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**A REPORT ON A PHASE 1 HERITAGE IMPACT ASSESSMENT  
FOR THE DEVELOPMENT OF THE GOEDEHOOP 300MW SOLAR PV FACILITY LOCATED ON  
SEVERAL PORTIONS OF FARMS IN THE HANOVER DISTRICT, EMTHANJENI LOCAL  
MUNICIPALITY, PIXLEY KA SEME DISTRICT MUNICIPALITY  
IN THE NORTHERN CAPE PROVINCE.**

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REPORT: **APAC021/10**

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***February 2021***

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**Although all efforts are made to identify all sites of cultural heritage (archaeological and historical) significance during an assessment of study areas, the nature of archaeological and historical sites are as such that it is always possible that hidden or subterranean sites, features or objects could be overlooked during the study. APELSE Archaeological Consulting can't be held liable for such oversights or for costs incurred as a result thereof.**

**Clients & Developers should not continue with any development actions until SAHRA or one of its subsidiary bodies has provided final comments on this report. Submitting the report to SAHRA is the responsibility of the Client unless required of the Heritage Specialist as part of their appointment and Terms of Reference**

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## SUMMARY

APelser Archaeological Consulting (APAC) was appointed by Ecoleges Environmental Consultants cc, on behalf of Soventix South Africa (Pty) Ltd, to conduct a Phase 1 Heritage Impact Assessment for their development of a 300MW solar photo-voltaic (PV) facility, comprising 3 interconnected 100MW plants, one sub-station that ties into existing overhead ESKOM 400kV transmission lines, and associated infrastructure including containerized lithium-ion battery storage and gas turbines, on several portions of farms in the Hanover District, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province. The assessment is a follow-up on previous work for the same Solar PV project conducted in 2017 by APAC cc (**See Report APAC017/11**), with the 2021 assessment focusing on the so- called PV2 Array area.

Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area fall, with a number recorded and identified during the 2017 assessment. The February 2021 assessment furthermore identified a number of sites, features or material of cultural heritage (archaeological and/or historical) significance in the study area, and included mainly individual Stone Age artifacts and scatters of Stone Age material. This report discusses the results of both the background research and physical assessment and provides recommendations on the way forward at the end.

**From a Cultural Heritage Point of View it is recommended that the proposed development be allowed to continue, taking into consideration the recommendations put forward at the end of the report.**

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## **1. INTRODUCTION**

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Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area fall, with a number recorded and identified during the 2017 assessment. The February 2021 assessment furthermore identified a number of sites, features or material of cultural heritage (archaeological and/or historical) significance in the study area, and included mainly individual Stone Age artifacts and scatters of Stone Age material.

The client indicated the location and boundaries of the area that had to be assessed and the work was confined to this location.

## **2. TERMS OF REFERENCE**

The Terms of Reference for the study was to:

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

### **3. LEGISLATIVE REQUIREMENTS**

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

#### **3.1. The National Heritage Resources Act**

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

- a. Archaeological artifacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years
- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

#### **The National Estate includes the following:**

- a. Places, buildings, structures and equipment of cultural significance
- b. Places to which oral traditions are attached or which are associated with living heritage
- c. Historical settlements and townscapes
- d. Landscapes and features of cultural significance
- e. Geological sites of scientific or cultural importance
- f. Sites of Archaeological and palaeontological importance
- g. Graves and burial grounds
- h. Sites of significance relating to the history of slavery
- i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

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

- a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length

- c. Any development or other activity that will change the character of a site and exceed 5 000m<sup>2</sup> or involve three or more existing erven or subdivisions thereof
- d. Re-zoning of a site exceeding 10 000 m<sup>2</sup>
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

### **Structures**

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

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

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

### **Archaeology, palaeontology and meteorites**

Section 35(4) of the 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)**.

### **3.2. The National Environmental Management Act**

This act states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of the environment, will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made.

Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitute the nation's cultural

heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

## **4. METHODOLOGY**

### **4.1. Survey of literature**

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

### **4.2. Field survey**

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

### **4.3. Oral histories**

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

### **4.4. Documentation**

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

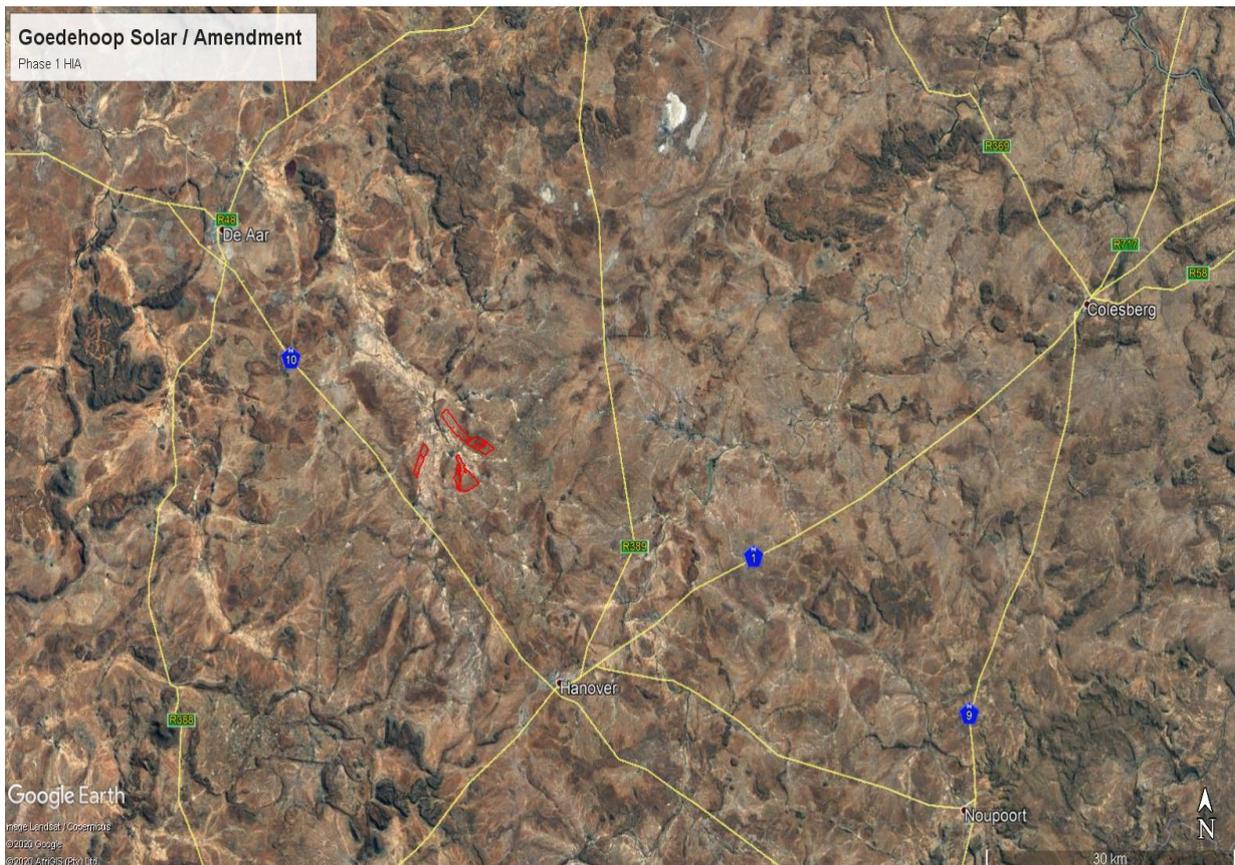
## **5. DESCRIPTION OF THE AREA**

The study and development area is located on several portions of farms in the Hanover District, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province. The February 2021 Heritage assessment formed part of the proposed Part 2 amendment application for the 300MW solar photo-voltaic (PV) facility, comprising 3 interconnected 100MW plants, one sub-station that ties into existing overhead Eskom 400kV transmission lines, and associated infrastructure including containerized lithium-ion battery storage and gas turbines. Previous work for the proposed Solar PV Plant provided background information, with the current assessment focusing on the PV2 Solar Array area.

