AN ARCHAEOLOGICAL DESKTOP STUDY FOR THE PROPOSED KAROO RENEWABLE ENERGY FACILITY ON A SITE SOUTH OF VICTORIA WEST, NORTHERN AND WESTERN CAPE PROVINCE

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SUMMARY

The area for the proposed Karoo Renewable Energy Facility is situated approximately 34km south of the small Karoo town of Victoria West across the Western and Northern Cape border and falls within the Ubuntu and the Beaufort West Local Municipalities. The proposed 200km^2 area for the development is nestled between the N12, N1 and R63 roads. The proposed area is both sparse and mountainous with no major rivers occurring within the immediate area.

Little is known about the archaeology of the immediate area, mainly because no systematic research has been conducted within the proposed area for development. However, two relevant phase 1 archaeological impacts assessments (AIAs) have been conducted approximately 20km to the north-east of the proposed development along the N1 and north-east of the R63 on the Farm Skietkuil No. 3. Surface scatters of Later Stone Age stone artefacts and Khoekhoen pottery, rock engravings and, the remains of historical buildings, pottery and kraals were encountered during the survey.

It is therefore recommended that:

1. A full phase 1 archaeological impact assessment be conducted to establish the range and importance of the exposed and *in situ* archaeological heritage materials and features, the potential impact of the development and to make recommendations to minimize possible damage to these sites.

INTRODUCTION AND BRIEF

South African Renewable Green Energy (Pty) Ltd (SARGE) is proposing to establish a commercial renewable energy facility consisting of both a wind energy facility component and a photovoltaic solar facility component as well as associated infrastructure. The proposed area for the Karoo Renewable Energy Facility has been identified as the ideal site owing to favourable climatic conditions as wind and solar renewable energy facilities are directly reliant on average wind speeds and solar radiation values for a particular area, access to the electricity grid, accessibility of the study site and the local site topography. An area of 200km^2 / 20 222ha is being considered within which the proposed facility will be constructed. The proposed Farms include: Nobelsfontein 227, Annex Nobelsfontein 234, Ezelsfontein 235, Rietkloofplaaten 239, Modderfontein 228 and PhisantKraal 1.

The proposed facility is expected to have a generating capacity of approximately 350MW and will include:

- up to 150 wind turbines and concrete foundations to support them (~300MW),
- an array of photovoltaic (PV) panels (~50MW),
- cabling between the project components, to be lain underground where practical,
- an on-site substation to facilitate the connection between the facility and the grid,
- an overhead powerline (132kV) of ~6km in length feeding into the Eskom electricity network at the existing Skietkuil/Biesiespoort Substation,
- internal access roads, and
- a workshop area for maintenance and storage.

Savannah Environmental (Pty) Ltd has been contracted to conduct the environmental impact assessment (EIA) by South African Renewable Green Energy (Pty) LTD (SARGE) (the developer). This archaeological desktop assessment has therefore been prepared as part of the scoping phase for the proposed project in accordance with the National Heritage Resources Act 25 of 1999 and guidelines by the South African Heritage Resources Agency (SAHRA).

ARCHAEOLOGICAL BACKGROUND AND HERITAGE ("Description of the Affected Environment")

Little is known about the archaeology of the immediate area, mainly because no systematic archaeological research has been conducted within the proposed area for the Karoo Renewable Energy Facility. Records of early travelers through the area as well as those of early settlers of the town of Victoria West and surrounds make mention of their interactions with San people who still inhabited the area during the latter half of the 1800's. Archaeologists such as A.H.J. Goodwin, during the mid-1920's, identified an exclusive stone tool industry as the Victoria West Industry which occurred around the town of Victoria West and along the Vaal River (Goodwin 1926, 1946). Rock engravings are widespread over the Karoo landscape, substantial research has been conducted within the Northern and Western Cape areas of the Karoo (Parkington et al. 2008). A few relevant phase 1 archaeological impact assessments that have been conducted close to the area proposed for development provide a more recent and accurate recording of what may be found within the area proposed for development (Binneman et al. 2010; Morris 2006).

