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**PHASE 1 HIA REPORT FOR THE PROPOSED ACCESS ROADS
FOR THE ZEERUST PV PLANT ON REMAINDER OF PORTION 5 OF HAZIA
240JP & PORTION 15 OF KAMEELDOORN 271JP
IN ZEERUST, NORTHWEST PROVINCE**

For:

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REPORT: APAC017/36

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A handwritten signature in black ink, appearing to be 'A. Pelser', is centered on the page.

SUMMARY

APelser Archaeological Consulting (APAC) was initially appointed by RE Capital 2 (Pty) Ltd to conduct a Heritage Impact Assessment (HIA) for the grid connection for the proposed development of a 75MW Photovoltaic Solar Facility near Zeerust in the Northwest Province (See Report APAC01547b – October 2015). A 2012 study by the same author (See Report AE01244P – July 2012) on Kameeldoorn 271JP identified a number of Late Iron Age stone walled sites and finds. As a result of this a number of other alternative sites for the development were earmarked and a 2013 study (by Pelser) had to focus on these 3 Alternatives, as well as the original study area (See Report APAC013/64 – October 2013). In March 2016 APAC was again contracted to look at an Expansion Area for the Plant. The need for this study was driven by the fact that in order to achieve the required generation capacity of the facility, the developers need to expand the area under panel by a total expansion of less than 20 ha (See Report APAC016/18 – April 2016).

A number of archaeological and recent historical sites and finds were identified in the study areas during the earlier assessments, and recommendations on their mitigation were provided in these documents. As part of this a Cultural Heritage Management Plan for the Zeerust Solar Plant development was commissioned by the developer (APAC016/24). The South African Heritage Resources Agency (SAHRA) provided comments (Case ID: 9194 – Interim Comments June & August 2016) on this document, and an Amended Version of the CHMP was the result of these comments and the requirements contained in it (APAC016/44).

APAC was commissioned once again in April 2017 to undertake a Basic/Phase 1 HIA for the proposed alternative access roads for the PV Plant. Three alternative routes on Remainder of Portion 5 of the farm Hazia 240JP & Portion 15 of Kameeldoorn 271JP had to be assessed. This report is the result of this assessment done in May 2017.

Based on the assessment of these three Alternative Access Roads, from a Cultural Heritage perspective, the development of any of these three should be allowed to continue, taking cognizance of the findings and recommendations put forward at the end of this report.

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1. INTRODUCTION

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APAC was commissioned once again in April 2017 to undertake a Basic/Phase 1 HIA for the proposed alternative access roads for the PV Plant. Three alternative routes on Remainder of Portion 5 of the farm Hazia 240JP & Portion 15 of Kameeldoorn 271JP had to be accessed.

The client indicated the location and boundaries of the various alternative study areas and the fieldwork focused on these.

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 in the study 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;

2. 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).

2.1 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 000m² or involve three or more existing erven or subdivisions thereof
- d. Re-zoning of a site exceeding 10 000 m²

- 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 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 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
- c. 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)**.

Unidentified/unknown graves are also handled as older than 60 until proven otherwise.

2.2 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.

3. METHODOLOGY

3.1 Survey of literature

A survey of available literature was undertaken in order to place the development area in an archaeological and historical context, while previous studies done in the larger geographical area were also consulted. The sources utilized in this regard are indicated in the bibliography.

3.2 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 archaeological 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 detailed 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 the general minimum standards accepted by the archaeological profession. 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

APAC was appointed in April 2017 to undertake a Basic/Phase 1 HIA for the proposed alternative access roads for the PV Plant. Three alternative routes on Remainder of Portion 5 of the farm Hazia 240JP & Portion 15 of Kameeldoorn 271JP had to be accessed.

The topography of the area is relatively flat, although there are some hills and outcrops on portions of the area. The larger area has been disturbed in the recent past in certain sections by agricultural activities including ploughing and cattle grazing. Large sections are however still in pristine condition, especially on the hills and outcrops in the area. Relatively dense vegetation made visibility difficult in some sections. The three alternative routes themselves are located in areas already disturbed to a large degree through various activities related to urban settlement, including existing road networks, housing, the informal dumping of residential refuse and others. If any sites of cultural heritage origin or significance did exist here it would have been extensively disturbed or destroyed.

