

**A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED ESKOM  
KARUSA SWITCHING STATION, ANCILLARIES AND A 132KV DOUBLE CIRCUIT  
OVERHEAD POWER LINE, NEAR SUTHERLAND, KAROO HOOGLAND LOCAL  
MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE  
PROVINCE.**

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**NOTE:** The phase 1 archaeological impact assessment for the Proposed Eskom Karusa Switching Station, Ancillaries and a 132kv Double Circuit Overhead Power Line was conducted as a requirement of the National Heritage Resources Act 25 of 1999, Section 38 (1)(c)(i):

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;

(c) any development or other activity which will change the character of the site –

(i) exceeding 5 000 m<sup>2</sup> in extent

The phase 1 archaeological impact assessment follows the minimum standards of the South African Heritage Resources Agency (SAHRA) and Northern Cape Provincial Heritage Resources Agency (Ngwao Boswa Kapa Bokoni).

## **1. EXECUTIVE SUMMARY**

### **1.1. Purpose of the Study**

The purpose of the study was to conduct a phase 1 archaeological impact assessment for the proposed Eskom Karusa Switching Station, Ancillaries (i.e. laydown area(s), operation and maintenance building, access road for construction and maintenance) and a 132kV Double Circuit Overhead Power Line (the "Project"). The Eskom Karusa Switching Station will be located adjacent to the proposed Karusa Facility Substation<sup>1</sup>.

The archaeological assessment was conducted to assess the proposed layout and alignment of the 132kV double circuit overhead power line and the switching station site (approximately 120m x 120m), including ancillaries, i.e. laydown area(s), operation and maintenance building, access road for construction and maintenance) (the "Project") to establish the range and importance of the exposed and in situ archaeological heritage material remains, sites and features; to establish the potential impact of the development; and to make recommendations to minimize possible damage to the archaeological heritage. To allow for micro-siting of the power line alignment and the position/ layout of the switching station and ancillaries due to technical, geotechnical and/or environmental sensitivities, a buffer area of approximately 300m was investigated.

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<sup>1</sup> The aforementioned project is being assessed in a separate Basic Assessment Process.

## **1.2. Brief Summary of Findings**

One stone artefact was documented on the Farm Standvastigheid 210 along the proposed power line route toward the Komsberg Substation. Two dry packed stone wall features intersect the same power line route on the Farm Standvastigheid 210. Considering that the proposed power line is overhead, it should not affect the stone wall features negatively as long as pylons are micro-sited to avoid these features (as per the recommendations in this report).

## **1.3. Recommendations**

The –potential impact of the Project is considered **low** in archaeological significance as the identified heritage sites/ artefacts can be sufficiently avoided (as discussed below). The following recommendations must be considered before development continues:

1. If any significant changes, i.e. outside of the assessed buffer area, are made to the layout and alignment of the Project, an archaeological survey of the changes must be conducted and further mitigatory recommendations may be made if necessary.
2. The dry packed stone walls must be avoided by locating the positions of the pylons a minimum of 30 m from any stone packed feature. It is therefore unlikely that the dry packed stone walls and stone packed features will be negatively affected by the construction of the Project, however, precautions must be taken as to avoid impact during construction activities.
3. If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work, in the immediate area affecting the find, must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) or the MacGregor Museum in Kimberly must be contacted and an archaeologist must be appointed at the cost of the Proponent so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.
4. A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO)/ Environmental Officer (EO)/ Environmental Representative should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

## **1.4. Declaration of Independence and Qualifications**

This section confirms a declaration of independence that archaeological heritage specialist, Ms Celeste Booth, has no financial or any other personal interests in the project for the phase 1 archaeological impact assessment for the proposed Project. Ms Celeste Booth was appointed on a strictly professional basis to conduct a Phase 1 Archaeological Impact Assessment in line with the South African national heritage legislation, the National Heritage Resources Act 25 of 1999 (NHRA 25 of 1999).

Ms Celeste Booth (BSc Honours: Archaeology) is an archaeologist who has had almost eight years (October 2015) of full time Cultural Resource Management in the Eastern Cape and sections of the Northern Cape and Western Cape. Ms Booth has conducted several Archaeological Desktop Studies and Phase 1 Archaeological Impact Assessments within the Eastern Cape and in the Karoo region across the Eastern Cape, Northern Cape and Western Cape.

## **2. BACKGROUND INFORMATION**

### **2.1. Previous studies conducted within the study area**

An archaeological desktop study for the Hidden Valley Wind Energy Facility (within which this proposed project falls) was conducted in 2011 (Booth 2011). The outcome of the desktop study recommended that a phase 1 archaeological impact assessment of the site be conducted.

A phase 1 archaeological impact assessment of the proposed Hidden Valley Wind Energy Facility was then conducted in 2012 (Booth 2012). The proposed wind energy facility area was divided into three phases:

- Phase 1 – Proposed Karusa Wind Farm to be located on the Farm De Hoop 202, Farm Standvastigheid 210, and Portion 1, 2, 3 and the remainder of Farm Rheeboeke Fontein 209;
- Phase 2 – Proposed Soetwater Wind Farm to be located on the remainder of and Portion 1 of Farm Orange Fontein 203, Annex Orange Fontein 185, Farm Leeuwe Hoek 183 and Farm Zwanepoelshoek 184;
- Phase 3 – Proposed Great Karoo Wind Farm to be located on Farm Kentucky 206 and Portion 1 of Farm Wolvenkop 207.

The findings of the archaeological investigation indicated that no precolonial heritage remains, features or sites were encountered within the area proposed for the development of the wind energy facility. However, several historical archaeological remains, features and sites were highlighted in the wider wind farm .

Historical heritage sites within the area proposed for the Phase 1 – Proposed Karusa Wind Energy Facility included were documented on the Farms Standvastigheid 210 (on which the proposed overhead power line alignment is routed) and De Hoop 202:

1. A fenced graveyard consisting of both mixed formal family graves and informal labourers' stone packed burials situated within the current farmstead complex (Farm Standvastigheid 210) – not to be affected by this proposed development;
2. Dry packed stone walling kraal within the vicinity of the current farmstead complex (Farm Standvastigheid 210) - not to be affected by this proposed development;
3. Two dry packed stone walling boundary walls situated north-west and south-east of the current farmstead (Farm Standvastigheid 210) – within the overhead power line route, but can be sufficiently avoided through micro-siting the pylon positions; and
4. Stone walled farmstead complex consisting of a dry packed stone walled kraal, a main cottage and stables (Farm De Hoop 202) - not to be affected by this proposed development.

