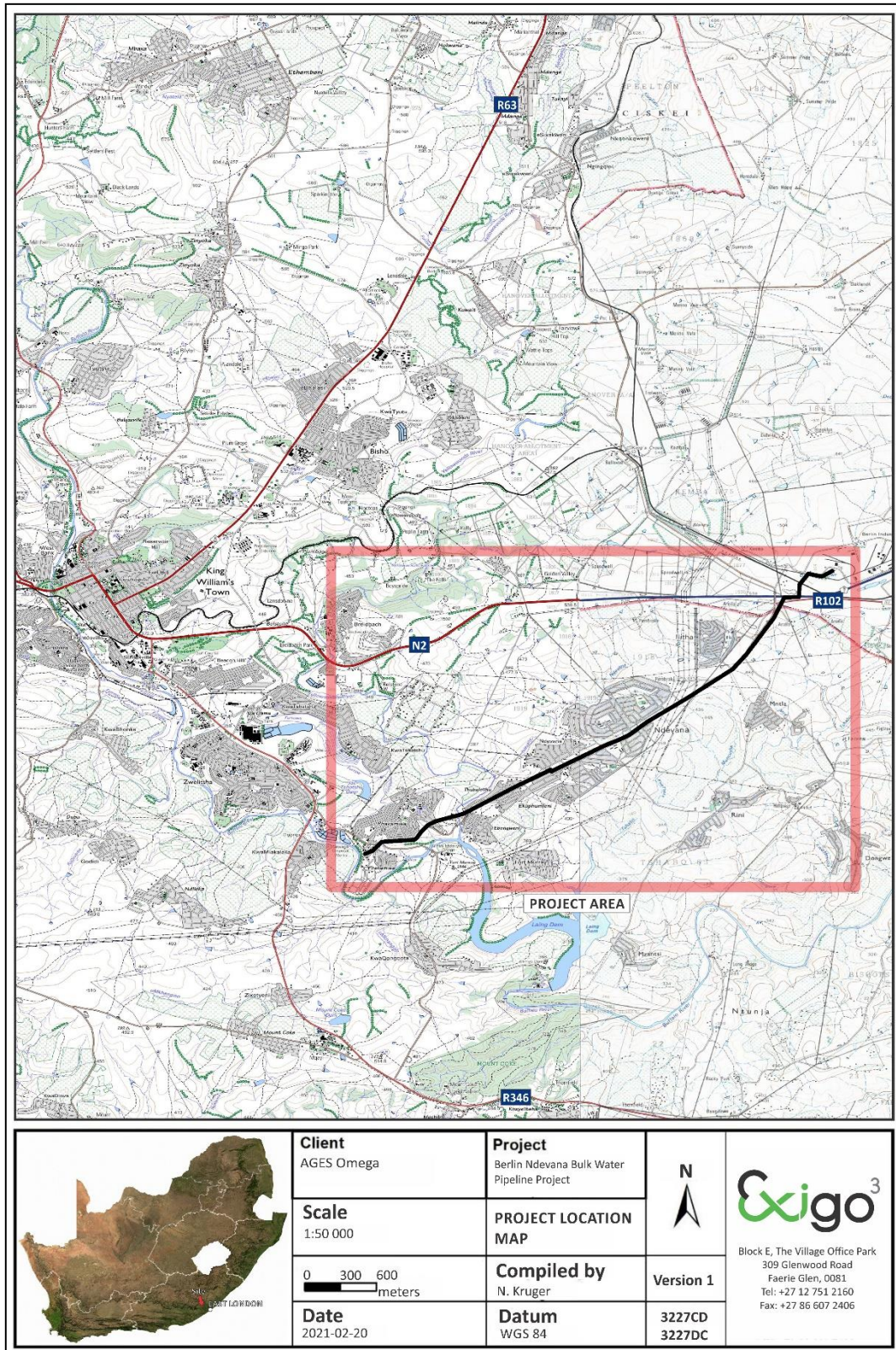


Figure 2-1: 1:50 00 Map representation of the location of the proposed Berlin Ndevana Bulk Water Pipeline Project (sheet 3227CD & 3227DC).

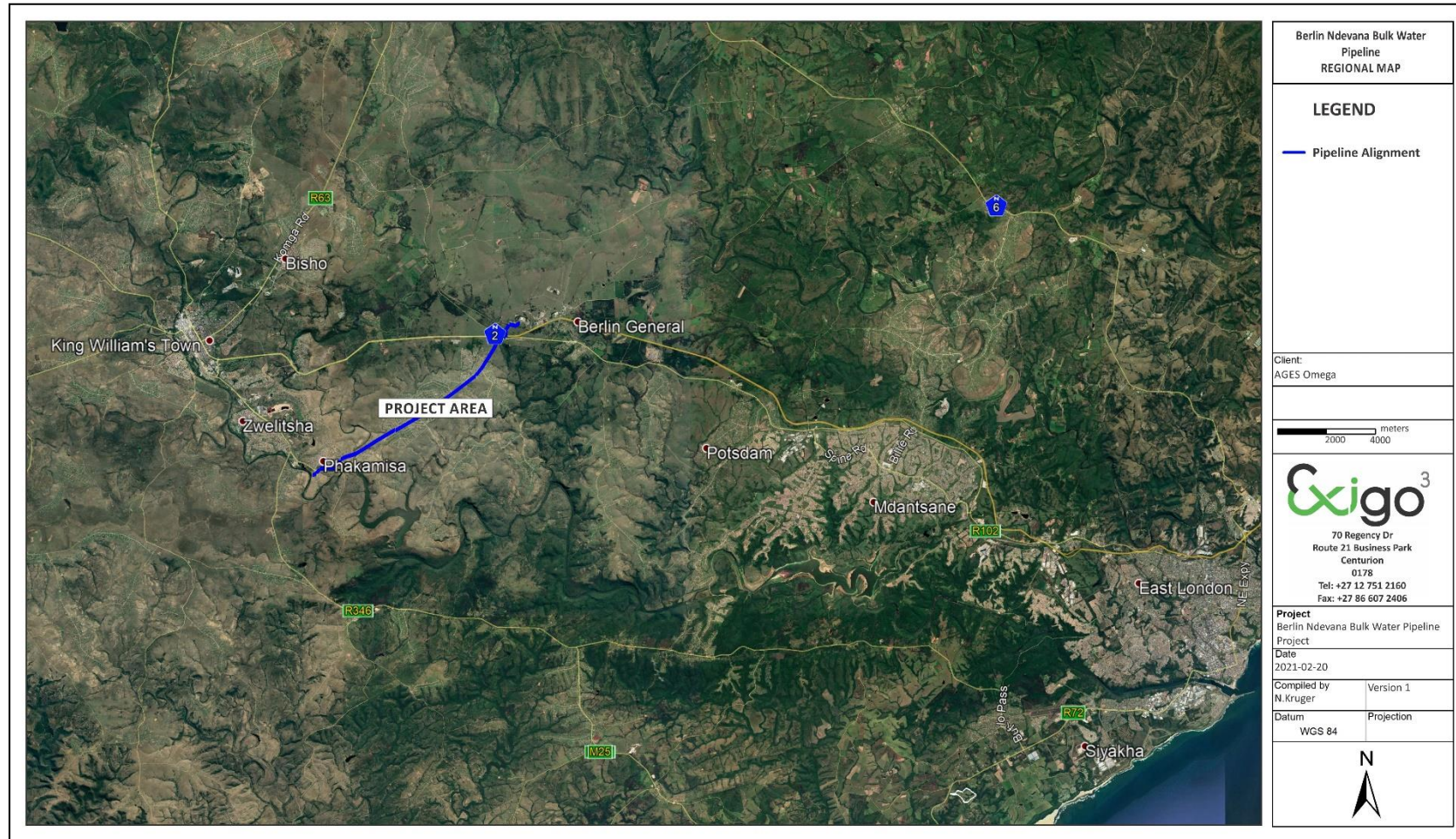


Figure 2-2: Aerial map providing a regional context for the proposed Berlin Ndevana Bulk Water Pipeline Project.

### 3 METHOD OF ENQUIRY

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#### 3.1 Sources of Information

Data from detailed desktop, aerial and field studies were employed in order to sample surface areas systematically and to ensure a high probability of heritage site recording.

##### 3.1.1 Desktop Study

The larger landscape around King William's Town has been relatively well documented in terms of its archaeology and history. A desktop study was prepared in order to contextualize the proposed project within a larger historical milieu. The study focused on relevant previous studies, archaeological and archival sources, aerial photographs, historical maps and local histories, all pertaining to the King William's Town area and the larger landscape of this section of the Eastern Cape Province. A number of Cultural Resources Management (CRM) projects conducted in the King William's Town area were also consulted.

##### 3.1.2 Aerial Survey

Aerial photography is often employed to locate and study archaeological sites, particularly where larger scale area surveys are performed. Site assessment of the project area relied on this method to assist the site survey. Here, depressions, variation in vegetation, soil marks and landmarks were examined and specific attention was given to shadow sites (shadows of walls or earthworks which are visible early or late in the day), crop mark sites (crop mark sites are visible because disturbances beneath crops cause variations in their height, vigour and type) and soil marks (e.g. differently coloured or textured soil (soil marks) might indicate ploughed-out burial mounds). Attention was also given to moisture differences, as prolonged dampening of soil as a result of precipitation frequently occurs over walls or embankments. In addition, historical aerial photos obtained during the archival search were scrutinized and features that were regarded as important in terms of heritage value were identified and if they were located within the boundaries of the project area they were physically visited in an effort to determine whether they still exist and in order to assess their current condition and significance. By superimposing high frequency aerial photographs with images generated with Google Earth as well as historical aerial imagery, potential sensitive areas were subsequently identified, geo-referenced and transferred to a handheld GPS device. These areas served as reference points from where further vehicular and pedestrian surveys were carried out.

##### 3.1.3 Mapping of sites

Similar to the aerial survey, the site assessment of the project area relied on archive and more recent map renderings of the project area to assist the site survey where historical and current maps of the project area were examined. By merging data obtained from the desktop study and the aerial survey, sites and areas of possible heritage potential were plotted on these maps of the larger King William's Town area using GIS software. These maps were then superimposed on high-definition aerial representations in order to graphically demonstrate the geographical locations and distribution of potentially sensitive landscapes.

##### 3.1.4 Field Survey

Archaeological survey implies the systematic procedure of the identification of archaeological sites. An archaeological survey of the Berlin Ndevana Bulk Water Pipeline Project area was conducted in February 2021. The process encompassed a random field survey by foot and in motor vehicle in accordance with standard archaeological practice by which heritage resources are observed and documented. Particular focus was placed on GPS reference points identified during the aerial and mapping survey. Where possible, random spot checks were made and potentially sensitive heritage areas were investigated. Using a Garmin GPS, the

survey was tracked and general surroundings were photographed with a Samsung Digital camera. Real time aerial orientation, by means of a mobile Google Earth application was also employed to investigate possible disturbed areas during the survey.

### 3.2 Limitations

#### 3.2.1 Access

The study area is accessed from the Ndevana main road which connects to the N2 and the R346. Access control is not applied to the project area and no access restrictions onto the site were encountered during the site visit.

#### 3.2.2 Visibility

The surrounding vegetation in the project area mostly comprised out of riparian vegetation and hilltop vegetation and pockets of pioneering species, occasional trees and mixed grasslands. The general visibility at the time of the AIA survey (February 2021) ranged from moderate in open fields to high along public roads. In single cases during the survey sub-surface inspection was possible. Where applied, this revealed no archaeological deposits.



Figure 3-1: View of the south western offset of the proposed pipeline alignment in Phakamisa.



Figure 3-2: View of the proposed pipeline alignment in Phakamisa.



Figure 3-3: General surroundings along the proposed pipeline alignment in KwaKlifu.



Figure 3-4: General surroundings along the proposed pipeline alignment in Izeleni.



Figure 3-5: General surroundings along the proposed pipeline alignment in Ilitha.



Figure 3-6: View of the north eastern offset of the proposed pipeline alignment in Berkin.



