

---

PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

THE BLACK ROCK POWERLINE PROJECT,  
BLACK ROCK NEAR HOTAZEL  
IN THE NORTHERN CAPE, SOUTH AFRICA

DATE: 2010-01-11

---



RECEIVED  
1 - FEB 2010

**REPORT TO:**

SELMA NEL (Ivuzi Environmental Consultants / GCS)  
Tel: 011 807 8925; Fax: 011 803 5745;  
Postal Address: P.O. Box 2597, Rivonia, 2128;  
E-mail: Selma@gcs-sa.biz

PHILLIP HINE (South African Heritage Resources Agency – SAHRA, APM Unit)  
Tel: 021 462 4505; Fax: 021 462 4509;  
Postal Address: P.O. Box 4637, Cape Town, 8000;  
E-mail: phine@sahra.org.za

**PREPARED BY:**

KAREN VAN RYNEVELD (ArchaeoMaps Archaeological Consultancy)  
Tel: 084 871 1064; Fax: N/A;  
Postal Address: Postnet Suite 239, Private Bag X3, Beacon Bay, 5205;  
E-mail: kvanryneveld@gmail.com

---

PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

BLACK ROCK POWERLINE PROJECT,  
 BLACK ROCK NEAR HOTAZEL  
 NORTHERN CAPE, SOUTH AFRICA

---

**CONTENTS**

**INTRODUCTION** ..... 2  
*Introduction, Details & Impact* ..... 2

**ARCHAEOLOGICAL IMPACT ASSESSMENT** ..... 7  
*Legislative Compliance* ..... 7  
 ..... 7  
*Impact Analysis* ..... 8  
*Assessment findings* ..... 8  
*Recommendations* ..... 18

**APPENDICES** ..... 20

*Historic and Historic Periods*

*Heritage Resources Act (No 25 of 1999)*

**LIST OF FIGURES**

*Black Rock Powerline Project at Black Rock near Hotazel in the Northern Cape* ..... 2

*Project: Locality map* ..... 5

*View of Klipkop Substation* ..... 8

*View of the road to the north of the Klipkop Substation* ..... 9

*View of the north of the Klipkop Substation* ..... 9

*View of Substation with Assmang's Black Rock Substation in the background* ..... 9

*View of the Umtu Substation development area* ..... 10

*View of the Umtu Substation area (with the marker visible in the photograph)* ..... 10

*View of the road currently under construction, from the Umtu Substation development area* ..... 11

*View of the proposed Line Route option 4* ..... 12

*View of the road supporting sub-surface anthropic sterility to a level of approximately 35cm* ..... 12

*View of the proposed Line Route option 4, after the joint with option 5 and just before the intersection with option 6* ..... 12

*View of the proposed Line Route option 5 in the vicinity of the Klipkop Substation* ..... 13

*View of the proposed Line Route option 5 after the joint with option 4* ..... 14

*View of the proposed Line Route option 5, road adjacent to the joint between Line Route options 4, 5 and 6* ..... 14

*View of the proposed Line Route option 6 after the joint with options 4 and 5* ..... 14

## 1) TERMS OF REFERENCE

Ivuzi Environmental Consultants (Pty) Ltd / GCS has been appointed as independent environmental consultant by the proponents, Eskom Holdings Limited (Eskom) and Assmang mine (Assmang), to prepare the Environmental Impact Assessment (EIA) for the proposed Black Rock Powerline Project, a 132kV powerline from the Klipkop to the Umtu Substations, including the upgrading of the Klipkop and the construction of the Umtu stations, in the Black Rock area near Hotazel in the Northern Cape, South Africa. ArchaeoMaps Archaeological Consultancy has been appointed by Ivuzi Environmental Consultants / GCS to conduct the Phase 1 Archaeological Impact Assessment (AIA) as specialist sub-section to the EIA.

### 1.1) Development Location, Details & Impact

**General:** Eskom is mandated by the South African government to ensure the provision of reliable and affordable power to South Africa. Electricity cannot be stored and must be used as it is generated; it therefore needs to be generated in accordance with supply-demand requirements. Eskom's core business is the generation, transmission, trading and retail of electricity. The reliable generation of electricity by Eskom is thus critical for industrial / economic development, related employment and sustainable development in South Africa (Ivuzi 2009).

The purpose of the *Black Rock Powerline Project* is firstly to provide the Assmang Black Rock Manganese Mine with sufficient electricity for proposed expansion in the near future and secondly to meet increasing power demands at the Black Rock village (Ivuzi 2009).

