



**GOLDI (A DIVISION OF ASTRAL OPERATIONS LIMITED):  
PROPOSED GOLDI CHICKEN WATER SUPPLY PIPELINE  
PROJECT, STANDERTON, LEKWA LOCAL MUNICIPALITY,  
MPUMALANGA PROVINCE**

**Archaeological Impact Assessment**



Prepared for: **Goldi (A Division of Astral Operations Limited)**  
Prepared by: **Exigo Sustainability**



## ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) ON STANDERTON TOWNLANDS FOR THE PROPOSED GOLDI CHICKEN WATER SUPPLY PIPELINE PROJECT, LEKWA LOCAL MUNICIPALITY, MPUMALANGA PROVINCE

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**Conducted for:**

Goldi (A Division of Astral Operations Limited)

**Compiled by:**

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**EXECUTIVE SUMMARY**

This report details the results of an Archaeological Impact Assessment (AIA) study subject to an Environmental Basic Assessment (BA) process for the proposed Goldi Chicken Water Supply Pipeline Project on Standerton Townlands in the Lekwa Local Municipality of the Mpumalanga Province. The proposed project entails the proposed construction of a water supply pipeline from the Vaal River abstraction point to the Goldi Chicken Factory in Standerton over **5km**. 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>	Goldi Chicken Water Supply Pipeline Project
<b>Project Location</b>	S26.924943° E29.244407°
<b>1:50 000 Map Sheet</b>	2629CC & 2629CD
<b>Farm Portion / Parcel</b>	Standerton Townlands
<b>Magisterial District / Municipal Area</b>	Lekwa Local Municipality
<b>Province</b>	Mpumalanga Province

The cultural landscape of the Mpumalanga encompasses a period of time that spans millions of years, covering human cultural development from the Stone Ages up to recent times. It depicts the interaction between the first humans and their adaptation and utilization to the environment, the migration of people, technological advances, warfare and contact and conflict. Contained in its archaeology are traces of conquests by Bantu-speakers, Europeans and British imperialism encompassing the struggle for land, resources and political power.

The town of Standerton was founded in 1878 on a farm called Grootverlangen and the town has seen substantial development over the past decades. An analysis of historical aerial imagery and archive maps indicate that much of the project area occurs along portions of the town which were established in the past 30 years and it might be inferred that these areas have been altered and transformed extensively. This inference was confirmed during an archaeological site assessment whereby **no sites or heritage features were observed**.

The following recommendations are made based on general observations in the project area:

- According to the South African Heritage Resources Agency Information System (SAHRIS) Palaeo Map, portions of the project area fall within a sensitive fossiliferous zone and a Palaeontological Assessment has been commissioned for the project. Should fossil remains such as fossil fish, reptiles or petrified wood be exposed during construction, these objects should carefully safeguarded and the relevant heritage resources authority (SAHRA) should be notified immediately so that the appropriate action can be taken by a professional palaeontologist.
- 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 is essential that cognisance be taken of the larger archaeological landscape of the area in order to avoid the destruction of previously undetected heritage sites. 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.

***Cognisant of known site distribution patterns in this section of the Mpumalanga Province, and based on general on-site observations and off-site assessments and, notably the fact that the project site and its immediate surrounds have previously been transformed by urbanization and human settlement, the author of this report is of the opinion that the construction of the Goldi Chicken Water Supply Pipeline Project, will have no impact on archaeological artefacts, features or structures surviving in primary context, subject to the fact that no previously undetected heritage remains (for example, those in sub-surface deposits) are exposed at any stage 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).

## NOTATIONS AND TERMS/TERMINOLOGY

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**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)

**TABLE OF CONTENTS**

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<b>EXECUTIVE SUMMARY .....</b>	<b>5</b>
<b>1 BACKGROUND.....</b>	<b>11</b>
1.1 SCOPE AND MOTIVATION .....	11
1.2 PROJECT DIRECTION .....	11
1.3 PROJECT BRIEF .....	11
1.4 TERMS OF REFERENCE .....	13
1.5 CRM: LEGISLATION, CONSERVATION AND HERITAGE MANAGEMENT.....	13
1.5.1 <i>Legislation regarding archaeology and heritage sites</i> .....	13
1.5.2 <i>Background to HIA and AIA Studies</i> .....	15
<b>2 REGIONAL CONTEXT.....</b>	<b>16</b>
2.1 AREA LOCATION .....	16
2.2 AREA DESCRIPTION: RECEIVING ENVIRONMENT .....	16
2.3 SITE DESCRIPTION .....	16
<b>3 METHOD OF ENQUIRY.....</b>	<b>19</b>
3.1 SOURCES OF INFORMATION .....	19
3.1.1 <i>Desktop Study</i> .....	19
3.1.2 <i>Aerial Survey</i> .....	19
3.1.3 <i>Mapping of sites</i> .....	19
3.1.4 <i>Field Survey</i> .....	19
3.2 LIMITATIONS.....	20
3.2.1 <i>Access</i> .....	20
3.2.2 <i>Visibility</i> .....	20
3.2.3 <i>Summary: Limitations and Constraints</i> .....	23
3.3 IMPACT ASSESSMENT .....	24
<b>4 ARCHAEO-HISTORICAL CONTEXT.....</b>	<b>24</b>
4.1 THE ARCHAEOLOGY OF SOUTHERN AFRICA.....	24
4.2 DISCUSSION: THE PROJECT HERITAGE LANDSCAPE: SPECIFIC THEMES .....	25
4.2.1 <i>Early History and the Stone Ages</i> .....	25
4.2.2 <i>Iron Age / Farmer Period</i> .....	26
4.2.3 <i>Later History: Colonial Period and the Anglo Boer War</i> .....	27
<b>5 RESULTS: ARCHAEOLOGICAL SURVEY .....</b>	<b>28</b>
5.1 THE OFF-SITE DESKTOP SURVEY .....	28
5.2 THE ARCHAEOLOGICAL SITE SURVEY .....	32
<b>6 RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING .....</b>	<b>32</b>
6.1 POTENTIAL IMPACTS AND SIGNIFICANCE RATINGS .....	32
6.1.1 <i>General assessment of impacts on resources</i> .....	32
6.1.2 <i>Direct impact rating</i> .....	32
6.2 EVALUATION IMPACTS .....	33
6.2.1 <i>Archaeology</i> .....	33
6.2.2 <i>Built Environment</i> .....	33
6.2.3 <i>Cultural Landscape</i> .....	33
6.2.4 <i>Graves / Human Burials Sites</i> .....	33
6.3 MANAGEMENT ACTIONS .....	34

