

# **Eskom Holdings Limited**

**Hydra-Perseus 765kV Transmission Line (260km),  
Beta-Perseus Transmission Lines (12km),  
Cross-over Alignment Alternatives, and  
Perseus Substation (50 hectares).**

## **IMPACT ON CULTURAL HERITAGE RESOURCES**

Project Number: J25235

AUGUST 2006

**HYDRA-PERSEUS 765KV TRANSMISSION LINES (260 KM),  
BETA-PERSEUS TRANSMISSION LINES (12 KM),  
CROSS-OVER ALIGNMENT ALTERNATIVES, AND  
PERSEUS SUBSTATION (50 HECTARES).**

**CULTURAL HERITAGE IMPACT REPORT**

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## **ABBREVIATIONS**

<b>EIA:</b>	Environmental Impact Assessment/Early Iron Age
<b>EMP:</b>	Environmental Management Plan
<b>ESA:</b>	Early Stone Age
<b>LIA:</b>	Later Iron Age
<b>LSA:</b>	Later Stone Age
<b>MSA:</b>	Middle Stone Age
<b>SAHRA:</b>	South African Heritage Resources Agency

## EXECUTIVE SUMMARY

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Arcus Gibb (Pty) Ltd was contracted by Eskom Holdings to undertake an EIA for the evaluation of four alternative alignments for a proposed 765Kv power transmission line between Perseus (Dealesville) and Hydra (De Aar), including possible crossover alignments, well as two double servitude alignments between Perseus and Beta ( $\pm 12$  km). Perseus substation is to be expanded by 50 hectares, while the south-western corner of the Hydra-Perseus study area was also included in the assessment as the line will pass through this area to link with the proposed Hydra-Gamma line from Victoria West. Part of the EIA process is a cultural heritage impact study, which involves man-made and natural features associated with human activity.

Desktop research and a brief field visit by helicopter and car on 25.08.2005, which culminated in a Scoping Report, were followed by a field survey during May and July 2006. Although the survey was complicated due to circumstances explained elsewhere, enough information was gathered to make defensible findings regarding the positioning of the proposed transmission power lines. No-go areas of high significance have been identified (mainly rock-engraving sites), while it has been pointed out that the construction of the power lines will in general have a LOW impact on cultural heritage resources, provided that Eskom Holdings adheres to recommendations contained in this report as well as those in the reviewing report by SAHRA dated 16.05.2006.

No Iron Age site or sites dating back to the historical period (e.g. towns, Anglo Boer War battlefield sites and declared National Monuments) will be impacted upon. The construction phase of the power lines could be beneficial to the economies of local communities.

# 1 INTRODUCTION

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Arcus Gibb (Pty) Ltd was contracted by Eskom Holdings to undertake an Environmental Impact Assessment of resources that might occur and be impacted upon as a result of the construction of the following power transmission lines and expansion of substations in the Free State and Northern Cape based on the outcome of the Scoping phase (see map).

- Central Alignment Corridor (Dark Blue), approximately 260 kms in length, between Hydra (De Aar) and Perseus (Dealesville) Substations (500m-wide corridor; i.e. 250m either side from middle line of corridor)
- Western Alignment Corridor (Red) approximately 260 kms in length, between Hydra (De Aar) and Perseus (Dealesville) Substations (500m wide corridor, i.e. 250m either side from middle of corridor)
- Existing 765kv line Alignment Corridor (Green), approximately 360 kms in length between Hydra (De Aar) and Perseus (Dealesville) substations (500m wide corridor, i.e. 250m either side from middle line of corridor)
- Eastern Alignment Corridor (Yellow) approximately 260 kms in length and approximately 2 kms west of existing 765kv transmission line, between Hydra (De Aar) and Perseus (Dealesville) substations (500m wide corridor, i.e. 250m either side from middle line corridor)
- Cross-over Alignment Corridor Alternatives (Light Blue Broken Lines) at three points between the Central and Western corridors between Hydra and Perseus substations (500m wide corridors, i.e. 250m either side from middle line of each corridor)
- Beta-Perseus Lines (double servitude) Alignment (Dark Green), approximately 12 km in length between Beta (SSW of Dealesville) and Perseus (Dealesville) substations (500m wide corridor, i.e. 250m either side from middle line of corridor) adjacent of the two existing 400kv lines
- Expansion of the existing Perseus substation by 50 hectares: 35 hectares to the south and 15 hectares to the west
- The south western corner of the Hydra-Perseus study area for proposed lines to link with the proposed Gamma-Hydra line from Victoria West

Following the completion of a Scoping Report dated 31.05.2005, which was submitted and reviewed by SAHRA (Northern Cape and Free State), Albert van Jaarsveld was sub-contracted by Arcus Gibb (Pty) Ltd to undertake a Phase I Cultural Heritage and Archaeology Specialist Report on the study area. This report forms part of a detailed EIA report in terms of the requirement of EIA regulations.

## 2 STUDY APPROACH / METHOD

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This report gives an overview of cultural heritage resources in the study area (see map) and will attempt to assess the impact that the construction of the proposed power transmission lines will have on these. Mitigation measures to minimize the negative impacts will be considered as well as a management plan to preserve existing cultural heritage resources in the area.

