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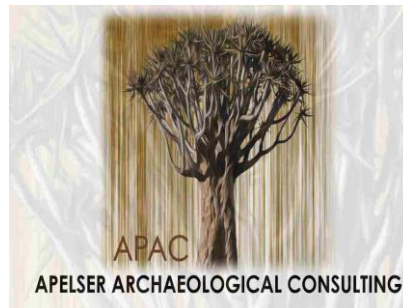
LYNNWOOD RIDGE

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Tel: 083 459 3091

Fax: 086 695 7247

Email: apac.heritage@gmail.com



Comprehensive and Professional Solutions for all Heritage Related Matters
CK 2006/014630/23 **VAT NO.: 4360226270**

APAC023/88

2023-08-29

To: Me. Lizette Kloppers

EarthnSky Environmental
P.O. Box 5419
Rietvalleirand
Pretoria
0174

RE: HIA STATEMENT **AMENDMENT REPORT RELATED TO THE HERITAGE IMPACT ASSESSMENT FOR THE ENVIRONMENTAL AUTHORISATION AMENDMENT APPLICATION FOR THE 75 MW HUMANSRUS PHOTOVOLTAIC (PV) 1 SOLAR POWER FACILITY (REFERRED TO AS LESEDI POWER COMPANY), NORTHERN CAPE**

APelsers Archaeological Consulting cc (APAC cc) was appointed by EarthnSky Environmental to undertake the above work. Previous Heritage/Archaeological work in the study & development area informed the current study & Heritage Impact Assessment process.

Background to the Project

On the 29th of August 2011 an EA was issued by DFFE (then DEA) for the construction of the 160 MW Humansrus Solar Power Farm on the Farm Humansrus 469 (DEA Reference 12 12 20 1903). Due to Eskom's restrictions in terms of the Renewable Energy IPP Procurement Programme (an amendment application was lodged to split the 160 MW Humansrus Solar Power Farm into two separate 75 MW solar facilities (for Lesedi and Jasper Power Projects), and therefore two separate EAs.

The amendment application related to the EA granted for the 75 MW Humansrus (PV1) Solar Power Facility (Lesedi Power Company), as issued on 23 February 2012 (DEA Reference 12 12 20 1903 1). A subsequent Environmental Authorisation amendment was granted on 11 July 2012 to change the holder of the Environmental Authorisation from Intikon Energy (Ltd) to Oakleaf Investment Holdings 79 (Ltd) (DEA Reference 12 12 20 1903 1). In 2017 a further EA amendment application was submitted (but never completed because authorization was first required for Section 21 (c) and (i) (water uses in terms of the National Water Act, 1998). A Water Use Registration Record No 25065811 was issued by the DWS on 26 April 2019 for one road crossing a water course This Registration Certificate was revised by the DWS on 24 June 2021 to include two additional access roads and the overhead powerline crossing watercourses (File No 27 2 2 /D 173 18 1).

AJ Pelsers BA (UNISA), BA (Hons) (Archaeology) [WITS], MA (Archaeology) [WITS]

Beatrix Bed & Breakfast Trading as A Pelsers Archaeological Consulting

The DWS also issued a letter, dated 13 July 2021 (File No 27 2 2 /C 591 55 1) confirming that sewage effluent discharge on site falls within the ambit of a General Authorization under section 21 (and is a permissible water use under section 22 of the NWA). The current EA for the 75 MW Humansrus Photovoltaic (PV1) Solar Power Facility (referred to as Lesedi Power Company) includes the following listed activities:

GN R 387:

1. (a) (i) (The construction of facilities or infrastructure, including associated structures or infrastructure, for the generation of electricity where electricity output is 20 megawatts or more
1. (a) (ii) (The construction of facilities or infrastructure, including associated structures or infrastructure, for the generation of electricity where the elements of the facility cover a combined area in excess of 1 hectare
1. (i) The transmission and distribution of above ground electricity with capacity of 120 kilovolts or more
2. Any development activity, including associated structures and infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares or more.

The EA amendment application was lodged in order to finalise the application that was initiated but not completed in 2017. The impact assessment in the Environmental Impact Report will assess the impacts of all the relevant amendments applied for. EA amendment was sought for the following:

- i. Confirmation of change of the contact person for Oakleaf Investment Holdings 79 (Ltd) (Trading as Lesedi Power Company (Ltd)
- ii. To amend the size and location of the substation, and indicate that the substation area comprises a control room, external 132 kV transformers, electric switch gear, capacitor banks and is fenced for security and safety
- iii. To indicate the location of the operations and maintenance facility, and to show this consists of an office and storage buildings, security, ablution facilities, parking, outdoor storage area and water treatment facility
- iv. To include aboveground 22 kV power lines between the northern solar field and the substation, i e across the railway line and D 3381 road
- v. Relaxation of the 200 m visual buffer (condition 29 of the EA and the 50 m buffer (condition 30 of the EA for the aboveground 22 kV power lines between the northern solar field and the substation that cross the railway line and D 3381 road (Updated Visual Impact Assessment already completed)
- vi. To show PV arrays of up to 1 km in length across the south solar field and up to 1 5 km in length across the north solar field, and made up of approximately 100 m Sections
- vii. To accommodate the temporary storage of up to 300 waste solar PV modules on site, in compliance with the 2013 National Norms and Standards for the storage of waste, as per NEM WA Regulations (a N&S Registration application will also be lodged with the DFFE for the storage of the waste solar PV modules)
- viii. To align the authorised development footprint with the farm boundary, to accommodate the overburden storage area, and to indicate that a small borrow pit on site was not needed during the construction phase, as excess overburden was used for filling

