Heritage Scoping Report for the proposed photovoltaic plant on Albert farm No 986 Free State Province

Prepared For

Savannah Environmental (Pty) Ltd

By

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Auckland Park

2006

VERSION 1.2

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ACKNOWLEDGEMENT OF RECEIPT

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I, Jaco van der Walt as duly authorised representative of Heritage Contracts and Archaeological Consulting CC, hereby confirm my independence as a specialist and declare that neither I nor the Heritage Contracts and Archaeological Consulting CC have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which the Environmental Consultant was appointed as Environmental Assessment practitioner, other than fair remuneration for work performed on this project.

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EXECUTIVE SUMMARY

Site name and location: SunCorp/Solar Reserve JV (as joint venture between Solar Reserve South Africa (Pty) Ltd and SunCorp) is proposing to establish three commercial photovoltaic solar energy facilities as well as associated infrastructure on the Farm Albert 986 located approximately 12 km south of Hertzogville in the Free State Province.
1: 50 000 Topographic Map: 2825 BA

EIA Consultant: Savannah Environmental (Pty) Ltd.

Developer: SunCorp/Solar Reserve JV (as joint venture between Solar Reserve South Africa (Pty) Ltd and SunCorp)

Heritage Consultant: Heritage Contracts and Archaeological Consulting CC (HCAC).

Contact person: Jaco van der Walt Tel: +27 82 373 8491 E –mail jaco.heritage@gmail.com.

Date of Report: 10 January 2012

Findings of the Assessment:

This report endeavoured to give an account of the history of the farm Albert No. 986. The general history of human settlement in the area, including information on the interactions between whites and blacks in the vicinity, was discussed. Though not much material could be found that specifically refers to the farm Albert, information on the surrounding area and towns were incorporated into the report, and helps one to gain a better understanding of the history of the area.

The brief background study indicates that a range of Stone Age manifestations can be expected in the areas demarcated for potential photovoltaic plants. Engraved boulders or stones may also occur throughout the area. Concentrations of stone tools point to activities that took place at various stages over the past 1.5 million years, representing the different groups of people who inhabited or moved across the landscape over time.

This scoping study revealed that a range of heritage sites occur in the larger region and similar sites can be expected within the study area. Every site is relevant to the Heritage Landscape, but it is anticipated that few if any sites in the area have conservation value. Sites in the area are expected to have Generally Protected A field ratings.

Disclaimer: *Although all possible care is taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. Heritage Contracts and Archaeological Consulting CC and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

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ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
ECO: Environmental Control Officer
EIA: Environmental Impact Assessment*
EIA: Early Iron Age*
EIA Practitioner: Environmental Impact Assessment Practitioner
EMP: Environmental Management Plan
ESA: Early Stone Age
GPS: Global Positioning System
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA: National Environmental Management Act
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (~ 2.6 million to 250 000 years ago)

Middle Stone Age (~ 250 000 to 40-25 000 years ago)

Later Stone Age (~ 40-25 000, to recently, 100 years ago)

The Iron Age (~ AD 400 to 1840)

Historic (~ AD 1840 to 1950)

Historic building (over 60 years old)

1. INTRODUCTION

Heritage Contracts and Archaeological Consulting CC was contracted by Savannah (Pty) Ltd to conduct a Heritage Scoping Report for the proposed development of a photovoltaic facility referred to as Hertzogville PV 1 and PV 2. The proposed project is located on the Farm Albert 986 situated in the vicinity of Hertzogville in the Free State Province. The heritage scoping report forms part of the EIA process for the proposed project.

The aim of the scoping report is to conduct a desktop study to identify possible heritage resources within the project area and to assess their importance within a Local, Provincial and National context. The study furthermore aims to assess the impact of the proposed project on non - renewable heritage resources and to submit appropriate recommendations with regards to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve and develop them within the framework provided by Heritage legislation.

The report outlines the approach and methodology utilized for the Scoping phase of the project. The report includes information collected from various sources and consultations. Possible impacts are identified and mitigation measures are proposed in the following report. It is important to note that no field work was conducted as part of the scoping phase but will be conducted as part of the Impact Assessment phase of the EIA.