Alternative 1 is the preferred access road. The preferred alternative is to upgrade and utilize the existing farm access that starts at the end of Furguson Street (at the intersection between Furguson and Rois St). From the end of Furguson Street, this proposed access road will

follow the existing farm access track over Remainder of Portion 5 of the Farm Hazia 240JP into Portion 15 of Kameeldoorn 271JP via the existing farm gate. It will then run along the Eastern boundary of Portion 15 of Kameeldoorn to within the authorized footprint of the proposed development. Alternative 1 is approximately 880m in length.

Alternative 2 also starts at the end of Furguson road (at the intersection between Furguson and Rois St). It then utilizes Rois Street in a southerly direction to the intersection of Rois and Reitz Street. From this intersection, it follows an existing gravel track on Remainder of Portion 5 of the Farm Hazia 240JP (along the western boundary) and enters Portion 15 of Kameeldoorn 271JP within the authorized footprint. Alternative 2 is approximately 820m in length.

Alternative 3 starts at the end of Kop Street (at the intersection of Kop and Spruit Street.) From this intersection, it follows an existing gravel track on Remainder of Portion 5 of Hazia 240JP and enters Portion 15 of Kameeldoorn 271JP within the authorized footprint. Alternative 3 is approximately 730m in length.

It must be noted, that the alignments reflected in the figures below shows the existing access roads intended to be upgraded for the purpose of accessing the facility. This report will however consider and assess 50m wide access corridors along these alignments to allow for minor deviations that may come as a result of detailed design.

