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# FINAL HERITAGE IMPACT ASSESSMENT REPORT: PROPOSED ESSELEN-NORTHRAND-CHLOORKOP ESKOM STRENGTHENING PROJECT, GAUTENG PROVINCE

PREPARED FOR: Diana Verster, DMV Environmental Consulting  
DATE OF SUBMISSION: 3 November 2008

## EXECUTIVE SUMMARY

This report fulfils the partial requirements for a full Heritage Impact Assessment (HIA) as provided for in Section 38 of the National Heritage Resources Act (NHRA) (Act 25 of 1999), which lists certain activities for which an HIA is necessary. This report also fulfils the requirements of a Specialist Study in accordance with the EIA Regulations and procedures.

The project is a linear development and entails the upgrading of ESKOM's Esselen and North Rand substations, the construction of two 400 kv Esselen-North Rand lines and the construction of an additional line between North Rand and Chloorkop substations.

For the proposed new 400 kv power line between Esselen Park substation and North Rand substation, five possible routes were investigated, some of which run along existing power line corridors. For the proposed 132 kv power line between North Rand and Chloorkop substations, three routes were investigated, which also run along existing power lines. This 132 kv route is in fact an extension of Route 4.

The investigation was carried out by an independent generalist heritage practitioner, Dr RC de Jong (Cultmatrix cc).

The site for the proposed project is located in the northern parts of Ekurhuleni, comprising urban areas such as Tembisa and Kempton Park, industrial areas such as Chloorkop, vacant open land, roads and railways and a few remaining agricultural areas. This is an area that has been transformed since the 1890s through numerous interventions related to transport, industrial, commercial and residential developments that have obliterated features associated with pre-colonial and early colonial history. Most of the residential and other developments date back to the 1960s so that there are few heritage resources older than 60 years that could be affected.

The aim of the full HIA investigation was to identify, analyse and recommend heritage conservation and mitigation measures.

The objectives were to identify and analyse heritage issues, to research the chronology of the site and its role in the broader context, to undertake a comprehensive assessment of heritage significance, to analyse the nature and scale of the proposed development, to establish the compatibility of the proposed development with heritage and other statutory frameworks and to assess alternatives in order to promote heritage conservation issues.

The investigation was done through a combination of desktop and field studies and a grid reference for ease of mapping and assessing heritage resources was provided by the client.

This report complies as follows with the provisions of Section 38 (3) of the *National Heritage Resources Act* (Act 25 of 1999):

### (a) Identification and mapping of heritage resources

SITE	RESOURCE	LOCATION	SIGNIFICANCE (1)	CONDITION (2)	SENSITIVITY (1 X 2)	MANAGEMENT ACTION
EN 1	Mooifontein Cemetery (municipal)	South of Tembisa (routes 1 and 4)	High = 3	Good = 3	9	Locate new power line tower structures between graves
EN 2	Old railway culverts (2)	Van Riebeeck Park green zone (routes 3 and 5)	Medium = 2	Fair = 2	4	Avoid if possible
EN 3	Old Kempton Park sewage	Between Birchleigh and	Low = 1	Poor = 1	1	No action necessary

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	treatment plant	Kaalfontein (routes 2 and 5)				
EN 4	North Rand substation	North Rand substation	Medium = 2	Fair = 2	4	Avoid damage to or disturbance of historic fabric if possible, otherwise document before this is done

No other heritage resources affected by the five 400 kv routes were identified. The proposed three routes for the 132 kv line between North Rand and Chloorkop also do not affect any heritage resources. This landscape is in fact an emerging industrial landscape characterised by a slimes dam, waste dump, chemical plant, railway lines and power lines.

**(b) Significance**

See the table above. The railway culverts are the oldest colonial structures (1892) in the area.

**(c) Impact on heritage resources**

- Mooifontein Cemetery: The cemetery is located adjacent to existing power lines that run across an informal settlement. Routes 1 and 5 of the proposed 400 kv line run through this cemetery. The impact could vary from neutral (no impact) to low negative, depending on the location of the bases for the tower structures.
- Old railway culverts: These are located on an old railway embankment that forms part of a green zone and wetland area between Birchleigh and the railway line. The impact of routes 3 and 5 will be medium negative, also because the green zone is an environmentally sensitive area.
- Old sewage treatment plant: The impact of routes 2 and 5 will be neutral due to the low significance and sensitivity of the site.
- North Rand substation: Depending on the location of the new lines the impact could vary from neutral to low negative due to the presence of historic fabric (workshops, transformer buildings, houses, offices etc)

**(d) Social and economic benefits**

The development will have no direct benefits related to heritage conservation. With the exception of Van Riebeeck Park, the benefits associated with socio-economic development outweigh any heritage conservation benefits.

**(e) Public consultation**

This has been part of the EIA process. Except for references to Mooifontein Cemetery, no comments regarding heritage resources were obtained.

**(f) Mitigation before construction**

- Mooifontein Cemetery: Check locations of tower structures for routes 1 and 4
- Railway culverts: Avoid (Routes 3 and 5)
- Sewage treatment plant (Routes 2 and 5): No mitigation is necessary.
- North Rand substation: Avoid historic fabric if possible, otherwise detailed documentation before changes

**(g) Mitigation during and after construction**

- Chance finds (burial sites, old waste disposal sites, foundations etc) should be monitored during construction work
- Any damage to or disturbance of graves in Mooifontein Cemetery should be monitored during construction work
- Should the cemetery and/or the culverts be incorporated into the final route, a Conservation Management Plan will be required in terms of the NHRA.
- In the medium to long term a Conservation Management Plan for North Rand substation will be necessary to protect the historic fabric.

Based on the above findings, Cultmatrix **supports Route 4 for the proposed 400 kv power lines** due to the fact that this route will have the least impact on heritage resources. The four other routes have more adverse impacts on heritage resources and are therefore not supported.

Based on the above findings, Cultmatrix also **supports Routes 4B and 4C for the proposed 132 kv power line** between North Rand and Chloorkop because these routes run along existing power lines and do not affect any heritage resources. Route 4A encroaches on the Modderfontein precinct and could have negative impacts on contemplated developments here; hence, this route is not supported.

The following conditions apply:

- Vegetation clearing, bulk earthworks and excavation operations must be monitored during the site preparation and construction phases of the project. Should any archaeological remains be uncovered during these operations (hidden foundations, old waste dumps and other chance finds), these must be brought to the attention of Cultmatrix. Test excavations (and possibly) systematic archaeological sampling may be required subject to the issuing of a permit by SAHRA before construction will be allowed to proceed. This will be a new and separate project.
- Should any human remains be disturbed, exposed or uncovered during excavations for the proposed project, these should immediately be reported to Cultmatrix. Burial remains should not be disturbed or removed until inspected by the archaeologist.
- The above recommendations must be included in the Construction Environment Management Plan for the proposed project.

Routes 3 and 5 may run across an ecologically sensitive area (Van Riebeeck Park) that includes two significant heritage resources (old railway culverts) and therefore these routes should be **avoided**. The implication of this is that Route 2 (from which Routes 3 and 5 branch off) is therefore also not feasible and should be **avoided**.

Route 2 runs through and past built-up areas where there is already encroachment on existing power line corridors and there is lack of space for another power line. This route should therefore be **avoided**.

Although of recent origin, the Mooifontein Cemetery is a significant local heritage resource that should be **avoided** if possible where routes 1 and 4 are concerned by locating the new lines away from the cemetery. If this is not possible the route may be located across the cemetery provided that there is a minimum impact on existing and new burial areas.



