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**INTEGRATED HERITAGE IMPACT ASSESSMENT (HIA) REPORT
FOR A PROPOSED 75MW PHOTOVOLTAIC SOLAR FACILITY
ON THE REMAINDER OF KAMEELDOORN 271JP, PORTION 15 OF
KAMEELDOORN 271JP & PORTION 14 OF KRUISRIVIER 270JP,
ZEERUST, NORTHWEST PROVINCE**

For:

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REPORT: APAC013/64

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SUMMARY

A Pelsers Archaeological Consulting (APAC) was appointed by Sharples Environmental Services cc, in conjunction with RE Capital 2 (Pty) Ltd, to conduct a Phase 1 HIA for the proposed development of a 75MW Photovoltaic Solar Facility on various portions of the farms Kameeldoorn 271JP and Kruisrivier 270JP, near Zeerust in the Northwest Province. 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 the 2013 had to focus on these alternatives, as well as the original study area.

This report is the result of the 2013 HIA. A number of archaeological and recent historical sites and finds were identified in the areas, and recommendations on their mitigation are provided in the document. The best alternative area (in terms of the archaeological heritage) for the development is indicated. A palaeontological study (PIA) formed part of the scope of work, and this report is also provided.

Based on the assessment, from a Heritage perspective, the development should be allowed to continue, taking cognizance of the conclusions and recommendations put forward at the end of this report.

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1. INTRODUCTION

A Pelsers Archaeological Consulting (APAC) was appointed by Sharples Environmental Services cc, in conjunction with RE Capital 2 (Pty) Ltd, to conduct a Phase 1 HIA for the proposed development of a 75MW Photovoltaic Solar Facility on various portions of the farms Kameeldoorn 271JP and Kruisrivier 270JP, near Zeerust in the Northwest Province. 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 the 2013 had to focus on these alternatives, as well as the original study area.

A palaeontological study (PIA) formed part of the scope of work, and this report is also provided.

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 is 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 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 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
- 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 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 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 area identified for the proposed photovoltaic solar park development is located around 4km from 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. The solar facility is proposed for either the Remainder of the Farm Kameeldoorn 271JP or the Remainder of Portion 15 of the same farm. The power line proposed to connect to the existing Eskom Substation is proposed on Portion 14 of the Farm Kruisrivier 270JP.

Area A (Remainder of Kameeldoorn) is owned by Dr. Willem Erasmus and is approximately 40-60ha in size and this area is the furthest area from the substation. Area B (remainder of Portion 15) is owned by Johannes Keulder and Area C is owned by the Ramotshere Moiloa Local Municipality. Area A & B combined are approximately 150ha in size. An informal settlement is located surrounding and adjacent to the Zeerust substation.

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 grass and other vegetational cover made visibility difficult in some sections, although a number of archaeological sites and other find-spots were identified during the assessment.

