McGregor Museum
Department of Archaeology

SKUITDRIFT 2 SOLAR PV ENERGY FACILITY

(KHOI-SUN DEVELOPMENT (PTY) LTD)

NEAR POFADDER, NORTHERN CAPE

ARCHAEOLOGY SPECIALIST
WALK-THROUGH SURVEY

David Morris
October 2017

SKUITDRIFT 2 SOLAR PV ENERGY FACILITY
ON THE FARM SKUITDRIF 426
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ARCHAEOLOGY SPECIALIST WALK-THROUGH SURVEY

David Morris, McGregor Museum, Kimberley & Sol Plaatje University, Kimberley
P.O. Box 316 Kimberley 8300
Tel 082 2224777 email dmorriskby@gmail.com
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1. Introduction and Background

The McGregor Museum was approached by Savannah Environmental (Ref SE1784) to carry out a heritage walk-through survey for the solar PV energy facility proposed by Khoi-Sun Development (Pty) Ltd, to be situated on the farm Skuitdrif 426 near Pofadder in the Northern Cape. This report provides an archaeology specialist walk-through survey of the footprint for the proposed construction of a 5 MW photovoltaic solar facility. Previously, Phase 1 Impact Assessments had been provided for Archaeology (Smith 2012) and Palaeontology (Almond 2012), together with an integrated Heritage Impact Assessment (De Kock 2012). Final Comment supporting the archaeology and palaeontology report recommendations was signed off by SAHRA on 11 July 2012 (SAHRIS), and Environmental Authorisation was granted on 26 June 2013.

The PV facility is proposed to make use of solar photovoltaic (PV) technology and include the following infrastructure: Arrays of solar photovoltaic (PV) panels; appropriate tracking/mounting structures; cabling between the project components, to be lain underground where practical; fencing around the facility; security and ablution facilities; two 10kL rainwater tanks; internal and external access roads; laydown area; site office, store room and control room buildings; inverter stations; onsite substation and transformers; and 33kV overhead power line to evacuate the power from the facility into the Eskom grid at the nearby existing Eskom Schuitdrift Substation. Existing roads will be upgraded and used for the facility where possible, however internal access roads will have to be constructed.

2. Specialist

The author of this report is an archaeologist accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists, employed at Head of Archaeology at the McGregor Museum in Kimberley and an Extraordinary Professor in the School of Humanities, Sol Plaatje University, Kimberley. Work has previously been carried by the author in the region of the proposed activity (Morris 1999a-b, 2000a-c, 2001, 2010, 2012, 2014).

The author works independently of the organisation commissioning specialist input, and provides these walk-trough survey observations within the framework of the National Heritage Resources Act (No 25 of 1999).

The National Heritage Resources Act no. 25 of 1999 (NHRA) protects heritage resources which include archaeological and palaeontological objects/sites older than 100 years, graves older than 60 years, structures older than 60 years, as well as intangible values attached to places. The Act requires that anyone intending to disturb, destroy or damage such sites, objects and/or structures may not do so without a permit from the relevant heritage resources authority. This is the context for this walk-through survey and specialist report, required by the relevant heritage resources authority/ies to assess whether there are any sensitive heritage resources located within the site and whether authorisation may be granted for the disturbance or alteration, or destruction of the identified heritage resources.

3. Description of the receiving environment and potential impacts

The environment is arid, comprising a barren, almost featureless, gently sloping drainage plain situated about 12 km south of the Orange River north east of Pofadder. The landscape being sparsely vegetated, surface archaeological traces are likely to be highly visible.

Figure 1. Google Earth image of the terrain indicating the locality of the site some 12 km south of the Orange River.