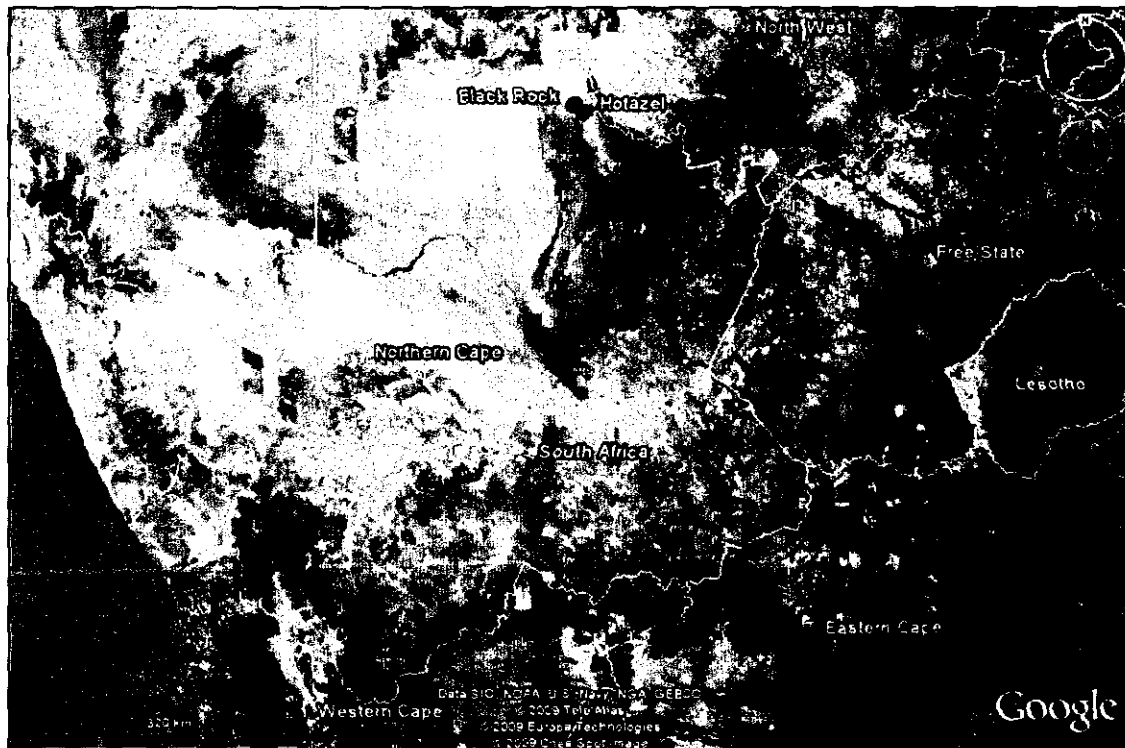


Figure 1: General locality of the *Black Rock Powerline Project* at Black Rock near Hotazel in the Northern Cape

**Location:** Eskom intends to, through Assmang's Black Rock Managenese Mine, construct a 132kV overhead powerline, between the Klipkop and the Umtu Substations at Black Rock near Hotazel, located in the Kgalagadi District of the Northern Cape Province.

**Development Particulars:** The proposed *Black Rock Powerline Project* will comprise of a maximum 17.5m linear development with a 38m wide servitude (19m on either side of the centre line) between the Klipkop and Umtu Substations. Monopole steel structures (pylons) are intended for use along the line route. Poles weigh approximately 1,200kg each and vary in height from 17.4-28m. The size of the foundation footprint depends on the type of pole, i.e. whether it is a self supporting, guyed suspension or an angle strain pole structure. The size of the footprint areas ranges from 0.36m<sup>2</sup> to 2.36m<sup>2</sup>, with the larger footprint area associated with the guyed suspension and angle strain pole structures. The average span between 2 towers is 200m, but can be extended to 250 and 375m, depending on the ground profile and terrain that is traversed. The self supporting structure is typically used along the straight sections of the powerline, while the guyed intermediate suspension structures and angle strain structures are used where there is a bend in the powerline alignment (Ivuzi 2009).

Six alternative corridors (Line Routes 1, 2, 3, 4, 5 and 6) were considered for the line route during the Scoping Phase of the project, with a line route length varying from 13-17.5km. Three proposed line routes are further investigated for purposes of the Environmental Impact Assessment (EIA), namely Line Routes 4, 5 and 6 (Ivuzi 2009).

The Klipkop Substation is located on Portion 3 of the farm Nchwaning 267 and the Umtu Substation will be constructed on the Remaining Extent of the Farm Olive Pan 282 (Ivuzi 2009).

The proposed *Black Rock Powerline Project* can be summarized as (Ivuzi 2009):

- The construction of a maximum 17.5km 132kV chickadee line between the Klipkop and Umtu Substations (a chickadee powerline is a very thin type of powerline but will suffice to be the most reliable and cost effective way to transmit an electricity capacity of 132kV between the substations);
- The extension of the Klipkop Substation; and
- The construction of the Umtu Substation; comprising of
- The installation of 132/66kV 40MVA transformer bays;
- The installation of 132kV busbar and feeder bays;
- The installation of 3 x 132kV CT's (Current Transformers);
- The installation of 3 x 132kV VT's (Voltage Transformers);
- The installation of a complete 66kV feeder bay on the existing Wessels line;
- The installation of a complete 66kV feeder bay on the existing Hotazel line;
- The installation of 6 x 66kV VT's on 66kV busbars;
- The installation of 2 x 66kV busbar isolators; and
- The installation of lightning masts of 2 x 14m, at both the Klipkop and Umtu Substations.

**The Proposed 6 Line Routes:** Six alternative corridors were originally considered for the construction of the 132kV powerline, varying in length from 13-17.5km. The final corridor of the proposed powerline still needs to be finalized, and will in large be dependent on the outcome of the EIA (Ivuzi 2009).

It is the intension of Eskom to utilize, where possible, existing road servitudes for the construction of the powerline, thereby ensuring that the use and impact on vacant land is kept to a minimum and that the construction of the overhead powerline will mainly take place along already existing road servitudes where the natural environment has already been disturbed (Ivuzi 2009).

