

# **Heritage Impact Assessment**

Heritage Impact Assessment for the Proposed Solar Park  
and Power Line Development on the Farm Liverpool near  
Koedoeskop, Limpopo Province.

## **Compiled for:**

Jonk Begin Omgewings Dienste

## **Survey conducted & Report compiled by:**

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Amended Version

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# Executive Summary

**Site name and location:** Proposed solar park and power line development on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ, approximately 2km west of Koedoeskop in the Limpopo Province.

**Local Authority:** Waterberg District Municipality.

**Developer:** Allied Farms S.A.

**Date of field work:** 13 March 2013.

**Date of report:** 02 June 2015.

**Findings:** The developer, Allied Farms S.A., has earmarked an area for the development of a solar park. This area was approximately 50ha in size and was largely undisturbed and was used for grazing of cattle and/or as a game park. The solar park will be connected to the existing Eskom grid via a 2.2km power line to the east of the proposed solar park.

An archival and historical desktop study was undertaken which was used to compile a historical layering of the study areas within its regional context. This component indicated that the landscape within which the project area is located has a rich and diverse history. However, the desktop study did not reveal any historic or heritage sites from within the specific locations of the study areas.

The Sahrís Palaeontological Sensitivity Map was also consulted and it was found that the palaeontological sensitivity for the study areas was high and that a palaeontological desktop study was required. Dr. J.F. Durand (2013) completed a Palaeontological Desktop Study for the proposed development. He concluded that due to the improbability of fossils occurring in the study areas it is recommended that the project should be exempted from further palaeontological studies.

The desktop studies were followed by a fieldwork component which comprised an inspection of the study areas. Most parts of the areas were previously used as a cattle grazing facility or was used as part of a game farm. The areas were largely undisturbed. No sites or finds of any heritage value or potential were identified during the fieldwork investigations.

Van Schalkwyk (2007b) carried out a Heritage Impact Assessment on the Farm Aapieskraal 376 KQ, approximately 10km to the north, and also within and near the floodplains of the Crocodile River and recommended that the proposed development could go ahead from a heritage point of view. The HIA found no features, sites or artefacts of cultural significance and stated that the flat terrain, without landscape features such as rocky hills, coupled with the fact that the study area is near the floodplain of the

Crocodile River, made the locality highly unsuitable for settlement (Van Schalkwyk, 2007b) compared to the more mountainous areas to the south and east.

The study areas in this report are also located near the floodplains of the Crocodile River and the same deductions will also apply. As for the proposed sites, no site-specific actions or any further heritage mitigation measures are recommended as no heritage resource sites or finds of any value or significance were identified in the indicated study areas.

The proposed solar park and power line developments on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ at the indicated areas can continue from a heritage point of view.

**Disclaimer:** *Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites and/or graves could be overlooked during the study. Hutten Heritage Consultants 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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### **ADDENDUM A    Photographs**

- Photo 1: General view of the site and its vegetation.
- Photo 2: Another view of the site and its vegetation.
- Photo 3: View of a track and power line across the study area.
- Photo 4: View of the fencing of the site with Geyskop in the background.
- Photo 5: View from Geyskop of agriculture to the north.
- Photo 6: View of the power line route through the natural bush.
- Photo 7: View of the power line route around an agricultural field.
- Photo 8: View of the P20 gravel road to the north of the site.

### **ADDENDUM B    Location Maps**

## **1. Introduction**

Hutten Heritage Consultants was contracted by Jonk Begin Omgewings Dienste to conduct a Heritage Impact Assessment (HIA) on the proposed solar park and power line developments on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ, approximately 2km west of Koedoeskop in the Limpopo Province.

The aim of the study was to identify all heritage sites, to document and to assess their significance within Local, Provincial and National context. The report outlines the approach and methodology implemented before and during the survey, which includes in Phase 1: Information collection from various sources and social consultations; Phase 2: Physical surveying of the area on foot and by vehicle; and Phase 3: Reporting the outcome of the study.

This HIA forms part of the Environmental Impact Assessment (EIA) as required by various Acts and Laws as described under the next heading and is intended for submission to the provincial South African Heritage Resources Agency (SAHRA) for peer review.

Minimum standards for reports, site documentation and descriptions are set by the Association of Southern African Professional Archaeologists (ASAPA) in collaboration with SAHRA. ASAPA is a legal body representing professional archaeology in the Southern African Development Community (SADC) region. As a member of ASAPA, these standards are tried to be adhered to.

The extent of the proposed development sites were determined as well as the extent of the areas to be affected by secondary activities (access routes, construction camps, etc.) during the development.

## **2. Legislative Requirements**

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

National Environmental Management Act (NEMA) Act 107 of 1998

National Heritage Resources Act (NHRA) Act 25 of 1999

Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002

Development Facilitation Act (DFA) Act 67 of 1995

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

National Environmental Management Act (NEMA) Act 107 of 1998

Basic Environmental Assessment (BEA) – Section (23)(2)(d)

Environmental Scoping Report (ESR) – Section (29)(1)(d)

Environmental Impacts Assessment (EIA) – Section (32)(2)(d)

Environmental Management Plan (EMP) – Section (34)(b)  
National Heritage Resources Act (NHRA) Act 25 of 1999  
Protection of Heritage resources – Sections 34 to 36; and  
Heritage Resources Management – Section 38  
Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002  
Section 39(3)  
Development Facilitation Act (DFA) Act 67 of 1995  
The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

### **3. Proposed Project**

The developer, Allied Farms S.A. through Mr. Roland van Tonder, proposed the development of a solar park and power line on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ, approximately 2km west of Koedoeskop in the Limpopo Province (see maps: proposed development).