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<b>7</b>	<b>RECOMMENDATIONS.....</b>	<b>34</b>
<b>8</b>	<b>GENERAL COMMENTS AND CONDITIONS.....</b>	<b>35</b>
<b>9</b>	<b>BIBLIOGRAPHY.....</b>	<b>36</b>
<b>10</b>	<b>ADDENDUM 1: HERITAGE LEGISLATION BACKGROUND.....</b>	<b>39</b>
10.1	CRM: LEGISLATION, CONSERVATION AND HERITAGE MANAGEMENT.....	39
10.1.1	Legislation regarding archaeology and heritage sites.....	39
10.1.2	Background to HIA and AIA Studies.....	40
10.2	ASSESSING THE SIGNIFICANCE OF HERITAGE RESOURCES.....	42
	- CATEGORIES OF SIGNIFICANCE.....	42
<b>11</b>	<b>ADDENDUM 2: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF HERITAGE.....</b>	<b>44</b>
11.1	SITE SIGNIFICANCE MATRIX.....	44
11.2	IMPACT ASSESSMENT CRITERIA.....	45
11.3	DIRECT IMPACT ASSESSMENT CRITERIA.....	46
11.4	MANAGEMENT AND MITIGATION ACTIONS.....	47

**LIST OF FIGURES**

Figure 1-1:	Aerial map indicating the proposed Goldi Chicken Water Supply Pipeline Project infrastructure alternatives.....	12
Figure 2-1:	1:50 00 Map representation of the location of the proposed Goldi Chicken Water Supply Pipeline Project (sheet 2629CC & 2629CD).....	17
Figure 2-2:	Aerial map providing a regional context for the proposed Goldi Chicken Water Supply Pipeline Project area.....	18
Figure 3-1:	View of the location of the proposed abstraction point in the Vaal River.....	20
Figure 3-2:	View of the Standerton WWTW along the proposed alignment for the preferred pipeline route.....	20
Figure 3-3:	View of open fields along the proposed alignment for the preferred pipeline route.....	21
Figure 3-4:	View of vegetation along the proposed alignment for the preferred pipeline route.....	21
Figure 3-5:	View of the proposed alignment for the preferred pipeline route along the R39 road.....	21
Figure 3-6:	View of a small wetland along the alternative 1 alignment for the pipeline route.....	22
Figure 3-7:	View of a drainage line along the alternative 1 alignment for the pipeline route.....	22
Figure 3-8:	View of a small wetland along the alternative 2 alignment for the pipeline route.....	22
Figure 3-9:	View of the proposed alignment for the preferred pipeline route along the R39 road in Standerton.....	23
Figure 3-10:	View of the Goldi facility at the offset of the proposed pipeline.....	23
Figure 4-1:	Typical ESA handaxe (left) and cleaver (center). To the right is a MSA scraper (right, top), point (right, middle) and blade (right, bottom).....	26
Figure 4-2:	View of "Burgher Street and Post Office Standerton Transvaal" at the beginning of the 20 <sup>th</sup> century.....	28
Figure 5-1:	Historical aerial photo of the project alignments (yellow lines) dating to 1953 indicating the landscape during the mid-20 <sup>th</sup> century. Much of the project area was agricultural fields at this time.....	29
Figure 5-2:	Historical topographic maps of Standerton indicating the project alignments (yellow lines) during the mid to later 20 <sup>th</sup> century. Note that the project area occurs along portions of the town which were established in the past 30 years.....	30
Figure 5-3:	"South African War Maps, Vrede Region" dating to 1899.....	31

## **1 BACKGROUND**

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### **1.1 Scope and Motivation**

Exigo Sustainability (Pty) Ltd (Exigo) was commissioned by Goldi (A Division of Astral Operations Limited) to conduct an Archaeological Impact Assessment (AIA) study in support of to an Environmental Basic Assessment (BA) process for the proposed Goldi Chicken Water Supply Pipeline Project in the Mpumalanga 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**

Exigo Sustainability (Pty) Ltd (Exigo) was appointed by Goldi - A Division of Astral Operations Limited to conduct a BA for the proposed water supply pipeline from the Vaal River abstraction point to the Goldi Chicken Factory in Standerton, Mpumalanga Province. Three different pipeline routes as well as the abstraction point from the Vaal River are proposed. The proposed pipeline development will roughly span over 5km. Upon finalisation of the proposed pipeline development, the water supply pipeline will ensure a more efficient supply of water to the Goldi Chicken Factory. The proposed water supply pipeline would stretch from the Vaal River abstraction point (at the Standerton Water Treatment Works) to the Goldi Chicken Factory located to the south of the R50 in Standerton, Mpumalanga Province. The proposed project is to pump 7ML of water per day using a 450mm pipeline. There will be a pump station at the river as well as a 1ML reservoir.