#### **2.4. Proposed activity for the proposed Project:**

It is Aced Renewable Hidden Valley's (Pty) Ltd. (Karusa Wind Farm) intention to develop the authorised, and preferred bidder in bid window four (round four) of the Department of Energy's Renewable Energy Independent Power Producer Procurement Process (REIPPPP), Karusa Wind Energy Facility (Department of Environmental Affairs' Ref: 12/12/20/2370/1). In order to evacuate the power from the Karusa Wind Energy Facility into the Eskom National grid, the following infrastructure (the "Project" will be required:

- Construction of the Eskom Karusa Switching Station (approximately 120m x 120m) and ancillaries (i.e. laydown area(s), operation and maintenance building, access road for construction and maintenance) (located adjacent to the proposed Karusa Facility Substation<sup>2</sup>), and a 132kV double circuit overhead power line which will connect the facility to the Eskom Komsberg Main Transmission Substation (MTS).

#### **2.5. Applicant:**

African Clean Energy Developments (ACED) Renewables Hidden Valley (Pty) Ltd, (Karusa Wind Farm).

#### **2.6. Consultant:**

Savannah Environmental Pty Ltd

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<sup>2</sup> Assessed as part of a separate Basic Assessment process.

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## **2.7. Terms of reference**

The purpose of the study was to conduct a phase 1 archaeological impact assessment for the Proposed Project, near Sutherland, Karoo Hoogland Local Municipality, Namakwa District Municipality, Northern Cape Province, near Sutherland, Northern Cape Province.

The Terms of Reference (ToR) are as follows:

- Conduct a literature review of known archaeological resources within the area with a view to determining which of these resources are likely to occur within the development footprint;
- Indicate the methodology used in determining the significance of potential archaeological impacts;
- Describe all archaeological heritage issues that were identified during the environmental impact assessment process;
- Assess the significance of potential direct, indirect and cumulative impacts;
- Describe and make a comparative assessment of all alternatives identified during the archaeological impact assessment process;
- Make recommendations regarding practical mitigation measures for potentially significant impacts, for inclusion in the *Environmental Management Programme (EMPr)*;
- Indicate to what extent to which the issue could be addressed by the adoption of mitigation measures;
- Describe any assumptions, uncertainties and gaps in knowledge; and
- An environmental impact statement.

## **3. HERITAGE LEGISLATIVE REQUIREMENTS**

Parts of sections 3(1)(2)(3), 34(1), 35(4), 36(3) and 38(1)(8) of the National Heritage Resources Act 25 of 1999 apply:

### **S3. National estate**

3. (1) For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future



generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.

3. (2) Without limiting the generality of subsection (1), the national estate may include –

- (a) places, buildings, structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds, including –
  - (i) ancestral graves;
  - (ii) royal graves and graves of traditional leaders;
  - (iii) graves and victims of conflict;
  - (iv) graves of individuals designated by the Minister by notice in the Gazette;
  - (v) historical graves and cemeteries; and
  - (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including –
  - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological specimens;
  - (ii) objects to which oral traditions are attached or which are associated with living heritage;
  - (iii) ethnographic art and objects;
  - (iv) military objects;
  - (v) objects of decorative or fine art;
  - (vi) objects of scientific or technological interest; and
  - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act (Act No. 43 of 1996).

3. (3) Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of –

- (a) its importance in the community, or pattern of South Africa's history;
- (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- (g) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- (i) sites of significance relating to the history of slavery in South Africa.

#### ***S34. Structures***

34. (1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

#### ***S35. Archaeology, palaeontology and meteorites***

35 (4) No person may, without a permit issued by the responsible heritage resources authority—

- (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
- (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite; or
- (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

#### ***S36. Burial grounds and graves***

36. (3) (a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

- (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.

#### ***S38. Heritage resources management***

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

- (a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
- (b) the construction of a bridge or similar structure exceeding 50 m in length;
- (c) any development or other activity which will change the character of the site –
  - (i) exceeding 5 000 m<sup>2</sup> in extent, or
  - (ii) involving three or more erven or subdivisions thereof; or
  - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
- (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;
- (d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

#### **4. ARCHAEOLOGICAL BACKGROUND**

Further to the Archaeological desktop and impact assessment for the Hidden Valley Wind Farm site (within which the proposed Project is located), heritage impact assessments have also been conducted to south of Sutherland (Hart 2005; Hart *et al.* 2010; Hart & Kendrick 2014; Hart & Webley 2013; Rossouw 2007) and within the Witteberg region near to Matjiesfontein (Hart, 2007; Hart and Miller nd), and a mitigation phase excavation (Evans *et al.* 1985) has been undertaken at two small rock shelters in the grounds of the South African Astronomical Observatory near Sutherland during November 1983 and March 1984. The wider Karoo landscape has been occupied by humans since the Early Stone Age (ESA), spanning an occupation period of about 1.5 million years. Archaeological evidence is usually observed as surface scatters and is widely dispersed across the landscape. Caves are uncommon in the Karoo and open sites (Early Stone Age to the last 2 000 years) generally consist of single-level occupations near sources of water such as rivers, streams and springs. 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). Early travellers and *trekboere* (Dutch farmers) started entering this part of the Northern Cape towards the end of the 18<sup>th</sup> century and colonial settlement increased towards the second half of the 19<sup>th</sup> century.

The following sections describe the possible archaeological encounters that may be expected within the proposed area for development and includes 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), human remains, and the historical period.

##### **4.1. Early Stone Age (ESA) - 1.5 million to 250 000 years ago**

The Early Stone Age from 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 Olduvan Industry originating from stone artefacts recorded at Olduvai Gorge, Tanzania. The Acheulian Industry, the predominant southern African Early Stone Age Industry, replaced the Olduvan 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 than 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 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 Acheulean 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. Other Early Stone Age sites that contained preserved bone and plant material include Wonderwerk Cave in the Northern Province, near Kimberly (Binneman & Beaumont 1992) and Montagu Cave in the Western Cape, near the small town of Montagu (Mitchell 2007). Early Stone Age sites have also been reported in the foothills of the Sneeuwberge Mountains (in Prins 2011) in the Eastern Cape. A few Early Stone Age handaxes were also reported from the site near Victoria West (Binneman *et al.* 2011a).

A few surface scatters of Early Stone Age stone artefacts had been documented on the site to the west of Matjiesfontein (Hart & Miller, nd) and to the site south of Sutherland (Hart *et al.* 2010).

#### **4.2. Middle Stone Age (MSA) – 250 000 – 30 000 years ago**

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 artefacts 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 Middle Stone Age 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).

The Middle Stone Age is distinguished from the Early Stone Age by the smaller-sized and distinctly different stone artefacts and *chaîne opératoire* (method) used in manufacture, the introduction of other types of artefacts and evidence of symbolic behaviour. The prepared core technique was used for the manufacture of the stone artefacts which display a characteristic faceted striking platform and includes mainly unifacial and bifacial flake blades and points. The Howiesons Poort Industry (80 000 - 55 000 years ago) is distinguished from the other Middle Stone Age stone artefacts: the size of tools are generally smaller, the range of raw materials include finer-grained rocks such as silcrete, chalcedony, quartz and hornfels, and include segments, backed blades and trapezoids in the stone toolkit which were sometimes hafted (set or glued) onto handles. In addition to stone artefacts, bone was worked into points, possibly hafted, and used as tools for hunting (Deacon & Deacon 1999).