Solar energy facilities using Photovoltaic (PV) panels use the energy from the sun to generate electricity through a process known as Photovoltaic Effect. This effect refers to photons of light colliding with electrons, and therefore placing the electrons into a higher state of energy to create electricity. The PV panels are designed to operate continuously for more than 20 years, unattended and with low maintenance and only needs to be cleaned twice a year using water only.

The Liverpool Farm Solar plant will produce 10MW of power and will consist of 40 000 solar panels (Each PV panel is 1m x 1.7m in size), 200 inverters (that converts the direct current solar power to useable alternating current), electrical cabling, 10 000 substructures (pylons) and 1000 steel mounting structures (made up of 40 PV panels covering an surface area of 66m<sup>2</sup>), a substation, a control room and a new 22kV overhead power line.

The steel pylon will be pile driven into the ground and as a result will have minimal effect on the surface area. It is also the most effective and least environmental intrusive way to mount this system. The individual ground-mounted PV panels (also referred to as free-field or stand-alone arrays) will be connected into a ‘string’ of panels of up to 3.4m in height. The ‘string’ will be attached to a steel support structure (attached to the pylon), one metre off the ground, set at an angle so to receive the maximum amount of solar radiation. The facility will consist of 10 blocks of PV panels making up 1 “unit” each with its own inverter and transformer area covering an area of 14 ha in extent.

Inverters will convert the solar power into useable AC power which will be fed into a transformer located within the Substation on the Northern part of the site which would step up the voltage to 22kV. A control room will also be established on the northern part of the site, next to the substation from where the electricity supply and distribution will be managed.

A new, 22kV overhead power line of approximately 2.2km in length will be erected from the solar plant linking to an existing 22kV power line on the farm where it will tie into the existing Eskom network. A meter area will be established at the Eskom tie in where electricity being supplied from the Solar plant will be recorded. The setup at this point will consist of a pole mounted electrical box that will include a beaker and metering equipment.

The purpose of the study was to determine if the proposed areas were suitable for the development of the solar park and power line from a heritage point of view.

The project was tabled during May 2013 and the developer intends to commence as soon as possible after receipt of the ROD from the Department of Environmental Affairs.

#### **4. Project Area Description**

The proposed solar park and power line development will be situated on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ, approximately 2km west of Koedoeskop in the Limpopo Province.

The proposed study area for the solar park development measured approximately 50ha in size. The anticipated footprint of the proposed development will cover most of the 50ha. Most parts of the proposed area were undisturbed and were used for cattle grazing and/or the keeping of game (photo 1 & 2). A few tracks and a power line (photo 3) crossed the proposed area and the area was fenced (photo 4). Some parts of the study area were densely overgrown and it made access difficult (photo 2). Neighbouring farms to the south, west and east were also largely undisturbed and were also used for cattle grazing and/or game keeping. Agricultural developments in the form of crop circles were situated on the northern and north-eastern side of the proposed study area (photo 5).

The proposed power line will extent for approximately 2.2km to the east through the natural bush (photo 6) and will pass on the southern side of an agricultural field (photo 7). It will be connected to an existing Eskom power line.

The proposed site was situated on the northern slopes of Geyskop (photo 5) and on the flat area between Geyskop and the P20 gravel road (photo 8) from Koedoeskop.

The proposed development will be situated on the Northam 2427 CD and the 2427 DC 1:50 000 topographical maps (See Appendix B: Location Maps).

#### **5. Desktop Study Findings**

The examination of heritage databases, historical data and cartographic resources represents a critical additional tool for locating and identifying heritage resources and in determining the historical and cultural context of the study area. Therefore an internet literature search was conducted and relevant archaeological and historical texts were also



consulted. Relevant topographic maps and satellite imagery were studied. Researching the SAHRA APM Report Mapping Project records and the SAHRIS online database (<http://www.sahra.org.za/sahris>), it was determined no previous archaeological studies had been carried out in the study area. However, a number of previous archaeological or historical studies had been performed within the wider vicinity of the study area.

### 5.1. Previous Heritage Studies

Previous studies listed for the area in the APM Report Mapping Project included a large number of surveys within Quarter Degree Squares 2427CD, 2427CC, 2427DA, 2427DC, 2527AB and 2427CB:

- Van Schalkwyk, J.A. 1994. **A Survey of Archaeological and Cultural Historical Resources in the Amandelbult Mining Lease Area.** An unpublished report by the National Cultural History Museum on file at SAHRA as: 1994-SAHRA-0024.
- Van Schalkwyk, J.A. 2003. **Arch Survey Mantserre-Kraalhoek-Mopyane Water Scheme, NW Province.** An unpublished report by the National Cultural History Museum on file at SAHRA as: 2003-SAHRA-0026.
- Van Schalkwyk, J.A., Teichert, F., & Pelser, A.J. 2003. **A Survey of Archaeological Sites for the Amandelbult Platinum Mine Seismic Exploration Program.** An unpublished report by the National Cultural History Museum on file at SAHRA as: 2003-SAHRA-0086.
- Küsel, U. 2003. **Cultural Heritage Resources Scoping Report Proposed Private Resort (Kwaggasvlakte 317 KQ Portion 32).** An unpublished report by African Heritage Consultants CC on file at SAHRA as: 2003-SAHRA-0149.
- Gaigher, S. 2006. **Heritage Impact Assessment for the Proposed Wildlife Estate on the Farm Grootfontein 352 KQ, Limpopo Province.** An unpublished report by Archaeo-Info on file at SAHRA as: 2006-SAHRA-0262.
- Roodt, F. 2006. **Heritage Resources Scoping Report: Nooitgedacht Open Cast Mine on the Farm Nooitgedacht 22 JQ Northam: Thabazimbi Municipality.** An unpublished report by R & R Cultural Resource Consultants on file at SAHRA as: 2006-SAHRA-0280.
- Van Schalkwyk, J.A., 2007a. **Survey of Heritage Resources in the Location of the Proposed Merensky Mining Project, Amandelbult Section, Rustenburg Platinum, Limpopo Province.** An unpublished report by the National Cultural History Museum on file at SAHRA as: 2007-SAHRA-0028.
- Van Schalkwyk, J.A. 2007b. **Heritage Impact Assessment: Portion 6 Aapieskraal.** An unpublished report by the National Cultural History Museum on file at SAHRA as: 2007-SAHRA-0386.

- Fourie, W. 2007. **Heritage Impact Assessment on Portion 3 of the Farm Rooiberg 604 KQ, the Remainder of the Farm Olievenbosch 506 KQ, and the Farm Blancheberg 626 KQ, Limpopo Province.** An unpublished report by Matakoma Heritage Consultants (Pty) Ltd on file at SAHRA as: 2007-SAHRA-0031
- Pistorius, J.C.C. 2007. **A Phase 1 Heritage Impact Assessment (HIA) Study for Eskom's Proposed New 400 kV Power Line Route Between the Matimba B Power Station and the Marang Substation near Rustenburg.** An unpublished report by Archaeologist and Cultural Heritage Management Consultants on file at SAHRA as: 2007-SAHRA-0048.
- Roodt, F. 2007. **Phase 1 Heritage Resources Impact Assessment (Scoping & Evaluation) Rhebokkloof Wild Life Estate Thabazimbi, Limpopo.** An unpublished report by R & R Cultural Resource Consultants on file at SAHRA as: 2007-SAHRA-0072.
- Fourie, W. & van der Walt, J. 2007. **Sunbird Heritage Impact Assessment Proposed Estate Development on Portions of the Farm Doornhoek 318 KQ, Thabazimbi, Limpopo Province.** An unpublished report by Matakoma Heritage Consultants (Pty) Ltd on file at SAHRA as: 2007-SAHRA-0302.
- Küsel, U. 2007a. **Cultural Heritage Resources Impact Assessment of the Farm Hardekoolbult 548 KQ in the Thabazimbi Municipal Area, Limpopo Province.** An unpublished report by African Heritage Consultants CC on file at SAHRA as: 2007-SAHRA-0337.
- Küsel, U. 2007b. **Cultural Heritage Resources Impact Assessment of Hanover 341 KQ in the Thabazimbi Area Limpopo Province.** An unpublished report by African Heritage Consultants CC on file at SAHRA as: 2007-SAHRA-0338.
- Maguire, J.M. & van Wyk, C. 2008. **Phase 1 Archaeological Impact Assessment for Portion 128 of the Farm Koedoesdoorns KQ 414, Northam, Limpopo Province.** An unpublished report by Adansonie Heritage Consultants on file at SAHRA as: 2008-SAHRA-0293.
- Küsel, U. 2008. **Cultural Heritage Resources Impact Assessment for Portions 1, 4, 5, 6, 7, 18, 19, 27 and 28 of the Farm Maroeloesfontein 366 KQ, Limpopo Province.** An unpublished report by African Heritage Consultants CC on file at SAHRA as: 2008-SAHRA-0369.

Researching the SAHRIS online database (<http://www.sahra.org.za/sahris>) further studies were identified in the wider vicinity of the study area:

- Allison, H. 2012. **Pilanesberg Platinum Mines Proposed Tuschenkomst Pit Extension. Scoping Report.** An unpublished report by SLR consulting. SAHRIS case number 845.
- Fourie, W. 2012. **Kumba Iron Ore Thabazimbi Mine Mostert Tunnel Level Cave (MTC) Wachteenbietjesdraai 350 KQ and Kwaggashoek 345 KQ. Heritage Impact Report on proposed mining activities of project Phoenix.** An unpublished report by Professional Grave Solutions .SAHRIS case number 548.
- Kruger N. 2012. **Phase 1 Archaeological Impact Assessment Report. Atla Mining Resources (pty) Ltd.: Mine on Rooderand portion 2, Bojanala Municipality, Northwest Province.** An unpublished report by Africa Geo-Environmental Services. SAHRIS case number 357.
- Shippon, J. et al. 2012. **Dishaba Mine Backfill Project Draft Scoping Report.** An unpublished report by Prime Resources Environmental Consultants. SAHRIS case number 579.
- Thathong Development Consulting, no date. **Environmental Management Plan.** An unpublished report by Thathong Development Consulting. SAHRIS case number 725.
- Van Schalkwyk, J. 2012. **Heritage Impact Assessment for the Proposed New Developments at the SAPS Verdrag Training Centre, Thabazimbi Region, Limpopo Province.** An unpublished report for Interdesign Landscape Architects. SAHRIS case number 465.