**R C DE JONG**  
Principal Member: Cultmatrix cc

## PART 1: DEVELOPMENT OVERVIEW

The structure of this report is based on:

- SOUTH AFRICAN HERITAGE RESOURCES AGENCY, Heritage Impact Assessment: Notification of intent to develop (form)
- DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING, PROVINCIAL GOVERNMENT OF THE WESTERN CAPE, 2005, Guideline for involving heritage specialists in EIA processes (document)
- DEPARTMENT OF ENVIRONMENT AFFAIRS AND TOURISM, Integrated Environmental Management Guidelines
- SOUTH AFRICAN HERITAGE RESOURCES AGENCY, 2006, *Minimum standards: Archaeological and palaeontological components of impact assessment reports* (unpublished).
- WORLD BANK, *Environmental Assessment Sourcebook Update No 8, September 1994: Cultural Heritage in Environmental Assessment*.
- Best-practice HIA reports submitted by Cultmatrix and other heritage consultants

### 1.1 Background

#### 1.1.1 General

This HIA report is part of the Environmental Impact Assessment (EIA) for the proposed strengthening of the Eskom transmission network between Esselen, North Rand and Chloorkop substations in the Tembisa and Kempton Park area.

This area has a long history of human use and occupation, initiated by Early Stone Age communities and preceded by geological changes. It includes a range of heritage resources as defined in the *National Heritage Resources Act* (Act 25 of 1999):

- Places, buildings and structures and equipment of cultural significance;
- Places to which oral traditions are attached or that are associated with intangible heritage (ceremonies, memories, festivals, economic use etc);
- Historical settlements and townscapes;
- Landscapes and natural features of cultural significance;
- Graves and burial grounds;
- Archaeological sites;
- Sites related to the history of farm and industrial labour.

The 275/132kV transformers at Esselen substation are currently uniform. Due to the Esselen substation site being dolomite a need arose to look at an alternative way of resolving the uniform conditions. Most of the 132kV load supplied by Esselen substation is at Northrand and Chloorkop substations with the 132kV line from Esselen constructed at 275kV specification. Since the 88kV cannot be shifted or supplied for neighbouring MTS, the only option available was to move the 132kV load. There is also a request from City Power for Eskom to supply them with 275kV at Kelvin Power station site which is closer to Northrand substation.

#### Phase 1: Commissioning date June 2010

- ✓ 1 x 400kV, 1x132kV transformer bays and 1x275/132kV 500MVA line banked transformers at Northrand S/S
- ✓ 1 x 275kV Esselen line bays and rearrange 275kV line bays
- ✓ Rebuild Esselen-North Rand 1 16km 275kV line to 400kV 2000MW operated at 275kV in servitude
- ✓ Replace the Esselen 2x160MVA with 1x315MVA 275/88kV transformer.

#### Phase 2: Commissioning date June 2011

- ✓ 400kV Busbar operated at 275kV and 4 x 400kV North Rand line bays
- ✓ 1 x 275kV Esselen line bays
- ✓ 2 x 275, 2x132kV transformer bays and 2x275/132kV 500MVA transformers at Northrand S/S
- ✓ Rebuild Esselen-North Rand 2 16km 275kV line to 400kV 2000MW operated at 275kV in servitude

- ✓ Construct 2x132kV lines from North Rand to Chloorkop and establish 2x132kV line bays at Northrand S/S

BKS Environmental (independent EIA consultants appointed by the developers) appointed Cultmatrix cc as an independent heritage consultant to conduct a heritage impact assessment of places, buildings, objects and structures of cultural significance found within the boundaries of the area that is to be impacted upon directly and indirectly by the layout of the proposed development.

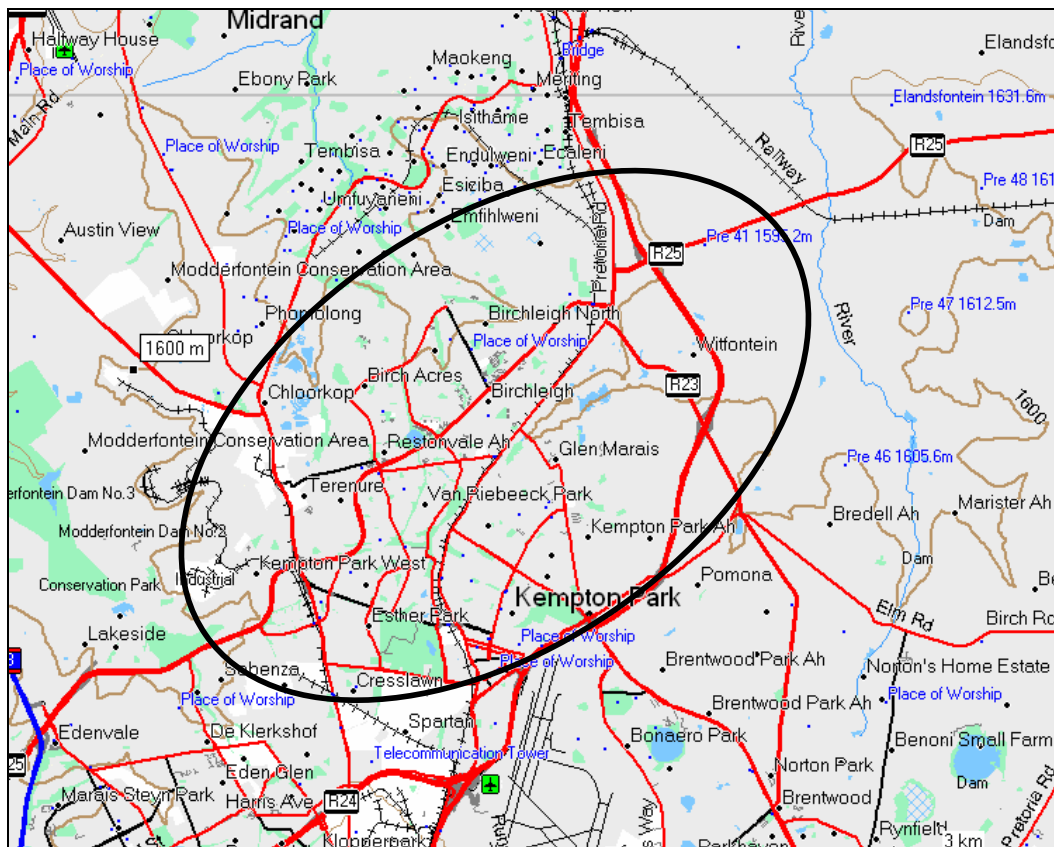
**1.1.2 Terms of reference**

This investigation is a heritage impact assessment concerning the proposed development in accordance with the requirements of Section 38 of the National Heritage Resources Act (Act 25 of 1999).

The general aim of the full HIA investigation was to identify, analyse and recommend heritage management mitigation measures and monitoring programmes.

The general objectives were to analyse heritage issues, to research the chronology of the site and its role in the broader context, to undertake a comprehensive assessment of heritage significance, to analyse the nature and scale of the proposed development, to establish the compatibility of the proposed development with heritage and other statutory frameworks and to assess alternatives in order to promote heritage conservation issues.

This report may be submitted as a final HIA report to SAHRA Gauteng for purposes of authorising the proposed development.