- ix. To indicate that the solar irradiation measuring panel (approximately 16 m² in size) was in place during the feasibility stage, to collect data on the solar resource which informed the layout of the facility, but is not permanent, and was removed prior to commencement of operations
- x. To include three autonomous weather stations (approximately 4 m in height), for continuous monitoring of local conditions during the operational phase, and three soiling stations consisting of two PV panels each, measuring approximately 4 m² in size each, to monitor and determine operational efficiencies
- xi. Approval of the as built drawings and layout plans for the entire operations

An independent desktop compliance review of previous Heritage Impact work in the study and development area, as well as Addendum Document with Heritage Impact Assessment for which APAC cc was appointed, formed part of this Environmental Authorisation Amendment Application. The August 2023 Amendment Report relates to SAHRA's Final Comments Letter on Case ID#21432, and also discusses briefly the impact of the development on previously recorded graves not included in the earlier HIA Review Report.

Relevant Legislation

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).

The National Heritage Resources Act (Act 25 of 1999)

According to the Act the following is protected as cultural heritage resources:

- a. Archaeological artefacts, 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; and
- 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; and
- 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. According to Section 38 (1) of the Act 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 000m².
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

Results of Desktop Heritage Review & Heritage Assessment

The study and development area is located on Remaining Portion of the Remainder of Farm 469, Hay Rd, 30km east of Postmasburg in the Northern Cape Province.

The general topography and landscape of the study and application (development) area can not be described from a personal observation perspective (with fieldwork not forming part of this appointment). The description is taken from a 2010 study done in the same area for the Groenwater Solar Power Farm.

"The property has access via the R385 which connects Postmasburg and Barkley West, as well as the D3381 gravel road which cuts through the southern portion of the property and connects the R385 to Lime Acres. The latter road runs alongside the railway line. The north-western portion of the Study Area, which is located on high lying ground, will not be covered in solar panels as the owner of the property is mining red jasper. Several hectares have been opened to a depth of 2 m or more. The central portion of the property is undulating with the low-lying areas covered in long grass. The hill slopes are covered in taller, woody vegetation including a stand of wild olive trees in the south-eastern corner). The owner has indicated that he wants to conserve this grove of trees. This portion of the Study Area will also not be impacted by the solar panels. The farm is currently being used for grazing by livestock and for the breeding of horses. There is a small, non-perennial stream which runs south-east to north-west more or less parallel to the railway line and the D3381 road. It has a tributary which starts behind the old Humansrus farmhouse. The owner has indicated that this tributary may flow after heavy rains. There are a number of low depressions within the site which may hold shallow water bodies (pans) after rains." (Webley et.al. 2010: 7).

