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# PHASE 1 HIA REPORT FOR THE PROPOSED NEW GROOTVLEI SEWER PUMP STATION AND LINE LOCATED IN STRUBENVALE, SPRINGS, GAUTENG ON A PORTION OF THE FARM GROOTVLEI 124IR.

For:

# VULCANO ENGINEERING AND ENVIRONMENTAL CONSULTING 423 Cork Avenue, Ferndale RANDBURG 2194

**REPORT: APAC019/115** 

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#### **SUMMARY**

A Pelser Archaeological Consulting (APAC) was appointed by Vulcano Engineering and Environmental Consuting, on behalf of the City of Ekhurhuleni, to conduct a Phase 1 HIA for the proposed new Grootvlei Sewer Pump Station and sewerage line implementation. The study area is located in Strubenvale in Springs in the province of Gauteng, and on a portion of the farm Grootvlei 124IR.

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. The assessment of the specific study area did not identify any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance. This report discusses the results of both the background research and physical assessment.

It is recommended that the proposed development actions be allowed to continue, taking into consideration the recommendations put forward at the end of the report.

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#### 1. INTRODUCTION

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Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. The assessment of the specific study area did not identify any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance.

The client indicated the location and boundaries of the study area and the assessment concentrated on this area. A representative of the client (Vulcano Engineering) accompanied the Specialist during the field assessment.

#### 2. TERMS OF REFERENCE

The Terms of Reference for the study was to:

- 1. Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;
- 2. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
- 3. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
- 4. Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;
- 5. Review applicable legislative requirements;

# 3. LEGISLATIVE REQUIREMENTS

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

# 3.1. The National Heritage Resources Act

According to the above-mentioned act the following is protected as cultural heritage resources:

- a. Archaeological artifacts, 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.

# 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. Sites of Archaeological and palaeontological importance
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. An HIA must be done under the following circumstances:

- a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length
- c. Any development or other activity that will change the character of a site and exceed 5 000m<sup>2</sup> or involve three or more existing erven or subdivisions thereof
- d. Re-zoning of a site exceeding 10 000 m<sup>2</sup>
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

#### Structures

Section 34 (1) of the mentioned act states that no person may demolish any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Alter means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

#### Archaeology, palaeontology and meteorites

Section 35(4) of this act deals with archaeology, palaeontology and meteorites. The act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial)

- 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 that assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.
- e. alter or demolish any structure or part of a structure which is older than 60 years as protected.

The above mentioned may only be disturbed or moved by an archaeologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.

#### **Human remains**

Graves and burial grounds are divided into the following:

- 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

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:

- a. destroy, damage, alter, exhume or remove from its original position of 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 or 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; or
- bring onto or use at a burial ground or grave referred to in paragraph (a) or
   (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the **Ordinance on Excavations** (**Ordinance no. 12 of 1980**) (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated to) before exhumation can take place.

Human remains can only be handled by a registered undertaker or an institution declared under the **Human Tissues Act (Act 65 of 1983 as amended)**.

# 3.2. The National Environmental Management Act

This act 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.

# 4. METHODOLOGY

# 4.1. Survey of literature

A survey of available literature was undertaken in order to place the development area in an archaeological and historical context. The sources utilized in this regard are indicated in the bibliography.

# 4.2. Field survey

The field assessment section of the study was conducted according to generally accepted HIA practices and aimed at locating all possible objects, sites and features of heritage significance in the area of the proposed development. The location/position of all sites, features and objects is determined by means of a Global Positioning System (GPS) where possible, while detail photographs are also taken where needed.

#### 4.3. Oral histories

People from local communities are sometimes interviewed in order to obtain information relating to the surveyed area. It needs to be stated that this is not applicable under all circumstances. When applicable, the information is included in the text and referred to in the bibliography.

#### 4.4. Documentation

All sites, objects, features and structures identified are documented according to a general set of minimum standards. Co-ordinates of individual localities are determined by means of the Global Positioning System (GPS). The information is added to the description in order to facilitate the identification of each locality.