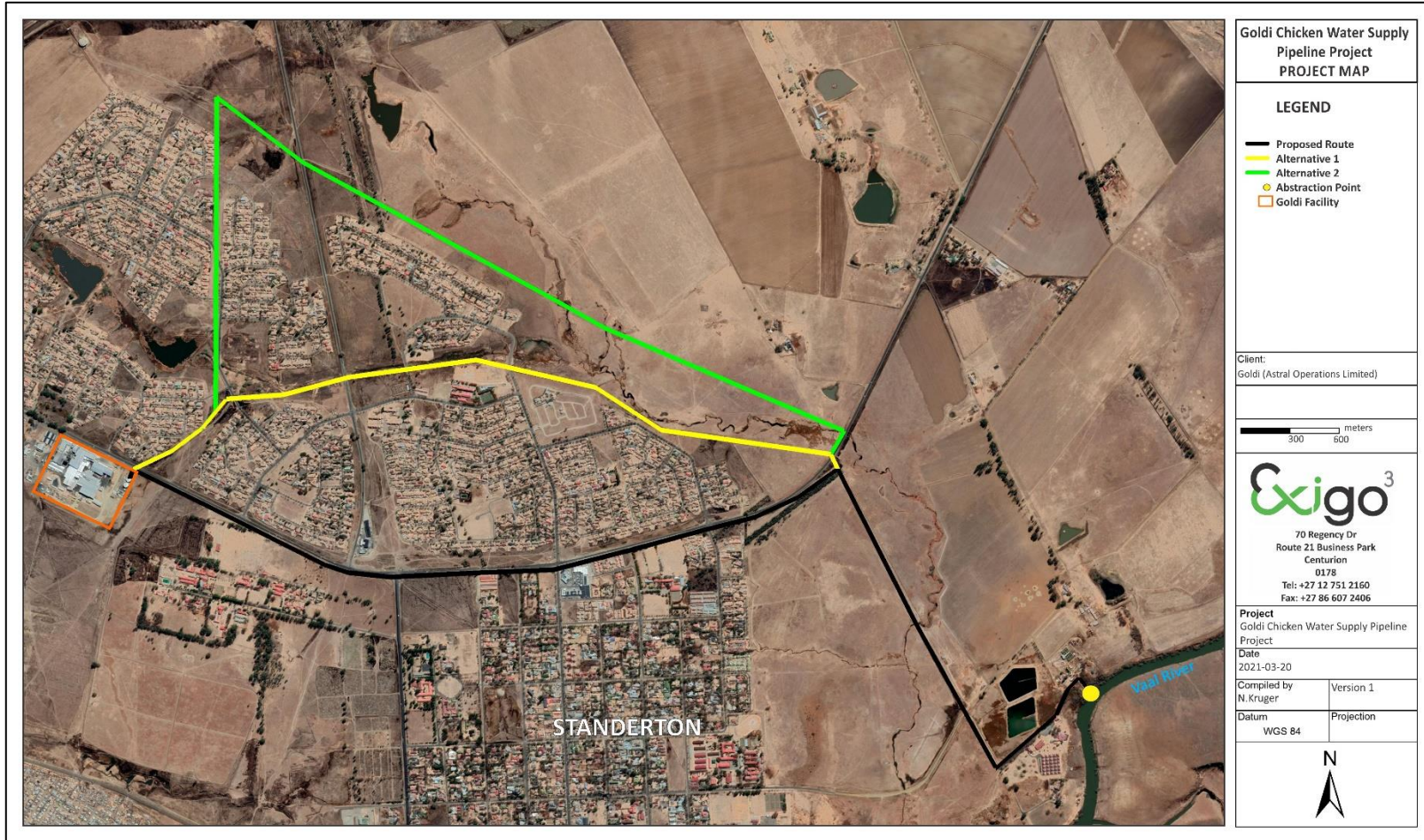


Figure 1-1: Aerial map indicating the proposed Goldi Chicken Water Supply Pipeline Project infrastructure alternatives.

## 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 Goldi Chicken Water Supply Pipeline Project occurs within and around the town of Standerton in the Lekwa Local Municipality of the Mpumalanga Province. The project area follows the R50 and R39 route through the town as well as secondary roads within Standerton and connecting to the Standerton WWTW.

The study areas appear on 1:50000 map sheet 2629CC & 2629CD (see Figure 2-1) and coordinates for the proposed project are as follows:

- S24.908390° E27.639393°

### 2.2 Area Description: Receiving Environment

The project is situated within the Mesic Highveld Grassland of the Grassland Biome, in particular within its Eastern Highveld Grassland vegetation unit. The terrain morphology is gently to moderately undulating plains on the Highveld plateau supporting short to medium high, dense, tufted grassland. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. Both vegetation types have been degraded to a large extent through extensive agricultural activities, mining and livestock farming. This vegetation type occurs on moderately undulating plains with short open tree layer with a well-developed grass layer to grass plains with occasional trees at higher altitudes. The gently undulating highland topography is characterised by gentle rolling grass covered hills. The main drainage line in the area, the Vaal River traverse the landscape from south to north to drain into the Grootdraai Dam to the east of the project area.

### 2.3 Site Description

The study area is situated in a landscape that has been altered in the past through agricultural activities, urban residential developments, human settlement and roads. As such, the area varies between urban townscapes, agricultural fields and areas utilized for grazing, farmland and undisturbed grassland. Pockets of level or undulating and undisturbed grassland remain in places. Original vegetation remains intact in pockets along water courses and pioneer plant species are prevalent in transformed zones. A number of perennial and non-perennial streams and drainage lines originating in the surrounding hills, bisect the region and drain into the Vaal River.