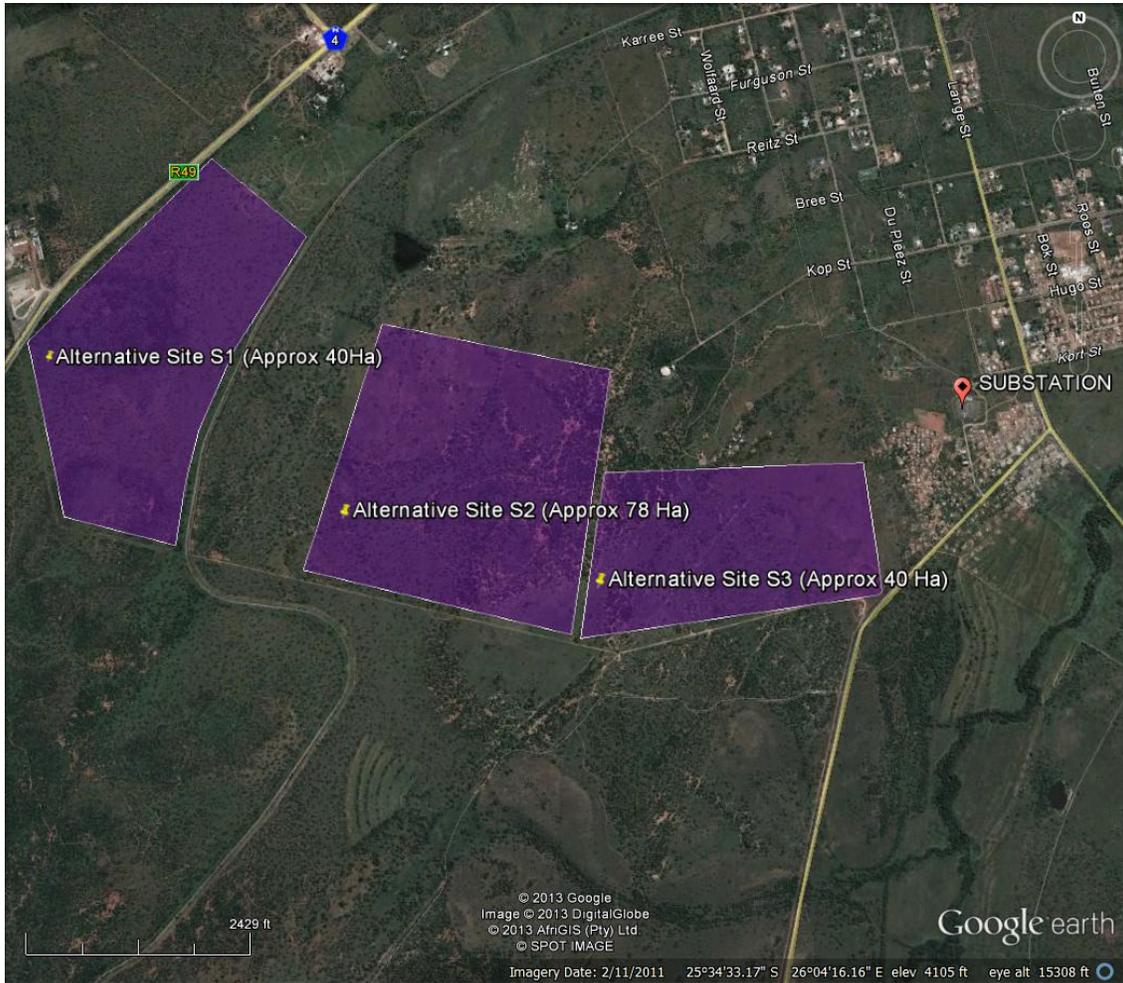


Figure 1: Location of development area. S1 is Area A, S2 is B and S3 is C in the text (Location map provided by Sharples Environmental).

