

**SCOPING ASSESSMENT: PROPOSED CONSTRUCTION OF RE CAPITAL  
11 SOLAR DEVELOPMENT ON THE REMAINDER OF THE FARM  
DYASON'S KLIP 454, NORTHERN CAPE**

(Assessment conducted under Section 38 (8) of the  
National Heritage Resources Act No 25 of 1999)

Prepared for:

RE Capital 11 (Pty) Ltd

July 2014



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## EXECUTIVE SUMMARY

ACO Associates cc was appointed by Perception Planning on behalf of the client, RE Capital 11 (Pty) Ltd, to undertake a Scoping assessment for the construction of a PV facility on the Remainder of the Farm Dyason's Klip 454, in the Kai Garib local Municipality of the Northern Cape.

The client proposes to construct a 75 MW PV and/or concentrated PV on approximately 200 ha of the property. The PV facility will include a lay-down area, access roads and a 132 kV powerline which will connect to a new sub-station.

This Scoping assessment provides a brief baseline description and attempts to predict the possible range of impacts and identify issues in terms of accumulated knowledge of the area. It sets out the methodology for a full heritage impact study.

A number of heritage impact assessments have been conducted in close vicinity to the study area during the last decade. The landscape is characterised as a gently sloping plain crossed by shallow drainage lines and covered in sparse vegetation.

A review of the reports indicates ephemeral scatters of Middle Stone Age and Later Stone Age artefacts are expected to occur, predominantly along the edges of pans and drainage lines as well as in proximity to bedrock hollows where water may collect after rains. Grinding grooves have been observed in the bedrock. Military activity related to the Korana Wars of the 19<sup>th</sup> century occurred along this stretch of the Orange River and material remains may be found close to the river. Structures and features related to 20<sup>th</sup> century farming and mining activities may occur on the property. This would include ruins of workers' cottages, unmarked graves, prospecting trenches, etc.

The aim of the EIA would be to identify and assess the significance of all heritage resources on the property, to determine the potential impacts on the resources, and where appropriate to recommend "no-go" areas and to propose mitigation if avoidance is not possible.

Terms of Reference for the EIA:

- The proposed study area, including proposed routes of linear infrastructure (access roads, underground services, power lines) will need to be subject to a detailed survey by heritage practitioner/archaeologist who will need to walk transects over the site recording details and locations of any heritage material found;
- The significance of each find will need to be assessed along with the impacts of the proposed activity;
- In the case of impacts to significance heritage resources, the proposed mitigation measures may include the "No-Go" alternative, avoidance, archaeological excavations or monitoring during earthworks.

Based on the archaeology of the adjoining areas, the terrain on which the proposed RE Capital 11 Solar Development will be located is unlikely to be rich in heritage remains.

Indications are that in terms of archaeological heritage and built environment the proposed activity is viable and impacts are expected to be limited and controllable. In terms of the information available at this time, no fatal flaws are anticipated.

## GLOSSARY

**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.

**Pleistocene:** A geological time period (of 3 million – 20 000 years ago).

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

**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

DEA	Department of Environmental Affairs
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

## 1. INTRODUCTION

ACO Associates cc was appointed by Perception Planning on behalf of the client, RE Capital 11 (Pty) Ltd, to undertake a Scoping assessment for the construction of a new solar facility on the Remainder of the Farm Dyason's Klip 454, in the Kai Garib local Municipality of the Northern Cape.



**Figure 1:** An aerial image of the proposed PV facility on the Farm Dyason's Klip. The facility is indicated as the yellow polygon, the access road alternatives as turquoise and white lines, and the grid connection alternatives as the red, green and blue lines.

## 2. DEVELOPMENT PROPOSALS

The client proposes to construct a 75 MW PV and/or concentrated PV with fixed, single or double axis tracking technology on approximately 200 ha of the property (Figure 1). The total footprint will not exceed 240 ha and will include a 2-5 ha laydown area. Access roads are expected to vary between 6m – 8m. The length of the roads depends on the various layout assessed. The facility will connect from the on-site substation to a planned MTS substation (close to the current Oasis substation) via a 132 kV powerline. Various grid connections are being considered. The powerline poles will be steel monopole structures and the servitude width is expected to be 32 m. The lifetime of the facility is 2-25 years and the site will be rehabilitated at the end of the project.