Figure 3-7: General surroundings along the proposed pipeline alignment in the Berlin area.



Figure 3-8: General surroundings along the proposed pipeline alignment in KwaKlifu.



Figure 3-9: General surroundings along the proposed pipeline alignment in Ndevana.



Figure 3-10: General surroundings in the proposed pipeline alignment along the main Ndevana road.

### 3.2.3 Summary: Limitations and Constraints

The site survey for the Berlin Ndevana Bulk Water Pipeline Project AIA primarily focused around areas tentatively identified as sensitive and of high heritage probability (i.e. those noted during the mapping and aerial survey) as well as areas of potential high human settlement catchment. In summary, the following constraints were encountered during the site survey:

- Visibility proved to be a minor constraint during the site survey.

Cognisant of the constraints noted above, it should be stated that the possibility exists that individual sites could be missed due to the localised nature of some heritage remains as well as the possible presence of sub-surface archaeology. Therefore, maintaining due cognisance of the integrity and accuracy of the archaeological survey, it should be stated that the heritage resources identified during the study do not necessarily represent all the heritage resources present in the project area. The subterranean nature of some archaeological sites, dense vegetation cover and visibility constraints sometimes distort heritage representations and any additional heritage resources located during consequent development phases must be reported to the Heritage Resources Authority or an archaeological specialist.

### 3.3 Impact Assessment

For consistency among specialists, impact assessment ratings by Exigo Specialist are generally done using the Plomp<sup>1</sup> impact assessment matrix scale supplied by Exigo. According to this matrix scale, each heritage receptor in the study area is given an impact assessment.

## 4 ARCHAEO-HISTORICAL CONTEXT

### 4.1 The archaeology of Southern Africa

Archaeology in Southern Africa is typically divided into two main fields of study, the **Stone Age** and the **Iron Age** or **Farmer Period**. The following table provides a concise outline of the chronological sequence of periods, events, cultural groups and material expressions in Southern African pre-history and history.

**Table 1 Chronological Periods across Southern Africa**

Period	Epoch	Associated cultural groups	Typical Material Expressions
Early Stone Age 2.5m – 250 000 YCE	Pleistocene	Early Hominins: <i>Australopithecines</i> <i>Homo habilis</i> <i>Homo erectus</i>	Typically large stone tools such as hand axes, choppers and cleavers.
Middle Stone Age 250 000 – 25 000 YCE	Pleistocene	First <i>Homo sapiens</i> species	Typically smaller stone tools such as scrapers, blades and points.
Late Stone Age 20 000 BC – present	Pleistocene / Holocene	<i>Homo sapiens sapiens</i> including San people	Typically small to minute stone tools such as arrow heads, points and bladelets.
Early Iron Age / Early Farmer Period 300 – 900 AD <b>(commonly restricted to the interior and north-east coastal areas of Southern</b>	Holocene	First Bantu-speaking groups	Typically distinct ceramics, bead ware, iron objects, grinding stones.

<sup>1</sup> Plomp, H., 2004



<b>Africa)</b>			
Middle Iron Age (Mapungubwe / K2) / early Later Farmer Period 900 – 1350 AD <b>(commonly restricted to the interior and north-east coastal areas of Southern Africa)</b>	Holocene	Bantu-speaking groups, ancestors of present-day groups	Typically distinct ceramics, bead ware and iron / gold / copper objects, trade goods and grinding stones.
Late Iron Age / Later Farmer Period 1400 AD -1850 AD <b>(commonly restricted to the interior and north-east coastal areas of Southern Africa)</b>	Holocene	Various Bantu-speaking groups including Venda, Thonga, Sotho-Tswana and Zulu	Distinct ceramics, grinding stones, iron objects, trade objects, remains of iron smelting activities including iron smelting furnace, iron slag and residue as well as iron ore.
Historical / Colonial Period ±1850 AD – present	Holocene	Various Bantu-speaking groups as well as European farmers, settlers and explorers	Remains of historical structures e.g. homesteads, missionary schools etc. as well as, glass, porcelain, metal and ceramics.

**4.2 Discussion: The Eastern Cape and King William’s Town Heritage Landscape**

The archaeological history of the Eastern Cape Province dates back to about 2 million years and possibly older. Several archaeological sites have been recorded in the landscape around King William’s Town. The Albany Museum database holds limited information of archaeological sites for the north Eastern Cape, however, records are held at several institutions including the University of the Transkei (now Walter Sisulu University), the University of Fort Hare, and the Rock Art Research Institute at the University of the Witwatersrand. Rock art research, mainly conducted by researchers from the Rock Art Research Institute, University of the Witwatersrand, have been conducted around the Barkly East, Ugie, Maclear, Dordrecht and other areas in the Southern Drakensberg escarpment of the north-eastern Cape. Middle Stone Age and Later Stone Age sites have also been excavated and researched during the 1970's. The literature shows evidence of an archaeological heritage that spans from the Early Stone Age, Middle Stone Age to the Later- Stone, as well as evidence of pastoralism and Iron Age farmers. Rock paintings are prolific throughout Southern Drakensberg Mountains. The region is also significant historically as a frontier between hunter-gatherers, pastoralists, Nguni-speaking farming communities and European settlers.

**4.2.1 Early History and the Stone Ages**

According to archaeological research, the earliest ancestors of modern humans emerged some two to three million years ago. The remains of Australopithecine and *Homo habilis* have been found in dolomite caves and underground dwellings in the Riverton Area at places such as Sterkfontein and Swartkrans near Krugersdorp. *Homo habilis*, one of the Early Stone Age hominids, is associated with Oldowan artefacts, which include crude implements manufactured from large pebbles. The Acheulian industrial complex replaced the Oldowan industrial complex during the Early Stone Age. This phase of human existence was widely distributed across South Africa and is associated with *Homo erectus*, who manufactured hand axes and cleavers from as early as one and a half million years ago. Middle Stone Age sites dating from as early as two hundred thousand years ago have been found all over South Africa. Middle Stone Age hunter-gatherer bands also lived and hunted in the Orange and Vaal River valleys. These people, who probably looked like modern humans, occupied campsites near water but also used caves as dwellings. They manufactured a wide range

of stone tools, including blades and points that may have had long wooden sticks as hafts and were used as spears.

A few important Early Stone Age (ESA) sites are known from a number of Ciskei sites including Middeldrift commonage and wide flood plain along the Keiskamma River, streams and erosion channels show Early Stone Age material on silcrete sandstone, from within the fluvial deposits (Derricourt 1973). ESA handaxes were documented and recorded on a site near Indwe (Smith 2010). ESA material has been reported in other sites in the Transkei (Derricourt 1977; Feely 1987). Apart from stone artefacts, the ESA sites in the Transkei have produced very little as regards other archaeological remains. This has made it difficult to make inferences pointing to economical dynamics of the ESA people in this part of the world (Mazel 1989). Although Middle Stone Age (MSA) artefacts occur throughout the Eastern Cape, the most well-known MSA sites include the type-site for the Howiesons Poort stone tool industry, Howiesons Poort rock shelter, situated close to Grahamstown and Klasies River Mouth Cave, situated along the Tsitsikamma coast. MSA sites are located both at the coast and in the interior across southern Africa. MSA people occupied the Southern Drakensberg area before 29 000 BP (Opperman 1996) until between 22 5000 BP and 20 9000 BP (Opperman & Heydenrych 1990). Strathalan Cave B is situated in the foothills of the Southern Drakensberg range approximately 10 km north-east of Maclear contained a terminal MSA continuous occupation from between 28 000 to about 22 000 years ago. The site deposit revealed a sequence of Middle Stone Age occupation floors characterized by the presence of grass bedding materials. The stone artefact collection included slender blades and wooden tools were also used. The subsistence system was based on the hunting of medium-large antelopes and the gathering of plant foods (Opperman & Heydenrych 1990; Opperman 1992). Surface scatters of MSA stone artefact industries occur widely as in the former homelands of the Ciskei and Transkei (Derricourt 1973). No known ESA sites have been reported in studies around the project area. Anderson (2011a) documented both MSA and LSA artefact scatters at the Ikwezi Solar Energy study site near East London. His discovery of MSA artefact occurrences are in accordance with MSA hominid evidence: The Nahoon footprints site, where hominid / human footprints dating to 200,000BP have been discovered, is situated approximately 20km north-east of the study site, while of the earliest *Homo sapiens sapiens*, or modern human remains, dating to 125,000BP, are known from Klasies River Mouth along the south coast of the Eastern Cape.

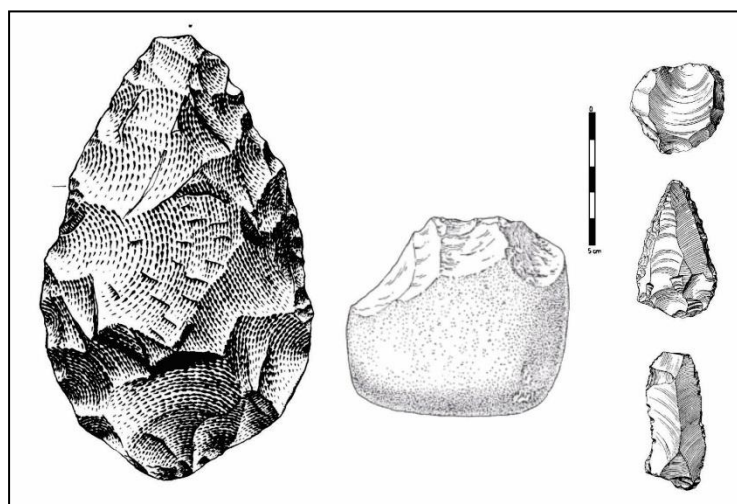


Figure 4-2: Typical ESA handaxe (left) and cleaver (center). To the right is a MSA scraper (right, top), point (right, middle) and blade (right, bottom).

#### 4.2.2 The Later Stone Age (LSA) and Rock Art

Later Stone Age (LSA) sites occur both at the coast and inland as caves deposits, rock shelters, open sites and shell deposits. The majority of LSA archaeological sites in the Eastern Cape area would date from the past 10 000 years where San hunter-gatherers inhabited the landscape living in rock shelters and caves as well as on the open landscape. These latter sites are difficult to find because they are in the open veld and often covered by vegetation and sand. Sometimes these sites are only represented by a few stone tools and fragments of bone. The Southern Drakensberg was occupied by hunter-gatherers before 10 000 BP (Opperman 1987) but was subsequently abandoned in the Holocene after ca. 6 000 BP, only to be re-occupied by 3 000 BP (Tusenius 1989). Ecological evidence suggests that the southern Drakensberg may have been too dry to support the animals and plants needed for the existence of hunter-gatherer people between 6 000 and some time before 3 000 BP (Tusenius 1989). The north-eastern Cape forms a link between the better watered eastern half of South Africa and the drier west. The wettest conditions apparently existed around 2700 BP, probably correlating with an increase in human occupation in the Southern Drakensberg following the possible abandonment of that area during the dry phase(s) of preceding millennia (Rosen et al. 1999). The succession of stone artefact Industries within the LSA of the Drakensberg region of the north-eastern Cape demonstrates that the resources of this area, which is characterized by a steep ecological gradient, were consistently exploited throughout end Pleistocene and Holocene following the amelioration of conditions after the cold maximum of the Late Pleistocene. The culture stratigraphic sequence is very comparable to that recorded in Lesotho, the middle Orange River basin and the southern and Eastern Cape (Opperman 1982).

The renowned San rock paintings of the Drakensberg region also belongs to the LSA period- although the majority were made between 4000 years ago and about 120 years ago. Rock Art can be in the form of rock paintings or rock engravings. Rock paintings occur on the walls of caves and rock shelters across southern Africa and are prolific in the Southern Drakensberg, north-eastern Cape extending the entire Drakensberg range into KwaZulu-Natal and Lesotho. Rock engravings are limited to the Karoo and Northern Cape Regions and do not generally occur within the north Eastern Cape region and former Transkei region. Rock art research within the Southern Drakensberg has been conducted by several researchers and students from the Rock Art Research Institute, University of the Witwatersrand, over a period of 25 years, with a well-established database of site from Maclear, Tsolo, Barkly East, Ugie, Dordrecht and the wider region and extent of the Drakensberg range and Maluti Mountains. The South African Rock Art Database established by the Rock Art Research Institute is a useful source for rock art site information across southern Africa.