#### 5. DESCRIPTION OF THE AREA

The study area is situated on a portion of the farm Grootvlei 124IR and in Strubenvale (Springs) in Gauteng. The new sewer pump station is located close to the old site near the Acid Mine Drainage Eastern Basin. The new line will be installed running from here, crossing a railway line and Smythe Road, down Largo Road up to its crossing with the Ermelo Road (R29) running through mostly urban area along the existing road reserve and crossing a Public Park (Marks Park) roughly in the center of the study area.

The topography of the study area is in general flat and open, with no rocky ridges or outcrops present. Visibility during the assessment was good, with very little grass and tree cover present. The area (and surrounds) has been developed in the recent past through mining activities as well as urban residential developments such as housing, roads and related infrastructure. If any sites of archaeological and/or historical significance did occur here in the past it would have been disturbed or destroyed as a result of recent activities to a large degree. The proposed new sewer pump station will be located around 180m from the old existing site, and is situated on old mining land. The old defunct pump station will be demolished.



Figure 1: General location of study area (Google Earth 2019).



Figure 2: Closer view of the study area (Google Earth 2019).

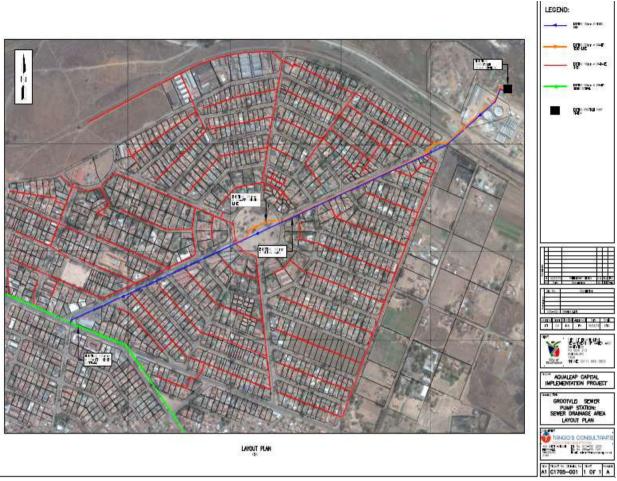


Figure 3: Grootvlei Sewer Pump Station & Line Layout Plan (courtesy Vulcano Engineering).



Figure 4: The location of the proposed new Grootvlei Sewer Pump Station.



Figure 5: Another general view of the new pump location.



Figure 6: Some old mining structure remains in the general area.

The proposed new pump station will not impact on these structural remains.



Figure 7: A view of the existing Grootvlei pump station.



Figure 8: A view of the Eastern Basin Acid Mine Drainage Treatment Plant.



Figure 9: A view of the old railway line over which the new pipe line will cross.



Figure 10: View of old line across a small stream created by sewer flow. The new line Will tie in here and follow Largo Road down to Ermelo Road.



Figure 11: A view of the direction of the proposed new line from Smythe Road down Largo Road in Strubenvale.



Figure 12: The line will cross Marks Park (underground) and continue further down Largo Road towards Ermelo Road (the R29).



Figure 13: Another view of the route of the line across Marks Park.



Figure 14: A view down Largo Road towards Marks Park.
The new line will follow the existing road reserve.



Figure 15: A view of the last section of the proposed new sewer line down Largo Road up to the Ermelo Road (R29) junction.

#### 6. DISCUSSION

The Stone Age is the period in human history when lithic (stone) material was mainly used to produce tools. In South Africa the Stone Age can be divided basically into three periods. It is however important to note that dates are relative and only provide a broad framework for interpretation. A basic sequence for the South African Stone Age (Lombard et.al 2012) is as follows:

Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago Middle Stone Age (MSA) less than 300 000 – 20 000 years ago Later Stone Age (LSA) 40 000 years ago – 2000 years ago

It should also be noted that these dates are not a neat fit because of variability and overlapping ages between sites (Lombard et.al 2012: 125).