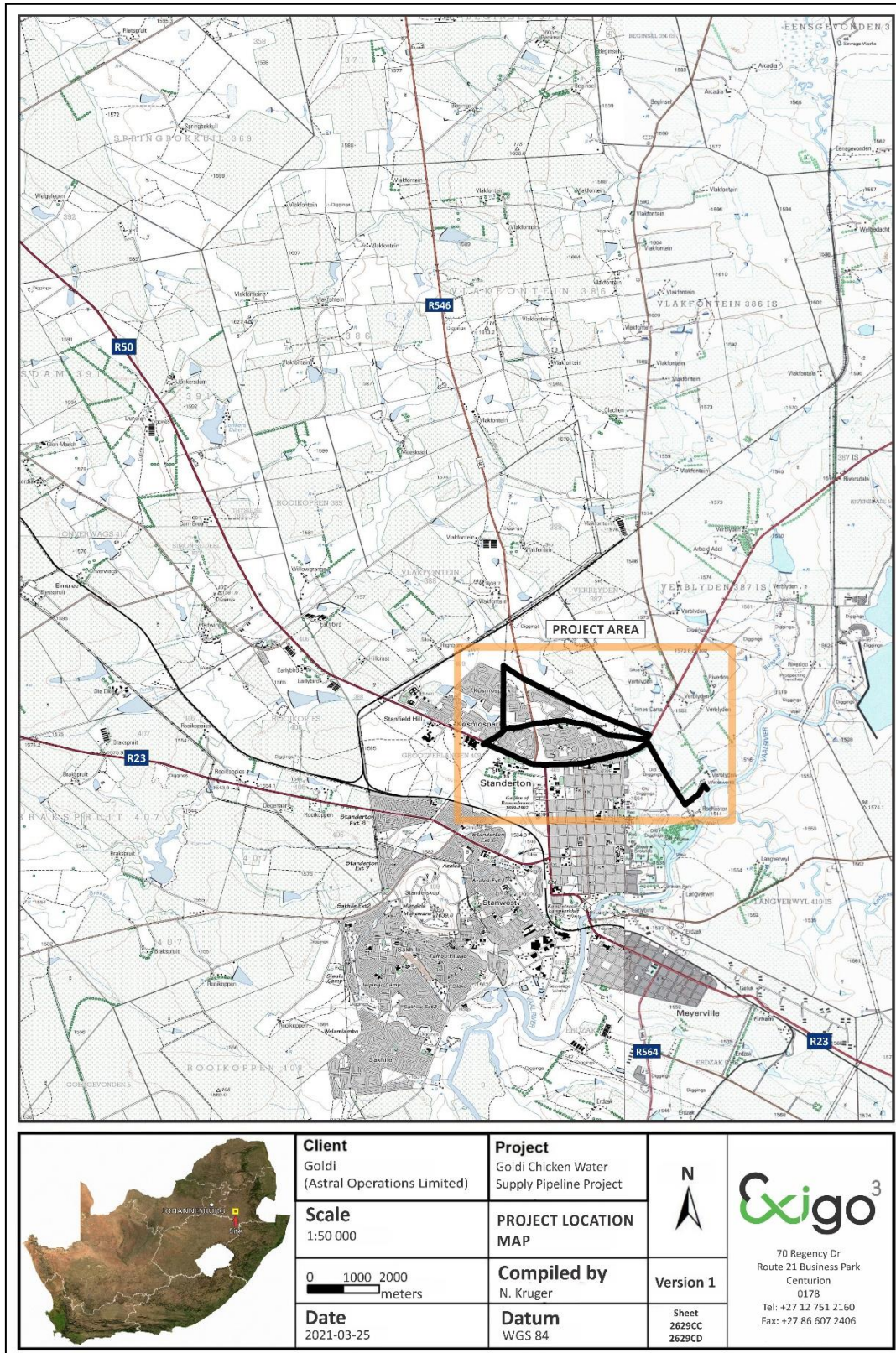


Figure 2-1: 1:50 00 Map representation of the location of the proposed Goldi Chicken Water Supply Pipeline Project (sheet 2629CC & 2629CD).



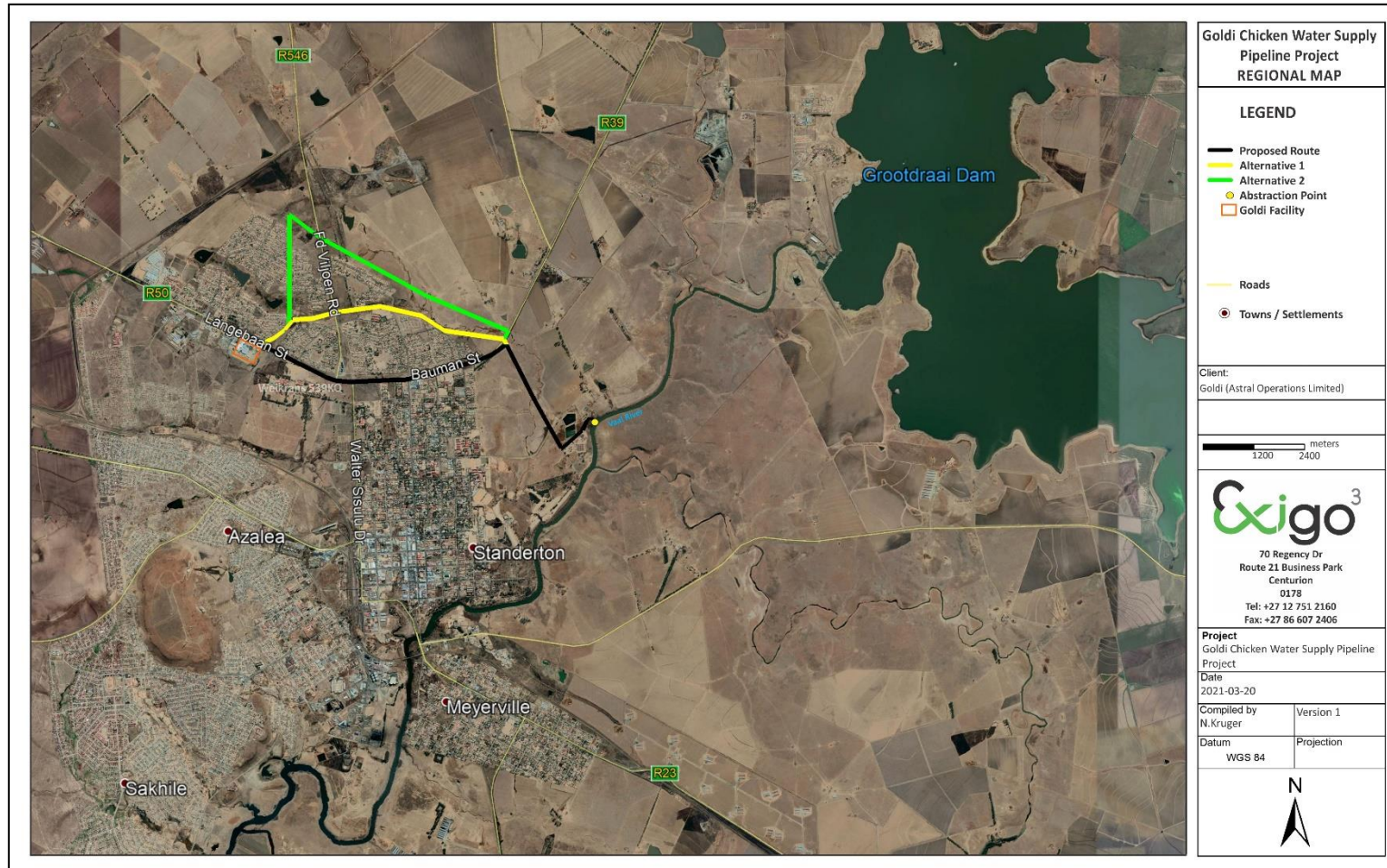


Figure 2-2: Aerial map providing a regional context for the proposed Goldi Chicken Water Supply Pipeline Project area.

