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**CK 2006/014630/23** **VAT NO.: 4360226270**

**BASELINE ASSESSMENT & HERITAGE IMPACT ASSESSMENT REPORT  
FOR THE RE CAPITAL 2 PROPOSED 75MW PHOTOVOLTAIC SOLAR  
FACILITY ON PORTIONS OF THE FARMS KAMEELDOORN 271JP &  
KRUISRIVIER 270JP, INCLUDING THE NEW ALTERNATIVE EXPANSION  
AREAS, ZEERUST, NORTHWEST PROVINCE**

For:

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REPORT: APAC016/18

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*April 2016*

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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 271 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 Pelsler) 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 is 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.

This report is the result of the 2016 Baseline study for the Expansion Area and will include the results of the 2015 HIA that focused on the Solar plant alternative sites and substation sites, as well as the powerline servitudes for the grid connection to the existing ESKOM lines and substation. A number of archaeological and recent historical sites and finds were identified in the larger study areas during the previous 2012, 2013 and 2015 assessments, and recommendations on their mitigation were provided in these documents. A number of recommendations in terms of the mitigation measures needed to minimize the possible negative impact of the development are provided at the end of the report. A Cultural Heritage Management Plan for the Zeerust Solar Plant development has also been commissioned by the developer and will be submitted and implemented in due course.

**Based on these assessments, from a Cultural Heritage perspective, the development 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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The client indicated the location and boundaries of the various alternative study areas and the fieldwork focused on these. The landowners were consulted and access provided by them.

## 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 portions of land near Zeerust 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 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.

### **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, while previous studies done in the larger geographical area were also consulted. 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 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.

