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FIRST PHASE ARCHAEOLOGICAL & HERITAGE INVESTIGATION OF THE PROPOSED PV ENERGY DEVELOPMENTS AT THE FARM SANDDRAAI 391 NEAR GROBLERSHOOP, NORTHERN CAPE PROVINCE

EXECUTIVE SUMMARY

Solafrica Photovoltaic Energy from Rivonia Road, Sandhurst, is planning the construction of a combined Concentrated Solar Power (CSP) and Photo Voltaic (PV) project on the farm Sanddraai 391, near Groblershoop in the Northern Cape. The farm covers about 4600ha. The land can be divided into two parts: a low lying area near the Orange River on bare layers of calcrete and further away, sterile red sand dunes covered by stands of Bushman Grass (*Cipa sp.*) with indigenous trees and shrubs.

Several heritage impact assessments around Groblershoop and Olifantshoek and along the Sishen-Saldanha railway line produced archaeological and historical material. In the case of Sanddraai 391, archaeological remains in the form of flaked cores and core flakes were found previously and in the present case along the river. Scatters of worked stone artefacts were found in association with calcrete outcrops. No dense concentrations occurred.

Along the Orange River, cultural and historical remnants go along with human occupation, represented by a farm yard consisting of a residential house and a well built kraal with a solar installation and water supply equipment. No graves were found.

Mitigation measures will be necessary in case graves or other human skeletal or unidentified heritage resources are found during the construction phase. Although the red sand dunes seem to be sterile, it is possible that the dune crests and streets between dunes could have been the activity and dwelling places during the Later Stone Age.

INTRODUCTION & DESCRIPTION

Royal Haskoning DHV from Woodmead, Gallo Manor, is commissioned by Solafrica Photovoltaic Energy to do the Environmental Impact Assessment (EIA), for the proposed construction of a combined Concentrated Solar Power (CSP) and PV project. The EIA also includes this heritage investigation of the proposed land on Sanddraai 391 near Groblershoop.

Scope and Limitations

This report addresses the Heritage Impact Assessment for the proposed CSP and PV project at Sanddraai 391 near Groblershoop.

The survey is based on a visual inspection of the area. The lower part of the site lies on a calcrete deposit with a stony top soil. The surface is covered by thorny shrubs and bushes, while the dune veld has a substantial grass and tree cover.

Driedoring (*Rhigozum trichotomum*) and Haak-en-Steek / Umbrella thorn (*Acacia tortillis*) occur at the site.

Methodology

1. Standard archaeological survey and recording methods were applied.
2. Rapport building with local farmer and neighbours.
3. A study of the literature to obtain information about the history, archaeology and heritage remains of the area.
4. The farm was patrolled by vehicle and inspected on foot where accessible.
5. The layout of the area plotted by GPS and coordinates transferred to Google Earth.
6. The site and its surroundings and features recorded on camera.
7. Mitigation measures were considered.
8. Investigate possible access, by-pass and service roads.

INVESTIGATION

The current heritage investigation provided the opportunity to examine the land proposed for the construction of a combined Concentrated Solar Power (CSP) and PV project on Sanddraai 391 near Olifantshoek. The site was visited on 14 November 2014. Johan Blignaut from Royal Haskoning DHV gave directions to the site. At the farm we were received and directed by Willem Niemann, the farm manager who is living on the farm.

The study aims to locate and evaluate the significance of cultural heritage sites, archaeological material, manmade structures older than 60 years, and sites

associated with oral histories and graves that might be affected by the proposed developments. In many cases, planted and self-sown trees and other types of vegetation represent a major part of the historical environment of human settlements in villages and towns, on farmyards or even deserted places in the open veld. These features are taken into consideration during any cultural investigation.

The site was examined for possible archaeological and historical material and to establish the potential impact on any cultural material that may be found. The Heritage Impact Assessment (HIA) is done in terms of the National Heritage Resources Act (NHRA), (25 of 1999) and under the National Environmental Management Act, 1998 (Act. 108 of 1998).

HISTORICAL ENVIRONMENT

People consider Groblershoop as the gateway to the Kalahari and claims that it represents a land of contrasts. The environment changes from arid, undulating hills penetrated by the gleaming and life giving Orange River valley, creating a luscious green strip through its surroundings.

Graves tell the story of battles fought nearby during the Rebellion in 1914. Development in the region was set in motion by the construction of the Boegoeberg dam and water channels in 1929. The project was used by the government at the time to create jobs for hundreds of poor white people. The name of the dam originates from the Boegoe plant that grows wild in the surrounding hills and was widely used in traditional medicine.

Situated 30km south west of Groblershoop in the beautiful Esel Mountains, a natural ravine was formed around a water hole that fills up during the rainy season. This cycle must have happened for centuries and it is claimed by the local people that there is a fossilised footprint of a donkey in the rock below the water hole. At the bottom of the ravine laymen claims to find evidence of lava remains.

Several of the ancient Batswana tribes, including the different Thlaping and Thlaro sections as well as other smaller groups, take their 18th and 19th century roots back to the area around Groblershoop, Olifantshoek and the Langeberg (Majeng) and Korannaberg ranges in the western part of the region. This area includes the districts as far as Pilansberg, Marico, Lichtenburg, Wolmaransstad, Potchefstroom, Rustenburg and Klerksdorp (Breutz 1953, 1954, Van Warmelo 1935, Massie 1905).