**FIGURE 1: Map indicating general location of the proposed development area. North is at the top.**

## 1.2 Study approach

### 1.2.1 Definitions and assumptions

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

- *Cultural (heritage) resources* are all non-physical and physical human-made occurrences, as well as natural occurrences that are associated with human activity. These include all sites, structures and artefacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development.
- The *significance* of the sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.
- The *value* is related to concepts such as *worth, merit, attraction or appeal*, concepts that are associated with the (current) usefulness and condition of a place or an object. Hence, in the development area, there are instances where elements of the place have a high level of significance but a lower level of value.
- It must be kept in mind that significance and value are not mutually exclusive, and that the evaluation of any feature is based on a combination or balance between the two.
- Isolated occurrences: findings of artefacts or other remains located apart from archaeological sites. Although these are noted and samples are collected, it is not used in impact assessment and therefore do not feature in the report.
- Traditional cultural use: resources which are culturally important to people.
- All archaeological remains, artificial features and structures older than 100 years and historic structures older than 60 years are protected by the relevant legislation, in this case the National Heritage Resources Act (NHRA) (Act No. 25 of 1999). No archaeological artefact, assemblage or settlement (site) and no historical building or structure older than 60 years may be altered, moved or destroyed without the necessary authorisation from the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority. Full cognisance is taken of this Act in making recommendations in this report.
- The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3, and the Australian ICOMOS Charter (also known as the Burra Charter) are used when determining the cultural significance or other special value of archaeological or historical sites.
- It should be kept in mind that archaeological deposits usually occur below ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants would be required to be notified in order for an investigation and evaluation of the find(s) to take place (*cf.* NHRA (Act No. 25 of 1999), Section 36 (6)).

### 1.2.2 Limiting/Restricting factors

The investigation has been influenced by the following factors related to the overall EIA:

- Availability and reliability of baseline information about the affected area;
- Unpredictability of buried archaeological remains (absence of evidence does not mean evidence of absence);
- Portions of the site are covered with dense and tall grass and weeds.
- Limited physical access to some areas



### 1.2.3 Field work

The approach used in the study entailed two separate foot and vehicle surveys of the proposed site.

### 1.2.4 Desktop study

Further information was obtained from published sources and historic maps.

## 1.3 Legal context of the HIA

### 1.3.1 Section 38 of the NHRA

This study constitutes a heritage impact assessment (HIA) linked to the environmental impact scoping and impact assessment required for the development. The proposed development is a listed activity in terms of Section 38 (1) of the NHRA. Section 38 (2)(a) of the National Heritage Resources Act (Act 25 of 1999) requires the submission of a heritage impact assessment report for authorisation purposes to the responsible heritage resources agency, SAHRA.

Heritage conservation and management in South Africa (excluding KwaZulu Natal on a provincial level) is governed by the *National Heritage Resources Act (Act 25 of 1999)* (NHRA) and falls under the overall jurisdiction of the *South African Heritage Resources Agency (SAHRA)* and its provincial offices and counterparts.

Section 38 of the NHRA requires a Heritage Impact Assessment (HIA), to be conducted by an independent heritage management consultant, for the following development categories:

- Construction of a road, wall, **power line**, pipeline, canal or other linear form of development or barrier **exceeding 300m in length**
- Construction of bridge or similar structure exceeding 50m in length
- Development or other activity that will change the character of a site -
  - Exceeding 5000 sq m
  - Involving three or more existing erven or subdivisions
  - Involving three or more erven or divisions that have been consolidated within past five years
  - Rezoning of site exceeding 10 000 sq m
  - The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority
- Any other development category, public open space, squares, parks, recreation grounds

The proposed development is therefore a listed activity in terms of the NHRA.

In addition, the new EIA Regulations promulgated in terms of NEMA determine that any environmental reports will include cultural (heritage) issues.

The end purpose of this report (in its final form) is to alert ESKOM, the environmental consultant, GDACE and SAHRA about existing heritage resources that may be affected by the proposed development, and to recommend mitigatory measures aimed at reducing the risks of any adverse impacts on these heritage resources. Such measures could include the recording of any heritage buildings and structures older than 60 years prior to demolition, in terms of Section 34 of the NHRA and also other Sections of this act dealing with archaeological sites, buildings and graves. The implementation of these interventions constitutes separate, follow-up projects with separate permits.

Because of the size of the development, authorisation will be given or facilitated by SAHRA's Gauteng office. Final reports should therefore be submitted by the client (or, if agreed to, by Cultmatrix) to these offices for authorisation.

In terms of the ECA, Section 38(1) of the NHRA is also applicable – thus any person undertaking any development in the categories of Section 38 (1) a-e, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. In the case of an EIA, comments from the responsible heritage resources agency based on a heritage scoping report are required.

The NHRA Section 2 (xvi) states that a “heritage resource” means any place or object of cultural significance, and in Section 2 (vi) that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

This HIA forms part of an EIA for the site.

Based on the HIA report, SAHRA Gauteng will be able to authorise the proposed development with certain conditions. These conditions have been included in this report (see Recommendations).

Apart from a heritage report assisting a client to make informed development decisions, it also serves to provide the relevant heritage resources authority with the necessary data to perform their statutory duties under the NHRA. After evaluating the heritage scoping report, the relevant heritage resources authority will decide on the status of the resource, whether the development may proceed as proposed or whether mitigation is acceptable, and whether the heritage resources require formal protection, i.e. as a Grade I, II or III resource, with relevant parties having to comply with all aspects pertaining to such Grading.

### **1.3.2 Section 35 of the NHRA**

Section 35 (4) of the NHRA stipulates that no person may, without a permit issued by SAHRA to destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object. This section would apply in the case of chance finds of hidden foundations, waste dumps and similar features.

### **1.3.3 Section 36 of the NHRA**

Section 36 (3) of the NHRA stipulates that no person may, without a permit issued by the South African Heritage Resources Agency (SAHRA), 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. This section would apply in the case of the discovery of hidden burial sites and also applies to the Mooifontein Cemetery.

### **1.3.4 Section 34 of the NHRA**

Section 34 of the NHRA stipulates that no person may, without a permit issued by SAHRA and/or its provincial counterparts, alter, destroy, damage, relocate etc any building or structure older than 60 years. This section applies to two old railway culverts. North Rand substation just falls outside the 60-year clause but has nevertheless accrued significance to its importance in the distribution and transmission network in the area.

## **1.4 Development criteria in terms of Section 38(1)**

<b>1.4</b>	<b>Development criteria in terms of Section 38(1)</b>	<b>Yes/No details</b>
1.4.1	Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
1.4.2	Construction of bridge or similar structure exceeding 50m in length	No
1.4.3	Development exceeding 5000 sq m	Yes
1.4.4	Development involving three or more existing erven or subdivisions	No
1.4.5	Development involving three or more erven or divisions that have been consolidated within past five years	No
1.4.6	Rezoning of site exceeding 10 000 sq m	Yes
1.4.7	Any other development category, public open space, squares, parks, recreation grounds	No

## **1.5 Property ownership**

<b>1.5</b>	<b>Property owners</b>	
1.5.1	Farms	
1.5.2	Name and contract address	
1.5.3	Telephone number	
1.5.4	Fax number	

1.5.5	E-mail	
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**1.6 Developer**

<b>1.6</b>	<b>Developer</b>	
1.6.1	Name and contact address	ESKOM
1.6.2	Telephone number	
1.6.3	Fax	
1.6.4	E-mail	

**1.7 Environmental specialist**

<b>1.7</b>	<b>Environmental Specialist</b>	
1.7.1	Name and contact address	Diana Verster, DMV Environmental Consulting
1.7.2	Telephone number	(073) 1577362
1.7.3	Fax	(087) 8074536
1.7.4	E-mail	<a href="mailto:dianav@lantic.net">dianav@lantic.net</a>

