



SOUTH AFRICAN HERITAGE RESOURCES AGENCY

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FOR ATTENTION:

PHRA Northern Cape (Mr Andrew Timothy)**FOR OFFICIAL USE ONLY:**SAHRA File No: **9/2/075/0001**Date Received: **5 April 2012**Date of Comment: **5 June 2012**

Sent to Peer Review:

Date to Peer Review:

SAHRA Contact Person: **Ms Kathryn Smuts**DEA Ref. no: **12/12/20/2501**

REVIEW COMMENT ON ARCHAEOLOGICAL AND PALAEOLOGICAL IMPACT ASSESSMENTS

BY ARCHAEOLOGY, PALAEOLOGY AND METEORITES UNIT OF THE SOUTH AFRICAN HERITAGE RESOURCES AGENCY

South Africa has a unique and non-renewable archaeological and palaeontological heritage. Archaeological and palaeontological sites are protected in terms of the National Heritage Resources Act (Act No 25 of 1999) and may not be disturbed without a permit. Archaeological Impact Assessments (AIAs) and Palaeontological Impact Assessments (PIAs) identify and assess the significance of the sites, assess the potential impact of developments upon such sites, and make recommendations concerning mitigation and management of these sites. On the basis of satisfactory specialist reports SAHRA or the relevant heritage resources agency can assess whether or not it has objection to a development and indicate the conditions upon which such development might proceed and assess whether or not to issue permission to destroy such sites.

AIAs and PIAs often form part of the heritage component of an Environmental Impact Assessment or Environmental Management Plan. They may also form part of a Heritage Impact Assessment called for in terms of section 38 of the National Heritage Resources Act, Act No. 25, 1999. They may have other origins. In any event they should comply with basic minimum standards of reporting as indicated in SAHRA Regulations and Guidelines.

This form provides review comment from the Archaeologist of the relevant heritage resources authority for use by Heritage Managers, for example, when informing authorities that have applied to SAHRA for comment and for inclusion in documentation sent to environmental authorities. It may be used in conjunction with Form B, which provides relevant peer review comment.

- A. PROVINCIAL HERITAGE RESOURCES AUTHORITY: **Northern Cape**
- B. AUTHOR OF REPORT: **Mr J. Orton**
- C. ARCHAEOLOGY CONTRACT GROUP: **Archaeology Contracts Office**
- D. CONTACT DETAILS: **ACO Department of Archaeology, University of Cape Town, Private Bag Rondebosch 7701**
- E. DATE OF REPORT: **10 January 2012**
- F. TITLE OF REPORT: **HERITAGE IMPACT ASSESSMENT FOR A PROPOSED PHOTOVOLTAIC ENERGY PLANT ON THE FARM KLIPGATS PAN NEAR COPPERTON, NORTHERN CAPE**
- G. AUTHOR OF REPORT: **Dr J.E. Almond**
- H. ARCHAEOLOGY CONTRACT GROUP: **Natura Viva cc.**
- I. CONTACT DETAILS: **P.O. Box 12410 Mill Street Cape Town 8010, email: naturaviva@universe.co.za**
- J. DATE OF REPORT: **February 2012**
- K. TITLE OF REPORT: **PALAEOLOGICAL IMPACT ASSESSMENT: COMBINEC DESKTOP & FIELD ASSESSMENT STUDY - PROPOSED PHOTOVOLTAIC**

ENERGY PLANT ON FARM KLIPGATS PAN (PORTION 4 OF FARM 117) NEAR COPPERTON, NORTHERN CAPE

- L. Please circle as relevant: Heritage component of **EIA** / EMP / HIA / CMP/ Other (Specify).....
- M. REPORT COMMISSIONED BY (**CONSULTANT** OR DEVELOPER): **Aurecon South Africa**
- N. CONTACT DETAILS: **P.O. Box 494, Cape Town, 8000, email: franci.gresse@aurecongroup.com**
- O. COMMENTS:

REVIEW COMMENT ON HERITAGE AND PALAEOLOGICAL IMPACT ASSESSMENTS

Author

Mr J. Orton

Dated: 10 January 2012 Received 5 April 2012

Title

HERITAGE IMPACT ASSESSMENT FOR A PROPOSED PHOTOVOLTAIC ENERGY PLANT ON THE FARM KLIPGATS PAN NEAR COPPERTON, NORTHERN CAPE

Author

Dr J.E. Almond

Dated: February 2012 Received 5 April 2012

Title

PALAEOLOGICAL IMPACT ASSESSMENT: COMBINEC DESKTOP & FIELD ASSESSMENT STUDY - PROPOSED PHOTOVOLTAIC ENERGY PLANT ON FARM KLIPGATS PAN (PORTION 4 OF FARM 117) NEAR COPPERTON, NORTHERN CAPE

INTRODUCTION

Mulilo Renewable Energy proposed the construction of a 100 MW photovoltaic power generation facility on the Farm Klipgats, near Copperton in the Northern Cape. The total footprint for the development will be 300 ha. In addition to the photovoltaic panels, the development will entail the construction of a 132kV overhead transmission line, linking the facility to the Kronos Substation, the upgrading of existing farm roads and the construction of new roads as well as the construction of a small office building. The property will be fenced for security purposes. Two alternative locations have been chosen and both of these were assessed by the specialists. The developer considered two methods of power generation, namely Photovoltaic (PV) and Concentrated Solar Power (CSP), but CSP was ruled out at the scoping phase due to the high water demands of that technology.

The study area is flat, with low vegetation, allowing for good general visibility. To the south of the property are a large pan and hills.

DISCUSSION

Two archaeologists, Mr Jayson Orton and Mr Ross Lyall, surveyed the study area on foot and by vehicle. They focused on areas more likely to contain archaeology, namely hills; dense gravel patches and pan and stream margins. This survey work identified a low density of *ex situ* artefacts across the study area, predominantly on quartzite, but including silicates and quartz. Weathering of artefacts indicates a range of time over which they have accumulated and artefacts included Later, Middle and Early Stone Age material, including occasional hand-axes. One Middle Stone Age quarrying site (Site 153) was located on a quartzite outcrop.

In addition to the background scatter, a large number of discrete Stone Age sites were located. These were all associated with landscape features and clustered in three main areas. The first area was the elevated terrace in the north of the study area; this area had dense gravel cover and silty pan areas. The assemblage is dominated by unweathered quartzite, but includes quartz and CCS. While these artefacts were dispersed, together they indicate Later Stone Age occupation of the terrace, probably for viewing game from. The second area was just north of the R357 in an area that had gravel patches, sandy patches and silty pans. The sites in this area (KGP 2011/030; KPG2011/065) frequently had ostrich eggshell, while the raw materials were predominantly quartz and CCS. The third area was identified as the most significant, and was located in the elevated land in the south of the study area where it is likely there was seasonal water in the past. The sites from this area (KGP 2011/012; KGP 2011/010; KGP 2011/011 and KGP 2011/014) are Later Stone Age in date and are dominated by

microlithic material on quartz, quartzite and CCS. One site (KGP 2011/014) included glass, burnt bone and ceramics as well as Later Stone Age material, all associated with a small semi-circular feature of small cobbles. Most of the sites in this third area were on a plateau overlooking a dry pan to the west, many of them very extensive and several very dense (15-20 artefacts per m²). The largest, most significant site was KGP 2011/048 which was particularly dense and included decorated ostrich eggshell assumed to have originated from a water flask, as well as bone fragments. Stone artefacts included an adze and a bored stone fragment. Site KGP 2011/050, within the third area, yielded a well worn upper grindstone/hammerstone which is taken as an indication of long term occupation of the site. A single Later Stone Age site was found near an ephemeral pan, but not near any significant landscape feature like the others. This site (KGP 2011/034) contained primarily quartz microliths and included a backed triangle, a rare artefact type in South Africa.

Alternative 1 will have a greater impact on the Stone Age archaeology of the study area.