Other types of artefacts that have been encountered in archaeological excavations include tick shell (*Nassarius kraussianus*) beads, the rim pieces of ostrich eggshell (OES) water flasks, ochre-stained pieces of ostrich eggshell and engraved and scratched ochre pieces, as well as the collection of materials for purely aesthetic reasons. Although Middle Stone Age artefacts occur throughout the Eastern Cape, the most well-known Middle Stone Age sites include the type-site for the Howiesons Poort stone tool industry, Howiesons Poort (HP) rock shelter, situated close to Grahamstown and Klasies River Mouth Cave (KRM), situated along the Tsitsikamma coast. Middle Stone Age sites are located both at the coast and in the interior across southern Africa.

Surface scatters of Middle Stone Age stone artefacts are widely distributed across the Karoo landscape and have been reported from the site to the west of Matjiesfontein (Hart & Miller nd) and at the site to the south of Sutherland (Hart *et al.* 2010).

#### **4.3. Later Stone Age (LSA) – 30 000 years ago – recent (100 years ago)**

The Later Stone Age (LSA) spans the period from about 30 000 years ago until the colonial era, although some communities continue making stone tools today. The period between 30 000 and 20 000 years ago is referred to as the transition from the Middle Stone Age to Later Stone Age; although there is a lack of crucial sites and evidence that represent this change. By the time of the Later Stone Age the genus *Homo*, in southern Africa, had developed into *Homo sapiens sapiens*, and in Europe, had already replaced *Homo Neanderthalensis*.

The Later Stone Age is marked by a series of technological innovations, new tools and artefacts, the development of economic, political and social systems, and core symbolic beliefs and rituals. The stone toolkits changed over time according to time-specific needs and raw material availability, from smaller microlithic Robberg (20/18 000-14 000ya), Wilton (8 000-the last 500 years) Industries and in between, the larger Albany/Oakhurst (14 000-8 000ya) and the Kabeljous (4 500-the last 500 years) Industries. Bored stones used as part of digging sticks, grooved stones for sharpening and grinding and stone tools fixed to handles with mastic also become more common. Fishing equipment such as hooks, gorges and sinkers also appear within archaeological excavations. Polished bone tools such as eyed needles, awls, linkshafts and arrowheads also become a more common occurrence. Most importantly bows and arrows revolutionized the hunting economy. It was only within the last 2000 years that earthenware pottery was introduced, before then tortoiseshell bowls were used for cooking and ostrich eggshell (OES) flasks were used for storing water. Decorative items like ostrich eggshell and marine/fresh water shell beads and pendants were made.

Hunting and gathering made up the economic way of life of these communities; therefore, they are normally referred to as hunter-gatherers. Hunter-gatherers hunted both small and large game and gathered edible plantfoods from the veld. For those that lived at or close the coast, marine shellfish and seals and other edible marine resources were available for the gathering. The political system was mainly egalitarian, and socially, hunter-gatherers lived in bands of up to twenty people during the scarce resource availability dispersal seasons and aggregated according to kinship relations during the abundant resource availability seasons. Symbolic beliefs and rituals are evidenced by the deliberate burial of the dead and in the rock art paintings and engravings scattered across the southern African landscape.

Later Stone Age sites occur both at the coast (caves, rock shelters, open sites and shell middens) and in the interior (caves, rock shelters and open sites) across southern Africa. 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 pre-colonial human occupation.

The Later Stone Age archaeology of the Great Karoo stretching across the Eastern Cape, and Western Cape and Northern Cape is rich and varied. Various studies (Beaumont & Morris 1990, Beaumont & Vogel 1984, Morris & Beaumont 1990), have shown that the general area surrounding the proposed area for the development has been relatively marginal regarding pre-colonial human settlement, but is in fact exceptionally rich in archaeological sites and rock art (paintings and engravings [to be discussed in the following section]). Garth Sampson has conducted thirty years of extensive research within the Seacow River Valley and provides valuable insight on the distribution of both Later Stone Age and pastoralist/herder sites across the landscape. Unfortunately no such similar studies have yet been conducted within the area. Sampson has produced innumerable publications on the area (Sampson 1985) including further studies on Later Stone Age artefacts (Close & Sampson 1998, 1999) and in-depth analysis on the ceramics assemblages (Sampson 1988; Sampson et al. 1989 1997; Sampson & Vogel 1996), to name a few.

Substantial Later Stone Age research has been conducted in the surrounding Northern Cape region in the Richtersveld within the Orange River Valley, to the north near around the Carnarvon area, Bushmanland and the areas surrounding Kimberly, as well to the south of the proposed area for development in the Klein Karoo at a site called Boomplaas near Oudtshoorn. The research conducted provides considerable evidence of Later Stone Age occupation within the wider region of the proposed area for development. Scatters of Later Stone Age stone artefacts were documented at the site to the south-west of Matjiesfontein (Hart & Miller nd) and at the site to the south of Sutherland (Hart et al. 2010). The rescue excavations conducted at the two Observatory Shelters near Sutherland yielded a collection of Later Stone Age stone artefacts made predominantly on ironstone raw materials as well as shale, chert, hornfels, chalcedony, quartz, and quartzite. The stone artefact collection comprised a variety of lithic variants including cores, utilized flakes, blades and chunks, as well as formal tools such as scrapers, adzes, backed blades, points and miscellaneous retouched pieces. In addition, fragments of ostrich eggshell (OES) and ostrich eggshell beads, faunal remains and fresh water molluscs were documented (Evans *et al.* 1985).

#### **4.4. Last 2 000 years – Khoekhoen Pastoralism**

Until 2 000 years ago, hunter-gatherer communities traded, exchanged goods, encountered and interacted with other hunter-gatherer communities. From about 2 000 years ago the social dynamics of the southern African landscape started changing with the immigration of two 'other' groups of people, different in physique, political, economic and social systems, beliefs and rituals. Relevant to the study area, one of these groups, the Khoekhoe pastoralists or herders entered southern Africa with domestic animals, namely fat-tailed sheep and goats, travelling through the south towards the coast. They also

introduced thin-walled pottery common in the interior and along the coastal regions of southern Africa. Their economic systems were directed by the accumulation of wealth in domestic stock numbers and their political make-up was more hierarchical than that of the hunter-gatherers.

