




ARCHAEOLOGICAL IMPACT ASSESSMENT TECHNICAL REPORT

Prepared for

!Xun and Khwe

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1) PROJECT BACKGROUND (Information received from the client)

Project Name:	!XUN & KHWE SOLAR FARM
Technology Type	CSP (Concentrated Solar Power)
CSP Category	Compact Linear Fresnel Reflectors (CLFR)
Structure height	Minimum of 8.7 m to Maximum of 10 m
Permanent lay down area footprint	266 ha
Provision for Future Storage Lay down Footprint	30 ha
Surface area to be covered (including associated infrastructure such as roads);	270 ha
Structure orientation	+/- 20° longitudinal deviation from North – South
Lay down area dimensions Construction Period	2000 m (Width) x 1500 m (Length) = 3,000,000 m ² 1900 m (Width) x 1400 m (Length) = 2,660,000 m ²
Generation capacity of the facility as a whole at delivery points	100 MW el
Substations and / or transformers sites including their entire footprint	10 000 m ²
Construction period Lay down footprint (Workshop, storage, ablution and site office)	10 000 m ²
Internal roads indicating width	5m (Construction Period) – 6m (Operation Period) Access roads to lead directly to the construction lay down area and the length would be approximately 3 966.276 m from the main road R31
Planned Generation Output:	236 GWh / year
Start Production Year:	2017

The road width shall be 5m, with walk ways of 800 m along the road. Trenching will take place to allow for the development of cables for the PV facilities and the expected depth is 400 – 600m. The width is projected to be 250 to 300m.

Concrete foundations will depend on the geotechnical investigations but we expect to perform bulk earthworks and the digging for concrete foundations (the report shall guide us whether it should be reinforced). The CLFR (to support the mirror reflectors) as well as PV would need concrete foundations.

2) HISTORICAL BACKGROUND

2.1. ROCK ART

The Rock Art of the Northern Cape and Karoo provides an indication of the spatial and temporal variability at the regions. McGregor Museum is intensely involved in investigating the distribution of rock art sites and the associated archaeological context. Several engravings and paintings occur at the Northern Cape and the most popular consensus is that both types of rock art were developed by the “southern San” and the Later Stone Age Ancestors. A generalized feeling exist that rock art paintings are existent in the cave areas and that rock art engravings can be found at the inland plateau. Sites have also been discovered at sites that are evident of dolomite, granite, gneiss and sandstone. Findings at various Northern Cape sites have provided clues in terms of the chronology that link rock art diversity to time dimension (Morris D, 1988, Engraved in Space and Time: A Review of Variability in the Rock Art of the Northern Cape and Karoo, Vol. 43, No. 148, pp 110).

Two techniques used during the development of rock art include incised engravings and pecked engravings. Incised engravings are “fineline” petroglyphs and pecked engravings are produced by a use of a pointed tool (Morris, 1988, p110).

The form of engraving can be described as graphic elements that make up the motif (Morris, 1988). The classical engravings occur at Vryburg and Kimberley (Morris, 1988, p111).

The motifs are mostly focused on human figures, footprints, animals and geometric motifs (Morris, 1988, p112).

2.1.1. Rock Art Tourism

Public interest in Rock Art Tourism increased and it forms part of refining the cultural heritage resource management sphere. The management of rock art is divided between the concerns of the heritage practitioners and the tourism market. Heritage practitioners have a concern that the influx of tourists could result in further destruction of the rock art features. The tourism market assesses rock art from a different level and that is to understand the feasibility in running such an operation. The tourism feasibility includes the possible pricing attached to tourism and the methodology of communicating rock art tourism to the public. The overall objective is to support a conservation of rock art to achieve a sustainable economic and social environment. The conservation of rock art should include the local communities to understand the significance of the heritage resources, encourage the tourism community to promote the management of rock art, include the protection of oral history associated with the heritage resources and formulate management plans.