The following sections describe the possible archaeological encounters that may be expected within the proposed area for development and include topics such as the Early Stone Age (ESA) and the Middle Stone Age (MSA), the Later Stone Age (LSA) and pastoralism within the last 2000 years, rock art (paintings and engravings) and the historical period.

The Early Stone Age (ESA) and Middle Stone Age (MSA)

The Early Stone Age spans a period of between 1.5 million and 250 000 years ago refers to the earliest that *Homo sapiens sapiens* predecessors began making stone tools. The earliest stone tool industry was referred to as the Olduwan Industry originating from stone artefacts recorded at Olduvai Gorge, Tanzania. The Acheulian Industry which replaced the Olduwan Industry approximately 1.5 million years ago is attested to in diverse environments and over wide geographical areas. The hallmark of the Acheulian Industry is its large cutting tools (LCTs or bifaces), primarily handaxes and cleavers. Bifaces emerged in East Africa more that 1.5 million years ago (mya) but have been reported from a wide range of areas, from South Africa to northern Europe and from India to the Iberian coast. The end products were astonishingly similar across the geographical and chronological distribution of the Acheulian techno-complex: large flakes that were suitable in size and morphology for the production of handaxes and cleavers perfectly suited to the available raw materials (Sharon 2009). The most well know Early Stone Age site in southern Africa is Amanzi Springs, situated about 10km north-east of Uitenhage, near Port Elizabeth (Deacon 1970). In a series of spring deposits a large number of stone tools were found *in situ* to a depth of 3-4m. Wood and seed material preserved remarkably very well within the spring deposits, and possibly date to between 800 000 to 250 000 years old.

The Middle Stone Age spans a period from 250 000-30 000 years ago and focuses on the emergence of modern humans through the change in technology, behaviour, physical appearance, art and symbolism. Various stone artefact industries occur during this time period, although less is known about the time prior to 120 000 years ago, extensive systemic archaeological research is being conducted on sites across southern Africa dating within the last 120 000 years (Thompson & Marean 2008). The large handaxes and cleavers were replaced by smaller stone tools called the Middle Stone Age flake and blade industries. Surface scatters of these flake and blade industries occur widespread across southern Africa although rarely with any associated botanical and fauna remains. It is also common for these stone artefacts to be found between the surface and approximately 50-80cm below ground. Fossil bone may in rare cases be associated with MSA occurrences (Gess 1969). These stone artefacts, like the Earlier Stone Age handaxes are usually observed in secondary context with no other associated archaeological material.

From as early as 1915, stone artefacts which were of a “peculiar character”, referred to as hand-axes and tortoise-cores by Reginald A. Smith, were plentiful within the Victoria West district. The latter were only found in certain areas and the hand-axes occurred in conjunction with the cores or without them (Smith 1919). During the 1920’s. A.H.J. Goodwin (1926, 1946), identified the Victoria West stone artefact industry, presumably referring to those artefacts with a “peculiar character” found within the district, the wider Karoo region, as well as along the Vaal River. They comprised mainly of stone tools that

had been manufactured using a prepared core technique, and were regarded as being transitional between the Early Stone Age and Middle Stone Age. Recent research has established that the Victoria West cores were the “evolutionary step” towards the Levallois prepared core industry, indicating an outward spread of this technological change (Lycett 2009).

It is therefore likely that surface scatters of Early Stone Age, Middle Stone Age and above-mentioned Victoria West Industry may be encountered within the area proposed for development. Such occurrences may also be found between the surface and proximately 50-80cm below ground. It is rare that these particular stone artefacts are found in association with other archaeological remains and are usually out of context owing to natural disturbances over time and, more recently, owing to human impact.

The Later Stone Age (LSA) and Pastoralism within the last 2000 years

The Later Stone Age spans a period from 40 000 years ago to the historical period (the last 500 years) until 100 years ago and is associated with the archaeology of San hunter-gatherers. The majority of archaeological sites found in the area would date from the past 10 000 years where San hunter-gatherers inhabited the landscape living in rock shelters and caves as well as on the open landscape. These latter sites are difficult to find because they are in the open veld and often covered by vegetation and sand. Sometimes these sites are only represented by a few stone tools and fragments of bone. The preservation of these sites is poor and it is not always possible to date them (Deacon and Deacon 1999). Caves and rock shelters, however, in most cases, provide a more substantial preservation record of precolonial human occupation. Documentation of interactions with San hunter-gatherers in the surrounding Victoria West regions are recorded as recent as the latter half of the 1800’s (Green 1955, Rosenthal 1959).