Cultural heritage resources can broadly be defined as “physical features, both natural and manmade, associated with human activity”. South African heritage legislation stretches further than the restricted definition above by also including invisible and intangible beliefs, ideas and oral traditions, which are regarded as important as physical cultural objects. Also included are fossils and meteorite sites. Heritage resources reflected in South African heritage legislation (Act No 25 of 1999) include the following:

- Places, building structures and equipment
- Places to which oral traditions are attached or which associated with living heritage
- Historical settlements and townscapes
- Landscapes and natural features
- Geological sites of scientific or cultural importance
- Archaeological and palaeontological sites
- Graves and burial grounds, including
  - Ancestral graves
  - Royal graves and graves of traditional leaders
  - Graves of victims of conflict
  - Graves of important individuals
  - Historical graves and cemeteries older than 60 years, and
  - Other human remains, which are not covered under the Human Tissues Act, 1893 (Act No 65 of 1981 as amended).
- Sites of significance relating to the history of slavery in South Africa
- Movable objects, including:
  - Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens
  - Objects to which oral traditions are attached or which are associated with living heritage
  - Ethnographic art and objects
  - Military objects
  - Objects of decorative art
  - Objects of fine art
  - Objects of scientific or technological interest

- Books, records, documents, photographic positives and negatives, graphic film or video material or sound recordings, and
- Any other prescribed categories, but excluding any object made by a living person
- Battlefields
- Traditional building techniques
- Any building older than 60 years
- Shipwrecks

Section 38 of the National Heritage Resources Act (Act No 25 of 1999) makes provision for Impact Assessments to be done when heritage resources may be affected by development/construction. Sub-section (2) stipulates that the following information should form part of an EIA report:

- Wide-angled photographs of sites
- Close-up photographs of any heritage resources that may occur
- 1:50 000 maps reflecting site positions
- Significance assessments of heritage resources (Sections 6(2) and 7 of the above act)
- Assessment and evaluation of the impact of the proposed development on heritage resources
- Results of consultation with affected parties (e.g. communities or farmers)
- Recommendations re mitigation measures.

This study commenced with a survey of published material pertaining to the area, as well as maps provided by Arcus Gibb. This was followed by a short field visit on 25 and 26 August 2005 by helicopter. The field visit provided the author of this report with an opportunity to become acquainted with the study area by flying from Dealesville to De Aar at relatively low altitude. A Scoping Report was subsequently produced (dated 31.03.2006).

Two physical surveys of the affected area described were carried out during the weeks of 14-20 May 2006 and 9-13 July as part of the EIA phase. An attempt was made to cover the entire affected area on a drive-by and (as far as possible) foot-survey. Arcus Gibb kindly supplied maps and information regarding affected farms and farm owners. Affected farmers were contacted by telephone and a special effort was made to physically inspect all farms on which owners had reported that archaeological and/or historical resources were present. In addition, SAHRA was contacted and the National Museum in Bloemfontein supplied a list of some 106 archaeological sites with grid references (see attached appendix), which occur in the original study area (Scoping Report). These were plotted on a map in order to establish whether any would be affected by the planned positioning of the proposed power transmission lines. Only 13 of these appeared to be directly affected. Owners were contacted and farms visited where possible.

All identified archaeological and historical sites were briefly described, photographed and plotted by GPS. The heritage value of sites was rated as of low, medium or high significance in terms of Section 7(1) of the Heritage Resources Act, while field ratings of sites were done in compliance with SAHRA's report on minimum standards for the Archaeological and Palaeontological Components for Impact Assessment Reports (dated 09.01.06). Field rating of sites is to determine whether a site is of National, Provincial or Local significance:

- National: Grade I significance e.g. Resources such as the Castle in Cape Town or Mapungubwe Iron Age settlement at Limpopo (non-movable, of national interest and clear no-go areas for any developer)
- Provincial: Grade II significance e.g. resources such as LSA rock engravings and paintings (non-movable and to be avoided as no-go areas)
- Local: Grade III A significance; where mitigation is not advised and the site should be retained as a heritage site of high significance
- Local: Grade III B significance; where a section of a site should be mitigated and part should be retained as heritage site (high significance)
- Generally Protected A: where sites should be mitigated before destruction (generally high/medium significance)
- Generally Protected B: sites of medium significance that should be mitigated before development
- Generally Protected C: sites sufficiently recorded and require no further recording before development/destruction (low significance).

Although the field survey was relatively successful, several factors complicated it:

- Low ground visibility: The Karoo experienced an extremely wet rainy season with places like De Aar having measured more than 500mm rainfall since 1 January 2006 – a figure higher than the yearly average rainfall for the area. The result was that the veld was thickly overgrown with tall grass, which marred visibility. The difference in veld conditions since August 2005 when the helicopter fly-over took place was remarkable. It also complicated mobility. This scenario was evident throughout the entire study area – from Dealesville to De Aar.
- Time constraints and huge distances: The four alternative Perseus-Hydra transmission line alignments are each about 260 km in length. It made 100% ground cover impossible within two weeks. Some areas were therefore spot-checked – e.g. hilltops and places where vegetation appeared to look different from normal as a result of possible former human interference.
- Accessibility of farms: Some landowners whose land was directly affected by the proposed power lines were not reachable by telephone as there is no cell phone reception in large sections of the affected areas. Telephone calls during the evenings to farm lines were also problematic as these lines are shared and not always open. In many cases farmers were approached at home when not contactable by telephone. On the land of those farmers who could not be reached by telephone and who were not at home, spot checks were done from the roadside.