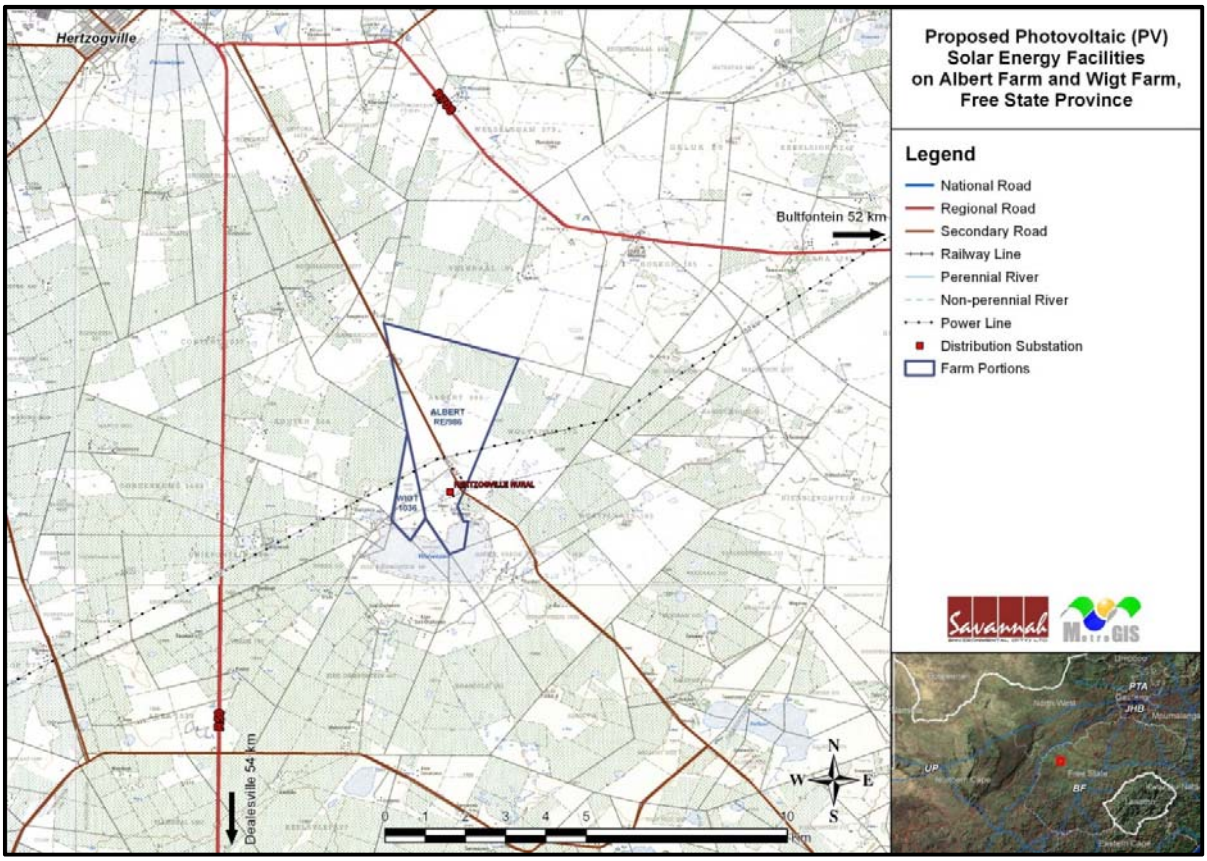

Figure 1: Locality map provided by Savannah Environmental

1.2 Terms of Reference

The main aim of this scoping report is to determine if any known heritage resources occur within the study area and to predict the occurrence of any possible heritage significant sites that might present a fatal flaw to the proposed project. The objectives of the scoping report were to:

- Conduct a desktop study:
  - Review available literature, previous heritage studies and other relevant information sources to obtain a thorough understanding of the archaeological and cultural heritage conditions of the area;
  - Gather data and compile a background history of the area;
  - Identify known and recorded archaeological and cultural sites;
  - Determine whether the area is renowned for any cultural and heritage resources, such as Stone Age sites, Iron Age sites, informal graveyards or historical homesteads.
- Report

The reporting of the scoping component is based on the results and findings of the desk-top study, wherein potential issues associated with the proposed project will be identified, and those issues requiring further investigation through the IA Phase highlighted. Reporting will aim to identify the anticipated impacts, as well as cumulative impacts, of the operational units of the proposed project activity on the identified heritage resources for all 3 development stages of the project, i.e. construction, operation and decommissioning. Reporting will also consider alternatives should any significant sites be impacted on by the proposed project. This is done to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve and develop them within the framework provided by Heritage Legislation.

1.3 Nature of the development

The PV solar energy facilities are proposed to accommodate an array of photovoltaic (PV) panels with a generating capacity for each project as follows:

» Hertzogville PV 2 - Phase 1 - 75MW
» Hertzogville PV 2 - Phase 2 - 75MW

Other infrastructure associated with each PV facility will include:

» Upgrade of the Hertzogville 132/22kV substation which is located on the Farm Albert 986;
» Mounting structure to be either rammed steel piles or piles with pre-manufactured concrete footings to support the PV panels;
» Cabling between the project components, to be lain underground where practical;
» Internal access roads; fencing and
» Workshop area for maintenance storage, office, toilets and small water treatment unit

1.4 The receiving environment

The study area is located approximately 12 km south of Hertzogville in the Free State Province. The topography of the area is relatively flat and the farm used to be used for agricultural purposes. A 132kV power line runs roughly from east to west through the property.

2. APPROACH AND METHODOLOGY

The assessment is to be undertaken in two phases, a desktop study as part of the Scoping phase and an Archaeological Impact Assessment as part of the Environmental Impact Assessment phase. This report concerns the scoping phase. The aim of the scoping phase is to extensively cover all archaeological and cultural heritage data available to compile a background history of the study area. In order to identify possible heritage issues or fatal flaws that should be avoided during development.

This was accomplished by means of the following phases:

2.1 Literature search

Utilising data for information gathering stored in the archaeological database at Wits and the McGregor Museum in Kimberly, published articles on the archaeology and history of the area and a search in the National archives. The aim of this is to extract data and information on the area in question, looking at archaeological sites, historical sites, graves, architecture, oral history and ethnographical information on the inhabitants of the area.

2.2 Information collection

The SAHRA report mapping project (Version 1.0) was consulted to further collect data from CRM practitioners who undertook work in the area to provide the most comprehensive account of the history of the area where possible.

2.3 Public consultation

No public consultation was conducted during this phase.

2.4 Google Earth and mapping survey

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological sites might be located.

2.5 Genealogical Society of South Africa

The database of the genealogical society was consulted to collect data on any known graves in the area.

3. LEGISLATION

For this project the National Heritage Resources Act, 1999 (Act No. 25 of 1999) is of importance and the following sites and features are protected:

a. Archaeological artefacts, structures and sites older than 100 years
b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
c. Objects of decorative and visual arts
d. Military objects, structures and sites older than 75 years
e. Historical objects, structures and sites older than 60 years
f. Proclaimed heritage sites
g. Grave yards and graves older than 60 years
h. Meteorites and fossils
i. Objects, structures and sites or scientific or technological value.

The national estate that includes the following:

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 features of cultural significance
e. Geological sites of scientific or cultural importance
f. Archaeological and palaeontological importance
g. Graves and burial grounds
h. Sites of significance relating to the history of slavery
i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

Section 34 (1) of the act deals with structures which is older than 60 years. Section 35(4) of this act deals with archaeology, palaeontology and meteorites. Section 36(3) of the National Heritage Resources Act, deals with human remains older than 60 years. Unidentified/unknown graves are also handled as older than 60 until proven otherwise.