This specific region of the Northern Cape had been occupied by European farmers since about 1911 in an area previously inhabited by the Batswana. When Britain annexed Bechuanaland in 1885 the land of the indigenous inhabitants had been limited to a number of reserves. In 1895, when British Bechuanaland was

incorporated into the Cape Colony, the land inside the reserves remained the property of the Tswana and could only be alienated with the consent of the British Secretary of State. Batswana resistance to White colonisation led to the Langeberg Rebellion of 1896-97 and permission for alienation followed soon afterwards. Farms in the confiscated reserves were surveyed and made available to White farmers. Chief Toto for one was offended by the White farmers and their families who settled in the area on farms such as Skaapkloof, Steenbokkloof and Gasikoa, which the Batswana considered as their best cattle posts and natural water springs. Toto claimed that his land stretched further west up to the Griqualand West border. This border problem originated from the neglect by Surveyor Theal, to clearly stipulate the western border of the Reserve. To resolve the uncertainty, another Surveyor J.C. Wessels, was sent out in 1894 to mark out the western border of the reserve and to measure the ten related farms situated in the south west.

The territory between the Vaal and the Molopo Rivers played an important role in the lives of the southern Tswana tribes of the region, in particular the Batlharo of Mankurwane and Barolong of Montshiwa. Shortly after 1881 when the Transvaal Republic (ZAR) gained their independence from Britain, full-scale hostilities broke out between the Boers and the Tshidi-Barolong of Montshiwa. Both these parties obtained the assistance of different groups of mercenaries to fight for them. One of these hired adventurers turned out to be the notorious Scotty Smith, renowned cattle and horse thief, diamond smuggler, gun-runner, elephant hunter and mercenary soldier (Edgecombe 1979).

After an extended period of siege and when his people were facing starvation, Montshiwa had to surrender to the Boers in 1882. The establishment of the Republics of Goosen (1882) and Stellaland (1883) by the European colonists, followed shortly afterwards. At the same time, the Tlhaping of chief Mankurwane aroused hostilities by an attack on a Taaibosch-Korana settlement of David Massouw at Mamusa near Schweizer-Reneke (Van Den Berg 1996). In 1883, a large British force under General Sir Charles Warren was sent out to put an end to the Republics of Stellaland and Goosen. An area, which included the two Republics, was annexed to Britain as the crown Colony of British Bechuanaland in 1885. This had been followed by a transfer of the land under the jurisdiction of the Government of the Cape Colony in 1895, thus also placing Mankurwane and Montshiwa under total British rule.

The Batlhaping and Batlharo, southern branches of the Batswana, reached Majeng (Langeberg), Tsantsabane (Postmasburg) and Tlhaka le Tlou (Olifantshoek), with the largest Tlhaping settlement at Nokaneng (Nokanna). The Tlharo occupied the Langeberg, and more specifically between Olifantshoek (Ditlou) and Dibeng. After clashes with the Korana, who came into the area in about 1770, the Tlhaping and Tlharo had to leave Nokaneng and the Langeberg region by 1790. The Tlhaping moved to Dithakong, while the Tlharo settled north and north-west of the Tlhaping. At the beginning of the 19th century, the Tlhaping

joined Robert Moffat's mission station near Kuruman. The Tlharo settled between Kuruman and the Langeberg, reaching the Kuruman River and the Korannaberg by 1820. The hostile conduct of the Bergenaars (vagabond groups of outcast Griekwa, Korana, Namakwa and other people of mixed descent) left the Langeberg relatively unoccupied during the early decades of the 19th century. From about the 1840s the situation stabilised sufficiently to allow the Tlharo, under chief Makgolokwe to stay in the Langeberg. Their main settlement was on the farms Pudahush and Toto, with outposts at Ditlou, Gamanyana and Gamasep. Other tribe members spread to Gatlhose, Maremane, Dibeng and Kathu. By 1859 the London Missionary Society was already active amongst the Batlharo and by 1862 a school existed at Pudahush.

To close the previously "open" western border, Griqualand West was annexed by Britain in 1871, placing the boundary line only about 30km south of Olifantshoek. This action resulted in a serious revolt by the Black occupants of Griqualand West in 1878. The unrest also affected British Bechuanaland, with a section of the Langberg Batlharo under Sampie, the son of Makgolokwe (and half brother of Toto from the second hut, Breutz 1963), who decided to join the rebels gathered around Ditlou and Pudahush. In 1897 a task force under General Sir Charles Warren marched on the Langeberg, where the rebels had been defeated in a series of skirmishes. To keep an eye on the situation, Warren remained in the area for some time, placing his base at Ditlou, with another section of his force at Gamasep. After this, peace had been restored in the whole of Bechuanaland and a general pardon was proclaimed. Throughout these hostilities, Makgolokwe and his son Toto (Totwe) remained quiet and loyal at Dibeng and were allowed to return to Pudahush after the war. In 1881 the total border police force had been withdrawn from Bechuanaland, allowing a state of disorder to develop in the area. Makgolokwe passed away in the same year and was succeeded by his son Toto (Snyman 1986).

Toto Makgolokwe became the paramount chief of the Batlharo tribe. In 1897, he became the hero of the Langeberg Rebellion after defeating the British military force. The British subsequently brought in reinforcements which defeated the Batlharo and captured both Toto Makgolokwe and Kgosi Galeshewe. Toto was convicted for protecting and sheltering Galeshewe. Toto's eldest son Phemelo Toto was also arrested and taken with him to Robben Island, where Toto died soon afterwards.