A vehicle access / maintenance track of approximately 6m in width will also be established along the entire length of the powerline servitude. The track will consist of a 2 track access path, which would require no formal scraping of the area. Access to the track will be negotiated with the relevant landowners, if existing access roads cannot be used. (Ivuzi 2009).

The proposed 6 Line Routes can be summarized as:

OPTION	LENGTH	FARMS TRANSVERSE	SENSITIVE CROSSINGS
Option 1	13.3km	Portion 3 of the Farm Nchwaning 267; Remaining Extent of the Farm Mukulu 265; Portion 1 of the Farm Gloria 266; Remaining Extent of the Farm Umtu 281; Remaining Extent of the Farm Olive Pan 282.	The R380 tarmac road; Railway; Assmang Gloria Mine - stockpile area; Assmang Gloria Mine - gravel access road; Umtu Mine - future open cast mining area.
Option 2	13.6km	Portion 3 of the Farm Nchwaning 267; Remaining Extent of the Farm Mukulu 265; Portion 1 of the Farm Gloria 266; Remaining Extent of the Farm Gloria 266; Remaining Extent of the Farm Umtu 281; Remaining Extent of the Farm Olive Pan 282.	The R380 tarmac road; Railway; Assmang Gloria Mine - gravel access road; Umtu Mine - future open cast mining area.
Option 3	14km	Portion 3 of the Farm Nchwaning 267; Remaining Extent of the Farm Mukulu 265; Portion 1 of the Farm Gloria 266; Remaining Extent of the Farm Gloria 266; Remaining Extent of the Farm Umtu 281; Remaining Extent of the Farm Olive Pan 282.	The R31 tarmac road (Van Zylrus road); Umtu Mine - future open cast mining area.
Option 4	16.6km	Portion 3 of the Farm Nchwaning 267; Remaining Extent of the Farm Mukulu 265; Remaining Extent of the Farm Umtu 281; Portion 1 of the farm Olive Pan 282; Remaining Extent of the Farm Olive Pan 282.	The R380 tarmac road; Gravel road.
Option 5	17.5km	Portion 3 of the Farm Nchwaning 267; Remaining Extent of the Farm Mukulu 265; Remaining Extent of the Farm Umtu 281; Portion 1 of the farm Olive Pan 282; Remaining Extent of the Farm Olive Pan 282.	The R31 tarmac road (Van Zylrus road).
Option 6	17.1km	Portion 3 of the Farm Nchwaning 267; Remaining Extent of the Farm Mukulu 265; Remaining Extent of the Farm Umtu 281; Portion 1 of the farm Olive Pan 282; Remaining Extent of the Farm Olive Pan 282.	The R31 tarmac road (Van Zylrus road);