The author carried out one study in the immediate vicinity of the study area (Hutten 2012) and four other studies a bit further to the north (Hutten 2013a; Hutten 2012b; Hutten 2013c; Hutten 2013e):

- Hutten, M. 2012. **Heritage Impact Assessment for the Proposed Agricultural Development on the Farm Kwikstaart near Koedoeskop, Limpopo Province.** An unpublished report by Hutten Heritage Consultants compiled for **Allied Farms.**
- Hutten, M. 2013a. **Heritage Impact Assessment for the Proposed Agricultural Development on the Farm Aapieskraal near Koedoeskop, Limpopo Province.** An unpublished report by Hutten Heritage Consultants compiled for **Jonk Begin Omgewings Dienste.**
- Hutten, M. 2013b. **Heritage Impact Assessment for the Proposed Agricultural Development on the Farm Grootkuil near Koedoeskop, Limpopo Province.** An unpublished report by Hutten Heritage Consultants compiled for **Jonk Begin Omgewings Dienste.**

- Hutten, M. 2013c. **Heritage Impact Assessment for the Proposed Agricultural Development on the Farm Haakdoorndrift near Koedoeskop, Limpopo Province.** An unpublished report by Hutten Heritage Consultants compiled for **Allied Farms.**
- Hutten, M. 2013e. **Heritage Impact Assessment for the Proposed Agricultural Development on the Farm Witvley near Koedoeskop, Limpopo Province.** An unpublished report by Hutten Heritage Consultants compiled for **Jonk Begin Omgewings Dienste.**

No heritage sites were identified in these surveys other than a historical homestead which lay outside of the proposed development area (Hutten 2013b).

Van Schalkwyk et al. (2003) also carried out a far more extensive survey of heritage resources in the Amandelbult platinum mining area a few kilometres to the north and west of the current study area and a large number of sites dating to the Late Iron Age were identified. All of these were stone walled sites with large deposits containing ash, faunal remains, potsherds and other cultural remains and located in areas close to the hills or on outcrops. The latter provided a source of stone for building the walls and were obviously preferable than the often flooded ‘turf’ closer to the Crocodile River. These sites were related to Tswana habitation from the late 17<sup>th</sup> Century to the late 19<sup>th</sup> Century (Van Schalkwyk et al. 2003). Van Schalkwyk (2007a) carried out a subsequent survey of this mining area. This survey identified a considerable number of heritage resources including a considerable number of MSA and LSA sites and artefacts and noted that MSA lithics were often encountered singly and in open areas near watercourses while LSA lithics were rather found in accumulations on rocky outcrops. The survey also located a number of Iron Age sites, most belonging to the Late Iron Age but two possibly belonging to the early Iron Age and recommended that sites be protected from development as that from an archaeological perspective the area is highly sensitive (Van Schalkwyk 2007a). Van Schalkwyk (2007b) carried out a Heritage Impact on Apieskraal 377 KQ just to the north of the study area which recommended that the proposed development could go ahead from a heritage point of view as the HIA found no features, sites or artefacts of cultural significance and stated that the flat terrain, without landscape features such as rocky hills, coupled with the fact that the study area is within the floodplain of the Crocodile River, made the locality highly unsuitable for settlement (Van Schalkwyk, 2007b) compared to the areas to the north and west.

The other studies listed for the area also located a number of heritage sites. Some 30 km to the north-west of the study area, Middle Stone Age and Late Stone Age artefacts were described as being well represented as well as a large number of Late Iron Age sites of the Kwenabaphalane, some settled as late as the 1820s, and a number of possible Early Iron Age sites (Van Schalkwyk 1994; Shippon, J. et al. 2012). To the south-east of the study area further indications of Early and Middle Stone Age occupation in the form of flakes were found although no important sites were identified (Küsel 2007a). North of Pilanesberg and to the west of the study area surface occurrences of stone tools and lithics, dating mostly to the Middle Stone Age, were identified as well as an early (1500

AD) Sotho-Tswana Iron Age settlement, possible 17<sup>th</sup> Century Iron Age stone walling and an Iron Age smelting site lacking any clear temporal markers (Kruger 2012). In the vicinity of Thabazimbi the Mostert Tunnel Cave contains speleothems that would qualify as rare geological specimens under the National Heritage Resources Act (Fourie 2012). Many studies reported no indications of Stone or Iron Age heritage sites or artefacts (Van Schalkwyk 2003; Gaigher 2006; Roodt 2007; Küsel 2007b; Van Schalkwyk 2007a; Küsel 2008; Thathong Development Consulting no date) although a number mention large numbers of graves and historical heritage resources including farmsteads. Some reports were incomplete copies or not located on the SAHRA & SAHRIS databases (e.g. Roodt 2006; Maguire & van Wyk 2008).