Kgosi Galeshewe was a chief of the Tlhaping tribe in the Northern Cape. Following an attack on Cornforth Hill near Taung in 1878, a raid in which Francis Thompson and his nephew were savagely murdered, Galeshewe was captured and subsequently sentenced to twelve years imprisonment for his part in the uprising. In 1897, during a rinderpest outbreak, he again clashed with the police and military at Phokwane near Hartswater. As a result, he was imprisoned for his part in the Langeberg Rebellion. He died at Magogong, near Hartswater in 1927. The Kimberley township of Galeshewe is named after him.

Shortly after annexation by the Cape Colony, rebellion erupted in the former Crown Colony of British Bechuanaland. Joining forces in the Langeberg Mountains, Tlhaping and Tlharo resisted a considerable government force for nearly eight months. The origins of the rebellion can be taken back to the long-standing grievances of the Tlhaping and Tlharo, mainly out of competition for land and the frustration caused by the white administration, which meant taxes, police and new laws, for the chiefs, the responsibility of a new legal system together with the arrival of Christianity and a decrease of authority of the chiefs. On the other hand, there had been the white man's own mounting frustration. The annexation of the territory by the Cape seems to have stimulated rebellion in order to make new land available. Amongst the Tlhaping and Tlharo, new grievances and pressures became acute immediately before the rebellion. These included total distrust of the Cape Colonial government, further fears of loss of land, and anxiety concerning threats to their growing involvement in a market economy. Finally the consequences of a rinderpest outbreak coupled with dynastic politics appear to have tipped the scales in favour of rebellion (Saker & Aldridge 1971).

From 1882 a noticeable shift of Batlharo tribe members to the Langeberg, caused a rapid increase in the followers of Tlharo. This movement followed after struggles between the Tlharo and the Tlhaping, Korana, Rolong and their White allied freebooters. By 1884 the Tlharo tribe was still prepared to acknowledge British rule over their territory, but after several raids by Mankurwane and his Tlhaping, the Batlharo of Toto were preparing for armed resistance.

From 1910 onwards, a need arose in the former Langeberg Reserve for a centre to serve the growing farming community. This led to the laying out of residential lots at Olifantshoek in 1911 and resulted in the establishment of a village management board in 1917 (Snyman 1987).

The report of the Land Commission of 1886 added the Langeberg, Deben, Kathu, Gatlhose and Maremane region to the territory of the Batlharo. These land grants did not bring any notable change to the safety situation and Toto's territory remained a haven for stock thieves. Between 1889 and 1890, the land surveyor M.W. Theal started to measure and layout the farms in the area around Toto's reserve. After the annexation of Bechuanaland the first group of traders moved into the area to settle at Bishops Wood (1886), Mapedi (Lynputs) from 1888, Gamagara (1889), Magoloring (Aarkop) and Mount Temple in 1888.

It is accepted that farms such as Langkloof, Inglesby, Lukin, Gamanyana, Puduhush, Toto, Luka and Hopkins, had been named after major role players in the Langberg Rebellion. A recent study, which aimed to understand the historical background and heritage resources of the area, did not produce any proof or references confirming these farms as the original and actual living sites of the different Batswana tribes (Dreyer 2014).

The inspection did likewise not produce any archaeological or historical remains of earlier tribal occupations in the Langeberg and Korannaberg ranges, either.

ARCHAEOLOGICAL BACKGROUND

Compared to other parts of the Northern Cape, it seems that not much is known about the archaeology of the 18th and 19th century history of the Langeberg region. A number of heritage investigations refer to Stone Age material from the area (Groenewald 2013). Pelser & Lombard (2013) mentions graves and lithic material at a site 15km north of Postmasburg and close to the Beeshoek mine on rocky ridges and on the flood plain along the Orange River. Rock engravings are also mentioned from both Beeshoek Mine and Paling farm. The Paling site is probably associated with a cave shown on a map dating from 1881.

A basic assessment along the Groblershoop - Marydale power line, revealed a single site of cultural heritage significance. A few other stone tools were also identified out of context (Van Vollenhoven 2014).

Beaumont and Boshier (1974) describe ancient specularite mines around Postmasburg and Beeshoek and refer particularly to finds at Doornfontein, 16km north-west of Postmasburg. The farm Paling is also mentioned as to have Stone Age material from all phases, mentioning artefacts such as core flakes, blades, segments and scrapers made out of Silcrete, jasper, quartzite, horn fells and banded iron stone (See also Thackeray et al. 1983).

IRON AGE ARCHAEOLOGY

Dramatic climate changes resulted in a rapid population growth along the east coast of South Africa. Increased pressure on the natural resources and attempts to control trade routes during the early 19th century brought the emergence of powerful leaders in the coastal area. Subsequent power struggles developed into a period of instability on the central Highveld. This time of strife or wars of devastation, known as “difaqane” (Sotho/Tswana) or “Mfecane” (Nguni), affected many of the Black tribes in the interior. Attacks from east of the escarpment initiated by the AmaZulu impis of Chaka in about 1822, were sustained by the AmaNdebele of Mzilikazi and the AmaNgwane of Matiwane into the Free State, North West Province and Northern Cape, thus uprooting among others, the Batlokwa of Sekonyela and Mantatise and various smaller Sotho/Tswana tribes further inland. On their turn, the Batlokwa drove off the Bafokeng of Sebetoane from Kurutlele near Senekal in the Free State, who, in their effort to escape the pursuit by the AmaNdebele forces, eventually landed up in the Caprivi (Dreyer & Kilby 2003). This period of unrest directly affected the peoples of the interior, resulting in the displacement of scores of tribesmen, women and children. The stronger tribal groups, such as the AmaNdebele of Mzilikazi, assimilated many of these Batswana refugees.

