

ESKOM DISTRIBUTION [NORTHERN REGION]

**PHASE 1 ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT
SPECIALIST STUDY REPORT**

**PROPOSED CONSTRUCTION OF A NEW 132kv DEVIATION
POWER LINE TO LINK WILGE SUBSTATION TO A NEW
BRAVO SUBSTATION IN EMALAHLENI
MUNICIPALITY, NKANGALA DISTRICT,
MUPUMALANGA PROVINCE**

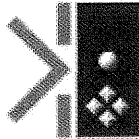
November 2008, Johannesburg

PREPARED BY

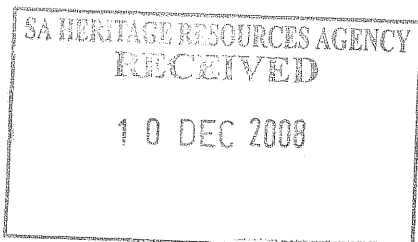
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REPORT DETAILS

PROJECT NAME: PROPOSED CONSTRUCTION OF A NEW 132kv DEVIATION POWER LINE TO LINK WILGE SUBSTATION TO A NEW BRAVO SUBSTATION IN EMALAHLENI LOCAL MUNICIPALITY, NKANGALA DISTRICT, MPUMALANGA PROVINCE.

REPORT TITLE: ARCHAEOLOGICAL AND CULTURAL AND ARCHAEOLOGICAL HERITAGE ASSESSMENT SPECIALIST STUDY FOR PROPOSED CONSTRUCTION OF A NEW 132kv DEVIATION LINE TO LINK WILGE SUBSTATION TO A NEW BRAVO SUBSTATION IN EMALAHLENI LOCAL MUNICIPALITY, NKANGALA DISTRICT, MPUMALANGA PROVINCE.

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FIELD STUDY TEAM **Principal Investigator:** Dr.M Murimbika

Assistant Archaeologist: T. Miilo (BA, Archaeology, UZ, 1993)

PROFESSIONAL SERVICE PROVIDER (PSP) Nzumbululo Heritage Solutions (South Africa) cc.

MANAGEMENT SUMMARY

Background

Eskom Commissioned Nzumbululo Heritage Solutions (South Africa) (HeSSA) to conduct an environmental impact assessment [EIA] study for proposed construction of a new 132kv power line from Wilge substation. The development will include construction of a deviation power line from Wilge substation in Emalahleni Local Municipality, Nkangala District, Mpumalanga province. This heritage impact assessment (HIA) study was conducted as part of the specialist studies for the EIA exercise. The HIA focuses on potential impacts on archaeological, cultural, and historical heritage resources associated with the proposed construction's receiving environment.

Summary Results

The field survey covered the proposed power-line servitude route and the proposed alternative route. No archaeological and physical cultural properties were recorded in the project area along both routes surveyed.

Summary Recommendations

We concluded that the proposed development of the transmission line may proceed subject to the following recommendations:

- The preferred powerline servitude route A, may be approved for the development. It will not make any difference should any of the presented powerline routes be accepted for the development because the affected landscape is uniform and similar in nature.
- We recommend that a heritage monitoring plan be put in place as part of the project's Environmental Management Plan (EMP) to ensure that the proposed construction of powerline and associated infrastructure will not interfere with chance archaeological sites that may be encountered during the development.
- Should the project be approved to proceed as proposed, an archaeological walk-down survey must be conducted in order to ensure that no tower or pole foundation will be sited on previously unidentified archaeological sites. Such specific recommendations should be incorporated in the project development Environmental Management Plan (EMP).
- The foot print impact of each pole should be kept to minimal to limit the possibility of encountering chance finds.
- Furthermore, the construction team should be informed about the value of the cultural heritage resources in general so as to ensure that they do not destroy the chance archaeological sites they may encounter during working on the power-line route.