### 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 of Standerton has been 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. Numerous academic papers and research articles supplied a historical context for the proposed project and archival sources, aerial photographs, historical maps and local histories were used to create a baseline of the landscape's heritage. In addition, the study drew on available unpublished Heritage Assessment reports to give a comprehensive representation of known sites in the study area.

##### 3.1.2 Aerial Survey

Aerial photography is often employed to locate and study archaeological sites, particularly where larger scale area surveys are performed. This method was applied to assist the foot and automotive site surveys where depressions, variation in vegetation, soil marks and landmarks were examined. 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

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 Standerton 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 Goldi Chicken Water Supply Pipeline Project area was conducted in March 2021. The process encompassed a systematic field survey in accordance with standard archaeological practice by which heritage resources are observed and documented. In order to sample surface areas systematically and to ensure a high probability of site recording, the proposed **project pipeline alignments** were investigated (see Figure 1-1). GPS reference points identified during the aerial survey were also visited and random spot checks were made (see detail in previous section). 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 directly via the R50 and R39 roads. Access control is not applied to the project areas and no access restrictions were encountered during the site.

#### 3.2.2 Visibility

The surrounding vegetation in the study area is mostly comprised out of mixed grasslands and scattered trees. Generally, the landscape is densely vegetated with grasses and trees in the more intact pristine sections and visibility proved to be a constraint in these areas at the time of the AIA survey (March 2021) (see Figures 3-1 to 3-10). In single cases during the survey sub-surface inspection was possible. Where applied, this revealed no archaeological deposits.



Figure 3-1: View of the location of the proposed abstraction point in the Vaal River.



Figure 3-2: View of the Standerton WWTW along the proposed alignment for the preferred pipeline route.



Figure 3-3: View of open fields along the proposed alignment for the preferred pipeline route.



Figure 3-4: View of vegetation along the proposed alignment for the preferred pipeline route.



Figure 3-5: View of the proposed alignment for the preferred pipeline route along the R39 road.



Figure 3-6: View of a small wetland along the alternative 1 alignment for the pipeline route.



Figure 3-7: View of a drainage line along the alternative 1 alignment for the pipeline route.



Figure 3-8: View of a small wetland along the alternative 2 alignment for the pipeline route.



Figure 3-9: View of the proposed alignment for the preferred pipeline route along the R39 road in Standerton.



Figure 3-10: View of the Goldi facility at the offset of the proposed pipeline.

### 3.2.3 Summary: Limitations and Constraints

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

- The surrounding vegetation in the Standerton area is mostly comprised out of mixed grasslands and scattered trees. The general visibility at the time of the site inspection was moderate to low and visibility constrained site identification in the project area.

It should be noted that, even though it might be assumed that survey findings are representative of the heritage landscape of the project area for the Project, 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 Africa)</b>	Holocene	First Bantu-speaking groups	Typically distinct ceramics, bead ware, iron objects, grinding stones.
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)</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.

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

coastal areas of Southern Africa)			
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 Project Heritage Landscape: Specific Themes**

In Mpumalanga Province the Drakensberg separates the interior plateau also known as the Highveld from the low-lying subtropical Lowveld which stretches to the Indian Ocean. This fertile landscape has provided resources for humans and their predecessors for more than 1,7million years. As such, the history of Mpumalanga is reflected in a rich archaeological landscape. Sites, documenting Earlier, Middle and Later Stone Age habitation occur across the province, mostly in open air locales or in sediments alongside rivers or pans. In addition, a wealth of Later Stone Age rock art sites, most of which are in the form of rock engravings are to be found in the larger landscape. These sites occur on hilltops, slopes, rock outcrops and occasionally in river beds. Later, Bantu-speaking tribes moved into this area from the northern parts of Southern Africa and settled here. These were presumably Sotho-Tswana herder groups. Various historians and ethnographers describe that the Lowveld was frequented by Swazi and Sotho-Tswana groups during historic times i.e. Late Iron Age times during the period AD 1500-1800. Historical trade routes were well established before the period of Colonial expansion and these routes mainly existed as a direct consequence of metallurgy and mining for iron, tin, copper and some gold to make weapons, agricultural equipment and ornaments. During the nineteenth century the Lowveld area of Mpumalanga was extensively settled by both Bantu and European groups that migrated into this area.

**4.2.1 Early History and the Stone Ages**

In South Africa the Earlier Stone Age (ESA) dates from about 2 million to 250000 thousand years ago from the early to middle Pleistocene. An example in Mpumalanga is Maleoskop on the farm Rietkloof where ESA tools have been found. This is one of only a handful of known ESA sites in the Province. The Middle Stone Age (MSA) has not been extensively studied in Mpumalanga but evidence of this period has been excavated at Bushman Rock Shelter on the farm Klipfonteinhoek in the Ohrigstad district. No Earlier or Middle Stone Age sites are known to occur in the area of development (Bergh 1999).

The Later Stone Age (LSA) is of importance in geological terms as it marks the transition from the Pleistocene to the Holocene which was accompanied by a gradual shift from cooler to warmer temperatures. This change had its greatest influence on the higher lying areas of South Africa. Later Stone Age (LSA) sites occur both at the coast and inland as caves deposits, rock shelters, open sites and shell deposits. It appears that there is a gap of approximately 4000 years in the Mpumalanga LSA record between 9000 BP and 5000 BP. This may be a result of generally little Stone Age research being conducted in the province. It is, however, also a period known for rapid warming and major climate fluctuation which may have led people to seek out protected environments in this area. The Mpumalanga Stone Age sequence is visible again during the mid-Holocene at the farm Honingklip near Badplaas in the Carolina district (Esterhuizen & Smith in Delius, 2007; Bergh, 1999). These two sites are located on the foothills of the Drakensberg where the climate is warmer than the Highveld but also cooler than the Lowveld (Bergh, 1998). Nearby the sites, dated to between 4870 BP and 200 BP are four panels which contain rock art. Colouring material is present in all the excavated layers of the site which makes it difficult to determine whether the rock art was painted during the mid-or later Holocene. Stone walls at both sites date from the last 250 years of hunter gatherer occupation and they may have served as protection from predators and intruders (Esterhuizen & Smith in Delius, 2007; Bergh, 1998).