- Absence of farmers: In many cases owners of farmland live as far away as Gauteng and Bloemfontein and as such meetings on affected farms could not be arranged. Telephonic discussions took place where possible.
- Public Involvement Process (PIP): Not all farmers made use of the opportunity to report on known existing cultural resources on their land and knowledge of these resulted mostly by word-of-mouth from neighbours.
- Weather conditions: Two cold fronts with accompanying rain and freezing conditions hit the Karoo as from Thursday 18 May. This prevented access to at least three LSA engraving sites and hindered the recording of two others. However, enough information was obtained to rate these. The follow-up visit during July 2006 remedied the above situation to some extent.
- The above problems experienced during the survey will not have serious implications on the findings, conclusions and recommendations contained in this report, as enough information was retrieved to make defensible findings. A re-visit to the affected area will not be necessary at this stage.

### **3 DESCRIPTION OF THE AFFECTED ENVIRONMENT**

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#### **3.1 Background**

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Environmental conditions played an important role in influencing past human settlement, hence a discussion on environmental factors that influenced past human beings, is essential. The following account of the climate, geology, soils, vegetation and fauna provides the basis for analysing the area as a hunter-gatherer habitat.

The study area is situated in a semi-arid, summer-rainfall zone with extreme summer and winter conditions typical of an inland plateau area. Strong winds and dust storms occur during August/September, followed by rain in intervals throughout the summer. Night temperatures fall below freezing during winter, but snow is rare. Day temperatures during summer months are often over 40°C. These extreme temperatures cause life, for both man and animal, to become very uncomfortable. This in turn causes a low productivity rate.

The Vanderkloof Dam, which is situated centrally in the study area, covers the Ecce Series of the Karoo system. These are near-sterile siltstones containing rare plant fossils. Some fragments of the Lower Beaufort shales are exposed in parts of the flood basin. Dolerite and sandstone is present, while exotic rocks occur in the gravel of the Orange River bed and terraces, e.g. agates, cherts, carnelious, jaspers and amygdaloidal lavas. These provided tough material for stone tool production, especially during the Later Stone Age. A striking feature is the occurrence of lideanite, a hard type of stone, blackish in colour, which proved to be very popular in stone tool production.

Vegetation in the study area is seasonal grasses and Karoo scrub, seldom more than half-a-metre high. Leaves are small and succulent in nature and this is ideal for goat and sheep grazing, as well as antelope. Taller bushes and trees occur only on the dolerite hill slopes and ridges, and also along the banks of the river, forming a dense forest, especially in the Vanderkloof Dam area. The Withaak (White thorn), Swarthaak (Black thorn) and Wag-'n-Bietjie (Buffalo Thorn) are common in the area.

The arrival of Europeans in the area during the eighteenth century caused huge numbers of game to disappear as a result of uncontrolled hunting. Some farmers have retained small herds of antelope eg. Springbok, Steenbok, Blesbok and Duiker. Ostriches also still occur. Carnivores are scarce, though jackals are common. Permanent bird life includes a wide range of species such as Stanley cranes, secretary birds, storks, herons, vultures and several birds of prey. A great variety of snakes, lizards and tortoises abound the area – the latter a great delicacy for Stone Age man.

Although the character of the above environment is altogether menacing of human survival, the environment also offered a lot. An abundance of water in the Gariep River, an abundance of meat (large herds of springbok) and the availability of lideanite for stone tool production, made the environment ideal for the hunter-gatherer lifestyle. The occurrence of salt in great quantities in many palls was a further advantage.

Disadvantages of the area are the almost total absence of rock-shelters. Deep caves, which would have offered ideal shelter, are unknown.

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## **3.2 The Stone Age**

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### **3.2.1 Background to Stone Age research in the study area**

The Stone Age Culture is the earliest known culture in South Africa and stretches roughly over the last two million years. The Stone Age can, according to cultures, be subdivided into five periods, namely an Early, Middle and Later Stone Age with two intermediate phases of cultural change:

- **EARLY STONE AGE (ESA):** Consists of the Olduvan and Acheullian cultures, commencing about 2 million years ago.
- **FIRST INTERMEDIATE PERIOD:** In South Africa this is represented by the Fauresmith culture, named after the town of Fauresmith, which falls just outside the study area.
- **MIDDLE STONE AGE (MSA):** In South Africa this is represented by the Pietersburg culture. It commenced just over 100 000 years before present (BP).
- **SECOND INTERMEDIATE PERIOD:** The so-called Magosian culture.
- **LATER STONE AGE (LSA):** This commenced approximately 30 000 years before present and in South Africa is represented by the Wilton (coastal) and Smithfield (inland) cultures.

The Stone Age commenced with the appearance of modern human beings some two million years ago and ended in the late nineteenth century after the interior of South Africa was penetrated by Black Settlers after 300 AD and then by White Settlers after 1652. Stone Age people were hunters, gatherers and scavengers and did not live in permanent settlements. Stone tools produced by these people are found all over South Africa.

The Orange River and its tributaries are well known for its river gravels, in some places containing large amounts of Early Stone Age tools (Acheullian). Olduvan tools are unknown in the Orange River area or have not yet been recorded. (Sampson 1972:3)

In 1962 a Government white paper was published in which details of the Orange River Dam scheme became known. The then director of the National Museum in Bloemfontein, Dr A C Hoffman, secured R18 000 from the SA Association for the Advancement of Sciences to carry out archaeological and palaeontological salvage work in the catchment areas. An archaeological research laboratory was subsequently established at Oviston.

