

Annex G

Heritage Specialist Study

**HERITAGE IMPACT ASSESSMENT OF PROPOSED GROENWATER SOLAR
ARRAY, NORTHERN CAPE PROVINCE**

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Prepared for

Environmental Resources Management

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EXECUTIVE SUMMARY

The Archaeology Contracts Office cc was appointed by Environmental Resources Management Southern Africa Pty Ltd (ERM), on behalf of Intikon Energy, to undertake a Heritage Impact Assessment for the proposed development of the Groenwater Solar Power Farm located some 30 km east of Postmasburg, in the Northern Cape Province.

The Study Area comprises part of the Humansrus Farm (Farm 469). The PV solar panels will cover an area of approximately 450 ha in extent. They will be linked via a substation to the National Grid. In addition to access roads, there will also be a small office, storage facilities, site fencing, a lay-down area and possibly a small borrow pit.

The field survey was conducted on the 17th November 2010 by Dr Lita Webley and Dr Duncan Miller. There were no limitations to the survey.

The central portion of the Study Area comprises flat grasslands while the hilly portion to the north-west is the focus of a small jasper mine, and the south-east is covered in wild olive trees. The southern portion of the Study Area projects beyond the railway line and the un-tarred D3381, and includes the old Humansrus farmstead. A shallow stream flows from east to west across the southern section of the property. There are also at least two shallow pans.

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 is proposed but if bones are discovered during excavations into the margins of the pans, then work must stop so that an archaeologist can examine the finds.

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 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 applies to the graveyard.

At least three stone cairns were identified near the old homestead. It is not known whether they represent burials or not. They do not have head or footstones and they are not clustered together. They may be geographical markers, or the result of agricultural activities.

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

The cultural landscape, comprising grasslands which are utilized for grazing, is very

common in large parts of the Northern Cape and it is not considered of high significance.

- No mitigation is required with respect to the Cultural Landscape.

If any of the following are uncovered during the construction phase:

- fossil bones;
- stone artefacts;
- cultural Material such as historic glass, ceramics, etc;
- sub-surface structures;
- graves;

then the appropriate Heritage Authorities (in this case SAHRA) should be notified immediately. They may stop work until mitigation has been undertaken.

1. INTRODUCTION

The Archaeology Contracts Office cc was appointed by Environmental Resources Management Southern Africa Pty Ltd (ERM), on behalf of Intikon Energy, to undertake a Heritage Impact Assessment as part of the Environmental Impact Assessment process for the proposed development of the Groenwater Solar Power Farm located some 30 km east of Postmasburg, in the Northern Cape Province.

The site comprises part of the Humansrus Farm (Farm 469) and is approximately 4 km south-east of Groenwater. The northern portion of the farm borders on the R385 which connects Postmasburg to Lime Acres. There is a secondary, un-tarred road (D3381) which bisects the southern portion of the farm and runs parallel to the railway line (Figure 1).

The approximate site boundary is shown in Figure 1. Environmental Resources Management (ERM) has commissioned Dr Lita Webley and Dr Duncan Miller to carry out the Heritage Impact Assessment (including palaeontology) of the Study Area.