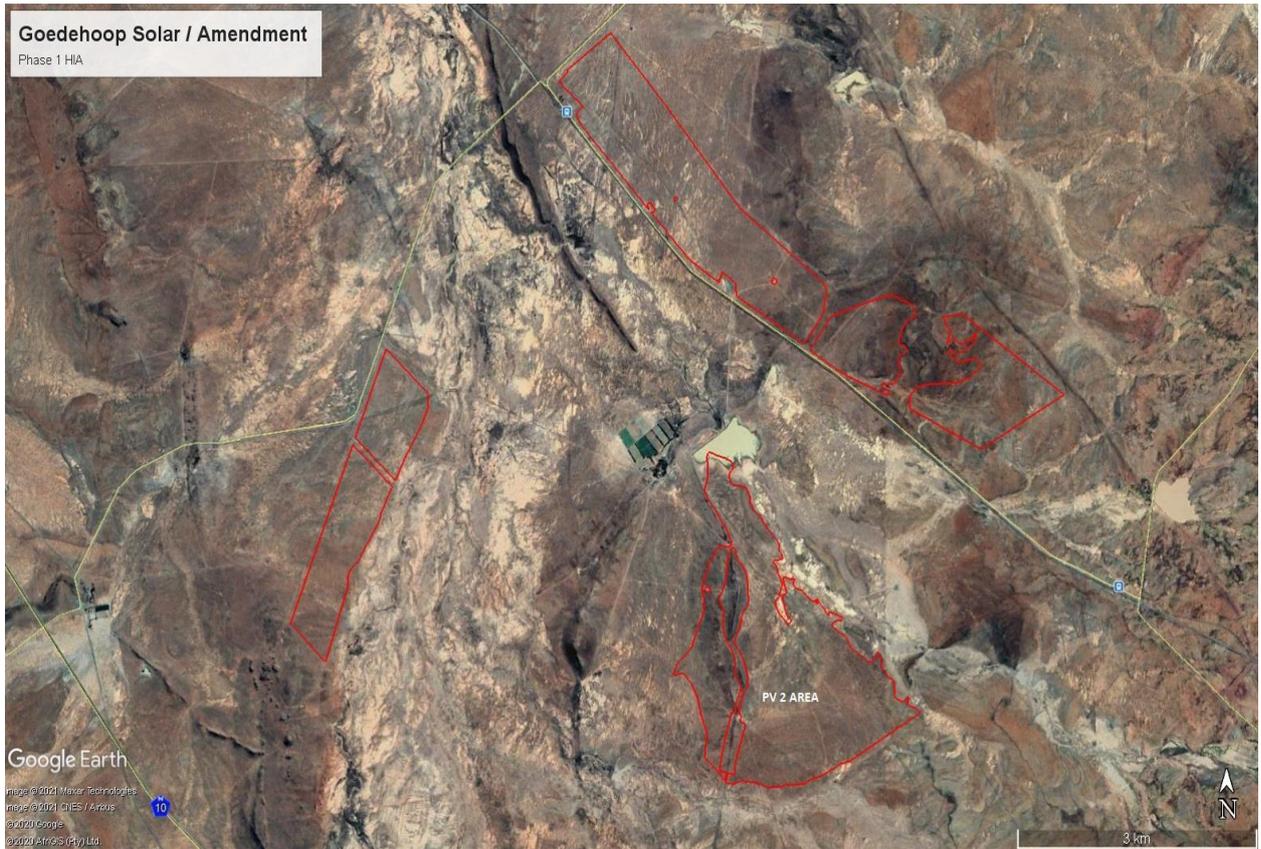
The Upper Nama Karoo (Nku3) vegetation of the region is limited by the low annual rainfall

(ca. 190 - 200 mm/a) and is dominated by flat plain areas and hills with rocky outcrops. The geology is mostly Dwyka / Ecca shales overlaid with shallow sandy soils that drain well. In general the topography of the study area is flat and open, with some rocky ridges/outcrops and low hills surrounding present. Tree cover is scarce, but fairly dense ground cover (grass/shrubs/bushes) in large sections did hamper visibility on the ground during the February 2021 assessment. The focus of the field assessment was therefore on large open patches of soil and erosion dongas, as well as the rocky ridges and outcrops.

