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PHASE 1 HERITAGE SCOPING STUDY

AN ARCHAEOLOGICAL INVESTIGATION FOR THE PROPOSED NEW SUBSTATION ESTABLISHMENT AT SOUTH WESTERN TOWNSHIP(SOWETO), WITHIN JOHANNESBURG METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE, SOUTH AFRICA

Report Prepared for:

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0700

**Survey Conducted and Report Prepared by:
Vhufa Hashu Heritage Consultants:**

Executive Summary

Site name and location: The proposed new substation establishment project is situated south west of Gauteng (Johannesburg) in close proximity around Baragwaneth hospital, Diepkloof, Klipspruit and Orlando, Within Johannesburg Metropolitan Municipality, Gauteng Province

Local Authority: Johannesburg Metropolitan Municipality

Developer: Eskom LTD

Date of field work: 05 May 2010

Date of report: 07 May 2010

Findings: The phase 1 heritage scoping study (Heritage Impact Assessments) as required in terms of section 38 of the National Heritage Resource Act (Act 25 of 1999) was done for the proposed new substation establishment, within Johannesburg Metropolitan Municipality, Gauteng, South Africa

The aims with the phase1 Heritage Impact assessment (HIA) program were the following:

- To establish whether any of the type and ranges of heritage resources as outlined in section 3 of the National Heritage Resource Act(Act 25 of 1999) do occur in or near the proposed area, and if so, to establish the significance of these heritage resources.
- To establish whether such heritage resources will be affected by the proposed new substation establishment activities, and if so, to determine possible mitigation measures that can be applied to these heritage resources.

The phase 1 heritage impact assessments for the proposed substation establishment revealed no heritage resources within the proposed study area.

No further studies/Mitigations are recommended as within the proposed area and its surrounding there is no archaeological or place of historical significance that will be impacted by the proposed new substation establishment. However, should any chance archaeological or any other physical cultural resources be discovered subsurface, heritage authorities should be informed. From an archaeological and cultural heritage resources perspective, there are no objections to the proposed substation development project and we recommend to South African Heritage Resources Agency (SAHRA) authorities to approve the project as planned.

MAY 2010

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 could be overlooked during the study. Vhufahashu 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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1. INTRODUCTION

Naledzi Environmental consultants were appointed to conduct Environmental Impact Assessment (HIA) studies commissioned by Eskom LTD for the proposed new substation establishment. They appointed Vhufahashu Heritage Consultants to conduct an Archaeological and Cultural Heritage Impact Assessment study as part of the Environmental Impact Assessment (EIA) for the proposed project.

As part of the development process, an application for an Environmental Assessment Authorization must be completed. This report is one of a series of appendices prepared for the impact assessment that is to be submitted to the Department of Environmental Affairs and Tourism (DEAT) _environmental assessment office, in support of the application as amended by the National Environmental Management (NEMA) Act no 107 of 1998 regulation in terms of chapter 5 section (32)(2)(d) and section (34) (b), The Mineral and Petroleum Resource Development (MPRDA) Act 28 of 2002 and Development Facilitation (DFA) Act 67 of 1995 regulation GNR1 of 7 January 2000 section 31 . The information presented in this report provides the background and the basis for the Heritage Resources component of the Project impact assessment. The heritage resources impact assessment focused on archaeological sites.

The Project proposal constitutes an activity, which may potentially be harmful to heritage resources that may occur in the demarcated area. The National Heritage Resources Act (NHRA - Act No. 25 of 1999) protects all structures and features older than 60 years (section 34), archaeological sites and material (section 35) and graves and burial sites (section 36). In order to comply with the legislation, the Applicant requires information on the heritage resources, and their significance that occur in the demarcated area. This will enable the Applicant to take pro-active measures to limit the adverse effects that the development could have on such heritage resources. In terms of the National Heritage Resources Act (1999) the following is of relevance:

Historical remains

Section 34(1) No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

Archaeological remains

Section 35(4) No person may, without a permit issued by the responsible heritage resources authority:

- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite

Burial grounds and graves

Section 36 (3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority:

- (i) destroy, damage, alter, exhume, 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
- (ii) bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.