No records have been found of archaeological research prior to the Orange River salvage scheme. In 1963 a preliminary collecting trip was carried out by the National Museum in Bloemfontein and a brief report was published in 1965. (Hoffman & Esterhuysen 1965:21-27). By August 1965 some 942 Stone Age occurrences were known within the flood basins of the Gariep and Vanderkloof Dams. All sites, except for 16, which were sealed, were 'open' and provided no information about stratigraphy, dating or settlement patterns. The 16 sealed sites provided a stratified sequence of the Stone Age industries ranging in time from the Late Acheullian to the 19<sup>th</sup> Century AD. Garth Sampson commenced with fulltime research on the Stone

Age Archaeology of the Orange River Scheme and subsequently produced a comprehensive research report, which was later published (Sampson 1972:1-288).

Based on Sampson's information, it is clear that the entire study area comprises of one huge Stone Age site. Artefacts ranging from the Acheullian period (ESA) to the Smithfield culture (LSA) are known to occur on mainly 'open' sites throughout the study area. The helicopter visit on 25 August confirmed this. At all four sites at which the helicopter landed, Stone Age tools ranging from the Middle Stone Age to the Later Stone Age were found. During the field survey in May 2006 the same abundance of stone tools at open sites ranging from the ESA (Acheullian) to the LSA was observed.

### **3.2.2 Affected Stone Age Sites recorded during field visit, May 2006**

#### Early Stone Age (Acheullian) occurrences:

Open sites containing Acheullian assemblages and which could be directly affected by the construction of the proposed power lines, were observed in the Petrusville district on the farms Leeuwfontein and Kalkfontein, belonging to Mr Gustaf van der Merwe and Mr Andre Langenhoven respectively.

- Leeuwfontein farm (crossed by the Red Line). An open site containing ESA – MSA tools and waste occurs at S 30° 01' 55,3" and E 24° 24' 27,8" at an elevation of 1 173m. The site extends over 100m in diameter and consists of open scatters or an 'industry'. Material used is mainly lideanite. Tools of exceptional beauty occur. As such the site can be classified as Generally Protected A and is of medium to high significance. The farm Leeuwfontein also has several rock engravings and LSA tools. These will be dealt with under the appropriate headings.
- Kalkfontein farm: An open site where textbook examples of Acheullian hand axes and related lithic material occurs at S 30° 02' 47,0" and E 24° 28' 42,7" at an elevation of 1 185m. (See photographs). These occur over an area of about 6 km<sup>2</sup> in extent. This site could be classified as Generally Protected A and is of medium to high significance – mitigation will thus be necessary before construction. Kalkfontein is crossed by the proposed Green transmission line and is situated directly to the east of the Blue and Green lines. Two adjacent farms (Jakkalskuil and Leeuwfontein) are archaeologically exceptionally sensitive (to be dealt with in the section under rock art). LSA material such as bored stone, beads, bone and stones on which beads were shaped do also occur on Kalkfontein farm.

#### Middle Stone Age (MSA) occurrences

MSA tools and waste material occur almost over the entire study area and it was difficult to pinpoint specific 'sites'. All the proposed lines will pass over such material and before pylons are pegged out, it is not possible to estimate the amount of 'damage' that could occur. These scatters will be dealt with in the appendix containing photographs. All these occurrences, flakes and waste material of mainly lideanite, occur throughout the entire study area. The appendix containing photographs contains more detail.

### Late Stone Age (LSA) occurrences

LSA material of exceptional beauty and quality occur on two farms directly affected by the Blue and Red lines in the district of Petrusville. These are:

- Leeuwfontein (Red Line). Owner: Mr Gustaf van der Merwe. The farm also has several rock engravings. Due to exceptionally bad weather (rain) and the consequent condition of the farm roads, the specific LSA sites could not be reached. The only examples available for inspection were part of the personal 'collection' of Mr van der Merwe and which is kept at home. This included round stones, bored stones, rocks on which arrows were sharpened and rocks on which ostrich eggshell beads were shaped.

Mr van der Merwe has created his own postcard depicting these as well as rock engravings (see photographs). Although the collection of these artefacts from primary context has destructive effects, the examples displayed was during the field survey the only means of ranking the sites, which seems to be of Grade III A significance.

- Jakkalskuil (owner: Mr J W de Villiers), farm crossed by Blue Line. This farm is archaeologically exceptionally sensitive – especially in three areas. Due to bad weather and accompanying rain only one of the sites could be visited on Saturday 20 May 2006, the rest not being reachable as a result of road conditions.

At the site that was visited, several chiselled rock engravings as well as LSA lithic material occur in an area of about 500m<sup>2</sup> at S 30° 03' 50" and E 24° 24' 38,1" at an elevation of 1 214m. A circular stone enclosure was erected on the side of a hilltop (about 2-3m in diameter) and within it occurs textbook examples of LSA material: bored stones, round stones, flat stones on which arrows were sharpened (slypsteen), stones on which ostrich eggshell beads were shaped and many more associated LSA artefacts (see photographs). The owner (whose children represent the seventh generation on the farm), denies having knowledge of the artefacts being collected and deposited at this central point. According to him, it occurred there ever since he can remember and was as such also protected by him. No artefacts have been carried away as no visitors are allowed without supervision. The context of the LSA tools, however, remain uncertain as the possibility that herdsmen have collected and deposited these since the 1800's, is not excluded.