No known Stone Age sites or artifacts are present in the study area. The closest known Stone Age sites are those of Linksfield, Primrose, Waldrif and others (Bergh 1999: 4). If any Stone Age artifacts are to be found in the area then it would more than likely be single, out of context, stone tools.

# No Stone Age sites or material (stone tools) were identified in the study area during the assessment.

The Iron Age is the name given to the period of human history when metal was mainly used to produce artifacts. In South Africa it can be divided in two separate phases (Bergh 1999: 96-98), namely:

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Early Iron Age (EIA) 200 – 1000 A.D.
Late Iron Age (LIA) 1000 – 1850 A.D.
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Huffman (2007: xiii) indicates that a Middle Iron Age should be included. His dates, which are widely accepted in archaeological circles, are:

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Early Iron Age (EIA) 250 – 900 A.D.
Middle Iron Age (MIA) 900 – 1300 A.D.
Late Iron Age (LIA) 1300 – 1840 A.D.
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No Early Iron Age sites are known in the larger geographical area, while LIA sites such as those at Melvillekoppies, Bruma and Klipriviersberg are the closest known ones (Bergh 1999: 7). No Iron Age sites, features or objects were found in the study area during the assessment.

#### No Iron Age occurrences were identified in the study area during the assessment.

The historical age started with the first recorded oral histories in the area. It includes the moving into the area of people that were able to read and write. The first Europeans to

move through and into the area were the groups of Cornwallis Harris (1836) and David Livingstone in 1847 (Bergh 1999: 13). These groups were closely followed by the Voortrekkers after 1844 (Bergh 1999: 15). White settlers started to occupy huge tracts of land, claiming it as farms after the late 1840s. Springs also played a role during the Anglo-Boer War (1899-1902), with a Black Concentration Camp also established in the town during the War (Bergh 1999: 51; 54).

The city of Springs was founded as a coal and gold mining town in 1904, but its history can be traced back to the second half of the 19th century. From about 1840 farmers moved into the area and declared farms for themselves, especially after the Zuid-Afrikaansche Republiek (South African Republic, later Transvaal) became an independent republic with the signing of the Sand River Convention in 1852. These initial farms were large, but the measurements of the borders were inaccurate and later, when the correct borders of the farms had to be documented, there were several extra or odd pieces of land that did not belong to any farm. These odd pieces of land then became state property. Such an odd piece existed between three neighbouring farms on the Witwatersrand, namely Geduld (meaning 'patience'), De Rietfontein ('the reed fountain') and Brakpan (literally, 'small, brackish lake'). The 685 ha odd piece was given the name 'The Springs' by the land surveyor James Brooks, probably because of all the fountains on the land (<a href="www.wikipedia.co.za">www.wikipedia.co.za</a>).

On 16 September 1884 the official map of The Springs was registered in Pretoria. Initially, the land's value was equal to R20, but the discovery of coal and gold and its subsequent mining increased the value considerably. The coal discovered in The Springs was of a good quality and in 1888 the first contract was signed to mine coal there. Initially mining was on a small scale, but rose when the Great Eastern mine was established. There were a number of corrugated iron houses around the mine and, although there were a few small hotels and general dealers, it was not a town yet. The settlement grew and in 1902 a health committee was appointed to look after the building and location of structures and also the hygiene in the growing township. In 1904 the Grootvlei Proprietary Mines were registered and shafts were sunk. This followed the discovery in 1899 of gold on the farm Geduld and the further discovery of the main reef in 1902. In April 1904 The Springs was proclaimed a town, called Springs, the health committee was replaced by a town council, and it flourished as a mining town (www.wikipedia.co.za).