Culture resource management

Section 38(1) Subject to the provisions of subsection (7), (8) and (9), any person who intends to undertake a development:

- must at the very earliest stages of initiating such development notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

development means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including:

- (i) Construction, alteration, demolition, removal or change of use of a place or a structure at a place;
- (ii) Any change to the natural or existing condition or topography of land, and
- (iii) Any removal or destruction of trees, or removal of vegetation or topsoil;

place means a site, area or region, a building or other structure

structure means any building, works, device or other facility made by people and which is fixed to the ground.

2. AIM OF STUDY

The aim of this Heritage Impact Assessment (HIA) Study was to determine the presence or absence of heritage resources such as archaeological, historical sites, features, graves, places of religious and cultural significance, and to submit appropriate mitigation recommendations with regard to the identified cultural resources management measures that may be affected by the proposed development.

2.1 Project Developers and Consultants

Developers are encouraged to consider archaeological values in their project planning and design from the outset. This will minimize scheduling and budget difficulties at later stages. As Consultants in the archaeological assessment process, we are responsible for: (see table 1)

<ul style="list-style-type: none"> ❖ Determining the presence of archaeological sites that may be adversely impacted by the proposed development, and evaluate their significance. ❖ Identification of potential adverse impacts to archaeological sites protected under the National Heritage Resources Act No. 25 of 1999 ❖ Assessing of the heritage significance of identified archaeological sites to assist in the development of appropriate mitigation strategies ❖ Make recommendations for avoidance or mitigation of protected or otherwise significant archaeological sites. ❖ Reporting the results of these studies to the Heritage Authorities.

Table 1

3. TERMS OF REFERENCE

The Terms of Reference for the study were to:

- (I) Assess the significance of the known cultural resources within the borders of proposed development area, in terms of their historical, social, religious, aesthetic and scientific value.
- (II) Develop mitigation or control measures for impact minimization and cultural resources preservation
- (III) Develop procedures to be implemented if previously unidentified cultural resources are uncovered during the construction.

4. TERMINOLOGY

The following aspects have direct bearing on the survey and the resulting report:

- **Archaeological sites** are places where people lived and left evidence of their presence in the form of artifacts, food remains and other traces such as rock paintings or engravings, burials, fireplaces and structures.

- **Cultural Resources** are all non-physical human-made occurrences, as well as natural occurrences that are associated with human activity. These include all sites, structures and artifacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development.
- **Cultural Significance** is the aesthetic, historical, scientific and social value for past, present and future generations.
- **Conservation** means all the processes of looking after a place so as to retain its cultural significance.
- **Historic** means significant in history.
- **Historical** means belonging to the past.
- **In Situ material** means archaeological remains that have not been disturbed.
- **Place** means site, area, building or other work, group of buildings or other works, together with pertinent contents, surroundings and historical and archaeological deposits.
- **Preservation** means protecting and maintaining the fabric of a place in its existing state and retarding deterioration or change, and may include stabilization where necessary.

5. METHODOLOGY

Physical Survey

The extent of the proposed area and corridors were determined as well as the extent of the areas to be affected by secondary activities (access route) during the development. Physical survey was aided by vehicle and on foot covering the proposed area, peripheral areas which will not be affected by the proposed project. A systematic inspection of the area on along linear transects resulted in the maximum coverage of the proposed area. The survey was conducted in May, 2010.

A brief literature survey relating to the Pre-historical and historical context of the project area where the proposed establishment have been earmarked was consulted, Institute such as South African Heritage resource agency office in Gauteng were consulted to determine whether any heritage resources have been identified during earlier archaeological survey near the proposed site. In addition, the proposed site was studied by means of the 1:50 000 topographical maps and the 1:250 000 map on which the proposed study area appears.

Restrictions

It must be pointed out that heritage resources can be found in the unexpected places, it must also be borne in mind that survey may not detect all the heritage resources in a given project area. While some remains may simply be missed during surveys (observation) others may occur below the surface of the earth and may be exposed once development (such as the construction of the facilities) commences.

Documentation

All sites/ find spots 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/ find spots were plotted using a Global Positioning System (GPS) (Garmin E-Trek Legend) and numbered accordingly.

6. ASSESMENT CRITERIA

This section 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.

6.1 Site Significance

The site significance classification standards as prescribed and endorsed 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 as guidelines in determining the site significance for the purpose of this report

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	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

Grading and rating systems of heritage resources

permanent change to the (natural and/or social) environment, or in severe or very severe effects, or beneficial or very beneficial effects.