One of the examples in terms of involving the community to protect rock art positioned at their property can be referred to the South African San Council. Wildebeestkuil rock art centre close to Kimberley has

a historical link between the original artists and neighbouring communities (Deacon J, 2006, Rock Art Conservation and Tourism, Journal of Archaeological Method and Theory, Vol. 13, NO. 4, 388).

2.1.2. Protection of Rock Art and the Sense of Place

If a rock art site is under threat of any type of development it could result in the destruction of the sense of place. Rock art landscape conservation are associated with a landscape authenticity, preservation of views, community liaison, development of private land owner protocols, integrated rock art management and management of disasters for example fire and waste.

The archaeology of place can be defined as the understanding of cultural and social meanings of places. The sense of place is embedded within the cultural meaning of a place and the material manifestations associated with these meanings.

The cultural landscape of !Xun and Khwe community is associated with the communities association with their cultural - environmental dimension. People have a continuous relationship with the physical, social and cultural dimensions of their habitat. Cultural landscapes are made up of the natural environment, cultural worldview, and areas of where populations survive and the cognitive map of the people that live at the property. In terms of !Xun and Khwe a certain worldview is persistent between the landowners and their sense of place. It is also important to understand the archaeologist's sense of place and interpretation of the landscape could be different. All the cultural spaces collected create a means of the development of a sense of place or landscape. This landscape needs to be protected in terms of the archaeological importance linked to the property, but also the living history that is linked to the site. One of the major concerns in terms of the alternative energy development is that the visual impact could result in the destruction of the archaeological sense of place. The rock art site associated with the rest of the landscape signals a site of a socio-cultural identity and ethnic value.

2.2. STONE AGE

A significant aspect of the Northern Cape Later Stone Age archaeology is open-air surfaces. Most of the sites consist of stone artefacts. The Northern Cape is characterized by a general scarcity of cave sites and an abundance of open air sites. Smaller stone tool assemblages will form part of the archaeological record of the province. The stone age sequence of South Africa is the evolution of new and better stone tool making practices and the scheduling of tool making activities to meet current circumstances (Parkington J et al., 1980, Time and Place: Some Observations on Spatial and Temporal Patterning in the Later Stone Age Sequence in Southern Africa, The South African Archaeological Bulletin, Vol. 35, No. 132, pp. 80).

3) PURPOSE AND OBJECTIVES

3.1 PROJECT OBJECTIVES

The objective of this Archaeological Impact Assessment is to determine if any archaeological features are positioned on site that could be impacted upon during earthmoving activities. Archaeological Features refer to graves, stone walling, archaeological objects (pottery), rock art, structures older than sixty years and archaeological cultural landscape areas. The features that are positioned in the close vicinity of development activities require further mitigation and recommendation procedures. The objective of the study is to provide the Heritage Resources authority with a detailed report in terms of the type of development, if heritage resources are positioned within the impacted area and what the professional archaeologist's recommendations are.

3.2 EXPECTED PROJECT ACHIEVEMENTS

The project expectation is to achieve a clear understanding of the type of development, the exact location of the development and to determine the direct potential impacts it will have on the heritage resources environment.

4) DEFINITIONS, ACRONYMS AND ABBREVIATIONS

Archaeological sites are places where people lived and left evidence of their presence in the form of artifacts, food remains and other traces such as rock paintings or engravings, burials, fireplaces and structures.

Aim of Conservation: The aim of conservation is to preserve, retain or recover the cultural interest of a place, and must include provision for its maintenance and its future.

Context: Historically valuable places do not consist of buildings alone. Conservation of such places requires the maintenance of appropriate visual settings and contexts. New construction, demolition or modification adversely affecting the setting, and environmental intrusions which adversely affect enjoyment or appreciation of the place, should be excluded.

Cultural Significance is the aesthetic, historical, scientific and social value for past, present and future generations.

Determination of Cultural Significance: Cultural significance should be determined by analysis of the evidence gathered and as far as possible in consultation with a range of parties, including the public at large, local communities, cultural bodies and accredited experts on conservation and related issues.