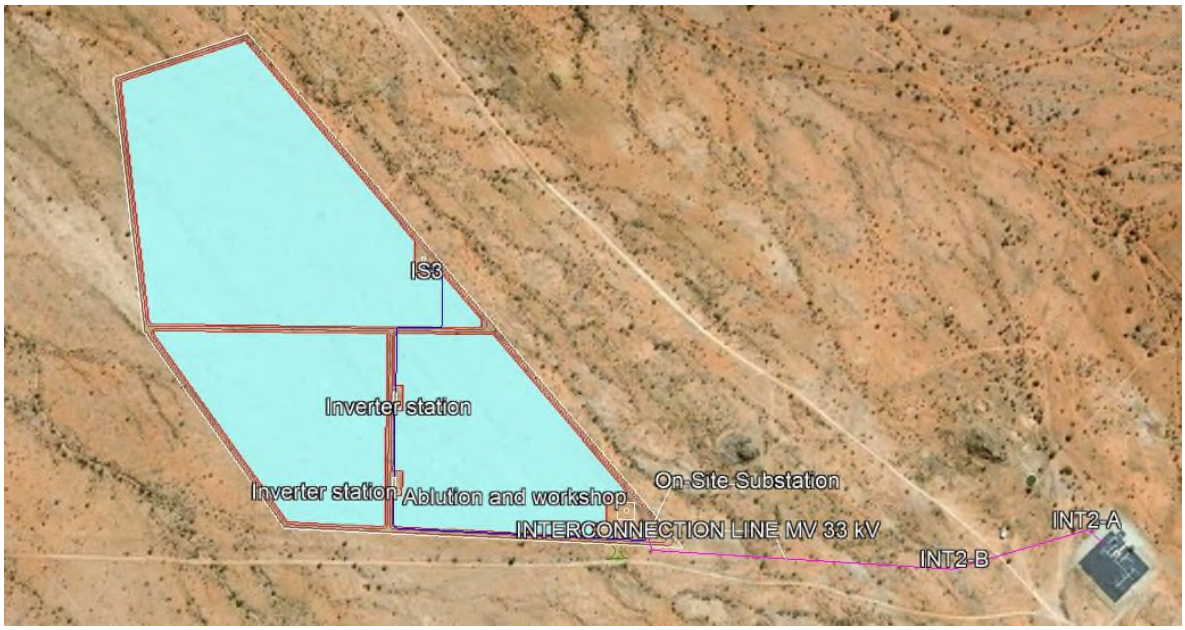

Figure 2. Google Earth image showing the proposed Skuitdrift 2 Solar PV Energy Facility footprint, with existing roads, and proposed facility infrastructure and transmission line to the exiting Eskom substation.

4. Heritage features of the region

Background information on heritage features known or expected in the region is the same, in its essential outline, to that noted in previous reports for similar landscapes nearer to Pofadder (e.g. Morris 2014). The Phase 1 Archaeological Impact Assessment report by Smith (2012; cf. De Kock 2012) produced findings in accord with this expectation.

Colonial frontier

The eighteenth- and nineteenth-century records for this region (Penn 2005) include the travelogues of George Thompson (1827) and E.J. Dunn (1931, Robinson 1978), who visited the region in 1824 and 1872 respectively. Place names were becoming fixed in this colonial frontier period (in a cadastral sense, on maps and in farm names), many such names having Khoekhoegowab origins encapsulating vestiges of precolonial/indigenous social geography. Genocide against the indigenous people is documented in this area (Anthing 1863; de Prada Samper 2012), with certain mountainous areas (like Gamsberg near Aggeneys and Namies) being the likely settings of massacre sites, referred to by Dunn in 1872 (Robinson 1978) and, more obliquely, by Anthing (1863; Jose Manuel de Prada-Samper pers. comm. 2009). Dunn refers to conflict at Zwart Modder, a farm south of Skuitdrift, where he recorded an isolated grave of a member of the Northern Border Police (which has yet to be relocated).