Example: The loss of a species would be viewed by informed society as being of VERY HIGH significance.

Example: The establishment of a large amount of infrastructure in a rural area, which previously had very few services, would be regarded by the affected parties as resulting in benefits with VERY HIGH significance.

HIGH

These impacts will usually result in long term effects on the social and /or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

Example: The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

Example: The change to soil conditions will impact the natural system, and the impact on affected parties (e.g. farmers) would be HIGH.

MODERATE

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by the public or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are real, but not substantial.

Example: The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

Example: The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

LOW

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by

society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

Example: The temporary changes in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

Example: The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people living some distance away.

NO SIGNIFICANCE

There are no primary or secondary effects at all that are important to scientists or the public.

Example: A change to the geology of a certain formation may be regarded as severe from a geological perspective, but is of NO SIGNIFICANCE in the overall context.

6.3 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.

6.4 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

6.5 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

7. SITE LOCATION AND DESCRIPTION

The proposed site and three alternative sites, lies north of the National road(N1) from Gauteng to Bloemfontein, west of the M70. The area is situated south west of Gauteng (Johannesburg) in close proximity around Baragwaneth hospital, Diepkloof, Klipspruit and Orlando, within Johannesburg Metropolitan Municipality, Gauteng Province.

The physical environment of the area in which the proposed substations are situated ranges from flat to slightly undulated section, in most instances such land is characterized by wetland with perennial stream adjacent to the proposed area. The geological influence of the proposed site has given rise to dense grassland covering most parts of the proposed area. The following is the description of the possible area proposed for substation establishment as suggested by ESKOM:

8. History of Soweto

The development of Soweto (an abbreviation of South Western Township) could be linked to the gold rush period associated with the discovery of Gold in 1885 where thousands of people flocked to Johannesburg to seek for fortunes. More than half of the population was Africans, most living in multi racial shanty towns near the gold mines in the centre of the town. As the gold mining industry developed, so did the need for labour increase. Migrant labour was started and most of these workers lived in mine compounds. However other workers had to find their own accommodation often in appalling conditions.

The first residents of what is now known as Soweto were located into the area called Klipspruit in 1905 following their relocation from "Coolietown" in the centre of

Johannesburg as a result of an outbreak of bubonic plague. The Johannesburg City Council took the opportunity to establish racially segregated residential areas. Some residents were to be relocated to Alexandra Township (near the present day Sandton). This group comprised black, Indian and coloured families and they received freehold title to their land (this was subsequently reversed by the Apartheid Government). Only black families were located into Klipspruit and the housing was on a rental basis. Klipspruit was subsequently renamed Pimville.

During the 1930's the demand for housing for the large numbers of black people who had moved into Johannesburg grew to such an extent that new housing was built in an area known as Orlando, named after the first administrator Edwin Orlando Leaky.

In the 1940's a controversial character James Mpanza led the first land invasion and some 20000 squatter's occupied land near Orlando. James Mpanza is known as the "Father of Soweto".

In 1959 the residents of Sophiatown were forcibly removed to Soweto and occupied the area known as Meadowlands. Sir Earnest Oppenheimer, the first chairman of the Anglo American Corporation, was appalled by the housing shortage and was instrumental in arranging a loan for the construction of additional housing and this is commemorated by the Oppenheimer Tower in Jabulani www.soweto.co.za (2010).

9.1. PROPOSED SUBSTATION SITE A

The proposed site A is situated south west of Baragwaneth hospital, further south east of Vista University approximately 3kilometeres from the main turn off from the Main old Potchefstroom tarred road. The site is situated north of PICK IT UP, waste recycle management area, located at an abandoned commercialized waste water treatment plant, this is articulated by several abandoned treatment building and dams which are scattered around. Several constructed concrete platform with underground pipe line often noted where the constructed concrete manhole have been exposed to the surface. The age of the structures were not established, however if during public participation it emerge that they are older than 60 years they must be avoided or necessary mitigation measures applied

Further east of the proposed area an operational Goud koppie waste water treatment work plant can be seen covering large section of a well fenced off area. Section of the proposed area north of the abandoned waste water treatment structure is characterized by a disturbed site currently used as garbage refusal site; there is a clear indication that the area was previously used as *Eucalyptus camaldulensis* Plantation. The proposed area for substation is located on the following global positioning co-ordinates (S27° .55' .10.74" E 26° 16' .16.87")

Further north of the proposed site earmarked for substation development, several old houses structures occurred, their design and arrangement place them to be part of old Soweto residential township, these structures are currently in used, and they are part of Soweto living heritage protected by law. These houses structures provenience were not geo- referenced because the proposed substation development will not jeopardize or affect them in any way.