3.1 Heritage Site Significance and Mitigation Measures

The presence and distribution of heritage resources define a Heritage Landscape. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface.

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. National and Provincial Monuments are recognised for conservation purposes. The following interrelated criteria were used to establish site significance:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposit;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined or is known);
- The preservation condition of the site;
- Potential to answer present research questions.

The criteria above will be used to place identified sites with in SAHRA's system of grading of places and objects which form part of the national estate, and which distinguishes between the following categories—

FIELD RATING	***GRADE***	***SIGNIFICANCE***	***RECOMMENDED MITIGATION***
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

Sites with no significance do not require mitigation; low to medium sites may require limited mitigation; while high significance requires extensive mitigation. Outstanding sites should not be disturbed at all. Recognizable graves and living heritage sites have high social value regardless of their archaeological significance.

4. REGIONAL OVERVIEW

4.1 General Information

4.1.1. Literature search

No previously recorded sites exist with the Archaeological databases at Wits University. We are still awaiting results from the McGregor Museum Kimberley, the results will incorporated in the EIA phase of the project

4.1.2. Information collection

The SAHRA report mapping project has no sites on record close to the study area.

4.1 3. Public consultation

No public consultation was conducted during the scoping phase.

4.1.4. Google Earth and mapping survey

Google Earth and 1:50 000 maps of the area was utilised to identify possible places where archaeological sites might be located.

4.1.5. Genealogical Society of South Africa

No grave sites are indicated within the study area.

5. HISTORIC PERIOD

The following section will endeavour to give an account of the history of these farms and also a brief overview of the history of the area and district in which they are located. The report has been divided into several sections that will focus on the following aspects:

- General history of human settlement in the area
- The history of black and white interaction in the area
- A history of specific land ownership and development in the farm area where this could be traced

5.1. Historiography And Methodology

It was necessary to use a wide range of sources in order to give an accurate account of the history of the area in which the farms Albert No. 986 is located. Sources include secondary source material, maps, electronic sources and archival documents. Unfortunately, no sources could be found in the National Archives that specifically refer to these farms. A search on the National Archives database also includes searches in various other archives repositories, records centres, national registers and libraries in South Africa. Unfortunately, it was also not possible to trace historic maps of the area in which the farm is located. Some information could be found on a neighbouring farm, and this was incorporated into the report. A more general overview of the history of the district is provided. Thus, although many sources exist on the general history of areas, it is often difficult to compile histories that focus on very specific portions of land, such as individual farms.

5.2. Maps Of The Area Under Investigation

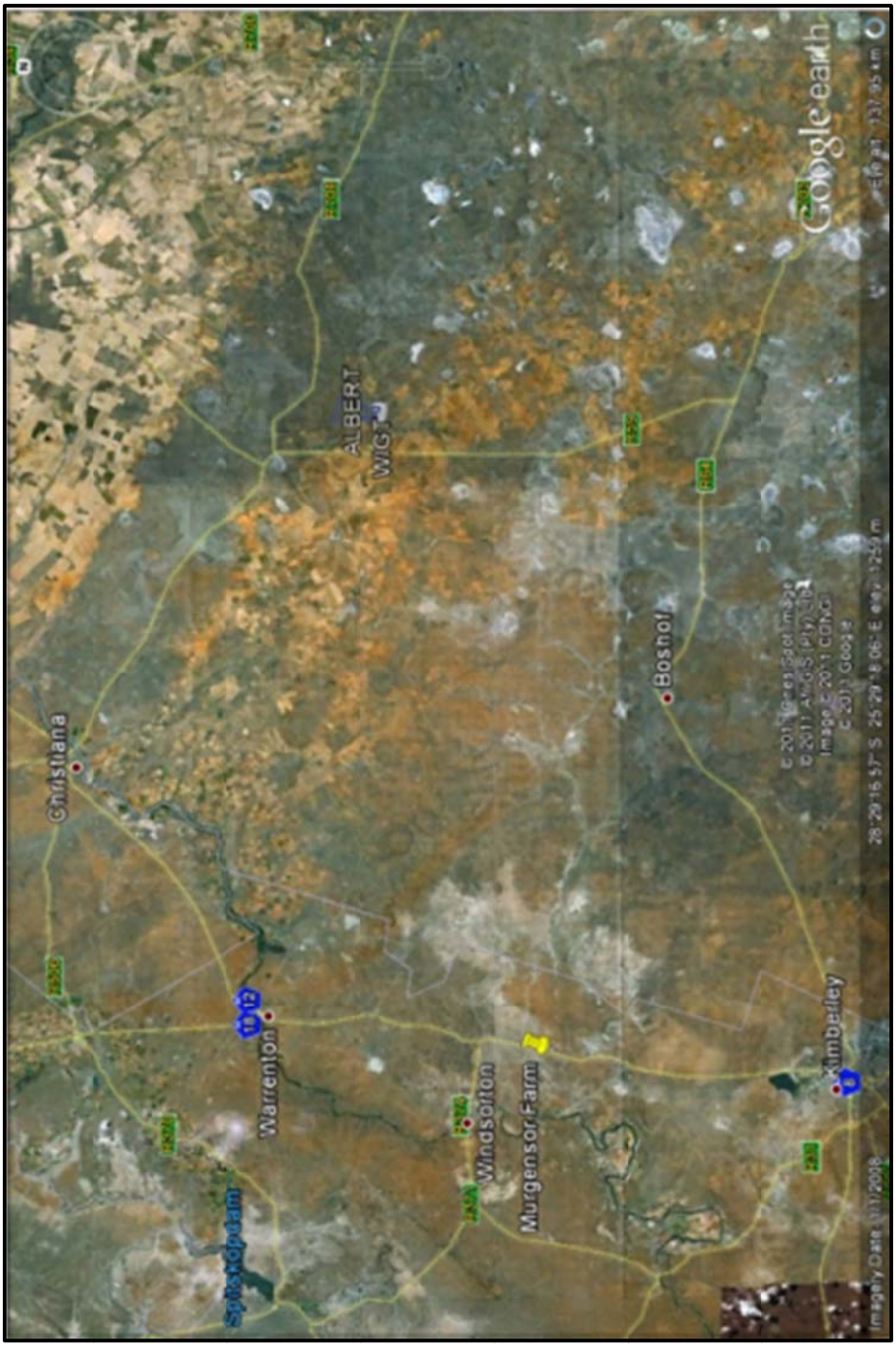

Figure 2. Map showing the farm Albert in relation to the towns Warrenton, Windsorton, Boshof and Christiana. (Google Earth 2011)