The original 7 km² farm on which the city of Springs was later to be built, The Springs, was surveyed in 1883. Coal was discovered in the area in 1887 and three years later in 1890-1891, the Transvaal Republic's first railway, the Randtram Line, was built by the Netherlands-South African Railway Company (NZASM) to carry coal from the East Rand coalfields to the gold mines of the Witwatersrand. Gradually, especially after coal was discovered further east in South Africa in Witbank, the Springs collieries were closed. In the meanwhile, however, gold had also been discovered in the area. A village was laid out in 1904 and in 1908 the first gold mining began. Springs was granted municipal status in 1912. By the late 1930s, there were eight gold mines near Springs, making it the largest single gold-producing area in the world. Springs is currently one of the industrial centers of the Witwatersrand and also the Eastern Gateway of Gauteng towards Mpumalanga and Northern Kwazulu Natal. Mining has been replaced by manufacturing and engineering

industries of economic importance; products of the region include processed metals, chemicals, paper and foodstuffs (www.wikipedia.co.za).

The oldest map obtained from the Chief Surveyor General's database (<a href="www.csg.dla.gov.za">www.csg.dla.gov.za</a>) for the farm Grootvlei 124IR (Portion 1), dates to 1929 (**Document 10I7ZA01**). It shows that the farm was then known as Grootvaly No.5 and was situated in the Springsg District of the Transvaal Province. Portion 1 was surveyed in July 1929. The map also shows that the whole of the original farm was granted to one B. Richardson on the 18-03.1867.

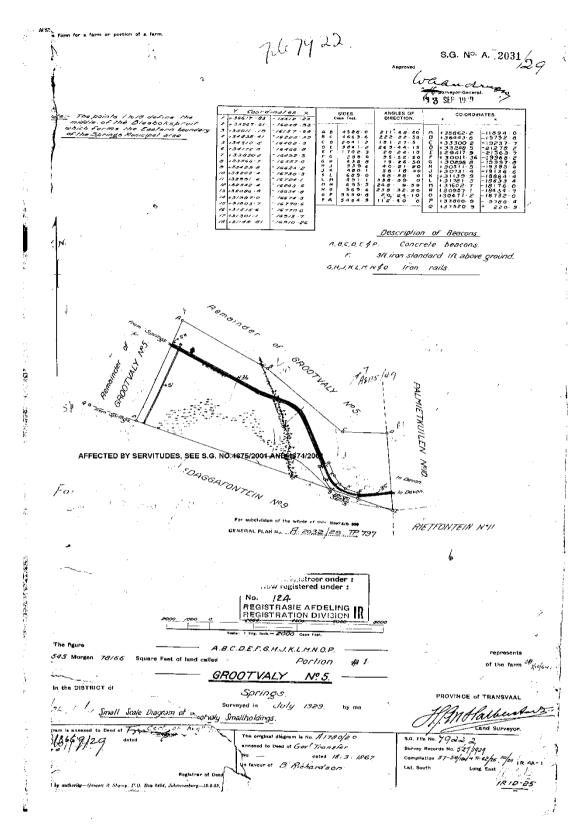


Figure 16: 1929 map of Portion 1 of Grootvlei 124IR (<u>www.csg.dla.gov.za</u>).

# Results of the study area assessment

As indicated earlier no sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the physical assessment. If any sites did exist here in the past it would have been largely disturbed or destroyed by recent historical agricultural and other development activities in the study and larger area around it.

The only structures found in the general area that might be older than 60 years of age are the remnants of old mining structures. However, the proposed new Sewer Pump Station development will not impact on these structures at all.

The existing old Grootvlei Sewer Pump Station structure that will be demolished does not seem to be older than 60 years of age or have any historical significance. No mitigation measures from a heritage point of view are required. Furthermore, the need to develop the new pump station is based in the fact that the old pump station and machinery is dysfunctional and not working. Sewerage and acid water from here is also polluting the neighboring wetland area. The proposed new pump station and line will be moved away from the wetland area and will ensure that the wetland will not be polluted.



Figure 17: Another old mining structure in the general area.



Figure 18: A view of the existing Grootvlei Sewer Pump Station.



Figure 19: Another view.



Figure 20: Inside of the old pump station. The machinery has been vandalized & is not working.

It should be noted that although all efforts are made to cover a total area during any assessment and therefore to identify all possible sites or features of cultural (archaeological and/or historical) heritage origin and significance, that there is always the possibility of something being missed. This will include low stone-packed or unmarked graves. This aspect should be kept in mind when development work commences and if any sites (including graves) are identified then an expert should be called in to investigate and recommend on the best way forward.