Several rock engravings of mainly animals occur in close vicinity of the stone enclosure (see photographs). Having inspected the patina, at least one of these (a horse) appears to be very recent and is most probably the work of herdsmen during the last century and has more historic than archaeological value. The remainder are of much older origin. The sites on Jakkalskuil are considered to be of HIGH significance and as such can be rated as Grade II sites (no-go areas).

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### 3.3 Rock Art Sites

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Several occur in the original study area. However, relatively few are being threatened by the proposed construction of the power lines. Farms containing rock engravings being affected by the proposed power transmission lines are as follows:

- Leeuwfontein, Red Line, district of Petrusville (owner: Mr Gustaf van der Merwe). Several chiselled engravings depicting mainly animals (e.g. hippopotamus, rhinoceros, eland etc) occur on rocky outcrops on the farm. These were recorded (see photographs) at on or around the following GPS positions:

S 30° 03' 02,0" and E 24° 24' 43,2";

S 30° 03' 01,7" and E 24° 24' 40,6";

S 30° 03' 01,6" and E 24° 24' 40,6" at an average elevation of 1 205m.

As is the case Jakkalskuil, the engravings occur on flat imbedded stones and area as such is not movable. Mitigation as part of the development process is not advised as the engravings are of high significance and are classifiable as Grade II.

- Jakkalskuil, district of Petrusville (Blue Line). Owner: Mr J W de Villiers. See description above and appendix with photographs. Grade II significance – a no-go area for developers. GPS position:

S 30° 03' 50,6" and E 24° 24' 38,1" (elevation 1 214m).

- Witfontein 1168 (Red Line) district of Orania (owner lives in Pretoria. Neighbour, Mr RP Strauss looks after the farm). Rock engravings were reported to occur on the farm and a site inspection was done on 19/05/2006. The 'engravings' occur at several places (mainly rocky outcrops) on the farm around the following GPS positions at an average elevation of 1 130m:

S 29° 48' 01,2" and E 24° 30' 04,4";

S 29° 47' 06,0" and E 24° 30' 42,6".

These 'engravings' appear to be not original Bushmen engravings at all. These are 'fine line' engravings and have not been chiselled. The majority of these rather look like scratch marks with no definite geometric pattern. The only identifiable drawing was that of horses drawing a plough. The initials 'I W' were also found on a rock. The suggestion is that the 'drawings' could be the work of later herdsman and are of historic value rather than archaeological (see photographs). The recorded drawings were also shown to Dr Manie Opperman (retired professional Stone Age archaeologist, now mayor of Orania) who is familiar with the area. Dr Opperman confirmed my opinion regarding the fine line 'engravings'.

- Roodekraal, district of De Aar (Blue Line). Owner: Mr Pieter du Toit. Visited: 19 May 2006 and 11 July 2006. Rock engravings depicting a human being, animals and geometric patterns are situated about 1 km east from the farmhouse at S 30° 24' 47,18" and E 24° 07' 29,3". These occur on a rocky outcrop directly at the centre to the inflow of the farm dam. The engravings could also be classified as of Grade II significance and should be avoided by developers. (See photographs).

- Simonskraal and Oudefontein, district of Koffiefontein (Red line). Bushmen rock engravings occur on these farms. The owner, Mr Justice C P Rabie did not report on these and information regarding the existence of the sites reached author of this report too late to physically inspect these.
- Blauwbanksdrift (Red line): site recorded by National Museum, Bloemfontein. Engraving site at GPS S 29° 18' 39" and E 24° 52' 06". No further detail as owner could not be contacted. Map 2924 BD Bloubankdrif.
- Wintershoek (Blue Line): Sites recorded by National Museum, Bloemfontein. Engraving sites at GPS S 29° 19' 02" and E 24° 57' 00"; S 29° 18' 53" and E 24° 56' 47"; S 29° 18' 57" and E 24° 56' 42"; S 28° 19' 03" and E 24° 56' 40"; S 29° 21' 38" and E 24° 54' 25"; S 29° 20' 03" and E 24° 55' 51"; S 29° 20' 07" and E 24° 55' 31". No further detail as owners could not be contacted. (Mr Leo Kruger, lawyer in Koffiefontein).
- De Kiel, district of Koffiefontein. Owner: Mr Daan Badenhorst. Several phone calls were made to Mr Badenhorst and an appointment made for Saturday morning 20 May. When the farm was visited, Mr Badenhorst was absent from home and unreachable by cell phone. Engravings recorded by the National Museum, Bloemfontein are at GPS positions S 29° 19' 36" and E 24° 53' 29"; S 29° 20' 22" and E 24° 51' 04". Map: FS 2925 AC. No further information is known.
- Bethel, district of Luckhoff. Owner: Mr Roelf Grobbelaar (could not be contacted). Engravings recorded by National Museum, Bloemfontein at GPS positions S 29° 36' 10" and E 24° 41' 55"; S 29° 36' 12" and E 24° 42' 09". No further details known. Map: 2924 DA Rooipanville.
- Aloe Kop 662, district of Luckhoff. Engravings recorded by National Museum, Bloemfontein at GPS position S 29° 34' 03" and E 24° 45' 30". Owner (Mrs du Toit) could not be contacted. No further details known. Map: FS 2924 DB Luckhoff.
- Biesjesfontein 31, district of Luckhoff. Rhino rubbed engravings recorded by National Museum, Bloemfontein, at GPS position S 29° 33' 04" and E 24° 45' 13". Map: FS 2924 Luckhoff.