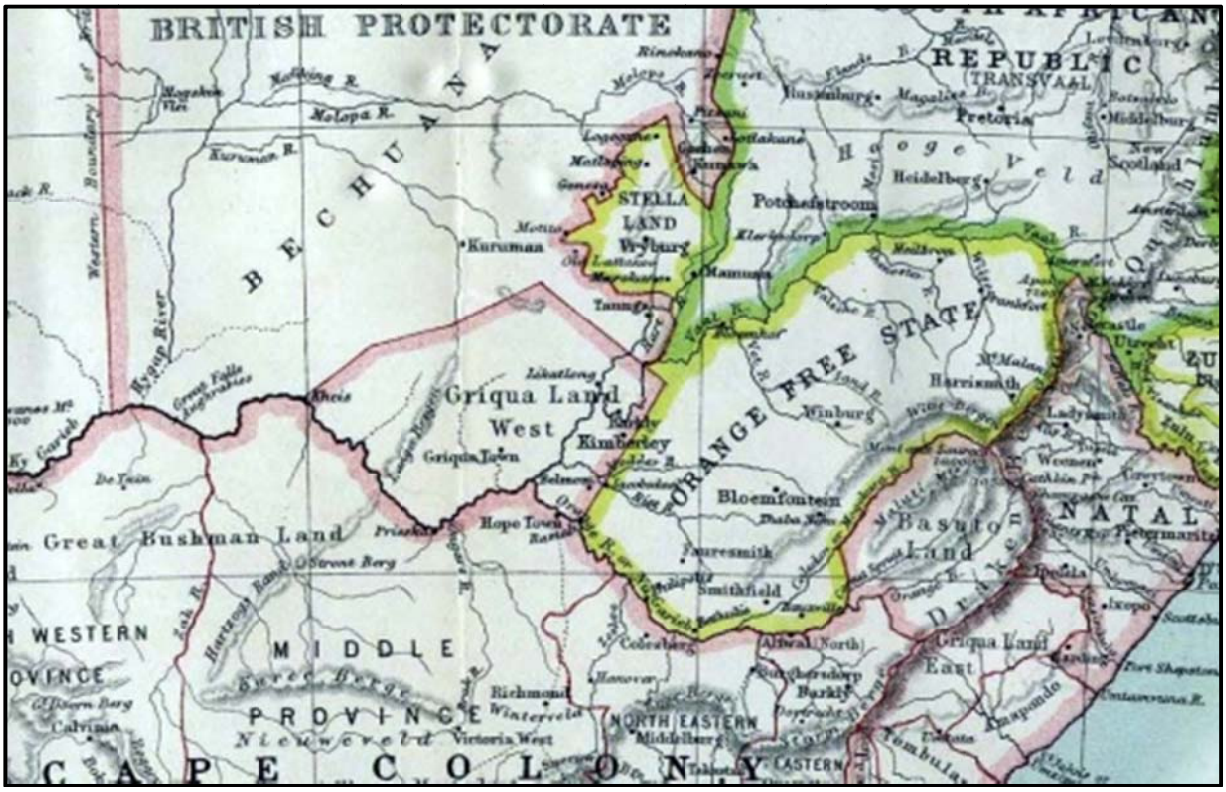

Figure 3. 1885 Map showing the area of Griqualand West, which was in British possession at the time. Kimberley and the farm area were located in this district. (The British Empire 2011)

5.3. A Brief History of Human Settlement and Black and White Interaction in the Kimberley Area

A farm does not exist in isolation, and it is important to understand the social history of the surrounding area. It is essential to consider the history of towns in the vicinity of the properties under investigation, since these social centres would have affected those individuals living in the rural areas. The city of Kimberley is of obvious significance, but some smaller towns such as Hertzogville, Christiana, Bloemhof and Warrenton are also of importance. The history of these towns will be discussed briefly.

Roberts' book provides a lovely description of the Kimberley area: "The earth was grey, stony, cindery, carpeted in long silvery grass and dotted with thousands upon thousands of umbrella-shaped thorn trees…When it rained, the normally dry watercourses became raging torrents; when it blew, the dust was choking; when, as happened for most days of the year, the sun shone, it was like an oven. In more ways than one could it be described as a no-man's-land; lying between the Great Karoo to the south, the undulating grasslands to the north-east and the Kalahari desert to the north-west." (Roberts 1985: 3) The land was however all but uninhabited. Among the earliest inhabitants in the area were the Koranas, the Khoikhoi and the Bushmen. The latter existed as hunter-gatherers, whereas the Khoikhoi and Koranas grazed livestock. In other respects, their cultures were much alike.