Table 1: Powerline route summary descriptions

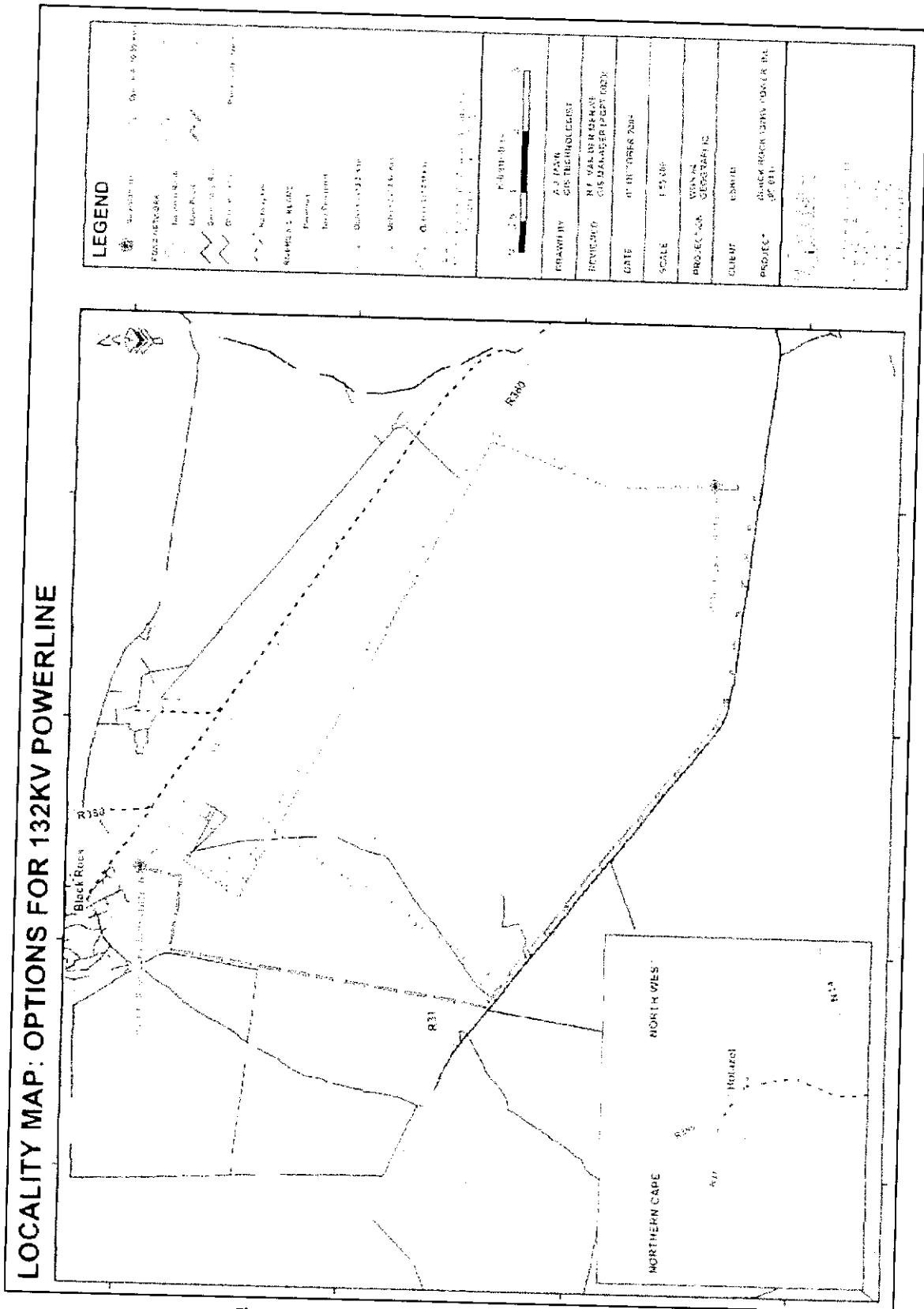


Figure 2: The Black Rock Powerline Project: Locality map

The Scoping assessment identified Line Routes 1, 2, and 3 as unsuitable options for the *Black Rock Powerline Project*. The main reason for their unsuitability was the fact that they would cross the future proposed mining works area of the Kalahari Resources Umtu mine. Line Route options 4, 5, and 6 were to be investigated in finer detail for purposes of the EIA.

**The Natural Environment:** The semi-arid Northern Cape receives an annual rainfall of between 250-500mm, with the rainy season being between October and March. Thunderstorms, characteristically accompanied by lightning, heavy rain, strong winds and sometimes hail, occur during the rainy season. Daily maximum temperatures vary between 30-40°C in January and averaging 17°C in July, with an average minimum temperature of 15°C in September (Ivuzi 2009).

The regional topography is flat, with the Kalahari plains intersected by a few riverbeds, including the Gamagara River, located east of the project area. Rivers are seasonal and do not flow at surface each year. Topographically the area slopes down gradually to the Gamagara River to the east and north east towards the Kuruman River. The area has a rural character with the Black Rock village and mining area forming the residential / commercial hub within the landscape (Ivuzi 2009).

The project area cross-cuts the boundaries of 2 different vegetation types, namely the Kathu Bushveld vegetation type, forming part of the Eastern Kalahari Bushveld Bioregion and the Gordonia Duneveld, which in turn forms part of the Kalahari Duneveld Bioregion. Both of the aforementioned bioregions form part of the Savanna Biome (Ivuzi 2009).

Geologically the Kalahari Manganese Field exists as structurally preserved erosional relicts of the Hotazel Formation below younger cover of late Early Proterozoic Olifantshoek red beds, late Carboniferous – early Permian Karoo Dwyka diamictite and Tertiary Kalahari beds. Virtually all of the deposits are covered by these younger sequences and natural outcrops are restricted to Black Rock, a small hill in the Kalahari deposit. The manganese-bearing Hotazel Formation is conformably underlain by pillow lava, hyaloclastite and jaspellite of the Ongeluk Formation and overlain by Mapedi shales and quartzites. The strata dip gently to the west at approximately 8°. Near the western margin of the deposit, Ongeluk lava and Hotazel manganese deposits have been duplicated by thrusting from the west. The sequence has also been affected by a series of north trending normal faults. These faults post-date the deposition of the overlying Early Proterozoic Olifantshoek red beds; but pre-date the thrust event. Thrusting is related to formation of the Kheiss Orogen some 1,700mya (Ivuzi 2009).

The banded Ironstone and underlying lava, which outcrops at Black Rock, have been forced over the basal layer of the same sequence by a series of thrust faults. No dykes have been encountered during the past 22 years of mining (Ivuzi 2009).

The pedology of the region is typical of the Kalahari, with fine grained sands dominating the physical structure of the soils. The majority of soils are of the orthic phase Hutton. These soils are freely drained, deep and sandy. The Hutton soils have low dryland agricultural potential despite their adequate depth for roots to grow into due to the fact that they are extremely sandy resulting in poor water retention capacity as well as the harsh, dry climatic conditions prevalent in the area. They will require high levels of management to mitigate erosion hazards as they are of aeolian origin and by implication prone to wind transportation (Ivuzi 2009).

## 2) THE PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

### 2.1) *Archaeological Legislative Compliance*

The Phase 1 Archaeological Impact Assessment (AIA) was requested by the South African Heritage Resources Agency (SAHRA) mandatory responsible for the National Heritage Resources Act, Act No 25 of 1999 (NHRA 1999).

The Phase 1 AIA was requested as specialist sub-section to the Environmental Impact Assessment (EIA) in compliance with requirements of the Mineral and Petroleum Resources Development Act, No 28 of 2002 (MPRDA 2002), the National Environmental Management Act, No 107 of 1998 (NEMA 1998) and associated regulations (2006), and the NHRA 1999 and associated regulations (2000).