**1.8 Heritage impact assessment specialists**

<b>1.8</b>	<b>Specialist (1)</b>	
1.8.1	Name and contact address	Dr RC de Jong (Principal Member: Cultmatrix cc), PO Box 12013, Queenswood 0121, Pretoria
1.8.2	Qualifications and field of expertise	PhD (Cultural History) UP (1990), Post-Graduate Museology Diploma UP (1979), generalist heritage management specialist with experience in museums and heritage since 1983
1.8.3	Relevant experience in study area	HIAs for Serengeti, Africa The Park and Heineken Brewery; Heritage component of the 2003 Ekurhuleni SOER
1.8.4	Telephone number	(082) 577-4741
1.8.5	Fax number	(086) 612-7383
1.7.6	E-mail	<a href="mailto:cultmat@iafrica.com">cultmat@iafrica.com</a>

**1.9 Property details**

<b>1.9</b>	<b>Property details</b>	
1.9.1	Name and location of property	Esselen-North Rand-Chloorkop substations and connecting power lines and corridors
1.9.2	Erf or farm numbers	Too much detail
1.9.3	Magisterial district	Kempton Park
1.9.4	Closest town	Kempton Park
1.9.5	Local authority	Ekurhuleni
1.9.5	Current use	Electrical substations and transmission lines, electrical distribution lines, residential suburbs, vacant open land, farm land, industrial areas, streams and wetlands, roads and railway lines
1.9.5	Current zoning	Undetermined
1.9.5	Predominant land use of surrounding properties	Residential suburbs, vacant open land, farm land, industrial areas, streams and wetlands, roads and railway lines
1.9.9	Total extent of property	More than 16 km of power lines

**1.10 Development description**

<b>1.10</b>	<b>Development description</b>	
1.10.1	Nature of proposed development	<p><b>Phase 1: Commissioning date June 2010</b></p> <ul style="list-style-type: none"> <li>✓ 1 x 400kV, 1x132kV transformer bays and 1x275/132kV 500MVA line banked transformers at Northrand S/S</li> <li>✓ 1 x 275kV Esselen line bays and</li> </ul>

1.10	Development description	
		rearrange 275kV line bays ✓ Rebuild Esselen-North Rand 1 16km 275kV line to 400kV 2000MW operated at 275kV. ✓ Replace the Esselen 2x160MVA with 1x315MVA 275/88kV transformer.  <b>Phase 2: Commissioning date June 2011</b> ✓ 400kV Busbar operated at 275kV and 4 x 400kV North Rand line bays ✓ 1 x 275kV Esselen line bays ✓ 2 x 275, 2x132kV transformer bays and 2x275/132kV 500MVA transformers at Northrand S/S ✓ Rebuild Esselen-North Rand 2 16km 275kV line to 400kV 2000MW operated at 275kV. ✓ Construct a 2x132kV lines from North Rand to Chlookop and establish 2x132kV line bays at Northrand S/S
1.10.2	Possible impacts on heritage value of site and contents	Medium to low negative (in case of chance archaeological finds, burial sites, the cemetery and the railway culverts), neutral (in case there are no features)
1.10.3	Structures older than 60 years affected by proposed development	Two old railway culverts in Van Riebeeck Park
1.10.4	Rezoning or change of land use	No
1.10.5	Construction work	Yes
1.10.6	Total floor area of proposed development	Immaterial
1.10.7	Extent of land coverage of development	Not available
1.10.8	Earth moving and excavation	Yes
1.10.9	Number of storeys	Immaterial
1.10.10	Maximum height above ground level	Immaterial
1.10.11	Monetary value development	Not available
1.10.12	Time frames	3 years

**1.11 Legal requirements**

1.11	Legal requirements	
1.11.1	Is planning permission required for any departures or consent use in terms of zoning schemes? Has an application been submitted to the planning authority and have any comments or approval from the planning authority been obtained?	
1.11.2	Is planning authority permission required for any subdivision or consolidation? Has an application been submitted to the planning authority and has any comment or approval from the planning authority been obtained?	

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<b>1.11</b>	<b>Legal requirements</b>	
1.11.3	Is the proposed development subject to EIA regulations and has an application been submitted to the provincial environmental agency?	The proposed development is subject to the EIA regulations of the National Environmental Management Act (NEMA).
1.11.4	Has any assessment of the impact of the proposed development on any heritage resources been undertaken in terms of EIA or planning processes?	Yes: part of this report
1.11.5	At what stage in the EIA process is the application?	Specialist studies
1.11.6	Title deed restrictions	Not available
1.11.6	Is affected area situated within or adjacent to conservation area, special area, scenic route or any other area that has special environmental or heritage protection?	Yes: Van Riebeeck Park wetland zone and Mooifontein Cemetery
1.11.6	Does affected area have any special conservation status?	No
1.11.6	Are there any other restrictions on the property?	No
1.11.10	Does the proposed development conform to local planning policies?	Yes
1.11.11	What interested and affected parties have been consulted?	Public participation process has been conducted as part of EIA process.
1.11.12	Is approval from any authority required?	Yes: SAHRA and GDACE
1.11.13	Has permission for similar development been refused by any authority in the past?	No

## PART 2: HERITAGE ASPECTS OF THE AFFECTED AREA

### 2.1 General issues of site and context

<b>2.1.1 Context</b>		
	<i>(check box of all relevant categories)</i>	<i>Brief description/explanation</i>
x	Urban environmental context	Residential, commercial and industrial townships, rail way lines, roads, existing power lines, vacant urban land
	Rural environmental context	
	Natural environmental context	
<b>Formal protection (NHRA)</b>		
	Is the property part of a protected area (S. 28)?	No
	Is the property part of a heritage area (S. 31)?	No
<b>Other</b>		
	Is the property near to or visible from any protected heritage sites?	No
	Is the property part of a conservation area or special area in terms of the Zoning Scheme?	No
	Does the site form part of a historical settlement or townscape?	Yes: Kempton Park/Tembisa
	Does the site form part of a rural cultural landscape?	No
	Does the site form part of a natural landscape of cultural significance?	No
	Is the site within or adjacent to a scenic route?	No
	Is the property within or adjacent to any other area which has special environmental or heritage protection?	No
x	Does the general context or any adjoining properties have cultural significance?	Yes: Historic farms, older industrial area etc

<b>2.1.2 Property features and characteristics</b>		
	<i>(check box if YES)</i>	<i>Brief description</i>
x	Has the site been previously cultivated or developed?	Residential, commercial and industrial townships, rail way lines, roads, existing power lines, vacant urban land
	Are there any significant landscape features on the property?	No
	Are there any sites or features of geological significance on the property?	No
	Does the property have any rocky outcrops on it?	No
x	Does the property have any fresh water sources (springs, streams, rivers) on or alongside it?	Small stream and wetland (Van Riebeeck Park), small stream and wetland (south of Tembisa)
	Does the property have any sea frontage?	No
	Does the property form part of a coastal dune system?	No
	Are there any marine shell heaps or scatters on the property?	No
	Is the property or part thereof on land reclaimed from the sea?	No

