

**Reconnaissance and plan for further mitigation:
sites impacted on by proposed photovoltaic power
generation facility in De Aar
Northern Cape**

Prepared for:

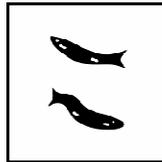
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DECLARATION BY THE INDEPENDENT PERSON WHO COMPILED A SPECIALIST REPORT OR UNDERTOOK A SPECIALIST PROCESS

Specialist Archaeological Assessment

Reconnaissance and plan for further mitigation: sites impacted on by proposed photovoltaic power generation facility in De Aar, Northern Cape.

Terms of Reference

Declaration

I ...**Will Archer**....., as the appointed independent specialist hereby declare that I:

- acted as the independent specialist in the compilation of this report;
- regard the information contained in this report as it is encompassed by my specialist study to be true and correct, and
- do not have, and will not have, any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have any vested interest in the proposed activity proceeding;
- have disclosed to the EAP any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010, and any specific environmental management act;
- have provided the EAP with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543, 2010.

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1. Executive summary

DJ Environmental Consultants, on behalf of Mulilo Renewable Energy, appointed the Agency for Cultural Resource Management to conduct a reconnaissance survey of two archaeological sites identified by J. Kaplan (Kaplan 2010). These sites were identified during the archaeological impact assessment for the proposed construction of a photovoltaic power generation facility in De Aar, Northern Cape Province. The footprint of the preferred location for the proposed construction is 400 X 400m. Two archaeological sites - DANW 10 and DANW 11- were identified within this footprint, and are worthy of mitigation action.

The reconnaissance survey was undertaken by Will Archer.

The aim of this study was to assess the likely antiquity and spatial integrity of these sites as well as the likelihood of in situ archaeological deposits occurring in the vicinity of these sites. This information guided the development of a plan for the future mitigation of these sites.

The archaeological study entailed the following:

- A one day survey of the identified sites which included making technological observations of individual artefacts and broad spatial observations regarding the extension and spatial integrity of lithic scatters.

The following findings were made:

- All artefacts at sites DANW 10 and DANW 11 are ex situ.
- The identified artefacts have a mosaic of technological characteristics that suggest these are multi-component sites.
- No in situ deposits exist in the vicinity of these sites.
- There is no potential for obtaining absolute dates of these sites.

The following recommendations are made:

- No archaeological excavations are required to mitigate these sites.
- A reflective sample of artefacts from sites DANW10 and DANW11 should be shot out with a total station and collected for technological analyses.

- A spatial sampling strategy should be devised where evenly spaced locations 30-40 meters apart can be identified across the area where artefacts are exposed.
- 5 by 5 meter squares will be set-up at each of these locations and all artefacts within these squares will be shot out with the total station and collected for basic technological analyses off site. The spatial data will also indicate if and where activity areas such as knapping locations are present.
- Standard technological and morphometric data will be collected on the shot out finds.

2. Terms of reference

The terms of reference for this archaeological study were to:

- Locate the sites DANW 10 and DANW 11 identified in the initial Archaeological Impact Assessment (Kaplan 2010).
- Preliminarily assess the likely antiquity of the scatters at these localities.
- Preliminarily assess the spatial integrity of the scatters at these localities.
- Assess the potential for in situ archaeological deposits in the vicinity of these localities.
- Develop a plan for the future mitigation of sites DANW 10 and DANW 11.

3. Study sites

The two sites in question are located in De Aar in the Northern Cape Province, and are situated within a locality that has been designated for the construction of a photovoltaic power generation facility (hereafter the 'PV facility'). The sites were identified initially by J. Kaplan in his survey of two potential location options for the construction of the PV facility. Namely the (1) North West option and the (2) South East option (Kaplan 2010).

Kaplan (2010) identified two archaeological sites within the North West alternative location, in close proximity to one another. The sites occur on the western terraces of the Brak river approximately 1.5 kilometres from the De Aar municipal show-grounds about 1 kilometre North West of the municipal substation (Figures 1 and 2).



Figure 1: The North West location designated for the proposed development.