### 3. HERITAGE LEGISLATION

This report is conducted in terms of Section 38 (8) of the National Heritage Resources Act, No 25 of 1999.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological Sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

#### 3.1 Grading

The South African heritage resources management system is based on grading, which provides for assigning the appropriate level of management responsibility to a heritage resource.

**Table 1:** Grading of Heritage Resources

Grade	Level of significance	Description
I	National	Of high intrinsic, associational and contextual heritage value within a national context, i.e. formally declared or potential Grade 1 heritage resources.
II	Provincial	Of high intrinsic, associational and contextual heritage value within a provincial context, i.e. formally declared or potential Grade 2 heritage resources.
IIIa	Local	Of high intrinsic, associational and contextual heritage value within a local context, i.e. formally declared or potential Grade 3a heritage resources.
IIIb	Local	Of moderate to high intrinsic, associational and contextual value within a local context, i.e. potential Grade 3b heritage resources.
IIIc	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. METHODOLOGY

This study has been commissioned as a Scoping assessment. It provides a brief baseline description and attempts to predict the possible range of impacts and identify issues in terms of accumulated knowledge of the area. It sets out the methodology for a full heritage impact study.

This Scoping study includes a review of the published material as well as unpublished reports on the SAHRIS database. The 1:50 000 maps of the area as well as Google Earth aerial images were consulted. Numerous impact assessments have been conducted in proximity to the proposed facility as reflected on the SAHRIS database. This review of the CRM literature has identified the following reports to be of most value.

Morris (2013) conducted an assessment on the northern and central sections of the farm Dyason's Klip 454 itself for RE Capital 3 (Pty) Ltd. He has also undertaken an assessment of the adjoining property of McTaggart's Camp 453 which included a mitigation study (Morris 2013).

Gaigher (2013) undertook an assessment for the construction of the proposed Sirius Solar Project on the farm Tungsten Lodge 638 to the east of Dyason's Klip; Van der Walt (2011) assessed the construction of a solar facility on the farm Geel Kop 456 some 2 km to the west of Dyason's Klip and Dreyer (2006) undertook a fairly superficial assessment for the development of a concentrated solar thermal plant (CSP) on the farm Olyvenhout's Drift to the east of the study area.

## 5. RECEIVING ENVIRONMENT

The study area is located on the northern banks of the Orange River. The farm Dyason's Klip 454 is a narrow strip of land extending from the Orange River in a north-westerly direction. Morris (2013) describes the environment of the farm as an arid, gently sloping plain with shallow drainage lines running through it. He also observed low outcrops of bedrock in places on the farm. The landscape is very sparsely vegetated and surface archaeological material is therefore highly visible.

### 5.1 Archaeological Background

#### *Early and Middle Stone Age*

Beaumont et al. (1995) has reported on the widespread, but low density, distribution of stone artefacts of Pleistocene age across large areas of Bushmanland to the south of the Orange River. These artefacts are made mainly on quartzite cobbles derived from the Dwyka glacial till. Systematic collections have suggested that these industries can be distinguished by their degree of weathering. Morris (2013) describes the ESA from the area as including Victoria West cores on dolerite and quartzite while the assemblages included a very low incidence of handaxes and cleavers.

Van der Walt (2011) recorded an open scatter of MSA artefacts on the farm Geel Kop 453 to the west of Dyason's Klip. The artefacts were predominantly on banded ironstone and included convergent flakes and small retouched blades. Artefact densities of 4 per m<sup>2</sup> were recorded over an area of 100 m x 50 m.

Morris (2013) recorded a low density surface scatter of MSA material on McTaggart's Camp in 2010 and this was sampled in Phase 2 mitigation (Morris 2012). The artefacts were concentrated around a bedrock exposure where water would be held for a time after good rain. Dreyer (2006) mentions the presence of stone artefact scatters on the farm Olyvenhout's Drift to the east of Dyason's Klip – his description includes references to points with convergent ends and flakes with faceted platforms made on quartzite, chalcedony and banded ironstone. "The material could arbitrarily be classified as Middle Stone Age", he concludes.

#### *Later Stone Age*

Late Stone Age sites dating to the Late Holocene are frequently recorded in surveys to the south and south-west of this stretch of the Orange River (eg. Morris & Beaumont 1991; Beaumont *et al.* 1995). These sites tend to cluster around certain features on the landscape, such as hills or rocky outcrops and in proximity to water (i.e. pans or rivers). Morris (2013) suggests these are generally short-lived occupations in contrast to the more substantial pastoralist settlements on the floodplains of the Orange River. Smith (1995) excavated the small rock shelter (and specularite mining site) of Zoorvoorbij in a range of hills to the north-east of Keimoes.