<b>2.1.3 Heritage resources on the property</b>		
	<i>(check box if present on the property)</i>	<i>Name / List / Brief description</i>
<b>Formal protections (NHRA)</b>		
	National heritage site (S. 27)	No
	Provincial heritage site (S. 27)	No
	Provisional protection (s.29)	No
	Place listed in heritage register (S. 30)	No
<b>General protections (NHRA)</b>		
x	structures older than 60 years (S. 34)	Railway culverts
x	archaeological site or material (S. 35)	Possible (waste disposal sites, hidden foundations etc)
	palaeontological site or material (S. 35)	No
x	graves or burial grounds (S. 36)	Mooifontein Cemetery
	public monuments or memorials (S. 37)	No
<b>Other</b>		
	Any heritage resource identified in a heritage survey (state author and date of survey and survey grading/s)	None
x	Any other heritage resources (describe)	Old sewage treatment plant, North Rand substation

<b>2.1.4 Property history and associations</b>		
	<i>(check box if YES)</i>	<i>Brief description/explanation</i>
x	Provide a brief history of the property (e.g. when granted, previous owners and uses).	See 2.3 below <b>Rating: Low</b>
	Is the property associated with any important persons or groups?	No
x	Is the property associated with any important events, activities or public memory?	Railway development in the 1890s, power transmission and distribution development since the 1930s <b>Rating: Medium</b>
	Does the property have any direct association with the history of slavery?	No
	Is the property associated with or used for living heritage?	No
	Are there any oral traditions attached to the property?	No

## 2.2 General description of the affected area

The site for the proposed project is located in the northern parts of Ekurhuleni, comprising urban areas such as Tembisa and Kempton Park, industrial areas such as Chloorkop, vacant open land, roads and railways and a few remaining agricultural areas. This is an area that has been transformed since the 1890s through numerous interventions related to transport, industrial, commercial and residential developments that have obliterated features associated with pre-colonial and early colonial history. Most of the residential and other developments date back to the 1960s so that there are few heritage resources older than 60 years that could be affected.

The below images provide general views.



**FIGURE 2: Landscape between Birchleigh North and Tembisa (routes 1 and 4)**



**FIGURE 3: Northern boundary of Mooifontein Cemetery (routes 1 and 4)**





**FIGURE 4: Existing power lines between Norkem Park and Birch Acres (route 1)**



**FIGURE 5: Small pan and wetland between Norkem Park and Birch Acres (route 1)**



**FIGURE 6: Chloorkop substation**



**FIGURE 7: Open land and existing power lines (route 4) between Chloorkop and North Rand substations**



**FIGURE 8: Existing power lines (route 3) between North Rand substation and Esther Park**



**FIGURE 9: Esther Park area (route 3)**



**FIGURE 10: Existing power lines south of Edleen (route 3)**

**2.3 Chronology of the development area**

DATE	EVENT
500 000 years BP	Early Stone Age communities
200 000 years BP	Evidence of Middle Stone Age communities at Halfway House
30 000 years BP	Evidence of Late Stone Age communities at Halfway House and along the Jukskei River
350-600 AD	Tswana communities live in Midrand area
1100-1200 AD	San communities live in Midrand area
1500 AD	Tswana communities return to area
1830s	Displacement of Tswana communities by Matabele kingdom (Mzilikazi)
1840s	Voortrekker settlement
1850s-1860s	Grants of Mooifontein, Zuurfontein, Modderfontein, Klipfontein and Rietfontein to first Boer farmers
1891-1892	Construction of Germiston-Pretoria railway line
1896	<i>Zuid-Afrikaansche Fabriek voor Ontplofbare Stoffen</i> opened by President Kruger at Modderfontein
1899-1902	Anglo-Boer War
1903	Kempton Park established
1924	<i>African Explosives and Industries</i> established at Modderfontein
1934	Rand Extension Undertaking ceded to <i>Victoria Falls Power Co Ltd</i>
1939	Spartan industrial township established
1940	Esselen Park established
1942	South African and British governments build first chlor-alkali plant at Chloorkop
1944	<i>AEI</i> becomes <i>AECI</i>
1946	Cresslawn township established
1947	Greater Rand Extension Undertaking authorised
1948	Birchleigh township established
1949	Chloorkop industrial township established
1950	Klipfontein Organic Products (KOP) established at Chloorkop
1950	Restonvale Agricultural Holdings established
1950	Edleen township established
1950	Kempton Park sewage treatment plant established (now redundant)
1951	North Rand substation established as coupling point between Rand Undertaking and Johannesburg municipality
1957	Tembisa township established

DATE	EVENT
1958	Esselen substation completed as distribution station
1964	Allen Grove township established
1966	Glenmarais township established
1968	Birch Acres township established
1968	Birchleigh North township established
1968	Norkem Park township established
1969	Terenure township established
1972	Esther Park township established
1972	Apollo-Esselen-Jupiter 275 KV lines completed
1977	Expansion of Esselen substation
1973	Aquachlor established at Chlookop
1978	Van Riebeeck Park township established
1994	Ultrafloc established at Chlookop
1999	AECI becomes AEL

The above chronology indicates the average age of the urban developments to be affected by the project, implying that there are very few heritage resources older than 60 years.



**FIGURE 11: Portion of oldest 2628 AA map (1944) indicating a large portion of the study area**

### PART 3: FINDINGS AND RECOMMENDATIONS

Part 3 is based on the requirements for heritage scoping reports and HIAs in accordance with Section 38(3) of the NHRA.