Historical period archaeology in the study area includes several ruined structures, forming a single farm complex, and artefact scatters; the present tenant, whose father owned the farm previously, thought the structures to date to 1914. The structures include the ruins of a small stone-built rectangular structure (KGP 2011/006), associated with early 20th century glass as well as stone walling, a stone foundation, a collapsed brick wall, two brick "towers" and a small double walled structure (KGP 2011/018); a pile of stones was located nearby. These structures were all rendered with cement and were probably 20th century, possibly the remains of a house. A final structure (KGP 2011/022) was the stone foundations of a small 3.5m by 2.5m structure. South of this complex of ruins was a widespread, dispersed scatter of historical glass and ceramics that were probably late 19th or early 20th century in date. Three standing structures were also located on the farm, a cow shed (KGP 2011/020) and a toilet (KGP 2011/019), both built of shale blocks and a kraal (KGP 2011/021) built of sandstone.

Alternative 2 will have a greater impact on the historical archaeology of the study area

The archaeologist comments on the cultural landscape, noting the windmills, feeding troughs and a stone-lined dam that contribute to the sense of place. Two quarries were located to the south of the farm complex and were clearly the sources of the building stone. The archaeologist further comments on the scenic qualities of the area, noting that Alternative 1 adjoins the R357, which is a scenic route, while Alternative 2 might not be visible from the road. Nonetheless, the author points out that the road is not much used, reducing the visual impact. The archaeologist does point out that another PV facility is proposed for the same farm and a number more PV and wind facilities for the area, meaning that the cumulative visual impact will be greater.

Dr Almond completed a deskbased assessment of the two alternative locations for the larger facility, which, although not sharing the same location as the proposed 20 MW site, overlie similar geological formations.

The uppermost deposits in the area are Quaternary to Recent Age sandy to silty soils, which overlie a well-developed calcrete hardpan. These calcretes and their overlying gravels are probably Pleistocene deposits of the Mokalanen and Obogorop Formations. Water courses contain sandy and silty fluvial deposits, while pans contain fine-grained silts. These upper sediments usually contain only sparse, low diversity fossils, and their wide ranging occurrence means they are not considered of high sensitivity. Nonetheless, they may contain important fossil biota, such as mammalian teeth, bones and horn cores as well as tortoise bones and ostrich eggshell. Calcrete hardpans are known to contain trace fossils such as rhizoliths, termitaria and mammalian trackways, while solution hollows within the calcretes can act as fossil traps and preserve vertebrate remains. Fossil remains – mammalian teeth and bones – are likely to be encountered in the fluvial and pan deposits. The superficial deposits overlie the Permocarboneous glacial Dwyka Group sediments of the Mbizane Formation. This Formation contains sparse, low density fossils, usually arthropod trackways and plynomorphs; a limited range of marine fossils might also be encountered. Nonetheless, the Dwyka Group is of low overall palaeontological sensitivity. Igneous Precambrian basement rocks exist throughout the

study area as isolated inliers belonging to the Namaqua-Natal Metamorphic Province of Mokolian Age. These are entirely unfossiliferous. Outcrops of similarly unfossiliferous Early Jurassic dolerites (Karoo Dolerite Suite) and Kimberlite also occur in the area.

SAHRA RECOMMENDATIONS AND CONCLUSION

The SAHRA Archaeology, Palaeontology and Meteorites Unit supports the recommendations of the specialists and requires that:

- If Alternative 2 is chosen, the built structures in that area should be avoided, and the footprint should be moved to the east in order to avoid them. The artefactual material is younger than 100 years old, and therefore not currently legally protected. The LSA sites on the hilly parts of Alternative 2 should be demarcated as a no go area, with an exclusion zone of at least 100m around them. The exclusion zone should be clearly marked on all construction maps. Archaeologically, Alternative 1 is preferable to Alternative 2
- If Alternative 1 is chosen, the low plateau area to the north should be avoided due to the high density of background scatter and the good representative samples of ESA and MSA material. This area should be cordoned off during development to avoid disturbance.
- Sites in the southern edge of Alternative 1 will require mitigation, if that option is chosen. These are KGP 2011/002, KGP 2011/003, KGP 2011/025 and KGP 2011/065. Mitigation should take the form of excavation of the larger, denser sites and sampling of the smaller, less dense ones. The visible material boundaries of the sites to be mitigated must be surveyed with the aid of a surveying instrument and for the purpose of establishing excavation grids. A photographic record must be established immediately before, during and after mitigation. The archaeologist will require a mitigation permit from the South African Heritage Resources Agency, in terms of section 35 of the National Heritage Resources Act (Act 25 of 1999). On receipt of a satisfactory mitigation (Phase 2) permit report from the archaeologist, the heritage authority will make further recommendations in terms of the site. Very often permission is given for the destruction of the remainder of the archaeological or palaeontological sites. Very rarely, if a site has high heritage significance the authority may request that it be conserved, that mini-site management plans, interpretive material and possibly protective infrastructure be established.
- The Environmental Control Officer should be made aware of the possibility of fossil finds being unearthed and should monitor all excavations into fresh, unweathered bedrock and this stipulation should be included in the Environmental Management Plan for the site

Should any new evidence of archaeological sites or artefacts, palaeontological fossils, graves or other heritage resources are found during development, construction or mining, SAHRA (Katie Smuts/Colette Scheermeyer, Tel: 021 462 4502) or an archaeologist must be alerted immediately.

Decisions on Built Environment (e.g. structures over 60 years) and associated Living Heritage (e.g. sacred sites) must be made by the Provincial Heritage Resources Authority of the Northern Cape (**Mr. Andrew Timothy, email: ratha.timothy@gmail.com**) to whom this Archaeological Review Comment will be copied.

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 NAME OF HERITAGE RESOURCES AGENCY: SAHRA.....

PLEASE NOTE THAT THE COMMENT (ABOVE OR APPENDED) CONSTITUTES THE COMMENT OF THE HERITAGE RESOURCES AGENCY ARCHAEOLOGIST AND THAT ANY DEVELOPMENT THAT INVOLVES DESTRUCTION OF ANY ARCHAEOLOGICAL/PALAEONTOLOGICAL SITE IS STILL SUBJECT TO A PERMIT/PERMISSION FOR DESTRUCTION OF SUCH SITE GIVEN TO THE DEVELOPER BY THE RELEVANT HERITAGE RESOURCES AGENCY ARCHAEOLOGICAL AND PALAEONTOLOGICAL PERMIT COMMITTEE (THIS WILL BE SUBJECT TO APPROVAL OF THE PHASE 2 OR ARCHAEOLOGICAL/ PALAEONTOLOGICAL MITIGATION AS NECESSARY). THIS REPORT MAY BE TAKEN ONLY AS APPROVAL IN TERMS OF SECTION 35 OF THE NATIONAL HERITAGE RESOURCES ACT. THE PROVINCIAL MANAGER OF THE HERITAGE RESOURCES AUTHORITY MUST ADVISE AS TO APPROVAL IN TERMS OF HERITAGE ISSUES ENCOMPASSED BY OTHER ASPECTS OF THE LEGISLATION, SUCH AS ISSUES OF THE BUILT ENVIRONMENT (STRUCTURES (E.G. FARM HOUSES), OVER 60 YEARS), INDIGENOUS KNOWLEDGE SYSTEMS OR OF CULTURAL LANDSCAPES AS THIS IS NOT WITHIN THE SCOPE OF THE ARCHAEOLOGIST.

PLEASE NOTE THAT SAHRA IS NOW RESPONSIBLE FOR GRADE I HERITAGE RESOURCES (AND EXPORT) AND THE PROVINCIAL HERITAGE RESOURCES ARE RESPONSIBLE FOR GRADE II AND GRADE III HERITAGE RESOURCES, EXCEPT WHERE THERE IS AN AGENCY ARRANGEMENT WITH THE PROVINCIAL HERITAGE RESOURCES AUTHORITY.