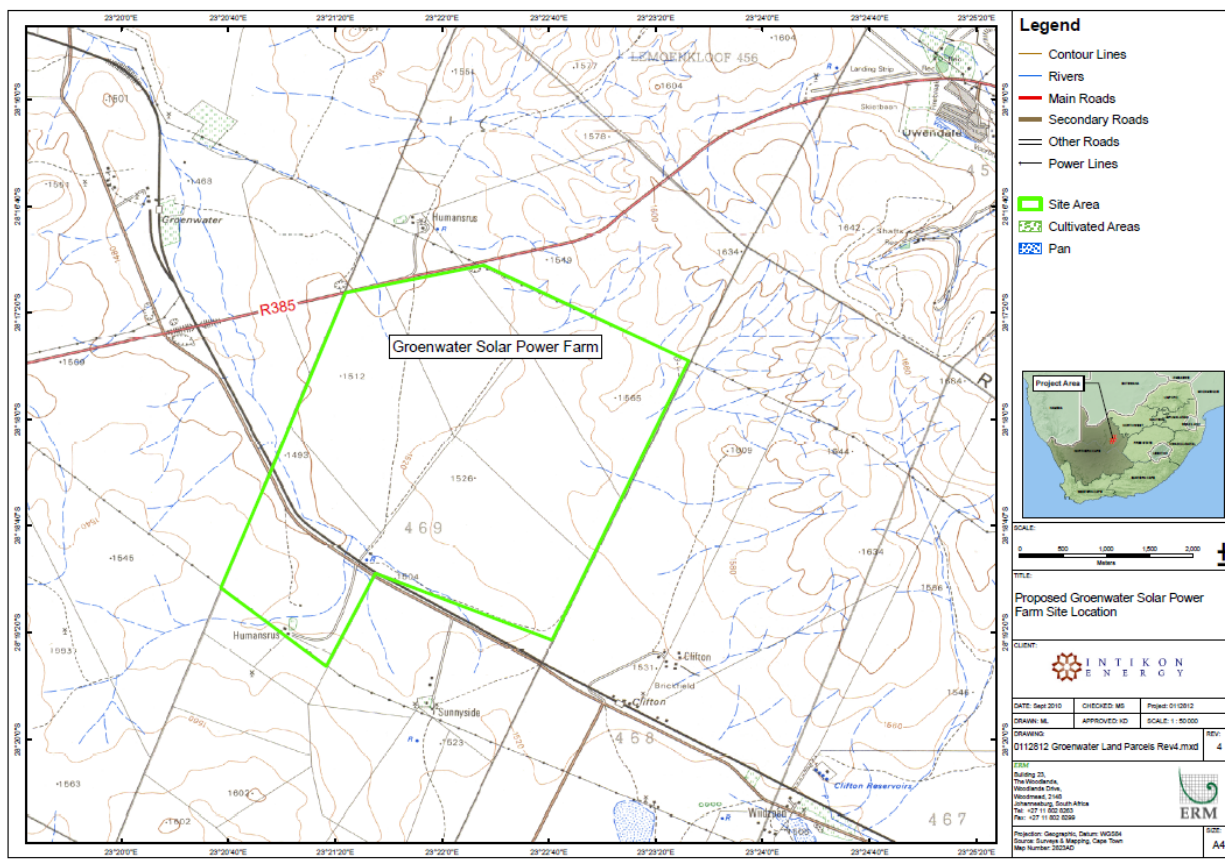


Figure 1: 1:50 000 map of 2823 AD (Lime Acres). Map supplied by client.

1.1 Development Proposals

- It is proposed to install and operate solar panels with a capacity of 160 MW of electricity
- The PV solar panels will be arranged in rows of 1km in length and will cover up to 450 ha (4.5 km²) in total

- It is proposed to construct a new sub-station close to the abandoned Humansrus farmhouse. The substation will cover an area of approximately 200 m² in size. It will connect to the National Grid via existing transmission lines
- The panels will be connected to an internal electrical collection system via an overhead transmission line
- There will in addition be a small office, storage facilities, site fencing, a lay-down area and possibly a small borrow pit.

1.2 Specialist Background

Dr Webley is an employee of the Archaeology Contracts Office cc. She has a PhD in Archaeology and has been active in archaeological and anthropological research in the Northern, Eastern and Western Cape as well as in Kwa-Zulu Natal over the last 30 years. She is an accredited Principle Investigator with the Association of Southern African Archaeologists for Stone Age, Shell Middens and Historical Archaeology and Field Director for Human Remains. She has been involved in more than 100 Heritage/Archaeological Impact Assessments.

2. METHODOLOGY

- A literature review was undertaken for the area
- The SAHRA 2009 electronic database was examined for CRM reports from this area
- The Surveyor General plans for the farm were downloaded electronically (*Figure 2*)

2.1 Fieldwork

The positions of the proposed solar panel arrays, office and storage area, as well as access roads were not available at the time of the survey. The boundaries of the Study Area were loaded onto handheld GPS receivers (set to the WGS84 datum) to facilitate the identification of the boundaries during field work. Fieldwork was undertaken by Lita Webley and Duncan Miller on 17 November 2010. Walk paths and site locations were recorded with GPS and finds were photographed and described.

- A drive down was undertaken of the access roads
- We visited the Humansrus farmhouse on the Humansrus farm (*Figure 3*) and recorded the farm buildings in order to assess the impact of the WEF on the built environment and possible farm graveyards
- We held brief discussions with Mr Schultz of Humansrus Farm. We questioned him about the history of the farm and the presence of any heritage resources on the property

2.2 Limitations

With regard information gaps, there is very little published information on the archaeology of the area, with most archaeological research concentrated further south and west. This makes it difficult to compare the results of the survey or to infer the significance of the sites discovered during the field work.