#### 3.1 Identification of significant heritage features

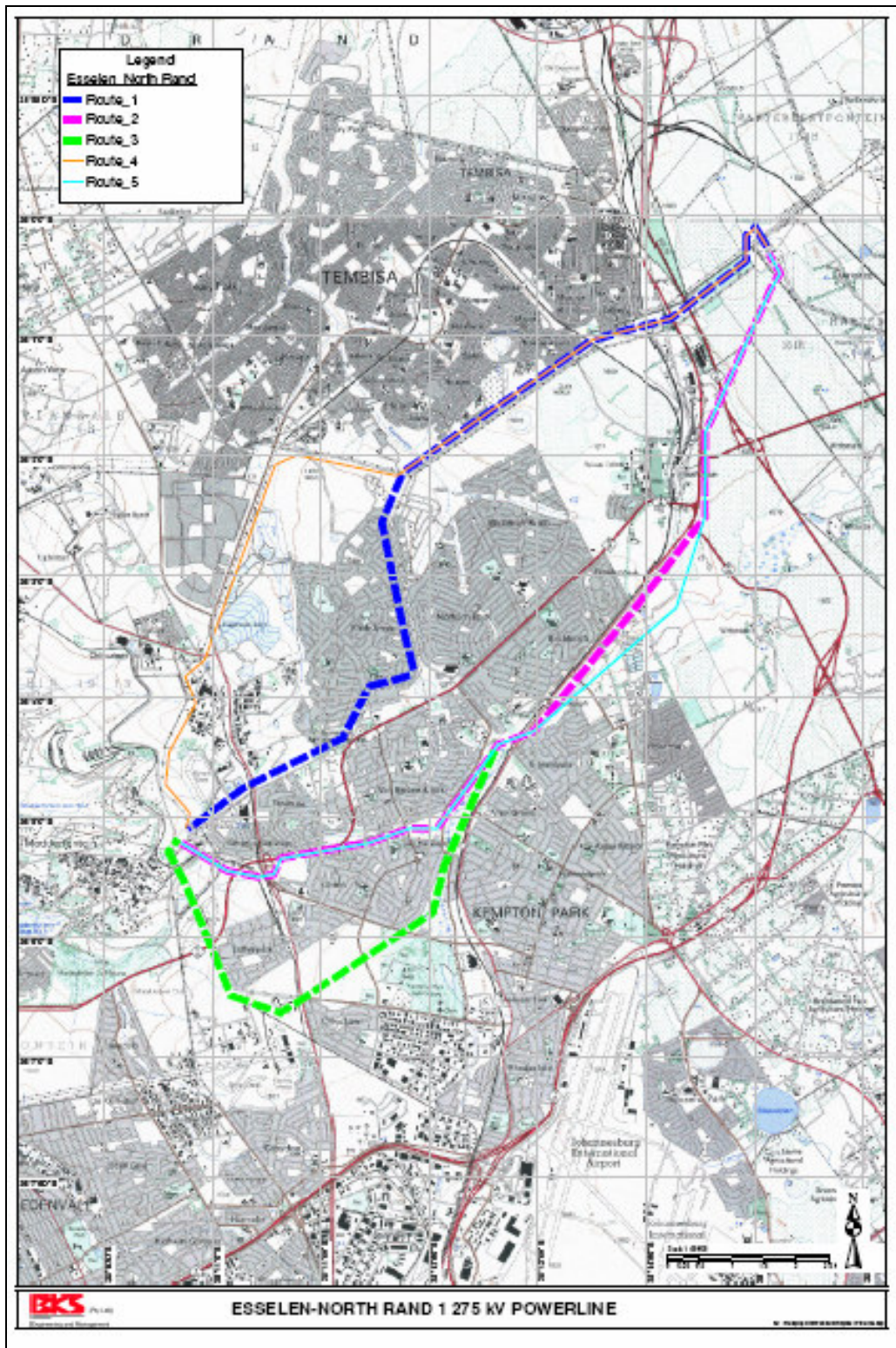
##### 3.1.1 General

The study indicated that the following tangible resources of heritage significance may be affected by the proposed development:

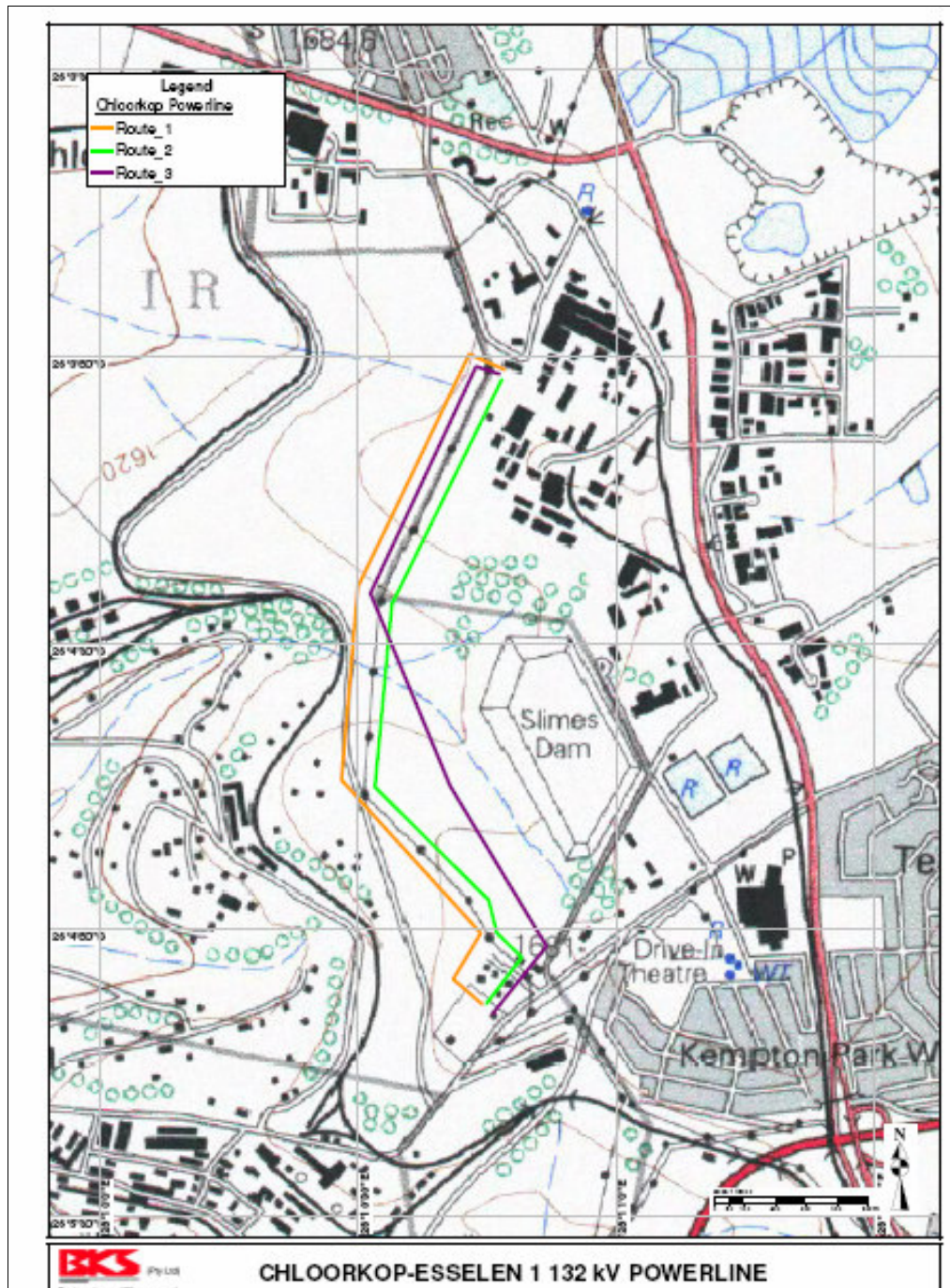
NO	DESCRIPTION	QUADRANT	COMMENTS
EN 1	Mooifontein municipal cemetery	26 02 0 S – 26 03 0S 28 11 0 E - 26 12 0 E	Existing municipal cemetery south of Tembisa
EN 2	Old railway culverts	26 04 0 S – 26 05 0 S 28 12 0 E 28 13 0 E	Two railway culverts in old railway embankment located in green urban area
EN 3	Old Kempton Park sewage treatment plant	26 03 0 S 26 04 0 S 28 14 0 E 28 15 0 E	Abandoned plant located adjacent to concrete and brick works
EN 4	North Rand substation	26 05 0 S 26 06 0 S 28 10 0 E 28 11 0 E	Working ESKOM substation with a few historic structures



**FIGURE 12: Google Earth image indicating the location of significant heritage resources**



**FIGURE 13: Map indicating the study area and the five power line route options (Courtesy BKS)**



**FIGURE 14: Map indicating the three possible North rand-Chloorkop lines. Note that Route 1 has been changed to Route 4A, Route 2 to Route 4B and Route 3 to Route 4C.**

**3.1.2 Mapping, description and assessment of individual heritage resources**

See Appendix 1.

**3.2 Summary of cultural significance of the property or any part thereof (Section 3(3))**

**3.2.1 Description of the site**

The site for the proposed project is located in the northern parts of Ekurhuleni, comprising urban areas such as Tembisa and Kempton Park, industrial areas such as Chloorkop, vacant open land, roads and railways and a few remaining agricultural areas. This is an area that has been transformed since the



1890s through numerous interventions related to transport, industrial, commercial and residential developments that have obliterated features associated with pre-colonial and early colonial history. Most of the residential and other developments date back to the 1960s so that there are few heritage resources older than 60 years that could be affected.