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### 3.4 The African Iron Age

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The Iron Age in Southern Africa can roughly be divided into two phases, namely an Early Iron Age Period (0 – 1000 AD) when Black people penetrated and settled in the area south of the Limpopo river and the Later Iron Age (1000 – 19th Century).

The economy of the Iron Age people centred mainly on cattle and crop growing. The largest part of the study area is dry and semi-arid and can therefore not sustain dry land crop-growing or large herds of cattle. For the same reason evidence of the existence of Early Iron Age is absent in the entire study area.

Some evidence of the existence of the Later Iron Age can only be found towards the far northern end of the study area (Luckhoff – Dealesville). No LIA sites were found during the field survey. The National Museum has however, recorded a few LIA occurrences within the study area. These occur on the following farms:-

- Blauwbankdrif 195, Koffiefontein. Stone walled kraal at GPS position S 29° 18' 39" and E 24° 52' 06". No further details available.
- Wintershoek 41, Koffiefontein. About 22 Type "R" stone enclosures (see Maggs 1976: 293-294) as well as undecorated pottery occur on the farm. Owner could not be contacted and no further detail is known. GPS position: S 29° 19' 09" and E 24° 56' 35".

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### 3.5 The historical period

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#### 3.5.1 Towns in Study Area

Whites started penetrating the study area as early as the eighteenth century. Explorers, missionaries and hunters were the first visitors while towns were only established during the early nineteenth century. Several of these towns, therefore contain buildings of historic and architectural value older than 60 years and is as such protected by the National Heritage Act (Act 25 of 1999). These include:

- Philipstown: (NC 3024 AD, S 30° 26', E 24° 26'), situated 56kms north east of De Aar. Philipstown was founded in 1863 as a church centre. Interesting buildings exemplify the style of architecture popular in that period of which the original sandstone church and parsonage (still in use) are good examples. The town was named after Sir Philip Wodehouse, Governor of the Cape Colony. Sheep farming forms the backbone of its economy.
- Petrusville: (NC 3024 BA, S 30° 05'; E 24° 39'), situated about 45 km from Philipstown by road. Petrusville is surround by flat topped and rhino horn shaped hillocks. The town is situated in a fertile valley and was named after Petrus van der Walt, owner of the farm Renosterfontein on which the town was laid out circa 1878. The first buildings date back to about 1893 when a church and parsonage were erected.



- De Aar: (NC 3024 AA, S 30° 09'; E 24° 01'). De Aar was founded in 1881 and is, after Germiston, the second most important railway station in the country. A marshalling yard and junction was established in the same year and the town received municipality status in 1904. De Aar was named after the farm it was established on – De Aar – purchased from J G Vermeulen. The house of renowned author Olive Schreiner is situated in the town (see below).
- Luckhoff: (FS 2924 DD, S 29° 45'; E 24° 47'), situated 82 km northwest of Philippolis and 56 km west of Fauresmith. The town was established in 1892 and named after the Reverend H J Luckhoff (1842 – 1943). Like Philipstown, sheep farming is the backbone of the town economy. The beautiful NG church building in stone dates back to 1924 (see photograph).
- Koffiefontein: (S 2925 AC, S 29° 24'; E 25° 01'), situated on the Riet River some 55 km northwest of Fauresmith. The name derives from the habitual making of coffee by early transport riders. A monument in the form of a coffee pot was erected in the town centre to commemorate the history of the name. Koffiefontein was founded and grew as a result of the diamond rush. In June 1870 a transport rider picked up a diamond in the area. By 1882 Koffiefontein was booming with four mining companies establishing offices in the centre of town. Several buildings remain from this period, notably the Central Hotel. The town received municipality status in 1892. The main economic activity is sheep farming since the De Beers company closed its diamond-mining operations. During the Second World War, Koffiefontein served as a Prisoner of War Camp for almost 2 000 Italians. A few memorials remain from this period, including two wall paintings of Benito Mussolini and the Italian king. Approximately 800 pro-Nazi South Africans were detained here during the same time, including a later Prime Minister, Mr B J Vorster.
- Jacobsdal: (FS 2924 BB, S 29° 08'; E 24° 46'), situated on the Riet River 60 km south of Kimberley. The town was named after Christoffel Johannes Jacobs, owner of the farm on which the town was laid out. It received municipality status in 1860. An Anglo Boer War blockhouse is situated on the outskirts of the town. Sheep farming and salt mining are the most important economic activity, while wine is produced at Landsicht cellar. The first church building was inaugurated as early as 1879.
- Dealesville: (FS 2825 DB, S 28° 40'; E 25° 45'), situated some 70 km northwest of Bloemfontein. Dealesville was laid out on the farm Klipfontein, owned by John Henry Deale. It received municipality status in 1914. The town forms the centre of a flourishing maize and sheep farming operation. Salt recovery is also being undertaken in the area. Florisbad spring is situated about 37 km away, where Prof Thomas Dreyer discovered the world known Florisbad skull in 1932, dating back more than 40 000 years. The NG Kerk church building in town dates back to 1912.
- Orania: The town was a former construction camp of builders of the Vanderkloof Dam on Gariep River. There are therefore no historic buildings. The town itself has little historic value. Orania does house the Verwoerd collection – memorabilia collected during Dr Verwoerd's lifetime and now on display in the house where Mrs Betsie Verwoerd lived for the last five years before her death in 2001. According to Dr Manie Opperman, retired archaeologist and present Mayor of Orania, several Bushmen rock engravings occur on town's land. These will however not be affected by the proposed power transmission lines as the latter would be constructed on the opposite (Free State) side of the Orange river.