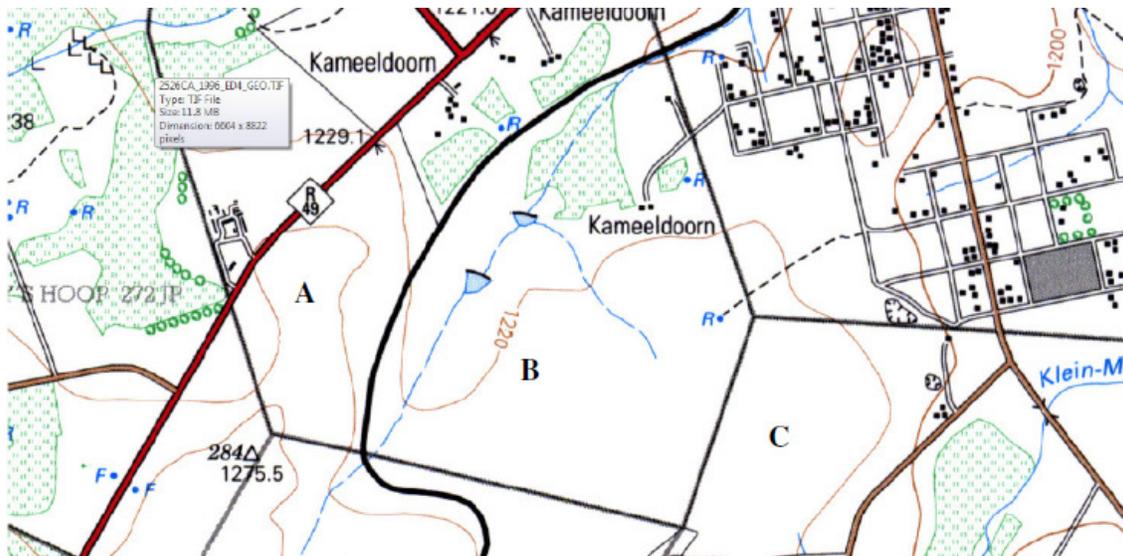


Figure 2: Copy of topographic map showing location of study areas (courtesy Sharples).



Figure 3: View of a section of Area A. Note the railway line.



Figure 4: Another view of the area (Area B).



**Figure 5: One of the rocky ridges in Area B.
Some stone walling was recorded here.**



**Figure 6: View of area close to Cell Phone tower &
Water Reservoir on the boundary of Area B.**



Figure 7: View from ridge area in Area B towards the “valley” section between A, the railway line and Area B.



Figure 8: View of a section of Area C.

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 in 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).

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

All three alternative areas were to be assessed while a Palaeontological study was also to be conducted. For last mentioned a palaeontologist was consulted, and the results of this is included in a report that will be submitted separately to this one (See Appendix F).

Area A

This is the area comprising the remainder of Kameeldoorn 271JP, and is owned by Dr. Erasmus. This is the area that was surveyed in 2012 by the author of this report, and the area was not assessed again in 2013. Seven archaeological sites dating to the Late Iron Age was recorded in the study area, with most comprising stone walled settlements and related features located on top of or close to the feet of low hills in the area. One site (containing a single undecorated piece of pottery – Site 7) was identified in a flat section of the area.

A number of Late Iron Age stone walled sites and features were identified during the survey in the area. The sites are located on hills and outcrops and in the area, and as a result will not be directly impacted on by the proposed development. The development will focus on the flat open sections in the area and will steer clear from the hills. 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 date 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 assessment.

Many more sites and features possibly exist in the area, especially around hills and low outcrops and it is recommended that all development activities be kept away from these. One site (Site 7) is represented by a single, undecorated potsherd located in a flat section away from the hills and it is possible that more scattered finds such as these could occur in the area. These “flat” sections would have been utilized for crop growing and cattle grazing purposes, and finds such as these are more than likely out of primary archaeological context (washed or carried down from the hill settlements. The flat sections of the area are also characterized by turf, and would not have been suitable for building and settlement. With the significant archaeological settlement sites occurring mostly on the hills and outcrops conducting the proposed development here would not be a problem, taking into consideration the measures put forward at the end of this report.

GPS Locations:

Site 1: S25.56561 E26.06028

Site 2: S25.56610 E26.05985

Site 3: S25.56912 E26.05675

Site 4: S25.56948 E26.05672

Site 5: S25.57022 E26.05659

Site 6: S25.57154 E26.05576

Site 7: S25.57194 E26.05825

Cultural Significance: Medium to High (Sites 1-6). Low (Site 7)

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.



Figure 9: Typical Stone walling found at these LIA sites.



Figure 10: Foundations of other Stone walling in the area.

Areas B & C

Area B is located on the remainder of Portion 15 of Kameeldoorn 271JP, with Mr. J.H. Keulder the owner, while B is on Portion 14 of Kruisrivier 270JP (property of the Ramotshere Moiloa Local Municipality). Mr. Keulder indicated that he is aware of a number of stonewalls (similar to the sites identified in Area B) located close to the Cell Tower and Water Reservoir and he also showed some grinding stones (for maize) found on his property. During the assessment 8 sites or find-spots were recorded in close proximity to or inside the sections indicated as alternative Areas B and C. They were numbered from Site 8 – 15.