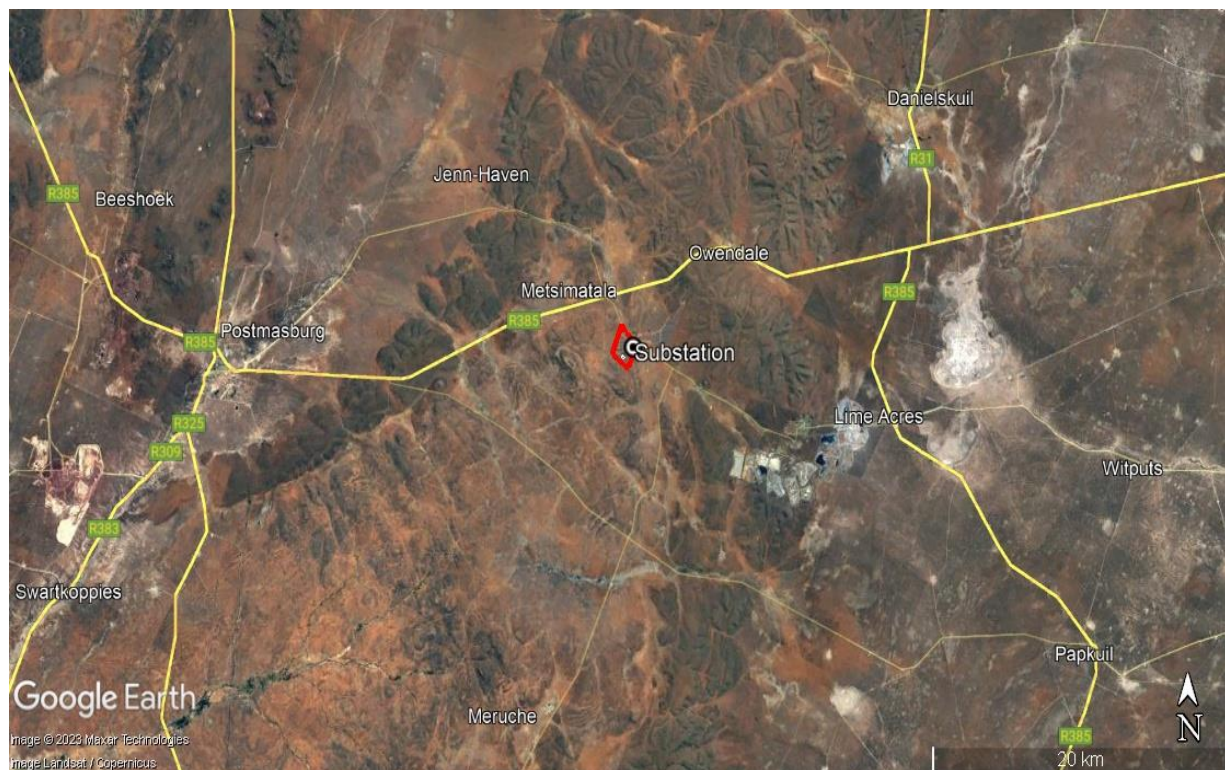


Figure 1: General location of the study & application area in red polygon (Google Earth 2023).

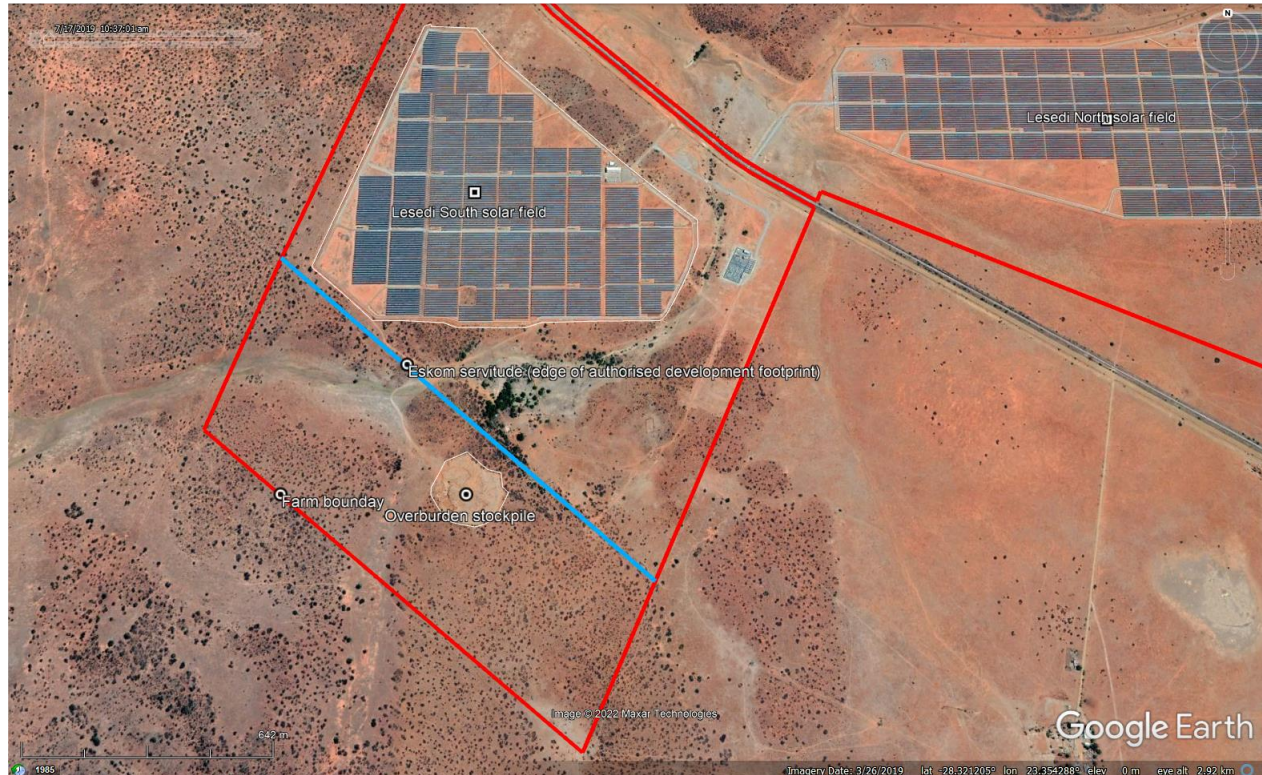


Figure 2: Closer view of the study & application area location and footprint (from Google Earth provided by EarthnSky Environmental).

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).

The archaeology of the Northern Cape is rich and varied, covering long spans of human history. The Karoo is particularly bountiful. Some areas are richer than others, and not all sites are equally significant. The significance of sites encountered in the study area may be assessed against previous research in the region and subcontinent. The region's remoteness from research institutions accounts for a relative lack of archaeological research in the area. The area has probably been relatively marginal to human settlement for most of its history, yet it is in fact exceptionally rich in terms of Stone Age sites and rock art, as a number of studies have shown (Morris 2006).