Early European missionaries and travellers ventured into the central parts of the country during the 19th century and the Rev James Archbell established the missionary at Thaba Nchu by 1834. These marauding hordes affected the lives of the Batswana people living at Dithakong near the mission station of Robert and Mary Moffat near Kuruman.

The Later Iron Age phase brought people who smelted metals, cultivated crops, kept livestock and produced an abundance of pottery in a variety of shapes and sizes. Extensive stone-walled enclosures characterise their permanent settlements. These living places are known from the prominent Sotho/Tswana settlements along the Sand, Renoster and Vals Rivers near Ventersburg, Kroonstad and Bothaville, at Klerksdorp, Rustenburg and in the Magaliesberg.

A number of Taaibos Korana and Griqua groups, remnants of the Later Stone Age peoples, managed to survive the assimilation by Sotho/Tswana tribes at Mamusa near Schweizer Reneke (Van den Berg 1996).

The Iron Age archaeology of the Free State, Northern Cape and North West Province is characterised by a wide distribution of stone-walled sites on the flat-topped ridges and hills. There is detail and consistency in the arrangement and design of these structures. People's expression of culture has left its imprint on the material environment. The settlement patterns display human perceptions with regard to social clustering, economic system and political organisation. Patterns culminate in the arrangement of huts, byres and middens in a particular order and in relation to one another. Spatial organisation in general is characterised by the central position of stock enclosures and the placing of the main dwelling area on the perimeter of the settlement. Although a variety of different classes and types of settlements have been defined, these are all variations of the Central Cattle Pattern (CCP), a specific model for the organisation and use of space in Zulu and Sotho/Tswana settlements.

The classification of sites is based on the assumption that settlement layout is destined and arranged by cultural perceptions. The identification of different ethnic groups is thus possible from the way in which these traditional peoples organised their different living places in terms of space and time. The result was directed by cultural preference (choice) and function. The significance of livestock, personal status, kinship, social organisation and the diverse roles of men, women and offspring have always been important in the understanding of settlement patterns (Huffman 2007).

The Later Iron Age classification of settlement patterns formulated by Maggs (1976) and Mason (1986), produced a standardised archaeological framework for the ordering of structures and sites characterised respectively by stock enclosures with connecting walls, in certain cases including corbelled huts (Type V), surrounding walls (Type N) and huts with bilobial courtyards (Type Z).

Associated pottery assemblages with different decoration styles confirm the classification of sites based on layout (Maggs 1976:290). Different settlement patterns also produced huts of different materials in different styles.

The remains at Type Z sites normally associated with Batswana settlement show up as a ring of scalloped stone-walls surrounding several stock enclosures. From this, it is concluded that these dwellings consisted of a cone on cylinder hut with stone-walled courtyards at both front and rear, forming a bilobial layout. The huts are arranged around a cluster of central cattle byres. Raw materials have been substituted at different localities, resulting in a variation in settlement pattern where clay walls replaced stone-walling of the front lobe as at Bothaville (Maggs 1976) and at the Willem Pretorius Game Reserve on the Sand River, near Ventersburg (Dreyer 1997). The occupation of the sites with bilobial dwellings is ascribed to Batswana (e.g. Thlaping and Rolong) groups. It is also possible to link Kubung people to every known site of this kind (Maggs 1976).

Pottery decorations associated with these settlements are characterised by shallow line incisions in bands and triangles below the rim and on the shoulder, combined with straight or curved lines and areas of red ochre burnish on the body of clay vessels (Maggs 1976).

According to radiocarbon dating and oral tradition, these Type Z sites were occupied from the 16th and 17th to early 19th century at Ventersburg, and 18th to early 19th century at Bothaville. A single bone sample from Jansfontein in the Doringberg, near Ventersburg, produced a calibrated date of 1670, which is slightly later than the Ventersburg date (Dreyer 1992). Taylor's Group II sites produced a date between AD 1650 and 1800 with the settlements at Askoppies around late 1670s, early 1680s and early 1800 (Pelser 2005).

LOCALITY

Groblershoop is situated about 1 km south of the Orange River (Fig.1). The town was founded in 1914 on the farm Sternham, but was renamed in 1939 after Piet Grobler, a former Minister of Agriculture. The construction of the Boegoeberg Dam and water channels in 1929, accelerated development along the Orange River. Known as the gateway to the Green Kalahari, the Groblershoop region is now a major wine-producing area.

Royal Haskoning DHV from Woodmead, Gallo Manor, is commissioned by Solafrica Photovoltaic Energy to do the Environmental Impact Assessment (EIA), for the proposed construction of a combined Concentrated Solar Power (CSP) and PV project. The EIA also includes the present heritage investigation of the proposed land on Sanddraai 391.

The farm Sanddraai 391 is located on the Orange River about 16km north-west of Groblershoop (Maps 2&3) and covers about 4600ha. The land can be divided

into two parts: a low lying area near the Orange River on bare layers of calcrete and further away, sterile red sand dunes covered by stands of Bushman Grass (*Cipa sp.*) with indigenous trees and shrubs. Other developments at Bokpoort and Garona along the Sishen-Saldanha railway line nearby are indicated on Map 3. Several heritage impact assessments around Groblershoop and Olifantshoek and along the Sishen-Saldanha railway line produced archaeological and historical material.