#### 4.2.3 Pastoralism in the Eastern Cape

As noted above, Khoekhoe pastoralists or herders entered southern Africa about 2000 years ago, with domestic animals such as fat-tailed sheep and goats, travelling through the south towards the coast. Hunter-gatherer and herder sites occur widely in the Eastern Cape. It is sometimes difficult to distinguish between hunter-gatherer and herder sites, because the former may have acquired stock through theft or herder clientship and the latter largely relied on hunting and gathering to supplement pastoral resources. Both groups collected shellfish and used other food sources from the sea, and both groups hunted and gathered plant food. Their economic systems were directed by the accumulation of wealth in domestic stock numbers and their political make-up was more hierarchical than that of the hunter-gatherers. The most significant Khoekhoe pastoralist sites in the Eastern Cape include Scott's Cave near Patensie (Deacon 1967), Goedgeloof shell midden along the St. Francis coast (Binneman 2007) and Oakleigh rock shelter near Queenstown (Derricourt 1977). Often, these archaeological sites are found close to the banks of large streams and rivers. Excavations at sites indicate that shellfish and marine animals, and in particular seals, specifically formed a major part of their diet. The intensive utilization of shellfish manifests in the archaeological record through hundreds of shell middens (large piles of marine shell) dating to the terminal Pleistocene and Holocene that litter the coastal

areas of southern Africa. These were campsites of San, Khoisan and Bantu-speakers who lived along the immediate coast. Human remains are frequently found in the middens, mixed with shell, other food remains and cultural material. A large number of shell middens were situated east of Coega River Mouth and numerous middens, ceramic pot sherds (from Later Stone Age Khoekhoen pastoralist origin - last 2 000 years) and other archaeological material, occur between the Coega and Sunday's River Mouths. These remains date mainly from Holocene Later Stone Age (last 10 000 years). Human remains have also been found in the dunes along the coast. Mega-middens which accumulated in coastal and inland areas probably represent alternative seasonal food resources and the shellfish species from middens reflect the species available in the immediate vicinity and also provide information on the environment. Inland shell middens are also found in the Eastern Cape and these shell accumulations date to the last 3000 years. The existence of these features implies the use of alternative food sources as a result of the spread of pastoralists and Iron Age people (Deacon 1984b). Various researchers have observed that the occurrence of seasonally restricted food remains in archaeological deposits could be linked to historically known seasonal movements by the early Khoisan and Khoekhoen hunters and herders of the Cape. In other places, those Khoi who had lost their stock (to drought, disease or raiders), as well as San who had none, may have subsisted mainly or entirely on seafood, but for the rest pastoralism, involving cattle and perhaps fat-tailed sheep, was the principal focus of subsistence, accompanied by a few crops in the fertile river valleys (Elphick 1977). This pattern of subsistence was continued - with different emphases and eventually on a larger scale - by those who succeeded the Khoi on this coast, the Cape Nguni, or Xhosa. By the 16th century, the Khoi peoples of the Wild Coast had been largely displaced or absorbed by Nguni speakers (Peires 1976). Evidence of LSA (including pastoralist) occupation of the East London area seems fairly ample: The presence of deflated coastal shell middens were reported on by Binneman & Webley (1996). Anderson (2009) identified no less than 7 LSA shell midden sites during his East London IDZ survey. In addition an ephemeral shell scatter situated approximately 2.5-3km inland, on the banks of the Buffalo River, was reported on (Van Ryneveld 2010).



Figure 4-3: Large shell midden off the coast of southern Africa.

#### 4.2.4 Iron Age / Farmer Period

The beginnings of the Iron Age (Farmer Period) in southern Africa are associated with the arrival of a new Bantu speaking population group at around the third century AD. These newcomers introduced a new way of life into areas that were occupied by Later Stone Age hunter-gatherers and Khoekhoe herders. Distinctive features of the Iron Age are a settled village life, food production (agriculture and animal husbandry), metallurgy (the mining, smelting and working of iron, copper and gold) and the manufacture of pottery. Iron Age farming communities generally preferred to occupy river valleys within the eastern half of southern Africa owing to the summer-rainfall climate that was conducive for growing millet and sorghum. According

to Huffman (2007) an eastern migration stream, known as the Chifumbaze Complex spread southwards from East Africa south into southern Africa during the period of about AD 200—300 where several KwaZulu-Natal and north-Eastern Cape sites were occupied. Relatively little research has been conducted on the archaeology of later farmer communities of the Eastern Cape and adjacent areas. According to research in adjacent parts of South Africa, there was little or no settlement in the dry high-altitude grasslands of the north-western parts of the Eastern Cape and Lesotho until after AD 1600 (e.g. Walton 1956; Maggs 1976; Hall 1990; Mitchell 2002). A few important Eastern Cape Early Iron Age Sites (EIA) sites include Kulubele situated in the Kei River Valley near Khomga (Binneman 1996), Ntsitsana situated in the interior Transkei, 70 km west of the coast, along the Mzimvubu River (Prins & Granger 1993), and Canasta Place situated on the west bank of the Buffalo River (Nogwaza 1994). Previous investigations into the EIA in the Transkei and Ciskei include work at Buffalo River Mouth (Wells 1934; Laidler 1935), at Chalumna River Mouth (Derricourt 1977) and additional research by Feely (1987) and Prins (1989). In addition, evidence of numerous Early Iron Age (EIA) sites or material occurs in the area surrounding Mtatha and the Eastern Cape (Feely & Bell-Cross 2011). Evidence in the form of thick-walled well-decorated pot sherds are present along other parts of the Transkei coast as is evident from sites that were excavated at Mpame River Mouth (Cronin 1982) and just west of East London (Nongwaza 1994). Research in the adjacent Kei River Valley area indicates that the first mixed farmers were already settled in the Eastern Cape region between A.D. 600 -700 (Binneman 1994, Feely & Bell-Cross 2011). Thus far the closest documented and well-researched Early Iron Age site is located within the Great Kei River Valley. The site is situated some 200 m below the plateau and 60 km inland from the coast, within the borders of the Transkei, approximately 100 km up the coast towards Durban.

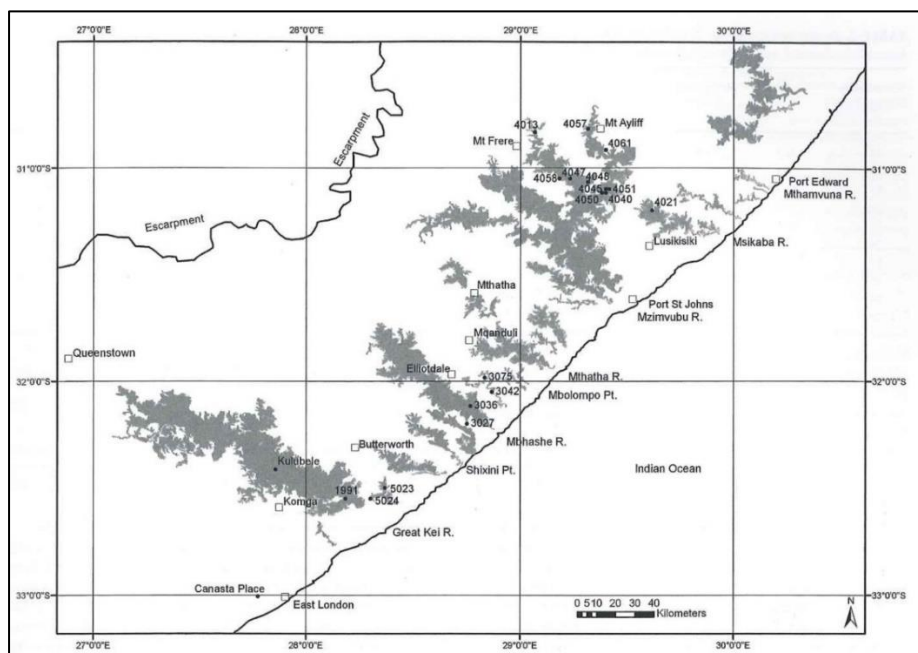


Figure 4-4: Early Iron Age farmer period sites in the Eastern Cape around Mthatha (after Feely & Bell-Cross 2011).

There has been some speculation that EIA populations may have spread well south of the Transkei into the Ciskei, possibly up to the Great Fish River (Binneman et al. 1992), however, no further research has been undertaken to confirm these statements. Two closer EIA sites have been documented, one to the south of East London (Cronin 1982) and the other is situated 12 km west of East London on the west bank of the Buffalo River (Nogwaza 1994). Thicker and decorated pottery sherds, kraals, possible remains of domesticated animals, upper and lower grindstones and storage pits are associated for identifying Early Iron Age sites. The sites are generally large settlements, but the archaeological visibility may in most cases be

difficult owing to the organic nature of the homesteads. Metal and iron implements are also associated with Early Iron Age communities.

The Later Iron Age (LIA) is not only distinguished from the EIA by greater regional diversity of pottery styles but is also marked by extensive stone wall settlements. In many instances, LIA farmer communities moved from river valleys to the hilltops, such settlements have been formally recorded by the Albany Museum and cover a relatively extended area in comparison to the Early Iron Age settlement patterns (Binneman *et al.* 2010). LIA communities gradually expanded into the grasslands of the KwaZulu-Natal and north Eastern Cape interior. LIA sites in the Eastern Cape Province occur adjacent to the major rivers in low lying river valleys but also along ridge crests above the 800m contour. An early phase of the Late Iron Age has been uncovered in KwaZulu-Natal which transpired in a ceramic style known as "Blackburn". This ceramic style represents a break with that of the Early Iron Age. Since there is a resemblance between Blackburn pottery and Nguni pottery, Huffman (1989) postulates that Blackburn reflects the migration of the Nguni to KwaZulu-Natal and later to the Transkei. Consequently, sites belonging to the final phase of the Late Iron Age can often be linked with historically known Nguni groups. The most southern Iron Age site, Kulubele, excavated by archaeologists from the Albany Museum during the 1990's, is situated along the banks of the Kei River in the Kei River Valley. The earliest date for the site is 1250 BP yielded numerous settlement areas, thick-walled pottery, animal bones, and most importantly chicken bones that illustrates contact between the first farming communities and European seafarers. The LIA in the project area can be ascribed to the Mpondomise, Thembu, and Xhosa tribal clusters or their immediate predecessors (Feely 1987). It is also possible that some stone walled sites, especially those incorporating shelters or caves, were constructed by hybrid San/Nguni groups. Trade played a major role in the economy of LIA societies. Goods were traded locally and over long distances. The main trade goods included metal, salt, grain, cattle and thatch. This led to the establishment of economically driven centres and the growth of trade wealth. Keeping of domestic animals, metal work and the cultivation of crops continued with a change in the organisation of economic activities (Maggs, 1989; Huffman 2007). Hilltop settlements are mainly associated with LIA settlement patterns that occurred during the second millennium AD. Later Iron Age settlements have been formally recorded by the Albany Museum and cover a relatively extended area in comparison with the Early Iron Age settlement patterns. With the exception of the Tembu, stone buildings which characterizes the Iron Age sites of Sotho areas, is absent in the Transkei and Ciskei, and a pattern of some mobility without, it is presumed, a stone working technology of significance, makes the allocation of sites a major problem (Derricourt 1973). Contact with the Cape Colony initially stimulated an already flexible and dynamic characteristic of the Cape Nguni political economy. When trade opportunities developed in the late 18th century, the Xhosa would exchange cattle (and permission for and guidance in hunting elephants) in return for copper, iron, beads (Peires 1981:95); they would then exchange these goods at a profit for cattle with their African neighbours to the east, bringing about a kind of speculation in cattle.