## **5.2. Archaeological & Historical Sequence**

The historical background and timeframe of the study area and other areas in Southern Africa can be divided into the Stone Age, Iron Age and Historical period. These can be divided as follows:

### **Stone Age**

The Stone Age is divided into the Early; Middle and Late Stone Age. The *Early Stone Age* (ESA) includes the period from 2.5 million years B.P. to 250 000 years B.P. and is associated with Australopithecines and early *Homo* species who practiced stone tool industries such as the Oldowan and Acheullian. The *Middle Stone Age* (MSA) covers various tool industries, for example the Howiesons Poort industry, in the period from 250 000 years B.P. to 25 000 years B.P. and is associated with archaic and modern *Homo sapiens*. The *Late Stone Age* (LSA) incorporates the period from 25 000 years B.P. up to the Iron Age and Historical Periods and contact between hunter-gatherers and Iron Age farmers or European colonists. This period is associated with modern humans and characterised by lithic tool industries such as Smithfield and Robberg.

Although no ESA sites were recorded within Marakele National Park (Birkholtz & Steyn 2002), excavations at several well known sites in the region attest to ESA occupation. Makapansgat provided evidence of long occupation, initially by *Australopithecus africanus* from approximately 3.3 million years B.P. (Bergh 1999) while the Olieboompoort shelter indicated the presence of ESA people from between 1 million to 400 000 years B.P. (Birkholtz & Steyn 2002). A number of MSA sites are known from Marakele as well as the wider region including an MSA layer in the Olieboompoort Shelter dated to 33 000 year B.P. (Mason 1962) and MSA sites at New Belgium 608 LR, Schurfpoort 112 KR and Goergap 113 KR (Birkholtz & Steyn 2002).

Interestingly, research on the LSA in the Waterberg Plateau suggests a discontinuity between MSA and LSA settlement of several thousand years, with settlement of the area by LSA hunter gatherers occurring in the 11<sup>th</sup> and 12<sup>th</sup> Centuries and coinciding with settlement by Iron Age peoples (van der Ryst 1998). While the relationship between stone-age people and Iron Age settlers was initially characterised by peaceful interaction and trade, the relationship seems to have degraded into one of subjugation of the former,

exacerbated by increasing numbers of white settlers. The farm Vaalpensspan 90 KQ located some distance to the north of the study area is a reminder of the marginalised remnants of the hunter gatherers, 'Vaalpense' being the name given to people of mixed Bantu and hunter gatherer descent (van der Ryst 1998; Birkholtz & Steyn 2002). In Southern Africa the Late Stone Age is characterised by the appearance of rock art in the form of paintings and engravings and the Waterberg is known for its many rock art sites including those containing shaded paintings such as at Haakdoorndraai (Pager, 1973) and the depiction of a fat tailed sheep at Dwaalhoek 185 KQ (van der Ryst 1998).

## **Iron Age**

The Iron Age incorporates the arrival and settlement of Bantu speaking people and overlaps the Pre-Historic and Historical Periods. It can be divided into three phases. The *Early Iron Age* includes the majority of the first millennium A.D. and is characterised by traditions such as Happy Rest and Silver Leaves. The *Middle Iron Age* spans the 10<sup>th</sup> to the 13<sup>th</sup> Centuries A.D. and includes such well known cultures as those at K2 and Mapungubwe. The *Late Iron Age* is taken to stretch from the 14<sup>th</sup> Century up to the colonial period and includes traditions such as Icon and Letaba.

The earliest Iron Age site in the region lies some 150 km to the north-east of the study area at Ongelukskraal 48 KR, dated to 140 A.D. and is associated with the Bambata ceramic typology (van der Ryst 1998). Research on the Waterberg Plateau and within the Motlhabatsi (Matlabas) River valley to the north of the study area and in the Rooiberg area to the west has indicated three phases of Early Iron Age settlement. The first phase is characterised by ceramics of the Western Stream similar to those from Happy Rest and Klein Africa and dated to Circa 570 A.D. (Huffman 1990; van der Ryst 1998). The second phase, circa 700 A.D., is similar to the Rooiberg Unit 1 (Hall 1981; Huffman 1990) ceramics described from a site to the north-east of the study area and the third phase, circa 1000 A.D. is associated with the Eiland tradition, marking the end of the Early Iron Age in the area (Huffman 1990). The site at Diamant on the western edge of the Waterberg has yielded Middle Iron Age imported glass beads like those excavated at Schroda on the Limpopo, the latter being the likely centre of distribution for this early trade (Huffman 2007).

Several Sotho-Tswana communities settled in the North-west Province, Gauteng, Limpopo Province and in Botswana during the 14<sup>th</sup> and 15<sup>th</sup> centuries. These communities spread over the region as several lineages developed under their separate leaders. One of these lineages was the Bahurutshe-Bakwena which divided into the Bakwena, Bahurutshe and Bakgatla chiefdoms. The Bakgatla settled at first in the Hammanskraal area during the 17<sup>th</sup> century. Over the years and after several succession disputes, the divided and separated Bakgatla tribes settled in a much wider region. This region extended to the north of Pretoria up to Nylstroom and further to the north-west to the Marico River (Pistorius, 1992; Bergh, 1999; Huffman, 2007). Later Iron Age presence in the region was associated with the arrival in the area of the Northern Ndebele in the 16<sup>th</sup> and 17<sup>th</sup> Centuries with characteristic hilltop settlements (van der Ryst 1998). It must be noted that the influx of Ndebele people was not to uninhabited country given

the established Kwena and Kgatla groups of Sotho-Tswana lineage, Kgatla people still predominating in the study area today (Hall 1981; Birkholtz & Steyn 2002).