The following GPS coordinates (Cape scale) were taken (Map 4).

S1	28°46'50"S 021°53'20"E	Altitude 860m	(Fig.1).
S2	28°46'59"S 021°53'34"E	Altitude 866m	(Fig.3).
S3	28°46'54"S 021°53'51"E	Altitude 869m	(Fig.5).
S4	28°46'43"S 021°54'12"E	Altitude 882m	(Fig.7).
S5	28°46'26"S 021°53'35"E	Altitude 883m	(Fig.9).
S6	28°44'41"S 021°55'30"E	Altitude 914m	(Fig.10).
S7	28°43'27"S 021°56'43"E	Altitude 925m	(Fig.11).
S8	28°42'04"S 021°58'04"E	Altitude 953m	(Fig.12).
S9	28°41'57"S 021°58'37"E	Altitude 955m	(Figs.13-15).
S10	28°40'16"S 021°59'47"E	Altitude 978m	(Fig.16).

FINDS

At Sanddraai 391, cultural and historical remnants mainly revolve around human occupation. Archaeological remains in the form of flaked cores and core flakes were found previously and in the present case along the river at Points S1 to S4 (Figs. 2,4,6,8) (Map 3).

A farm yard consisting of a residential house and a well built kraal with a solar installation and water supply equipment, occur at Point 9 (Figs.14&15). The age of the buildings could not be ascertained. No graves were found here. The Bokpoort solar plant and Garona Sub-station along the Sishen-Saldanha railway line is visible from Point S10 on Sanddraai 391 when facing south towards the Orange River (Fig.17).

A number of CRM projects have been undertaken between the Garona sub-station and the Orange River in recent years (Dreyer 2006, 2012, 2014, Pelsler & Lombard 2013, Webley 2013, PGS Heritage 2009, 2010). These projects have identified temporary scatters of Middle Stone Age material across the landscape but concluded that the artefacts do not appear to be concentrated sufficiently to represent sites. They were rated to be of low significance and no mitigation was proposed.

A joint field survey was undertaken with staff from Landscape Dynamics, Eskom and other specialists in February 2013 (Webley 2013). Spot checks were made along the route to establish the potential impacts to heritage remains.

The fieldwork identified small scatters of Middle Stone Age material made on banded ironstone on both sides of the river. These scatters appear to be denser on small quartz koppies.

Sites comprising hornfels cobbles and quartz artefacts (which may represent Later Stone Age sites), along the eastern banks of the Orange River.

A stone water reservoir dam east of the power line near Garona.

No cemeteries or graves were recorded.

No buildings or structures older than 60 years will be impacted.

The Cultural Landscape consists of intensive agriculture in a narrow belt along the Orange River surrounded by the red Aeolian sands of the Kalahari.

The recordings by Van Riet Lowe (1956) do not have any reference to rock paintings in this part of the Hay District.

During the present survey, scatters of worked stone artefacts were spotted at a number of places mainly in association with calcrete outcrops. The collections were widespread and no dense concentrations occurred.

No other cultural or historical remains or graves were found along the proposed route.

Although the red sand dunes seem to be sterile, it is possible that the dune crests and streets between dunes could have been the activity and dwelling places during the Later Stone Age (Morris 2012, Webley 2013).

IMPACT ASSESSMENT

The proposed new solar plant developments will have no serious and destructive effect on any graves and other historical remains at Sanddraai 391.

During the present survey, scatters of worked stone artefacts were spotted at a number of places in association with calcrete outcrops. The collections were widespread and no dense concentrations occurred.

No other cultural or historical remains or graves were found on the farm.

Mitigation measures will be necessary in case graves or other human skeletal or unidentified heritage resources are found during the construction phase.

Further planning of the proposed project may continue.

CONCLUSIONS AND RECOMMENDATIONS

It is accepted that the First Phase Heritage Impact Assessment for the proposed solar plant developments at Sanddraai near Groblershoop has been conducted successfully.

The sub-soil presence of archaeological and / or historical remains, features or artefacts are always a strong possibility and needs to be kept in mind at all times. Care should therefore be taken during all development activities that if any material of cultural importance or human skeletal remains are discovered, a qualified archaeologist should be called in to investigate. This would include the discovery of previously unknown graves.

MITIGATION

Mitigation measures will be necessary in case graves or other human skeletal or unidentified heritage resources are found during the construction phase.