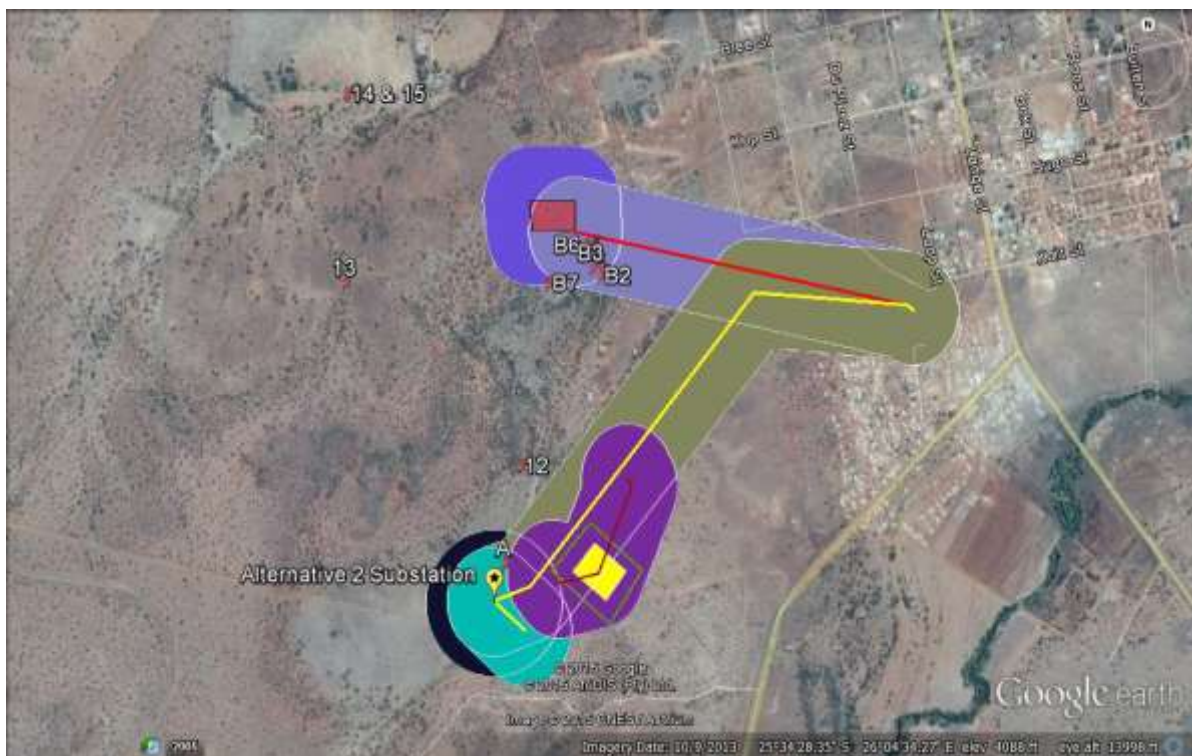
## **5. DESCRIPTION OF THE AREA**

The study area is located close to the town of Zeerust in the North West Province of South Africa. It is located in the Ngaka Modiri Molema District Municipality and in the Ramotshere Moiloa Local Municipality. Portions of the farm Kameeldoorn 271JP and Kruisrivier 270JP form part of the proposed development and study area.

The topography of the area is relatively flat, although there are some hills and outcrops on portions of the area. The 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. Dense vegetation made visibility difficult in some sections, although a number of archaeological sites and other find-spots were identified and recorded during the earlier and September 2015 assessment.



**Figure 1: General location of development study area (Google Earth 2015).**



**Figure 2: Closer view of development and study area (2015 study) showing powerline corridors & the preferred and alternative Solar plant substation locations (Google Earth 2015). Also indicates heritage sites recorded during assessment.**



**Figure 3: Aerial view showing Expansion area (pink) in relation to the authorized Plant area (green).  
Google Earth 2016.**







**Figure 6: In other areas the vegetation is much denser.**



**Figure 7: View of the existing ESKOM Lines in the area.**



**Figure 8: Some sections have been extensively disturbed.**

## **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 area during the assessment at different locations.

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 the assessments (both the 2012 & 2013 surveys) of the area and will be discussed in more detail later on in the report.

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 Fieldwork***

It should be mentioned here that the current (2016) Baseline Study for the proposed Expansion Area did not include a field assessment as this section of the development area has been covered during the previous assessments in 2012, 2013 and 2015.

A number of Late Iron Age stone walled sites and features were identified during the various assessments in the area. The sites are located around rocky outcrops and close to the existing Water Reservoir in the area, and fairly close to the preferred and Alternative Substation locations. The sites probably form part of a large 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 18<sup>th</sup> to early 19th century. Very little cultural material was observed, and only fragments of undecorated pottery were identified during the field assessment.

Sites 12 & 13 (See Site Distribution Google Earth map) were identified during the 2013 survey, while Sites A & B (Google Map) were identified and recorded during the recent studies. These sites are most likely related to a single settlement complex in the area.

**GPS Locations:** S25.57918 E26.07335 (A)  
S25.57196 E26.07626; S25.57202 E26.07615; S25.57186 E26.07589; S25.57164 E26.07613;  
S25.57125 E26.07597; S25.57131 E26.07573 & S25.57226 E26.07461 (Site B)  
S25.57673 E26.07379 (12) & S25.57221 E26.06867 (13)

**Cultural Significance:** Medium to High

**Heritage Significance:** Grade III. Should be included in the heritage register and may be mitigated (high/ medium significance).

**Field Ratings:** Local Grade IIIB. Sites of local importance and therefore worthy of conservation.

**Mitigation:** No development should be allowed close to the stone walled settlement sites on and around the hills and outcrops. They should be demarcated (fenced-in) and a Heritage Management Plan for the archaeological sites in the area should be drafted and implemented. If they cannot be avoided and need to be demolished then the sites will have to be mapped in detail under an archaeological excavation permit prior to a demolition permit being applied for.