In general the area has not been disturbed by modern developments, except for the railway line that is situated to the north & northeast of the study area. Existing 400Kv Eskom Powerline corridors cuts through the areas and have had some impact, with the largest other type of impact being agricultural activities (sheep/cattle; grazing and limited crop growing and ploughing). Farmsteads and related infrastructure are also present, but these will not be directly impacted by the proposed development actions.



**Figure 1: General location of the study area showing the 3 PV Plant areas (Google Earth 2021).**



**Figure 2: Closer view of the location of the development and study area (Google Earth 2021). The PV 2 area is indicated.**



**Figure 3: Closer view of the location & footprint of the PV2 area (Google Earth 2021).**

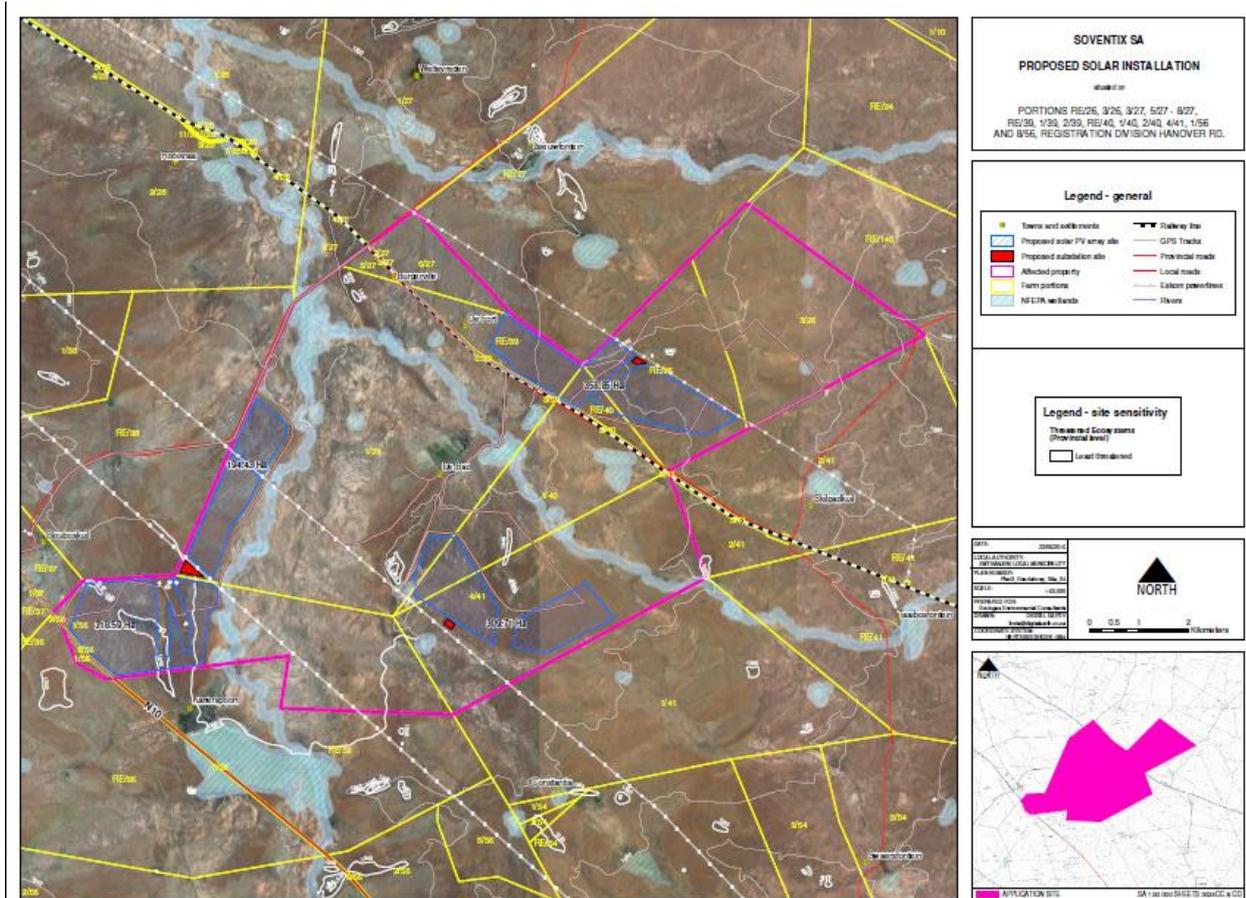


Figure 4: Location and development area footprint (courtesy Ecoleges).