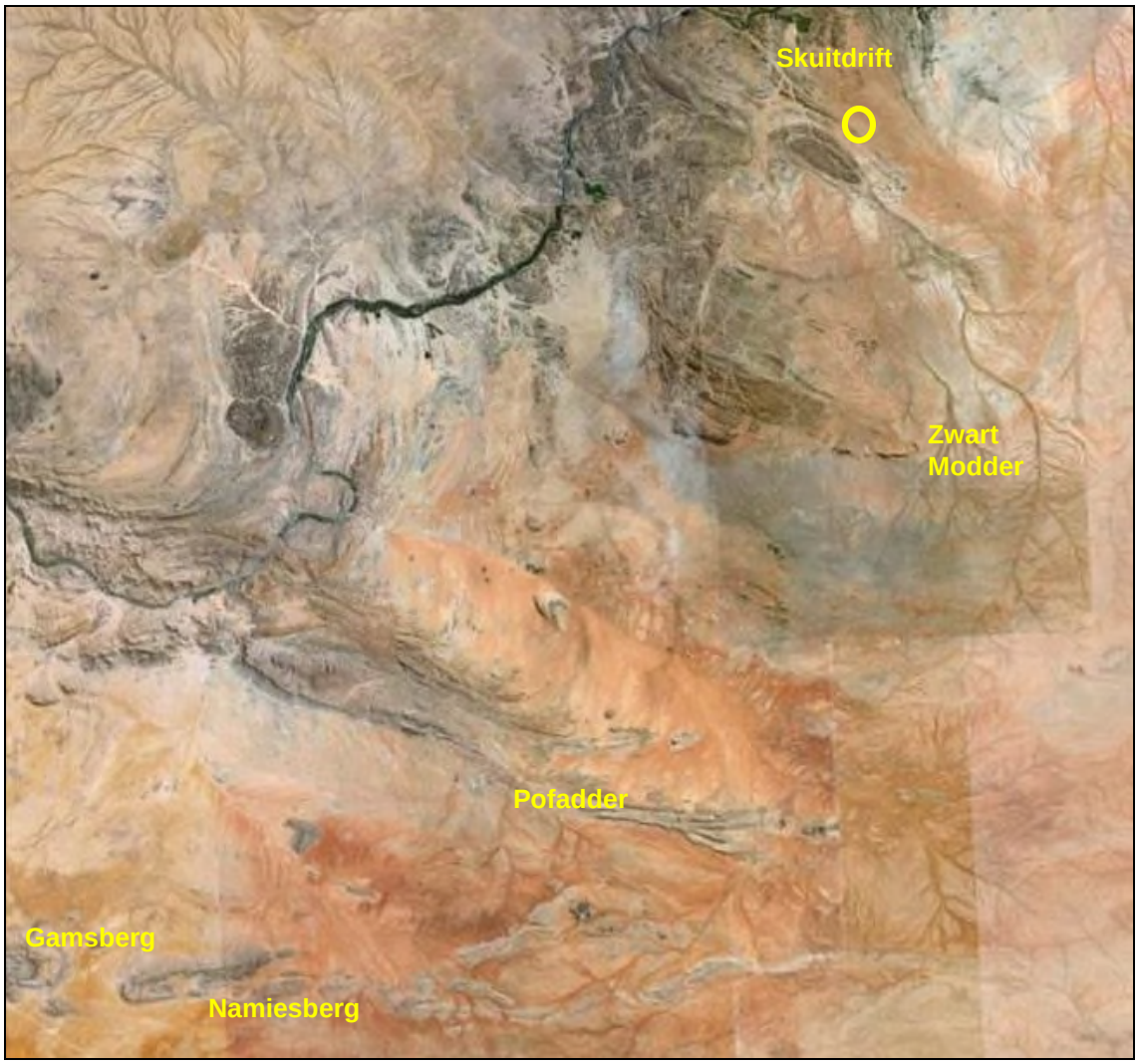

Figure 3. Regional focus: the study area relative to Skuitdrift, Pofadder and some other places mentioned.