Stone Age sites are known to occur in the larger geographical area, including the well-known Wonderwerk Cave in the Kuruman Hills, Tsantsabane, an ancient specularite working on the eastern side of Postmasburg, Doornfontein, another specularite working north of Beeshoek and a cluster of important Stone Age sites near Kathu (including the Kathu Pan sites). Additional specularite workings with associated Ceramic Later Stone Age material and older Fauresmith sites (early Middle Stone Age) are known from Lylyfeld, Demaneng, Mashwening, King, Rust & Vrede, Paling, Gloucester and Mount Huxley to the north. Rock engraving sites are known from Beeshoek and Bruce (Morris 2005: 3).

A number of Stone Age sites and scatters of Stone Age material are known to exist in and close to the specific study and development area. These were identified and recorded during earlier work here (2010) and will be discussed in the next section.

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artefacts. 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 expansion of early farmers, who, among other things, cultivated crops, raised livestock, made ceramic containers (pots), mined ore and smelted metals, occurred in this area between AD 400 and AD 1100 and brought the Early Iron Age (EIA) to South Africa. They settled in semi-permanent villages (De Jong 2010: 35).

While there is some evidence that the EIA continued into the 15th century in the South African Lowveld, on the escarpment it had ended by AD1100. The Highveld became active again from the 15th century onwards due to a gradually warmer and wetter climate. From here communities spread to other parts of the interior. This later phase, termed the Late Iron Age (LIA), was accompanied by extensive stonewalled settlements, such as the Thlaping capital Dithakong, 40 km north of Kuruman (De Jong 2010: 35-36).

Sotho-Tswana and Nguni societies, the descendants of the LIA mixed farming communities, found the region already sparsely inhabited by the Late Stone Age (LSA) Khoisan groups, the so-called 'first people'. Most of them were eventually assimilated by LIA communities and only a few managed to survive, such as the Korana and Griqua. This period of contact is sometimes known as the Ceramic Late Stone Age and is represented by the Blinkklipkop specularite mine near Postmasburg and finds at the Kathu Pan (De Jong 2010: 36).

Factors such as population expansion, increasing pressure on natural resources, the emergence of power blocs, attempts to control trade and penetration by Griquas, Korana and white communities from the south-west resulted in a period of instability in Southern Africa that began in the late 18th century and effectively ended with the settlement of white farmers in the interior. This period, known as the *difaqane* or *mfecane*, also affected the Northern Cape Province, although at a relatively late stage compared to the rest of Southern Africa. Here, the period of instability, beginning in the mid-1820s, was triggered by the incursion of displaced refugees associated with the Tlokwa, Fokeng, Hlakwa and Phuting tribal groups.

The *difaqane* coincided with the penetration of the interior of South Africa by white traders, hunters, explorers and missionaries. The first was PJ Truter's and William Somerville's journey of 1801, which reached Dithakong at Kuruman. They were followed by Cowan, Donovan, Burchell and Campbell and resulted in the establishment of a London Mission Society station near Kuruman in 1817 by James Read. Robert Moffat and his wife Mary came to Kuruman in 1820 and the mission has been known as The Moffat Mission Station ever since.

The Great Trek of the Boers from the Cape in 1836 brought large numbers of Voortrekkers up to the borders of large regions known as Bechuanaland and Griqualand West, thereby coming into conflict with many Tswana groups and also the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s when the Korana and Griqua communities became involved and later also the British government. The conflict mainly centered on land claims by various communities. For decades the western border of the Transvaal Boer republic was not fixed. Only through arbitration (the Keate Arbitration), triggered by the discovery of gold at Tati (1866) and diamonds

at Hopetown (1867) was part of the western border finally determined in 1871. Ten years later, the Pretoria Convention fixed the entire western border, thereby finally excluding Bechuanaland and Griqualand West from Boer domination (De Jong 2010: 36).

Although no Iron Age sites or material were identified in the area during the 2010 assessment for the Groenwater Solar Farm, some recent historical sites & features were identified and recorded here (Webley et.al. 2010: 2-3).

Results of 2010 Groenwater Solar Farm Heritage Impact Assessment (Webley et.al. 2010: 13-20)

The old Humansrus homestead (**Site 2**), located to the south of the railway line and the D3381 road was the 1st site recorded at the time. The farmhouse and outbuildings were marked by a stand of trees. The main house was in ruins, with the doors, windows and door frames removed. The foundations of the house are of stone and the walls of mud-brick. The shed was still in reasonably good condition at the time. The farm owner, Mr. Schultz, explained that after the family moved to the more modern house to the north of the R385, they cannibalised the old farmhouse and stone kraals.