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ABBREVIATIONS

HIA	Heritage Impact Assessment
EIA	Environmental Impact Assessment
HeSSA	Nzumbululo Heritage Solutions (South Africa)
LIA	Late Iron Age
SAHRA	South African Heritage Resources Agency

DEFINITIONS

Archaeological Material remains resulting from human activities, which are in a state of disuse and are in, or on, land and which are older than 100 years, including artefacts, human and hominid remains, and artificial features and structures.

Chance Finds Archaeological artefacts, features, structures or historical cultural remains such as human burials that are found accidentally in context previously not identified during cultural heritage scoping, screening and assessment studies. Such finds are usually found during earth moving activities such as water pipeline trench excavations.

Cultural Heritage Resources Same as Heritage Resources as defined and used in the South African Heritage Resources Act (Act No. 25 of 1999). Refer to physical cultural properties such as archaeological and palaeontological sites; historic and prehistoric places, buildings, structures and material remains; cultural sites such as places of ritual or religious importance and their associated materials; burial sites or *graves* and their associated materials; geological or natural features of cultural importance or scientific significance. Cultural Heritage Resources also include intangible resources such as religion practices, ritual ceremonies, oral histories, memories and indigenous knowledge.

Cultural Significance The complexities of what makes a place, materials or intangible resources of value to society or part of, customarily assessed in terms of aesthetic, historical, scientific/research and social values.

Grave A place of interment (variably referred to as burial), including the contents, headstone or other marker of such a place, and any other structure on or associated with such place. A grave may occur in isolation or in association with others where upon it is referred to as being situated in a cemetery.

Historic Material remains resulting from human activities, which are younger than 100 years, but no longer in use, including artefacts, human remains and artificial features and structures.

In Situ material *Material culture* and surrounding deposits in their original location and context, for example an archaeological site that has not been disturbed by farming.

Late Iron Age this period is associated with the development of complex societies and state systems in southern Africa.

Material culture Buildings, structure, features, tools and other artefacts that constitute the remains from past societies.

Site A distinct spatial cluster of artefacts, structures, organic and environmental remains, as residues of past human activity.

PHASE I ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENT SPECIALIST STUDY REPORT

PROPOSED CONSTRUCTION OF A NEW 132kv DEVIATION LINE TO LINK WILGE SUBSTATION TO A NEW BRAVO SUBSTATION IN EMALAHLENI LOCAL MUNICIPALITY, NKANGALA DISTRICT, MPUMALANGA PROVINCE.

1 INTRODUCTION

This Archaeological and Heritage Impact Assessment (HIA) study was conducted to fulfil the requirements of the National Heritage Resources Act, Act 25 of 1999 Section 38. It was conducted as part of the Environmental Impact Assessment (EIA) for the proposed power-line from Wilge to a new Bravo substation in Emalahleni Municipality, Mpumalanga Province (see Fig. 1). The HIA study focus on identifying and assessing potential impacts on archaeological, cultural, and historical heritage resources associated with the proposed project.

2 AIMS OF THE HIA STUDY

This HIA study primarily seeks to fulfil the requirements of South African Heritage Resources Act (Act No. 25 of 1999) Section 38 by (also see Table 1).

- Identifying heritage resources affected by the proposed power line and the associated infrastructural development.
- Assess the significance of the resources.
- Evaluate the impact thereon with respect to the socio-economic opportunities and benefits that would be derived from the proposed power line construction.
- Consult with the affected and other interested parties in regard to the impact on the heritage resources in the project's receiving environment.
- Make recommendations on mitigation measures with the view to reduce specific adverse impacts and enhance specific positive impacts on the heritage resources.
- Identify and discuss with local communities (where applicable) on potential impacts of the proposed power-line construction on graves and burials sites within the affected area and make the necessary recommendations on how to handle the matter.
- Take responsibility for communicating with the SAHRA and other authorities in order to obtain the relevant permits and authorization.

Table 1: Terms of Reference for the Heritage Study for the proposed powerline construction project.

