Heritage Assessment

HERITAGE UNIT

Upgrade and rehabilitation of the Rand Water F5 pipeline, Mogale City, Gauteng

Version 1.0

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EXECUTIVE SUMMARY

Professional Grave Solutions Heritage Unit was appointed by SSI Engineering and Environmental (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the upgrade and rehabilitation of a section of the Rand Water F5 pipeline, Mogale City, Gauteng.

During the survey no sites of heritage significance were identified.

Although the physical pipeline is older than 60 years it has low heritage value and this document will suffice as documentation of the pipeline alignment. Permission of alteration or changes to a structure older than 60 years must be granted by The Provincial Heritage Authority and such an application must be lodged with them under Section 34 of the National Heritage Resources Act (Act 25 of 199) and the Provincial Regulations.

General

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

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1. INTRODUCTION

Professional Grave Solutions Heritage Unit was appointed by SSI Engineering and Environmental (Pty) Ltd to undertake a Heritage Impact Assessment (HIA) that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the upgrade and rehabilitation of a section of the Rand Water F5 pipeline, Mogale City, Gauteng.

The aim of the study is to identify all heritage sites, document, and assess their importance within Local, Provincial and National context. From this we aim to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999) (NHRA).

The report outlines the approach and methodology utilised before and during the survey, which includes in Phase 1: Information collection from various sources and public consultations; Phase 2: Physical surveying of the area on foot and by vehicle; and Phase 3: Reporting the outcome of the study.

General site conditions and features on site were recorded by means of photos, GPS location, and description. Possible impacts were identified and mitigation measures are proposed in the following report.

This report must also be submitted to SAHRA's provincial office for scrutiny.

2. APPROACH AND METHODOLOGY

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

2.1. PROJECT DESCRIPTION

The F5 pipeline starts at Krugersdorp reservoir, cuts across Ontdekkers Road at Factoria and through the Telkom premises and adjacent the industrial area, goes across Main Road and ends in the Randfontein are. The pipeline also crosses railway lines at two points. The history of the pipeline as learnt from Rand Water is that the pipeline was installed in 1934. The total length of the pipe is 15km and it is a 400 mm diameter lead caulked pipe.

Approximately ten years ago the F5 pipeline was decommissioned between Point X and Point Y (see the Figure 1). This 2km length was put away from service due to its severe corroded state.

The curtailment of the pipe at Point X resulted in an irregular outflow at the upstream reservoir and subsequently impacting negatively on the water quality compliance. The site is located along the existing Rand Water servitude as depicted in Figure 1. It is proposed that the pipeline be rehabilitated, and the rehabilitation for the sake's of thorough reparation work has been broken into two phase. Phase 1 between Point X and Y (this reports scope). Phase 2 will be the construction of the remainder of the alignment through until Randfontein.

Figure 1 – Locality Map

2.2 PHYSICAL SURVEYING

Due to the build up character of the alignment within the study area it was decided to utilise aerial photography to enhance the survey of the area. The aerial photography indicated that the alignment will follow the existing pipeline route and will only impact on existing servitudes. Particular attention where given to detailed investigation of some of these areas. Due to the nature of cultural remains, with the majority of artefacts occurring below surface, an intensive foot-survey that covered the study area was conducted. A controlled-exclusive surface survey was conducted over a period of three days, by means of vehicle and extensive surveys on foot by two archaeologists of PGS Heritage Unit.

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

3. LEGISLATIVE REQUIREMENTS AND TERMINOLOGY

3.1 Legislation

The identification, evaluation, and assessment of any cultural heritage site, artefact, or find in the South African context is required and governed by the following legislation:

i. National Environmental Management Act (NEMA) Act 107 of 1998
ii. National Heritage Resources Act (NHRA) Act 25 of 1999
iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
iv. Development Facilitation Act (DFA) Act 67 of 1995

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

i. National Environmental Management Act (NEMA) Act 107 of 1998
    a. Basic Environmental Assessment (BEA) – Section (23)(2)(d)
    b. Environmental Scoping Report (ESR) – Section (29)(1)(d)
    c. Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
    d. Environmental Management Plan (EMP) – Section (34)(b)
ii. National Heritage Resources Act (NHRA) Act 25 of 1999
    a. Protection of Heritage resources – Sections 34 to 36; and
    b. Heritage Resources Management – Section 38
iii. Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
    a. Section 39(3)
iv. Development Facilitation Act (DFA) Act 67 of 1995
    a. The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

