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Heritage Assessment

Construction of pipeline at the
Lethabo Pumping Station

Version 1.0

18 May 2010

**Professional Grave
Solutions (Pty)
Limited**

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EXECUTIVE SUMMARY

PGS Heritage Solutions was appointed by Greenline Environmental Consulting (Pty) Ltd to undertake a Phase 1 Heritage Assessment for the proposed construction of a pipeline at the Lethabo Pumping Station. This heritage assessment forms part of the Basic Environmental Assessment undertaken by Greenline Environmental Consulting (Pty) Ltd.

The proposed construction is located on the farm Bankfontein 1814, Free State Province. It comprises the construction of an approximate 250m long pipeline.

No heritage resources were located.

The following general recommendation is made:

- If any heritage finds are made during the construction of the pipeline, all work must be stopped and a qualified archaeologist be contacted for an assessment of the find.

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ANNEXURE A: Legislation, Terminology and Assessment Criteria

1. INTRODUCTION

PGS Heritage Solutions was appointed by Greenline Environmental Consulting (Pty) Ltd to undertake a Phase 1 Heritage Assessment that forms part of the Basic Environmental Assessment for the proposed construction of a pipeline at the Lethabo Pumping Station. The proposed construction is located on the farm Bankfontein 1814, Free State Province.

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 Phase 3: Reporting the outcome of the study.

General site conditions and features on site were recorded by means of photos, coordinates 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. PROJECT DESCRIPTION

Rand Water, who is the developer, aims to construct a pipeline from within the Lethabo Pumping Station to a reservoir located further to the north. The entire length of the proposed pipeline is approximately 250 metres.