9.2 PROPOSED SUBSTATION SITE B

Proposed substation site B is located few kilometers east of the proposed site A. The area is situated within the industrial area south of Chris Hani Baragwaneth hospital, inside a well fenced off palisade area west of Multi meat, quality products, the site is characterized by dense blackjack and morning glory plant and grass, an indication that the area have been cultivated or disturbed previously.

The previous land use of the area has been agricultural farm land. The proposed site is located on the following global positioning co-ordinates (S27° .55' .50.13" E 26° 16' .27.19").

9.3 PROPOSED SUBSTATION SITE C

Proposed substation site C is located few kilometers north east of the proposed site C. The area is situated within the industrial area, approximately 1kilometre south of Chris Hani Baragwaneth Hospital, north of JRW Engineering (formerly TEC Engineering). Generally the area is covered by *themedata trianda* grassland with few scattered *acacia Karoo* trees. Proposed area C is on the following global positioning co-ordinates (S27° .56' .10.2" E 26° 16' 7.03").

9.4 PROPOSED SUBSTATION SITE D

Proposed substation site D is located north of Chris Hani Baragwaneth, further north of old Potchefstroom and Bara Mall on an undulated section of land densely covered by *Themenda trianda* grass and few scattered trees such as *siringa*, *acacia karoo* and juvenile *Eucalyptus* tree. The area is adjacent to the well known Orlando Cooling tower and a perennial stream that feeds the Orlando Power dam, the surface of the area shows sign of compaction possibly during the construction of the Bara Mall and other related infrastructures such as Taxi rank. The proposed site is located at the following global positioning co-ordinates (S27° .55' .48.7" E 26° 15' .20.25")

10. History of Orlando twin cooling towers

These iconic structures could be linked to part of the history of urbanization which link to the development of Soweto, Johannesburg and the gold rush period. This history centers on the generation and supply of electricity under an increasingly harsh political regime. Implicit in the history of Johannesburg's electricity is an exploration of 'the power of power' the area was one of the most advanced power stations in the southern hemisphere.

- Orlando Power Station was constructed in three phases between 1939 and 1955.
- Initially, the spray ponds in the dam were used to cool the steam from the boilers.
- In 1951 the two cooling towers were added as additional cooling mechanisms, as the power station was extended.
- At the time the cooling towers were considered to be state-of-the-art structurally, both locally and internationally.
- Orlando Power Station functioned until 1998, way beyond its intended lifespan.

All major municipalities extended their power stations or built new ones in the period 1935-1945. Johannesburg was no different. Industrial and business development between 1927 and 1937 meant that the electricity load exceeded all estimates of demand. Indeed the load trebled, and doubled again during the three and a half years prior to the outbreak of the Second World War.

As early as 1935, the Council had begun to consider the construction of Orlando Power Station, recognizing that City Generating Station could not keep up with the demand for power. This demand for power was the result of rapid expansion of the city. Orlando site was commonly chosen as the area lies, 'about nine miles from the City on the north side of the Potchefstroom Road', offered easy access to both coal and water. On the site was a dam constructed originally prior to 1907. The dam's area of 65 acres was suited to the cooling requirements of first 40 MW of plant. The cooling process would be supplemented with spray ponds.

It was close to the main Soweto railway line running on western boundary, which would facilitate coal and plant transportation. The ever present problem of ash disposal could be solved by a 'large valley adjacent to site. Ground conditions of soft rock were ideally suited to heavy foundation requirements. In 1937, the City obtained approval from Administrator of the Transvaal for funds to borrow to build new Power Station. Like the City Generating Station, Orlando was built in stages, and was eclipsed before the final stage was complete.

The station would ultimately consist of

- 10 X 30 MW turbo-alternators
- 20 X 175,000 lb per hour boilers operating at 600 lb per square inch and 825 ° Fahrenheit

However, it would be built in three stages, using identical design and type of construction with each extension. Orlando was regarded as an ultra-modern station with state of the art turbines, using high temperatures and pressures, with higher thermal efficiencies than the City Generating Station, In 1951 two cooling towers were built, as the cooling capacity of dam had reached

maximum. The erection of additional boilers started in January 1952 and the first turbine in August 1952. Construction was completed in late 1954.