The Phase 1 AIA aimed to locate, identify and assess the significance of cultural heritage resources, inclusive of archaeological deposits / sites, built structures older than 60 years, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict and cultural landscapes or views as defined and protected by the NHRA 1999, that may be affected by the proposed development. Palaeontological deposits / sites as defined and protected by the NHRA 1999 are not included as subject to this report.

### 2.2) *Methodology*

The Phase 1 AIA was conducted over a 1 day period (2010-01-04) by one archaeologist. The assessment was done by vehicle (LVD) and foot and limited to a Phase 1 surface survey; no excavation or sub-surface testing was done. GPS co-ordinates were taken with a Garmin GPSmap 60CSx GPS (Datum: WGS84). Photographic documentation was done with a Pentax K20D camera. A combination of Garmap and Google Earth software was used in the display of spatial information.

<b>SAHRA ARCHAEOLOGICAL AND CULTURAL HERITAGE SITE SIGNIFICANCE ASSESSMENT</b>			
<b>SITE SIGNIFICANCE</b>	<b>FIELD RATING</b>	<b>GRADE</b>	<b>RECOMMENDED MITIGATION</b>
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	Site conservation or extensive mitigation prior to development / destruction
High / Medium Significance	Generally Protected A	-	Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B	-	Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C	-	On-site sampling, monitoring or no archaeological mitigation required prior to or during development / destruction

**Table 2:** SAHRA archaeological and cultural heritage site significance assessment and mitigation recommendations

Archaeological and cultural heritage site significance assessment and associated mitigation recommendations were done according to the system prescribed by SAHRA (2007). The archaeological



and cultural environmental grading was done according to the system prescribed by Ivuzi Environmental Consultants / GCS (2009).

### 2.3) Coverage and Gap Analysis

The Phase 1 AIA assessment focused on the following areas:

- The vicinity surrounding the existing Klipkop Substation to accommodate proposed extension to the station;
- The proposed Umtu Substation area;
- Line Route option 4;
- Line Route option 5; and
- (Portions of) Line route option 6.

### 2.4) Phase 1 AIA Assessment findings

No archaeological or cultural heritage resources, as defined and protected by the NHRA 1999, were identified during the Phase 1 AIA assessment for the proposed *Black Rock Powerline Project*, Black Rock near Hotazel in the Northern Cape.

General observations include:

#### 1. The Klipkop Substation

An approximate 50m development corridor around the existing Klipkop Substation, situated at approximately S27°08'10.9"; E22°50'40.2", and located on the property Portion 3 of the farm Nchwaning 267, was surveyed to accommodate proposed extensions to the station. The Klipkop Substation is cited a few meters south east of the Assmang Black Rock powerstation. No archeological or cultural heritage resources as defined and protected by the NHRA 1999 were identified during the Phase 1 AIA assessment.

Visibility across the assessment area was good; characterized by mantling red Hutton sands with relatively low vegetation. Natural outcrops and contemporary construction waste was present in the assessment area located north of the Klipkop substation.



Figure 3: General view of the existing Klipkop Substation



Figure 4: Contemporary building rubble to the north of the Klipkop Substation



Figure 5: Natural outcrops located north of the Klipkop Substation



Figure 6: General view of the Klipkop Substation with Assmang's Black Rock Substation in the background

The exact location of the proposed extension to the Klipkop Substation is not yet known. Phase 1 AIA assessment results indicated that extensions to all sides would be possible without impacting on any archaeological or cultural heritage resources as defined and protected by the NHRA 1999, to an extent equal to that of the existing, relatively small Klipkop station. *It is recommended that the proposed extension to the Klipkop Substation, located on Portion 3 of the farm Nchwaning 267, at approximately S27°08'10.9"; E22°50'40.2", proceeds as applied for.*

2. The Umtu Substation

2007-SAHRA-0138 Founie + van der Walt

The Umtu Substation will be located on the property Remaining Extent of the Farm Olive Pan 282 at approximately S27°12'19.4"; E22°54'13.5". The assessed area comprised of an approximate 100 x 100m area to accommodate the construction of the substation. No archaeological or cultural heritage resources were present in the vicinity of the proposed Umtu Substation locality. The general area was again typified by the characteristic mantling red Hutton sands with grass cover and scattered trees and shrubs providing for good surface visibility.



Figure 7: General view of the proposed Umtu Substation development area



Figure 8: View of the proposed Umtu Substation area (with the marker visible in the photograph)



Figure 9: View of the Umtu shaft, currently under construction, from the Umtu Substation development area

Proposed development of the Umtu Substation will not impact on any identified archaeological or cultural heritage resources as defined and protected under the NHRA 1999. *It is recommended that development of the Umtu Substation, to be located on the Remaining Portion of Olive Pan 282, at approximately S27°12'19.4"; E22°54'13.5", proceeds as applied for.*

### 3. Line Route Option 4

Line Route option 4 comprises of an approximate 16.6km line route. Development will impact on the properties Portion 3 of the Farm Nchwaning 267, Remaining Extent of the Farm Mukulu 265, Remaining Extent of the Farm Umtu 281, Portion 1 of the Farm Olive Pan 282 and Remaining Extent of the Farm Olive Pan 282. Development co-ordinates (datum: WGS84) can briefly be described as:

Klipkop Substation:	S27°08'10.9"; E22°50'40.2"
Co-ordinate 1:	S27°08'26.2"; E22°51'01.3"
Co-ordinate 2:	S27°09'16.4"; E22°51'11.1"
Co-ordinate 3: (Join – Line Route 4 & 5)	S27°09'25.8"; E22°51'01.3"
Co-ordinate 4: (Join – Line Route 4, 5 & 6)	S27°11'23.3"; E22°49'50.8"
Co-ordinate 5:	S27°13'12.7"; E22°52'09.7"
Co-ordinate 6:	S27°13'16.7"; E22°52'22.5"
Co-ordinate 7:	S27°13'28.0"; E22°54'11.3"
Umtu Substation:	S27°12'19.4"; E22°54'13.5"

The Phase 1 AIA assessment covered the total of the 16.6km line route with a 38m development corridor.

No archaeological or cultural heritage resources as defined and protected by the NHRA 1999 were identified during the assessment. The general area can again be described as with good visibility and typified by mantling red Hutton sands with relatively low to medium vegetation. A shallow contemporary dump serves as evidence of anthropic sterility to a level of approximately 35cm in depth. In addition a calcrete road, no longer in use by the mine, demarcates a large portion of the proposed development corridor where Line Route option 4 runs directly adjacent to option 5.



Figure 10: View of a portion of proposed Lone Route option 4



Figure 11: A small contemporary dump, supporting sub-surface anthropic sterility to a level of approximately 35cm



Figure 12: General view of the proposed Line Route option 4, after the joint with option 5 and just before the intersection with option 6

Development of the approximate 16.6km Line Route option 4 of the *Black Rock Powerline Project* poses no threat to any identified archaeological or cultural heritage resources. *It is recommended that development of Line Route option 4 proceeds as applied for should the route option be prioritized for development through the EIA.*

#### 4. Line Route Option 5

Line Route option 5 constitutes an approximate 17.5km line route. Development will impact on the properties Portion 3 of the Farm Nchwaning 267, Remaining Extent of the Farm Mukulu 265, Remaining Extent of the Farm Umtu 281, Portion 1 of the Farm Olive Pan 282 and Remaining Extent of the Farm Olive Pan 282. Development co-ordinates (datum: WGS84) can briefly be described as:

Klipkop Substation:	S27°08'10.9"; E22°50'40.2"
Co-ordinate 8:	S27°08'25.6"; E22°50'49.3"
Co-ordinate 9:	S27°08'04.4"; E22°50'21.5"
Co-ordinate 3: (Join – Line Route 4 & 5)	S27°09'25.8"; E22°51'01.3"
Co-ordinate 4: (Join – Line Route 4, 5 & 6)	S27°11'23.3"; E22°49'50.8"
Co-ordinate 5:	S27°13'12.7"; E22°52'09.7"
Co-ordinate 6:	S27°13'16.7"; E22°52'22.5"
Co-ordinate 7:	S27°13'28.0"; E22°54'11.3"
Umtu Substation:	S27°12'19.4"; E22°54'13.5"

The Phase 1 AIA assessment covered the approximate 17.5km line route with a 38m development corridor. No archaeological or cultural heritage resources as defined and protected by the NHRA 1999 were identified on the surface of the proposed development area. Visibility across the assessment area, characterized by mantling red Hutton sand with low to medium vegetation, can be described as good.



Figure 13: General view of Line Route option 5 in the vicinity of the Klipkop Substation



Figure 14: General view of Line Route option 5 after the join with option 4

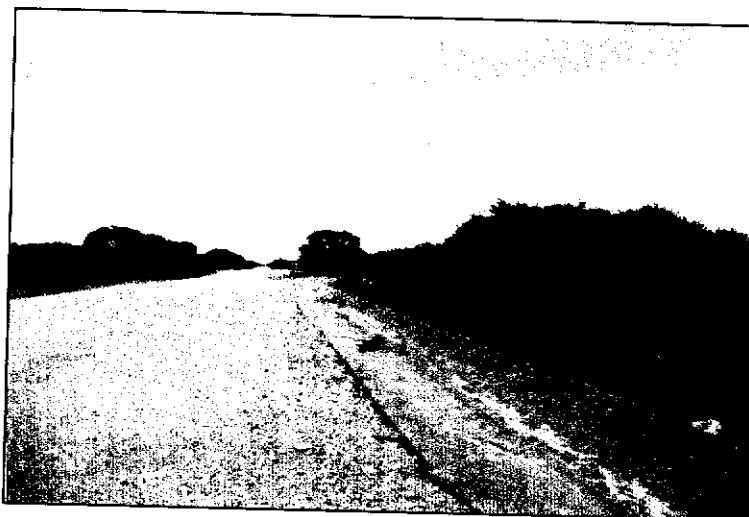


Figure 15: View of the closed access road adjacent to the joint between Line Route options 4, 5 and 6

Development of the approximate 17.5km Line Route option 5 of the *Black Rock Powerline Project* poses no threat to any identified archaeological or cultural heritage resources. ***It is recommended that development of Line Route option 5 proceeds as applied for should the route option be prioritized for development through the EIA.***