Later Stone Age

Late Holocene Later Stone Age (LSA) sites are the predominant archaeological trace noted in surveys in the Aggeneys-Pofadder region (Morris 1999a-b, 2000a-c, 2001, 2010). Beaumont *et al*. (1995) have shown, with reference to the LSA, that "virtually all the Bushmanland sites so far located appear to be ephemeral occupations by small groups in the hinterland on both sides of the [Orange] river" (1995:263). This was in sharp contrast to the substantial herder encampments along the Orange River floodplain itself (Morris & Beaumont 1990), which reflected the "much higher productivity and carrying capacity of these bottom lands." "Given choice, the optimal exploitation zone for foragers would have been the Orange River." The appearance of herders in the Orange River Basin, Beaumont *et al*. argued, led to competition over resources and ultimately to marginalisation of hunter-gatherers, some of whom then occupied Bushmanland, probably mainly in the last millennium, and focused their hunting and gathering activities around the limited number of water sources in the region. Surveys have located signs of

human occupation mainly in the shelter of granite inselbergs (as indeed found here by Smith 2012), on red dunes which provided clean sand for sleeping, or around the seasonal pans (Beaumont *el al*. 1995:264). Possibly following good rains, herders moved into the Orange River hinterland, as attested archaeologically at sites with ample pottery near Aggeneys and, east of Pofadder, at Schuitdrift South – Morris 1999a). However, Thompson (1824) refers to herder groups settled at the stronger springs such as Pella dispersing during periods of drought to smaller springs in the region, which could equally well account for the traces referred to here. Dunn, in 1872, refers to a place at Schuit Klip where water accumulated following rains and was still available after a year of no rain in the vicinity (Robinson 1978:60-61). At such times competition between groups over resources and stress within an already marginalised hunter-gatherer society, must have intensified.

Pleistocene: Middle and Earlier Stone Age

Beaumont *et al*. (1995:240-1) have noted a widespread low density stone artefact scatter of Pleistocene age across areas of Bushmanland to the south where raw materials, mainly quartzite cobbles, were derived from extensive surface spreads of Dwyka tillite. Systematic collections of this material made at Olyvenkolk, south west of Kenhardt and Maans Pannen, and east of Gamoep, could be separated out by abrasion state into a fresh component of Middle Stone Age (MSA) with prepared cores, blades and points, and a large aggregate of moderately to heavily weathered Earlier Stone Age (ESA).

Beaumont *et al*. have shown that "substantial MSA sites are uncommon in Bushmanland" (1995:241) and those that have been documented thus far have generally yielded only small samples (Morris & Beaumont 1991; Smith 1995).

The ESA included Victoria West cores on dolerite, long blades, and a very low incidence of handaxes and cleavers. The Middle (and perhaps in some instances Lower) Pleistocene occupation of the region that these artefacts reflect must have occurred at times when the environment was more hospitable than today. This is suggested by the known greater reliance of people in Acheulean times on quite restricted ecological ranges, with proximity to water being a recurrent factor in the distribution of sites.

5. Description and evaluation of environmental issues and potential impacts

Heritage resources including archaeological sites are in each instance unique and non-renewable resources. Area and linear developments such as those envisaged can have a permanent destructive impact on these resources. The original heritage impact assessments (Smith 2012, Almond 2012, De Kock 2012) evaluated the sensitivity and significance of such resources where present with a view to recommending no-go areas and/or measures to mitigate or manage the said impacts.

The walk-through survey follows authorisation of the proposed facility and addresses the appropriateness of the layout relative to heritage resources and sensitivities.

6. Potential areas of sensitivity

Based on previous experience in the area (including Smith 2012), it is estimated that any terrain close to hills or rocky features, particularly sandy spots near sheltering rocks, may tend to have traces of precolonial Stone Age occupation/activity.

No such features occur on the actual footprint of the proposed development.

While places in the open plains have been found to have sparsely scattered artefacts (such as at Konkoonsies near the Paulputs Substation site – Morris 1999a), these areas are expected to be less significant. An exception to this is where rocky outcrops at the surface on the plains provide places where water pools exist after rains. Such places often attracted people in the past with traces of this including artificial grinding grooves in the bedrock and ample evidence of stone artefacts and pottery. A very good example of this is at Schuitdrift South about 3 km east of the development at 28º36'46" S 19º48'46" E. It is in fact described in some detail by Dunn (Robinson 1978:60-61): "Two holes occur in the gneiss at the crest of a ridge … when heavy thunder rains sweep over this arid country the water runs into and sometimes fills these most useful reservoirs, in which it is stored up and lasts many months."