A group of people, who more recently started to inhabit the Kimberley district, were the “Bastards”, in whose veins flowed the blood of white adventurers, the Khoikhoi and Bushmen peoples. These people, who often owned firearms and wagons, formed bands that joined Bushman and Khoikhoi tribes. “Together they made up a nomadic, independent, haphazard society, each group following its own chief.” (Roberts 1985: 3)

The London Missionary Society, which arrived on the scene in the early nineteenth century, attempted to bring order to the Kimberley area. The society renamed the “Bastards” as Griquas, and in due time the territory would become known as Griqualand West. The order however did not last long, and the Griqua split into factions and resumed their raiding expeditions. Boer farmers that moved inland from the Cape Colony during the 1830s and 1840s, further added to this arena of conflicting claims. Colesberg, which came into being in the 1830s, was one of the earliest towns to develop in this area. The settlement of Hopetown was established later on, but the area remained inhospitable and desolate. It was however only in 1866 that an occurrence took place that would forever change the social fibre of this area. In December 1866, during a visit to a family on a neighbouring property, the landowner and amateur geologist Schalk van Niekerk picked up an interesting stone. On further inspection, this was found to be the first diamond that was ever discovered in South Africa. (Roberts 1985: 3-7)

As more diamonds were found on the banks of the Vaal River, just above its confluence with the Gariep, mining and the industry associated with it started to become something that would always be at the centre of South Africa’s social, economic and political life. Within a few years, in four locations between the Vaal and the Gariep, volcanic pipes were discovered in which diamonds had crystalized in the distant past. These pipes seemed to be of limitless capacity, and Kimberley developed between them in the early 1870s. In a few years, this town would become the second largest settlement in South Africa, producing 80 per cent of the region’s exports. The need for a constant stream of labour dramatically changed the social structure of the area. By the mid-1870s, 50 000 black men a year sought work in Kimberley. The majority of these people were Bapedi and other Sotho-Tswana speakers from Transvaal. There were not many black individuals from Natal and the Cape who came to work at Kimberly, and those who did were mainly educated and Christian, and worked as artisans and clerks. In 1889, the company of Cecil John Rhodes, De Beers Consolidated Mines, acquired the monopoly over the diamond pipes at Kimberley. Rhodes had realized that working the mines as single units rather than multiple claims would prove much more profitable. The organization of black labour changed considerably with the consolidation of the mines. Workers henceforth lived in closed barracks, called compounds, which they could only leave to go to work. Since De Beers had the monopoly of the mines, workers’ wages were also reduced. In this way the path was set for a new, and ultimately disastrous, organization of labour in South Africa. (Ross 2002: 54-56)

The discovery of diamonds and gold in the northern provinces also had other consequences. The British, who at the time had colonized the Cape and Natal, had intensions of expanding their territory into the northern Boer republics. This eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa, and which was one of the most turbulent times in South Africa’s history. Even before the outbreak of war in October 1899 British politicians, including Sir Alfred Milner and Mr. Chamberlain, had declared that should Britain's differences with the Z.A.R. result in violence, it would mean the end of republican independence. This decision was not immediately publicized, and as a consequence republican leaders based their assessment of British intentions on the more moderate public utterances of British leaders. Consequently, in March 1900, they asked Lord Salisbury to agree to peace on the basis of the status quo ante bellum. Salisbury's reply was, however, a clear statement of British war aims. (Du Preez 1977)

The siege of Kimberley took place between 14 October 1899 and 15 February 1900. By this time, the town was the centre of Cecil John Rhodes' De Beers diamond mining enterprise. Before the war, as Rhodes realized that the conflict was eminent, he moved to Kimberley with a large battalion to defend it against the advancing Boers. On 14 October 1899 the Boers invaded the northern Cape Colony, beginning the siege of Kimberley. The Boers were however unable to lay siege to the town, as the British were relieved by General French's Cavalry Division. (British Battles.com 2011)

Kimberley became the legislative capital of the Northern Cape Province in 1994, when apartheid ended. (Wikipedia 2011) Apart from considering the history of Kimberley, it is also important to take note of some of the smaller towns that are located in the vicinity of the farm area. The history of the towns of Hertzogville, Warrenton and Christiana will be discussed briefly.

Hertzogville was established on the farm Donkerfontein in 1915 and is named after James Barry Munnik Hertzog, prime minister of the Union of South Africa, a position he held from 1924 to 1939. Hertzogville is home to typical sandstone architecture an example is the Dutch Reformed Church in town. Due to the fact that Hertzogville was only established in 1915, the history of this town did not have as much impact on Albert Farm. Therefore the history of other towns in the region that would have had more influence on the study area will now be discussed.

Figure 4. Hertzog 1866 - 1942

Warrenton was founded in 1882. A number of cattle farmers had lived in the area before this time. They were scattered and few, but at the discovery of diamonds in the area, they realized the irrigation potential of the Vaal River. These farmers understood that there would be a considerable market for their produce, and started growing vegetables to provide food for the mines at Kimberley. A community of farmers started to develop, and the settlement further expanded when diamonds were found alongside the Vaal River, where Warrenton is located today. The town also developed partially as a church town, as many towns in South Africa had. The leaders of the Nederduitse Gereformeerde Church Council were at one point effectively in charge of the town, and used its authority to influence the community. (Van Wyk 1982.: vii) Warrenton was named after Sir Charles Warren, who was a British land surveyor who had been sent to the Cape to serve as a mediator in the border conflict between the Orange Free State and Griqualand West. Because of the work he did in this respect, as well as serving in military operations, the pioneers at Warrenton decided to name the town after him. (Van Wyk 1982.: 4-5)

Warrenton was severely affected by the Anglo-Boer War, since it was a British town surrounded by individuals of republican persuasion. On Tuesday 17 October 1899, the town was seized by Boer forces. Several of Warrenton's inhabitants joined the republican forces at that time. In December of that year the population of the entire town was commandeered by the Boers. The British however successfully occupied the town in March 1900 and imprisoned almost the whole male population of Warrenton. The siege ended in a few weeks' time, but massive damage had been done during that time. (Van Wyk 1982: 32)