Graves, burial sites, war memorials and monuments are tangible and symbolic reminders of our turbulent history. Graves are architectural examples of space where we transcend the historical past.

Historic means significant in history.

Historical means belonging to the past.

SAHRA: South African Heritage Resources Agency.

Minimal Intervention: Conservation is based on respect for the existing fabric and should involve the least possible intervention. It should not distort the evidence revealed in the fabric.

Place means site, area, building or other work, group of buildings or other works, together with pertinent contents, surroundings and historical and archaeological deposits.

Social Value embraces the qualities, for which a place has become a focus of spiritual, political, national, or other cultural sentiments to a majority or minority group.

5) SURVEY METHODOLOGY AND HERITAGE LEGISLATION


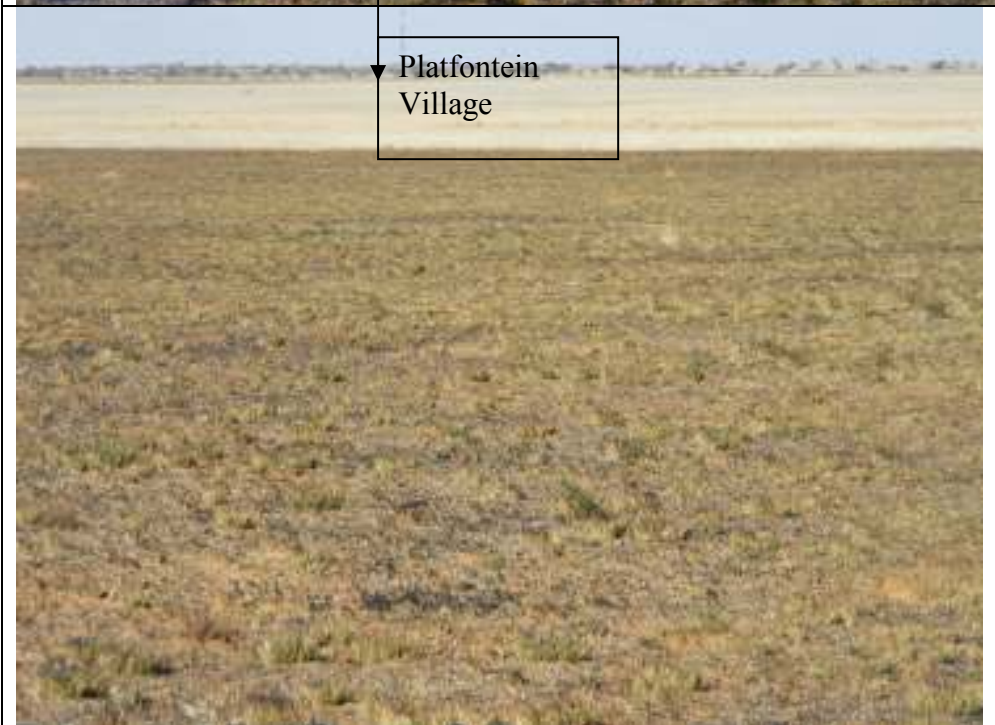
A site survey was undertaken on foot by Ms Elize Becker (Heritage Resources Practitioner) on the 15th to 18th of August 2011. The survey provided insight into the type of environment, position of the site, the surrounding activities and the possible living heritage resource problems that may occur if the proposed development is to proceed. The following steps were taken to obtain a better understanding of the cultural heritage of the area and the receiving environment.

- a) A project orientation process was undertaken at a desktop level to obtain a better understanding of the nature of the activity and the extent of the development proposal.
- b) A review of the technical proposal was undertaken. Environmental Assurance provided information with regard to the extent of the site and information regarding the position of the development alternatives in terms of the potential impact it may have on the undisturbed area.
- c) A desktop investigation into the history of the area was undertaken including a literature review, internet search and liaison with the South African Heritage Resources Agency.
- d) The compilation of the report and the determination of a way forward.
- e) Interviews with the community members to obtain a better understanding in the historical background of the origin of the !Xun and Khwe communities.
- f) Assessment of the cultural landscape in terms of the tangible and intangible heritage resource significance.
- g) The use of ethnoarchaeology to obtain an understanding of the historical and current layout patterns evident at the Platfontein villages.
- h) Meeting to discuss the impact that the development may have on the Wildebeestkuil Rock Art site.