PURPOSE	ACTIVITIES
<ul style="list-style-type: none"> ❑ Fulfill the statutory requirements of the National Heritage Resources Act, Act 25 of 1999, Section 38. ❑ To identify and describe (in terms of their conservation and / or preservation importance) sites of cultural and/or archaeological importance that may be affected by the proposed powerline construction project area. This study should include the identification of gravesites. ❑ Identify and describe impacts to archaeological and cultural resources. ❑ Make recommendations on mitigation measures. ❑ Identify and describe management measures. 	<ul style="list-style-type: none"> ❑ Identify, describe and map sites of archaeological, historical or cultural interest affected by the proposed powerline construction project. ❑ Identify, where possible, the gravesites affected by the development. ❑ Liaise with the local communities (if applicable) with regards to the impact of the development on the heritage resources. ❑ Describe the importance or significance of these sites and whether these sites need to be conserved, protected or relocated. ❑ Describe the procedures for mitigation or relocation of sites and provide an indication of time required for these management measures to be implemented. ❑ Document findings and recommendations.

3 BACKGROUND SUMMARY

The proposed development consists of construction of a new 132KV deviation power line to link Wilge substation to a new Bravo substation in Emalahleni Local Municipality, Nkangala District, Mpumalanga province (see Fig. 1). The proposed project development is located in commercial agricultural landscape marked with built up areas, road networks, power and telecommunication lines, boundary fence lines, communal grazing land, cornfields and prospecting rights areas (Plate 1 to 6). Generally, this landscape has a long history of intensive land use which left a distinctively altered landscape. Culture-historically, the Emalahleni area has yielded evidence of human settlement extending into hundreds of years of prehistory going back as far as the Iron Age communities. In recent colonial history, the area played host to different competing local settler communities. The area was a scene of series of colonial wars. By the end of the 19th century, the region was placed under British rule and the local people displaced. Today most of the land is used for commercial agriculture activities, residential, mining, and grazing. It is within this cultural landscape that the project area is located.

From a culture geography and history perspective, Emalahleni area, within which the project falls, is in the open veld in the Mpumalanga province. This area was historically occupied by predominantly Ndebele Nguni-speaking groups before it was partitioned into commercial settler farms during the colonial period. Archaeologically, the areas associated with Nguni communities have yielded three ceramic sequences: Blackburn (AD 1050-1500) Moor Park (AD 1350-1700) and Nqabeni (AD 1700-1850) [Huffman 2007: 443]. Around the 1830s, the region also witnessed the massive movements associated with the *mfencane* ('wandering hordes'). The causes and consequences of the *mfencane* are well documented elsewhere (e.g. Hamilton 1995; Cobbing 1988). Prior to this section of the Mpumalanga region being incorporated into the colonial administration of the Transvaal, the region experienced several episodes of white settler migration and settler settlements as well as the associated colonial wars such as the Anglo-Boer War which ended in

1901. Today the project area of Bravo and Wilge is predominantly commercial farming and mining area. Most of the powerline route will traverse through large land sections that are currently under corn fields, developed landscapes and infrastructures such as access roads, existing powerlines, farm boundary lines and farm and mining buildings and associated infrastructures.