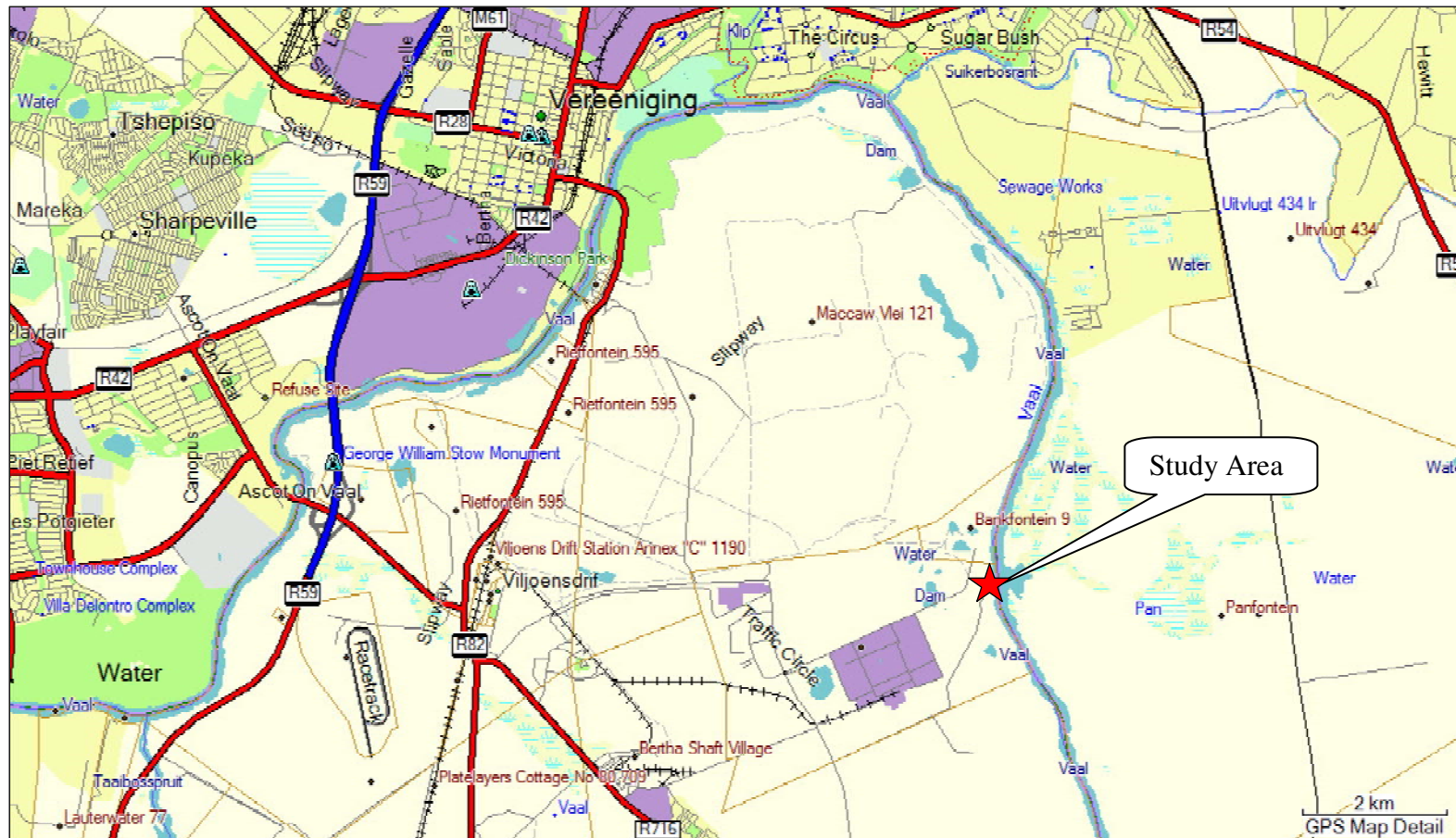


Figure 1 – Locality Map



Figure 2 – Google Earth image indicating the position of the proposed pipeline.



Plate 1 General view across the study area as seen from within the Lethabo Pumping Station. The proposed pipeline is to run from the left of this image to the reservoir visible in the background.



Plate 2 As can be seen from this image large sections of the study area is covered in dense vegetation.

2.1 METHODOLOGY

This report (including applicable maps, tables and figures) has been compiled by PGS for the proposed construction of a pipeline at the Lethabo Pumping Station in accordance with the stipulations of the NHRA (no 25 of 1999), the NEMA (no 107 of 1998) and the MPRDA (28 of 2002). The process consisted of three steps:

- Step I – Literature Review: This step was aimed at gathering information relating to known archaeological and heritage resources within and surrounding the proposed development area, which included a desktop study and literature reviews of project information.
- Step II – Physical Survey: A physical survey was conducted on foot through the proposed project area by qualified archaeologists (Monday, 17 May 2010), aimed at locating and documenting sites falling within and adjacent to the proposed development footprint.
- Step III – The final step involved the recording and documentation of relevant archaeological and heritage resources, as well as the assessment of resources in terms of the archaeological impact assessment criteria (Annexure A) and report writing, as well as mapping and constructive recommendations

2.2 PHYSICAL SURVEYING

The study area for the proposed projects comprises a linear development which stretches over an area of approximately 250 metres. An intensive foot survey was undertaken of the study area by a team comprised of a professional archaeologist and one field assistant of the 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 prehistoric activity. The intention was for all sites discovered both inside and bordering on the proposed development areas to be plotted on 1:50 000 maps and their GPS co-ordinates noted. In addition digital photographs were to be used to document all the sites.

3. LEGISLATIVE REQUIREMENTS

The NHRA stipulates that cultural heritage resources may not be disturbed without authorization from the relevant heritage authority. Section 34 (1) of the NHRA states that “no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...”. The National Environmental Management Act (No 107 of 1998) states that an integrated environmental management plan should (23:2 (b)) “...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage...” In accordance with legislative requirements and EIA rating criteria, the regulations of SAHRA and ASAPA have also been incorporated to ensure that a comprehensive legally compatible report is compiled. The heritage impact assessment criteria are described in more detail in Annexure A.