Figure 5: General view of a section in the northern parts of the area.



**Figure 6: Another view of the general area showing the low hill that runs through a part of the area.**



**Figure 7: General view showing the general flat nature of the study area. The dense ground cover hampered visibility on the ground.**



**Figure 8: Some sections are more open and contain less vegetation (ground cover). This made visibility on the ground in these sections better.**



**Figure 9: Another general view of the study area in the central parts.**



**Figure 10: General view of a section of the PV2 study area.**



**Figure 11: Some sections are also more open as a result of livestock grazing.**



**Figure 12: Open, eroded areas such as these were focused on and many of the Stone Age sites were found in these locations.**



**Figure 13: Another general view in the southern part of the study area.**

## 6. DISCUSSION

A number of Heritage Impact Assessments have been undertaken in the larger geographical area. No Grade I or II sites (National or Provincial Heritage Sites) have been identified in close proximity to the proposed development area as yet.

The possible impact of the proposed development on paleontological resources is gauged by using the fossil sensitivity maps available on the SAHRIS and the nature of the proposed development.

### **Karoo Sedimentary Rocks**

The Beaufort Group contains fossils of diverse terrestrial and freshwater tetrapods of *Tapinocephalus* and *Lystrosaurus* genere (amphibians, true reptiles, synapsids – especially therapsids), palaeoniscoid fish, freshwater bivalves, trace fossils (including tetrapod trackways) and sparse vascular plants (*Glossopteris* Flora, including petrified wood) that dates to the Late Permian – Early Triassic Periods (c. 266 – 250 Ma). The area of the proposed development where this geological signature occurs is regarded as highly sensitive with regards to palaeontological heritage (Palaeo Field Services cc 2014: 5).

### **Karoo Dolerites**

No fossil heritage has been recorded in these intrusive dolerites (dykes, sills) and associated diatremes. The dolerite dykes and sills within the area of the proposed development are not palaeontologically significant. Notice must however be taken of the presence of these features as Stone Age quarry sites are usually found at the foot of dolerite hills where hornfels outcrops occur. Dolerite is also associated with engraving sites. One such site has been recorded at the Commonage in Hanover Town (Palaeo Field Services 2014: 5).

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

Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago

Middle Stone Age (MSA) less than 300 000 – 20 000 years ago

Later Stone Age (LSA) 40 000 years ago – 2000 years ago

The Stone Age is well represented in the area by the archaeological remains associated with Stone Age hunter gatherers and herders and includes cave shelters and surface sites. These occurrences cover represent the Early, Middle and Later Stone Ages. Erosion gullies and river/streambeds and dolerite outcrops are usually associated with stone tool assemblages (Palaeo Field Services 2014: 6).

For prehistory, Sampson's (1972, 1974) survey of the Seacow drainage near Hanover (part of his Orange River Scheme) is the most important archaeological project in the Karoo environment of the Northern Cape. His team recorded sites and quarries, ranging from the Earlier, Middle and Later Stone Ages, to proto-historic pastoralist camps and Historic farmyards. Among other things, the research noted a correlation between age and the patina on hornfels (also called lydianite and indurated shale): dark brown to yellow = Earlier Stone Age; red = Middle Stone Age; grey to grey brown = Lockshoek; light brown/tan = Interior Wilton; and black = Smithfield (the last three belonging to the Later Stone Age). This culture-history sequence forms a basis for identifying stone tool industries and historic occupations over the entire district. There have been several investigations in the De Aar district itself because of the ammunition disposal plant to the west and various solar panel projects (e.g. Kaplan 2010; Kruger 2012; Morris 2011). Generally, archaeologists have found scatters of stone tools dating to the Middle and Later Stone Ages. In addition, the ammunition area yielded an Earlier Stone Age scatter, and a few rock art sites are on record for the district (Morris 1988; Rudner and Rudner 1968). These reports show that the De Aar district has a rich archaeological heritage (Huffman 2013: 3).