The family graveyard (part of Site 2) is located close to the house and near a stand of exotic cactus plants. It consists of four stone cairns, all covered with local stone termed "Ongeluk lava". Only one grave contains a collapsed white marble headstone. The inscription indicates the deceased had the surname Human and died in 1913. There is a wind pump and stone dam/kraal behind the house. According to Mr. Schultz, the wind pump is located on a natural seepage which, after heavy rains, flows down a gully as a fast-flowing stream into the non-perennial river which crosses the southern portion of the Study Area. Mr. Schultz utilized the water from this river and indicated that the drainage area will not be impacted by the solar array.

A thin spread of archaeological remains was identified behind the farmstead around the old water seepage. This included a weathered Early Stone Age implement and two Later Stone Age artefacts.

There were two stone kraals in this area (Site 004 and 016) – the reduced walls are due to the fact that the farmer collected the stone from the kraals to use elsewhere. There were also at least three stone cairns (Site 012, 014 and 015) which could represent graves although this was impossible to identify positively at the time. There were three European ceramic fragments on the cairn at 015, suggesting that this might have been a possibility.

Site 013 consisted of at least three stone features in the veld in close proximity to each other. The most clearly defined feature consisted of a single row of stone, placed vertically in the soil, forming a square of 4 m x 2 m. There was no evidence for flooring in any of the three square-shaped features. The best example contained the blade of a plough share (embossed with the letters Hobson & Co, New York) and some fragments of glass and translucent ceramic. Blue medicine bottle fragments and the decorative, embossed glass suggested a date at the beginning of the 20th century. There appeared to be a 1 m wide strip of cobbled paving on two sides of the stone feature – the farmer described the paving as a "stoep". The interpretation of the features could be that they represented the remnants of workers' cottages which had been made of wooden beams and corrugated iron walls and roof, with dung flooring. There were scatters of glass and white, undecorated, ceramic spread all over the area. In discussion with Mr. Schultz at the time, he conceded that the features could have represented the remains of workers' cottages. The wood and iron might have been removed when the farmer and his staff moved to the new farmhouse, north of the R385 (at the time already some 30 years ago.)

A single snapped MSA blade outside the best-preserved feature suggested that these features lay on top of a much older pre-colonial settlement in the area.

The stream next to the old farmstead flows northward, into an un-named stream which crosses the Study area in an east-westerly direction. Where these two streams meet, they form a shallow pan. An attempt had been made, in the past, to artificially increase the size of the pan. This has resulted in sub-surface soil being brought to the surface. Numerous stone artefacts were found in and around this pan in 2010, with the majority being in secondary position. Site 017 consisted of stone artefacts including a weathered Early Stone Age flake, as well as a number of flakes of banded agate and chalcedony. Some of the material

may be of Middle Stone Age origins but there were no clearly identifiable Later Stone Age artefacts. No bone or pottery was discovered on the margins of the pan. Further stone artefacts were discovered upstream of the pan, along the banks of the stream (Site 018), including one characteristic Middle Stone Age flake. A further pan (Site 019) was identified within the central section of the flat grasslands. Numerous stone artefacts were observed scattered around this pan.

Table of Heritage Sites recorded during the survey (Webley 2010:20).

Site Number	GPS Co-ordinates	Type	Description	Significance
001	S28 17 41.6 E23 21 21.5	Mine	Jasper Mine	None
002	S28 19 18.2 E23 21 03.2	Humansrus homestead	This includes the ruined house, shed, old dam/kraal and graveyard	Ruins – Low Graveyard- High
003	S28 19 16.7 E23 21 01.4	Stone artefacts	Miscellaneous scatter of ESA and LSA stone tools at the water seepage behind the house.	Low
004	S28 19 23.8 E23 21 05.4	Stone kraal	A circular stone kraal beneath the transmission lines and close to the homestead	Low
012	S28 19 24.3 E23 21 07.4	Stone Cairn	Artificial mound of stone. It may be a grave?	If grave - High
013	S28 19 26.2 E23 21 11.4	3 stone features	3 stone features comprising rectangular stone structures, possibly the outlines of workers' cottages from early 20th century.	Low
014	S28 19 25.0 E23 21 14.2	Stone Cairn	Artificial mound of stone. It may be a grave?	If grave - High
015	S28 19 22.1 E23 21 16.1	Stone Cairn	Artificial mound of stone, with 3 ceramic fragments on the top.	If grave – High
016	S28 19 20.0 E23 21 16.9	Stone Kraal	Rectangular stone kraal, measuring 20 m x 37 m.	Low
017	S28 18 52.4 E23 21 32.6	Stone artefacts around pan	Mix of ESA and MSA stone artefacts around a shallow pan	Low
018	S28 18 55.9 E23 21 42.9	Stone artefacts along stream bed	MSA artefacts along banks of dry stream bed	Low
019	S28 17 52.0 E23 22 16.7	Stone artefacts around pan	Mainly weathered MSA stone around the margins of a	Low

			large pan	
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The following observations & recommendations regarding the archaeological and recent historical (cultural heritage) sites in the area was made by the Specialists during the earlier impact assessment (Webley et.al 2010: 17-18)

1. While stone artefacts are distributed quite widely across the Study Area in proximity to water courses and pans, none of the distributions appeared to be in context and they were assigned a low archaeological value.