There are two main suggestions on the migration routes of the Khoekhoen pastoralists into South Africa within the last 2000 years that have been based on linguistic comparisons and archaeological evidence. The first route, based on rock art and oral traditions suggest that the pastoralists groups entered from Namibia moved down the west coast into the south-western Cape and then spread to the east along the southern Cape coast (Stow 1905; Cooke 1965). The second route, based on linguistic evidence, suggests that the pastoralist groups entered from Botswana with one branching to the west along the Orange River to the Atlantic west coast and groups branching down the central plateau, through the Karoo (via the Seacow River Valley), down the escarpment into the Eastern Cape (Elphick 1977; 1985). Extensive pastoralist research has yielded evidence from sites along the suggested routes within the Northern Cape, Karoo, Orange River Valley, along the Namaqualand and west coast and into the southern and south-eastern Cape.

Circular dry stone piled wall enclosures up to half a meter high and 3-4 m and 9 m in diameter situated on the leeward slopes of low ridges were documented on the site south of Sutherland (Hart *et al.* 2010). These enclosures were arranged in complexes of up to 13 interlocking enclosures with adjoining 'lammerkraals' (lamb pens). Archaeological remains associated with these enclosures included fine thin red burnished pottery and ostrich eggshell fragments (OES). In addition, open Khoekhoen encampments situated among the *Kameeldoring* trees along dry river beds in the bottom of valleys were documented on the site south of Sutherland. These encampments are rare and have only been recorded in the Richtersveld area (Hart *et al.* 2010). These sites are relative extensive, approximately 80 -80m in diameter. The archaeological material remains associated with these encampments included very fine thin wall burnished Cape coastal pottery, numerous informal stone artefacts, stone features, grinding surfaces, discreet ash middens, animal bone, and a number of graves that have broken grinding stones placed on top. Nineteenth century glass and ceramics were documented at two of the sites. A few small plain body sherds of fine-grained pottery, about 5mm thick, and probably from the same pot, were documented on a talus slope of one of the two Observatory Shelters near Sutherland (Evans *et al.* 1985).

#### **4.5. Human Remains**

It is difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Human remains are usually observed when they are exposed through erosion or construction activities for development. Several human remains have been rescued eroding out of the dunes along the coastline. In some instances packed stones or rocks may indicate the presence of informal pre-colonial burials. Cultural Resource Management practitioners whilst



conducting archaeological heritage impact assessments have also recorded formal historical cemeteries and informal burials.

#### **4.6. 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). Substantial research has also been conducted in the Western Cape Karoo area around Beaufort West (Parkington 2008), in the northern parts of the Northern Cape between Springbok, Calvinia, Carnarvon, Kimberly, Kuruman, Pomfret and Upington as the outline of the area.

#### **4.7. Historical Background**

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 travellers and pioneer Dutch *trekboere* (trek farmers or migrant farmers) ventured into this harsh landscape and documented their encounters with the San hunter-gatherers and Khoekhoen who had originally inhabited the landscape. Various trade goods exchanged between these pioneering Europeans, the San hunter-gatherers, and Khoekhoen have been recorded in travellers' diaries, historical documents and archaeological excavations within the wider region of the proposed area for development. These include glass beads that documentary evidence suggests were first given to the local Bushmen in the upper Seacow Valley during the Sneeuberg War (c. AD 1770-1795) and later by travellers, missionaries, and resident farmers (Saitowitz & Sampson 1992). This may be a similar situation at Highlands Rock Shelter (Deacon 1976). In addition, rare instances of ammunition and firearm paraphernalia have been excavated from sites in the upper Seacow Valley. Historical records show that the first Dutch farmers transferred their firearms to the Bushmen as early as the 1770's.

Evidence of the remains of historical buildings, stone cairns and features, as well as European ceramic ware has been recorded in one of the specialist studies within the wider area. Given the findings of other studies in the general area, stone packed foundations of

a rectangular cottages and associated dumping (waste) area, as well as stone packed kraals positioned on the bottom half of slight-gradient *koppies* are some of the features to look out for in the Karoo. Broken and fragmented pieces of iron implements, glass bottles and European ceramic wares including stoneware, transfer print and willow pattern ceramic types are included. It is likely that these features may be associated with early farming activities where shepherds would have lived with their flocks and herds of domesticated stock (cattle, sheep, and goats).

It is possible that a variety of historical features and artefacts could 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. However, this study, which considered the current layout and alignment of the Project, only found two historical features, i.e. dry packed stone walls and one archaeological feature.