Surface scatters of stone tools (mostly Early and Middle Stone Age) were recorded during various earlier Heritage Impact Assessments: - The farm Plooyfontein 93 (Palaeo Field Services 2014: 6; 24) in the Hanover District.

- Erf 3094 on the old De Aar 180 farm (Huffman 2013: 5-6)
- A variable density of stone artifacts, mostly of Pleistocene age, was noted over most of the area examined during the Archaeological Specialist Input on the site of the proposed Taaibosch Photovoltaic Plant between De Aar and Hanover (David Morris 2011). Rock art sites have also been recorded (Morris 1988, Rudner & Rudner 1968). Included are the engraving sites at the Hanover Town Commonage and at the farm Groenfontein, Hanover District. (Palaeo Field Services 2014).

**A number of Stone Age sites were identified and recorded during the 2017 assessment for the Soventix Solar PV Project (some of which occur close to or in the PV2 Array area), while further sites were also identified and recorded during the February 2021 fieldwork.**

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal 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) however indicates that a Middle Iron Age should be included. His dates, which now seem to be 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.

***The Iron Age is not represented in the general area of the development. No sites were found during the assessment as well, although one of the sites recorded could represent a proto-historic pastoralist structure similar to those described by Sampson.***

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, but more recently also refers to the last five hundred years of South African history. Farms and other historical settlements in the area date back to the 1840's, while the area also have evidence associated with the South African (Anglo Boer) War. Signs of historical occupation is common in the general area and includes abandoned sheep kraals and homestead ruins. Old railway infrastructure (housing, old railway lines and foundations) was also recorded (at nearby Burgervilleweg (Becker 2012).

The proximity of the railway means that material traces may exist alongside that relate to its construction, maintenance and use, and its protection by way of blockhouses, as a major transport route for British forces further inland during the Anglo-Boer War. The Google Earth image of the area clearly shows different generations of railway alignment within the study area. Jean Beater's heritage report describes Anglo-Boer War redoubts (components of a blockhouse line) on the north side of the older railway (Beater 2011).

**A number of historical sites, features and artifacts related to the above was identified and recorded during the 2017 assessment in the larger area. None was identified during the 2021 study.**

#### **Results of the February 2021 field assessment**

The sites recorded close to and in the PV2 Solar Array area during the 2017 assessment will not be discussed here again but will be indicated on the Heritage Sites Map that will be provided at the end of the discussion. These seven (7) sites were Sites 15-21, with Sites 15, 16 & 18 dating to the Stone Age and Sites 17, 19, 20 & 21 dating to the Historical period and Anglo-Boer War (1899-1902).

#### **2017 GPS Locations of Sites**

S30.88862 E24.33071(15); S30.88920 E24.32936(16); S30.89174 E24.32450(17); S30.89070 E24.31404(18); S30.89076 E24.31306(19); S30.89010 E24.31322(20); S30.88885 E24.31347(21);

**Cultural Significance of Sites:** Low (15; 16 & 18) for Stone Age sites and Low (17) & Medium (19-21) Historical Sites.

**Heritage Significance of Sites:** Grade III: Other heritage resources of local importance and therefore worthy of conservation

**Field Ratings for Sites:** General protection C (IV C): Phase 1 is seen as sufficient recording and it may be demolished (**Low significance**) & General protection B (IV B): site should be recorded before destruction (**Medium significance**)

**Mitigation:** No further mitigation required for the Stone Age sites. The Anglo-Boer War (1899-1902) related sites (**Sites 19-21**) should be mitigated if they are to be impacted by the proposed development actions. This will include detailed mapping and drawing of the sites, as well as limited historical-archaeological excavations. If these sites can be avoided then no further mitigation is required.