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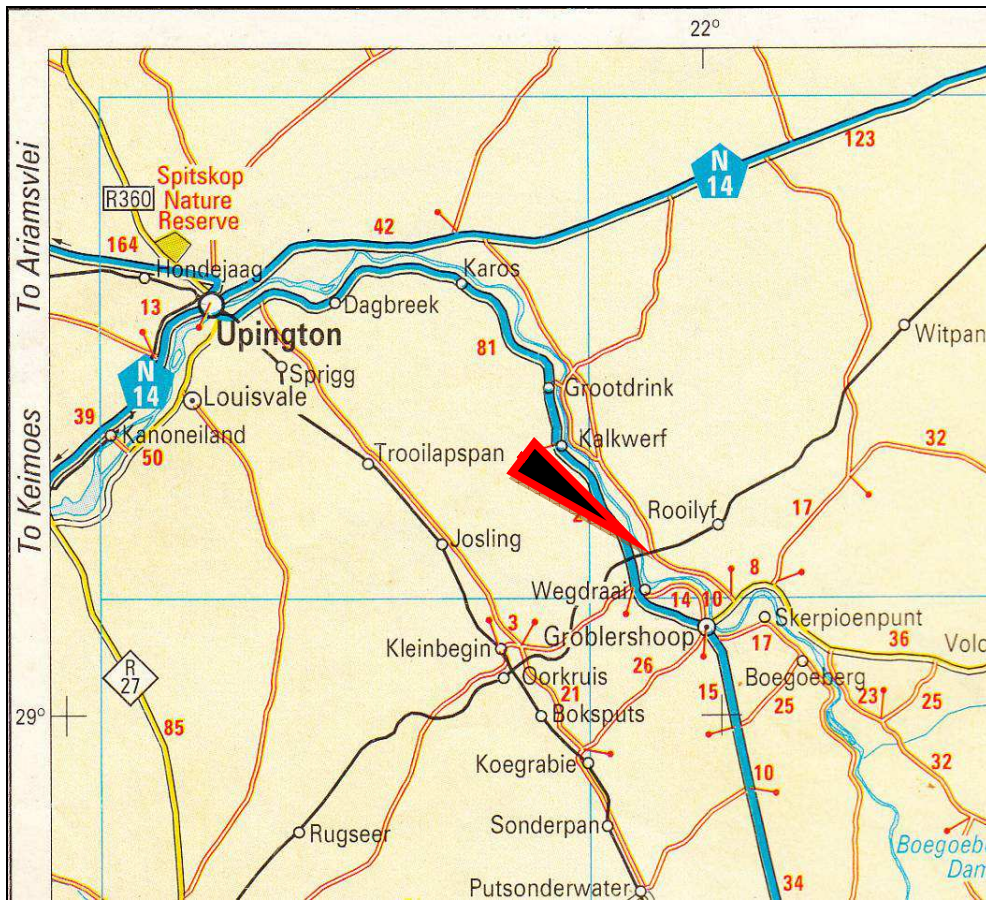
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LIST OF ILLUSTRATIONS:



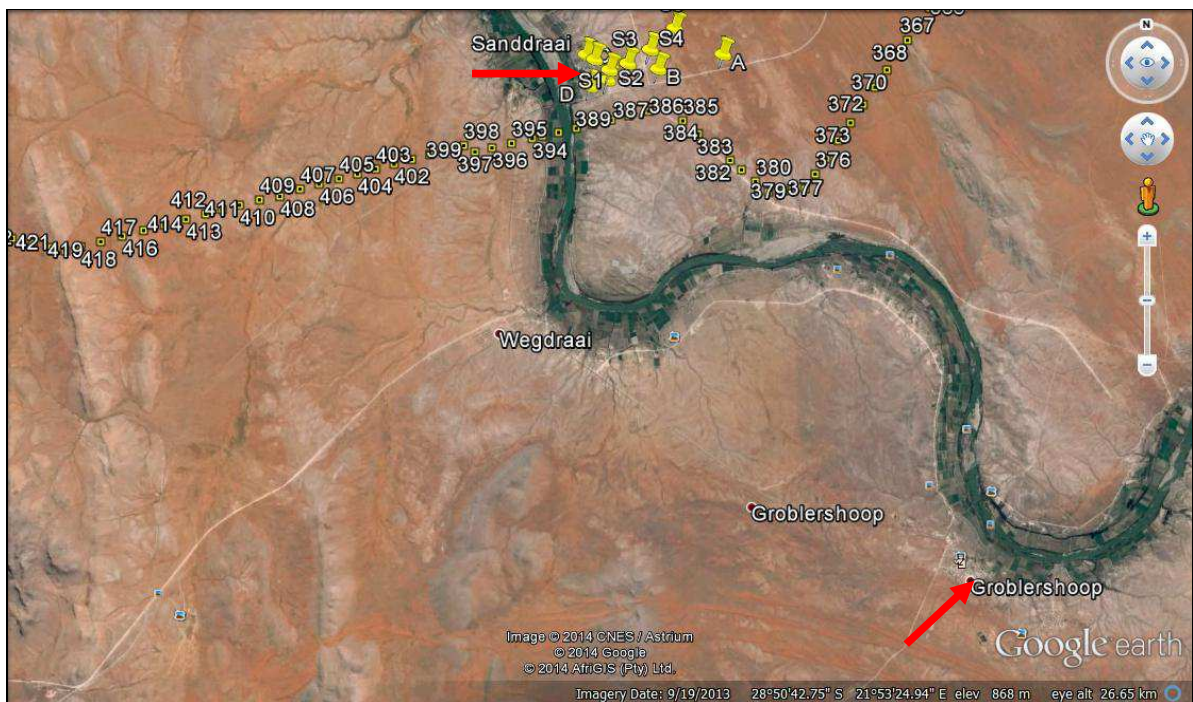
Map 1 Locality of Sanddraai 391 near Groblershoop on the Orange River.