3.2 Terminology

Acronyms	*Description*
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEAT	Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
PSSA	Palaeontological Society of South Africa
ROD	Record of Decision
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency

Archaeological resources

This includes:

i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;
ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
ii. carrying out any works on or over or under a place;
iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
iv. constructing or putting up for display signs or boards;
v. any change to the natural or existing condition or topography of land; and
vi. any removal or destruction of trees, or removal of vegetation or topsoil

Heritage resources

This means any place or object of cultural significance

4. ASSESSMENT CRITERIA

This chapter describes the evaluation criteria used for the sites listed below.
The significance of archaeological sites was based on four main criteria:

- **site integrity** (i.e. primary vs. secondary context),
- **amount of deposit, range of features** (e.g., stonewalling, stone tools and enclosures),
- **uniqueness** and
- **potential** to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:
A - No further action necessary;
B - Mapping of the site and controlled sampling required;
C - Preserve site, or extensive data collection and mapping of the site; and
D - Preserve site

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

4.1 IMPACT

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

4.1.1 Nature and existing mitigation

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

4.2 EVALUATION

4.2.1 Site Significance

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

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

Generally Protected C (GP.C)	-	Low Significance	Destruction

4.2.2 Impact Rating

VERY HIGH

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

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

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

HIGH

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

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

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

MODERATE

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

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

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

LOW

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

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

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

NO SIGNIFICANCE

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

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

4.2.3 Certainty

DEFINITE: More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.
PROBABLE: Over 70% sure of a particular fact, or of the likelihood of impact occurring.
POSSIBLE: Only over 40% sure of a particular fact or of the likelihood of an impact occurring.
UNSURE: Less than 40% sure of a particular fact or likelihood of an impact occurring.

4.2.4 Duration

SHORT TERM: 0 to 5 years
MEDIUM: 6 to 20 years
LONG TERM: more than 20 years
DEMOLISHED: site will be demolished or is already demolished
Example
Evaluation

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	Moderate	Grade GP.B	Possible	Short term	B

5. BACKGROUND OF AREA

5.1 Archaeological Time frame

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

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

Middle Stone Age: Various lithic industries in SA dating from ± 250 000 yrs – 22 000 yrs before present.

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

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

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

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

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

5.2 Historical Time frame

5.2.1 Cartographic material

Major Jackson Series Sheet Composite

The map depicted in Figure 2 below were produced during the South African War (1899-1902) and forms part of the Major Jackson Series. This specific sheet is named "*Johannesburg-Heidelberg*", while the sheet number is 13. It was compiled and drawn in the Surveyor-General's office in Pretoria, and is dated to June 1902 (the third revised edition of the particular sheet). The date of the map indicates that this revised edition was made just after the end of the Anglo Boer War, which lasted from October 1899 to May 1902.

The first important observation to be made from Figure 2 below is that the rail line between Krugersdorp and Johannesburg passed through the study area. No other structures except the rail line and road are evideint in the pipeline area.