Some 2 000 years ago Khoekhoen pastoralists entered into the region and lived mainly in small settlements. They were the first food producers in South Africa and introduced domesticated animals (sheep, goat and cattle) and ceramic vessels to southern Africa. Often, these archaeological sites are found close to the banks of large streams and rivers. Large piles of freshwater mussel shell (called middens) usually mark these sites. Precolonial groups collected the freshwater mussel from the muddy banks of the rivers as a source of food. Mixed with the shell and other riverine and terrestrial food waste are also cultural materials. Human remains are often found buried in the middens (Deacon and Deacon 1999).

The Later Stone Age archaeology of the Great Karoo stretching across the Eastern Cape, Northern Cape and Western Cape is rich and varied. Various studies (Beaumont & Morris 1990, Beaumont & Vogel 1984, Morris & Beaumont 1990, Sampson 1985), have shown that

the general area surrounding the proposed area for the development has been relatively marginal regarding precolonial human settlement, but is in fact exceptionally rich in archaeological sites and rock art (paintings and engravings [to be discussed in the following section]). Previously conducted phase 1 archaeological impact assessments, namely the Hydra-Gamma 765kV transmission lines from near De Aar to Victoria West beginning approximately 20km north-east of the area proposed for the development indicated that several Stone Age sites, surface assemblages, rock engravings and painted sites occurred within the area (Morris 2006). In May 2010, archaeologists from the Albany Museum conducted a phase 1 archaeological impact assessment close to the area of the proposed Hydra-Gamma substation on the Farm Skietkuil (Binneman et al. 2010). It was observed that Later Stone Age stone artefacts predominantly made on a fine-grained black raw material (hornfels) and silcrete were observed closer to the small rocky outcrop within the area proposed for development. The stone artefacts included flakes, some showing an indication of utilisation and retouch, formal tools such as scrapers, as well as two lower grindstones. A piece of Khoekhoen pottery was also observed on the periphery of area surveyed.

It is likely that Later Stone Age stone artefacts and Khoekhoen pastoral archaeological remains would occur within the proposed area for development, mainly as surface scatters around the rocky outcrops. Precolonial human inhabited caves and rock shelters may also be encountered within the area proposed for development.

Rock Art (Paintings and Engravings)

Rock art is generally associated with the Later Stone Age period mostly dating from the last 5000 years to the historical period. It is difficult to accurately date the rock art without destructive practices. The southern African landscape is exceptionally rich in the distribution of rock art which is determined between paintings and engravings. Rock paintings occur on the walls of caves and rock shelters across southern Africa. Rock engravings, however, are generally distributed on the semi-arid central plateau, with most of the engravings found in the Orange-Vaal basin, the Karoo stretching from the Eastern Cape (Cradock area) into the Northern Cape as well as the Western Cape, and Namibia. At some sites both paintings and engravings occur in close proximity to one another especially in the Karoo and Northern Cape. The greatest concentrations of engravings occur on the andesite basement rocks and the intrusive Karoo dolerites, but sites are also found on about nine other rock types including dolomite, granite, gneiss, and in a few cases on sandstone (Morris 1988).

No systematic research on the occurrence of rock paintings and engravings has been conducted within the immediate area proposed for development. However, in a previous phase 1 archaeological impact assessment of the Hydra-Gamma 765kV transmission lines

from near De Aar to Victoria West approximately 20km north-east of the area proposed for the development indicated that rock engravings were encountered within the study area.

It is possible that rock shelters and caves containing rock painting images and rock engravings on boulders and flat bedrock may be encountered within the proposed area for development.

Historical Period

Historical archaeology refers to the last 500 years when European settlers and colonialism entered into southern Africa. In the early days of colonialism the Karoo was still a sparse and unknown area. It was only until the early travelers and pioneer white farmers ventured into this harsh landscape and documented their encounters with the San hunter-gatherers and Khoekhoen that had originally inhabited the landscape. Therefore, the towns of the Great Karoo were established much later. The establishment of the town of Victoria West began during the 1840's, but by a proclamation issued, it was only on Christmas Eve, December 24 1955, that the District of Victoria West came into existence (Rosenthal 1959).