4 STUDY METHODS

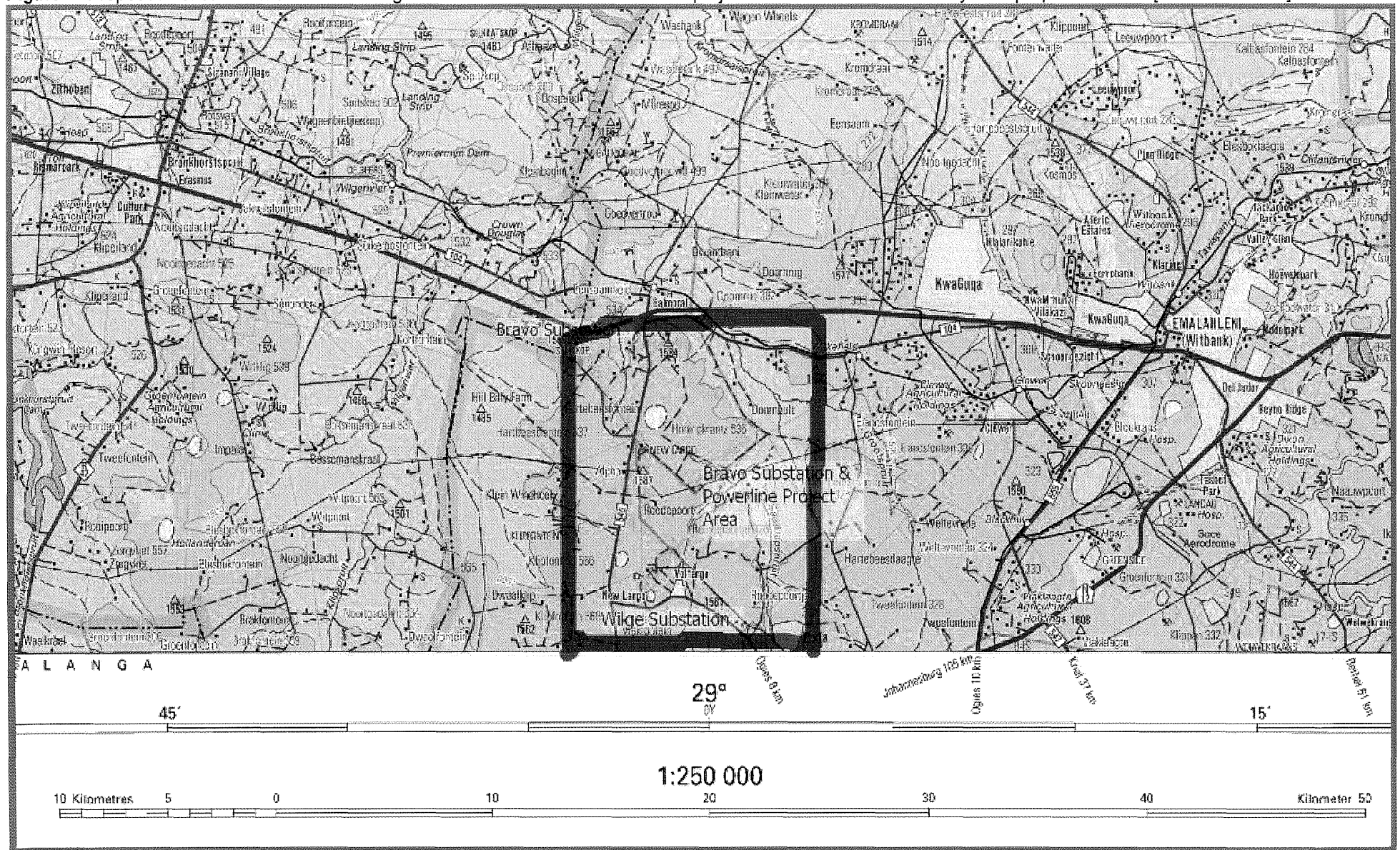
Nzumbululo Heritage Solutions specialist team has conducted EIA and related studies in the Bravo and Wilge areas prior to this project (Nobanda 2007). As such, the existing studies provided detailed background data on the project area. We began the HIA study with a desktop survey of archaeological databases other HIA reports from the same region (Fig. 1). We then proceeded to a field reconnaissance study of the proposed power line route. In the third segment we conducted an archaeological and cultural heritage field survey of the affected area and finally conducted an assessment and report production for the study.