#### **4.2.5 Later History: Reorganization, Colonial Contact and living heritage.**

Oral tradition is the basis of the evidence of historical events that took place before written history could be recorded. This kind of evidence becomes even more reliable in cases where archaeology could be utilised to back up the oral records. Sources of evidence for socio political organization during the mid-eighteenth to early nineteenth century in the study area and the Transkei suggest that the people here existed in numerous small-scale political units of different sizes, population numbers and political structures (Feely 1987; Wright & Hamilton, 1989). This period was largely characterised by rage and instability as political skirmishes broke due to the thirst for power and resources between chiefdoms. During the 2nd half of the eighteenth century, stronger chiefdoms and paramuncies emerged. However, these were not fully grown states as there was no proper formal central political body established. This changed in the 1780's when a shift towards a more

centralized political state occurred in parts of northern KwaZulu-Natal. The Zulu kingdom, established by King Shaka however became the most powerful in KwaZulu-Natal in the early years of the 19th century and had a marked influence on the local Nguni chiefdoms of the project area (Feely 1987). Refugees from north of the Umtavuna River such as the Bhaca and Qwabe tribes moved into the Transkei and asked the Mpondo chief for permission to settle in adjacent parts. These refugees were collectively called amaMfengu and many of these people were settled in parts of the project area and the adjacent areas near Qumbu and Mount Fletcher. One group of refugees from the north, the amaNgwane, crossed the Umthatha River in the project area, and fought a decisive battle against British colonial troops and their Thembu and Xhosa allies in 1828 at Mbholompo Point. During this episode the amaNgwane was defeated and the tribe broken-up (Peires 1981).

British Kaffraria experienced three waves of German immigrants in 1856, 1858, and 1877. The first of the German settlers were members of the German Crimean Legion in 1856. The British German Legion (or Anglo-German Legion) was a group of German soldiers recruited to fight for Britain in the Crimean War. It was disbanded near the end 1856, having seen little or no military action due to the war having ended. The majority of the members of the legion were resettled in the Eastern Cape Colony, in South Africa. As a result, to this day there are place names of German origin in the area around King Williams Town, including the town of Stutterheim. Ten locations at which German military settlers were placed that survived, five were alongside or near existing towns that enhanced their viability (Peddie, King Williams Town, Keiskammahoek, Cambridge and Panmure). Only five settlements established for German military settlers (about 23%) could be said to have become towns in their own right – Frankfort, Hamburg, Berlin, Breidbach and Stutterheim. The 1877 settler scheme was much smaller than the first two schemes –only 700 Germans arrived in the Eastern Cape in 1877 under the auspices of this latter recruitment drive (Schell 1954: 217) They did not settle in the same places as the previous German Settlers and most moved to “Kwelegha, Lilyfontein and Paardekraal” (Schnell 1954:218), with only 17 three locations showing any overlap at all between the 1857-1858 settlements and these later settlers, namely Keiskammahoek, East London, and King Williams Town (Schnell 1954:218) (Zipp 2012).

Reverend John Brownlee, from the London Missionary Society, established the Buffalo Mission on the bank of the Buffalo River in January 1826. By 1832, the mission consisted of five substantial buildings. The mission station was attacked and burnt by the Xhosa during the War of Hintsa (1834-1835). King Williams Town was then to serve as the military and administrative centre for the new Province of Queen Adelaide. During May 1835, Governor D’Urban extended the colonial boundary of the Cape to the western bank of the Great Kei River extending the from the Keiskamma and Kei Rivers and south as far as the coast. The northern boundary, at this stage was indeterminate. However, by November 1835, D’Urban annexed the territory up to the Orange River in order to extend jurisdiction over Boers already grazing there and to neutralize Louis Trichardt’s anti-British provocations (Lester 1998). King Williams Town, which was to be established on the LMS land, was declared the capital of the annexed territory of the conquered Province of Queen Adelaide in May 1835, during the 6th Frontier War. King Williams Town was surrounded by a ring of defensive forts Fort Beaufort, Fort Cox, Fort Thompson, Fort Peddie, Fort Willshire (was re-occupied) and Fort Montgomery-Williams, and Fort Hill (King Williams Town) (thesis). The subsequent peace treaty signed allowed the Xhosa to remain in specifically designated areas, termed locations, however, the bulk of their lands were given to European occupation (SAHO). It was soon realized that the colonial forces had little prospect of controlling the remote vastness of the province’s Amatole Mountains and the continued resistance from the Xhosa. The Province of Queen Adelaide was retained for 18 months before being abandoned under pressure from the imperial government. This short-lived but significant annexation represented ‘the first British attempt to extend control over a large body of formerly independent Africans (Martens 2015). By July 1836, the British Cor renounced its claim to the Province of Queen Adelaide and ordered the withdrawal of all troops in the area, retaining only

King Williams Town and Fort Cox (thesis) By the end of 1848, King Williams Town's importance was once again re-established when it became the capital of the new Crown Colony, British Kaffraria. The 8th Frontier War (the War of the Axe), brought destruction to the LMS and the lands between the Keiskamma and Great Kei Rivers were annexed to the Cape Colony. The new territory, known as British Kaffraria was divided into seven counties named Bedfordshire, Cambridgeshire, Lincolnshire, Middlesex, Yorkshire, Sussex and Northumberland which was roughly coincidental with the tribal divisions existing in the region before the war (SAHO). By the end of the 8<sup>th</sup> Frontier War, King Williams Town, had become a large military base and a number of structures had been built. The town was largely planned by the Royal Engineers and built with military labour. During 1860 British Kaffraria territory was proclaimed a Crown Colony with divisions at East London, King Williams Town, Stutterheim, Gonube, Keiskammahoek and Middledrift (SAHO). In April 1862, the military headquarters for the Eastern Frontier were moved from Grahamstown to King Williams Town as Grahamstown was already experiencing an economic depression. However, this endeavor was short-lived owing to the immense costs of housing the additional troops and the Cape colony High Commission Sir Phillip Wodehouse, recommended the reestablishment of Grahamstown as the military headquarters (Welsh 2000, Garson 1992, Lamar & Thompson 1981, Caffrey 1973) (thesis)

In 1866 King Williams Town was incorporated into the Cape Colony. The town's so-called coloured and Xhosa inhabitants also lived at Brownlee Station, Bidhili, Tsolo (later Ginsberg), Gillam's Drift (subsequently Schornville) and Breidbach. They were free to erect their own houses and municipal control was limited, however, they could not own land. Until 1870 the town's commercial and administrative significance grew and expanded along the plain on the left bank of the Buffalo River. At least four separate urban developments are clearly discernable (before 1870): New Town, just across the Fleet Ditch, Pensioner's Village, German Village and the areas on the lower slopes of the hills where wealthy residents erected their dwellings (Webb 2013). In May 1880: King Williams Town was connected by rail via Blaney Junction, with the centres of East London, Kei Road, Kubusie, Cathcart and Queenstown which proved to be a tremendous boost to the commercial interests of the town. By 1889, King Williams Town had become one of the largest trading districts in the Cape Colony, largely due to trade with the Xhosa and had come to be known as "the wholesale emporium of East London". At the turn of the century, King Williams Town was beginning to stagnate in relation to East London, largely because of their harbor facilities. After 1910: British Kaffraria became known as the Border region (SAHO). King Williams Town remained a garrison town, until 1913, and the military presence contributed greatly to the social scene, entertainment and sport. Between 1946-1982: Segregation was further imposed on the landscape with the establishment of townships like Zwelitsha (1946), Schornville (1959), Dimbaza (1968), and Phakamisa (c. 1982) and determined to a large extent, the development of the town.

A significant heritage site occurs no more than 6km south-west of the project area on the banks of the Buffalo River. Here, Fort Murray was established by Colonel Harry Smith on the instructions of Governor Sir Benjamin D'Urban after the Sixth Frontier War in 1835. It was one of the Forts in a series of forts built by the British during the frontier wars of the early 1800's to mid-1800's. The fort was located on the west bank of the Buffalo River near the Mount Coke Mission Station. Named after Colonel Murray of the 42nd Regiment, the fort was 40 metres square with three redans and could accommodate thirty cavalry. Government agent to the followers of chiefs Tzatzoe, Siwani and Umkye, Richard Southey, was based at Fort Murray. On July 28, 1836 the British Government renounced its claim to the province of Queen Adelaide and ordered the withdrawal of all troops in the area, retaining only King William's Town and Fort Cox. Fort Murray was abandoned in September 1836. Restoration of the fort started in 1976 being completed in May 1977 but by August 1995, the fort was vandalised and totally destroyed.



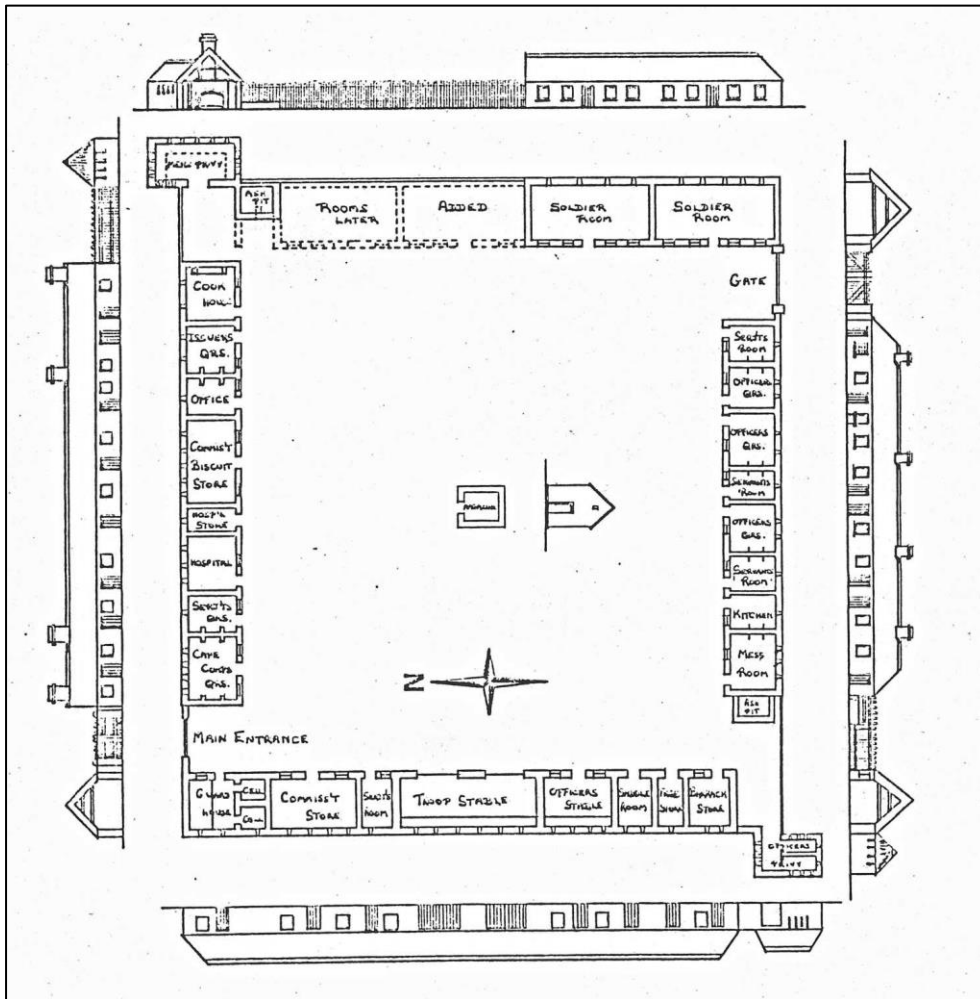


Figure 4-5: The original design plan for Fort Murray (<http://www.artefacts.co.za/main/Buildings/bldgframes.php?bldgid=10397>).