Morris (2013) reported a small scatter of LSA material on Dyason's Klip and Gaigher (2013) reported three small scatter of LSA microlithic stone tools on the adjoining farm of Tungsten Lodge. He refers to these artefacts as "re-worked microliths". However, the heavy patination on some of the artefacts illustrated in the report suggest that some may be of MSA origins. Morris (2013) also reported grinding grooves in the bedrock exposures on Dyason's Klip.

The lower units of Zoorvoorbij Cave contain a large flake component which Smith (1995) attributes to the MSA although this is not confirmed by radiocarbon dates. The upper units contain heavy patinated LSA material, including large scrapers, and radiocarbon dates suggest two distinct clusters of dates, that of c.4500-4300 and 2600-2300 BP.

## 5.2 Historical Background

Early travellers such as Wikar and Gordon travelled along the Orange River in the 1770s and described various communities living along the river (Penn 1995). By the mid-19<sup>th</sup> century the stretch of the Orange River to the west of Upington was settled by the Korana, a Khoekhoen group whose origins are still unclear (Strauss 1979). With increasing Trekboer encroachment from the south, the Korana became involved in a struggle to maintain an independent existence. The attempt by the Korana to resist resulted in two wars, that of 1868-9 and 1878-9.

According to Morris (2013), the name Dyasons Klip is derived from events which occurred during the Korana War of 1879-1880. Apparently a certain Captain Dyason of the Northern Border Police was killed by Korana adversaries while walking between two rocks at this place in 1880. However, it is not recorded exactly where these stones are situated. The adjoining property of McTaggart's Camp also derives its name from events during the Korana War when Captain McTaggart set up his military camp here. It is assumed that the camp was located close to the river and that it is unlikely to have left much of an archaeological trace.

In his assessment of the farm Olyvenhout's Drift, Dreyer (2006) reported finding a heavily soldered food tin resembling British rations from the Anglo-Boer War (1899-1902). He considered it possible that a British camp may have existed in the area. Van der Walt (2011) reported the presence of a sandy track marking an old wagon-track on the farm Geel Kop to the west of Dyason's Klip. The wagon road between Keimoes and Upington crossed the farm and is marked on maps dating to 1908 (Van der Walt 2011). To the north of the farm Geel Kop, on the farm Van Rooi's Vley 443, is the Rebellion Tree monument (Van der Walt 2011). It marks the Rebellion of 1914 in which many Afrikaners opposed the plan of the South African government to invade German South-West Africa at the commencement of World War I (Van Vollenhoven 2012). The site is a Provincial Heritage site.

Van der Walt (2011) mentions the presence of mining exploration trenches on the farm Geel Kop dating to 1929 and Morris (2013) also reports on tungsten mining on the north-western portion of the farm McTaggart's Camp dating to the early 1930s. Morris (2013) identified two ruined mud-brick structure, presumably that of 19<sup>th</sup>/20<sup>th</sup> century farm workers, on the farm Dyason's Klip.

## 6. ANTICIPATED IMPACTS

Since heritage sites, including archaeological sites, are non-renewable, it is important that they are identified and their significance assessed prior to development.

### *Nature of Impacts*

The main cause of impacts to archaeological sites is direct, physical disturbance of the material itself and its context. The heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose buried archaeological sites and artefacts, the artefacts are relatively meaningless once removed from the area in which they were found. Large scale excavations will damage archaeological sites, construction of roads and laydown areas, injudicious use of off-road vehicles can contribute to high levels of impact. The impacts are likely to be most severe during the construction period although indirect impacts may occur during the operational phase of the project.

It is not anticipated that there will be any impacts to the Built Environment. There do not appear to be any structures on the property, although Morris (2013) did records some mud-brick ruins on Dyason's Klip. Historic structures and graveyards are sensitive to physical damage such as demolition as well as neglect. They are also context sensitive, in that changes to the surrounding landscape will affect their significance. The presence of any historic structures and graveyards will need to be assessed through site inspection.