4. BACKGROUND OF AREA

4.1 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 - $\pm 250\,000$ yrs ago. Acheulean stone tools are dominant.
- *Middle Stone Age:* Various lithic industries in SA dating from $\pm 250\,000$ yrs – $22\,000$ yrs before present.
- *Later Stone Age:* The period from $\pm 22\,000$ -yrs before present to the period of contact with either Iron Age farmers or European colonists.

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

- *The Early Iron Age:* Most of the first millennium AD.
- *The Middle Iron Age:* 10th to 13th centuries AD
- *The Late Iron Age:* 14th century to colonial period.

The third and final phase in the archaeological history of the area is what is known as the Historical or Colonial Period. This period commences with the arrival of the first Europeans in the area in c. 1836 and still continues to this day.

4.2 Brief Historical Overview

Some of the important dates in the history of the study area and surroundings include the following:

- During 1878 George William Stow discovered coal deposits on the farms Maccauvlei and Leeuwspruit in the vicinity of present-day Vereeniging.
- The first coal mining activities in the vicinity of Vereeniging took place at the coal deposits on the farm Leeuwspruit. This area became known as the Bedworth Colliery.
- The plans and name of the town of Vereeniging was approved by the government of the *Zuid-Afrikaan Republiek* on 4 July 1882, whereas the final approval for the establishment of the town took place on 23 December 1889
- In 1912 one of the first power stations in the vicinity of Vereeniging became operational. The V.F.P. Power Station (as it became known) was established by the Victoria Falls and Transvaal Power Company (Leigh, 1968).
- Construction of the Lethabo Power Station started in 1980 and the station became fully operational during December 1990 (www.eskom.co.za).
- On 26 November 1982 the Board of Rand Water approved the Additional Water Supply (1982) Scheme. The aims of the scheme were to firstly to meet the increasing demand for

potable water in Vereeniging, Houtkop, Arcon Park and Langerand as well as to address the needs of the distribution area of the Eikenhof Pumping Station. The second aim was to supply potable water to expanding industries such as Eskom's Lethabo Power Station and the Iscor Plant in Vanderbijlpark. The scheme comprised the construction of a weir in the Vaal River near the Lethabo Power Station, the erection of the Lethabo Pumping Station, the construction of a pipeline from the Lethabo Pumping Station to the Vereeniging Pumping Station and lastly the construction of a tunnel to cross underneath the Vaal River. The scheme was completed during the late 1980s (Rand Water, 2004).

5. HERITAGE SITES

No heritage sites were located in the field.

6. ASSUMPTIONS AND LIMITATIONS

Not subtracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the fact that no heritage resources located during the fieldwork does not necessarily mean that no such resources are located there. 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 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.

It is important to note that this study focussed on archaeological and historical resources. As a result no assessment of the impact of the proposed development on any paleontological resources located there was undertaken.

7. ASSESSMENT AND RECOMMENDATIONS

No heritage sites were observed within the area proposed for the construction of the pipeline. Furthermore, the proposed pipeline also does not pass through or across a historic landscape. This can be said in that the landscape directly associated with the study area is represented by the Lethabo Pumping Station. As mentioned elsewhere this pumping station was constructed as part of Rand Water Board's 1982 Scheme which was completed during the late 1980s.

The following general recommendation is made:

- If any heritage finds are made during the construction of the pipeline, all work must be stopped and a qualified archaeologist be contacted for an assessment of the find.

10. LIST OF PREPARERS

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WWW.ESKOM.CO.ZA

ANNEXURE A:
Legislation , Terminology and Assessment Criteria

LEGISLATIVE REQUIREMENTS – TERMINOLOGY AND ASSESSMENT CRITERIA

1.1 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.

1.2 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

2. 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

2.1 IMPACT

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

2.1.1 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.

2.2 EVALUATION

2.2.1 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
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2.2.2 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 is 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.

2.2.3 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.

2.2.4 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

3. LEGAL AND POLICY REQUIREMENTS

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

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

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

3.1 Graves and cemeteries

Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance 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 the 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.