The area in which the town of Christiana was established was initially very sparsely populated. This was due to the constant droughts and cattle diseases that made the area very hard to settle in. Some of the earliest inhabitants in this area were the Batlapin, the Barolong and the Koranas. These populations were however displaced during the Difaqane: a time of bloody upheavals in South Africa, which occurred around the early 1820's until the late 1830's. (Geskiedenisatlas van Suid-Afrika 1999: 109-115) It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. (Geskiedenisatlas van Suid-Afrika 1999: 14; 116-119) These tribes were assaulted by the Ndebele troupes of Mzilikazi, and migrated to the Blesberg. Skirmished between different tribes in the area continued to cause unrest, but it was not long before the need developed for towns to be established for the white farmers that have settled in the area. Bloemhof was founded on 28 March 1866, and only three years later Christiana was also established. The latter town was named after Christina Petronella Pretorius, the only child of the State President M. W. Pretorius (1857-1860 and 1864-1871). In 1870, plots were first sold at Christiana, and this helped the expansion of the town. (Anon 1970: 3-7)

The discovery of diamonds predictably affected the town of Christiana significantly. On 3 October 1904, the town lands of Christiana were declared public diggings. More than 200 diggers came to the area during this time. Shortly before this, the Anglo-Boer War had also left its mark on Christiana. Several serious battles took place in the vicinity of the town, and several British soldiers are buried in the old grave yard. In May 1900 the town was seized by the British Lieutenant-General Sir A. Hunter. Another incidence of note is an influenza epidemic in the town that killed 60 individuals, including the Chief of Police, in 1918. (Anon 1970: 11-12, 15).

5.4. Historical Overview Of The Ownership And Development Of The Farm Albert No. 986

Unfortunately, a search in the National Archives of South Africa did not yield any results for the farm Albert No. 986. Information on neighbouring farms can sometimes be relevant for the history of a certain property. Therefore, a database search was also conducted on the farms surrounding the property. Searches on the farms Wolvepan No. 375, Aangekocht No. 570, Kouter No. 568, Groot Vrede No. 1630 and Rustplaats No. 185 did not produce any results.

Two documents are however available on the farm Zuid Driefontein No. 481. This property is located directly to the southwest of the farm Albert. It seems that, in 1958, a public road on the property was closed off. At this time the farm belonged to one C. J. Kramer. (Free State Archives Repository 1958) In 1961, the same landowner subdivided Zuid Driefontein, which was at that time under the jurisdiction of the Boshof district. (National Archives of South Africa 1961) One can deduce that Albert would have also likely have formed part of the Boshof district by the early 1960s.

6. HISTORICAL CONCLUSION

This section endeavoured to give an account of the history of the farm Albert No. 986. The general history of human settlement in the area, including information on the interactions between whites and blacks in the vicinity, was discussed. Though not much material could be found that specifically refers to the farm Albert, information on the surrounding area and towns were incorporated into the report, and helps one to gain a better understanding of the history of the area.

7. STONE AGE BACKGROUND

7.1 Introduction

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contains sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. For Cultural Resources Management (CRM) purposes it is often only expected/ possible to identify the presence of the three main phases. Yet sometimes the recognition of cultural groups, affinities or trends in technology and/or subsistence practices, as represented by the sub-phases or industrial complexes, is achievable. Such finer-grained identifications may help to highlight the importance of some archaeological sites in a specific region. Table 1 provides a brief overview of the Stone Age phases and sub-phases/industrial complexes of South Africa, based on our current knowledge. The information is aimed at assisting the identification of Stone Age occurrences in the field by providing the main associated characteristics, and it provides the broadly associated age estimates. Users of this document should, however, remember that the outlines are broad, and any field interpretations can only be considered preliminary observations until further research is conducted (Lombard 2011).

Stone Age Sites are often concentrated along rivers such as the Vaal River (e.g Gibbon et al 2009) as well as around koppies for example Wildebeest Kuil west of Kimberley. Sites can also be found on the verges of pans such as Alexandersfontein east of Kimberley Archaeological surveys have shown rocky outcrops and hills, drainage lines, riverbanks and confluences to be prime localities for archaeological finds and specifically Stone Age sites, as these areas where utilized for settlement of base camps close to water and hunting ranges. If any of these features occur in the study area Stone Age manifestations can be expect within the development area.

Cultural sequence	**~ Associated ages**	**Associated characteristics**
Later Stone Age; associated with Khoi and San societies and their immediate predecessors		
See sub-phases below for more detailed chronology	Recently to ~30 thousand years ago	Include stone tools mostly < 25 mm, bored stones, grinding stones, grooved stones, ostrich eggshell beads, bone tools sometimes with decoration, decorated ostrich eggshell flasks and fishing equipment These are the general characteristics for the Later Stone Age. In the sub-divisions below I highlight differences or characteristics that may be used to refine interpretations depending on context.
Broad overview of Later Stone Age sub-phases/industrial complexes		
Hunters-with-livestock/herders (e.g. Mitchell 2002; Lombard & Parsons 2008; Sadr 2008)	Mostly less than 2 thousand years ago	Regular occurrence of blades and bladelets, but formal stone tools are rare, backed pieces mostly absent, grindstones are common, stone bowls and boat-shaped grinding grooves may occur Sheep, goat, cattle and dog bones along with wild species Pottery is mostly well-fired, thin-walled, sometimes with lugs, spouts and coned bases, sometimes with comb-stamping
Post-Wilton (includes some Smithfield phases) (e.g. Deacon & Deacon 1999; Lombard & Parsons 2008)	~1 hundred -3 thousand years ago	Mostly macrolithic (stone tools > 20 mm) and informal sometimes with blades and bladelets Characterised by large untrimmed flakes At some sites there are also small backed tools, scrapers and adzes Sometimes includes thick-walled, grass-tempered potsherds
Wilton (includes some Smithfield phases) (e.g. Deacon & Deacon 1999; Wadley 2007)	~4-8 thousand years ago	Microlithic (stone tools < 20 mm) High incidence of backed bladelets and geometric shapes such as segments Include borers, small scrapers, double scrapers, polished bone tools
Oakhurst (includes Albany and Lockshoek) (e.g. Deacon & Deacon 1999; Wadley 2007)	~8-12 thousand years ago	Characterised by round, end and D-shaped scrapers, adzes and a wide range of polished bone tools Few or no microliths
Robberg (Deacon & Deacon 1999; Wadley 2007)	~12-22 thousand years ago	Characterised by few backed tools, few scrapers, significant numbers of unretouched bladelets