Orlando Power Station is the most efficient power station in South Africa. At the 50th anniversary function in 1992, Gilbert Marshall noted that Orlando's 'working life had exceeded many of the man who made it. 'The City Treasurer who raised the loans.... planned on a life of 25 years, and designers hoped it would last 35 years but the operators have kept it going for 50 years.

The power station was finally closed in 1998 after 56 years of operation. The cooling towers remain a significant landmark in Soweto, and will continue to do so as one of the highlights on the tourist route through Soweto in their new life as a vertical adventure center (Sue Krige;2010).

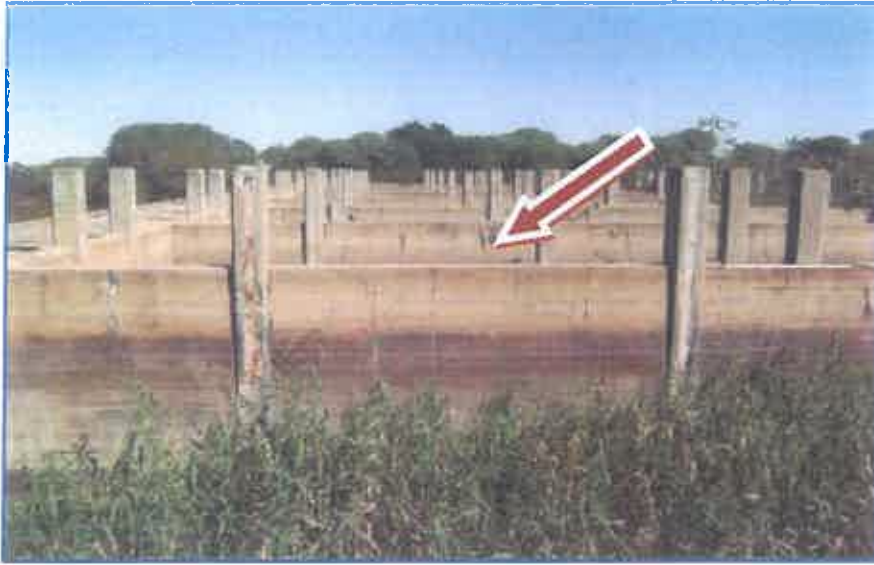


Figure 1: View of the abandoned waste water treatment works concrete structure noted on the proposed site.



Figure 2: View of the existing concrete Manhole of the sewage pipe line



Figure 3: View of the waste water treatment works, the photo was taken from the southern direction where PICK IT UP waste recycles is located.



Figure 4: Section of the proposed area currently used as Garbage refusal site.



Figure 5: View of the proposed site B towards the western section, showing the existing waste water treatment works at the photo background.



Figure 6: View of the proposed site B towards the north.



Figure 7: View of the proposed site B towards the eastern side where some of the existing industries are located.



Figure 8: View of the proposed site C densely covered by grass and few scattered trees.



Figure 9: View of the proposed site C towards the northern section the tall building at the photo background is Chris Hani Baragwaneth hospital.



Figure 10: View of the proposed site D located adjacent to Orlando cooling tower, the area is located north of the Bara Mall.



Figure 11: View of the proposed D towards the south eastern section where concrete palisade form boundary and can be seen from the photo back ground.



Figure 12: View of the proposed area on site D, showing foot path linking the Diepkloof Township with the Bara mall cutting across the proposed site in two sections.

11. ASSESMENT OF SITES AND FINDS

This section contains the results of the heritage site/find assessment. The phase 1 heritage scoping assessment program as required in terms of the section 38 of the National Heritage Resource Act (Act 25 of 1999) done for the proposed project.

Within the close proximity around the area proposed for the construction of the substations, series of heritage importance occur such as, Old house structures north of the proposed site A, twin concrete cooling towers around proposed site D all the mentioned structures existence will not be affected by the proposed development, therefore there are no primary or secondary effect at all which will be imposed by the construction of a substation.