During the latter half of the 1800's, Xhosa-speaking people began migrating from the Ciskei-Transkei areas across the Karoo into the Northern Cape Karoo areas, owing to the influx of British forces, settlers and disruption of their settlement patterns (Anderson, nd). Historical archaeological research is currently being conducted approximately 70km to the north, north-west of the town of Victoria West on the historical remains of these Xhosa settlements (S. Hall pers. comm. 2010).

The district of Victoria West also played a small part in the Anglo-Boer War as well as World War 1. During 1902 it was written in *The London Gazette* that "a line of blockhouses has been commenced which will ultimately run from Lambert's Bay, by Calvinia to Victoria West, a distance of over 200 miles", this line of block houses was to curtail the freedom of movement of rebels that had been causing havoc within the greater Victoria West area. The map indicating the line of blockhouses can be found in Shearing and Shearing 2000 (p 150).

During the phase 1 archaeological impact assessment conducted by archaeologists from the Albany Museum, various historical features and artefacts were observed just outside the boundary of the proposed development on the Farm Skietkuil. Stone packed foundations of a rectangular cottage and associated dumping (waste) area were observed, as well as four stone packed kraals positioned slightly up an adjacent koppie (hillock). Mainly broken and fragmented pieces of iron implements, glass bottles and European ceramic wares including stoneware, transfer print and willow pattern ceramic types were observed around the historical settlement area. It is likely that these features may be associated with early

farming activities were shepherds would live with their flocks and herds of domestic animals.

It is likely that a variety of historical features and artefacts will be encountered within the proposed area for development owing to early farming activities, the region's historical settlements, movements and migrations through the area, as well as the remnants of the Anglo-Boer war and World War 1.

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CONCLUSIONS AND RECOMMENDATIONS

The area proposed for the Karoo Renewable Energy Facility has in the past not been systematically researched archaeologically, although, there is enough information available, such as previous phase 1 archaeological impact assessments closer to the proposed area and within the wider region to determine the probable archaeological artefacts and remains that may be encountered during the practical investigation of the proposed area.

It has been established that the semi-arid Karoo region stretching across the Eastern Cape, Western Cape and Northern Cape seems marginal regarding precolonial human settlement although is rich in archaeological sites and rock art. There is a variety of archaeology within the proposed area that may be encountered, ranging from the Early Stone Age, Middle Stone Age, Later Stone Age and pastoralism within the last 2000 years. Historical artefacts and features may also be rife within the proposed area owing to the settlement and migrations of early travelers and settlers, and influence from the Anglo-Boer War and World War 1.

It is therefore recommended that:

1. A full phase 1 archaeological impact assessment be conducted to establish the range and importance of the exposed and *in situ* archaeological heritage materials and features, the potential impact of the development and to make recommendations to minimize possible damage to these sites.

APPENDIX A: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND AREAS: guidelines and procedures for developers

1. Human Skeletal material

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. In general the remains are buried in a flexed position on their sides, but are also found buried in a sitting position with a flat stone capping and developers are requested to be on the alert for this.

2. Freshwater mussel middens

Freshwater mussels are found in the muddy banks of rivers and streams and were collected by people in the past as a food resource. Freshwater mussel shell middens are accumulations of mussel shell and are usually found close to rivers and streams. These shell middens frequently contain stone tools, pottery, bone, and occasionally human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m^2 in extent, should be reported to an archaeologist.