### **February 2021 Sites Discussion**

A total of 12 sites were identified during the 2021 assessment of the PV Solar Array area. They included rock engravings, a number of open-air Stone Age surface sites (with varying degrees of density) and a possible pastoralist site (stone-walled enclosure).

#### **Site 1**

Site 1 is rocky outcrop with a number of rocks containing possible engravings in the form of various striations and lines. Although the age of the engravings can't be determined without a doubt, it could be related to proto-historic pastoralists that moved through the area. Stone Age material (tools/flakes) was also identified in the general proximity of the site.

Should the site be negatively impacted by the proposed development activities it is recommended that Phase 2 Archaeological mitigation work be undertaken. This will entail the detailed mapping, photographic recording and drawing of the site and the individual engravings (through detailed rubbings) to ensure the capturing of the information contained on the site before destruction.



**Figure 14: View of Site 1.**



**Figure 15: One of the rocks with “engravings”.**



**Figure 16: Another engraving at Site 1.**



**Figure 17: Another rock at Site 1 with random lines and striations.**

#### **Sites 2-10 & 12: Stone Age open-air surface scatters**

These sites were all open-air surface scatters with differing densities of material (flakes, more formal tools such as blades and scrapers, hammer stones) on them. These artifact and sites date to between the MSA and LSA and is similar to those found in other areas during the 2017 assessments and in other studies by archaeologists in the larger geographical area.

Although only 10 sites were identified, there could potentially be many more located in the area. Fairly dense ground cover (grass, shrubs/bushes) hampered visibility during the survey and the focus was therefore on more open patches of ground, erosion dongas and pans. Most of the sites identified and recorded occurred in these areas. Some of the sites were located close to and around the low hill that runs through a section of the study area and around rocky outcrops.

Although these sites and finds are open-air surface locations and not in a primary context, it is believed that they could contribute to our knowledge of the Stone Age of the specific and larger geographical area. If the sites can't be avoided by the development activities and need to be destroyed as a result then the following mitigation measures are recommended prior to development commencing:

1. Mapping of surface sites to determine their extents
2. Surface collection of material to obtain a representative sample of Stone Age material and types to determine the age of the material and sites



**Figure 18: Stone Age material from Site 2.**



**Figure 19: Material at Site 3.**



**Figure 20: Stone tools at Site 4.**



**Figure 21: Stone tools from Site 5. The site is located close to a pan area.**



**Figure 22: Hammer stone from Site 5.**



**Figure 23: Erosion area and pan. Scatters of material were also identified here.**



**Figure 24: LSA material from Site 7.**



**Figure 25: Stone Age material from Site 8. The site is located close to an old pan.**



**Figure 26: Stone tools at Site 9.**



**Figure 27: Some of the Stone Age material at Site 10.**

## Site 11 – Stone-packed enclosure and walling

Site 11 contains the remains of what seems to be a collapsed stone-walled enclosure close to the low hill in the area, situated on a natural rocky terrace, as well as a smaller section of stone walling. A grinding hollow was also recorded in close proximity. Although the age and function of these features can't be determined without a doubt at this stage, it is likely related to proto-historical pastoralists and could represent the remnants of a small camp.

Although the site is not completely intact, these types of sites are fairly scarce and slowly disappearing from the landscape as a result of various factors such as developments. It is therefore deemed as of fairly High Significance from a Cultural Heritage perspective. It is recommended that the site should be avoided if possible and be preserved in situ. If the proposed development actions can't avoid the site the following is recommended:

1. Detailed mapping and drawing of the site and its features
2. Limited archaeological excavations on the site before destruction.