Figure 4-6: View of the remains of Fort Murray along the Buffalo River (<http://www.artefacts.co.za/main/Buildings/bldgframes.php?bldgid=10397>)

## 5 RESULTS: ARCHAEOLOGICAL SURVEY

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### 5.1 The Off-Site Desktop Survey

In terms of heritage resources, the landscape around King William's Town is primarily well known for the occurrence of Herder sites and shell middens, Later Iron Age sites and known Colonial Period resources are ample, primarily clustered in the vicinity of historical farms and settlements. However, the general landscape area has seen ruralisation over the past century where portions of pristine areas have been altered largely sterilizing the area of heritage remains.

An analysis of historical aerial imagery and archive maps reveals the following (see Figure 5-1 to Figure 5-3):

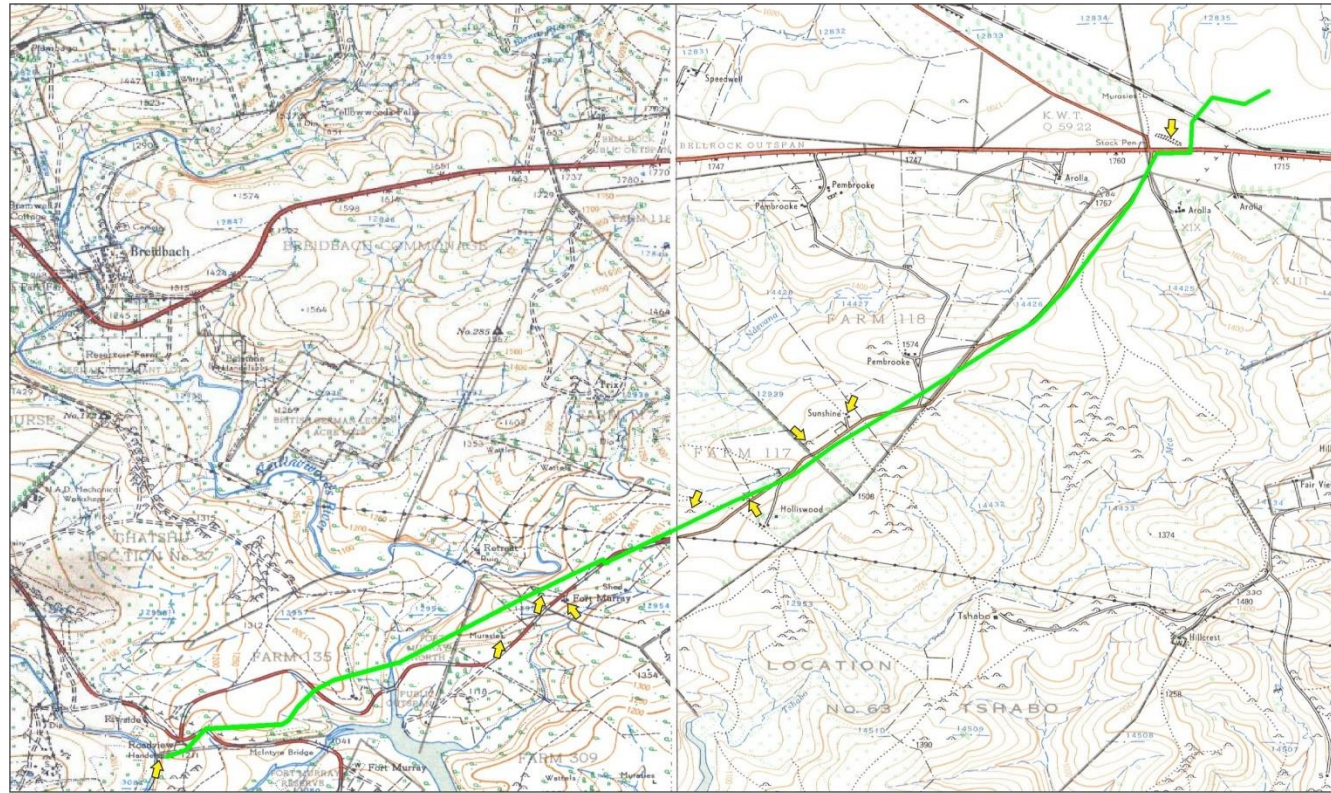
- A number of buildings, in particular Fort Murray (see discussion above), a "handelshuis" or trading store, farm houses and so-called "huts" are indicated on a 1955 topographical map of the project area. A number of unnamed buildings appear on later maps (1971, 1985) of the project area, and these maps also indicate access roads, footpaths and cultivated fields across the landscape.
- Aerial imagery dating to 1939 indicate that portions of the project area - and particularly areas subject to this assessment - have been altered by historical farming, settlement and agriculture. In addition, man-made structures are visible on these images (1938 and 1952).
- Van Warmelo's Map of the project landscape dating to 1935 indicate that the Ndlambe settled in this part of the landscape during the first part of the 20<sup>th</sup> century.
- Vast and large-scale urban settlement is visible of more recent aerial images of the landscape.



Figure 5-1: An excerpt of Van Warmelo’s Map of the project landscape dating to 1935. Each red dot represents “10 taxpayers”. Note that the project area was relatively densely populated by Xhosa and Fingo – particularly Ndlambe groups.



Figure 5-2: "Map of the Eastern Frontier of the Cape Colony and adjacent territory" dating to 1878. The relative location of the project area is indicated by the yellow arrow.



REFERENCE	VERKLARING	REFERENCE	VERKLARING
International Boundaries	Internasionale Grense	Magnetic Stations and Ground Signs	Magnetiese Stasies en Grondtekens
Provincial Boundaries	Provinsiale Grense	Native Huts	Natjuelohutte
Multiple Track Railways	Veelvoudige Spoorlyne	Monuments	Monumente
Single Track Railways	Enkelspoorlyne	Digging Tanks	Djibakke
Electric Railways	Elektriese Spoorlyne	Wardens	Wagters
Narrow Gauge Railways	Smalspoorlyne	Stone Walls	Stene Muure
Service Cans and Mineral Railways	Diens- en Minerale Spoorlyne	Anti-erosion Walls	Grondbeewaringswal
National Roads	Nasionale Paale	Excavations	Ojgrawings
Main Roads	Hoofpaale	Perennial Water	Standhoudende Water
Secondary Roads	Sekondere Paale	Non-perennial Water	Nie-standhoudende Water
Other Roads	Ander Paale	Dry Pans	Droel Panne
Tracks and Footpaths	Doone Paale en Voetpaaie	Fountains, Springs, Waterholes and Wells	Fontein, Watjurgte en Putte
Power Lines	Magjies	Marshes, Swamps and Vies	Marsje en Vies
Telephone and Telegraph Lines	Telefoon- en Telegraflyne	Pipelines	Pylyne
Post and Telegraph Offices, Police Stations and Posts, Stores, Hotels, Schools and Places of Worship	Post- en Telegrafkantore, Polisie- stasies en poste, Winkels, Hotelle, Skole en Plekke van Aanbidding	Photo Centres	Fotomiddeljante
Lighthouses and Marine Lights	Vuurtorings en Seewarjige	Prominent Rock Outcrops	Ljftstaande Klipbante
Marine Beacons	Seewarjebaken	Terraces	Terasse
Trig. Beacons (number to right and height below)	Driehoeksbaken (Nummer regs en hoogte onder)	Cultivated Lands	Bewarjke Lande
		Orchards and Vineyards	Boorde en Wingerde
		Trees and Bush	Bome en Bos

Figure 5-3: A historical topographic map of the project area indicating the project landscape (pipeline in green line) in the past decades. Note the presence of man-made structures as indicated by yellow arrows.

## 5.2 The Archaeological Site Survey

An analysis of historical aerial imagery and archive maps of areas subject to this assessment suggests a landscape which has been subjected to historical and more recent urban development and settlement possibly sterilising the area of heritage remains. **This inference was confirmed during an archaeological site assessment during which *in situ* archaeological or heritage remains were encountered.**

### 5.2.1 Historical Period Sites

- **Site Exigo-BNP-HP01**  
**S32.93860° E27.45225°**

The remains of a number of concrete building floors, walls as well as an enclosure consisting of brick fence posts enclosing a stand of Sisal Trees occur in the south-western portion of the of the project area at Phakamisa. In addition, a number of soil and stone mounds and heaps are scattered across the site. The historical function of the building remains is not clear but a trading store or “handelshuis” is indicated on an archive topographic map of this locale and it is possible that these remnants form part of the old trading store. The site is thus older than 60 years and generally protected under the National Heritage Resource Act (NHRA 1999) but is rated as low significance due to the general poor preservation of the features. A permit for the alteration or destruction of the site will nonetheless be required subject to the NHRA should impact prove inevitable.



Figure 5-4: View of Colonial Period enclosure at SITE EXIGO-BNP-HP01. Note the brick-built posts enclosing a strand of Sisal trees.



Figure 5-5: View of Colonial Period concrete floor remains at SITE EXIGO-BNP-HP01.



Figure 5-6: The Colonial Period remains indicated as possibly part of a trading store on a historical left, a historical aerial image center, and the site at present right.

### 5.2.2 Burial Sites

- Exigo-BNP-BP07  
S32.93102° E27.46970°

A small cemetery containing a number of graves occurs in the south-western portion of the project area at Kwa Klifu. Single graves are dressed with marble headstones but others are indicated by brick structures fashioned with ceramic tiles with brick headstones. Other graves are indicated by elongated soil and stone burial mounds. Some of the burials are enclosed in iron fences, the site is not maintained and the condition of the burials is fair. The burial site is of high heritage significance, it is situated within the alignment for the proposed pipeline and a conservation buffer should be observed. Alternatively, the burials should be relocated according to the applicable social and statutory requirements, should impact prove inevitable.



Figure 5-7: View of graves at SITE EXIGO-BNP-BP01.



Figure 5-8: View of the burial sites at SITE EXIGO-BNP-BP01.

- **Exigo-BNP-BP22**  
**S32.91260° E27.51046°**

A single grave occurs in a homestead complex next to the main road in the Ndevana. The densely overgrown burial is dressed with a marble headstone and enclosed within a wire fence around the homestead complex. The site is not maintained and the condition of the burials is fair. The burial site is of high heritage significance, it is situated in closed proximity of the alignment for the proposed pipeline and a conservation buffer should be observed. Alternatively, the burials should be relocated according to the applicable social and statutory requirements, should impact prove inevitable.





Figure 5-9: View of the densely overgrown grave at SITE EXIGO-BNP-BP02.