3. Stone artefacts

These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately and archaeologists notified

4. Fossil bone

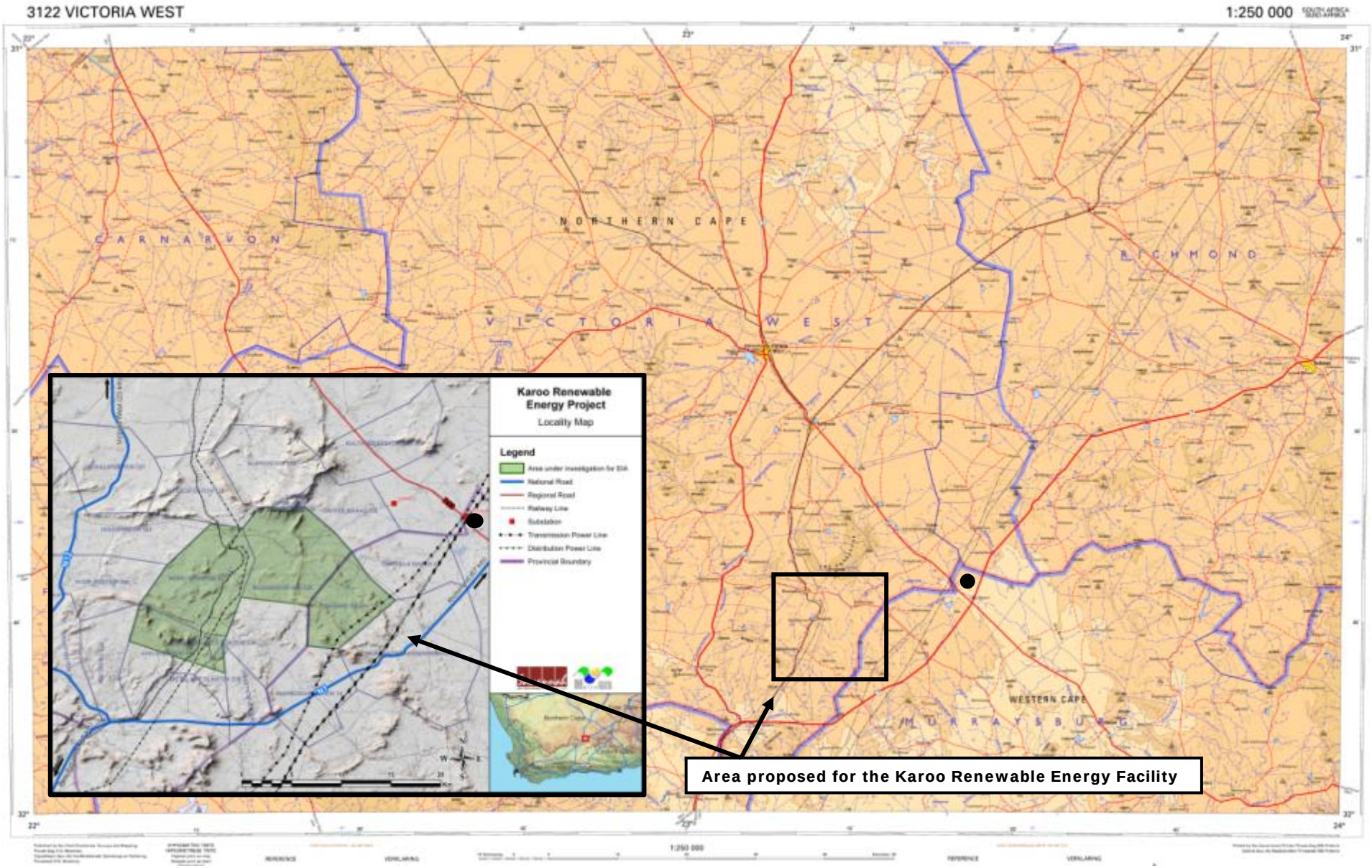
Fossil bones may be found embedded in geological deposits. Any concentrations of bones, whether fossilized or not, should be reported.