- Vanderkloof (NC 3024BA): The village dates back to 1967 when the former P K le Roux Dam (now the Vanderkloof Dam) was built,  $\pm$  9 kms north east of Petrusville. It was established to house the labour force constructing the dam. The name is derived from the surname of Petrus J van der Walt (after whom Petrusville was named) and a ravine (Afrikaans: kloof) in the vicinity. No historic buildings occur. Neither the Blue or Red proposed power transmission lines passes through any of the above villages and the only effect on these will be during the construction phase when local economies would possibly be boosted. No cultural heritage resources in or around villages are at threat.

### 3.5.2 Anglo Boer War Battlefields

Although it is known that a lot of activity (movement of troops, defence strongholds, etc) occurred within the study area during the Anglo Boer War, only one battlefield site is of real significance, namely the site where the Battle of Poplar Grove took place on 7 March 1900 at the Modder River close to the present steel bridge.

On this day three British Infantry Divisions, supported by artillery divisions, were to attack 6 000 Boers at a line of Kopje on a 10-mile wide front at either side of the Modder river. The battle ended when – to the surprise of the British – the Boers started fleeing. The effects of the battle, however, had a disastrous effect on the British forces in the long run. The British were so badly equipped that it was impossible for them to capture the fleeing Boer force, amongst whom was one of the most well known leaders, Paul Kruger. The Boers were under command of Gen de Wet. Lord Roberts, British Commander, was heavily criticised for British incompetence during the battle (Pakenham 1982: 373 – 375). The battle site (GPS position S 28° 54' 32,9" and E 25° 21' 51,8", elevation 1 185m) on which nothing physically is left, will not be threatened by the proposed power transmission lines.

A monument and war graves for British soldiers killed at the Battle of Paardeberg (farm of Koos and Christa Weideman at GPS position S 28° 57' 36,5" and E 25° 08' 42,1") during the Anglo Boer War is situated some 8 km from the proposed new power transmission lines and will consequently not be affected at all.

The concerns raised by the owners of Brandvallei Boerdery BK (letter dated 17 November 2005) regarding the farms Brandvallei 242 and Sterkfontein 113 were discussed telephonically with Mr J E de Villiers on 10 and 12 July 2006 and it was agreed to investigate the matter further.

### 3.5.3 Declared National Monuments:

At least two declared National Monument occurs within the study area, namely the Olive Schreiner house at De Aar (see photograph) and the Lutheran church building at Adamshoop.

- Schreiner, well-known South African author, was born in 1855 in Lesotho. In 1894 she married Samuel Cronwright and the couple moved to De Aar in 1908. The Cronwrights had a house built on four erven at 9 Grundling Street and lived there until 1913. Huge gables, wooden ceilings and floors, thick walls and numerous fireplaces give character to the house. Two of Schreiner's major works were written in the house, namely "Thoughts about Women" and "Closer Union". The first had an important influence on the feminism movement while the latter dealt with her ideas on a Union for South Africa. A

synopsis of two of her earlier works “Dream Life” and “Real Life” was also completed here. (Oberholster 1972: 190).

- The Adamshoop Lutheran church building dates back to 1896 (at S 29° 30' 00,2" and E 24° 49' 41,3") and is situated on the road between Oppermans and Luckhoff. A plaque on the wall states that it was only declared a National Monument on 17 June 1994. The proposed Yellow line (eastern alignment) passes directly to the east of the building. SAHRA Free State was contacted on 18 July 2006 regarding this monument.

#### **3.5.4 The Star of South Africa**

One of the most well known diamonds of Southern Africa, namely the ‘Star of South Africa’ was found within the original defined study area in 1868 on the farm Zandfontein near Hopetown. A Griqua diviner with the name of ‘Booi’ picked up a diamond weighing 83,5 carats. It was eventually sold for £11 000 to Lilienfeld Bros. at Hopetown. It was resold to the Earl of Dudley for £30 000 and became known as the ‘Star of South Africa’. Its discovery marked the beginning of the diamond epoch in the history of South Africa and as such the transformation of the South African economy from agricultural-based to mining and industrialisation. The site where the diamond was found is situated away from the proposed power transmission lines and will consequently not be affected.

## **4 IDENTIFICATION OF RISK SOURCES**

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Aspects concerning the conservation of culture heritage are dealt with by the Heritage Resources Act (Act 25 of 1999) and to a lesser extent the Environmental Conservation Act (Act No 73 of 1989).

The above Acts aim to preserve and protect South Africa's national heritage so that future generations may bequeath this unique and precious aspect of South African culture. Section 35(4) of the Act stipulates that no person may without a SAHRA permit, disturb, destroy, damage or deface any archaeological, palaeontological and historical site or objects. Places and objects should be graded into categories of low, medium and high significance and the resources should be managed accordingly.

The Environmental Impact Assessment is focused on two phases of the proposed development, namely the construction and operation phases. From a heritage point of view, resources which cannot be avoided can be excavated/documented while resources not affected by the development can be included in a future management plan.

During the construction phase risks include the actual damage and/or looting of sites. During the operational phase damage to sites may occur due to a deviation from management plans and/or unscheduled construction/developments.