Once again, there are no indications of such features on the footprint of the proposed development.

Colonial era sites or features within the study area include farm infrastructure, and a grave site beyond the footprint that was noted by De Kock (2012).

The objective of the walk-through survey is to assess the authorised layout relative to the above potential areas or sensitivities, given that disturbance of surfaces in the development area could have a destructive impact on heritage resources. In the event that such resources are found, they are likely to be of a nature that potential impacts could be mitigated by documentation and/or salvage following approval and permitting by the South African Heritage Resources Agency and, in the case of any built environment features, the Northern Cape Heritage Resources Authority. Should exceptional heritage features be found (not considered likely), some could require preservation *in situ* and hence modification of the intended placement of development components may be required.

Disturbance of any surface includes any construction: of a road, a pipeline, erection of a pylon, or preparation of a site for a substation, or plant, or building, or any other *clearance* of, or *excavation* into, a land surface. In the event of archaeological materials being present such activity would alter or destroy their context (even if the artefacts themselves are not destroyed, which is also possible). Without context, archaeological traces are of much reduced significance. It is the contexts as much as the individual items that are protected by the heritage legislation.

7. Criteria to assess significance where archaeological resources are found

In addition to guidelines provided by the National Heritage Resources Act (Act No. 25 of 1999), a set of criteria based on Deacon (nd) and Whitelaw (1997) for assessing archaeological significance has been developed for Northern Cape settings (Morris 2000a). These criteria include estimation of landform potential (in terms of its capacity to contain archaeological traces) and assessing the value to any archaeological traces (in terms of their attributes or their capacity to be construed as evidence, given that evidence is not given but constructed by the investigator).

Estimating site potential

Table 1 (below) is a classification of landforms and visible archaeological traces used for estimating the potential of archaeological sites (after J. Deacon nd, National Monuments Council). Type 3 sites tend to be those with higher archaeological potential, but there are notable exceptions to this rule, for example the renowned rock engravings site Driekopseiland near Kimberley which is on landform L1 Type 1 – normally a setting of lowest expected potential. It should also be noted that, generally, the older a site the poorer the preservation, so that sometimes *any* trace, even of only Type 1 quality, can be of exceptional significance. In light of this, estimation of potential will always be a matter for archaeological observation and interpretation.

Assessing site value by attribute

Table 2 (below) is adapted from Whitelaw (1997), who developed an approach for selecting sites meriting heritage recognition status in KwaZulu-Natal. It is a means of judging a site's archaeological value by ranking the relative strengths of a range of attributes (given in the second column of the table). While aspects of this matrix remain qualitative, attribute assessment is a good indicator of the general archaeological significance of a site, with Type 3 attributes being those of highest significance.

Table 1. Classification of landforms and visible archaeological traces for estimating the potential for archaeological sites (after J. Deacon, National Monuments Council).

Class	Landform	Type 1	Type 2	Type 3
L1	Rocky surface	Bedrock exposed	Some soil patches	Sandy/grassy patches
L2	Ploughed land	Far from water	In floodplain	On old river terrace
L3	Sandy ground, inland	Far from water	In floodplain or near feature such as hill	On old river terrace
L4	Sandy ground, Coastal	>1 km from sea	Inland of dune cordon	Near rocky shore
L5	Water-logged deposit	Heavily vegetated	Running water	Sedimentary basin
L6	Developed urban	Heavily built-up with no known record of early settlement	Known early settlement, but buildings have basements	Buildings without extensive basements over known historical sites
L7	Lime/dolomite	>5 myrs	<5000 yrs	Between 5000 yrs and 5

Class	Landform	Type 1	Type 2	Type 3
				myrs
L8	Rock shelter	Rocky floor	Sloping floor or small area	Flat floor, high ceiling
Class	**Archaeo-logical traces**	**Type 1**	**Type 2**	**Type 3**
A1	Area previously excavated	Little deposit remaining	More than half deposit remaining	High profile site
A2	Shell or bones visible	Dispersed scatter	Deposit <0.5 m thick	Deposit >0.5 m thick; shell and bone dense
A3	Stone artefacts or stone walling or other feature visible	Dispersed scatter	Deposit <0.5 m thick	Deposit >0.5 m thick

Table 2. Site attributes and value assessment (adapted from Whitelaw 1997)

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 arte/ecofacts
2	Presence of exceptional items (incl regional rarity)	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

8. Methodology & Limitations

The area being relatively small, our team of three scanned across the full extent of (and beyond) the footprint during the walk-through survey (Fig. 4 indicates the track taken by one of the three and all of the heritage resources located).