4.1 ARCHIVAL

We conducted reconnaissance study in November 2008 during which we gathered geographical and topographical background information along the proposed power-line route (Fig 1). We subsequently conducted a detailed field survey of the affected landscape. The survey was aimed at identifying archaeological sites and physical cultural resources signatures as well as other cultural heritage sites such as graves, burial and religious or sacred sites that may be affected by the proposed power-line construction project. A team of two archaeologists systematically transacted the power-line route on foot and slow moving vehicle in some sections. Using the preliminary findings from the reconnaissance study we applied a judgement surveying strategy (stratified sampling). We divided the landscape through which the proposed power line would pass into geographical zones (built up sections, land under crops, open grass lands, hills, gully, ridge, and stream or river valley section). Naturally, we placed more emphasis on areas we believed had potential of archaeological, historical or other physical cultural resources.

Identification of archaeological sites during surveying also depends on visibility and accessibility. All areas along the proposed power line route are generally accessible. From the connecting point proposed power-line route will cut across eroded area transecting through communal grazing and agricultural land. Heading to the proposed connecting site with the approved section of the preferred power line route at the Honigkrantz 536 JR farm, the line would go through heavily degraded commercial maize fields (Plates 3 & 4). Under these disturbed conditions, it was anticipated that the chances for archaeological material preserved *in situ* in most portions of the powerline route and substation site were limited. Nonetheless, we could not rule out the discovery of archaeological sites in the project area.

Figure 1: Proposed construction of Bravo to Wilge 132kv Powerlines and Substation project area marked in blue with yellow proposed routes [2528 1:250 000]



5 RESULTS OF THE HIA.

5.1. RESULTS OF ARCHAEOLOGICAL EXAMINATIONS FOR THE PREFERRED POWER-LINE ROUTE

Location Details

Province: Mpumalanga

Local Municipalities: Greater Emalahleni

Name Properties affected: Farms Honingkrantz 536 JR; and Roodpoortje 326 JS in the Largo farming area

Proposed development: Construction of a new 132kv deviation power line to link a new Bravo substation and Wilge substation.

1:50 000 map name: 2528

GPS Co-ordinates and description of proposed transmission lines route:

- S25° 58 042' E028° 58 546' (Wilge Substation, site earmarked for upgrade)
- S25° 58 121' E028° 58 630' (section along existing 132kv line note that the proposed line will run parallel to the existing line before it turns northwards at farm)
- S25° 58'21. 3" E29° 0'9.8"(section of the power line)
- S25° 55' 51.9" E28° 59' 40.1"(section of the power line route in the cornfields)