Sites 8 & 9 are both represented by single MSA/LSA stone tools, both found in open patches of soil. It is possible that more, single and out of context stone tools could be located in the area, but dense grass cover made identification difficult. It is however highly unlikely that

dense scatters of tools or sites in primary context will found. No caves or rock shelters are present in the area.

GPS Locations: S25.57081 E26.06016 (8) & S25.57383 E26.05887 (9)

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. However, should stratified deposits be found during development actions an archaeologist should be called in to investigate.



Figure 11: Middle/Later Stone Age core tool at Site 8.



Figure 12: MSA flake tool. Site 9.

The next two sites (or find spots) are represented by either single or a few fragments of undecorated pottery similar to those found during the 2012 assessment in Area A. These finds are not in a primary context. It is possible that more scatters or single finds could be located in the area, but dense grass cover made visibility difficult.

GPS Locations: S25.57649 E26.05818 (Site 10) & S25.57792 E26.05913 (Site 11)

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. However, should stratified deposits be found during development actions an archaeologist should be called in to investigate. In an Iron Age context this could include unmarked burials.



Figure 13: Undecorated pottery from Sites 10 & 11.

Sites 12 and 13 both date to the Late Iron Age again and contain stone walled features such as livestock enclosures and hut bays. They are similar to the sites found in Area A during 2012, although they are far less extensive and well preserved. Both sites are situated fairly close to the water reservoir in the area and have to some extent been impacted on already during the construction of the reservoir and the cell tower next to it. The sites are located on top of a ridge/hill, and as a result will not be impacted on by the proposed solar development. The solar plant will be developed away from ridges and hills and will be constructed on a flat section of the finally selected development area. Site 12 is situated in Area C where the power line proposed to connect to the existing Eskom Substation will run. It is recommended that once the exact location/route of the line (and towers/pylons) are known this route be assessed through a walkdown to determine if there is any impact on the stone walled remains here.

GPS Locations: 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.



Figure 14: Stone walling at Site 12.



**Figure 15: More stone walling near the water reservoir.
This is the foundation walls of a possible hut.**

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 labourers. Very little of the structure however 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.



Figure 16: Site 14 – remains of brick built structure.

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 proposed development for the solar plant be done in Area B and the site is to be impacted by it, 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 had 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)

MitigationIf 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.



Figure 17: One of the stone heaps on Site 15.