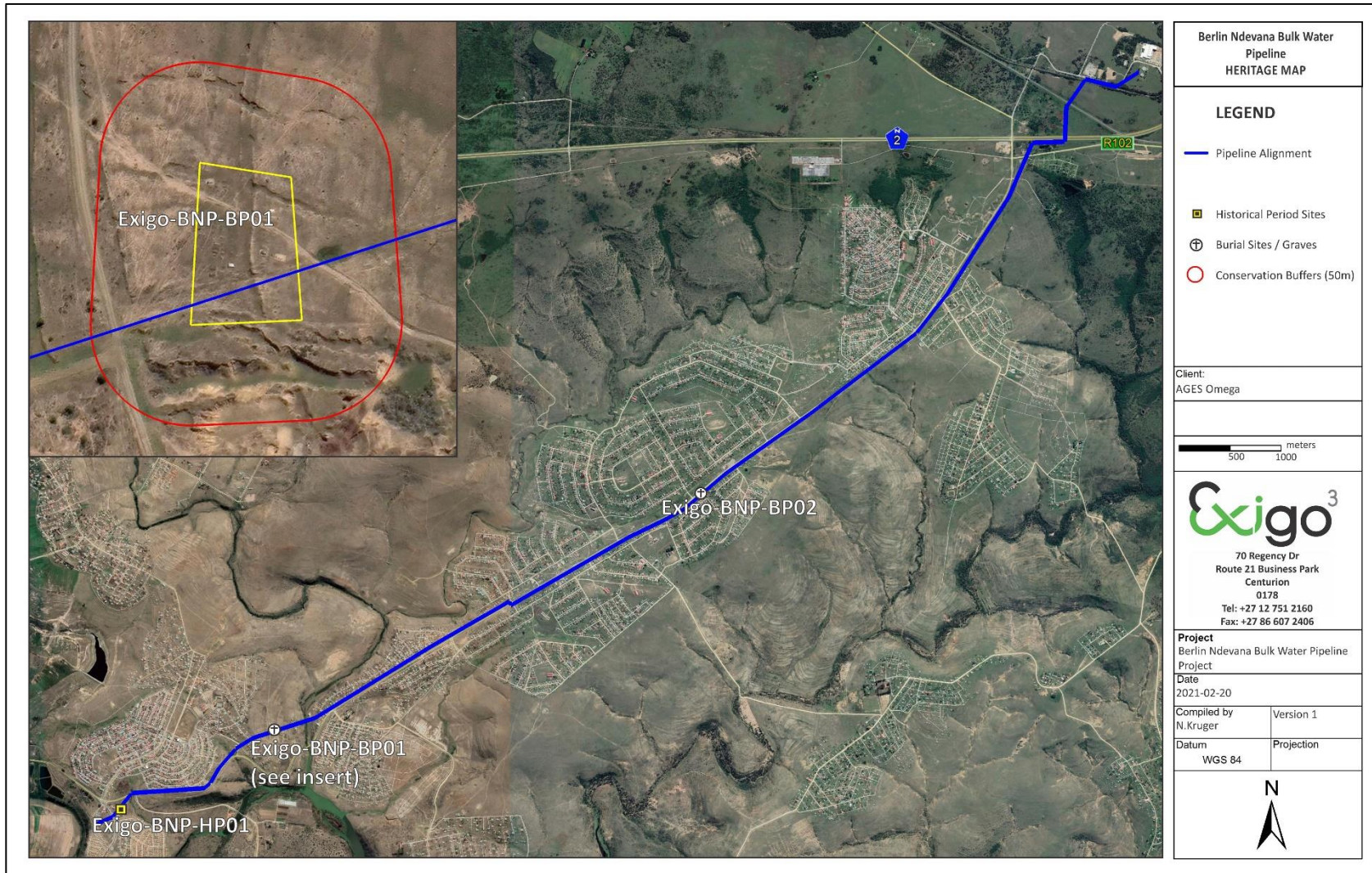


Figure 5-10: Aerial map indicating the location of heritage sites discussed in the text, as well as recommended conservation buffer extent.

## 6 RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING

### 6.1 Potential Impacts and Significance Ratings<sup>2</sup>

The following section provides a background to the identification and assessment of possible impacts and alternatives, as well as a range of risk situations and scenarios commonly associated with heritage resources management. A guideline for the rating of impacts and recommendation of management actions for areas of heritage potential within the study area is supplied in Section 10.2 of Addendum 3.

#### 6.1.1 General assessment of impacts on resources

Generally, the value and significance of archaeological and other heritage sites might be impacted on by any activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, of any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). Thus, the destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the initial construction period. However, in the long run, the proximity of operations in any given area could result in secondary indirect impacts. The EIA process therefore specifies impact assessment criteria which can be utilised from the perspective of a heritage specialist study which elucidates the overall extent of impacts.

#### 6.1.2 Direct impact rating

**Direct or primary effects** on heritage resources occur at the same time and in the same space as the activity, e.g. loss of historical fabric through demolition work. **Indirect effects or secondary effects** on heritage resources occur later in time or at a different place from the causal activity, or as a result of a complex pathway, e.g. restriction of access to a heritage resource resulting in the gradual erosion of its significance, which is dependent on ritual patterns of access (refer to Section 10.3 in the Addendum for an outline of the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected).

The following table summarizes impacts to the possible Historical Period sites and features of **low** significance located within the project areas:

- **Site Exigo-BNP-HP01**

NATURE OF IMPACT: Impacts could involve displacement or destruction of structures or features in the proposed Project area.		
	Without mitigation	With mitigation
EXTENT	Local	Local
DURATION	Permanent	Permanent
MAGNITUDE	Minor	Minor
PROBABILITY	Probable	Negligible
SIGNIFICANCE	Low	Low
STATUS	Negative	Neutral
REVERSIBILITY	Non-reversible	Non-reversible
IRREPLACEABLE LOSS OF RESOURCES?	Yes	No
CAN IMPACTS BE MITIGATED?	N.A	

<sup>2</sup> Based on: Winter, S. & Baumann, N. 2005. *Guideline for involving heritage specialists in EIA processes: Edition 1.*

<b>MITIGATION:</b> Site monitoring by ECO, destruction permitting if and when required.
<b>CUMULATIVE IMPACTS:</b> No cumulative impact is anticipated.
<b>RESIDUAL IMPACTS:</b> n/a

The following table summarizes impacts to burial sites of **high** significance located in close proximity of the project areas:

- **Site Exigo-BNP-BP01, Site Exigo-BNP-BP02**

<b>NATURE OF IMPACT:</b> Impacts could involve displacement or destruction of burials in the project area.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>EXTENT</b>	Local	Local
<b>DURATION</b>	Permanent	Permanent
<b>MAGNITUDE</b>	Major	Minor
<b>PROBABILITY</b>	Probable	Negligible
<b>SIGNIFICANCE</b>	High	Low
<b>STATUS</b>	Negative	Neutral
<b>REVERSIBILITY</b>	Non-reversible	Non-reversible
<b>IRREPLACEABLE LOSS OF RESOURCES?</b>	Yes	No
<b>CAN IMPACTS BE MITIGATED?</b>	N.A	
<b>MITIGATION:</b> Avoidance, site management (conservation buffering), strict site monitoring by ECO, grave relocation.		
<b>CUMULATIVE IMPACTS:</b> No cumulative impact is anticipated.		
<b>RESIDUAL IMPACTS:</b> n/a		

## 6.2 Evaluation Impacts

A number of archaeological and historical studies have been conducted in the larger King William’s Town area which points to a rich and diverse archaeological landscape. The heritage legacy of this area is mostly dominated by Herder sites and shell middens, Later Iron Age sites and known Colonial Period resources are ample. However, the project area has seen development over the past century where pristine areas have been altered extensively largely sterilizing the area of heritage remains.

### 6.2.1 Archaeology

No archeological sites, features or artefacts were noted in the project and no impact on archaeological resources is anticipated. However, the project area is situated along the Yellowwoods River which renders it is prone to alluvial deposits that could bury potential Stone Age material and *in situ* Stone Age remains might occur in previously undetected contexts of the project area.

### 6.2.2 Built Environment

Farm houses, forts and trading stores dating to the 19<sup>th</sup> and 20<sup>th</sup> centuries are common around King William’s Town. Locally, the probable remains of a section of a Historical Period trading store occur within the project landscape. The site is protected under the NHRA and impacts should be mitigated over the short term. As for the rest of the project area, the general landscape holds significance in terms of the built environment as

the area comprises historical farming remnants and relatively newly established industrial zones, settlements and townlands.

**6.2.3 Cultural Landscape**

Generally, the proposed project area and its surrounds are characterized by rural farmlands and dense riparian and hilltop vegetation. Further away from the project area, the landscape displays undulating hills with flatter plains in-between. This landscape stretches over many kilometres and the proposed project is unlikely to result in a significant impact on the or the landscape sense of place.

**6.2.4 Graves / Human Burials Sites**

Two burial sites were located in the project area. These receptors are of high significance for their social and cultural value. The potential impact on the resources is anticipated to be HIGH but this impact rating can be limited to a NEGLIBLE impact by the implementation of mitigation measures (avoidance, site management, site monitoring / grave relocation) for the sites, if / when required. In the rural areas of the Eastern Cape Province, graves and cemeteries often occur around farmsteads in family burial grounds but they are also randomly scattered around archaeological and historical settlements. The probability of informal human burials encountered during development should thus not be excluded. In addition, human remains and burials are commonly found close to archaeological sites; they may be found in "lost" graveyards, or occur sporadically anywhere as a result of prehistoric activity, victims of conflict or crime. It is often difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Human remains are usually observed when they are exposed through erosion. In some instances packed stones or rocks may indicate the presence of informal pre-colonial burials. If any human bones are found during the course of construction work then they should be reported to an archaeologist and work in the immediate vicinity should cease until the appropriate actions have been carried out by the archaeologist. Where human remains are part of a burial they would need to be exhumed under a permit from either SAHRA (for pre-colonial burials as well as burials later than about AD 1500). Should any unmarked human burials/remains be found during the course of construction, work in the immediate vicinity should cease and the find must immediately be reported to the archaeologist, or the South African Heritage Resources Agency (SAHRA). Under no circumstances may burials be disturbed or removed until such time as necessary statutory procedures required for grave relocation have been met.

**6.3 Management actions**

Recommendations for relevant heritage resource management actions are vital to the conservation of heritage resources. A general guideline for recommended management actions is included in Section 10.4 of Addendum 3.

**OBJECTIVE:** ensure conservation of heritage resources of significance, prevent unnecessary disturbance and/or destruction of previously undetected heritage receptors.

*For the Historical Period sites of low significance within the project area the following are required in terms of heritage management and mitigation:*

- **Site Exigo-BNP-HP01**

<b>PROJECT COMPONENT/S</b>	All phases of construction and operation.	
<b>POTENTIAL IMPACT</b>	Damage/destruction of sites.	
<b>ACTIVITY RISK/SOURCE</b>	Digging foundations and trenches into sensitive deposits that are not visible at the surface.	
<b>MITIGATION: TARGET/OBJECTIVE</b>	To locate previously undetected heritage remains / graves as soon as possible after disturbance so as to maximize the chances of successful rescue/mitigation work.	
<b>MITIGATION: ACTION/CONTROL</b>	<b>RESPONSIBILITY</b>	<b>TIMEFRAME</b>

Fixed Mitigation Procedure (required)		
<p><b>Site Monitoring:</b> Regular examination of trenches and excavations in order to detect and preserve previously undocumented heritage receptors.</p> <p><b>Permitting:</b> Obtain necessary destruction permits from the relevant Heritage Resources Authorities prior to site impact and destruction.</p>	ECO, HERITAGE ASSESSMENT PRACTITIONER	Monitor as frequently as practically possible. Prior to the commencement of construction and earth-moving.
<b>PERFORMANCE INDICATOR</b>	Archaeological sites are discovered and mitigated with the minimum amount of unnecessary disturbance.	
<b>MONITORING</b>	Successful location of sites by person/s monitoring.	

For the highly significant burial sites occurring within the project area the following are required in terms of heritage management and mitigation:

- **Site Exigo-BNP-BP01, Site Exigo-BNP-BP02**

<b>PROJECT COMPONENT/S</b>	All phases of construction and operation.		
<b>POTENTIAL IMPACT</b>	Damage/disturbance to subsurface burials and surface burial features.		
<b>ACTIVITY RISK/SOURCE</b>	Digging foundations and trenches into sensitive deposits that are not visible at the surface.		
<b>MITIGATION: TARGET/OBJECTIVE</b>	To locate human burials as soon as possible after disturbance so as to maximize the chances of successful rescue/mitigation work.		
<b>MITIGATION: ACTION/CONTROL</b>	<b>RESPONSIBILITY</b>	<b>TIMEFRAME</b>	
Preferred Mitigation Procedure			
<p><b>Avoidance:</b> Implement a heritage conservation buffer of at least 20m from all burials / graves. Erect a temporary construction barricade around burials to clearly indicate the location of burials. Implement a site management plan detailing strict site management conservation measures.</p>	DEVELOPER QUALIFIED SPECIALIST	HERITAGE	Prior to the commencement of construction and earth-moving.
Alternative Mitigation Procedure (if preferred mitigation procedure is not feasible)			
<p><b>Grave Relocation:</b> Relocation of burials and documentation of site, full social consultation with affected parties, possible conservation management and protection measures. Subject to authorisations and relevant permitting from heritage authorities and affected parties.</p>	QUALIFIED SPECIALIST	HERITAGE	Prior to the commencement of construction and earth-moving.
Fixed Mitigation Procedure (required)			
<p><b>Site Monitoring:</b> The project site in the vicinity of this receptor should be monitored bi-weekly by the heritage consultant or an ECO familiar with the heritage occurrences of the site: regular examination of trenches and excavations and site clearing in order to detect and preserve previously undocumented heritage receptors.</p>	ECO		Monitor as frequently as practically possible.
<b>PERFORMANCE INDICATOR</b>	Archaeological sites are discovered and mitigated with the minimum amount of unnecessary disturbance.		
<b>MONITORING</b>	Successful location of sites by person/s monitoring.		