6) FINDINGS (Listed according to sensitivity)

6.1 PHOTOGRAPHS SIGNALLING THE TYPE OF HERITAGE RESOURCES IDENTIFIED.



	<p>The proposed impacted site stretches from Wildebeestkuil to Platfontein. The property belongs to the !Xun and Khwe people and the CPA Council.</p>
 <p>Platfontein Village</p>	<p>The site is attributed with intangible heritage that is signaled by the cultural heritage associated with the !Xun and Khwe communities.</p>



Stone walling features were identified at Wildebeestkuil.



The archaeological sense of place is one of the major attributes that is part of the heritage resources landscape at Wildebeestkuil. The site is currently used as a tourism venue and further tourism projects are on the table. These projects are managed by McGregeor Museum and the South African SAN Institute.



High stone tool concentrations are existent on Wildebeestkuil and Platfontein (Figure 2)



Scattered flakes positioned at the proposed development area.



Stone tool objects identified.



Power lines are positioned on the property that is visible from the impacted site.

Plate 1: Photographs taken during the Archaeological Baseline Study

Figure 1: !Xun and Khwe Locality Map

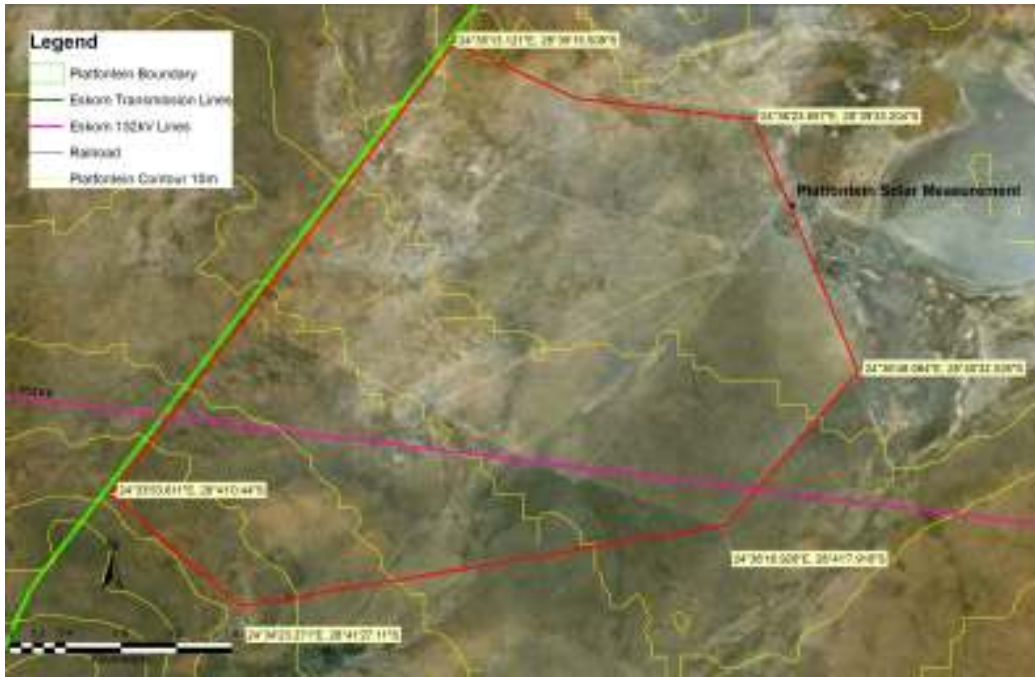
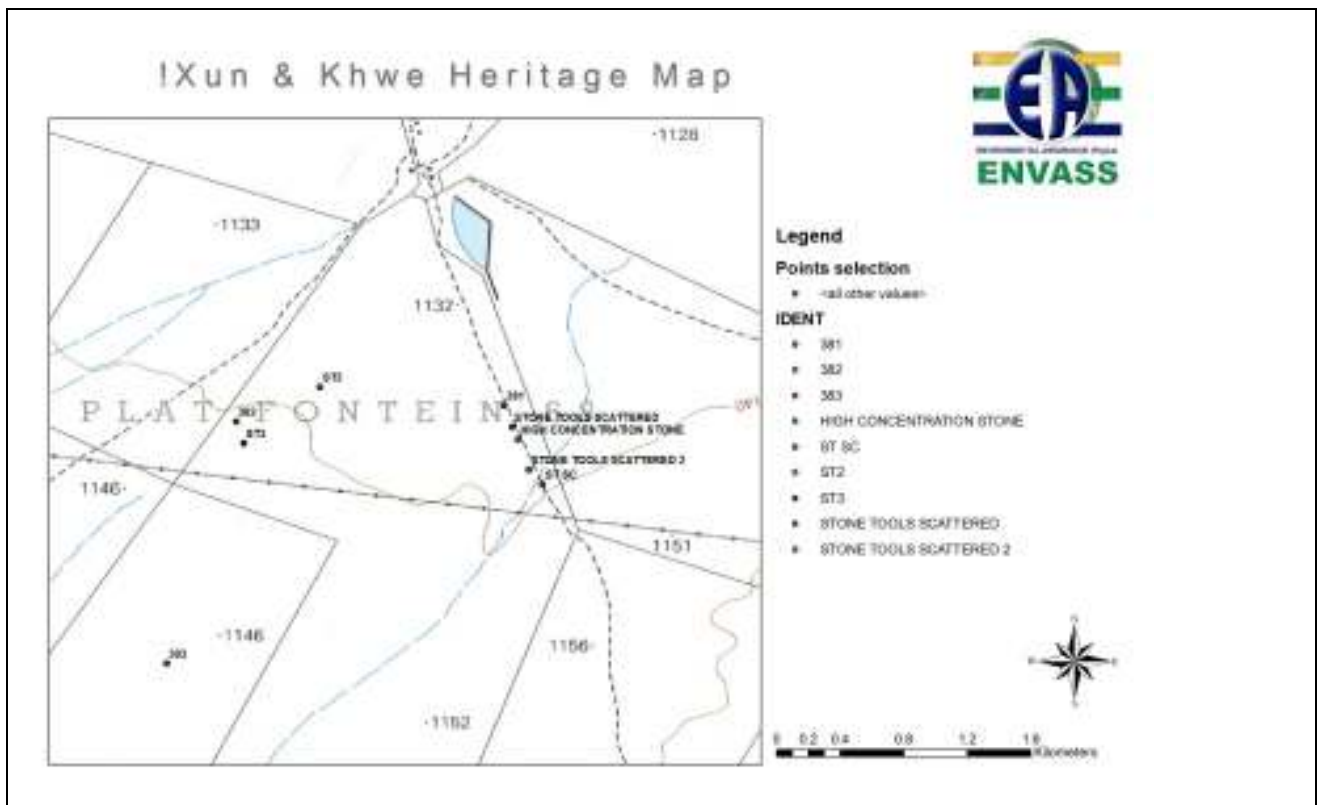
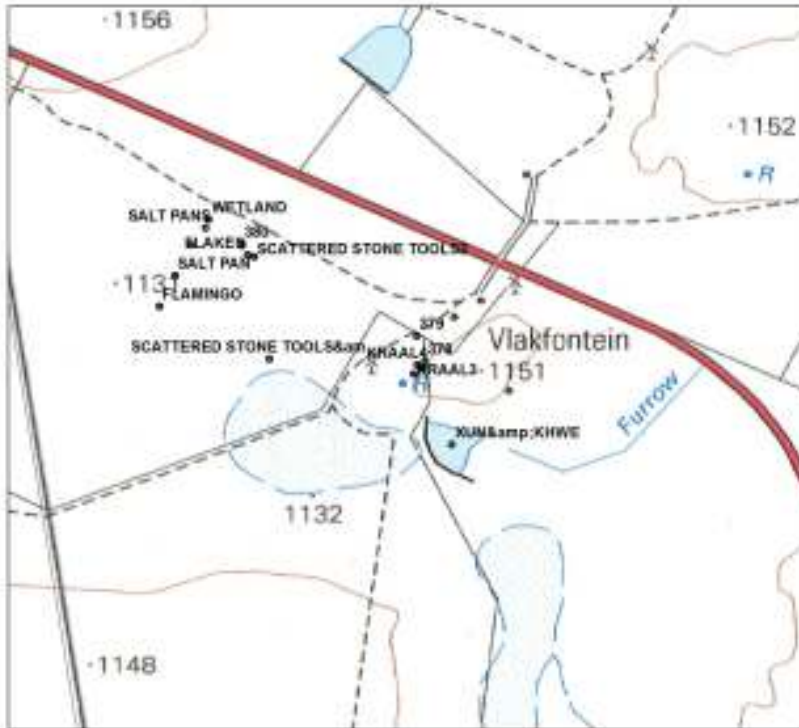