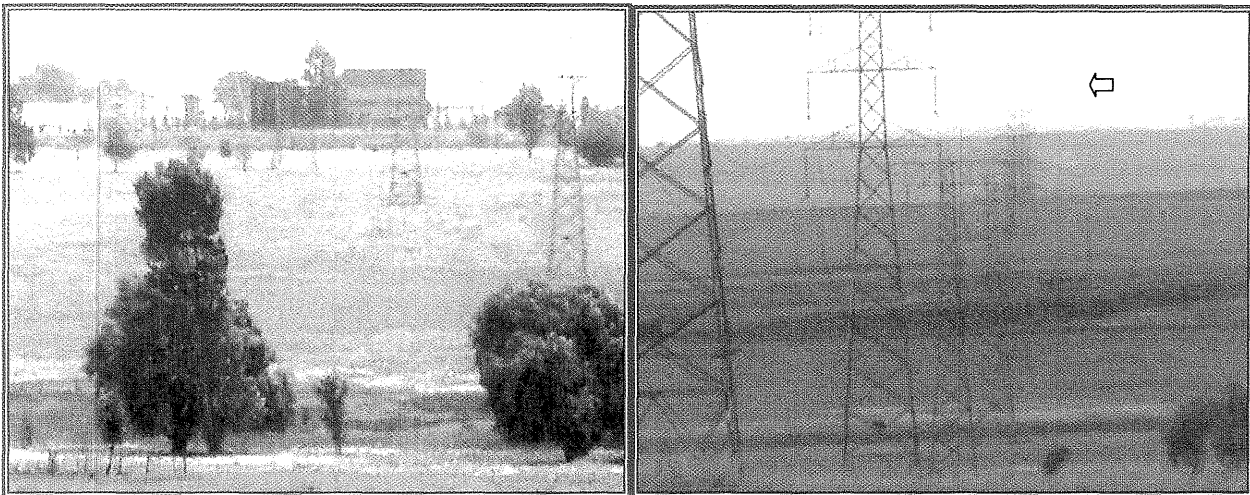


Plate 1 and 2 Wilge sub station site earmarked for upgrade to accommodate new powerline capacity. The new powerline will t-off from this site (Plate 1) and traverse parallel to the existing line (Plate 2) before turning at Roodpoort 326 JS towards Honingkrantz 536 JR where it will join the approved section of Wilge Bravo power line

Archaeological and Cultural Sites

No archaeological sites were identified in course of field investigations for the power line servitude route. The affected landscaped is heavily degraded from previous and current land use patterns. As such the chances of recovering archaeological materials *in situ*, particularly for open sites, were seriously compromised and limited (see Plates 3 & 4). If such sites existed along the surveyed power line route, they may have been destroyed over the land history of deep ploughing and other destructive land use patterns that have affected the project area prior to this proposed project.

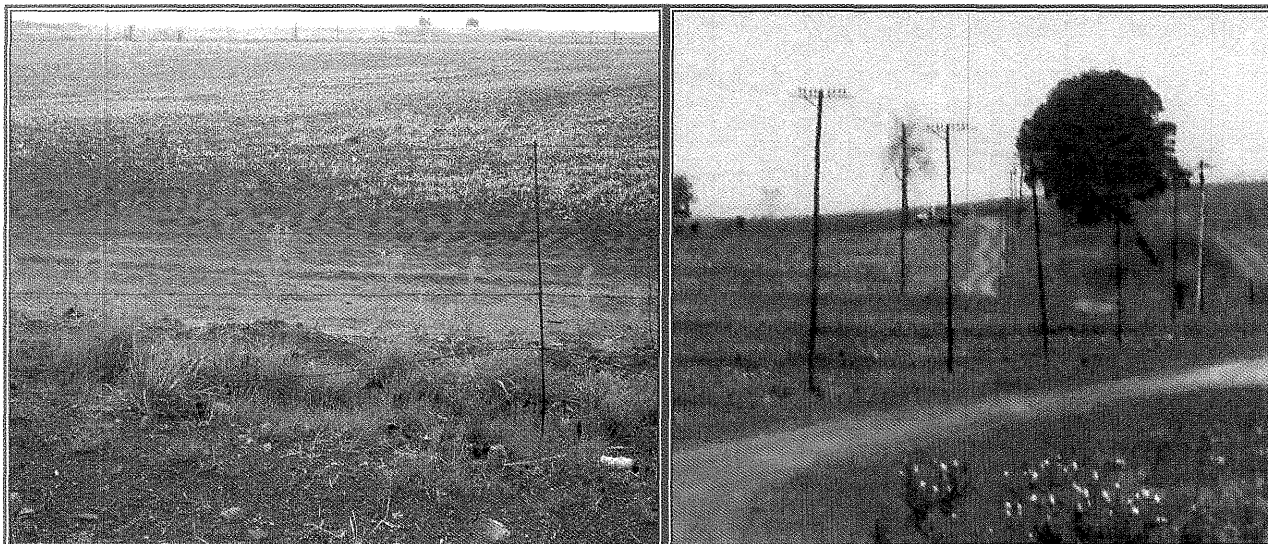


Plate 3 and 4: Note that the project site is already heavily disturbed by current farming activities associated with the cropping season. Some disturbed sections were inspected for possible archaeological materials that may possibly be exposed by earth moving activities.