## **5. DESCRIPTION OF THE PROPERTY**

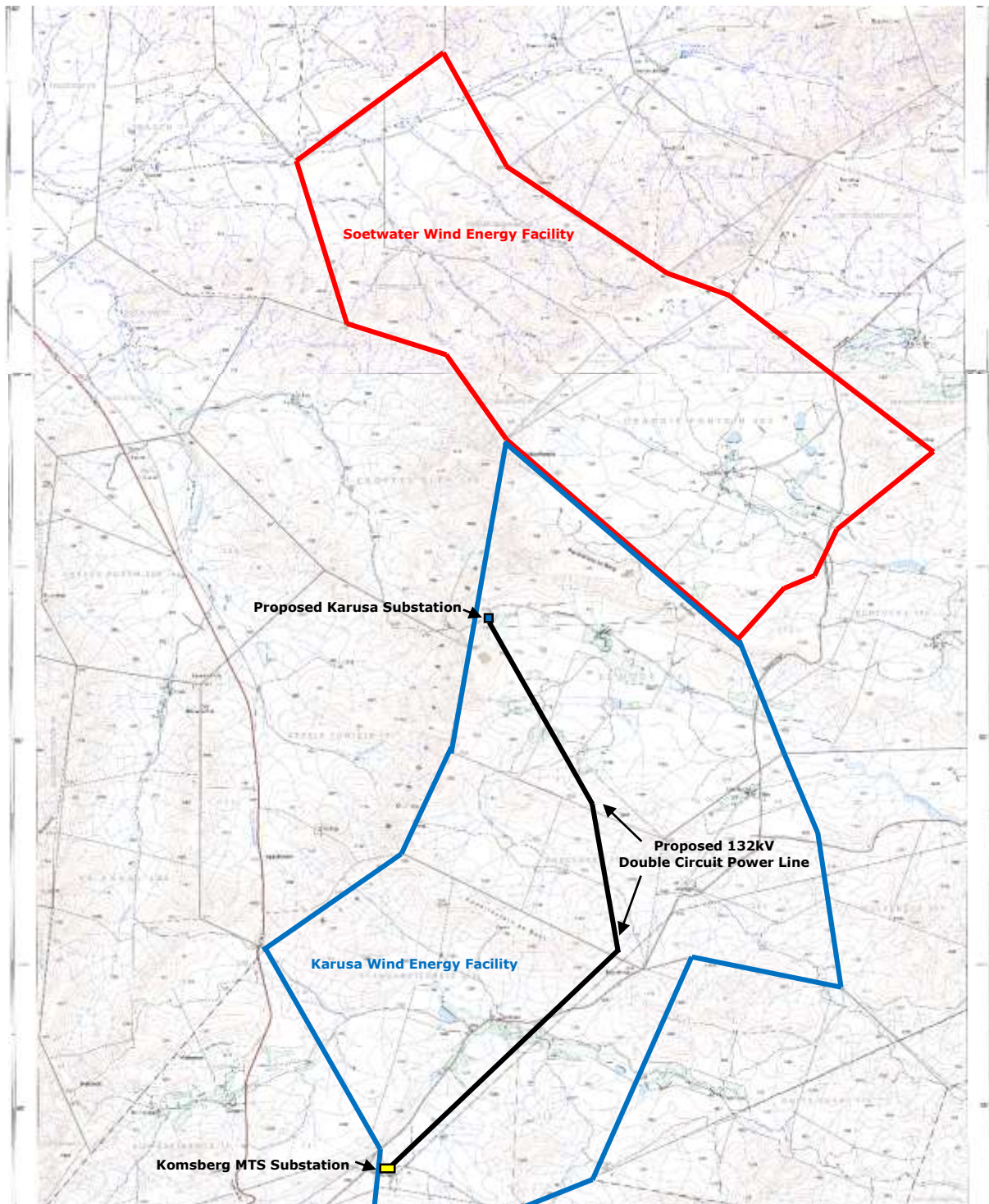
### **5.1. Location data**

The Eskom Karusa Switching Station will be located adjacent to the proposed Karusa Facility Substation. The 132kV double circuit overhead power line will run approximately 16km from the Karusa Facility Substation to the Komsberg MTS. The Eskom Karusa Switching Station will be located on the Farm De Hoop 202, the power line will traverse the properties of De Hoop 202, Farm Rheebokke Fontein 209 RE, Farm Rheebokke Fontein 209 (Portion 3) and the Farm Standvastigheid 210. These properties are located in the Komsberg area, east of the R354, approximately 40 km south of Sutherland and 50 km north of Matjiesfontein.

### **5.2. Maps**

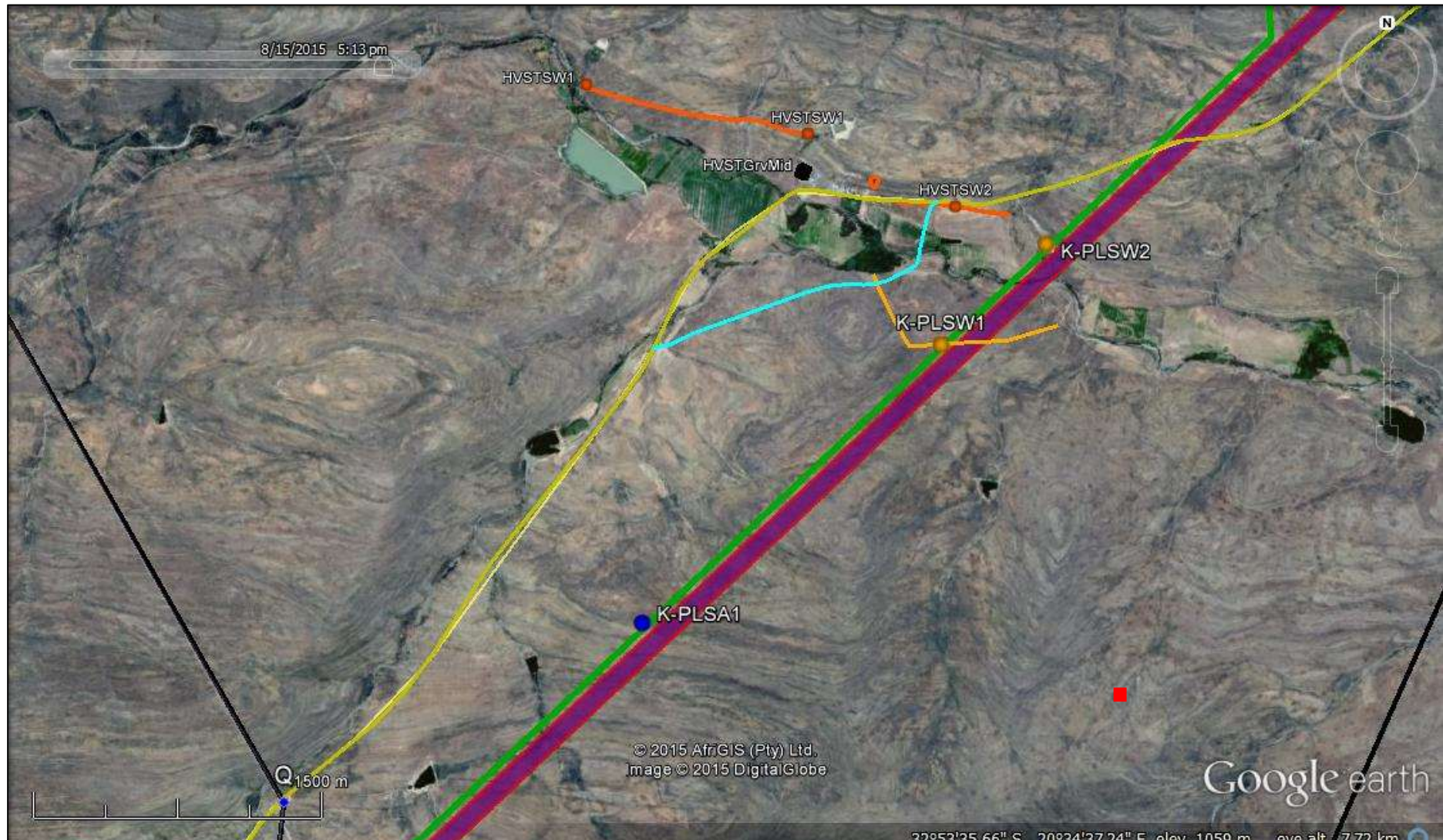
1:50 000 Maps: 3220 DA VERLATEKLOOF and 3220 DC SWARTLAND

**Figure 1. 1: 50 000 topographic maps 3220 DA VERLATEKLOOF and 3320 DC SWARTLAND showing the farm portions and power lines routes for the Karusa and Soetwater Wind Energy Facilities.**



**Figure 1. 1: 50 000 topographic maps 3220 DA VERLATEKLOOF and 3320 DC SWARTLAND showing the farm portions for the Karusa Wind Energy Facilities and location of the proposed Project and the Eskom Komsberg MTS Substation.**





**Figure 2. Aerial view showing the heritage sites (K-PLSA1, K-PLSW1, K-PLSW2) located within the vicinity of the proposed Project on the Farm Standvastigheid 210.**





**Figure 3. Close-up aerial view showing the occurrence of stone walls (K-PLSW1 and K-PLSW2) on the Farm Standvastigheid 210 within the proposed Project alignment.**

## **6. ARCHAEOLOGICAL INVESTIGATION**

### **6.1. Methodology**

An archaeological desktop literature review was conducted and has been included within this report. Very little systematic archaeological research has been conducted within the immediate area of the Karusa Wind Energy Facility.