Pistorius mentioned the occurrence of damaged stone walled sites and a graveyard along the base of Sefikile hill at Sefikile village approximately 40 km to the south-west of the study area where Phetso of the Kgatla Kgafela had his settlement (Pistorius 2012). There is quite some evidence, in the form of defensive hilltop settlement and aggregation that the Late Iron Age in the region was a time of upheaval and conflict, initially as a result of the influx of the Ndebele and later by European settlers (Hall 1985). The Difaqane period saw Mzilikazi settling in the Marico River valley in the 1830's, unsettling many people who fled east to seek refuge (Huffman 1990) where the Kransberg were known as 'Marakeli' or 'place of refuge' (Coetzee undated) or fled south as did the Bakgatla Chief Kgamanyane who settled at Saulspoort south-west of the study area. According to Breutz (1953) the Kwena baPhalane lived on the western bank of the Crocodile river possibly on the farms Haakdoorndrift 374 KQ and Buffelshoek 351 KQ (a few kilometres north west of the current study area) while the Kgatla бага Kgafela were settled on the farm Schilpadnest 385 KO where they were attacked by Mzilikazi in about 1828 and fled, returning years later (Breutz 1953; Van Schalkwyk 2007). Since 1995, an ongoing archaeological survey has been conducted in the Pilanesberg National Park 80 km to the south-west of the study area which has documented Late Iron Age archaeological sites within a temporal and spatial framework, for example indicating Moloko settlement between AD 1300 and AD 1600 (L'abbé et al. 2008).

## **Historical Period**

The beginning of the Historical Period overlaps the demise of the late Stone and Iron Ages and is characterised by the first written accounts of the region from 1600 A.D. A number of early European travellers visited the area from the early 19<sup>th</sup> Century onwards including Cowan & Donovan in 1808, David Hume in 1825, Cornwallis Harris in 1836, Livingstone in 1847 and Carl Mauch in 1869 (Birkholtz & Steyn 2002). Carl Mauch described how he found himself at the base of the "Marikele Point...a mighty mountain mass with its three peaks" (Burke 1969).

The first settlers in the area and up to the Waterberg established themselves in the late 1830's and initially sustained themselves through hunting, particularly of elephant, before the emergence of cattle farming and later, agriculture (Pont 1965; Naudé 1998). Early settler towns included Nylstroom, now renamed Modimolle, to the north-east which was established in 1865 and the Waterberg District was declared in 1866. The outbreak of the Boer War in 1899 had a considerable impact on the region with many Boer homesteads abandoned or destroyed as part of the British scorched earth policy and many women and children interned in concentration camps, one located in then-Nylstroom. Black involvement in the war in the region was significant with the Kgatla under Linchwe 1 taking the side of the British and becoming actively involved in the fighting (Birkholtz & Steyn 2002).

The discovery of iron ore deposits at Thabazimbi to the north and the Merensky Reef with platinum and chrome deposits at Rustenburg in the south during the 1920's introduced the region to mining activities. These mining activities, some near to the study area, continued to grow and expand up to what we see today (Bergh, 1999).

### 5.3. Palaeontology

The SAHRIS online database (<http://www.sahra.org.za/sahris>) was accessed and the Palaeontological Sensitivity Map was consulted. This map is colour coded to indicate the varied palaeontological sensitivities across the country. The following guidelines/recommendations are provided in the table below regarding the palaeontological sensitivity for each identified colour.

PalaeoSensitivity Map Action Guideline.

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.





Palaeontological Sensitivity Map of the study area (Sahris Palaeosensitivity Map).

It was found that the palaeontological sensitivity for the study area was high and that a palaeontological desktop study is required.

Dr. J.F. Durand (2013) completed a Palaeontological Desktop Study for the proposed development. The following are excerpts from that study:

“The study site is largely situated on Pretoria Group sediments while the southern margin overlaps the Penge Formation of the Chuniespoort Group. These late Archaean to early Proterozoic Transvaal Supergroup metamorphosed sediments consist mostly of iron-rich mudrock (Eriksson *et al.*, 2006).”

and, “Due to the improbability of fossils occurring in the study area it is recommended that the project should be exempted from further palaeontological studies.”

## 6. Methodology

### Physical Survey

The extent of the proposed development site was determined as well as the extent of the areas to be affected by secondary activities (access route, construction camp, etc.) during the development.

The physical survey was conducted on foot over the entire area proposed for development. Priority was placed on the undisturbed areas. A systematic inspection of the area on foot along linear transects resulted in the maximum coverage of the proposed area. The author and two experienced field workers, who did not have GPS devices with them, transected the study area in parallel transects of approximately 25m - 40m between them. The field work was conducted on March 13, 2013 and most of the day was spent on the survey, which was performed by M. Hutten and field workers T. Mulaudzi and E. Khorommbi. The survey focused on the indicated study area as provided by the developer where the proposed development will be situated. Areas outside of the indicated study area were not surveyed.