5. Large stone features

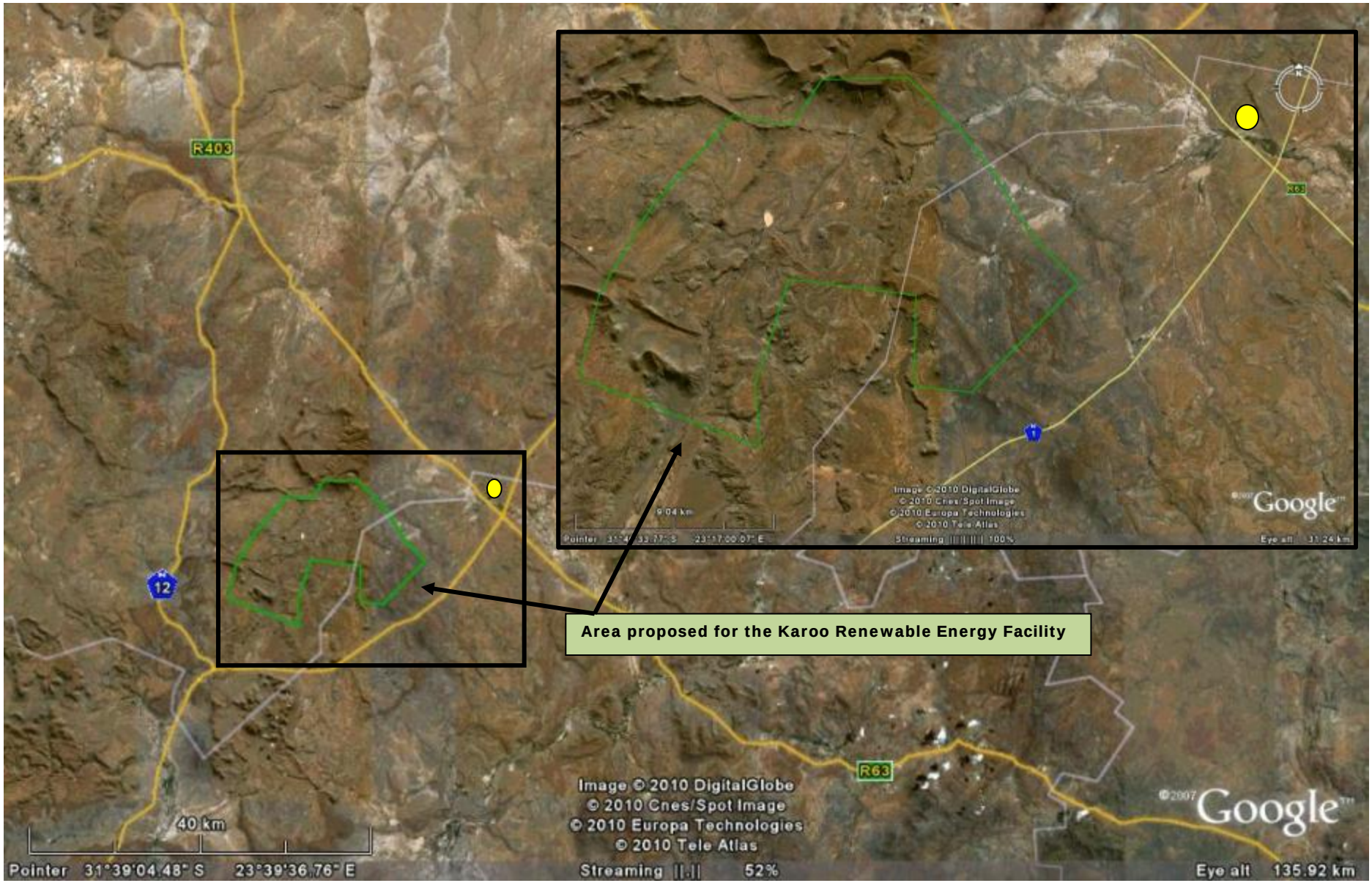
They come in different forms and sizes, but are easy to identify. The most common are roughly circular stone walls (mostly collapsed) and may represent stock enclosures, remains of wind breaks or cooking shelters. Others consist of large piles of stones of different sizes and heights and are known as *isisivane.* They are usually near river and mountain crossings. Their purpose and meaning is not fully understood, however, some are thought to represent burial cairns while others may have symbolic value.

6. Historical artefacts or features

These are easy to identified and include foundations of buildings or other construction features and items from domestic and military activities.



Map 1. 1:250 000 Map indicating the area proposed for Karoo Renewable Energy Facility (black dot: indicates the area surveyed in Binneman et al. 2010).



Map 2. Aerial view indicating the proposed for the Karoo Renewable Energy Facility (yellow dot: indicates the area surveyed in Binneman et al. 2010).