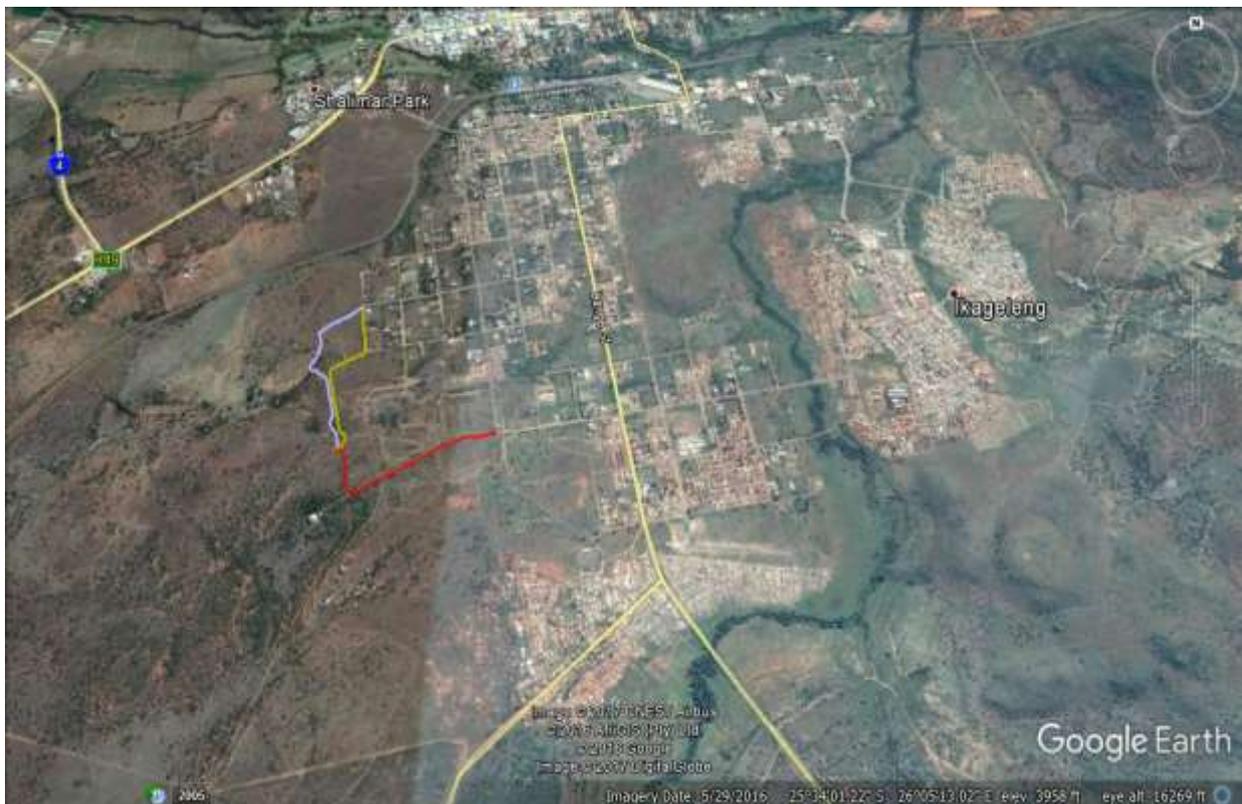


Fig.1: General location of study area & 3 Alternatives (Grey = Alt1; Yellow = Alt2 & Red = Alt3). Google Earth 2016 – Image date 29/05/2016).



Fig.2: Close view of Alternative Access Roads (Google Earth 2016 – Image date 29/05/2016).



Fig.3: General view of topography & vegetation around the Alternative Access Roads.



Fig.4: Another general view of the area.



Fig.5: The dense grass and tree cover is visible in the general area.

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 into basically 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).

Although there are no known Stone Age sites in the area, there are some rock art (engravings) sites located in the larger geographical a few kilometers west of Zeerust and near Groot Marico to the east of Zeerust (Bergh 1999: 5). A number of individual MSA/LSA stone tools were identified in the larger study area during the previous assessment for the Solar PV Plant in different locations.

None were identified during the current assessment for the alternative access roads. If any were to exist it would be single, out of context, stone tools.

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:

Early Iron Age (EIA) 200 – 1000 A.D.

Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii) indicates that a Middle Iron Age should be included. His dates, which are widely accepted in archaeological circles, are:

Early Iron Age (EIA) 250 – 900 A.D.

Middle Iron Age (MIA) 900 – 1300 A.D.

Late Iron Age (LIA) 1300 – 1840 A.D.

In a band stretching roughly from Brits in the east to Zeerust in the west there are many known Iron Age sites (Bergh 1999: 7-8). These all belong to the Later Iron Age (Bergh 1999:8-9). No EIA sites are known to occur in the area (Bergh 1999: 6). By the end of the 18th century the BaHurutshe stone walled sites (capitals) were located at Kaditshwene and Tshwenyane north of Zeerust (Bergh 1999: 106). Prof. J.Boeyens of UNISA did extensive archaeological research on this and other sites in the region (Boeyens 2003). A number of Late Iron Age stone walled sites and features were located during previous assessments in the area of the Solar PV Plant and related infrastructure.

None were identified during the May 2017 field assessments for the 3 Alternative Access Roads.

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. Early travelers (including missionaries, hunters and adventurers) moved through this part of the Northwest Province. This included Cambell I 1820, Robert Schoon and William McLuckie in 1829, David Hume in 1830, Dr.Andrew Smith in 1835 and Cornwallis Harris in 1836 (Bergh 1999: 12, 13). They were closely followed by the Voortrekkers after that.

Results of the May 2017 Alternative Access Roads assessment

No sites, features or material of any cultural heritage (archaeological and/or historical) origin or significance were identified during the assessment of the 3 Alternative Access Road corridors for the PV Plant. The closest site is the stone-walled Iron Age settlement unit (Site B in previous reports) located close to and around the Water Reservoir approximately 200 m from Alternative 3. The sites probably formed part of a larger LIA settlement complex, representing individual settlement units or homesteads with features such as cattle kraals (livestock enclosures), hut bays and other related features. It possibly dates to the same time period as the Hurutshe settlement complexes at Kaditshwene and other sites close to Zeerust, and around the late 18th to early 19th century. Very little cultural material was observed, and only fragments of undecorated pottery were identified during the field assessments. This site will not be impacted by any development activities related to the Solar PV Plant and have been included in the Cultural Heritage Management Plan for the Development.