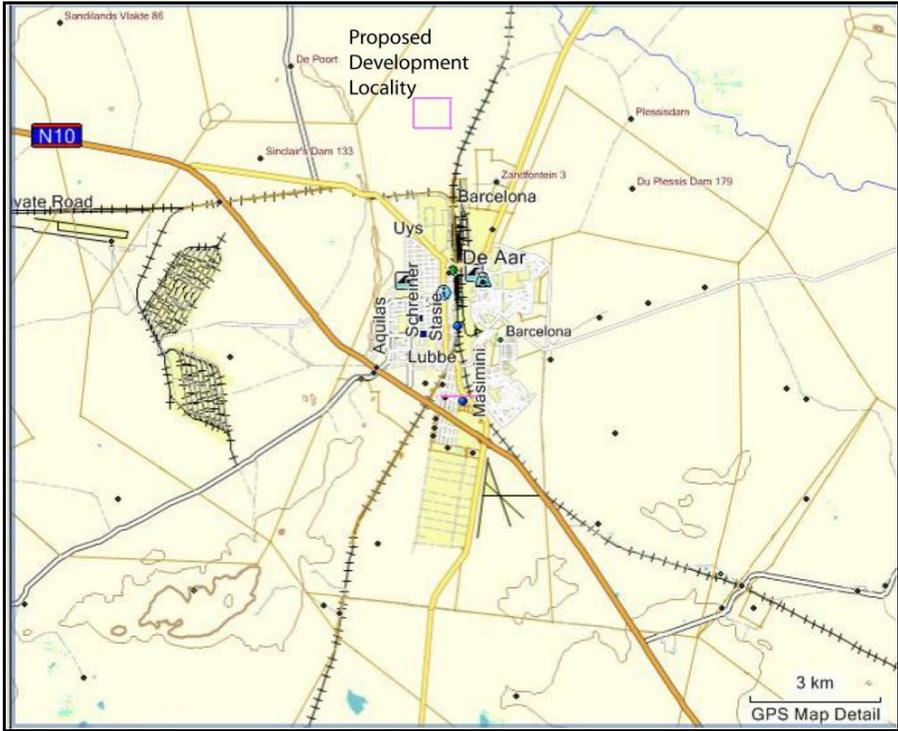


Figure 2: Locality map.

Archaeological visibility at the site localities is reasonably good and the artefacts are likely to have deflated down onto the current land surface through a dual process of recurring (1) low-energy flood wash and (2) intense overgrazing whereby roots of grass and shrubs are extracted by grazers and topsoil as well as sandy overburden is removed through both Aeolian and fluvial processes. Artefacts in the uppermost soils consequently sink down onto a single resistant land surface. However as one moves south-west of the site localities – and away from the river – grass and shrub cover increases and, contingently, artefactual visibility decreases.

Due to (1) the range of artefacts present and (2) the nature of the proposed construction, the identified sites were deemed as being in danger of negative impacts from the proposed development (Kaplan 2010). Consequently mitigatory measures are required.

The vulnerable sites were named (1) DANW10 and (2) DANW11. Future investigation of locations DANW10 and DANW11 related to mitigation will treat them as a single site due to (a) the proximity of these sites to one another, (b) the continuous scatter of artefacts between these sites and (c) the technological and typological similarity between artefacts at these sites.

Due to the client's preference for the North West alternative, mitigation measures are required to conserve the scientific value of sites DANW10 and DANW11 in perpetuity, for future generations of potentially interested researchers.

4. Methodology

A one day visit to the identified sites was completed. Preliminary observations were made regarding the (1) technological and typological characteristics of the artefacts at sites DANW10 and DANW11, (2) the spatial extension of the artefact scatters as well as the (2) contexts in which these artefacts were found. No morphometric technological data was collected.

The survey was guided by previously collected waypoints of the sites DANW10 and DANW11 (Figure 3).