**Figure 28: Section of small stone-walled enclosure on Site 11.**



**Figure 29: Collapsed stone-walling enclosure on Site 11.**



**Figure 30: Grinding hollow at Site 11.**



**Figure 31: Location of sites found in the PV2 area. The blue colored pins are those recorded in 2017 and the red ones those found in February 2021 (Google Earth 2021).**

**GPS Location of Sites:** S30 51 32.10 E24 18 43.00 (1); S30 51 30.70 E24 18 46.50 (2) S30 52 09.80 E24 19 00.00 (3); S30 52 13.70 E24 19 16.00 (4); S30 52 12.20 E24 19 16.20 (5); S30 52 19.20 E24 19 16.60 (6); S30 52 03.00 E24 18 48.30 (7); S30 53 30.60 E24 19 05.40 (8); S30 53 00.90 E24 18 45.90 (9); S30 52 58.50 E24 19 01.80 (10); S30 52 39.10 E24 18 42.60 (11) & S30 52 43.00 E24 18 39.00 (12).

**Cultural Significance:** Medium to High

**Heritage Significance:** Grade III: Other heritage resources of local importance and therefore worthy of conservation

**Field Ratings:** General protection A (IV A): Sites should be mitigated before destruction (High/Medium significance)

**Mitigation:** See Above discussions on the various sites

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

## 7. CONCLUSIONS AND RECOMMENDATIONS

In conclusion it can be said that the Phase 1 Heritage Impact Assessment for their development of a 300MW solar photo-voltaic (PV) facility, comprising 3 interconnected 100MW plants, one sub-station that ties into existing overhead ESKOM 400kV transmission lines, and associated infrastructure including containerized lithium-ion battery storage and gas turbines, on several portions of farms in the Hanover District, Emthanjeni Local Municipality, Pixley Ka Seme District Municipality, Northern Cape Province was concluded successfully. The assessment is a follow-up on previous work for the same Solar PV project conducted in 2017 by APAC cc (**See Report APAC017/11**), with the 2021 assessment focusing on the so- called PV2 Array area.

Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area fall, with a number recorded and identified during the 2017 assessment. The February 2021 assessment furthermore identified a number of sites, features or material of cultural heritage (archaeological and/or historical) significance in the study area.

A total of 12 sites were identified during the 2021 assessment of the PV Solar Array area. They included rock engravings, a number of open-air Stone Age surface sites (with varying degrees of density) and a possible pastoralist site (stone-walled enclosure).

**Site 1** is rocky outcrop with a number of rocks containing possible engravings in the form of various striations and lines. Although the age of the engravings can't be determined without a doubt, it could be related to proto-historic pastoralists that moved through the area. Stone Age material (tools/flakes) was also identified in the general proximity of the site. Should the site be negatively impacted by the proposed development activities it is recommended that Phase 2 Archaeological mitigation work be undertaken. This will entail the detailed mapping, photographic recording and drawing of the site and the individual engravings (through detailed rubbings) to ensure the capturing of the information contained on the site before destruction.

Although only **10 Stone Age** sites were identified, there could potentially be many more located in the area. Fairly dense ground cover (grass, shrubs/bushes) hampered visibility during the survey and the focus was therefore on more open patches of ground, erosion dongas and pans. Although these sites and finds are open-air surface locations and not in a primary context, it is believed that they could contribute to our knowledge of the Stone Age of the specific and larger geographical area. If the sites can't be avoided by the development activities and need to be destroyed as a result then the following mitigation measures are recommended prior to development commencing:

1. Mapping of surface sites to determine their extents
2. Surface collection of material to obtain a representative sample of Stone Age material and types to determine the age of the material and sites.

**Site 11** contains the remains of what seems to be a collapsed stone-walled enclosure close to the low hill in the area, situated on a natural rocky terrace, as well as a smaller section of stone walling. A grinding hollow was also recorded in close proximity. The age and function of these features can't be determined without a doubt at this stage, but it is likely related to proto-historical pastoralists and could represent the remnants of a small camp. Although the site is not completely intact, these types of sites are fairly scarce and slowly disappearing from the landscape as a result of various factors such as developments. It is therefore deemed as of fairly High Significance from a Cultural Heritage perspective. It is recommended that the site should be avoided if possible and be preserved in situ. If the proposed development actions can't avoid the site the following is recommended:

1. Detailed mapping and drawing of the site and its features
2. Limited archaeological excavations on the site before destruction.

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

**Finally, it is recommended that the proposed developments be allowed to continue, taking into consideration the recommendations put forward above.**

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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.