The survey was mostly conducted on foot and by conducting spot checks from a vehicle within exposed surface areas. Archaeological visibility was varied across the area, few exposed areas and dense grass and shrub vegetation as well as cultivated lands obscured archaeological visibility. The GPS co-ordinate readings and photographs were taken using a Garmin Oregon 550 unit.

### **6.3. Results of the Archaeological Investigation**

The 132kV double circuit power line between the existing Komsberg Substation and the proposed Karusa Substation situated on the Farm De Hoop 202 is situated north-south and stretches across the Farms Standvastigheid 210, Rheeboeke Fontein 209 and De Hoop 202. The Project is situated within the footprint of the authorised Karusa Wind Energy Facility site. Archaeological visibility was varied across the area, few exposed areas and dense grass and shrub vegetation as well as cultivated lands obscured archaeological visibility (Figures 7 – 14). The southern half of the power line on the Farm Standvastigheid 210 is situated west of an existing Eskom Overhead power line that connects from the Komsberg Substation. One stone artefact (K-PLSA1) (Figure 15) was documented along the route between proposed power line and the Eskom Overhead line. The stone artefact resembles a scraper tool that has been manufactured on silcrete raw material and is of the Later Stone Age period. No other stone artefacts or associated organic and cultural material was identified within the area of K-PLSA1. Two dry packed stone walls (K-PLSW1 and K-PLSW2) were also encountered within the path of the power line. K-PLSW1 is relatively intact and only a few areas of the wall have collapsed (Figures 16-20). The height of the walls vary between 1 m and 1.2 m in some areas with a width of about 50 m – 60 m. The area that the proposed power line intersects with K-PLSW2, shows that the wall have completely collapsed and heaps of stones are the remains of the dry packed stone wall (Figures 23-24). It is also easy for pylon positions to sufficiently avoid the stone walls with the conductors crossing overhead.





**Figure 7. General landscape of the power line route on the Farm Standvastigheid 210 facing north.**



**Figure 8. General landscape of the power line route on the Farm Standvastigheid 210.**





**Figure 9. General landscape of the power line route on the Farm Standvastigheid 210.**



**Figure 10. General landscape of the power line route on the Farm Standvastigheid 210 showing some of the few surface exposed areas along the route.**



**Figure 11. General landscape of the power line route on the De Hoop 202.**



**Figure 12. General landscape of the power line route situated on the Farm De Hoop 202.**





**Figure 13. General landscape of the power line route situated on the Farm De Hoop 202.**





**Figure 14. General landscape of the power line route situated on the Farm De Hoop 202.**



**Figure 15. A scraper stone tool documented along the route of the power line on the Farm Standvastigheid 210.**



**Figure 16. View of the dry packed stone wall (K-PLSW1) on the Farm Standvastigheid 210.**







**Figure 17. View of the dry packed stone wall (K-PLSW1) on the Farm Standvastigheid 210.**



**Figure 18. View of the dry packed stone wall (K-PLSW1) on the Farm Standvastigheid 210.**



**Figure 19. View of the dry packed stone wall (K-PLSW2) on the Farm Standvastigheid 210.**



**Figure 20. View of the dry packed stone wall (K-PLSW2) on the Farm Standvastigheid 210.**

## **7. DESCRIPTION OF SITES**

### **1.1. Stone Artefact Scatter**

#### **1.1.1. K-PLSA1 (Standvastigheid 210):**

One stone artefact (K-PLSA1) was documented along the route between proposed power line and the existing Eskom Overhead line. The stone artefact resembles a scraper tool that has been manufactured on silcrete raw material and is of the Later Stone Age period. No other stone artefacts or associated organic and cultural material was identified within the area of K-PLSA1.

'General' Protection C (Field Rating IV C): This site has been sufficiently recorded. It requires no further recording before destruction (usually Low significance).

### **1.2. Stone Walling (Standvastigheid 210):**

#### **1.2.1. K-PLSW1:**

K-PLSW1 is relatively intact dry packed stone wall and only a few areas of the wall have collapsed. The height of the wall varies between 1 m and 1.2 m in some areas with a width of about 50 m – 60 m.

The significance of the site is considered Local: This site is suggested to be Grade IIIB significance. It could be mitigated by pylons avoiding the area and (part, if not all) retained as a heritage register site (*High significance*).

#### **1.2.2. K-PLSW2:**

The area that the proposed power line intersects with K-PLSW2, shows that the wall have completely collapsed and heaps of stones are the remains of the dry packed stone wall.

The significance of the site is considered Local: This site is suggested to be Grade IIIB significance. It could be mitigated by pylons avoiding the area and (part, if not all) retained as a heritage register site (*High significance*).

## **2. HERITAGE/ ARCHAEOLOGICAL SITE(S) COORDINATES FOR THE PROPOSED PROJECT, NEAR SUTHERLAND, KAROO HOOGLAND LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE.**

### **TABLE 1. HERITAGE/ ARCHAEOLOGICAL SITE(S) COORDINATES FOR THE PROPOSED PROJECT, NEAR SUTHERLAND, KAROO HOOGLAND LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE.**

REFERENCE	DESCRIPTION	CO-ORDINATE	HERITAGE GRADING
K-PLSA1	Stone artefact occurrence (Standvastigheid 210)	32°55'04.26"S; 20°36'45.54"E	General Protection C (Field Rating IV C) (Low Significance)
K-PLSW1	Stone walling and proposed power line intersection (Standvastigheid 210)	32°54'16.00"S; 20°37'47.50"E	Grade IIIB significance (High Significance)
K-PLSW2	Stone walling and proposed power line intersection (Standvastigheid 210)	32°53'58.40"S; 20°38'09.40"E	Grade IIIB significance (High Significance)

## 9. CONCLUSION AND SUMMARY OF THE TERMS OF REFERENCE

This study was undertaken to satisfy the following Terms of Reference. Each point is followed by a short description on how it was satisfied.

- Conduct a literature review of known archaeological resources within the area with a view to determining which of these resources are likely to occur within the development footprint:

A slightly updated literature review of known archaeological resources within the area was conducted with a view to determining which of these resources are likely to occur within the development footprint. Although various Archaeological Impact Studies have been undertaken in the area, no systematic archaeological research has been conducted within this region of the Northern Cape, therefore little is known about the archaeology of the immediate area for the Project. Therefore, heritage impact assessments conducted within the region and a mitigation phase excavation nearer to Sutherland assisted in determining heritage resources that are likely to occur on the landscape.

- Indicate the methodology used in determining the significance of potential environmental (archaeological) impacts:

The methodology used in determining the significance of potential archaeological heritage impacts included the literature review of known archaeological resources, as mentioned above, and by conducting a survey of the area on foot to identify and document archaeological and other heritage resources that occurred within the proposed development area. Archaeological visibility was relatively good during the survey and if archaeological heritage sites, features and remains were present these would have been observed. The GPS co-ordinate readings and photographs were taken using a Garmin Oregon 550 unit.