Figure 2: IXun and Khwe Heritage Map



!Xun & Khwe Heritage Map (2)



Legend

Points selection

- -all other values-

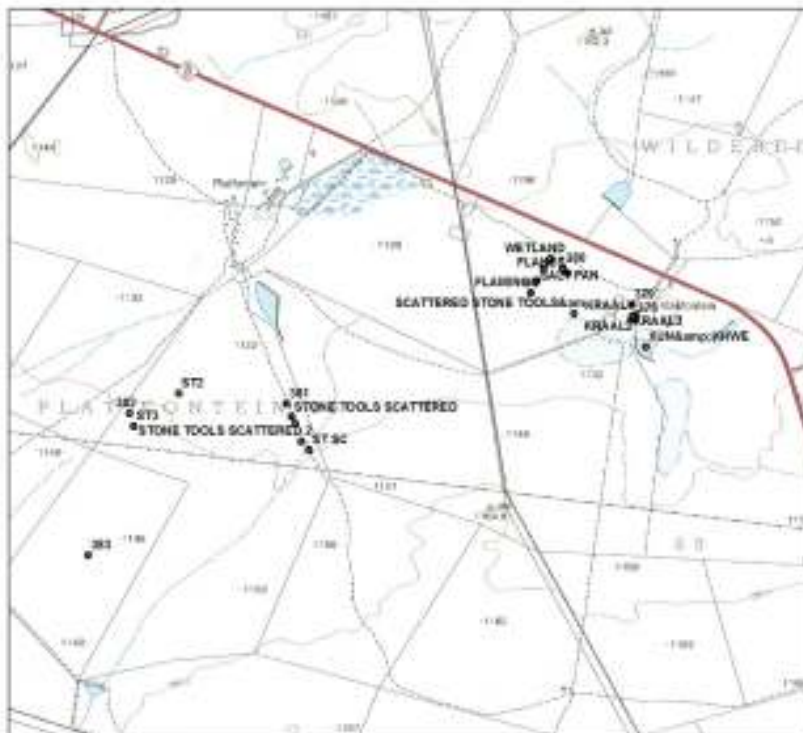
IDENT

- 378
- 379
- 380
- FLAKES
- FLAMINGO
- KRAAL1
- KRAAL2
- KRAAL3
- KRAAL4
- SALT PAN
- SALT PAN2
- SALT PANS
- SCATTERED STONE TOOLS M
- SCATTERED STONE TOOLS&am
- SCATTERED STONE TOOLS2
- WETLAND
- XUN&KHWE



0 0.125 0.25 0.5 0.75 1 Kilometers

!Xun & Khwe Heritage Map (3)