Cultural sequence	**~ Associated ages**	**Associated characteristics**
Early Later Stone Age	~30-40 thousand years ago	Described at some sites, but as yet unclear whether this represents a real archaeological phase or a mixture of LSA/MSA artefacts
Middle Stone Age; associated with Homo sapiens and archaic modern humans		
See sub-phases below for more detailed chronology	~30-300 thousand years ago	Mostly based on prepared core techniques, and the production of triangular flakes with convergent dorsal scars and faceted striking platforms Most pieces are in the region of 40-100 mm Often includes the deliberate manufacture of parallel-sided blades and flake-blades Sometimes produced using the Levallois technique Occasionally includes marine shell beads, bone points, engraved ochre nodules and engraved ostrich eggshell fragments These are the general characteristics for the Middle Stone Age. In the sub-divisions below I highlight differences or characteristics that may be used to refine interpretations depending on context
Broad overview of Middle Stone Age sub-phases/industrial complexes		
Final Middle Stone Age (informal designation partly based on the Sibudu sequence) (Jacobs et al. 2008; Wadley, 2005, 2010)	~30-40 thousand years ago	Could include bifacially retouched, hollow-based points Small bifacial and unifacial points Could include backed geometric shapes such as segments, as well as side scrapers
Late Middle Stone Age (informal designation partly based on the Sibudu sequence) (Jacobs et al. 2008; Wadley 2010)	~45-50 thousand years ago	Most formal retouch aimed at producing unifacial points Sometimes includes bifacially retouched points
Post-Howieson's Poort (also referred to as MSA III at Klasies River or MSA 3 generally) (e.g. Soriano et al. 2007; Jacobs et al. 2008:734)	~47-58 thousand years ago	Most points are produced using Levallois technique, and many are unifacially retouched Some side scrapers are present Backed pieces are rare
Howieson's Poort Industry (e.g. Jacobs et al. 2008:734)	~58-66 thousand years ago	Characterized by blade technology and the presence of small (< 4 cm) backed tools (made on blades), including segments, trapezes and backed blades.
Still Bay Industry (e.g.	~70-	Characterised by thin (< 10 mm), bifacially worked foliate

Cultural sequence	**~ Associated ages**	**Associated characteristics**
Jacobs et al. 2008; Lombard et al. 2010; Henshilwood & Dubreuil 2011)	77 thousand years ago	or lanceolate points with either a semicircular or wide-angled pointed butt Could include finely serrated points
Mossel Bay Industry (also referred to as MSA II at Klasies River or MSA 2b generally) (e.g. Wurz 2010, in press)	~85-105 thousand years ago	Characterised by a unipolar Levallois-type point reduction Products have straight profiles, percussion bulbs are prominent and often splintered or ring-cracked Formal retouch is infrequent, restricted to sharpening the tip or shaping the butt
Klasies River sub-stage (also referred to as MSA I at Klasies river or MSA 2a generally) (e.g. Wurz 2010, in press)	~105-115 thousand years ago	Mostly large blades, pointed flakes are elongated and thin, often with curved profiles Platforms are often diffuse and lack clear percussion marks Low frequencies of retouch, few denticulated pieces
MSA 1 (tentative, informal designation) (Volman 1984; Thompson et al. 2010)	Suggested age OIS 6 (~130-195 thousand years ago)	Platforms are mostly plain Very little formal retouch Flakes are mostly short and broad, few have denticulate retouch Rare scraper retouch
Sangoan Sometimes observed between MSA and ESA deposits, some researcher place this phase under the Middle Stone Age, others under the Earlier Stone Age, the designation is thus not yet clear (e.g. Kuman et al. 2005)	> 200 thousand years ago, but few sites in southern Africa have been dated	Contains small bifaces (< 100 mm), picks, heavy- and light-duty denticulated and notched scrapers
Earlier Stone Age; associated with early Homo groups such as Homo habilis and Homo erectus		
Fauresmith (e.g. Porat et al. 2010)	~400-600 thousand years ago	Generally includes small handaxes, long blades and convergent/pointed pieces
Acheulean (e.g. Kuman 2007; Mitchell 2002)	~300 thousand-1.5 million years ago	Bifacially worked handaxes and cleavers, large flakes > 10 cm Some flakes with deliberate retouch, sometimes classified as scrapers

Cultural sequence	~ Associated ages	Associated characteristics
		Give impression of being deliberately shaped, but could indicate result of knapping strategy Sometimes shows core preparation Mostly found in disturbed open-air locations
Oldowan (e.g. Kuman 2007; d'Errico & Backwell 2009; Mitchell 2002)	~1.5 -> 2 million years ago	Cobble, core or flake tools with little retouch and no flaking to predetermined patterns Hammerstones, manuports, cores Polished bone fragments/tools

Table 1. Outline of the Stone Age cultural sequence of South Africa. The information presented here provides a basic, simplified interpretation for the Stone Age sequence. Details may vary from region to region and from site to site. Most of the criteria such as dating, transitional phases, technological phenomena and recursions are currently being researched, so that the information cannot be considered static or final (Lombard 2011).

7.2. Concluding remarks

The brief background study indicates that a range of Stone Age manifestations can be expected in the areas demarcated for potential photovoltaic plants. Engraved boulders or stones may also occur throughout the area. Concentrations of stone tools point to activities that took place at various stages over the past 1.5 million years, representing the different groups of people who inhabited or moved across the landscape over time.