No mitigation was proposed but if bones are discovered during excavations into the margins of the pans, then work had to stop so that an archaeologist can examine the finds.

2. The field survey confirmed that the most significant areas of heritage concern lie within close proximity of the old Humansrus homestead. The ruined Humansrus farmstead and farm buildings were assigned a low significance in terms of the built environment. However, they are in close proximity to the family graveyard.

It was therefore recommended that an area around the farmstead (including the graveyard) is to be fenced-off and that no construction takes place within the fence. The family graveyard was assigned a high significance. The recommendation for mitigation of the homestead also applied to the graveyard.

3. At least three stone cairns were identified near the old homestead. It was not known whether they represent burials or not. They did not have head or footstones and they were not clustered together. They were thought to possibly be geographical markers, or the result of agricultural activities.

It was recommended that this area around the Humansrus homestead is avoided if possible. Alternatively, if development of the substation or access roads needed to be placed near the transmission lines, then it was recommended that an archaeologist should be asked to monitor construction in this particular area.

4. The cultural landscape, comprising grasslands which at the time were utilized for grazing, is very common in large parts of the Northern Cape and was not considered of high significance.

No mitigation was required with respect to the Cultural Landscape.

It is evident from the previous work done in the study & application area, that there were a range of cultural heritage (archaeological and historical) sites, features and material present in the area that could be impacted on by the development. These sites are spread across the study area landscape, and although there would have been some impacts on them, most of the sites (except the Humansrus Homestead, family graveyard and stone cairns around the homestead) were assigned Low Heritage Significance, with no further mitigation required.

At the time of the 2010 assessment (for the planned Groenwater Solar Farm development) the sites were all still intact, with no development having commenced yet. From aerial images of the study & development/application area (Google Earth) dating to between 2006 and 2023 it is also clear that somewhere between the 2010 assessment and 2016, the Solar Farm development had been undertaken and completed. In fact, the Construction Phase had commenced in November 2012. It was during this phase that a number of previously unknown graves (4 in total represented by 3 individual stone-packed features) were discovered by the contractor and reported to the EO. Work in the area of the graves was immediately stopped, photographs taken and the heritage specialist contacted to investigate. SAHRA was also informed, and they recommended that the site be fenced off with a 5m buffer zone. A further 15m buffer had to be adhered to before any PV arrays were constructed. The area was demarcated and fenced in adherence to this directive of SAHRA at the time. At the close of the construction phase these

graves were still intact. It is believed that these graves belong to a one family, with two parents (in one grave) buried next to two small children.

The additional development work that had already taken place under the EA Amendment Application, and had already been completed, did not impact on any of the known and recorded sites except the grave site located close to the Solar PV Arrays. However, the impact on these graves were mitigated as per SAHRA's directives at the time, with the required buffer zone adhered to and the Grave Site fenced-in appropriately.



Figure 3: The study & application in 2006 (Google Earth 2023).



Figure 4: By 2016 the Solar developments had been undertaken (Google Earth 2023).