3. REGULATORY AND LEGISLATIVE OVERVIEW

The basis for all heritage impact assessment is the National Heritage Resources Act 25 (NHRA) of 1999, which in turn prescribes the manner in which heritage is assessed and managed. The National Heritage Resources Act 25 of 1999 has defined certain kinds of heritage as being worthy of protection, by either specific or general protection mechanisms. In South Africa the law is directed towards the protection of human made heritage, although places and objects of scientific importance are covered. The National Heritage Resources Act also protects intangible heritage such as traditional activities, oral histories and places where significant events happened. Generally protected heritage which must be considered in any heritage assessment includes:

- cultural landscapes (described below)
- buildings and structures (greater than 60 years of age)
- archaeological sites (greater than 100 years of age)
- palaeontological sites and specimens
- shipwrecks and aircraft wrecks
- graves and grave yards.

Section 38 of the NHRA requires that Heritage Impact Assessments (HIA's) are required for certain kinds of development such as rezoning of land greater than 10 000 sq m in extent or exceeding three or more sub-divisions, or for any activity that will alter the character or landscape of a site greater than 5000 sq m.

3.1 Cultural Landscapes

Section 3(3) of the NHRA, No 25 of 1999 defines the cultural significance of a place or objects with regard to the following criteria:

- (a) its importance in the community or pattern of South Africa's history
- (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage
- (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period
- (g) its strong or special association with a particular community or cultural group for social cultural or spiritual reasons
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- (i) sites of significance relating to the history of slavery in South Africa.

3.2 Scenic Routes

While not specifically mentioned in the NHRA, No 25 of 1999, Scenic Routes are recognised by DEA&DP as a category of heritage resources. In the DEA&DP Guidelines for involving heritage specialists in the EIA process, Baumann & Winter (2005) comment that the visual intrusion of development on a scenic route should be considered a heritage issue. This is also given recognition in the Notice of Intent to Develop (NID) application which is used by Heritage Western Cape.

3.3 Heritage Grading

Heritage resources are graded following the system established by Winter and Baumann (2005) in the guidelines for involving heritage practitioners in EIA's (Table 1).

Table 1: Grading of heritage resources (Source: Winter & Baumann 2005: Box 5).

Grade	Level of significance	Description
1	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
2	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
3A	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3A heritage resources.
3B	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3B heritage resources.
3C	Local	Of medium to low intrinsic, associational or contextual heritage value within a national, provincial and local context, i.e. potential Grade 3C heritage resources.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The property has access via the R385 which connects Danielskuil and Lime Acres, as well as the D3381 gravel road which cuts through the southern portion of the property (Figure 1). 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 (Plate 1).

The central portion of the property is undulating with the low-lying areas covered in long grass (Plate 2). The hill slopes are covered in taller, woody vegetation including a stand of wild olive trees in the south-eastern corner (Plate 3). 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 west to east 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.



Plate 1: View of the jasper mine in the north-western portion of the Study Area.



Plate 2: View of the flat grasslands which will be covered in solar panels. The D3381 runs in the foreground.



Plate 3: View of the grove of wild olive trees in the south-eastern corner of the Study Area.

4.1 Pre-colonial

Recent CRM work by Webley & Halkett (2008), Webley et al. (2010), Webley & Halkett (2010), confirm the distribution of Early, Middle and Later Stone age artefacts in calcrete deposits around pans and springs in this part of the Northern Cape. Similarly, excavations at Bundu Pan near Marydale in the Northern Cape (Kiberd 2006) have also revealed a sequence including Early, Middle and Later Stone Age assemblages as well as preserved faunal remains. This suggests that the margins of pans need to be investigated for early human habitation.

Beaumont and Boshier (1974) have excavated a prehistoric pigment (specularite) mine near the Study Area on the farm Doornfontein north of Postmasburg. The Doornfontein site consists of a number of chambers which have been dug into a hillside. Archaeological excavations uncovered a large numbers of stone artefacts as well as pottery, decorated ostrich eggshell pieces, beads and bone implements as well as faunal (bone) remains which provide information on the diet of the pre-colonial miners. Radiocarbon dates place the mining activities to 1200 years ago or 800 AD. Fragmentary human remains from the Blinkklipkop mine which is 5 km to the north-east of Postmasburg suggest that the early miners were of Khoisan physical type rather than representing Iron Age settlement.