8. PROBABILITY OF OCCURRENCE OF SITES

Based on the above information and experience, it is possible to determine the probability of finding archaeological and cultural heritage sites within the study area to a certain degree. For the purposes of this section of the report the following terms are used – low, medium and high probability. Low indicates that no known occurrences of sites have been found previously in the general study area, medium probability indicates some known occurrences in the general study area are documented and can therefore be expected in the study area and a high probability indicates that occurrences have been documented close to or in the study area and that the environment of the study area has a high degree of probability having sites.

» <u>Palaeontological landscape</u>

Fossil remains. Such resources are typically found in specific geographical areas, e.g. the Karoo and are embedded in ancient rock and limestone/calcrete formations exposed by road cuttings and quarry excavation: *Unknown.*

» <u>Archaeological And Cultural Heritage Landscape</u>

NOTE: *Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface*.

» *Archaeologica*l remains dating to the following periods can be expected within the study Stone Age finds

ESA: Low-Medium *Probability*
MSA*: Medium -High Probability*
LSA: Medium- High Probability
LSA –Herder: Low-Medium Probability

» Historical finds

Historical period: Medium -*High Probability*
Historical dumps: Medium -*High Probability*
Structural remains: *High Probability*
Cultural Landscape*: Medium probability*

» Living Heritage
For example rainmaking sites: *Low Probability*

» Burial/Cemeteries

Burials over 100 years: *Medium -High Probability*
Burials younger than 60 years*: High Probability*

Subsurface excavations including ground levelling, landscaping, and foundation preparation can expose any number of these.

9. ASSUMPTIONS AND LIMITATIONS

The study area was not subjected to a field survey as this will be done in the EIA phase. It is assumed that information obtained for the wider area is applicable to the study area.

10. FINDINGS

The heritage scoping study revealed that the following heritage sites, features and objects that can be expected within the study area.

10.1. Archaeology

10.1.1 Archaeological finds

There is a high likelihood of finding Stone Age sites scattered over the study area. There is an increased likelihood of finding material near the foot hills and on hill tops and in shelters if any occur within the study area.

10.1.2 Nature of Impact

The construction phase of the photovoltaic plant could directly impact on surface and subsurface archaeological sites.

10.1.3 Extent of impact

The construction of the photovoltaic plant could have a low to medium impact on a local scale.

10.2. Historical period

10.2.1 Historical finds: I

Including middens, structural remains and cultural landscape. The desktop study highlighted the fact that the area was occupied at least from the 1950's and features dating to this period associated with farming can be expected.

10.2.1 Nature of Impact

The construction of the photovoltaic plant can directly impact on both the visual context and sense of place of historical sites. There are few if any structures identified in the area. Due to the visual nature of photovoltaic plants it can also have a direct impact on the sense of place as well as the cultural landscape.

10.2.3 Extent of impact

The plant will have a low to medium local impact due to the general physical nature of photovoltaic plants. The sense of place of cultural sites and the cultural landscape will be impacted on a local scale and the impact will be medium.

10.3. Burials and Cemeteries

10.3.1 Burials and Cemeteries

Formal and informal cemeteries can be expected anywhere on the landscape.

10.3.2 Nature of Impact

The construction and operation of the photovoltaic plant could directly impact on marked and unmarked graves.

10.3.3 Extent of impact

The plant could have a low to medium impact on a local scale.

11. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES

Based on the current information obtained for the area at a desktop level it is anticipated that any sites that occur within the proposed development area will have GP A Significance.

12. CONCLUSIONS AND RECOMMENDATIONS

This scoping study revealed that a range of heritage sites occur in the larger region and similar sites can be expected within the study area. Every site is relevant to the Heritage Landscape, but it is anticipated that few if any sites in the area have conservation value. The following conclusions are applicable to the following sites:

» Archaeological sites

All sites could be mitigated either in the form of conservation of the sites with in the development or by a Phase 2 study where the sites will be recorded and sampled before the client can apply for a destruction permit for these sites prior to development.

» Historical finds and Cultural landscape

It is not anticipated that the built environment will be severely impacted upon as very little structures occur within the study area. However, indirect impacts like the visual impact on the cultural landscape and possible historical sites can only be assessed during the survey of the area and suitable mitigation measures proposed. It is therefore recommended that the visual impact specialist and the heritage specialist work closely together.

» Burials and cemeteries

Formal and informal cemeteries as well as pre-colonial graves occur widely across Southern Africa. It is generally recommended that these sites are preserved with in a development. These sites can how ever be relocated if conservation is not possible, but this option must be seen as a last resort. The presence of any grave sites must be confirmed during the field survey and the public consultation process.

» General

It is recommended that as part of the public consultation process the history of the area as well as the oral history pertaining to the area must be recorded.

13. PLAN OF STUDY FOR EIA

In order to comply with the National Heritage Resources Act (Act 25 of 1999) a Phase 1 Archaeological Impact Assessment must be undertaken. During this study sites of archaeological, historical or places of cultural interest must be located, identified, recorded, photographed and described.

During this study the levels of significance of recorded heritage resources must be determined and mitigation proposed should any significant sites be impacted upon, ensuring that all the requirements of SAHRA are met.

14. LIST OF PREPARERS

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15. STATEMENT OF COMPETENCY

The author of the report is a member of the Association of Southern African Professional Archaeologists and is also accredited in the following fields of the Cultural Resource Management (CRM) Section, member number 159: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation.

Jaco serves as a council member for the CRM Section of the Association of Southern African Association Professional Archaeologists and is also an accredited CRM Archaeologist with SAHRA and AMAFA.

Jaco has been involved in research and contract work in South Africa, Botswana, Mozambique, Zimbabwe and Tanzania and conducted well over 300 AIAs since he started his career in CRM in 2000. This involved several mining operations, Eskom transmission and distribution projects and infrastructure developments. The results of several of these projects were presented at international and local conferences.

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