### 3.2.2 Criteria of heritage value

	<i>(check box of all relevant categories)</i>	<i>Brief description/explanation</i>
x	Important in the community or <b>pattern of South Africa's (or Gauteng's) history.</b>	The property has an important local link to the history of railway and electricity development in Gauteng <b>Rating: Medium</b>
	Associated with the life or work of a <b>person, group or organisation</b> of importance in history.	No <b>Rating: High</b>
	Associated with the history of <b>slavery.</b>	No <b>Rating: Low</b>
x	Strong or special association with a particular community or cultural group for <b>social, cultural or spiritual</b> reasons	Tembisa residents (cemetery) <b>Rating: High</b>
	Exhibits particular <b>aesthetic</b> characteristics valued by a community or cultural group	No <b>Rating: Low</b>
	Demonstrates a high degree of <b>creative or technical achievement</b> at a particular period	North Rand substation <b>Rating: Medium</b>
X	Has <b>potential to yield information</b> that will contribute to an understanding of natural or cultural heritage	Possible hidden (buried) objects, waste disposal sites, foundations etc <b>Rating: Low</b>
	<b>Typical:</b> Demonstrates the principal characteristics of a particular class of natural or cultural places	No <b>Rating: Low</b>
	<b>Rare:</b> Possesses uncommon, rare or endangered aspects of natural or cultural heritage	No <b>Rating: Low</b>

### 3.2.3 Statement of significance

The study area has general historical significance (medium) as it relates to the history of railway and electricity development in the province.

The study area has general historical significance (high) as it relates to the history of Tembisa.

### 3.3 Impact assessment

The tables in Figures 15 and 16 combine heritage-related impacts with other impacts and demonstrate that:

- Route 4 of the proposed 400 kv lines will have the least impact on heritage and other resources
- Routes 4B and 4C of the proposed 132 kv line will both have the least impact on heritage and other resources

The scoring in each corridor/route has been done by appointing a value between 0 – 5 for each criteria. These values signify the impact in terms of that criteria on that corridor, from being a very high impact or “no go” to being of no significance or relevance. The ratings are based on the findings by heritage and other specialists. The weighting system was determined as follows:

- 1 - no -low
- 2 - low - medium impact
- 3 - medium
- 4 - medium - high impact
- 5 - high / “no-go”/fatal flaw

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Criteria	Study Corridor/Route									
	1		2		3		4		5	
Phase	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation	Construction	Operation
Visual	2	2	4	4	5	5	1	1	4	4
Heritage Resources	2	2	5	5	5	5	1	1	5	5
Veg	1	1	5	5	5	5	1	1	5	5
Wetland	2	2	5	5	5	5	1	1	5	5
Social	5	5	3	3	5	5	2	2	3	3
Birds	2	2	4	4	5	5	3	3	4	4
Agriculture	2	2	2	2	4	4	2	2	3	3
Planned land use	2	2	4	4	5	5	3	3	5	5
Geology	1	1	4	4	4	4	2	2	2	2
<b>TOTAL</b>	<b>19</b>	<b>19</b>	<b>36</b>	<b>36</b>	<b>43</b>	<b>43</b>	<b>16</b>	<b>16</b>	<b>36</b>	<b>36</b>

**FIGURE 15: Table with impact ratings for Esselen Park – North Rand corridors/routes**

SPECIALIST STUDY	PREFERRED CORRIDOR			
	Route 4a(red)	Route 4b	Route 4c	
Soils and Agricultural Potential	1	1	1	
Vegetation/wetland	1	1	1	
Avifauna	2	2	1	
Geology	1	1	1	
Visual	1	2	3	
Heritage	1	1	1	
Landowner / land use				
Social	1	2	2	
TOTAL	8	10	10	

**FIGURE 16: Table with impact ratings for North Rand – Chloorkop corridors/routes**

### 3.4 Social and economic benefits

The development will have no direct benefits related to heritage conservation. With the exception of Van Riebeeck Park, the benefits associated with socio-economic development outweigh any heritage conservation benefits.

### 3.5 Consultation with affected communities

This process has been part of the EIA as a whole.

### 3.6 Identification of risk sources

The following project actions will very likely impact negatively on any existing and potential heritage resources.

The actions are likely to occur during both the Construction and Operational Phase of the proposed project.

- Vegetation clearing could expose foundations, objects and artefacts.
- Bulk earthworks and excavations will possibly expose or uncover foundations, objects and artefacts and unmarked human burials.
- Uncontrolled public use and access of the area during the Operational Phase of the project will also result in ongoing degradation of any heritage remains. These cumulative (i.e. long-term impacts) will need to be carefully managed and controlled.
- Heritage features may be damaged or destroyed during construction work although no direct impacts are intended

### 3.7 Key mitigation and enhancement measures before construction

- Check impact of tower structures in Mooifontein Cemetery area

### 3.8 Key mitigation measures during construction

- Vegetation clearing operations must be monitored during the construction phase of the project. Should any archaeological remains be uncovered during these operations, test excavations (and possibly) systematic archaeological sampling may be required.

- Bulk earthworks and excavations must also be monitored during the construction phase of the project. Should any archaeological remains be uncovered during these operations, test excavations (and possibly) systematic archaeological sampling may be required.
- Alternatively, monitoring of vegetation clearing operations and bulk earthworks can be carried out by an Environmental Control Officer (ECO).
- Should any human remains be disturbed, exposed or uncovered during excavations for the proposed project, these should immediately be reported to Cultmatrix and the South African Heritage Resources Agency. Burial remains should not be disturbed or removed until inspected by the archaeologist.
- Mooifontein graves must be demarcated and protected.
- Historic fabric at North Rand must be identifiable, demarcated and protected.
- The above recommendations must be included in the Construction Environment Management Plan for the proposed project.

### 3.9 Key mitigation measures after construction

- A Conservation Management Plan for preserved heritage resources affected by the final route (e.g. North Rand substation) may be required by SAHRA.

### 3.10 Consideration of alternatives

There are five alternative routes. From a heritage conservation perspective there are no compelling reasons why routes 1, 2 and 4 should not be allowed to proceed.

### 3.11 Final recommendations

Based on the above findings, Cultmatrix **supports Route 4 for the proposed 400 kv power lines** due to the fact that this route will have the least impact on heritage resources. The four other routes have more adverse impacts on heritage resources and are therefore not supported.

Based on the above findings, Cultmatrix also **supports Routes 4B and 4C for the proposed 132 kv power line** between North Rand and Chloorkop because these routes run along existing power lines and do not affect any heritage resources. Route 4A encroaches on the Modderfontein precinct and could have negative impacts on contemplated developments here; hence, this route is not supported.

The following conditions apply:

- Vegetation clearing, bulk earthworks and excavation operations must be monitored during the site preparation and construction phases of the project. Should any archaeological remains be uncovered during these operations (hidden foundations, old waste dumps and other chance finds), these must be brought to the attention of Cultmatrix. Test excavations (and possibly) systematic archaeological sampling may be required subject to the issuing of a permit by SAHRA before construction will be allowed to proceed. This will be a new and separate project.
- Should any human remains be disturbed, exposed or uncovered during excavations for the proposed project, these should immediately be reported to Cultmatrix. Burial remains should not be disturbed or removed until inspected by the archaeologist.
- The above recommendations must be included in the Construction Environment Management Plan for the proposed project.

Routes 3 and 5 may run across an ecologically sensitive area (Van Riebeeck Park) that includes two significant heritage resources (old railway culverts) and therefore these routes should be **avoided**. The implication of this is that Route 2 (from which Routes 3 and 5 branch off) is therefore also not feasible and should be **avoided**.