According to Humphreys and Thackeray (1983), Iron Age farmers only settled in the Northern Cape after 1600 AD. The main area of Iron Age settlement and the only area, in which there is direct archaeological evidence for such settlement in the form of stone walling, are to the north-east of Kuruman.

During the last millennium, there is evidence that Tswana settlement may have reached to Postmasburg, but that drier conditions and Korana expansion pushed them back to Kuruman and Taung before 1800 (Mitchell 2002: 349).

4.2 Colonial

The area known as Griqualand West was first 'roughly' surveyed by F. Orpen and W. Stow in 1872. During the Webley et al. (2010) survey of 20 farms in the vicinity of Olifantshoek it was discovered that the majority of the farms were surveyed and beaconed between the years 1904 - 1911. This is very late when compared to the rest of the country. Many of the farmsteads contained buildings of calcrete blocks and a high percentage also had family graveyards in close proximity to the farmhouse.

According to Mr Scholtz, his grandfather purchased a portion of the farm on which the old Humansrus house is established, during the 1940s. The farm was considerably smaller at that time and both his grandfather and father bought adjoining properties and consolidated the property into the current farm. He did not have any information regarding the Human family after whom the original farm is named.

However, the family graveyard at the old house contains a headstone which refers to a Human who died in 1913 (Plate 7). The survey diagram of the general area (SG3296/1878) identifies the adjoining farms Groenwater and Lemoenkloof (*Figure 2*) but Humansrus is not named suggesting it acquired its name after 1878.