An assumption made in this study is that, by and large in this landscape, some sense of the archaeological traces to be found in the area would be apparent from surface observations (including assessment of places of erosion or past excavations that expose erstwhile below-surface features). There remains the possibility that during construction sites or features of significance could be encountered in the sub-surface (this could include an unmarked burial, or a high density of stone tools, for instance), in which case specified steps are necessary (cease work and report to heritage authority).

Nineteenth- and twentieth-century cultural history and intangible heritage values attached to places are difficult to recover owing to the sparse population.

The manner in which archaeological traces might be affected by the proposed development has been indicated above, but can be summed up in the following terms: it would be any act or activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). The most obvious impact in this case would be land surface disturbance associated with infrastructure construction.

9. Findings: walk-through survey observations

The study area was visited on 4 October 2017 by an archaeology team from the McGregor Museum including the author (D. Morris) and assistants (A. Henderson and J. Louw), to carry out a walk-through survey of the proposed development footprint of the Skuitdrift 2 Solar PV Energy Facility site.

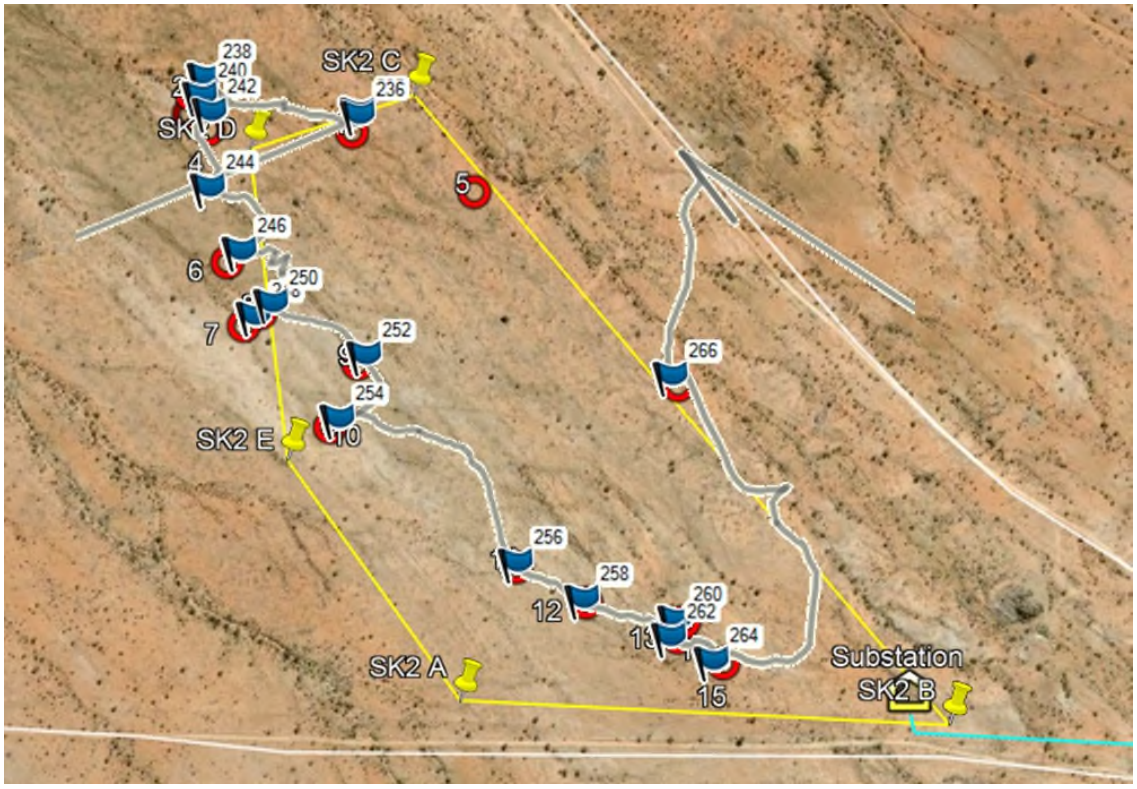

Figure 4. The track followed by one of the team members.