No sampling was done as no sites or finds of heritage significance were found.

### **Interviews**

The manager of the farm, Mr. Botha du Plessis, was questioned during the survey and he indicated that he was not aware of any sites of heritage value or significance (such as graves) in the proposed area.

### **Restrictions**

Vegetation proved the major restriction in accessibility to some of the areas and also contributed to poor surface visibility after the spate of recent good rains.

### **Documentation**

All sites/findspots if any located during the foot surveys were briefly documented. The documentation included digital photographs and descriptions as to the nature and condition of the site and recovered materials. The sites/findspots were plotted using a Global Positioning System (GPS) (Garmin GPSmap 60CSx) and numbered accordingly.

## **7. Assessment Criteria**

This chapter describes the evaluation criteria used for determining the significance of archaeological and heritage sites. The significance of archaeological and heritage sites were based on the following criteria:

- The unique nature of a site
- The amount/depth of the archaeological deposit and the range of features (stone walls, activity areas etc.)
- The wider historic, archaeological and geographic context of the site
- The preservation condition and integrity of the site
- The potential to answer present research questions.

### **Site Significance**

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

<b><i>FIELD RATING</i></b>	<b><i>GRADE</i></b>	<b><i>SIGNIFICANCE</i></b>	<b><i>RECOMMENDED MITIGATION</i></b>
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)	Grade 4A	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	Grade 4B	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	Grade 4C	Low Significance	Destruction

**Impact Rating:**

**Low or No Significance:**

The constraint is absent, but in instances where present, poses a negligible significance on the proposed development in terms of heritage concerns.

**Moderate Significance:**

The constraint is present and poses a notable but not major significance on the proposed development in terms of heritage concerns. If the constraint can not be avoided, appropriate mitigation measures must be implemented to minimize the significance.

**High Significance:**

The constraint is present and poses a high significance on the proposed development in terms of heritage concerns. It is recommended that the constraint be avoided or appropriate mitigation measures must be implemented to minimize the significance.

**Certainty**

*DEFINITE:* More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

*PROBABLE:* Over 70% sure of a particular fact, or of the likelihood of an impact occurring.

*POSSIBLE:* Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.

*UNSURE:* Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.

**Duration**

*SHORT TERM:* 0 – 5 years

*MEDIUM:* 6 – 20 years

*LONG TERM:* more than 20 years

*DEMOLISHED:* site will be demolished or is already demolished

**Mitigation**

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be classified as follows:

- **A** – No further action necessary
- **B** – Mapping of the site and controlled sampling required
- **C** – Preserve site, or extensive data collection and mapping required; and
- **D** – Preserve site

## 8. Assessment of Sites and Finds

This section will contain the results of the heritage site/find assessment.

### Allied Farms Solar Park Development

The proposed solar park and power line development will be situated on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ, approximately 2km west of Koedoeskop in the Limpopo Province.

The proposed study area for the solar park development measured approximately 50ha in size. The anticipated footprint of the proposed development will cover most of the 50ha. Most parts of the proposed area were undisturbed and were used for cattle grazing and/or keeping of game. A few tracks crossed the proposed area and the area was fenced.

The proposed power line will extent for approximately 2.2km to the east through the natural bush and will pass on the southern side of an agricultural field. It will be connected to an existing Eskom power line.

After intensive investigations across the study areas, no sites or finds of any heritage value or potential were identified.

Field Rating:	None
Heritage Significance:	None
Impact:	None
Certainty:	None
Duration:	None
Mitigation:	A – No further action necessary

## 9. Conclusion and Recommendations

The following steps and measures are recommended regarding the investigated areas:

### Allied Farms Solar Park Development

Van Schalkwyk (2007b) carried out a Heritage Impact Assessment on the Farm Aapieskraal 376 KQ, approximately 10km to the north, which recommended that the proposed development could go ahead from a heritage point of view. The HIA found no features, sites or artefacts of cultural significance and stated that the flat terrain, without landscape features such as rocky hills, coupled with the fact that the study area is within the floodplain of the Crocodile River, made the locality highly unsuitable for settlement (Van Schalkwyk, 2007b) compared to the more mountainous areas to the north and west.

Although some parts of the study areas were situated on the northern slopes of Geyskop, this deduction will also apply to the study area included in this report, due to its close proximity to the floodplains.

Dr. J.F. Durand (2013) completed a Palaeontological Desktop Study for the proposed development. He concluded that due to the improbability of fossils occurring in the study area it is recommended that the project should be exempted from further palaeontological studies.

As for the proposed site, the following is recommended:

- No site-specific actions or any further heritage mitigation measures are recommended for the study areas as no other heritage resource sites or finds of any value or significance were identified in the indicated study areas.
- The proposed solar park and power line developments on parts of Portions 2 & 3 of the Farm Liverpool 543 KQ at the indicated areas can continue from a heritage point of view.

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# **APPENDIX A**

## **Photographs**



Photo 1: General view of the site and its vegetation.



Photo 2: Another view of the site and its vegetation.





Photo 3: View of a track and a power line across the study area.