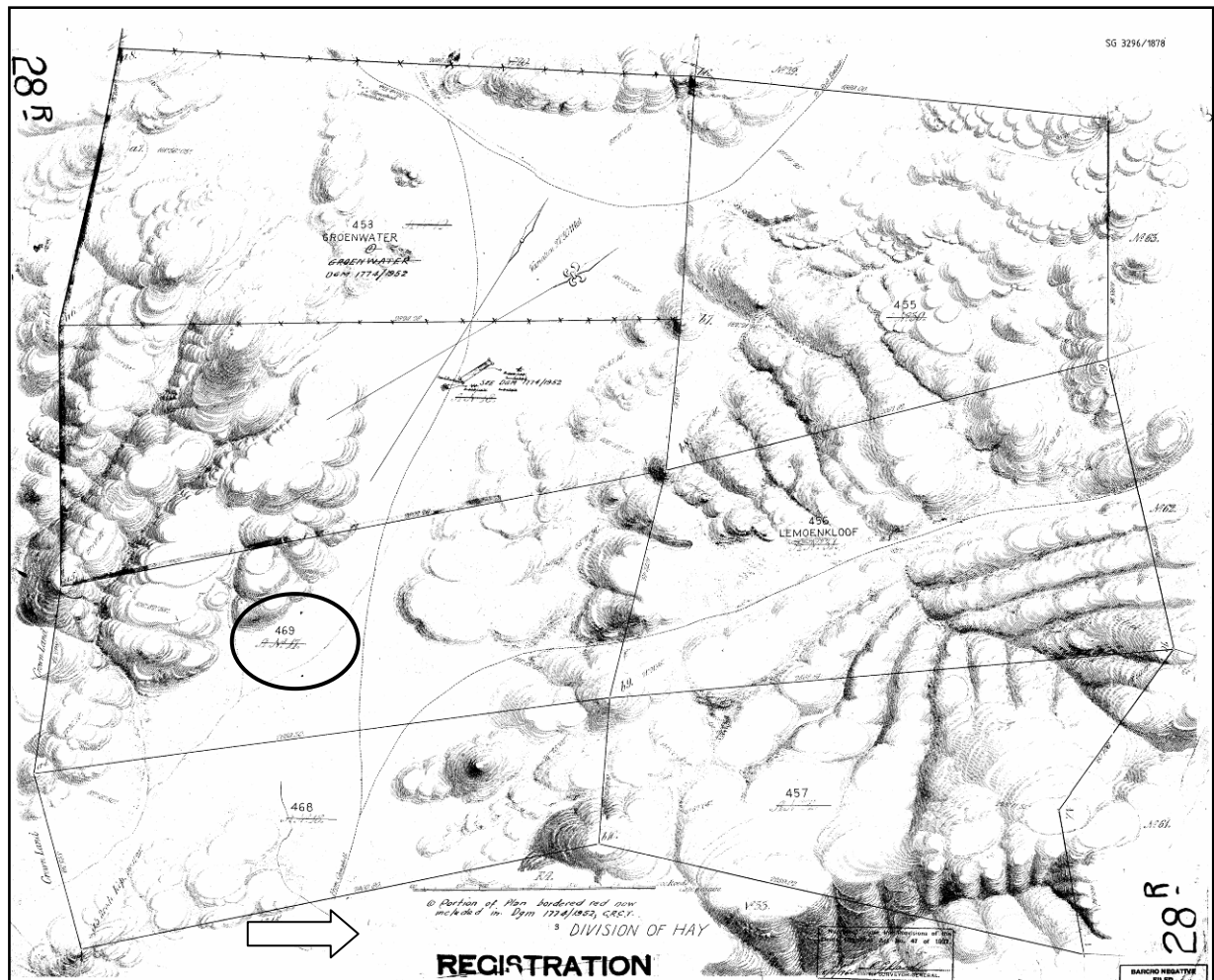


Figure 2: Survey diagram (SG3296/1878) for the general area. The Farm 469 is indicated by the circle. Lemoenkloof and Groenwater are situated on the northern and western boundaries. There are no homesteads shown on Farm 469.

5. RESULTS OF THE SURVEY

The old Humansrus homestead is situated to the south of the railway line and the secondary road (D3381). The farmhouse and outbuildings are marked by a stand of trees. The main house is in ruins, with the doors, windows and door frames removed. The foundations of the house are of stone and the walls of mud-brick (Plate 4). The shed is still in reasonably good condition (Plate 5). 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 (Table 2).

The family graveyard 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 (Plates 6 & 7).

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 uses the water from this river and indicated that the drainage area will not be impacted by the solar array.



Plate 4: Ruined farmhouse at Humansrus;



Plate 5: Shed at Humansrus.



Plate 6: Graves at old homestead;



Plate 7: Headstone on one of the graves.



Plate 8: ESA implement from the seepage;



Plate 9: LSA stone tools from the seepage.

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 (Plates 8 & 9).

Mr Schultz indicated the relative position of the proposed sub-station in close proximity to the ruined Humansrus farmstead. It will be placed close to the transmission lines which run along the southern boundary of the property.

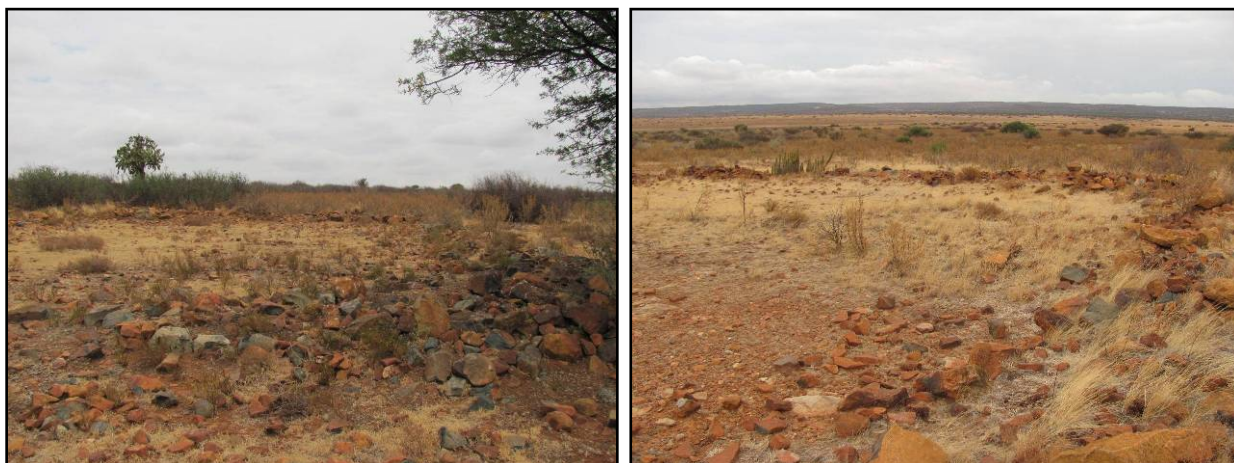


Plate 10: Circular stone kraal (Site 004);

Plate 11: Rectangular stone kraal (Site 016).

There are 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 (Plate 10 & 11).

There are also at least three stone cairns (Site 012, 014 and 015) which could represent graves although this was impossible to identify positively. There are three European ceramic fragments on the cairn at 015, suggesting that this may be possibility.