The lack of topographical features such as rocky outcrops, major watercourses, or dunes, suggested on the basis of prior experience of the archaeology of the region that the development footprint was not likely to be rich in archaeological traces of major significance.

This prediction was proven to be correct in terms of the very sparse observations tabulated below.

The sandy plain with rocky exposures across which the proposed facility is to be developed, was found to have extremely low density occurrences of Stone Age material, which occurs as isolated stone tool flakes, seemingly mainly of Middle and Later Stone Age character. This finding is consistent with that of Smith (2012) who found that higher density sites occur against the hills north east of the layout. Unconsolidated sand in places may mask higher numbers of artefacts below the surface, but much of the specific locale is eroded down, with artefacts resting directly on rocky or more or less consolidated substrate.

Observation No	Lattitude	Longitude	Description	Sensitivity
2017/1	28°36’’23.6”	19°45’43.7”	Jaspilite flake	LOW
2017/2	28°36’27.4”	19°45’43.9”	Quartzite flake	LOW
2017/3	28°36’33.0”	19°45’47.8”	Jaspilite flake and nearby flaked river-rolled pebble	LOW
2017/4	28°36’25.5”	19°45’43.5”	Quartz flake	LOW
2017/5	28°36’25.5”	19°45’48.1”	Two quartz flakes	LOW
2017/6	28°36’27.7”	19°45’41.2”	Flaked river-rolled pebble	LOW
2017/7	28°36’29.7”	19°45’39.8”	Flaked river-rolled pebble	LOW
2017/8	28°36’29.3”	19°45’40.4”	Jaspilite flake	LOW
2017/9	28°36’30.9”	19°45’43.9”	Quartzite flake	LOW
2017/10	28°36’32.9”	19°45’42.9”	Quartzite flake	LOW
2017/11	28°36’37.3”	19°45’49.6”	Jaspilite flake	LOW
2017/12	28°36’38.4”	19°45’52.1”	Quartzite flake broken	LOW
2017/13	28°36’39.0”	19°45’55.6”	Jaspilite manuport with edge damage and one flake removal	LOW
2017/14	28°36’39.5”	19°45’55.4”	Jaspilite flake	LOW
2017/15	28°36’40.3”	19°45’57.0”	Quartzite flake	LOW
2017/16	28°36’31.6”	19°45’55.4”	Quartz flake	LOW

Notable is the variety of raw materials present in comparison with the very few artefacts seen at the land adjacent to the site (east). The quartzite and jaspilite raw materials are exitic to the local environment, the quartzite probably derived from Dwyka tillite sources to the south, while jaspilite occurs in the river gravels of the Orange River to the north. The presence of river-rolled pebbles would appear to confirm derivation from the Orange River gravels.