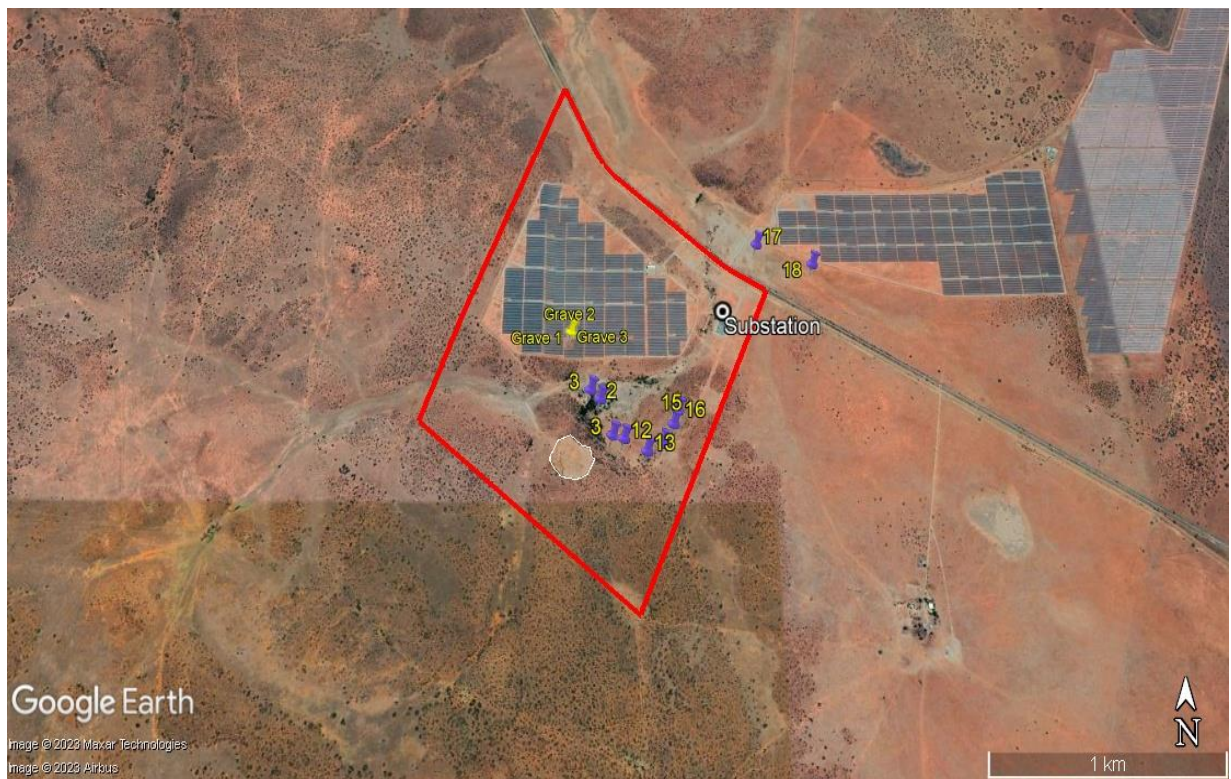


Figure 5: The location & distribution of the sites recorded in 2010 & later in 2012 (Google Earth 2023).

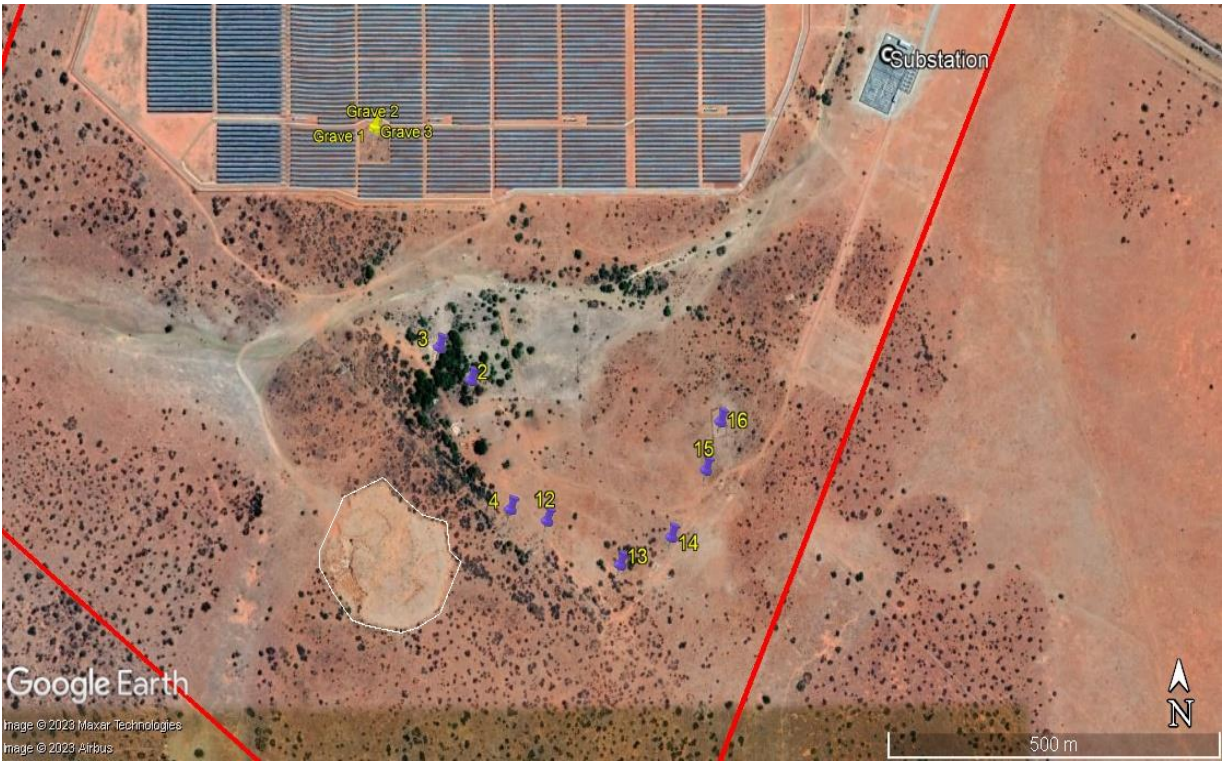


Figure 6: Closer view of the location of the most significant of the sites recorded in 2010 & 2012, such as the homestead, family graveyard and other related features. It is clear from this image that there has been hardly any impact on most of the sites from the Solar Farm development, except the individual Graves (Graves 1 – 3) recorded during the Construction Phase that commenced in November 2012 (Google Earth 2023).



Figure 7: Closer view showing the location of the 3 Graves in the Solar PV Array area. The buffer zone around them is evident (Google Earth 2023).



Figure 8: A view of the Grave Site with the site properly fenced-in and an access gate provided (photo courtesy Lesedi Power Company).