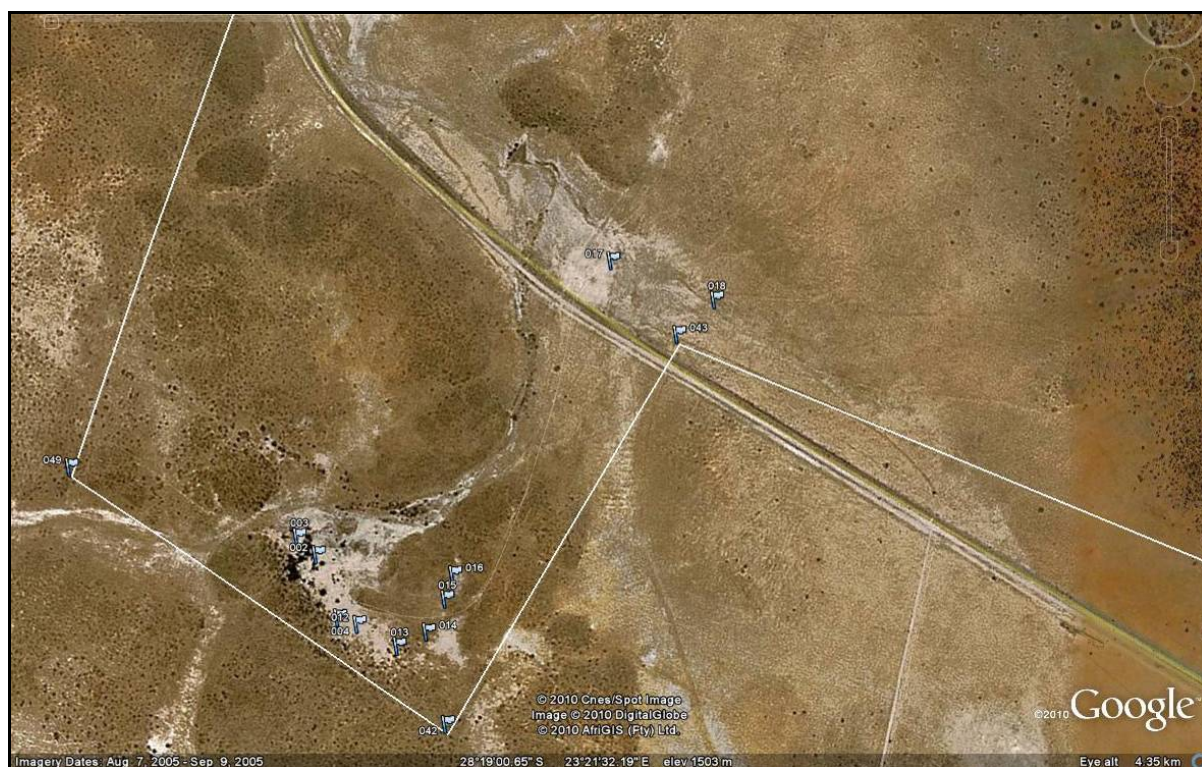


Figure 3: The southern section of the Study Area, showing the clustering of sites along the dry stream bed.

Site 013 consists of at least three stone features in the veld in close proximity to each other.

The most clearly defined feature consists of a single row of stone, placed vertically in the soil, forming a square of 4 m x 2 m. There is no evidence for flooring in any of the three square features. The best example contains the blade of a plough share (embossed with the letters Hobson & Co, New York) and some fragments of glass and translucent ceramic. The blue medicine bottle fragments and the decorative, embossed glass suggest a date at the beginning of the 20th century. There appears 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 represent the remnants of workers’ cottages which had been made of wooden beams and corrugated iron walls and roof, with dung flooring. There is scatters of glass and white, undecorated, ceramic spread all over the area. In discussion with Mr Schultz, he conceded that the features could represent the remains of workers’ cottages. The wood and iron may have been removed when the farmer and his staff moved to the new farmhouse, north of the R385, some 30 years ago.

A single snapped MSA blade outside the best preserved feature (Plate 12) suggests that these features lie on top of a much older pre-colonial settlement in the area.



Plate 12: The best preserved of the stone features, with plough share lying in the centre.

The stream next to the old farmstead flows northward, into an un-named stream which crosses the Study area in an east-westerly direction. This is clearly visible in *Figure 3*. Where these two streams meet, across from the D3381 and the railway line, they form a shallow pan. An attempt has 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 (Plate 13). There are numerous stone artefacts in and around this pan, the majority being in secondary position (Plate 14 & 15).