## 7 RECOMMENDATIONS

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The larger landscape around the project area indicate a rich heritage horizon Herder sites, Later Iron Age sites and known Colonial Period resources are ample, primarily clustered in the vicinity of old farmstead and settlements. Locally, the project area has seen transformation by vast rural settlement agriculture activities potentially sterilizing surface and subsurface of heritage remains, especially those dating to pre-colonial and prehistorical times. Cognisance should nonetheless be taken of archaeological material that might be present in surface and sub-surface deposits along drainage lines and in pristine areas. The following recommendations are made based on general observations in the proposed Berlin Ndevana Bulk Water Pipeline Project area:

- According to the South African Heritage Resources Agency Information System (SAHRIS) Palaeo Map, the project area fall within a sensitive fossiliferous zone and a Palaeontological Assessment should be considered for the project.
- The possible remnants of a part of a Historical Period trading store (**Site Exigo-BNP-HP01**) are of low significance due to the poor state of preservation of the features. The site is located in close proximity of the alignment for the proposed pipeline it is recommended that any activities occurring at these sites be monitored in order to avoid the destruction of previously undetected heritage remains. Should the site or it features be impacted on by the development, application should be made for destruction permits from the relevant heritage authorities (EC-PHRA), since they are older than 60 years and generally protected under heritage legislation.
- Burial sites identified within or in close proximity of the project area (**Site Exigo-BNP-BP01, Site Exigo-BNP-BP02**) are of high significance and these sites might be impacted on by the proposed project. As a primary measure, the SAHRA Burial Ground and Graves Unit (BGG) often requires a 50m conservation buffer around burial sites but the developer indicated that realignment around the burial sites according to this requirement would prove challenging given terrain constraints. Motivation is therefore made for the implementation of a 20m buffer around all burial sites on the condition that temporary construction barricades be erected around the burial sites for the duration of the development. In addition, it is required that the development progress around the burial sites be monitored on a bi-weekly basis during ground clearing, earth moving and construction phases to detect any impacts on burials at the earliest opportunity. A site management plan detailing strict site management conservation measures should be compiled for all burials in the project area. All burials should be monitored on a bi-monthly basis by an informed ECO or by the heritage Specialist in order to detect any impact on the resource at the earliest opportunity. It should be noted that this motivation of a relaxation of the conservation buffers is subject to approval by the SAHRA BGG unit.
- **Should impact on any human burial prove inevitable, full grave relocations are recommended for these burial grounds. This measure should be undertaken by a qualified archaeologist, and in accordance with relevant legislation, permitting, statutory permissions and subject to any local and regional provisions and laws and by-laws pertaining to human remains. A full social consultation process should occur in conjunction with the mitigation of cemeteries and burials (see Addendum B).**
- As burial sites have been located in the project area, it is recommended that the BA public participation and social consultative process address the possibility of further graves occurring in the project area.
- Considering the localised nature of heritage remains, the general monitoring of the development progress by an ECO or by the heritage specialist is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during

construction activities, all activities should be suspended and the archaeological specialist should be notified immediately.

- It should be stated that it is likely that further undetected archaeological remains might occur elsewhere in the Study Area along water sources and drainage lines, fountains and pans would often have attracted human activity in the past. Also, since Stone Age material seems to originate from below present soil surfaces in eroded areas, the larger landscape should be regarded as potentially sensitive in terms of possible subsurface deposits. Burials and historically significant structures dating to the Colonial Period occur on farms in the area and these resources should be avoided during all phases of construction and development, including the operational phases of the development.

In addition to these site-specific recommendations, careful cognizance should be taken of the following:

- As Palaeontological remains occur where bedrock has been exposed, all geological features should be regarded as sensitive.
- Water sources such as drainage lines, fountains and pans would often have attracted human activity in the past. As Stone Age material occur in the larger landscape, such resources should be regarded as potentially sensitive in terms of possible subsurface deposits.

## 8 GENERAL COMMENTS AND CONDITIONS

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This AIA report serves to confirm the extent and significance of the heritage landscape of the proposed Berlin Ndevana Bulk Water Pipeline Project area. The larger heritage horizon encompasses rich and diverse archaeological landscapes and cognizance should be taken of heritage resources and archaeological material that might be present in surface and sub-surface deposits. If, during construction, any possible archaeological material culture discoveries are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find. Such material culture might include:

- Formal Earlier Stone Age stone tools.
- Formal MSA stone tools.
- Formal LSA stone tools.
- Potsherds
- Iron objects.
- Beads made from ostrich eggshell and glass.
- Ash middens and cattle dung deposits and accumulations.
- Faunal remains.
- Human remains/graves.
- Stone walling or any sub-surface structures.
- Historical glass, tin or ceramics.
- Fossils.

If such sites were to be encountered or impacted by any proposed developments, recommendations contained in this report, as well as endorsement of mitigation measures as set out by AMAFA, SAHRA, the National Resources Act and the CRM section of ASAPA will be required. It must be emphasised that the conclusions and recommendations expressed in this archaeological heritage sensitivity investigation are based on the visibility of archaeological sites/features and may not therefore, represent the area's complete archaeological legacy. Many sites/features may be covered by soil and vegetation and might only be located during sub-surface investigations. If subsurface archaeological deposits, artefacts or skeletal material were to be recovered in the area during construction activities, all activities should be suspended and the archaeological specialist should be notified immediately (**cf. NHRA (Act No. 25 of 1999)**, Section 36 (6)). It must also be clear that Archaeological Specialist Reports will be assessed by the relevant heritage resources authority (SAHRA).



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## 10 ADDENDUM 1: HERITAGE LEGISLATION BACKGROUND

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### 10.1 CRM: Legislation, Conservation and Heritage Management

The broad generic term Cultural Heritage Resources refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

#### 10.1.1 Legislation regarding archaeology and heritage sites

The South African Heritage Resources Agency (SAHRA) and their provincial offices aim to conserve and control the management, research, alteration and destruction of cultural resources of South Africa. It is therefore vitally important to adhere to heritage resource legislation at all times.

##### d. National Heritage Resources Act No 25 of 1999, section 35

According to the National Heritage Resources Act of 1999 a historical site is any identifiable building or part thereof, marker, milestone, gravestone, landmark or tell older than 60 years. This clause is commonly known as the "60-years clause". Buildings are amongst the most enduring features of human occupation, and this definition therefore includes all buildings older than 60 years, modern architecture as well as ruins, fortifications and Iron Age settlements. "Tell" refers to the evidence of human existence which is no longer above ground level, such as building foundations and buried remains of settlements (including artefacts).

The Act identifies heritage objects as:

- objects recovered from the soil or waters of South Africa including archaeological and palaeontological objects, meteorites and rare geological specimens
- visual art objects
- military objects
- numismatic objects
- objects of cultural and historical significance
- objects to which oral traditions are attached and which are associated with living heritage
- objects of scientific or technological interest
- any other prescribed category

With regards to activities and work on archaeological and heritage sites this Act states that:

*"No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit by the relevant provincial heritage resources authority."* (34. [1] 1999:58)

and

*"No person may, without a permit issued by the responsible heritage resources authority-*

- (d) *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;*
- (e) *destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;*

- (f) *trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or*
- (g) *bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites. (35. [4] 1999:58)."*

and

*"No person may, without a permit issued by SAHRA or a provincial heritage resources agency-*

- (h) *destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;*
- (i) *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority;*
- (j) *bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) and excavation equipment, or any equipment which assists in the detection or recovery of metals (36. [3] 1999:60)."*

**e. Human Tissue Act of 1983 and Ordinance on the Removal of Graves and Dead Bodies of 1925**

Graves 60 years or older are heritage resources and fall under the jurisdiction of both the National Heritage Resources Act and the Human Tissues Act of 1983. However, graves younger than 60 years are specifically protected by the Human Tissues Act (Act 65 of 1983) and the Ordinance on the Removal of Graves and Dead Bodies (Ordinance 7 of 1925) as well as any local and regional provisions, laws and by-laws. Such burial places also fall under the jurisdiction of the National Department of Health and the Provincial Health Departments. Approval for the exhumation and re-burial must be obtained from the relevant Provincial MEC as well as the relevant Local Authorities.

**10.1.2 Background to HIA and AIA Studies**

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. Heritage sites are frequently threatened by development projects and both the environmental and heritage legislation require impact assessments (HIAs & AIAs) that identify all heritage resources in areas to be developed. Particularly, these assessments are required to make recommendations for protection or mitigation of the impact of the sites. HIAs and AIAs should be done by qualified professionals with adequate knowledge to (a) identify all heritage resources including archaeological and palaeontological sites that might occur in areas of developed and (b) make recommendations for protection or mitigation of the impact on the sites.

The National Heritage Resources Act (Act No. 25 of 1999, section 38) provides guidelines for Cultural Resources Management and prospective developments:

*"38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a*

development categorised as:

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- (b) the construction of a bridge or similar structure exceeding 50m in length;
- (c) any development or other activity which will change the character of a site:
  - (i) exceeding 5 000 m<sup>2</sup> in extent; or
  - (ii) involving three or more existing erven or subdivisions thereof; or
  - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
  - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- (d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.”

And:

“The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

- (k) The identification and mapping of all heritage resources in the area affected;
- (l) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
- (m) an assessment of the impact of the development on such heritage resources;
- (n) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- (o) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- (p) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- (q) plans for mitigation of any adverse effects during and after the completion of the proposed development (38. [3] 1999:64).”

Consequently, section 35 of the Act requires Heritage Impact Assessments (HIAs) or Archaeological Impact Assessments (AIAs) to be done for such developments in order for all heritage resources, that is, all places or objects of aesthetics, architectural, historic, scientific, social, spiritual, linguistic or technological value or significance to be protected. Thus any assessment should make provision for the protection of all these heritage components, including archaeology, shipwrecks, battlefields, graves, and structures older than 60

years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects. Heritage resources management and conservation.

## 10.2 Assessing the Significance of Heritage Resources

Archaeological sites, as previously defined in the National Heritage Resources Act (Act 25 of 1999) are places in the landscape where people have lived in the past – generally more than 60 years ago – and have left traces of their presence behind. In South Africa, archaeological sites include hominid fossil sites, places where people of the Earlier, Middle and Later Stone Age lived in open sites, river gravels, rock shelters and caves, Iron Age sites, graves, and a variety of historical sites and structures in rural areas, towns and cities. Palaeontological sites are those with fossil remains of plants and animals where people were not involved in the accumulation of the deposits. The basic principle of cultural heritage conservation is that archaeological and other heritage sites are valuable, scarce and *non-renewable*. Many such sites are unfortunately lost on a daily basis through development for housing, roads and infrastructure and once archaeological sites are damaged, they cannot be re-created as site integrity and authenticity is permanently lost. Archaeological sites have the potential to contribute to our understanding of the history of the region and of our country and continent. By preserving links with our past, we may not be able to revive lost cultural traditions, but it enables us to appreciate the role they have played in the history of our country.

### - Categories of significance

Rating the significance of archaeological sites, and consequently grading the potential impact on the resources is linked to the significance of the site itself. The significance of an archaeological site is based on the amount of deposit, the integrity of the context, the kind of deposit and the potential to help answer present research questions. Historical structures are defined by Section 34 of the National Heritage Resources Act, 1999, while other historical and cultural significant sites, places and features, are generally determined by community preferences. The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3 are used when determining the cultural significance or other special value of archaeological or historical sites. In addition, ICOMOS (the Australian Committee of the International Council on Monuments and Sites) highlights four cultural attributes, which are valuable to any given culture:

#### - *Aesthetic value:*

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria include consideration of the form, scale, colour, texture and material of the fabric, the general atmosphere associated with the place and its uses and also the aesthetic values commonly assessed in the analysis of landscapes and townscape.