Legend

Points selection

- -all other values-

IDENT

- 378
- 379
- 380
- FLAKES
- FLAMINGO
- KRAAL1
- KRAAL2
- KRAAL3
- KRAAL4
- SALT PAN
- SALT PAN2
- SALT PANS
- SCATTERED STONE TOOLS M
- SCATTERED STONE TOOLS&am
- SCATTERED STONE TOOLS2
- WETLAND
- XUN&KHWE

Points selection

- -all other values-

IDENT

- 381
- 382
- 383
- HIGH CONCENTRATION STONE
- ST 3C
- ST2
- ST3
- STONE TOOLS SCATTERED
- STONE TOOLS SCATTERED 2



0 0.35 0.7 1.4 2.1 2.8 Kilometers

6.2. SIGNIFICANCE RATING AT THE DEVELOPMENT FOOTPRINT SITE

6.2.1 The Criteria in assessing the Significance of Archaeological Sites of Importance

1. The cultural landscape and nature of the site.
2. The occurrence of archaeological deposits or in situ archaeological objects.
3. The historical landscape and geographic environment.
4. The position of the archaeological site in association with other sites of significance.
5. The condition of the archaeological site, the immediate threat and conservation value.
6. The overall characteristics of the site.

6.2.2 The determination of site significance is dependent on the following attributes:

Table 1: Significance Rating

Class	Attribute	Type 1	Type 2	Type 3
1	Length of sequence / context	No sequence Poor Context Dispersed Distribution	Limited sequence	Long sequence Favourable context High density of artefacts or ecofacts
2	Presence of exceptional items	Absent	Present	Major element
3	Organic preservation	Absent	Present	Major element
4	Potential for future archaeological investigation	Low	Medium	High
5	Potential for public display	Low	Medium	High
6	Aesthetic Appeal	Low	Medium	High
7	Potential for implementation of a long term management plan	Low	Medium	High

Overall significance rating at the development footprint area: High



Plate 2: The sense of place is one of the major attributes at the !Xun and Khwe area.

7) RECOMMENDATIONS

- Wildebeestkuil rock art site is a declared provincial heritage site and is legally protected by the National Heritage Act (No. 25 of 1999). No development may commence without the approval and a permit from the South African Heritage Authority.
- Continuous liaison with the !Xun and Khwe community, Footprints of the San, McGregor Museum, Wildebeestkuil Rock Art Centre and the South African San institute are of fundamental importance.
- Wildebeestkuil and Platfontein are signaled by a high concentration of stone tool artefacts, stone walling and a rich cultural landscape. During the development implementation phase the sense of place will be impacted upon and stone tool concentrations will be destructed.
- A phase 2 Heritage Impact Assessment is required to be able to undertake further sampling, undertake additional documentation of the heritage resources and to supply the heritage agency with supplementary data.
- If the development is approved a phase 3 heritage management plan is required to ensure strict integrated management during and after the construction phase.
- A visual impact will occur in terms of the archaeological sense of place. The developer must make an effort to determine the best methodology suitable to hide the solar panel infrastructure from being visible. The solar panels (glare) will be directed away from the rock art hilltop side, but the rear side of the infrastructure will be noticeable.
- It would be advisable that the development footprint is positioned at the remote end of the Platfontein fence line opposite the Griquatown road. If the development is moved any closer,

strict buffer zones could be implemented to prevent the development from intruding on the provincial heritage site.

8) CONCLUSION

The !Xun and Khwe proposed alternative energy development footprint site is of high significance. The rock art and associated stone tools positioned at the site are under threat and the cultural landscape will permanently be destroyed. The main concern is that the proposed development will have a visual impact on the Wildebeestkuil rock art site and the cultural sense of place will permanently be impacted upon.

9) REFERENCES

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- Parsons I, 2003, Lithic Expressions of Later Stone Age Lifeways in the Northern Cape, The South African Archaeological Bulletin, Vol. 58, No. 177, pp. 33-37.

10) AUTHORITIES CONSULTED

- South African Heritage Resources Agency Cape Town - 021 462 4502
- McGregor Museum: +27 (0) 53 839 2700