Site 017 consists 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 are no clearly identifiable Later Stone Age artefacts. No bone or pottery was discovered on the margins of the pan.



Plate 13: The shallow pan and stream bed is clearly visible. Dr Miller is walking across the terrain where stone artefacts occur.



Plates 14 & 15: Chalcedony, banded agate and quartz stone artefacts found at Site 017.

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 (Plate 16). Numerous stone artefacts were observed scattered around this pan (Plate 17).



Plate 16: Pan area (Site 019) ;



Plate 17: Stone artefacts found around the pan.

6. IMPACT IDENTIFICATION AND ASSESSMENT

6.1 Pre-Colonial and Colonial Archaeology

Stone artefacts are distributed quite widely across the Study Area in proximity to water courses and pans. Early, Middle and perhaps Later Stone Age implements are found. None of the distributions observed during this survey appear to be in primary context and they do not appear to constitute “living sites”. They are not associated with bone or pottery which would increase their research potential. They are therefore assigned a low archaeological value.

I have a high degree of confidence that the construction of the solar facility will result in the destruction of some of these stone tool scatters, although the PV panels will clearly not be placed on the banks of streams or inside pans. The destruction of sites will be permanent.

- No mitigation is proposed due to the low significance of the archaeological remains. However, if bones are discovered during excavations into the margins of the pans, then work must stop so that an archaeologist can examine the finds.

Table 6.1 Summary Impact Assessment: Archaeology

Type	The excavation activities associated with the Groenwater Solar PV facility will impact directly and negatively on the stone artefact scatters which have been identified in the Study Area.
Magnitude	<i>Extent:</i> On-site <i>Duration:</i> Permanent <i>Intensity:</i> Medium
Likelihood	Definite
Significance	Low
Degree of confidence	High

6.2 Built Environment

The ruins of the old Humansrus farmstead are located within the Study Area. The ruined farmstead, shed and stone kraal/s are older than 60 years. However, they are in a bad condition and of very low significance. The outlines of workers’ cottages were also recorded although they too, are of low significance.

The exact location of the PV panels is not known and we do not know whether they will be placed within the Humansrus homestead. If this area is used, the construction will result in a direct and negative impact on the homestead.

- In view of the close proximity of the homestead to the family graveyard (which is of high significance), it is recommended that an area around the farmstead is fenced off and that no construction takes place within the fence.

Table 6.2 Summary Impact Assessment: Built Environment

Type	The excavation activities associated with the Groenwater Solar PV facility may impact directly and negatively on the Built Environment which has been identified in the Study Area.
Magnitude	<i>Extent:</i> On-site <i>Duration:</i> Permanent <i>Intensity:</i> Low
Likelihood	Likely
Significance	Low
Degree of confidence	Medium (the placement of the PV panels is not known)

6.3 Graveyard and Stone Cairns

The family graveyard consists of at least four graves although more may be present under adjoining vegetation. The graveyard is unfenced and in close proximity to the homestead and other farm buildings.

If the PV panels, offices or storage facilities are constructed in this area they will have a direct and negative impact on the graveyard. Human remains are accorded a high significance rating by the NHRA.

- It is recommended that the farmstead is fenced off and that no development takes place within the established border.

At least three stone cairns were discovered during the survey. They were found in the same vicinity as the three stone features (which may represent the foundations of workers' cottages) and the stone kraals. Since we did not undertake a detailed survey, it is possible that more cairns may occur in this particular area near the Humansrus farmstead (Figure 3).

We do not know whether these cairns represent burials or not. They do not have head or footstones, they are not clustered together, and they are not aligned to points of the compass. Elsewhere, archaeologists have found that cairns may be placed on top of burials, but they may merely represent geographical markers, or the result of agricultural activities.

If human remains are uncovered during the construction of the solar farm, this will delay the completion of the project due to the legal process which needs to be followed.

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

Table 6.3 Summary Impact Assessment: Graves

Type	The excavation activities associated with the Groenwater Solar PV facility may impact directly and negatively on the family graveyard which has been identified in the Study Area, as well as on possible burial cairns scattered in the area.
Magnitude	<i>Extent:</i> On-site <i>Duration:</i> Permanent <i>Intensity:</i> Medium
Likelihood	Definite
Significance	High
Degree of confidence	High for the graveyard Low for the stone cairns

6.4 Cultural Landscape

The cultural landscape comprises a mix of grassland which is used for grazing of livestock and horses, and natural environment to the south-east which is covered in wild olive trees. The north-west section of the Study Area has been transformed by the mining of red jasper. This cultural landscape is very common in large parts of the Northern Cape and it is not considered of high significance.