### *Extent of Impacts*

In the case of the proposed solar facility, it is expected that impacts will be extensive. The clearance and levelling of the ground surface to install the PV units will result in the destruction of all surface material. Similarly, the clearing of access roads could impact material that lies buried in the surface sand.

Potential impacts caused by a 132 kV power line and the power line access roads are likely to be limited and local, however these will need to be physically searched and assessed during the EIA phase and the routes adjusted where necessary. Morris (2013) points out that the access road required for a 132 kV powerline is likely to be a 'two-track' which generally only requires limited physical disturbance of the ground surface.

## **6.1 Impacts on Pre-Colonial Archaeology**

Archaeological surveys on the adjoining properties of McTaggarts Camp, Geel Kop and Tungsten Camp as well as on Dyason's Klip itself, suggest that ephemeral scatters of MSA and LSA material may be recovered.

They are generally reported to occur in low densities and have been given a low rating by archaeologists.

Based on the surveys conducted on adjoining properties, the following impacts may occur:

- It is expected that ephemeral scatters of Middle Stone Age and Later Stone Age material may occur around pans, small drainage areas and at granite outcrops which contain hollows in which rain water may collect;
- Grinding grooves may occur in any bedrock exposures;
- Buried pre-colonial graves may occur.

## **6.2 Impacts on Colonial Period Heritage**

The fact that both Dyason's Klip and the adjoining farm of McTaggart Camp derive their names from the Korana Wars suggest that archaeological material from this time period may occur in the study area. However, historic remains are more likely to be located close to the Orange River. Surveys have reported 20<sup>th</sup> century features and structures such as an old wagon track (Van der Walt 2011); old mud-brick structures (Morris 2013) and evidence for mining dating to the first half of the 20<sup>th</sup> century.

While there is a possibility that colonial period heritage may occur, the likelihood of this occurring is low.

Based on the surveys conducted on adjoining properties, the following impacts may occur:

- Possible military remains relating to the Korana Wars;
- 20<sup>th</sup> century buildings and structures associated with farming and mining;
- Unmarked graves.



### **6.3 Living Heritage**

Living or intangible heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) is given also protection under the National Heritage Resources Act, No 25 of 1999.

Close association with the land, such as that experienced by farm owners and farm workers, may result in certain features on the landscape enjoying particular social or ritual significance. This information is difficult to obtain unless there is a possibility of conducting oral interviews with the inhabitants of the property. However, it is not thought likely that any significant intangible heritage values would be attached to the particular terrain in question.

## **7. PROPOSED METHODOLOGY FOR THE HIA STUDY**

The EIA phase study needs to fulfill the requirements of heritage impact assessment as defined in section 38 of the NHRA. This means that the assessment has to cover the full range of potential cultural heritage resources as defined in the National Heritage Resources Act 25 of 1999.

The aim of the EIA would be to identify and assess the significance of all heritage resources on the property, to determine the potential impacts on the resources, and where appropriate to recommend “no-go” areas and to propose mitigation if avoidance is not possible.

- The proposed study area, including proposed routes of linear infrastructure (access roads, underground services, power lines) will need to be subject to a detailed survey by heritage practitioner/archaeologist who will need to walk a pattern of transects over the site recording details and locations of any heritage material found;
- The significance of each find will need to be assessed along with the impacts of the proposed activity;
- In the case of impacts to significance heritage resources, the proposed mitigation measures may include the “No-Go” alternative, avoidance, archaeological excavations or monitoring during earthworks;

Based on the archaeology of the adjoining areas, the terrain on which the proposed RE Capital 11 Solar Development will be located is unlikely to be rich in heritage remains. Morris (2013) identified 11 heritage sites during his survey of the farm Dyason’s Klip and he graded them as of “low” significance.

### **7.1 Assumptions and Constraints**

It is assumed that, given the sparse vegetation of the study area, the presence of archaeological resources should be readily apparent from a surface survey and that test pit excavations will not be necessary to establish the potential of sub-surface archaeology.

If however, archaeological features or sites (such as burials, ostrich eggshell water flasks, high stone artefact concentrations) are uncovered during construction, then work will have to cease in that area and SAHRA must be notified.

These provisos should be included in the EMP.

## **8. CONCLUSION**

Indications are that in terms of archaeological heritage and built environment the proposed activity is viable, impacts are expected to be limited and controllable. In terms of the information available at this time, no fatal flaws are anticipated.

## 9. REFERENCES

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