#### 7. CONCLUSIONS AND RECOMMENDATIONS

In conclusion it is possible to say that the Phase 1 HIA for the proposed new Grootvlei Sewer Pump Station and sewerage line implementation was conducted successfully. The study area is located in Strubenvale in Springs in the province of Gauteng, and on a portion of the farm Grootvlei 124IR.

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. The assessment of the specific study area did not identify any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance.

As indicated earlier no sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the physical assessment. If any sites did exist here in the past it would have been largely disturbed or

destroyed by recent mining activities as well as urban residential developments such as housing, roads and related infrastructure.

The only structures found in the general area that might be older than 60 years of age are the remnants of old mining structures. However, the proposed new Sewer Pump Station development will not impact on these structures at all.

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It should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

Finally, from a Cultural Heritage point of view the proposed new Grootvlei Sewer Pump Station and Sewer Line development should be allowed to continue taking into consideration the recommended measures above.

#### 8. REFERENCES

General and Closer Views of Study Area Location: Google Earth 2019.

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#### **APPENDIX A: DEFINITION OF TERMS:**

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

**Structure**: A permanent building found in isolation or which forms a site in conjunction with other structures.

Feature: A coincidental find of movable cultural objects.

**Object**: Artifact (cultural object).

(Also see Knudson 1978: 20).

# APPENDIX B: DEFINITION/ STATEMENT OF HERITAGE SIGNIFICANCE

**Historic value**: Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.

**Aestetic value**: Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.

**Scientific value**: Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period

**Social value**: Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.

**Rarity**: Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.

**Representivity**: Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province region or locality.

#### APPENDIX C: SIGNIFICANCE AND FIELD RATING:

#### **Cultural significance:**

- Low: A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium: Any site, structure or feature being regarded less important due to a number of factors, such as date and frequency. Also any important object found out of context.
- High: Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as of a high importance. Also any important object found within a specific context.

# Heritage significance:

- Grade I: Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II: Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III: Other heritage resources of local importance and therefore worthy of conservation

# Field ratings:

- i. National Grade I significance: should be managed as part of the national estate
- ii. Provincial Grade II significance: should be managed as part of the provincial estate
- iii. Local Grade IIIA: should be included in the heritage register and not be mitigated (high significance)
- iv. Local Grade IIIB: should be included in the heritage register and may be mitigated (high/medium significance)
- v. General protection A (IV A): site should be mitigated before destruction (high/medium significance)
- vi. General protection B (IV B): site should be recorded before destruction (medium significance)
- vii. General protection C (IV C): phase 1 is seen as sufficient recording and it may be demolished (low significance)

#### **APPENDIX D: PROTECTION OF HERITAGE RESOURCES:**

### Formal protection:

National heritage sites and Provincial heritage sites – Grade I and II

Protected areas - An area surrounding a heritage site

Provisional protection – For a maximum period of two years

Heritage registers – Listing Grades II and III

Heritage areas – Areas with more than one heritage site included

Heritage objects – e.g. Archaeological, palaeontological, meteorites, geological specimens, visual art, military, numismatic, books, etc.

# **General protection:**

Objects protected by the laws of foreign states Structures – Older than 60 years Archaeology, palaeontology and meteorites Burial grounds and graves Public monuments and memorials

#### **APPENDIX E: HERITAGE IMPACT ASSESSMENT PHASES**

- 1. Pre-assessment or Scoping Phase Establishment of the scope of the project and terms of reference.
- 2. Baseline Assessment Establishment of a broad framework of the potential heritage of an area.
- 3. Phase I Impact Assessment Identifying sites, assess their significance, make comments on the impact of the development and makes recommendations for mitigation or conservation.
- 4. Letter of recommendation for exemption If there is no likelihood that any sites will be impacted.
- 5. Phase II Mitigation or Rescue Planning for the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
- 6. Phase III Management Plan For rare cases where sites are so important that development cannot be allowed.