- No mitigation is required with respect to the Cultural Landscape.

Table 6.4 Summary Impact Assessment: Cultural Landscape

Type	The excavation activities associated with the Groenwater Solar PV facility is unlikely to impact negatively on the Cultural Landscape of the Study Area.
Magnitude	<i>Extent:</i> On-site <i>Duration:</i> Temporary <i>Intensity:</i> Low
Likelihood	Unlikely
Significance	Low
Degree of confidence	High

7. CONCLUSIONS AND RECOMMENDATIONS

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 is proposed but if bones are discovered during excavations into the margins of the pans, then work must stop so that an archaeologist can examine the finds.

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 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 applies to the graveyard.

At least three stone cairns were identified near the old homestead. It is not known whether they represent burials or not. They do not have head or footstones and they are not clustered together. They may be geographical markers, or the result of agricultural activities.

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

The cultural landscape, comprising grasslands which are utilized for grazing, is very common in large parts of the Northern Cape and it is not considered of high significance.

- No mitigation is required with respect to the Cultural Landscape.

7. LIST OF DEFINITIONS AND ABBREVIATIONS

Archaeology: *Remains resulting from human activity which is in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures.*

Early Stone Age: *The archaeology of the Stone Age between 700 000 and 2500 000 years ago.*

Fossil: *Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.*

Heritage: *That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).*

Holocene: *The most recent geological time period which commenced 10 000 years ago.*

Late Stone Age: *The archaeology of the last 20 000 years associated with fully modern people.*

Middle Stone Age: *The archaeology of the Stone Age between 20-300 000 years ago associated with early modern humans.*

National Estate: *The collective heritage assets of the Nation.*

Palaeontology: *Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.*

SAHRA: *South African Heritage Resources Agency – the compliance authority which protects national heritage.*

Structure (historic): 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. Protected structures are those which are over 60 years old.

Acronyms

BP	Before the Present
DEA	Department of Environmental Affairs
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act, No 25 of 1999
SAHRA	South African Heritage Resources Agency

9. REFERENCE LIST

Beaumont, P. & Boshier, A. (1974) Report on Test Excavations in a Prehistoric pigment mine near Postmasburg, Northern Cape. *South African Archaeological Bulletin* **29**:41-59.

Humphreys, A.J.B. & Thackeray, A. I. (1983) *Ghaap and Gariep: Later Stone Age studies in the Northern Cape*. The South African Archaeological Society Monograph Series No 2. Cape Town.

Kiberd, P. (2006) Bundu Farm: A report on archaeological and palaeoenvironmental assemblages from a pan site in Bushmanland, Northern Cape, South Africa. *South African Archaeological Bulletin* **61**: 189-201.

Miller, D. (2010) Palaeontological Potential of Proposed Groenrivier Solar PV Facility, Northern Cape Province.

SAHRA. (2009) Archaeology, Palaeontology & Meteorite Unit. South African Heritage Resources Unit. Version 1.0

Webley, L. & Halkett, D. (2008) Phase 1 Heritage Impact Assessment: Proposed prospecting on the farms Adams 328 and Erin 316, Kuruman, Ga-Segonyana Municipality in the Northern Cape.

Webley, L., Halkett, D. & Miller, D. (2010) Scoping Heritage Impact Assessment: proposed prospecting on 20* farms in the Olifantshoek and Kuruman areas of the Northern Cape.

Webley, L. & Halkett, D. (2010) An Archaeological Impact Assessment (Report 5): Proposed construction of a substation between Ferrum-Garona and associated loop in and loop out lines, Olifantshoek, Northern Cape.

Webley, L. & Halkett, D. (2010) Archaeological Impact Assessment: Proposed prospecting on the kopje Bleskop, Farm Doornpan 445, Postmasburg, Northern Cape.

Winter, S. & Baumann, N. (2005) Guideline for involving heritage specialists in EIA process. Edition 1. CSIR report No ENV-S-C 2005 053E. Provincial Government of the Western Cape: Department of Environmental Affairs and Developmental Planning.

Table 2: Table of Heritage Sites recorded during the survey

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 20 th 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 large pan	Low