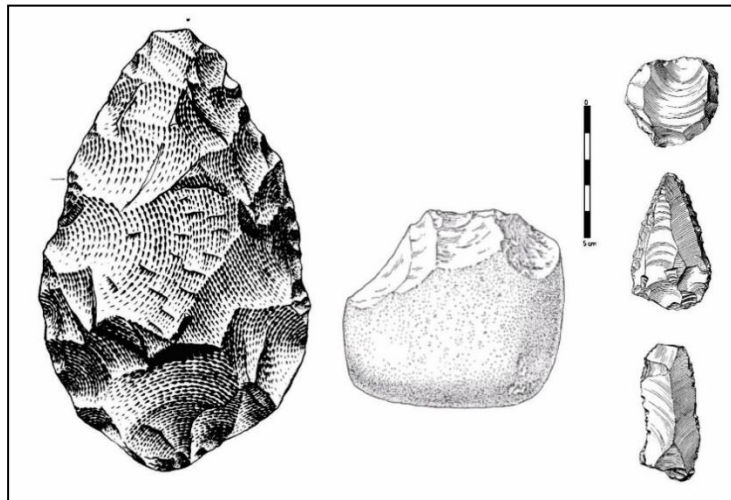


Figure 4-1: Typical ESA handaxe (left) and cleaver (center). To the right is a MSA scraper (right, top), point (right, middle) and blade (right, bottom).

#### 4.2.2 Iron Age / Farmer Period

Iron Age people moved into southern Africa by c. AD 200, entering the area either by moving down the coastal plains, or by using a more central route. In Mpumalanga, the last period of pre-colonial occupation consisted of Pedi-, Swazi- and Ndebele-speaking people that settled on terraced sites at the foot on the mountains. A single decorated potsherd from Site IA5 displays motives similar to that of the Maloko ceramic tradition, which can be broadly associated with some of these groups. The last 500 years in the area were characterised by population movements, conflict, contact and change which largely resulted in the current population and demographic distribution in the area today. The resonance of these sites in contemporary history generally deems them of medium significance. 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. The period referred to as the Early Iron Age (AD 200-1500 approx.) was initiated with the arrival of presumably Karanga (north-east African) herder groups, who may have been the makers of the famous Lydenburg Heads. These artefacts from the Lydenburg area date to approximately 600AD. These people were Bantu herders and agriculturists and probably populated Southern Africa from areas north-east of the Limpopo River. Some archaeological research was done during the 1970's at sites belonging to the EIA (Early Iron Age), location Plaston, a settlement close to White River (Evers, 1977). Early Iron Age pottery was also excavated by Huffman during 1997 on location where the Riverside Government complex is currently situated (Huffman 1998). This site known as the Riverside site is situated a few kilometres north of Nelspruit next to the confluence of the Nelspruit and Crocodile River. During the early 1970's Evers conducted fieldwork and excavations in the Eastern Transvaal. Two areas were studied, the Letaba area south of the Groot Letaba River, west of the Lebombo Mountains, east of the great escarpment and north of the Olifants River. The second area was the Eastern Transvaal escarpment area between Lydenburg and Machadodorp. The later phases of the Iron Age (AD 1600-1800's) is represented by various tribes including Ndebele, Swazi, BaKoni and Pedi which is characterized by extensive stonewalled settlements found throughout the escarpment and particularly around Lydenburg, Badfontein, Sekhukuneland, Roosenekal and Steelpoort. The Swazi was particularly active in the Lowveld during the difaqane period (1820's) and it is well-known that they frequently attacked and ousted smaller herder groups like the Pai and Pulana, especially in the area today known as Low's Creek. They were however prevented from settling in the low-lying areas due to the presence of the tsetse fly and malaria. Small,

isolated dry-packed stone-walled enclosures found near Nelspruit and surrounding areas may be attributed to these smaller groups who hid away from the Swazi onslaught. The sites were probably not used for extended periods as they were frequently on the move as a result of the onslaught and therefore small, indistinct and with little associated cultural material. No significant Iron Age sites are known to occur directly around Hendrina (Bergh 1999). However, it is possible that sites dating to the Mzonjani facies of the Urewe Tradition (AD450-750), and the Maguga facies of the Kalundu Tradition (AD1200-1450) could be found in the area (Huffman 2007). During the nineteenth century the Lowveld area of Mpumalanga was extensively settled by both Bantu and European groups that migrated into this area. Bantu migration was mainly as a result of political upheaval during the mfecane (“the crushing” in Nguni). This was a period of bloody tribal and faction struggles in present - day KwaZulu Natal and on the Highveld area, which occurred around the early 1820’s until the late 1830’s (Bergh, 1998). It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka’s Zulus to attack other tribes. During this period, a movement of Swazi people took place to the areas north and northwest of Swaziland. As a result reports indicate that the Swazi were living in the Lowveld area by the 1840’s (Bergh, 1998). The conflict during the mfecane, when the Swazi under Mswati II raided these smaller groups, resulted in scattered settlement of those who managed to escape the Swazi onslaught. Evidence of these scattered settlements are sometimes found in the form of small stone walled enclosures in and around Barberton, Nelspruit and onwards to the Schoemanskloof).

#### **4.2.3 Later History: Colonial Period and the Anglo Boer War**

The Historical period in Southern Africa encompass the course of Europe's discovery of South Africa and the spreading of European settlements along the East Coast and subsequently into the interior. In addition, the formation stages of this period are marked by the large-scale movements of various Bantu-speaking groups in the interior of South Africa, which profoundly influenced the course of European settlement. Finally, the final retreat of the San and Khoekhoen groups into their present-day living areas also occurred in the Historical period in Southern Africa).