## 5 IMPACT DESCRIPTION AND ASSESSMENT

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Archaeological and historical sites are unique and should be treated as such. Destruction of these as a result of development will require a permit from the relevant Heritage Authority – in this case SAHRA. Destruction of sites is not necessarily negative in the sense that a proper excavation/analysis of the site may reveal significant information on past human culture. It should be noted, however, that excavations are in essence destructive and permanent. Mitigation measures therefore might have a negative impact.

Author of this report is of the opinion that the proposed Eskom Power transmission lines will in general have a LOW impact on heritage resources in the study area. Although 'open' Stone Age sites occur throughout the study area, the sites are of LOW significance. In most cases these consist of scattered artefacts, as well as waste material, which are not stratified and therefore reveal little more information except for typology. The erection of pylons for the transmission line would have little or no effect on the 'open' Stone Age sites. An exception in this case is the farm Kalkfontein (Mr A Langenhoven, Petrusville) where an Acheullian industry with stone tools of exceptional quality occurs. This farm is to be avoided. If not possible, suitable mitigation measures will have to be taken.

As far as concerned villages, historic buildings, Anglo Boer War Battlefields and declared historical monuments: These are 'no-go' areas for Eskom, which could easily be avoided. The same applies for sites where rock engravings occur.

The majority of the latter can be classified as Grade II significance and should therefore not be disturbed at all. To be more specific: The farms Jakkalskuil, Leeuwfontein and Roodekraal are archaeologically extremely sensitive as engravings occur on these. Rock Art represents the expression of beliefs and values held by the Bushmen (San) and rituals fundamental to the San. Apart from their significance as works of art, the engravings have an important cultural-historical value as they tell us something about LSA rituals and social behaviour, which are rarely evident in archaeological deposits. The farms Jakkalskuil, Leeuwfontein and Roodekraal should therefore be avoided.

## **6 RECOMMENDED MANAGEMENT/MITIGATION ACTIVITIES**

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Recommendations in respect of mitigation/management issues include:

- Eskom has to undertake to provide an archaeologist access to each pylon site. 'Open' sites could be cleared of artefacts while stratified sites (if any) could be excavated after having obtained a permit from SAHRA.
- The same applies for Eskom contractors on construction campsites.
- All graves/burial yards, if present, should be avoided as far as possible.
- Battlefields, declared historical monuments, buildings older than 60 years as well as sites where rock art is present, should be regarded as 'no-go' areas. In this regard, the archaeological sites on the farms Kalkfontein, Jakkalskuil and Leeuwfontein, district of Petrusville, as well as the farm Roodekraal, district of De Aar, are extremely sensitive areas which should be avoided at all cost. (Grade II sensitivity rating).
- Any construction site in near vicinity of water (e.g. river banks, pans, etc) should be carefully considered as human beings have always lived in close proximity to water.
- The construction team should be made aware that most archaeological material is to be found below ground surface. For this reason, any archaeological sites, which might be accidentally exposed during the construction phase, should be reported. In fact, general information on archaeological deposits should be communicated to construction workers so as to enable them to recognise these.

## 8 DISCUSSION

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Following the Scoping exercise as well as the archaeological and historical field survey during May 2006, author of this report arrived at the following conclusions:

- The proposed Beta-Perseus power transmission lines (double servitude) Alignment, about 12 km in length between Beta and Perseus substations, poses no threat to cultural heritage resources as none were observed during a rather thorough survey.
- The same applies for the three Cross-over Alignment Corridor Alternatives between Perseus (Dealesville) and Hydra (De Aar) as well as the 50 hectares of land adjacent to Perseus substations where expansion is to take place.
- As far as concerned the four proposed Alignment Corridors stretching over 260 km in length between Dealesville and De Aar: although extremely sensitive areas have been identified during the field survey (Grade II significance rock art) impact on cultural heritage resources will in general be minimal. As mentioned earlier, the lines will unavoidably cross several sites where Stone Age lithic material is scattered over 'open' sites. These sites are generally of LOW significance and the erection of pylons should have a minimal effect upon them. The possibility that a pylon could be erected on a site of higher significance can, however, not be excluded and care should be taken to avoid it. Stratified sites may occur in close proximity to water. Several of these are known to occur in the gravels of the Orange River further away from the study area. Detection of these sites is usually not easy.
- The importance of rock engraving sites has been dealt with earlier. A general observation during the field trip was that engravings tend to occur on rocky outcrops/hills. It is therefore suggested that, where possible, such areas should be avoided all along the proposed routes for power transmission lines.
- The relatively few Iron Age sites mentioned in this report (Section 4 (d)) could easily be avoided, as stone structures are conspicuous and easy to detect.
- All cultural-historical resources dating back to the historical period (Section 4 (e) of this report) will NOT be impacted upon by the Eskom operations as none are in the direct pathway of the proposed power transmission lines. This applies to towns, battlefields and declared national monuments.

## 9 CONCLUSION

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The construction of the four power transmission lines as proposed by Eskom Holdings, will in general have a LOW impact on cultural heritage resources within the study area, as long as Eskom adheres to the recommendations contained in sections 7 and 8 of this report and the SAHRA Review Comment on the initial Scoping Report dated 16/05/2006. From a heritage point of view, the proposed (existing) Green and Yellow lines will have the least impact on cultural resources.

Eskom should however also be made aware of a fundamental principal in the archaeological science: absence of evidence does not imply evidence of absence. The possibility of detecting sites of high archaeological significance during the construction phase is most likely.



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# **APPENDIX 1**

## **Photographs**

## **APPENDIX 2**

### **Cultural Heritage Resources Map**