Two other sites identified during the 2013 assessment also fall within the development boundary area. Site 14 is situated close to the Keulder farmstead, and consists of the remains of a clay-brick structure. The age could not be determined, but it could be older than 60 years of age. It is possibly related to farm laborers. However, very little of the structure remains, and its significance as a result is seriously diminished.

**GPS Location:** S25.56755 E26.06867

**Cultural Significance:** Low

**Heritage Significance:** None

**Field Ratings:** General protection C (IV C): Phase 1 is seen as sufficient recording and it may be demolished (low significance)

**Mitigation:** None required.

Site 15 contains at least 6 stone cairns (heaps) of varying size. The possibility of these being graves should not be excluded, although it is more likely the result of clearance of fields during ploughing. The heaps are not in a distinct pattern (rows) as would be expected with a graveyard. The site is situated in close proximity to Site 14 as well. However, should the site be impacted on in any way by the proposed development and related activities, then it would be better to conduct social consultation in order to determine the origin and function of these stone heaps. Should it turn out to be graves then mitigation measures will have to be implemented to minimize any negative impact. This could include fencing-in and managing the site or exhumation and relocation of the graves after all due legal processes have been followed.

**GPS Location:** S25.56755 E26.06867

**Cultural Significance:** High (if graves). Low (if not graves)

**Heritage Significance:** None

**Field Ratings:** Grade III: Other heritage resources of local importance and therefore worthy of conservation (**if graves**). General protection C (IV C): Phase 1 is seen as sufficient recording and it may be demolished (if not graves and low significance)

**Mitigation:** If these are not graves then none required. If graves and to be impacted by the development then mitigation measures will have to be implemented. This could include fencing-in and Managing, or Exhumation and Relocation after all due consultation processes have been followed and permits have been issued.