Historical and Recent sites

Generically speaking, historic sites are associated with white settlers, colonial wars, industrialization; African population settlements, contemporary ritual sites and settler farming communities are the most common and visible. The more common functions of places of cultural historical significance include:

- Domestic
- Recreation & culture
- Commerce & trade
- Agriculture & subsistence
- Social
- Health care
- Religion
- Designed landscape
- Funeral (cemeteries, graves and burial grounds)
- Civil and Structural Engineering
- Education
- Defence /Military

There is no listed monument in the area affected by the proposed power-line route or in the vicinity of both the line and the proposed switching station. However, recent historic period sites and features associated with the settler and commercial farming communities were observed. Although the affected landscape is associated with historical events such as white settler migration, colonial wars and the recent peopling of the region, no specific historical sites are on the direct path of the proposed powerline development.

Burial grounds and graves

In terms of the Section 36 (3) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) no person may, without a permit issued by the relevant heritage resources authority:

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment, which assists in the detection or recovery of metals.

Regarding graves and burial grounds, the NHRA distinguishes between the following:

- Ancestral graves
- Royal graves and graves of traditional leaders
- Graves of victims of conflict
- Graves of individuals designated by the Minister by notice in the Gazette
- Historical graves and cemeteries
- Other human remains, which are not covered in terms of the Human Tissue Act, 1983 (Act No.65 of 1983).

No formal graveyard was identified within or near the proposed powerline route. From a heritage perspective, burial grounds and gravesites are accorded the highest social significance threshold. They have both historical and social significance and are considered sacred. They may not be tampered with or interfered with during the proposed power-line construction.

Previously unidentified burial sites/graves – Although the possibility of encountering previously unidentified burial sites is limited along the affected powerline servitude, should such sites be identified, they are still protected by applicable legislations and they should be protected.

5.2. ALTERNATIVE B POWER-LINE ROUTE

In line with the National Environmental Management Act (NEMA, 2002) EIA regulations, Eskom identified alternative routes for the proposed powerline development. The alternative route was assessed alongside the preferred route. The presented alternative powerline route will traverse through generally similar landscape to that of the preferred route A, discussed above (also see Plates 5 & 6). From Wilge, the alternative route B will run parallel to the existing line, as does the preferred route A, and traverses through Roodpoortje 326 JS and Honingkrantz 536 Farms towards the new Bravo substation site where it will terminate. The power line route is marked by the following GPS coordinates:

- S25° 58' 2.8" E29° 0' 47.6",
- S25° 58' 3.8" E29° 0' 31.1" and
- S25° 55' 10.1" E28° 58' 39.8" .

The survey did not identify any archaeological sites or physical cultural resources such as graves, burial grounds and religious or sacred sites that may be affected by the proposed development of this alternative route.



Plates 5 and 6: The general area marked as alternative route for the power line. The general area is either developed, under agricultural use or old cornfields.

Archaeological and cultural site

No archaeological sites were observed during the course of the field survey of Alternative route B. The alternative route of the proposed power line is equally as disturbed as the preferred route. It is marked with corn field that have been cultivated through deep ploughing for almost a century of commercial farming.

Historical Monuments

There is no listed monument in the area affected by the proposed power line's alternative route B.

Cemeteries and Burial sites

No cemeteries or burial site were observed during the course of the field investigations of the alternative route B

6 STATEMENT OF OVERALL IMPACTS

The affected project area is heavily degraded by existing and previous land use activities. There were no archaeological or any physical cultural properties were recorded on the path of both the preferred and alternative routes. In spite of this observation, it is important to note that in any given milieu, archaeological resources are fixed in space. Any activity that threatens to alter the status quo is an immediate and direct threat to any archaeological resources in its direct path. The impact will be permanent in nature, extent and duration (Bickford and Sullivan, 1977). In principal, given the absence of any recorded heritage sites along the powerline route(s), the proposed development project will have no or minimum impact upon any cultural heritage resources including graves, historical and archaeological resources.

7 OVERALL RECOMMENDATIONS

- The preferred route may be approved by the heritage authority for the proposed development. It will not make any difference should any of the presented powerline routes be accepted for the

development because the affected landscape is uniform and similar in nature. As such, the preferred powerline servitude route may be approved for the development.