Photo 4: View of the fencing of the site with Geyskop in the background.





Photo 5: View from Geyskop of the agriculture to the north.



Photo 6: View of the power line route through the natural bush.





Photo 7: View of the power line route around an agricultural field.

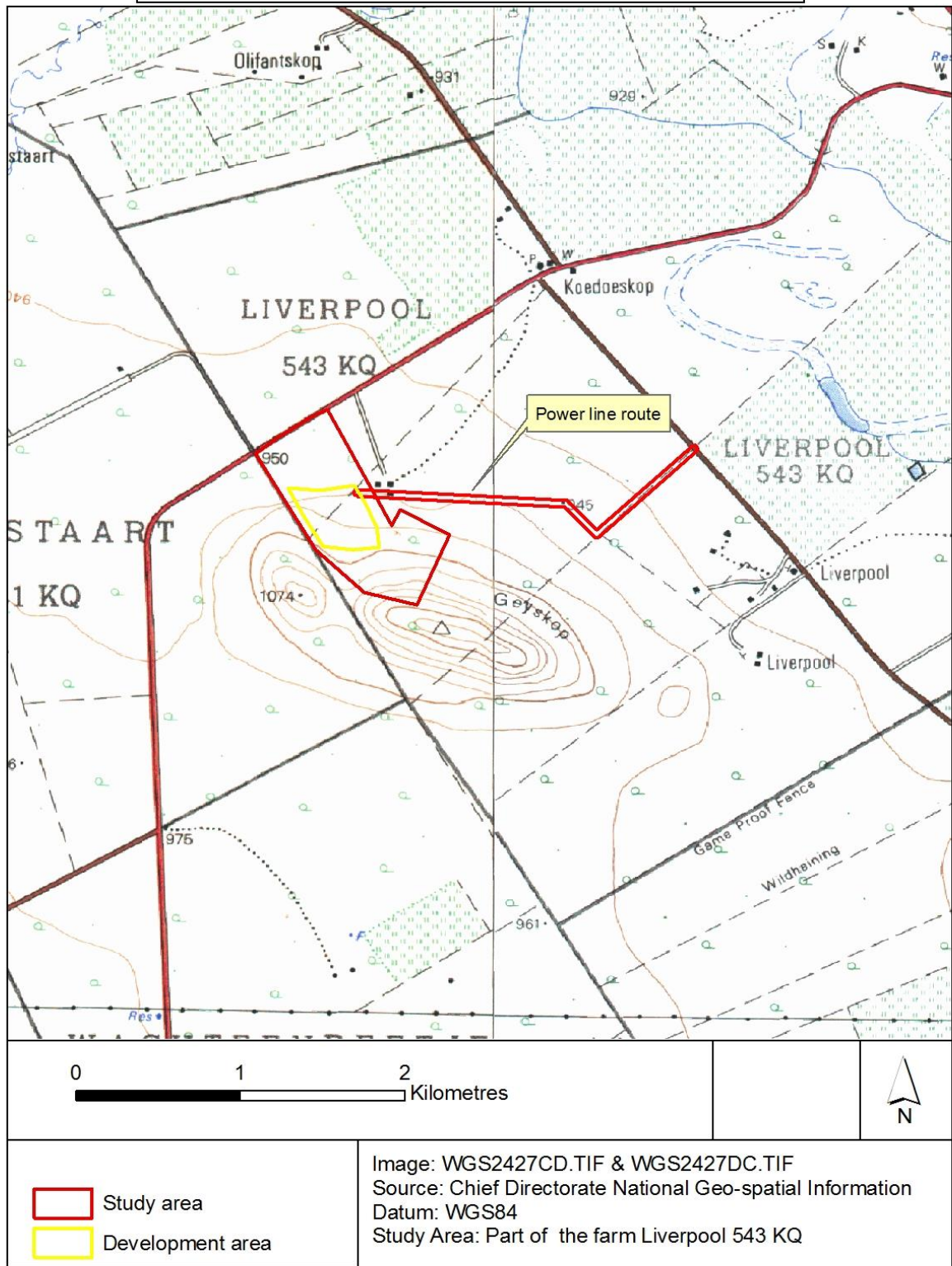


Photo 8: View of the P20 gravel road to the north of the site.

# **APPENDIX B**

## **Location Maps**

# Allied Farms Solar Park Project





# Allied Farms Solar Park Project



0 1 2 Kilometres



- Study area
- Development area

Image: 2427C.jp2 & 2427D.jp2  
 Source: Chief Directorate National Geo-spatial Information  
 Datum: WGS84  
 Study Area: Part of the farm Liverpool 543 KQ



## Allied Farms Solar Park Project



0 0.25 0.5  
Kilometres



- Study area
- Development area

Image: 2427C.jp2 & 2427D.jp2  
Source: Chief Directorate National Geo-spatial Information  
Datum: WGS84  
Study Area: Part of the farm Liverpool 543 KQ

# Allied Farms Solar Park Project



0 0.25 0.5  
Kilometres



- Study area
- Development area
- ..... Track log

Image: 2427C.jp2 & 2427D.jp2  
Source: Chief Directorate National Geo-spatial Information  
Datum: WGS84  
Study Area: Part of the farm Liverpool 543 KQ