The documented archaeological and other heritage resources were then used to establish the significance of the archaeological sensitivity of the area.



- Describe all environmental (archaeological heritage) issues that were identified during the archaeological impact assessment process:

One stone artefact (K-PLSA1) was documented along the route between proposed power line and the existing Eskom Overhead line. The stone artefact resembles a scraper tool that has been manufactured on silcrete raw material and is of the Later Stone Age period. No other stone artefacts or associated organic and cultural material was identified within the area of K-PLSA1. The significance of the site is regarded as 'General' Protection C (Field Rating IV C): This site has been sufficiently recorded. It requires no further recording before destruction (usually Low significance).

K-PLSW1 is relatively intact dry packed stone wall and only a few areas of the wall have collapsed. The height of the wall varies between 1 m and 1.2 m in some areas with a width of about 50 m – 60 m. The significance of the site is considered Local: This site is suggested to be Grade IIIB significance. It could be mitigated by pylons avoiding the area and (part, if not all) retained as a heritage register site (*High significance*).

The area that the proposed power line intersects with K-PLSW2, shows that the wall have completely collapsed and heaps of stones are the remains of the dry packed stone wall.

The significance of the site is considered Local: This site is suggested to be Grade IIIB significance. It could be mitigated by pylons avoiding the area and (part, if not all) retained as a heritage register site (*High significance*).

- Assess the significance of direct, indirect and cumulative impacts:

The nature of the impact is the proposed construction of the of the Project for the Karusa Wind Energy Facility which include:

- The 132kV double circuit overhead power line, between the existing Komsberg Substation and the proposed Karusa Substation, and Ancillaries, situated on the Farm De hoop 202. The Project is situated within the footprint of the authorised Karusa Wind Energy Facility site.

If impacts on the heritage resources (the stone artefact, dry packed stone walls and stone packed features) are mitigated the direct cumulative and indirect impacts should be **low**. The extent of the impact is expected to be local, limited to the immediate area / site of development.

The proposed Project could have negative implications on the archaeological heritage remains that are not visible at the surface within the proposed area during all phases of the development. The negative implications include the potential destruction of archaeological material or culture occurrences that are not immediately visible. The

recommendations must be considered as appropriate mitigation measures to protect and conserve the archaeological heritage remains observed within the proposed Project area and further archaeological remains that may occur and are not immediately visible on the surface.

- Describe and make a comparative assessment of all alternatives identified during the environmental (archaeological) impact assessment process:

No alternatives are required if the mitigation measures (recommendations) are implemented.

- Make recommendations regarding practical mitigation measures for potentially significant impacts, for inclusion in the *Environmental Management Programme (EMP)*:

Recommendations with regards to mitigation measures for the heritage features documented during the assessment have been established. Standard recommendations have been made in the section below which suggest that if the current alignment of the proposed Project changes significantly that an archaeological walkthrough be conducted to investigate any additional areas to the proposed development, provides the process to follow if concentrations of archaeological heritage remains including historical material and informal burials may be uncovered during the development process and suggests that the Environmental Control Officer (ECO), Contractor's Environmental Officer (EO) and the Proponent as well as the employees be well informed of the possible archaeological and other heritage resources that may be uncovered during the proposed Project.

- Indicate to what extent to which the issue could be addressed by the adoption of mitigation measures:

The issues could be wholly addressed by the recommendations and mitigation measures suggested in the report.

In the event of such archaeological heritage being uncovered (such as during any phase of construction activities), archaeologists or the relevant heritage authority must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed. The onus is on the Proponent to ensure that this agreement is honoured in accordance with the National Heritage Resources Act No. 25 of 1999 (NHRA 25 of 1999).

- Describe any assumptions, uncertainties and gaps in knowledge:

It must be emphasized that the conclusions and recommendations expressed in this walk-through report for the final layout of the power lines for the Karusa and Soetwater Wind Energy Facilities are based on the visibility of archaeological remains, features and, sites

and may not reflect the true state of affairs. Archaeological remains, features and, sites may be covered by soil and vegetation and will only be located once this has been removed.

- An environmental (archaeological) impact statement:

Considering the extent of the area very few heritage resources were documented in the assessed area for the location of the Eskom Karusa Switching Station, along the route proposed for the power line and within the footprint areas of the ancillaries. The dry packed stone walls and stone packed features are considered as having a medium-high significance and should not be negatively impacted during the process of development. The stone artefact documented is of a low archaeological significance as no other archaeological heritage material was documented.

Development may proceed as planned, however, the mitigation measures (recommendations) must be included in the proposed Project's Environmental Management Programme (EMP) to protect any archaeological sites, features and remains that may be uncovered during the proposed development.

**TABLE 2. ASSESSMENT OF THE SIGNIFICANCE FOR THE PROPOSED PROJECT, NEAR SUTHERLAND, KAROO HOOGLAND LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE: Archaeological Heritage Remains**

<b>Nature: Archaeological and Historical Heritage Remains including Formal and Informal Burials</b>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (1)	Local (1)
<b>Duration</b>	Permanent (5)	Permanent (5)
<b>Magnitude</b>	Low (4)	Low (4)
<b>Probability</b>	Highly Probable (2)	Probable (2)
<b>Significance</b>	<b>Low (12)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	Negative	Neutral unless archaeological heritage remains are uncovered during the construction which would then be Negative
<b>Reversibility</b>	None	Low
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	No	Yes
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• If the current layout is changed significantly, i.e. outside of the assessed area, an archaeological walk-through survey of the changes must be conducted and further mitigatory recommendations may be made if necessary.</li> <li>• If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work</li> </ul>		

<p>in the immediate area affecting the find must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.</p> <ul style="list-style-type: none"> <li>• A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the ECO/ EO should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.</li> </ul>
<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>• Irreplaceable loss of archaeological heritage resources. Considered to be of low significance.</li> </ul>
<p><b>Residual impacts:</b></p> <ul style="list-style-type: none"> <li>• Irreplaceable loss of archaeological heritage resources. Considered to be of low significance.</li> </ul>

**TABLE 3. ASSESSMENT OF THE SIGNIFICANCE FOR THE PROPOSED PROJECT, NEAR SUTHERLAND, KAROO HOOGLAND LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE: Dry Packed Stone Walls**

<b>Nature: Remnants of stone walling</b>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Local (2)	Local (1)
<b>Duration</b>	Permanent (5)	Short duration (5)
<b>Magnitude</b>	Minor (2)	Low (4)
<b>Probability</b>	Highly Probable (2)	Probable (1)
<b>Significance</b>	Low (13)	Low (11)
<b>Status (positive or negative)</b>	Negative	Positive
<b>Reversibility</b>	None	Low
<b>Irreplaceable loss of resources?</b>	Low	Low
<b>Can impacts be mitigated?</b>	No	Yes
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• The dry packed stone walls must be avoided by locating the positions of the pylons a minimum of 30 m from any stone packed feature. It is therefore unlikely that the dry packed stone walls and stone packed features will be negatively affected by the construction of the power lines, however, precautions must be taken as to avoid impact during construction activities.</li> </ul>		
<p><b>Cumulative impacts:</b></p> <ul style="list-style-type: none"> <li>• Irreplaceable loss of archaeological heritage resources. Considered to be of low significance.</li> </ul>		
<p><b>Residual impacts:</b></p>		

- Irreplaceable loss of archaeological heritage resources. Considered to be of low significance.