The significance of the proposed area delineated and surveyed could be rated as the following based on ASAPA standards and the National Heritage Resource Act (Act 25 of 1999)

<i>Heritage Significance:</i>	No significance
<i>Impact:</i>	Negative
<i>Impact Significance:</i>	High
<i>Certainty:</i>	Probable
<i>Duration:</i>	Permanent
<i>Mitigation:</i>	A

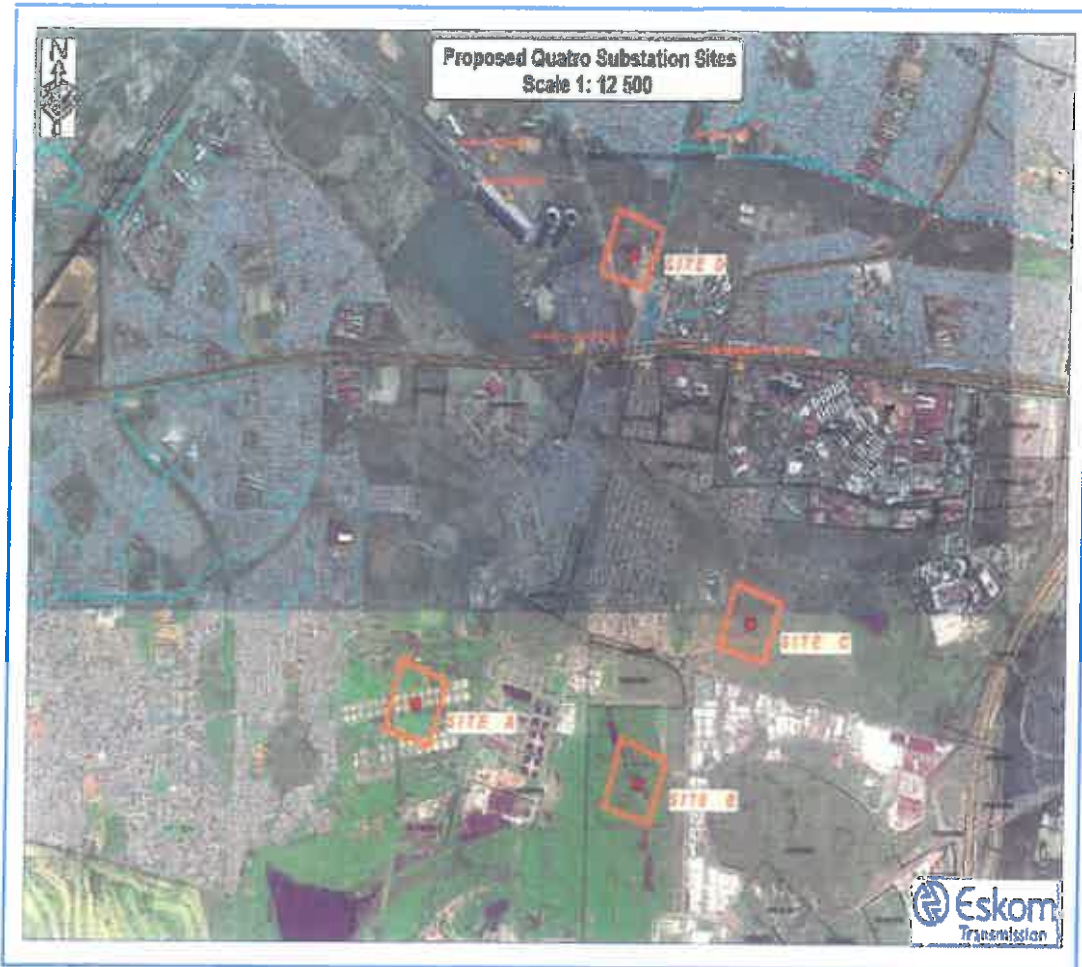
12. RECOMMENDATIONS

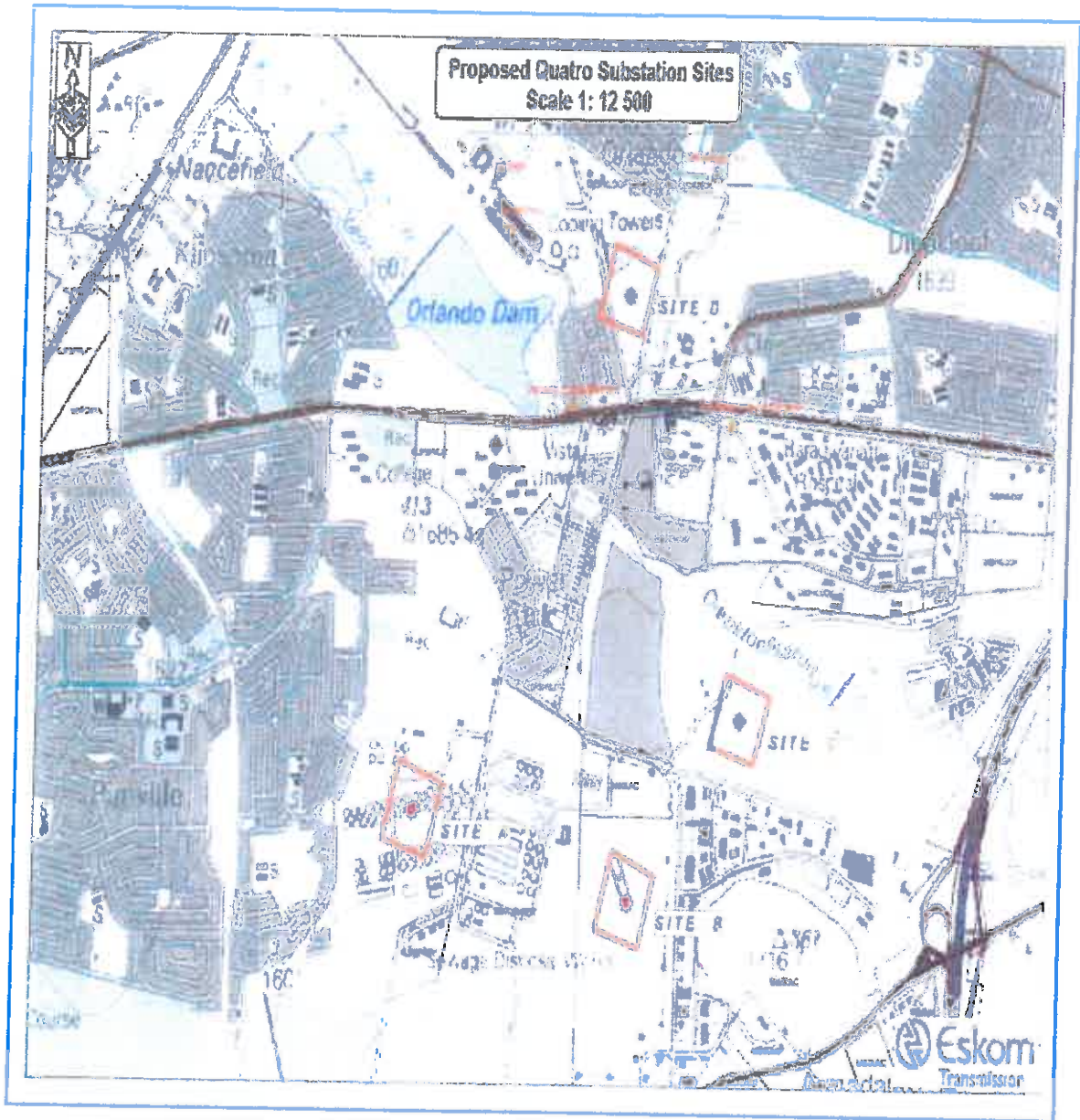
- Based on the outcome of the assessments of finds and heritage resources we would like to recommends that the proposed substation Site B, C and D be utilized as the most preferred sites since there is no other actions or any further heritage mitigation measures needed as no heritage resource sites or finds of any value or significance which were identified within the proposed substation sites. However, if Site A becomes the preferred sites

we would like to suggest that due to treatment structures, the substation be positioned further north of the structures within the disturbed *Eucalyptus* plantation area. There is consequently no reason from a heritage point of view why Eskom should not proceed with the proposed substation project on either of the proposed sites.

No further studies/ Mitigations are recommended for the proposed project and there is no archaeological or place of historical significance that will be impacted by the proposed project. However, should any chance archaeological or any other physical cultural resources be discovered subsurface, heritage authorities should be informed. From an archaeological and cultural heritage resources perspective, there are no objections to the proposed substation development and we recommend to South African Heritage Resources Agency (SAHRA) authorities to approve the project as planned.

13. TOPOGRAPHICAL MAP





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