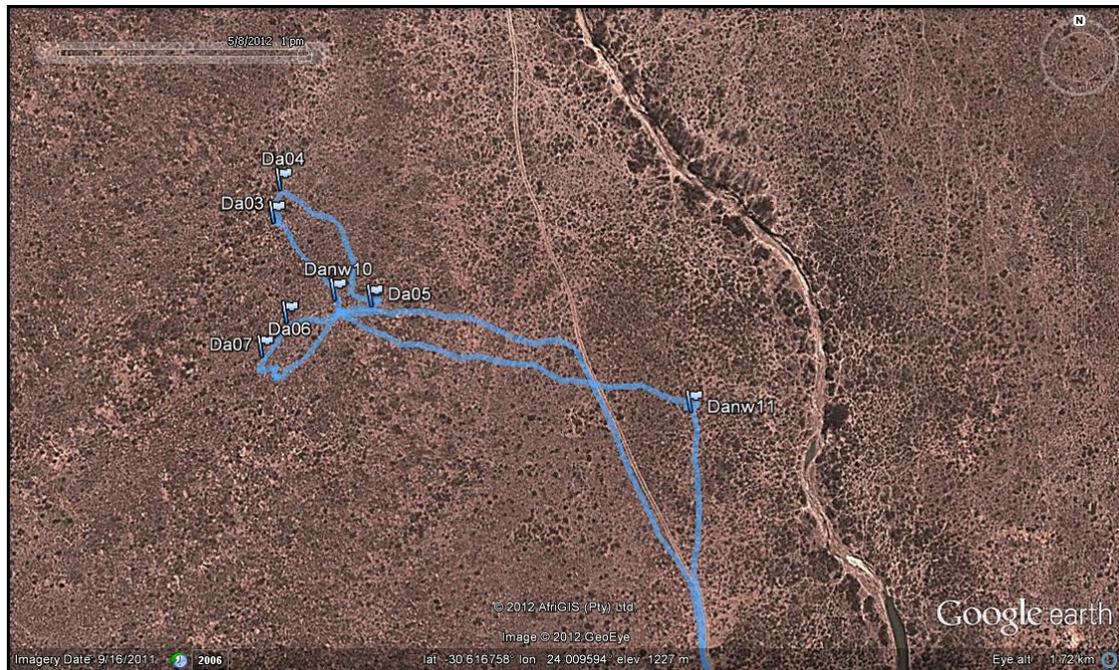


Figure 3: Waypoints showing the two identified sites DANW10 and DANW11 as well as way points showing the extent of the highest density of artefacts.

5. Findings

All identified artefacts were found *ex situ*. The artefacts occur in a deflated context and potentially have moved substantially both vertically as well as laterally since their time of original deposition (Figures 4-6). However the distances individual artefacts – and individual scatters - have moved potentially varies substantially for taphonomic reasons that need further spatial data to clarify. The artefacts where found relatively continuously distributed across a large area (Figure 7).



Figure 4: Typical erosional surface with artefacts high-lighted in red.



Figure 5: Typical artefact baring erosional surface.



Figure 6: Typical artefact bearing erosional surface.