Impact Assessment and Mitigation Measures

The significance of impacts is determined using the following criteria:

Probability: describes the likelihood of the impact actually occurring

- **Improbable:** the possibility of the impact occurring is very low, due to the circumstances, design or experience.
- **Probable:** there is a probability that the impact will occur to the extent that provision must be made therefore.
- **Highly probable:** it is most likely that the impact will occur at some stage of the development.
- **Definite:** the impact will take place regardless of any prevention plans and there can only be relied on mitigation measures or contingency plans to contain the effect.

Duration: the lifetime of the impact

- **Short Term:** the impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.
- **Medium Term:** the impact will last up to the end of the phases, where after it will be negated.
- **Long Term:** the impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.
- **Permanent:** the impact is non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale: the physical and spatial size of the impact

- **Local:** the impacted area extends only as far as the activity, e.g., footprint.
- **Site:** the impact could affect the whole or measurable portion of the abovementioned property.
- **Regional:** the impact could affect the area including the neighboring residential areas.

Magnitude/Severity: Does the impact destroy the environment, or alter its function

- **Low:** the impact alters the affected environment in such a way that natural processes are not affected.
- **Medium:** the affected environment is altered, but functions and processes continue in a modified way.
- **High:** function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance: This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

- **Negligible:** the impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.
- **Low:** the impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.
- **Moderate:** the impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.
- **High:** The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

The significance is calculated by combining the criteria in the following formula:

Sum (Duration, Scale, Magnitude) x Probability

S = Significance weighting; Sc = Scale; D = Duration; M = Magnitude; P = Probability

Although some sites, features and material of cultural heritage origin and significance were found in the area during the assessment, only the 4 graves located at the Grave Site close to the Solar PV Arrays were impacted directly. Suitable mitigation measures, as per SAHRA's directives after the discovery of these graves during the construction phase that commenced in November 2012, were however implemented and are adhered to. As part of the process to minimize the impact on the graves, a Grave Site Management Plan has been drafted and will be implemented.

Impact Rating for Sites outside the Solar PV Array Area

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short Term	1
	Medium Term	3
	Long Term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2

	Medium	6
	High	8
Significance	Sum (Duration, Scale, Magnitude)	x Probability
	Negligible	≤20
	Low	>20≤40
	Moderate	>40≤60
	High	>60

Results: 4+2+2×1 = 8 i.e., ≤20

The impact of the development on the recorded and known cultural heritage sites in the area is deemed as Negligible based on the Impact Assessment criteria used. However, there is always a possibility of sites, features and material being missed as a result of various factors such as vegetation cover hampering visibility on the ground, as well as the often-subterranean nature of cultural heritage resources (including low stone-packed or unmarked graves).

Impact Rating on the Grave Site inside the South Field Solar PV Array Area

Aspect	Description	Weight
Probability	Improbable	1
	Probable	2
	Highly Probable	4
	Definite	5
Duration	Short Term	1
	Medium Term	3
	Long Term	4
	Permanent	5
Scale	Local	1
	Site	2
	Regional	3
Magnitude/Severity	Low	2
	Medium	6
	High	8
Significance	Sum (Duration, Scale, Magnitude)	x Probability
	Negligible	≤20
	Low	>20≤40
	Moderate	>40≤60
	High	>60

Results: 4+2+6×2 = 24 i.e., >20≤40

The impact of the development on the Graves and Grave site inside the South Site Solar PV Array area is deemed as Low based on the Impact Assessment criteria used.

To avoid any possible negative future impacts on the known and recorded sites, however, it is furthermore recommended that the proposed mitigation measures related to the sites (more specifically the Humansrus Homestead, family graveyard and related sites) by strictly adhered to. No maintenance activities may take place within 20m of these areas. The drafting and implementation of a Cultural

Heritage Management Plan (CHMP) for these sites should also be considered(as these sites are not within Lesedi's lease area, this would be the responsibility of the landowner). Lesedi confirmed that the solar fields and substation infrastructure are fenced to limit operational activities to the solar site, and to prevent further impacts on the homestead and surrounding farm area. Solar infrastructure is located outside of the 20m buffer zone, and the overburden storage area (behind the homestead) does not impact on the homestead or sensitive areas. The graves within the south solar field were fenced, and the required buffer zone as directed by SAHRA, during the Construction Phase that commenced in November 2012.

Finally, based on all the evidence obtained during the desktop study and the information provided, it was recommended that Exemption from undertaking any further Phase I Heritage Impact Assessments as part of this EA Amendment Application for the proposed 75 MW Humansrus Photovoltaic (1 Solar Power Facility (Lesedi Power Company) be granted to the applicants. In their Final Comments Letter, dated 23rd of June 2023, SAHRA agreed with this recommendation & indicated that the SAHRA Development Applications Unit (DAU) had no objections to the proposed development.

The following needs to be taken into consideration however:

The subterranean nature of cultural heritage (archaeological and/or historical) resources must always be kept in mind. Should any previously unknown or invisible sites, features or material be uncovered during any operational activities then an expert should be contacted to investigate and provide recommendations on the way forward. This could include previously unknown and unmarked graves and/or cemeteries.

Should there be any questions or comments on the contents of this document please contact the author as soon as possible.

Kind regards



Anton Pelsers

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