The first early traveler who visited this area was Robert Scoon who passed through during 1836 (Bergh 1999:13). The second part of the 19th century saw the early establishment of farms by white farmers in the general vicinity of the study area. This said, the archival study has shown that all the farms within the study area were formally inspected by the government of the Zuid-Afrikaansche Republiek during February 1868. Of course, this does not necessarily mean that before this date no farms had already been settled and farmed on, simply that during February 1868 the farms were officially proclaimed and registered with government. The permanent settlement of white farmers in the general vicinity of the study area would have resulted in the proclamation of individual farms and the establishment of permanent farmsteads. Features that can typically be associated with early farming history of the area include farm dwellings, sheds, rectangular stone kraals, canals, farm labourer accommodation and cemeteries. The town of Standerton was founded in 1878 on a farm called Grootverlangen and named after its owner Commandant Adriaan Henrik Stander. The South African Republic's Volksraad approved the formation of a town at the drift in 1876 and proclaimed two years later. It was granted municipal status in 1903. The crossing over the Vaal River, now bridged, was known as Stander's Drift and a hill close to the town was called Standerskop were also named after Stander. During the First Boer War (1880–81), a British unit was besieged by the Boer forces who shelled them from the nearby hill, the former holding out until the end of the war in February 1881.

The Highveld area saw major military activity during the latter part of the South African War which lasted from 1899 to 1901. The occupation of Pretoria on 5 June 1900, saw the retreat of Boer forces towards the eastern Transvaal (Mpumalanga) and the intensification of the guerrilla warfare activities. Seeking to bring an end to the conflict the British started an advance of the Boer

forces from the west (Pretoria) and the south (Ermelo). In April 1901 one of the British Columns under Major-General F.W. Kitchener started with a push from Lydenburg towards the south over the Delagoa-Pretoria rail line in an attempt to capture the Boer forces under the command of General Ben Viljoen. Between April and August of 1900 numerous skirmishes and engagements took place between British forces and retreating Boer commandos. Although no battles or skirmishes are known from within the study area, a number of these are known from the wider vicinity. The two closest known battle sites to the present study area are the Battle of Bakenlaagte which took place on 30 October 1901 and the Battle of Wilmansrust which took place on 12 June 1901. Of interest during this time as the Standerton Concertation Camp, established at around December 1900. Before it was handed over to the civilian administration in February 1901, the local district commissioner had put Mr van Musschenbroek in charge but the camp was left '(more or less) to run itself'. There were no records of arrivals or departures as families poured in, while some were deported to Natal or transferred to other camps. A small camp which had been started at Platrand was also amalgamated with Standerton, although a black camp remained there. A black camp existed alongside the white. There is little information about it but it was there by the end of March 1901 and it lasted until September 1902, reaching about 2,000 inmates. Even after it was formally closed, some inmates remained for there are references to their existence in later white camp reports.



Figure 4-2: View of "Burgher Street and Post Office Standerton Transvaal" at the beginning of the 20<sup>th</sup> century.

## 5 RESULTS: ARCHAEOLOGICAL SURVEY

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### 5.1 The Off-Site Desktop Survey

In terms of heritage resources, the general landscape around the project area is primarily well known for its Stone Age, Iron Age and Historical Period occurrences. However, no particular reference to archaeological sites or features of heritage potential were recorded during an examination of literature thematically or geographically related to the project area at Weikrans.

The town of Standerton was founded in 1878 on a farm called Grootverlangen and the town has seen substantial development over the past decades. An analysis of historical aerial imagery and archive maps indicate that much of the project area occurs along portions of the town which were established in the past 30 years and it might be inferred that these areas have been altered and transformed extensively.



Figure 5-1: Historical aerial photo of the project alignments (yellow lines) dating to 1953 indicating the landscape during the mid-20<sup>th</sup> century. Much of the project area was agricultural fields at this time.