Route 2 runs through and past built-up areas where there is already encroachment on existing power line corridors and there is lack of space for another power line. This route should therefore be **avoided**.

Although of recent origin, the Mooifontein Cemetery is a significant local heritage resource that should be **avoided** if possible where routes 1 and 4 are concerned by locating the new lines away from the cemetery. If this is not possible the route may be located across the cemetery provided that there is a minimum impact on existing and new burial areas.

## **PART 4: INFORMATION SOURCES USED IN THIS REPORT**

### **4.1 Databases**

Environmental Potential Atlas, Department of Environmental Affairs and Tourism.  
Heritage Sites Database, Pretoria

### **4.2 Literature**

DE JONG, RC, VAN DER WAAL, GM, HEYDENREICH, DH, 1988, *NZASM 100*. Pretoria: Chris van Rensburg Publishers for the HSRC.

*Ekurhuleni State of the Environment Report, 2003.*

ESKOM Annual Reports, 1934-1977.

ICOMOS Australia. 1999. *The Australia ICOMOS Burra Charter for the conservation of places of cultural significance.*

MASON, R, *Prehistory of the Transvaal.*

*National Heritage Resources Act (Act 25 of 1999)*

*Standard Encyclopedia of Southern Africa*, all volumes. Cape Town: Nasou.

### **4.3 Archival sources (National Archives Pretoria)**

References to townships in National Archives

### **4.4 Maps**

2628 AA Johannesburg (1944)

### **4.5 Aerial photos**

Google Earth  
Job 33 of 1938 strips 4-7

## PART 5: TERMINOLOGY USED IN THIS REPORT

### Cultural significance (Burra Charter)

Aesthetic, historic, scientific, social or spiritual importance, meaning or noteworthiness for past, present or future generations

Cultural significance is embodied in the place itself (intrinsic significance), its fabric, setting, use, associations, meanings, records, related places and related objects

### Heritage resources/features (NHRA)

Any place or object of cultural significance, including:

- (a) places, buildings, structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds, including—
  - (i) ancestral graves;
  - (ii) royal graves and graves of traditional leaders;
  - (iii) graves of victims of conflict;
  - (iv) graves of individuals designated by the Minister by notice in the *Gazette*;
  - (v) historical graves and cemeteries; and
  - (vi) other human remains, which are not covered in terms of the Human Tissue Act, 1983 Act No. 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including—

- (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
- (ii) objects to which oral traditions are attached or which are associated with living heritage;
- (iii) ethnographic art and objects;
- (iv) military objects;
- (v) objects of decorative or fine art;
- (vi) objects of scientific or technological interest; and
- (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

### Heritage significance (NHRA)

- (a) its importance in the community, or pattern of South Africa's history;
- (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- (i) sites of significance relating to the history of slavery in South Africa.

**Historic period**

Since the arrival of the white settlers - c. AD 1840 in this part of the country

**Impact**

A description of the effect of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space

**Impact assessment**

Issues that cannot be resolved during screening (Level 1) and scoping (Level 2) and thus require further investigation

**Iron Age**

Early Iron Age (EIA)	AD 200 - AD 1000
Late Iron Age (LIA)	AD 1000 - AD 1830

**Issue**

A question that asks what the impact of the proposed development will be on some element of the environment

**Maintenance**

Keeping something in good health or repair.

**Management actions**

Actions that enhance benefits associated with a proposed development or avoid, mitigate, restore, rehabilitate or compensate for the negative impacts

**Preservation**

Conservation activities that consolidate and maintain the existing form, material and integrity of a cultural resource.

**Reconstruction**

Re-erecting a structure on its original site using original components.

**Rehabilitation**

Re-using an original building or structure for its historic purpose or placing it in a new use that requires minimal change to the building or structure characteristics and its site and environment.

**Restoration**

Returning the existing fabric of a place to a known earlier state by removing additions or by reassembling existing components.

**SAHRA** - South African Heritage Resources Agency

**Stone Age**

Early Stone Age (ESA)	2 000 000 - 150 000 Before Present
Middle Stone Age (MSA)	150 000 - 30 000 BP
Late Stone Age (LSA)	30 000 - until c. AD 200

**Value**



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Worth, conservation utility, desirability to conserve etc in terms of physical condition, level of significance (importance), economy (feasibility), possible new uses and associations/comparisons with similar features elsewhere

**APPENDIX 1: IDENTIFICATION AND ASSESSMENT OF AFFECTED HERITAGE  
RESOURCES**

<b>EN 1: MOOIFONTEIN CEMETERY</b>	
Feature name: Mooifontein Cemetery	
Type of feature: Cemetery	
Location/Area	South of Tembisa
Grid	26 02 0 S – 26 03 0S 28 11 0 E - 26 12 0 E
References	None
NHRA protection status	Section 35
Large municipal cemetery of fairly recent origin	
Significance status (1)	<b>3</b>
Condition status and value (2)	<b>3</b>
Sensitivity assessment (1 x 2 = range = level). There are no compelling reasons to demolish the cemetery.	<b>9</b>
Predicted impact	Will be preserved as part of the proposed development
Recommended management interventions to preserve feature or mitigate impact: Locate new power line pylons between graves	
Photo	
	

<b>EN 2: OLD RAILWAY CULVERTS</b>	
Feature name: NZASM railway culverts	
Type of feature: Structure	
Location/Area	Van Riebeeck Park green area
Grid	26 04 0 S – 26 05 0 S 28 12 0 E 28 13 0 E
References	Ekurhuleni SOER (2003)
NHRA protection status	Section 34
Description: Oldest colonial structures in Kempton Park, dating to 1892 when the railway line between Germiston and Pretoria was built. Located in an old embankment away from the current railway line.	
Significance status (1)	<b>2</b>
Condition status and value (2)	<b>2</b>
Sensitivity assessment (1 x 2 = range = level). There are compelling reasons to preserve these features.	<b>4</b>
Predicted impact	Low to medium negative should a power line route cross the area
Recommended management interventions to preserve features or mitigate impact: Avoid if possible.	

Photo



<b>EN 3: OLD KEMPTON PARK SEWAGE TREATMENT PLANT</b>	
Feature name: Old sewage treatment plant	
Type of feature: Structure	
Location/Area	East of road between Kempton Park and Kaalfontein
Grid	26 03 0 S 26 04 0 S 28 14 0 E 28 15 0 E
References	Files in National Archives
NHRA protection status	None
Description: Abandoned sewage treatment plant	
Significance status (1)	1
Condition status and value (2)	1
Sensitivity assessment (1 x 2 = range = level). There are no compelling reasons to preserve this feature.	1
Predicted impact	Neutral due to low significance
Recommended management interventions to preserve feature or mitigate impact: None	

Photo



<b>EN 4: NORTH RAND SUBSTATION</b>	
Feature name: ESKOM North Rand	
Type of feature: Structures and buildings	
Location/Area	East of Modderfontein
Grid	26 05 0 S 26 06 0 S 28 10 0 E 28 11 0 E
References	ESKOM annual reports
NHRA protection status	None in terms of Section 34, accrued significance in terms of Section 3
Description: Substation and distribution station	
Significance status (1)	2
Condition status and value (2)	2
Sensitivity assessment (1 x 2 = range = level): There are compelling reasons to preserve the memory of these roads	4
Predicted impact	Low negative due to possible damage and destruction
Recommended management interventions to preserve feature or mitigate impact: Avoid damage to or disturbance of historic fabric if possible, otherwise document before this is done	