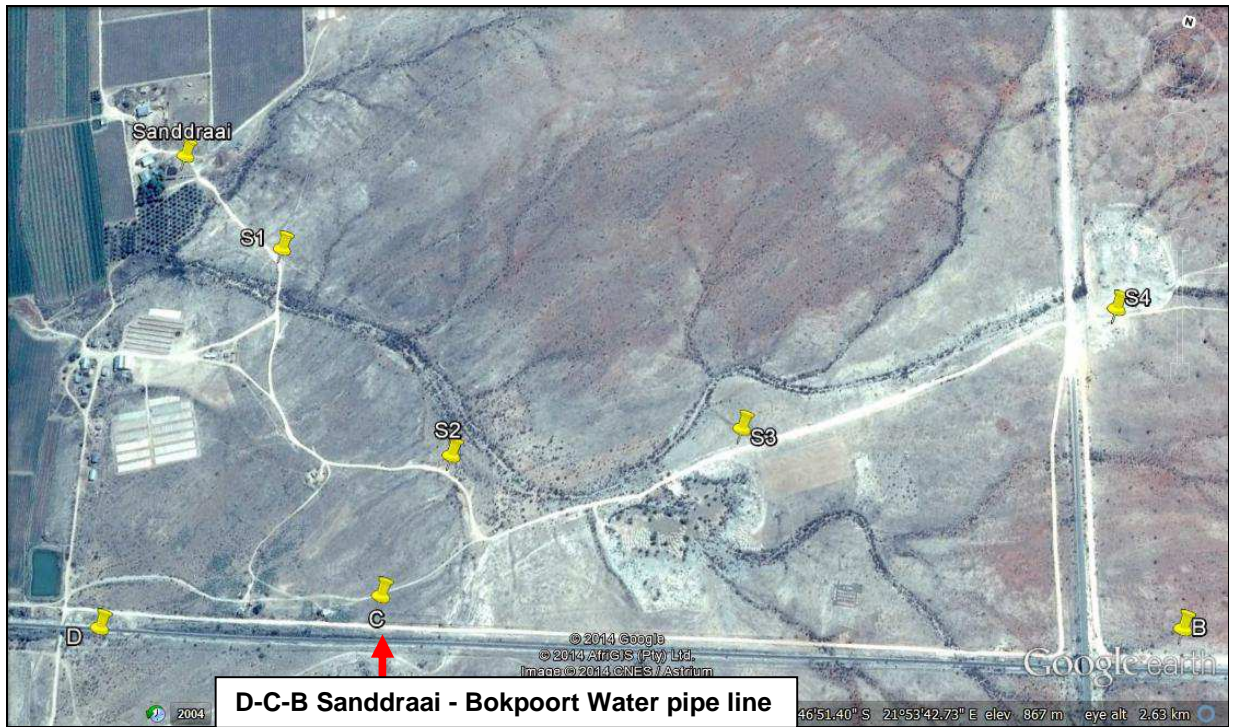
Fig.1 Point S1 at Sanddraai 391 near Groblershoop.



Fig.2 Stone flakes from Point S1 at Sanddraai 391 near Groblershoop (Pocket knife = 84mm).



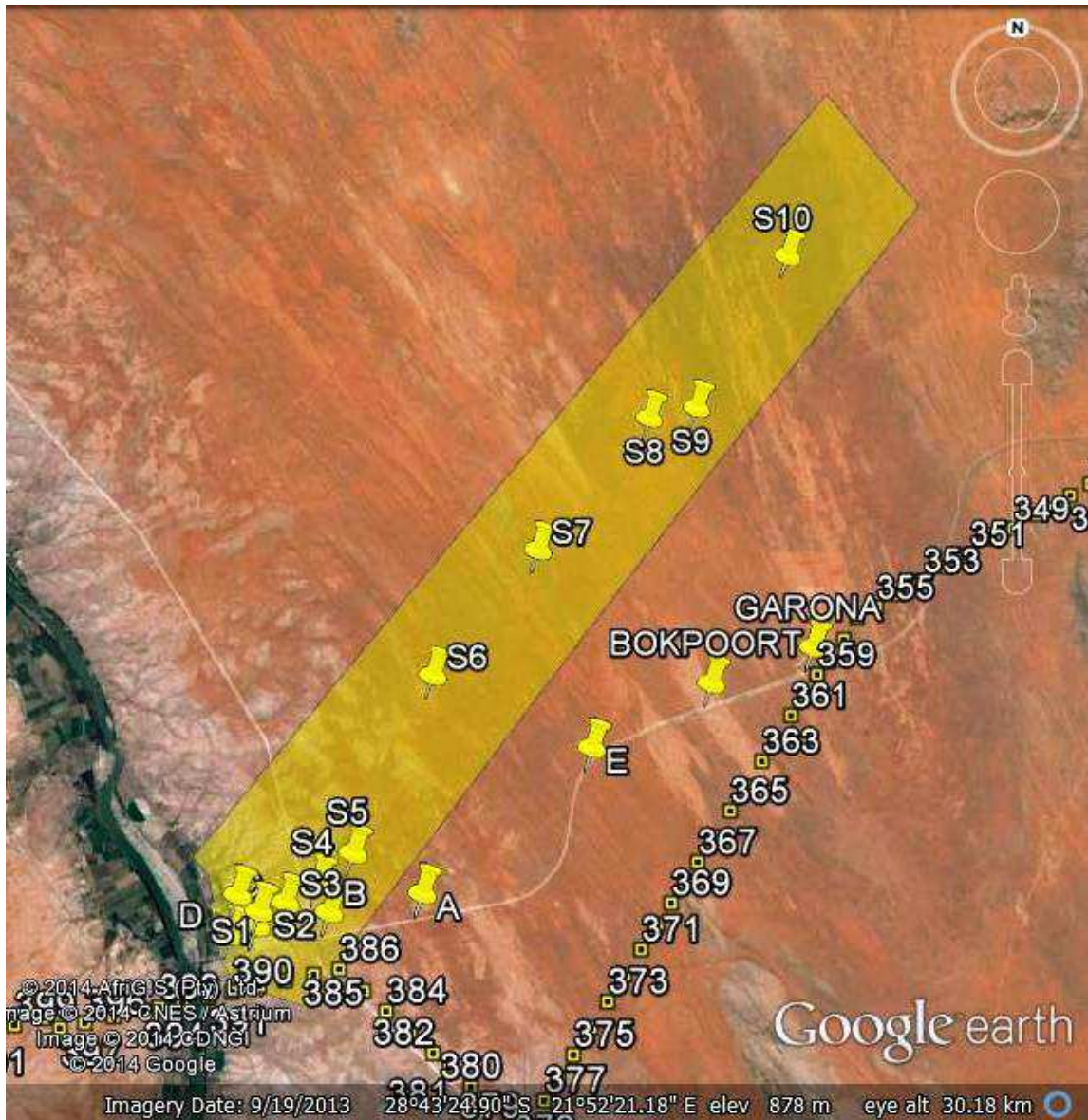
Map 2 Sanddraai 391 in relation to the Orange River and Groblershoop.