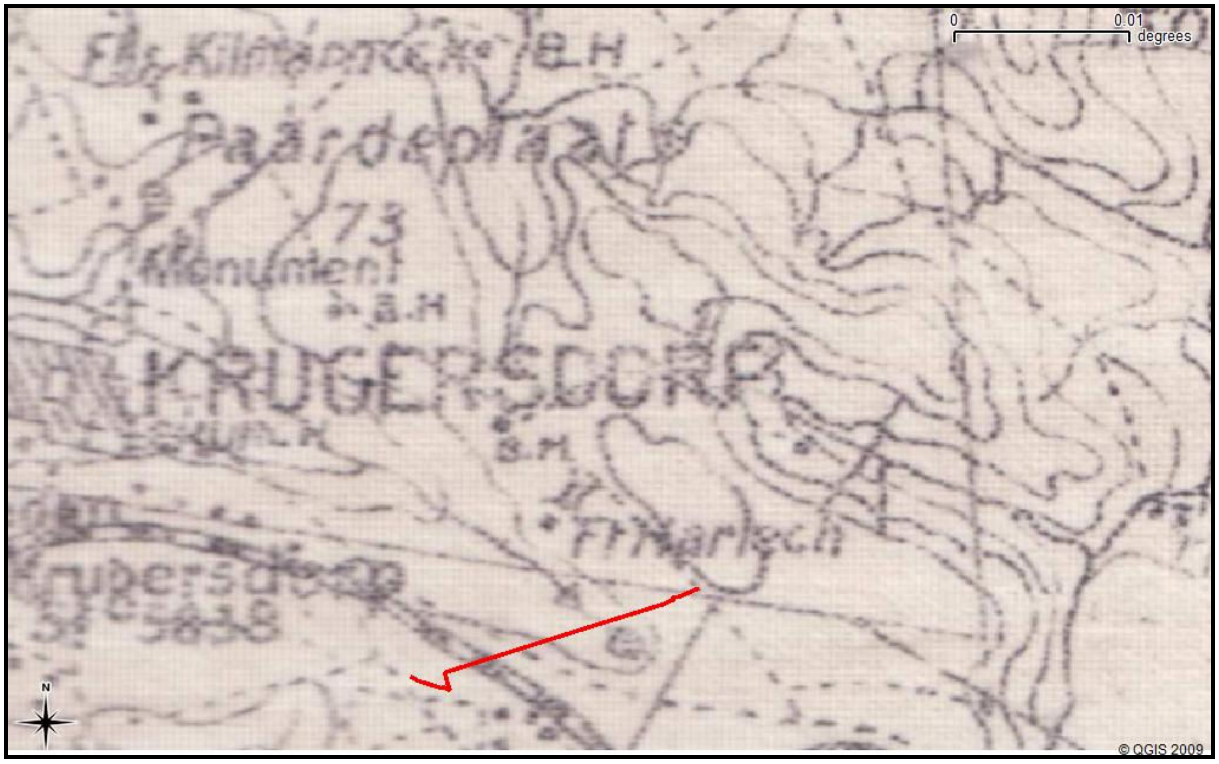

Figure 2 - Composite map made up of two Major Jackson Series Sheets

2627BB Roodepoort Sheet, dated 1943

The sheet depicted in **Figure 3** is the 2627BB Roodepoort topographical map in 1:50 000 scale, and represents the First Edition of this particular map. It was surveyed and drawn in 1943.

The following heritage features are depicted on the map:

1. The clay pit depicted to the east of the current route

2. A structure probably a mine compound to the south east of the alignment.

The road appears to have undergone some more changes since the date of the previous map, namely 1913.