The OBJECTIVE of the phase 1 archaeological impact assessment for the Proposed Project was to establish the range and importance of the exposed and *in situ* archaeological heritage material remains, sites and features; to establish the potential impact of the development; and to make recommendations to minimize possible damage to the archaeological heritage.

<b>Project component/s</b>	<ul style="list-style-type: none"> <li>• Construction of the Eskom Karusa Switching Station and ancillaries (i.e. laydown area(s), operation and maintenance building, access road for construction and maintenance) (located adjacent to the proposed Karusa Facility Substation), and a 132kV double circuit overhead power line which will connect the facility to the Komsberg Main Transmission Substation (MTS).</li> </ul>
<b>Potential Impact</b>	<ul style="list-style-type: none"> <li>• Negative impact on the dry packed stone walls.</li> <li>• Physical destruction of archaeological heritage resources not visible at the surface.</li> </ul>
<b>Activity/risk source</b>	Construction of the Project.
<b>Mitigation: Target/objective</b>	Protection and conservation of heritage features documented during the phase 1 archaeological impact assessment and possible archaeological heritage resources occurring below the surface not visible on the surface within the footprint of the Proposed Project.

<b>Mitigation: Action /control</b>	<b>Responsibility</b>	<b>Timeframe</b>
<ul style="list-style-type: none"> <li>• If the current layout is changed significantly, i.e. outside of the assessed footprint, an archaeological walk-through survey of the changes must be conducted and further mitigatory recommendations may be made if necessary.</li> </ul>	Contracted archaeologist	Prior to construction as part of the EMP.
<ul style="list-style-type: none"> <li>• The dry packed stone walls must be avoided by locating the positions of the pylons a minimum of 30 m from any stone packed feature. It is therefore unlikely that the dry packed stone walls and stone packed features will be negatively affected by the construction of the power lines, however, precautions must be taken as to avoid impact during construction activities.</li> </ul>	ECO/ EO/ Environmental representative, Proponent and construction workers	Prior to construction as part of the EMP.
	ECO/ EO/ Environmental representative, Proponent and construction workers	During construction.

<ul style="list-style-type: none"> <li>• If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work in the immediate area affecting the find must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.</li> <li>• A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the ECO/ EO/ Environmental Representative should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.</li> </ul>	<p>ECO/ EO/ Environmental representative, Proponent and construction workers</p> <p>ECO/ EO/ Environmental Representative, construction managers and foremen</p>	<p>During construction.</p> <p>Prior to construction as part of the EMP.</p>
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<p><b>Performance Indicator</b></p>	<p>Conservation of dry packed stone walls and stone packed features and preservation of possible subsurface archaeological heritage sites, features and sites.</p>
<p><b>Monitoring</b></p>	<p>A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the ECO/ EO/ Environmental Representative should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.</p>

**10. RECOMMENDATIONS**

The –proposed Project is considered to have an impact of low significance on archaeology and heritage. The following recommendations must be considered before development continues:

1. If any significant changes, i.e. outside of the area assessed, are made to the final layout of the Project, an archaeological walk-through survey of the changes must be conducted and further mitigatory recommendations may be made if necessary.
2. The dry packed stone walls should be avoided by locating the positions of the pylons a minimum of 30 m from any stone packed feature. It is therefore unlikely that the dry packed stone walls and stone packed features will be negatively affected by the construction of the power line(s), however, precautions must be taken as to avoid impact during construction activities.
3. If concentrations of historical and pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work in the immediate area affecting the find must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.
4. A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the ECO/ EO/ Environmental Representative should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

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### **13. GENERAL REMARKS AND CONDITIONS**

**NOTE:** This report is an archaeological heritage walk-through and does not include or exempt other required specialist assessments as part of the heritage impact assessments (HIAs).

The National Heritage Resources Act (Act No. 25 of 1999, Section 35 [Brief Legislative Requirements]) requires a full Heritage Impact Assessment (HIA) in order that all heritage

resources including all places or objects of aesthetics, architectural, historic, scientific, social, spiritual, linguistic, or technological value or significance are protected. Thus any assessment should make provision for the protection of all these heritage components including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

It must be emphasized that the conclusions and recommendations expressed in this phase 1 archaeological impact assessment (AIA) are based on the visibility of archaeological remains, features and, sites and may not reflect the true state of affairs. Many archaeological remains, features and, sites may be covered by soil and vegetation and will only be located once this has been removed. In the event of such archaeological heritage being uncovered (such as during any phase of construction activities), archaeologists or the relevant heritage authority must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed. The onus is on the Proponent to ensure that this agreement is honoured in accordance with the National Heritage Resources Act No. 25 of 1999 (NHRA 25 of 1999).

Archaeological Specialist Reports (desktops and AIA's) will be assessed by the relevant heritage resources authority. The final comment/decision rests with the heritage resources authority that may confirm the recommendations in the archaeological specialist report and grant a permit or a formal letter of permission for the destruction of any cultural sites.

## **APPENDIX A: GRADING SYSTEM**

The National Heritage Resources Act 25 of 1999 stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act and the South African Heritage Resources Agency:

- National: This site is suggested to be considered of Grade 1 significance and should be nominated as such. Heritage resources with qualities so exceptional that they are of special national significance.
- Provincial: This site is suggested to be considered of Grade II significance and should be nominated as such. Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region
- Local: This site is suggested to be Grade IIIA significance. This site should be retained as a heritage register site (High significance) and so mitigation as part of the development process is not advised.
- Local: This site is suggested to be Grade IIIB significance. It could be mitigated and (part) retained as a heritage register site (High significance).
- 'General' Protection A (Field Rating IV A): This site should be mitigated before destruction (usually High/Medium significance).
- 'General' Protection B (Field Rating IV B): This site should be recorded before destruction (usually Medium significance).
- 'General' Protection C (Field Rating IV C): This site has been sufficiently recorded (in the Phase 1). It requires no further recording before destruction (usually Low significance).

## **APPENDIX B: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND AREAS: guidelines and procedures for Proponents**

### 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 Proponents 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<sup>2</sup> 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.