Map 3 Locality of Sanddraai 391 with coordinate points S1 – S4 indicated.



Fig.3 Point S2 at Sanddraai 391 near Groblershoop.



Map 3 Sanddraai with Bokpoort PV Solar & Garona Sub-station. Coordinate points indicated.



Fig.4 Stone flakes & cores at Point S2, Sanddraai 391 (Pocket knife =84mm).



Fig.5 Calcrete on surface at Point S3, Sanddraai 391 near Groblershoop.



Fig.6 Stone flakes at Point S3, Sanddraai 391 (Pocket knife – 84mm).



Fig.7 Calcrete spread at Point S4, Sanddraai 391 near Groblershoop.



Fig.8 Stone cores at Point S4, Sanddraai 391 (Pocket knife = 84mm).



Fig.9 Point S5 at Sanddraai 391 near Groblershoop.

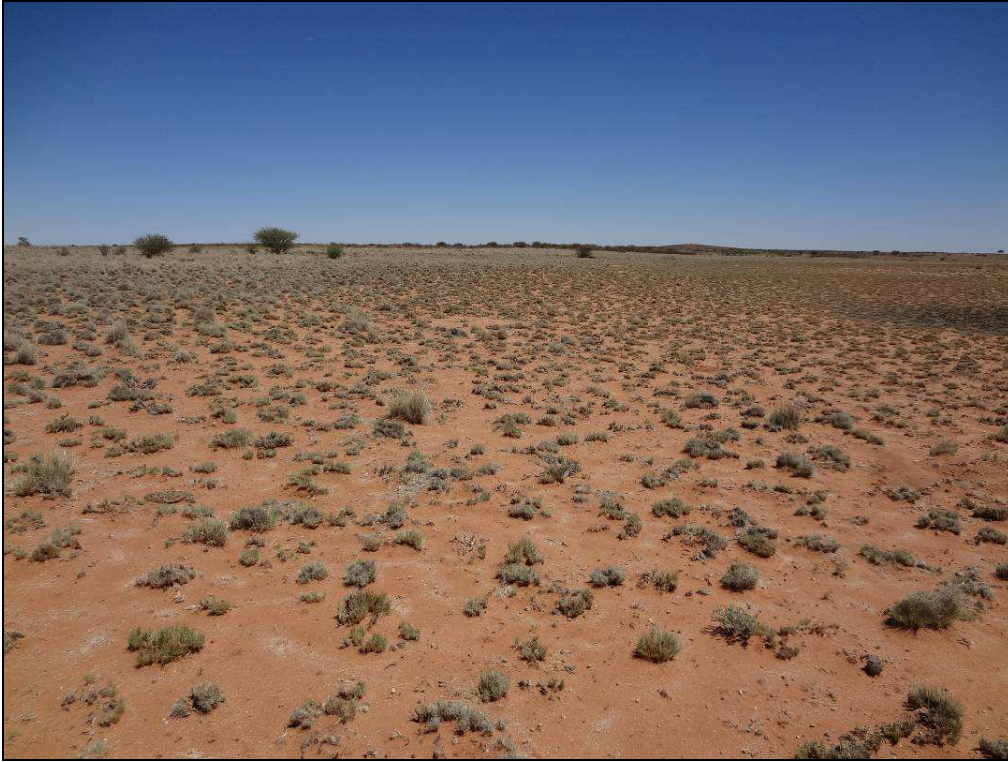


Fig.10 Point S6 at Sanddraai 391 near Groblershoop.



Fig. 11 Point S7 at Sanddraai 391 near Groblershoop.



Fig.12 Point S8 at Sanddraai 391 near Groblershoop.



Fig.13 Point S9 at Sanddraai 391 near Groblershoop.



Fig.14 Stone kraal, solar panels & water installation at Point S9, Sanddraai 391.



Fig.15 Farm house at Point S9, Sanddraai 391 near Groblershoop (See Map 5).



Map 5 Layout of the farm buildings at Point S9 on Sanddraai 391, Groblershoop.



Fig.16 Point S10 on Sanddraai 391, Groblershoop.



Fig.17 View from Point S10 on Sanddraai 391, facing south towards the Orange River. Bokpoort solar plant and the Garona Sub-station are visible on the left of picture.