#### - *Historic value:*

Historic value encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the attributes discussed here. Usually a place has historical value because of some kind of influence by an event, person, phase or activity.

#### - *Scientific value:*

The scientific or research value of a place will depend upon the importance of the data involved, on its rarity, quality and on the degree to which the place may contribute further substantial information.

#### - *Social value:*

Social value includes the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a certain group.

It is important for heritage specialist input in the EIA process to take into account the heritage management structure set up by the NHR Act. It makes provision for a 3-tier system of management including the South Africa Heritage Resources Agency (SAHRA) at a national level, Provincial Heritage Resources Authorities (PHRAs) at a provincial and the local authority. The Act makes provision for two types or forms of protection of heritage resources; i.e. formally protected and generally protected sites:

**Formally protected sites:**

- Grade 1 or national heritage sites, which are managed by SAHRA
- Grade 2 or provincial heritage sites, which are managed by the provincial HRA (MP-PHRA).
- Grade 3 or local heritage sites.

**Generally protected sites:**

- Human burials older than 60 years.
- Archaeological and palaeontological sites.
- Shipwrecks and associated remains older than 60 years.
- Structures older than 60 years.

With reference to the evaluation of sites, the certainty of prediction is definite, unless stated otherwise and if the significance of the site is rated high, the significance of the impact will also result in a high rating. The same rule applies if the significance rating of the site is low. The significance of archaeological sites is generally ranked into the following categories.

Significance	Rating Action
No significance: sites that do not require mitigation.	None
Low significance: sites, which may require mitigation.	2a. Recording and documentation (Phase 1) of site; no further action required 2b. Controlled sampling (shovel test pits, auguring), mapping and documentation (Phase 2 investigation); permit required for sampling and destruction
Medium significance: sites, which require mitigation.	3. Excavation of representative sample, C14 dating, mapping and documentation (Phase 2 investigation); permit required for sampling and destruction [including 2a & 2b]
High significance: sites, where disturbance should be avoided.	4a. Nomination for listing on Heritage Register (National, Provincial or Local) (Phase 2 & 3 investigation); site management plan; permit required if utilised for education or tourism
High significance: Graves and burial places	4b. Locate demonstrable descendants through social consulting; obtain permits from applicable legislation, ordinances and regional by-laws; exhumation and reinterment [including 2a, 2b & 3]

Furthermore, the significance of archaeological sites was based on six main criteria:

- Site integrity (i.e. primary vs. secondary context),
- Amount of deposit, range of features (e.g., stonewalling, stone tools and enclosures),
- Density of scatter (dispersed scatter),
- Social value,
- Uniqueness, and
- Potential to answer current and future research questions.



**11 ADDENDUM 2: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF HERITAGE**

**11.1 Site Significance Matrix**

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these. The following matrix is used for assessing the significance of each identified site/feature.

2. SITE EVALUATION			
2.1 Heritage Value (NHRA, section 2 [3])	High	Medium	Low
It has importance to the community or pattern of South Africa’s history or pre-colonial history.			
It possesses unique, uncommon, rare or endangered aspects of South Africa’s natural or cultural heritage.			
It has potential to yield information that will contribute to an understanding of South Africa’s natural and cultural heritage.			
It is of importance in demonstrating the principle characteristics of a particular class of South Africa’s natural or cultural places or objects.			
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			
It has marked or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).			
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			
It has significance through contributing towards the promotion of a local sociocultural identity and can be developed as a tourist destination.			
It has significance relating to the history of slavery in South Africa.			
It has importance to the wider understanding of temporal changes within cultural landscapes, settlement patterns and human occupation.			
2.2 Field Register Rating			
National/Grade 1 [should be registered, retained]			
Provincial/Grade 2 [should be registered, retained]			
Local/Grade 3A [should be registered, mitigation not advised]			
Local/Grade 3B [High significance; mitigation, partly retained]			
Generally Protected A [High/Medium significance, mitigation]			
Generally protected B [Medium significance, to be recorded]			
Generally Protected C [Low significance, no further action]			
2.3 Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Local			
Specific community			

## 11.2 Impact Assessment Criteria

The following table provides a guideline for the rating of impacts and recommendation of management actions for sites of heritage potential.

### Significance of the heritage resource

This is a statement of the nature and degree of significance of the heritage resource being affected by the activity. From a heritage management perspective, it is useful to distinguish between whether the significance is embedded in the physical fabric or in associations with events or persons or in the experience of a place; i.e. its visual and non-visual qualities. This statement is a primary informant to the nature and degree of significance of an impact and thus needs to be thoroughly considered. Consideration needs to be given to the significance of a heritage resource at different scales (i.e. site-specific, local, regional, national or international) and the relationship between the heritage resource, its setting and its associations.

### Nature of the impact

This is an assessment of the nature of the impact of the activity on a heritage resource, with some indication of its positive and/or negative effect/s. It is strongly informed by the statement of resource significance. In other words, the nature of the impact may be historical, aesthetic, social, scientific, linguistic or architectural, intrinsic, associational or contextual (visual or non-visual). In many cases, the nature of the impact will include more than one value.

### Extent

Here it should be indicated whether the impact will be experienced:

- On a site scale, i.e. extend only as far as the activity;
- Within the immediate context of a heritage resource;
- On a local scale, e.g. town or suburb
- On a metropolitan or regional scale; or
- On a national/international scale.

### Duration

Here it should be indicated whether the lifespan of the impact will be:

- Short term, (needs to be defined in context)
- Medium term, (needs to be defined in context)
- Long term where the impact will persist indefinitely, possibly beyond the operational life of the activity, either because of natural processes or by human intervention; or
- Permanent where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.

Of relevance to the duration of an impact are the following considerations:

- Reversibility of the impact; and
- Renewability of the heritage resource.

### Intensity

Here it should be established whether the impact should be indicated as:

- Low, where the impact affects the resource in such a way that its heritage value is not affected;
- Medium, where the affected resource is altered but its heritage value continues to exist albeit in a modified way; and
- High, where heritage value is altered to the extent that it will temporarily or permanently be damaged or destroyed.

### Probability

This should describe the likelihood of the impact actually occurring indicated as:

- Improbable, where the possibility of the impact to materialize is very low either because of design or historic experience;
- Probable, where there is a distinct possibility that the impact will occur;
- Highly probable, where it is most likely that the impact will occur; or
- Definite, where the impact will definitely occur regardless of any mitigation measures

### Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.
- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

**Impact Significance**

The significance of impacts can be determined through a synthesis of the aspects produced in terms of the nature and degree of heritage significance and the nature, duration, intensity, extent, probability and confidence of impacts and can be described as:

- Low; where it would have a negligible effect on heritage and on the decision
- Medium, where it would have a moderate effect on heritage and should influence the decision.
- High, where it would have, or there would be a high risk of, a big effect on heritage. Impacts of high significance should have a major influence on the decision;
- Very high, where it would have, or there would be high risk of, an irreversible and possibly irreplaceable negative impact on heritage. Impacts of very high significance should be a central factor in decision-making.

**11.3 Direct Impact Assessment Criteria**

The following table provides an outline of the relationship between the significance of a heritage context, the intensity of development and the significance of heritage impacts to be expected

HERITAGE CONTEXT	TYPE OF DEVELOPMENT			
	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D
<b>CONTEXT 1</b> High heritage Value	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected	Very high heritage impact expected
<b>CONTEXT 2</b> Medium to high heritage value	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected	Very high heritage impact expected
<b>CONTEXT 3</b> Medium to low heritage value	Little or no heritage impact expected	Minimal heritage impact expected	Moderate heritage impact expected	High heritage impact expected
<b>CONTEXT 4</b> Low to no heritage value	Little or no heritage impact expected	Little or no heritage impact expected	Minimal heritage value expected	Moderate heritage impact expected
<b>NOTE: A DEFAULT "LITTLE OR NO HERITAGE IMPACT EXPECTED" VALUE APPLIES WHERE A HERITAGE RESOURCE OCCURS OUTSIDE THE IMPACT ZONE OF THE DEVELOPMENT.</b>				
HERITAGE CONTEXTS	CATEGORIES OF DEVELOPMENT			
<p><b>Context 1:</b> Of high intrinsic, associational and contextual heritage value within a national, provincial and local context, i.e. formally declared or potential Grade 1, 2 or 3A heritage resources</p> <p><b>Context 2:</b> Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources.</p> <p><b>Context 3:</b></p>	<p><b>Category A: Minimal intensity development</b></p> <ul style="list-style-type: none"> <li>- No rezoning involved; within existing use rights.</li> <li>- No subdivision involved.</li> <li>- Upgrading of existing infrastructure within existing envelopes</li> <li>- Minor internal changes to existing structures</li> <li>- New building footprints limited to less than 1000m2.</li> </ul> <p><b>Category B: Low-key intensity development</b></p> <ul style="list-style-type: none"> <li>- Spot rezoning with no change to overall zoning of a site.</li> <li>- Linear development less than 100m</li> </ul>			

<p>Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources</p> <p><b>Context 4:</b> Of little or no intrinsic, associational or contextual heritage value due to disturbed, degraded conditions or extent of irreversible damage.</p>	<ul style="list-style-type: none"> <li>- Building footprints between 1000m<sup>2</sup>-2000m<sup>2</sup></li> <li>- Minor changes to external envelop of existing structures (less than 25%)</li> <li>- Minor changes in relation to bulk and height of immediately adjacent structures (less than 25%).</li> </ul> <p><b>Category C: Moderate intensity development</b></p> <ul style="list-style-type: none"> <li>- Rezoning of a site between 5000m<sup>2</sup>-10 000m<sup>2</sup>.</li> <li>- Linear development between 100m and 300m.</li> <li>- Building footprints between 2000m<sup>2</sup> and 5000m<sup>2</sup></li> <li>- Substantial changes to external envelop of existing structures (more than 50%)</li> <li>- Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 50%)</li> </ul> <p><b>Category D: High intensity development</b></p> <ul style="list-style-type: none"> <li>- Rezoning of a site in excess of 10 000m<sup>2</sup></li> <li>- Linear development in excess of 300m.</li> <li>- Any development changing the character of a site exceeding 5000m<sup>2</sup> or involving the subdivision of a site into three or more erven.</li> <li>- Substantial increase in bulk and height in relation to immediately adjacent buildings (more than 100%)</li> </ul>
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#### 11.4 Management and Mitigation Actions

The following table provides a guideline of relevant heritage resources management actions is vital to the conservation of heritage resources.

<p><b>No further action / Monitoring</b></p> <p>Where no heritage resources have been documented, heritage resources occur well outside the impact zone of any development or the primary context of the surroundings at a development footprint has been largely destroyed or altered, no further immediate action is required. Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage\ remains are destroyed.</p> <p><b>Avoidance</b></p> <p>This is appropriate where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. Mitigation is not acceptable or not possible. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources.</p> <p><b>Mitigation</b></p> <p>This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated to a degree of medium to low significance, e.g. the high to medium impact of a development on an archaeological site could be mitigated through sampling/excavation of the remains. Not all negative impacts can be mitigated.</p> <p><b>Compensation</b></p> <p>Compensation is generally not an appropriate heritage management action. The main function of management actions should be to conserve the resource for the benefit of future generations. Once lost it cannot be renewed. The circumstances around the potential public or heritage benefits would need to be exceptional to warrant this type of action, especially in the case of where the impact was high.</p> <p><b>Rehabilitation</b></p> <p>Rehabilitation is considered in heritage management terms as a intervention typically involving the adding of a new heritage layer to enable a new sustainable use. It is not appropriate when the process necessitates the removal of previous historical layers, i.e. restoration of a building or place to the previous state/period. It is an appropriate heritage management action in the following cases:</p> <ul style="list-style-type: none"> <li>- The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.</li> <li>- Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.</li> <li>- Where the rehabilitation process will not result in a negative impact on the intrinsic value of the resource.</li> </ul>
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