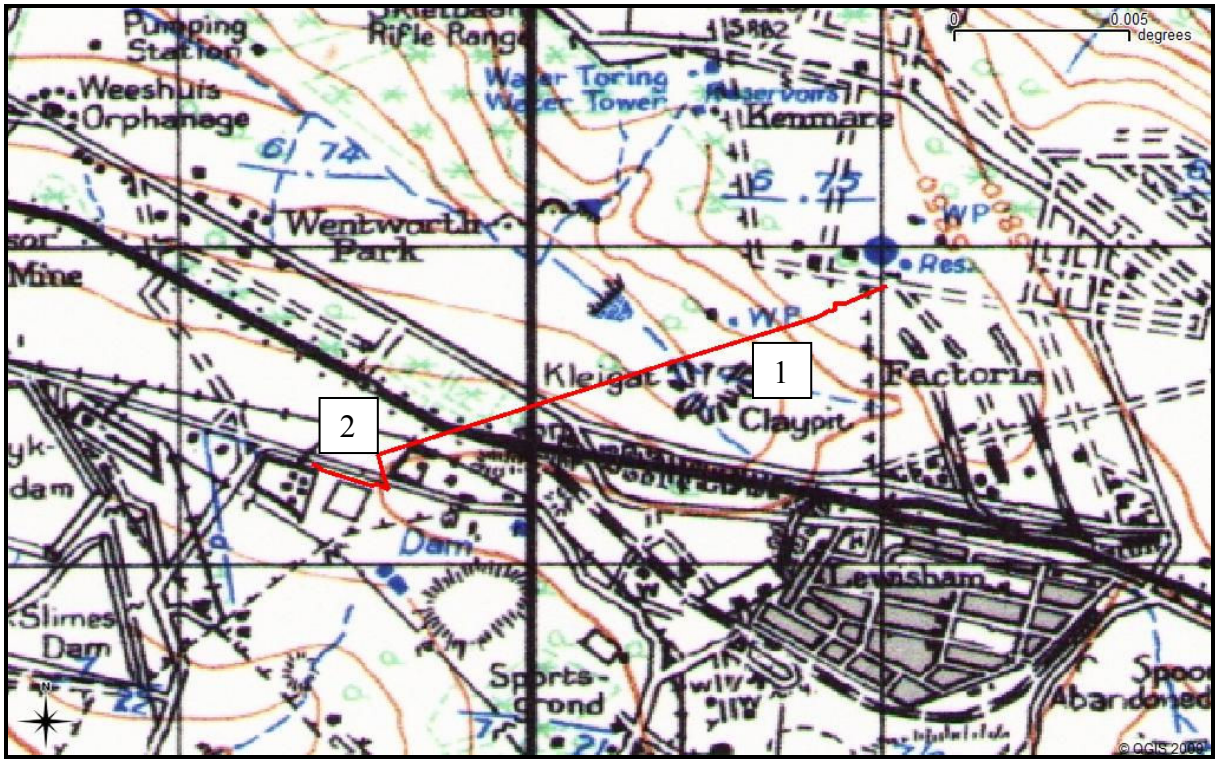

Figure 3 -2627BA Randfontein Sheet, dated 1944

5.2.2 Gold Mining

6. HERITAGE SITES ON ALIGNMENT

During the survey no heritage sites were identified that is in close proximity to the proposed alignments for the pipeline.

The area is situated on topographical maps 2627BB. The area is characterised by industrial properties in the Factoria area (Refer to Figures 4 to 6) after which it goes down a ridge (Figure 7) towards Wentworth Park residential. This residential area is not depicted on the 1943 map and the indications from Rand Water were that this particular pipe was installed in 1934.

The area of Wentworth Park where the pipeline runs is on a large pavement that traverses Main Reef Road (R24) after which it travels up Wentworth Street towards the rail line (Figure 8).

After crossing the rail line the pipe servitude runs through disturbed open field where a remnant of the structure 2 in Figure 3 is visible. These remains are only the tarred loading areas of the structure.

The alignment then joins crosses underneath Windsor Road (R28) and continues further towards Randfontein.

Figure 4 – Main valve inside Telkom yard in Factoria

Figure 5 – Alignment down ridge and through factory yard

Figure 6 - Alignment through wetland with clay pit (Structure 1) on left

Figure 7 – Alignment over Main Reef Road

Figure 8 - Old rail foundation

Figure 9 – Open veldt with tarred surface

7. ASSUMPTIONS AND LIMITATIONS

Not subtracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and the current dense vegetation cover. As such, should any heritage features and/or objects not included in the present inventory be located or observed, a heritage specialist must immediately be contacted. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist had been able to make an assessment as to the significance of the site (or material) in question.

This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development the procedures and requirements pertaining to graves and burials will apply as set out below.

8. LEGAL AND POLICY REQUIREMENTS

8.1 General principles

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

Archaeological and paleaontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In the new legislation, permits are required to damage, destroy, alter, or disturb them. People who already possess material are required to register it. The management of heritage resources are integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves, which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas), are protected. The legislation protects the interests of communities that have interest in the graves: they may be consulted before any disturbance takes place. The graves of victims of conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour.

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

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:
An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- 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;
- books, records, documents, photographic positives and negatives, graphic material, film or video or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with, and offer protection, to all historic and pre-historic cultural remains, including graves and human remains.

8.1 Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier. This function is usually delegated to the Provincial MEC for Local Government and Planning, or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the South African Heritage Resource Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

9. ASSESSMENT AND RECOMMENDATIONS

*A heritage map is provided in **Annexure A***

During the survey no sites of heritage significance were identified.

Although the physical pipeline is older than 60 years it has low heritage value and this document will suffice as documentation of the pipeline alignment. Permission of alteration or changes to a structure older than 60 years must be granted by The Provincial Heritage Authority and such an application must be lodged with them under Section 34 of the National Heritage Resources Act (Act 25 of 199) and the Provincial Regulations.

General

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

10. LIST OF PREPARES

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11. REFERENCES

AUSTRALIAN HISTORIC THEMES. A Framework for use in Heritage Assessment and Management. Australian Heritage Commission. 2001.

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

DOCUMENTS ON CULTURAL HERITAGE PROTECTION. 2002.

INTERNATIONAL COUNCIL OF MONUMENTS & SITE DOCUMENTS. Guidelines to the Burra Charter: Conservation Policy. 1985.

INTERNATIONAL COUNCIL OF MONUMENTS & SITE DOCUMENTS. Guidelines to the Burra Charter: Cultural Significance. 1984.

INTERNATIONAL COUNCIL OF MONUMENTS & SITE DOCUMENTS. Conventions, Charters and Guidelines. 2002.

STANDARD AND GUIDANCE FOR ARCHAEOLOGICAL DESK-BASED ASSESSMENT. 1994.