#### 5. Line Route Option 6

Line Route option 6 will comprise of an approximate 17.1km line route across the properties Portion 3 of the Farm Nchwaning 267, Remaining Extent of the Farm Mukulu 265, Remaining Extent of the Farm Umtu 281, Portion 1 of the Farm Olive Pan 282 and Remaining Extent of the Farm Olive Pan 282. Development co-ordinates (datum: WGS84) can briefly be described as:

Klipkop Substation:	S27°08'10.9"; E22°50'40.2"
Co-ordinate 10:	S27°08'34.6"; E22°50'36.6"
Co-ordinate 11:	S27°08'31.2"; E22°49'52.8"
Co-ordinate 12:	S27°11'12.0"; E22°49'31.5"
Co-ordinate 4: (Join – Line Route 4, 5 & 6)	S27°11'23.3"; E22°49'50.8"

Co-ordinate 5:	S27°13'12.7"; E22°52'09.7"
Co-ordinate 6:	S27°13'16.7"; E22°52'22.5"
Co-ordinate 7:	S27°13'28.0"; E22°54'11.3"
Umtu Substation:	S27°12'19.4"; E22°54'13.5"

The Phase 1 AIA assessment covered the majority of the 17.1km Line Route option 6 development area within a 38m wide development corridor. Certain portions were however excluded due to access restrictions by Assmang. No archaeological or cultural heritage resources as defined and protected by the NHRA 1999 were identified on the surface of the assessed portion. The general area is characterized by a red Hutton sand surface cover with low to medium vegetation resulting in good surface visibility.



Figure 16: General view of Line Route option 6 after the joint with options 4 and 5



Figure 17: General view of the closed access road along the joint portion of Line Routes 4, 5 and 6

Development of the approximate 17.1km Line Route option 6 of the *Black Rock Powerline Project* poses no threat to any identified archaeological or cultural heritage resources alongside the assessed portion of the line route. It is recommended that development of Line Route option 6 proceeds as-applied-for should the route option be prioritized for development through the EIA.



## 6. Other

General: Cultural heritage periods well represented in the Northern Cape include particularly the Stone Age and Historical / Colonial Period with the Iron Age represented primarily in a narrow band across the north of the province or culturally represented within Historic times. Later Stone Age (LSA) peoples, often referred to as the KhoiSan, were present on the landscape from the LSA to contemporary times. A wide range of archaeological sites could thus have been expected from the general area. However, anthropic use of the landscape is as a rule closely tied to the resources it offers. Within the generally flat topography Black Rock and the Gamogara River comprises the most prominent landscape features, both which yielded archaeological sites, although of varying Industrial Periods.

The absence of archaeological and cultural heritage sites across the proposed *Black Rock Powerline Project* development area and the general low presence of recorded sites within the general area may well be interpreted as a direct result of palaeo-environmental conditions combined with later socio-economic development.

**Archaeology:** Kusel *et al.* (2009) identified 3 archaeological and cultural heritage sites, in their report entitled '*Cultural Heritage Impact Assessment of Manganese Mining Areas on the Farms Belgravia 264, Santoy 230, Gloria 226 and Nchwaning 267, at Black Rock, north of Kuruman, Kgalegi District Municipality, Northern Cape Province*'. The assessment focused on proposed development areas of Assmang mine and included properties to which access was not possible at the time of the *Black Rock Powerline Project* assessment. Findings of Kusel *et al.* (2009) are thus relevant to the proposed development. The 3 identified sites were not revisited at the time of the assessment, but localities are plotted for purposes of proximity to the *Proposed Black Rock Powerline Project* development area and the sites are briefly discussed according to the Kusel *et al.* (2009) report for interpretive purposes.

- C1 (Cemetery 1) – S27°07'28.7"; E22°49'45.9"

Kusel *et al.* (2009) describe the site as '*...fenced off and has some 60+ graves. The graves are those of black mine workers who died at the mine. The graves are unmarked with no tombstones. Only one grave has a date of 8/7/74. The cemetery most probably represents the graves of black mine workers from the 1940's to the 1970's. The graves are not visited anymore by relatives as no grave goods are present. Most probably these graves are from migrant mine workers from far afield. No information could be obtained from mine officials on the graves though the mine must have a record in its archives.*'

- C2 (Cemetery 2) – S27°10'29.0"; E22°48'28.2"

The site is located in the Assmang mine's nature reserve and comprises of approximately 3 graves described by Kusel *et al.* (2009) as: '*The one grave has a date of September 1926 and is the grave of Diederick Johannes Pretorius. What is strange about the cemetery is that we could find no remains of a homestead or settlement nearby. The cemetery is in open bushveld. This is very strange as early European cemeteries are always near a farm settlement.*'

Neither of the cemeteries will be impacted on by the proposed *Black Rock Powerline Project* development. Current heritage management by Assmang mine is in line with the SAHRA minimum requirements: Both cemeteries are fenced with access for purposes of visitation, albeit none has been recorded over the past few decades.

- S1 (Site 1 – Stone Age) – S27°10'39.0"; E22°54'53.6"

The site is located on the banks of the Gamogara River where lithic artefacts was found eroding out of an approximate 500 x 100m borrow pit. A secondary context to the artefacts was inferred by the team although a direct relationship between the geological pebble member and the prehistoric knapping activities was established. Lithic artefacts were, based on typology assigned a mixed Earlier Stone Age (ESA) / Middle Stone Age (MSA) assignation. Despite anthropic surface sterility of the area the project team did caution against the high probability of sub-surface Stone Age assemblages, a characteristic feature of the Stone Age in the Northern Cape.