This site, as with a number of other Late Iron Age stone walled sites and features identified during the previous assessments in the area of the Solar PV Plant, are located around rocky outcrops. It is therefore recommended that any development associated with the Alternative Access Roads stay clear of any rocky ridges and outcrops as far as possible. If the existing farm access road is utilized it should have no impact on any sites or features.

Based on the May 2017 assessment it is therefore recommended that the development of the Access Road can continue and that any of the Alternatives can be utilized taking into consideration the recommendations provided at the end of this report.



Fig.6: View down section of Alternative Access Road 1.



Fig.7: Another view of section of Alternative 1.



Fig.8: Refuse dumping on the access road.



Fig.9: View down section of Alternative 2.



Fig.9: Another section of Alternative 2.



**Fig.10: A view of a section of Alternative 3
Taken towards the Water Reservoir top right.**



Fig.11: More informal dumping on the access roads.



Fig.12: A section of Alternative 3 down Kop Street.



Fig.13: Aerial view showing Alternative Access Roads (Grey = 1; Yellow = 2 & Red = 3). The location of the Water Reservoir & Site B Late Iron Age in relation to the access roads are shown (Google Earth 2016 – Image date 29/05/2016).

7. CONCLUSIONS AND RECOMMENDATIONS

APAC was appointed in April 2017 to undertake a Basic/Phase 1 HIA for the proposed alternative access roads for the PV Plant. Three alternative routes on Remainder of Portion 5 of the farm Hazia 240JP & Portion 15 of Kameeldoorn 271JP had to be accessed. APAC Archaeological Consulting (APAC) was initially appointed by RE Capital 2 (Pty) Ltd to conduct a Heritage Impact Assessment (HIA) for the grid connection for the proposed development of a 75MW Photovoltaic Solar Facility near Zeerust in the Northwest Province (See Report APAC01547b – October 2015). A 2012 study by the same author (See Report AE01244P – July 2012) on Kameeldoorn 271JP identified a number of Late Iron Age stone walled sites and finds. As a result of this a number of other alternative sites for the development were earmarked and a 2013 study (by Pelser) had to focus on these 3 Alternatives, as well as the original study area (See Report APAC013/64 – October 2013). In March 2016 APAC was again contracted to look at an Expansion Area for the Plant (See Report APAC016/18 – April 2016).

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Alternative 3 starts at the end of Kop Street (at the intersection of Kop and Spruit Street.) From this intersection, it follows an existing gravel track on Remainder of Portion 5 of Hazia 240JP and enters Portion 15 of Kameeldoorn 271JP within the authorized footprint. Alternative 3 is approximately 730m in length.

No sites, features or material of any cultural heritage (archaeological and/or historical) origin or significance were identified during the assessment of the 3 Alternative Access Roads for the PV Plant. The closest site is the stone-walled Iron Age settlement unit (Site B in previous reports) located close to and around the Water Reservoir. This site will not be impacted by any development activities related to the Solar PV Plant and have been included in the Cultural Heritage Management Plan for the Development.

The site, as with a number of other Late Iron Age stone walled sites and features identified during the previous assessments in the area of the Solar PV Plant, are located around rocky outcrops. *It is therefore recommended that any development associated with the Alternative Access Roads stay clear of any rocky ridges and outcrops as far as possible. If the existing farm access road is utilized it should have no impact on any sites or features.*

Based on the May 2017 assessment it is recommended that the development of the Access Road can continue and that any of the Alternatives can be utilized.

Finally, from a cultural heritage point of view the development should be allowed to continue taking heed of the above. The subterranean presence of archaeological or historical sites, features or objects is always a possibility. This could include unknown and unmarked burial pits. Should any be uncovered during the development process, an archaeologist should be called in to investigate and recommend on the best way forward.

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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.

Aesthetic 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.