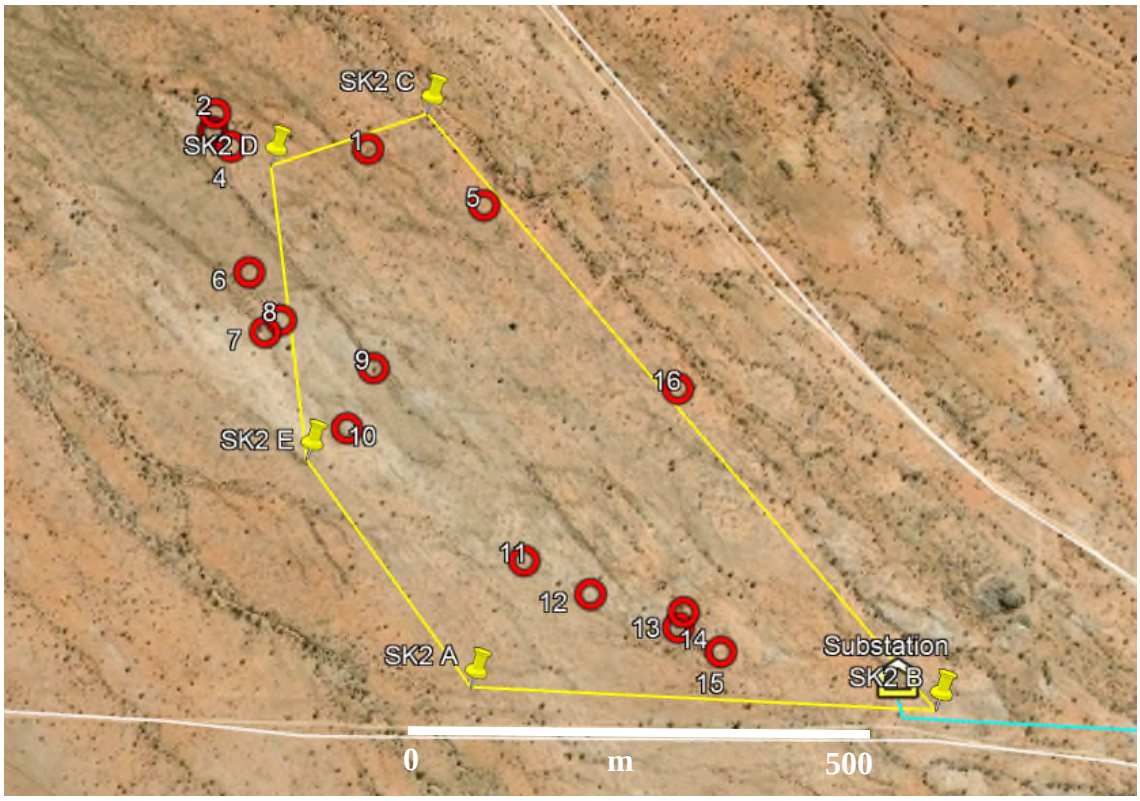

Figure 5. Observations 1-16 are within or at/just beyond the edge of the footprint of the proposed solar energy facility. This distribution of essentially isolated finds reflects an extremely low incidence of archaeological traces within the footprint.

Figure 6. A view north westwards across the proposed facility footprint from a nearby hill.

Figure 7. View southwards across the site.

Figure 8. View across the site showing sparse vegetation and wind-eroded surface, making for high archaeological visibility.

Figure 9. A view north westwards across the proposed facility footprint.


Figures 10 a, b & c. Flakes on a) jaspilite (river rolled pebble), b) jaspilite and on c) quartz.


Figure 11 a & b. Flakes on quartzite and on jaspilite.

10. Conclusion

The walk-through survey has found that the footprint of the proposed Skuitdrift 2 Solar PV Energy Facility has very low densities of isolated stone artefacts relating to the Middle and Later Stone Ages. The significance of impact is concluded to be LOW. Criteria applied (Tables 1 and 2) indicate Landform 3 Type 1 (Low significance), Archaeological trace Class 3 Type 1 (Low significance) and Type 1 for all of the Site Attribute classes (Low significance).

In terms of secondary or cumulative impacts (unlikely as they would apply only outside of the layout of the facility), the higher density artefact scatters against the nearby hills to the north east, noted by Smith (2012), must be avoided; while the existence of a sensitive high-density Later Stone Age site at Schuitdrift South, situated at 28º36'46" S 19º48'46" E, about 3 km to the east of the proposed development, is also noted. These higher/high-density sites in the wider landscape serve to further benchmark the low significance of archaeological materials found on the facility footprint during this walk-through survey.

Acknowledgements

The author thanks Savannah Environmental for assistance with information after commissioning the McGregor Museum to carry out this walk-through survey; farmer Mr Stephanus Nel who granted access to the land; and field assistants Abenicia Henderson and Jani Louw who helped walk the layout.

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