- We recommend that a heritage monitoring plan be put in place as part of the project's Environmental Management Plan (EMP) to ensure that the proposed construction of powerline and associated infrastructure will not interfere with chance archaeological sites that may be encountered subsurface during the development, especially during pylon foundation construction activities.
- Should the project be approved to proceed as proposed (recommended), an archaeological walk-down survey must be conducted in order to ensure that no tower or pole foundation will be sited on previously unidentified archaeological sites. Such specific recommendations should be incorporated in the project development Environmental Management Plan (EMP).
- The foot print impact of each pole should be kept to minimal to limit the possibility of encountering chance finds.
- Furthermore, the construction team should be informed about the value of the cultural heritage resources in general so as to ensure that they do not destroy the chance archaeological sites they may encounter during working on the power-line route.

8 CONCLUDING REMARKS

From a heritage perspective, it is not always possible to recommend an alternative site for the linear development such as the power-line especially when the alternative routes will traverse through a uniform cultural landscape as is the case for this proposed development. The project's receiving cultural landscape under potential threat from the proposed development, whilst important, it does not have high significance threshold to call for total protection. Nonetheless, a site specific walk-down survey must be conducted as part of the project EMP development. Detailed monitoring procedures should be scheduled in order to adequately respond to chance finds, although unlikely to be encountered, that may be found accidentally during the power-line development. Subject to the recommendations herein made, there are no significant cultural heritage resources barriers to the proposed development. The project may proceed as planned subject to a heritage monitoring programme. With the constraints herein discussed and appropriate monitoring measures adopted, there are no objections to the proposed transmission power-line development.

9 BIBLIOGRAPHY

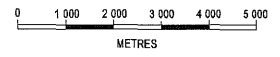
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- National Heritage Resources Act (Act No 25 of 1999)

- A Cherry
- A Harriet & Kie
- V.N.Tjaart
- Anglo Operations Limited
- Bronlaw Prop Pty Ltd
- JH Putter
- CJJ van Eeden
- CL de Kock
- DJ Meyer
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- GC Byrne Pty Ltd
- F v Heerden
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- JA Pereira
- JC vd Heever
- JE Strick
- JH Roos
- JH vd Merwe
- J & J Eiendomme cc
- JJ Greeff
- JPS Products cc
- K Haffert
- Kendal Poultry Farm Pty Ltd
- MJ Mmwane
- Fairacres Products
- NP Prinsloo
- PM Res
- Phola
- PJB Doman
- Q2 Mining Pty Ltd
- S Zowitsky
- Suid-Afrikaanse Padraad
- MCJ Diedericks
- Transnet Ltd
- Truter Boerdery Trust
- Waterfontein Boerdery cc
- Wilge (Eskom)



LEGEND :-

- NEW LARGO PROSPECTING RIGHTS AREA
- No 4 SEAM WORKINGS
- No 2 SEAM WORKINGS
- No. 2 SEAM SUBCROP (November 2007 - 2m)
- No. 4 SEAM SUBCROP (November 2007 - 1m)
- 11 KV POWERLINE
- 22KV POWERLINE
- 88KV POWERLINE
- 132KV POWERLINE
- 400KV POWERLINE
- RAILWAY LINES
- HIGHWAYS
- MAIN ROADS
- RIVERS AND STREAMS
- TOWNS
- FARM BOUNDARY
- SURFACE PORTIONS
- PROPOSED ROUTE 1
- PROPOSED ROUTE 2
- PROPOSED ROUTE 3
- DEVIATION A
- DEVIATION B



PROJECT SERVICES

NEW LARGO

SURFACE RIGHTS (PART2)

SCALE	1 : 40 000
SURVEY SYSTEM	WG29 (Hartebeesthoek)
DRAWN BY	A WAKERMAN
DATE DRAWN	MARCH 2008
AMENDED	
RESPONSIBLE OFFICIAL	M.VERTUE
FOLDER	M:\MICROSTATION\PROJECTS\NEW LARGO\WG29
FILE	0803NLC_ESKOM INFO 2_WG29