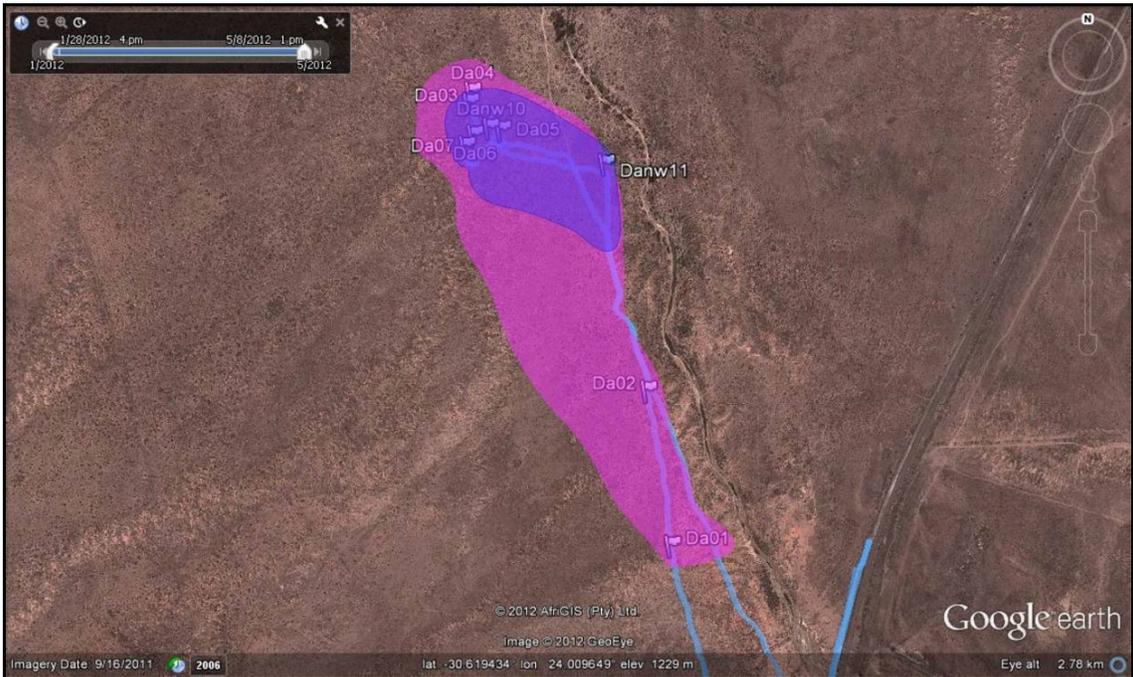


Figure 7: The area across which artefacts were continuously distributed (purple) and the portion which had higher densities of artefacts (blue).

All lithics were produced on the same raw-material- Hornfels (indurated shale)¹ – and were generally extensively patinated. Dual-patina occurred on a number of pieces which suggests multiple temporal waves of occupation/episodes of landscape use (Figure 8).



Figure 8: A snapped core with negative scars that indicate two different phases of removals (dual patina). The scar marked in yellow refers to the later scavenging phase of removals.

The assemblage is relatively amorphous and contains no typological markers or formal tools. A high frequency of flakes have cortex and there are also numerous unworked cobbles and nodules of raw-material at the locality which suggests that the way in which lithics were produced could be relatively expedient.

Two bi-directionally worked cores (Figure 10) and the presence of prepared platforms (facettes) (Figure 11) on some of the flakes suggests that there is a Late Pleistocene component to the site. However the numerous flakes that have been scavenged and the presence of a lower grindstone (Figure 9) suggest there is a more recent – Later Stone Age - occupation of this locality.

¹ However a lower grindstone was produced on Dolerite.



Figure 9: A Later Stone Age lower grindstone.



Figure 10: A heavily patinated core showing a bi-directionally worked edge: a core reduction strategy which would be very unusual in the Later Stone Age.



Figure 11: A flake with two clear facettes on the platform.

No potential for (1) in situ archaeological deposits or (2) dating of the site was identified. This site is deemed as having relatively *low significance* relative to the big questions in Stone Age archaeology today. The suggestion of (1) above was reinforced by observations of several aardvark burrows across the site locality, the excavated sediments from which yielded no artefacts.

6. Proposal for mitigation action

A reflective sample of artefacts from sites DANW10 and DANW11 should be shot out with a total station and collected for technological analyses.

A spatial sampling strategy will be devised where evenly spaced locations 30-40 meters apart will be identified across the area where artefacts are exposed. 5 by 5 meter squares will be set-up at each of these locations and all artefacts within these

squares will be shot out with the total station and collected for basic technological analyses off site. Taphonomic and behavioural hypotheses could be tested using the generated spatial data. The spatial data will also indicate if and where activity areas such as knapping locations are present.

Standard technological and morphometric data will be collected on the shot out finds.

Due to the *ex situ* nature of artefacts at sites DANW10 and DANW11, no excavation will be required.

7. Timeframe for mitigation action

The fieldwork component of the proposed study could be conducted across a ten day period. The lab-work component including lithic data collection, basic analyses and report write-up could be undertaken across a five day period.

8. Predicted outcomes of mitigation action

The predicted outcomes of the planned mitigation are:

- The identification of a technologically and typologically representative sample of artefacts at sites DANW 10 and DANW 11.
- The generation of a spatially representative distribution of artefacts at sites DANW 10 and DANW 11.
- The preliminary analysis of the above mentioned assemblage.
- The identification of potential activity areas, if these exist.
- The storage of this information for potential analyses by future interested scientists.

9. References

Kaplan, J. 2010. Archaeological Impact Assessment. Proposed Photovoltaic Power Generation Facility in De Aar, Northern Cape.