**Figure 18: One of the other stone heaps.
This one is more rectangular giving the impression
of a possible grave.**

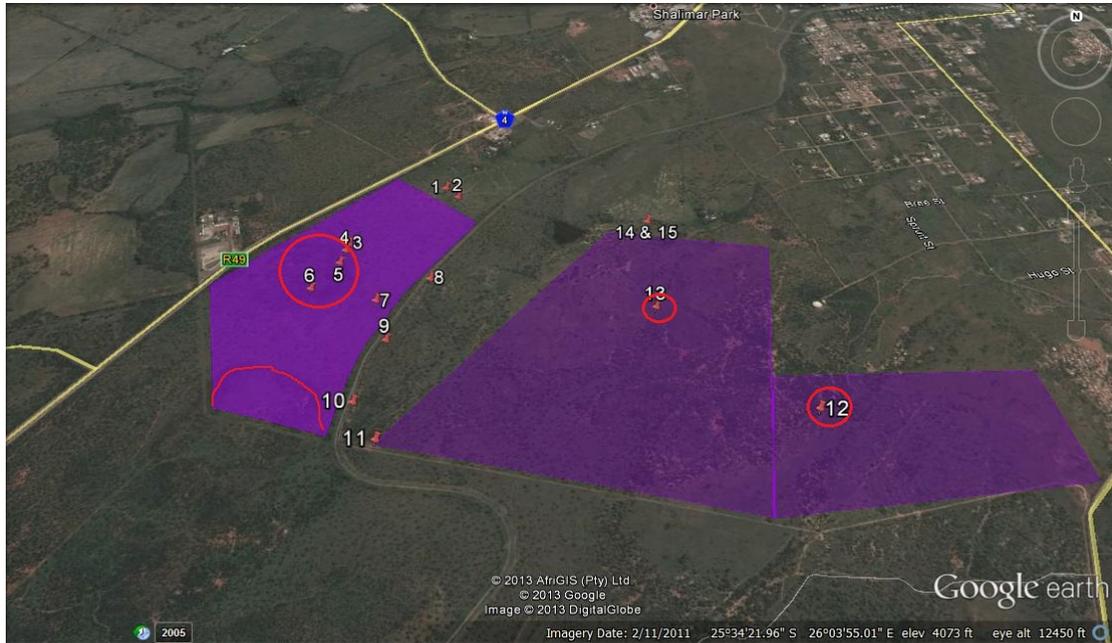


Figure 19: Aerial view of areas and site distribution. It is clear that some sites fall outside the areas highlighted for development purposes. The red circles indicate hills or outcrops where sites are located and that should be avoided by the development.

7. CONCLUSIONS AND RECOMMENDATIONS

In conclusion it is possible to say that the Phase 1 Intergrated HIA for the proposed 75MW Photovoltaic Solar Facility and associated powerline on Kameeldoorn 271 & Kruisrivier 270JP, near Zeerust in the Northwest Province was conducted successfully. Three areas (A, B & C) were investigated, with A & B alternatives for the solar facility and C for the associated powerlines to link the plant with the existing Zeerust substation. Area A was assessed in 2012 by the same author and 7 archaeological sites were identified. During the 2013 assessment a further 8 sites were recorded, including a few Stone Age find-spots, more stone walled Late Iron Age (LIA) sites similar to those in Area A, the remains of a possible farm labour dwelling and possible graves. The significant archaeological sites (all stone walled and linked to the LIA) are all located on top of or around the sides of various hills and outcrops in these areas and will not be impacted on by the development which will avoid these areas.

The following is therefore 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 should be drafted and implemented.
2. As far as the palaeontology is concerned, the proposed project may go ahead as there are no fossils in the area (**See Appendix F for Expert Report**).
3. Finally, it is recommended that the archaeology of the area is commemorated in some form at the Solar Facility. An information plaque could be erected at the entrance to the plant in order to educate and sensitize contractors and employees, as well as potential visitors,

regarding the importance of these sites and the value of preserving them for future generations.

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 and archaeologist should be called in to investigate and recommend on the best way forward.

8. REFERENCES

Maps and aerial views of study area location: Courtesy Sharples Environmental Services cc.

Site distribution: Google Earth 2013 – Image date 2011/11/02.

Bergh, J.S. (red.). 1999. **Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies.** Pretoria: J.L. van Schaik.

Boeyens, J.C.A. 2003. **The Late Iron Age Sequence in the Marico and Early Tswana History.** The South African Archaeological Bulletin, Vol. 58, No. 178 (Dec., 2003), pp. 63-78. South African Archaeological Society.

Huffman, T.N. 2007. Handbook to the Iron Age: **The Archaeology of Pre-Colonial Farming Societies in Southern Africa.** Scottsville: University of KwaZulu-Natal Press.

Knudson, S.J. 1978. **Culture in retrospect.** Chicago: Rand McNally College Publishing Company.

Lombard, M., L. Wadley, J. Deacon, S. Wurz, I. Parsons, M. Mohapi, J. Swart & P. Mitchell. 2012. **South African and Lesotho Stone Age Sequence Updated (I).** South African Archaeological Bulletin 67 (195): 120–144, 2012.

Pelser, A.J. 2012. **A Report on an Archaeological Impact Assessment for the proposed Kameeldoorn Solar PV Development on the farm Kameeldoorn 271 JP, Zeerust, Northwest Province.** Unpublished Report Archaeos cc AE01244P. July 2012. For: RE Capital.

Republic of South Africa. 1999. **National Heritage Resources Act** (No 25 of 1999). Pretoria: the Government Printer.