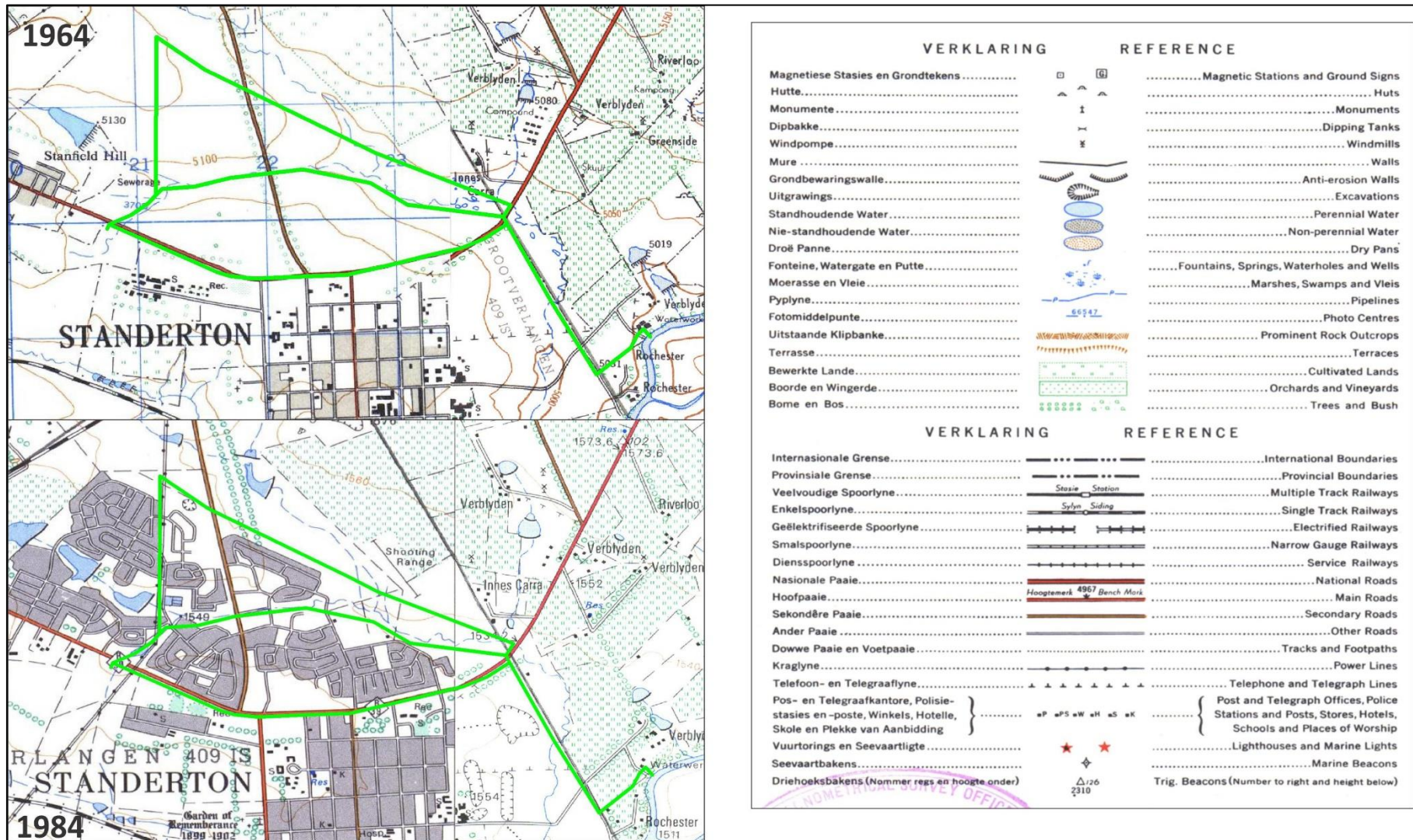


Figure 5-2: Historical topographic maps of Standerton indicating the project alignments (yellow lines) during the mid to later 20<sup>th</sup> century. Note that the project area occurs along portions of the town which were established in the past 30 years.



Figure 5-3: "South African War Maps, Vrede Region" dating to 1899

## 5.2 The Archaeological Site Survey

A careful analysis of historical aerial imagery and archive maps indicate that the larger Weikrans property had been utilized for agriculture during the 19<sup>th</sup> century and much of the project area has been transformed into a rural residential settlement in recent years.

It is evident that the proposed footprint area subject to this assessment have been altered and transformed extensively and this inference was confirmed during an archaeological site assessment during which the following observations were made:

- No heritage sites, features or remains were encountered in the project area.

## 6 RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATING

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### 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).

*No sensitive heritage receptors were found in the project area and no potential impact to heritage resources is foreseen.*

***Cognisant of known site distribution patterns in this section of the Mpumalanga Province, and based on general on-site observations and off-site assessments and, notably the fact that the project site and its immediate***

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

*surrounds have previously been transformed by urbanization and human settlement, the author of this report is of the opinion that the construction of the Goldi Chicken Water Supply Pipeline Project, will have no impact on archaeological artefacts, features or structures surviving in primary context, subject to the fact that no previously undetected heritage remains (for example, those in sub-surface deposits) are exposed at any stage of the development.*

## 6.2 Evaluation Impacts

Previous studies conducted in the larger Standerton landscape suggest a rich and diverse archaeological landscape but the project area have been transformed by farming and rural development. 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.

### 6.2.1 Archaeology

The study did not identify any archaeological receptors which will be directly impacted by the proposed project and no impact on archaeological sites or features is anticipated.

### 6.2.2 Built Environment

The project area is situated within and around Standerton where a number of Historical Period buildings and features, monuments and heritage sites are to be found. However, no Historical structure or buildings occur in the project area and the general landscape has limited significance in terms of the built environment. No impact on the built environment or similar features is anticipated.

### 6.2.3 Cultural Landscape

Even though the larger Highveld comprises a rich cultural horizon, the landscape surrounding the proposed project areas have been transformed by mining, infrastructure development and farming. Further away from the project area, the landscape is typical of the Trans-Vaal Highveld with large areas of flat plains, occasional mountain ranges and undulating hills occurring throughout. This landscape stretches over many kilometres and the proposed project is unlikely to result in a significant impact on the landscape.

### 6.2.4 Graves / Human Burials Sites

No human burials were documented in the project area and no impact on human remains is foreseen.

In the rural areas of the Mpumalanga 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.

*No specific action in terms of mitigation is required for the footprint areas of the Goldi Chicken Water Supply Pipeline Project. However, the following general procedure is required for the site:*

<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>	
<b>Fixed Mitigation Procedure (required)</b>			
<b>Site Monitoring:</b> Regular examination of trenches and excavations.	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**

Previous heritage studies conducted in the Standerton region suggest a rich and diverse archaeological landscape but the surroundings of the proposed Goldi Chicken Water Supply Pipeline Project area have been transformed by urbanization and human settlement, infrastructure development and crop farming. Cognisance should nonetheless be taken of archaeological material that might still be present in surface and sub-surface deposits along more pristine areas. The following recommendations are made based on general observations in the proposed Goldi Chicken Water Supply Pipeline Project area:

- According to the South African Heritage Resources Agency Information System (SAHRIS) Palaeo Map, portions of the project area fall within a sensitive fossiliferous zone and a Palaeontological Assessment has been commissioned for the project. Should fossil remains such as fossil fish, reptiles or petrified wood be exposed during construction, these objects should carefully safeguarded and the relevant heritage resources authority (SAHRA) should be notified immediately so that the appropriate action can be taken by a professional palaeontologist.

- 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 is essential that cognisance be taken of the larger archaeological landscape of the area in order to avoid the destruction of previously undetected heritage sites. 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.

## 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 Goldi Chicken Water Supply Pipeline Project area. The larger heritage horizon encompasses rich and diverse archaeological landscapes and cognisance 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 1000m<sup>2</sup>.</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 1000m2-2000m2</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 5000m2-10 000m2.</li> <li>- Linear development between 100m and 300m.</li> <li>- Building footprints between 2000m2 and 5000m2</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 000m2</li> <li>- Linear development in excess of 300m.</li> <li>- Any development changing the character of a site exceeding 5000m2 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> <p><b>Enhancement</b></p>
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