**Figure 9: Site 12.**



**Figure 10: Site 13 stone walling. Possible hut foundations.**



**Figure 11: Undecorated pottery from Site A.**



**Figure 12: Stone walling at Site B.**



**Figure 13: More stone walling at Site B.**

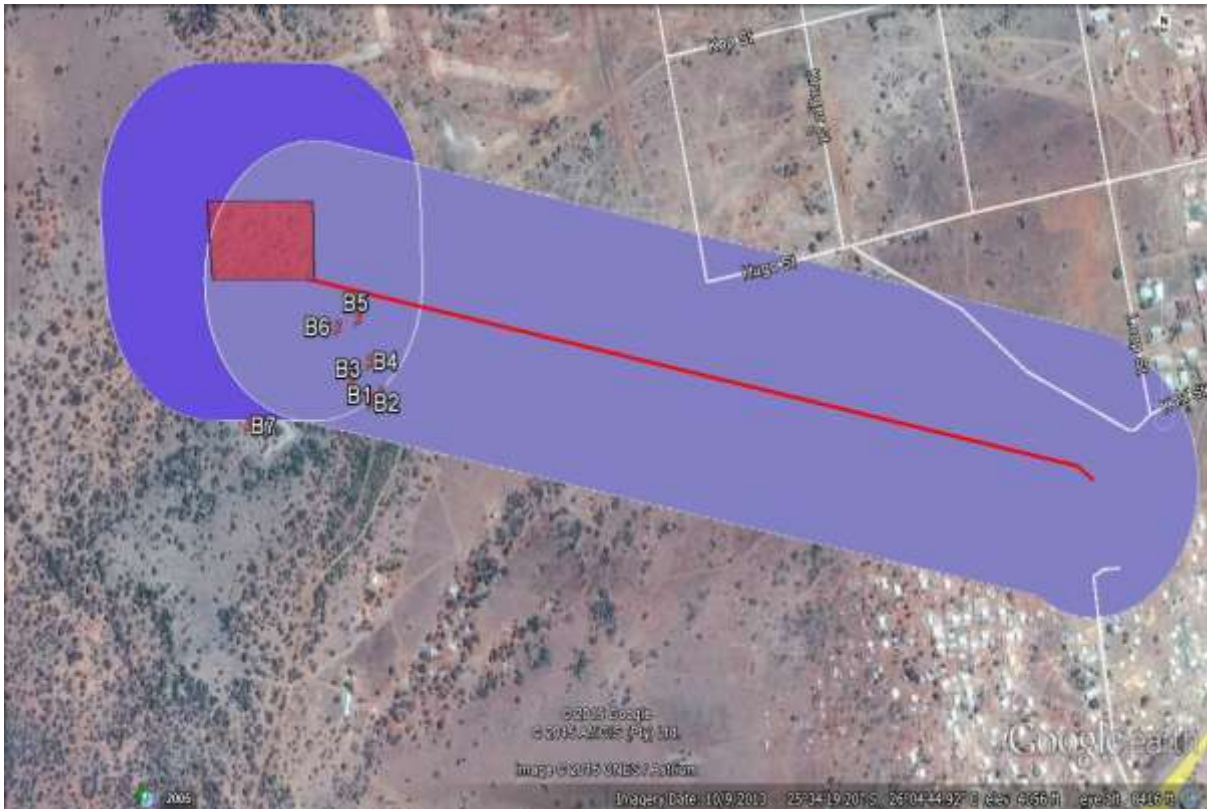


**Figure 14: A lower grinding stone at Site B.**



**Figure 15: Dirt road running through the Site B Stone walled site.**





**Figure 16: Aerial view of Alternative 1 study area and sites identified (Google Earth 2015).**



**Figure 17: Aerial view of Alternative 2 study area with sites recorded (Google Earth 2015).**





**Figure 18: Aerial view showing Alternative 3 study area with sites recorded (Google Earth 2015).**



**Figure 19: Aerial view of Expansion Area and current Plant Area showing all sites identified in 2012, 2013 & 2015 (Google Earth 2016).**

## 7. CONCLUSIONS AND RECOMMENDATIONS

In conclusion it is possible to say that the HIA for the grid connection for the proposed development of a 75MW Photovoltaic Solar Facility near Zeerust in the Northwest Province was completed successfully (See Report APAC01547b – October 2015). A 2012 study by the same author (See Report AE01244P – July 2012) on Kameeldoorn 271 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 Pelsler) had to focus on these 3 Alternatives, as well as the original study area (See Report APAC013/64 – October 2013). The Baseline study for the proposed Expansion Area (the focus of the April 2016 study) has also been completed successfully. This Expansion Area of less than 20 ha was also covered during the previous field assessments as well as part of the wider area studied during the walkthroughs and a physical field assessment was deemed unnecessary as a result.

The 2015 HIA focused on the Solar Plant and Alternative Substation sites, as well as the Powerline Servitudes for the grid connection to the existing ESKOM Lines and Substation. The 2015 assessment identified some new sites (LIA Stone walled sites), while a number of the sites identified in 2013 are also located within the larger boundaries/footprint of the authorised Solar Plant Area and/or close to some of the planned development actions. Sites 12 & 13 (also LIA sites and found in 2013) are related to the two (Sites A & B) found in September 2015), while Sites 14 & 15 are recent historical sites identified in 2013 as well, with the possible Site 14 graves being the most significant of these two site. *No sites are situated within the new Expansion Area of less than 20 ha.*

The following is recommended from a cultural heritage perspective:

*1. All the stone walled sites in the areas should be demarcated and fenced-in to avoid accidental damage and to ensure preservation. A Cultural Heritage Management Plan for these sites has been commissioned by the developer and will be drafted and implemented in due course. If the sites cannot be avoided then detailed mapping and archaeological excavations need to be conducted prior to demolition being applied for.*

*2. If Site 15 is indeed graves then the recommended action would be the fencing-in and avoiding of the site at all costs.*

**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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Maps and aerial views of study area location & Layout Plans for Solar Panels: Courtesy RE Capital.

Site distributions: Google Earth 2015 & 2016.

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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.