Republic of South Africa. 1998. **National Environmental Management Act** (no 107 of 1998). Pretoria: The Government Printer.

Sharples Environmental Services CC. 2013. **Draft Scoping Report (DSR) and Plan of Study for Environmental Impact Assessment (POSEIA). Proposed 75MW Photovoltaic, Renewable Energy, Solar Facility on the Remainder of the Farm 271- JS and on the Remainder of Portion 15 of the Farm 271 – JS and Associated Power lines on the Farm Kruisrivier No. 270.** For RE Capital 2 (Pty) Ltd. 30 July 2013.

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.

APPENDIX F – PALAEOLOGICAL REPORT

Palaeontological Impact Assessment for proposed Photovoltaic facility near Zeerust.

Desktop Study

04 September 2013

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Palaeontological Impact Assessment for proposed Photovoltaic facility near Zeerust.

Introduction

A Palaeontological Impact Assessment has been requested by Mr Anton Pelsler of APelsler Archaeological Consulting cc on behalf of his client Sharples Environmental Services cc. This company proposes to build a 75MW Photovoltaic, Renewable Energy, Solar Facility on the Remainder of the Farm Kruisrivier 271- JS and on the Remainder of Portion 15 of the Farm Kameeldoorn 271 – JS and associated power lines on the Farm Kruisrivier No. 270PV facility in Ramotshere Moiloa Local Municipality to the south east of the town of Zeerust for the nearby substation, as required by the National Heritage Act (No 25 of 1999).

Geology and Palaeontology of area

The site is situated ancient rocks of the Timeball Hill and Rooihogte Formations of the Pretoria Group (Fig. 1). There is also diabase in the area. These rocks are predominantly mudrocks, quartzites with some basal lavas and have been submitted to low grade metamorphism (Eriksson et al., 2006). The rocks are more than 2200 million years old and this predates macro- and land fossils. If any microscopic organisms such as bacteria, algae or fungi had been present they would likely have been destroyed by the metamorphism. There is no record of fossils from this site.

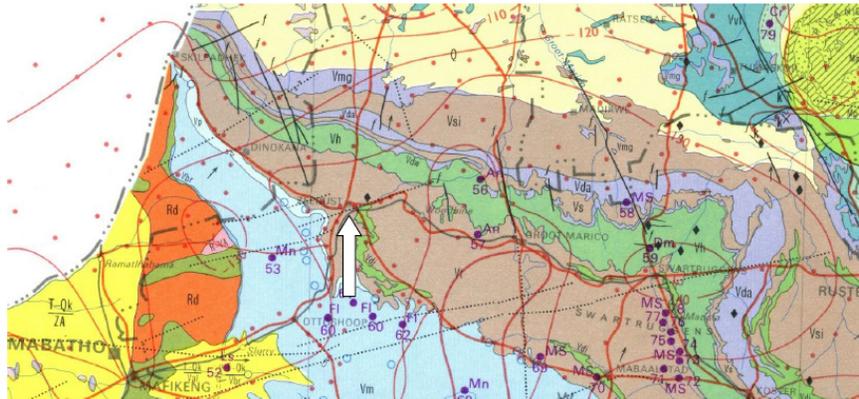


Fig 1: Geology of the region around Zeerust and locality marked with white arrow. Map enlarged from the Geological Survey, Pretoria; 1984, 1: 1 000 000. Vt = Timeball Hill and Rooihogte Formations (Pretoria Group); Vdi = Vaalian, diabase.

Recommendation

As far as the palaeontology is concerned, the proposed project may go ahead as there are no fossils in the area.

References

Eriksson, P.G., Altermann, W., Hartzler, F.J., 2006. The Transvaal Supergroup and its precursors. In: Johnson, M.R., Anhaeusser, C.R. and Thomas, R.J., (Eds). The Geology of South Africa. Geological Society of South Africa, Johannesburg / Council for Geoscience, Pretoria. pp 237 – 260.

Unpublished catalogue at BPI Palaeontology (now ESI), University of the Witwatersrand

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