The Stone Age site will not be impacted on by the proposed *Black Rock Powerline Project*. No formal conservation measures were prescribed by the team; *in-situ* conservation is inferred.

(Hutton sands are known to vary in depth from approximately 2-30m below the surface in the general Kathu / Kuruman region and may in cases be of quite considerable age with recorded dates in the vicinity of the Vaal River reaching back to approximately 70kya. Despite the general context of Stone Age sites in the region, namely at the interval between the Hutton sand and the underlying calcrete layer, sites may well be present within the Hutton sand member.)

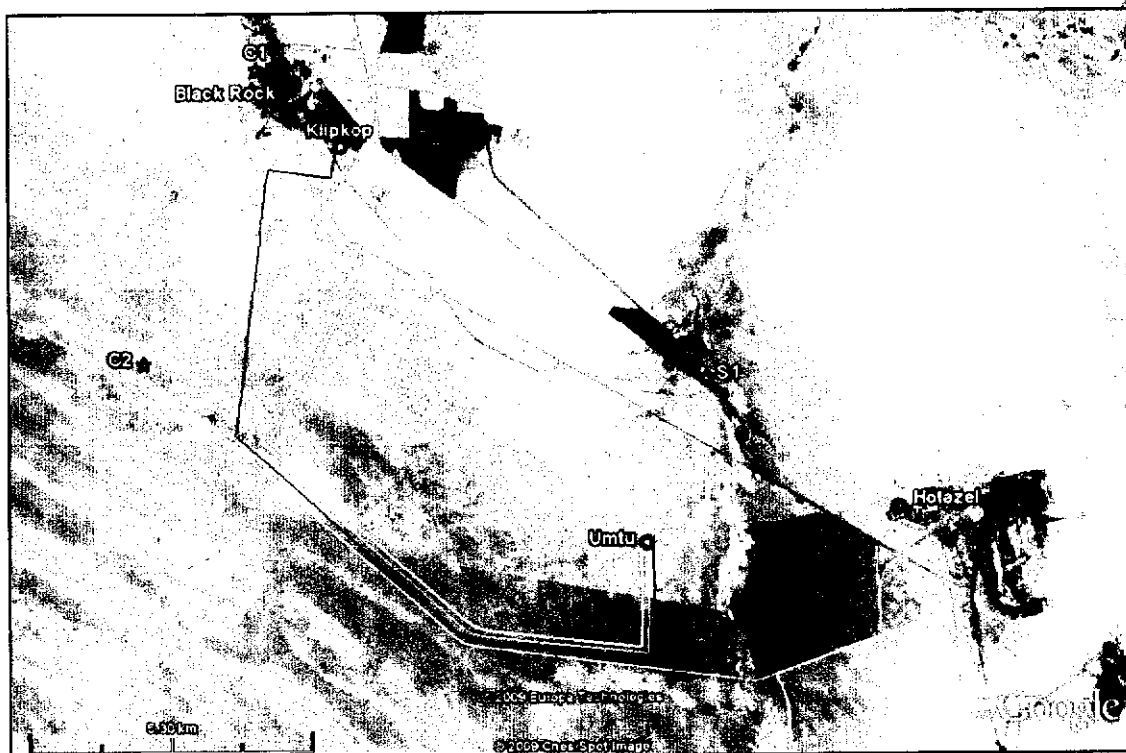


Figure 18: Proposed Line Route options 4, 5 and 6 from the Klipkop to the Umtu Substations in relation to known cultural heritage resources

2.5) *Conclusion and Recommendations*

The Phase 1 AIA for the proposed *Black Rock Powerline Project*, Black Rock near Hotazel in the Northern Cape, South Africa, which will comprise of extensions to the Klipkop Substation, construction of the Umtu Substation; and one powerline not exceeding 17.5km following proposed Line Route option 4 or 5 or 6, yielded no archaeological or cultural heritage resources as defined and protected by the NHRA 1999.

Three archaeological and cultural heritage sites are known from the general area namely 2 cemeteries and a Stone Age site recorded by Kusel *et al.* (2009). The sites will not be impacted on by the proposed development.

**Archaeological and Cultural Environmental Grading:**

No known archaeological or cultural heritage resources will be impacted on by the proposed *Black Rock Powerline Project*. The proposed development can thus be described as of **Low Significance** with the only potential threat being the uncovering of unknown / unidentified resources during sub-surface excavation as part of the development. All known resources from the general vicinity will be conserved.

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION					
		M	D	S	P	TOTAL	SP		M	D	S	P	TOTAL	SP
<b>ISSUES RELATED TO ARCHAEOLOGY AND CULTURAL HERITAFGE RESOURCES</b>														
Klipkop Substation	N/A	4	1	1	1		6	Excavation	-	-	-	-		-
Umtu Substation	N/A	4	1	1	1		6	Excavation	-	-	-	-		-
Line Route 4	N/A	2	1	1	1		4	Excavation	-	-	-	-		-
Line Route 5	N/A	2	1	1	1		4	Excavation	-	-	-	-		-
Line Route 6	N/A	2	1	1	1		4	Excavation	-	-	-	-		-

Table 3: Archaeological and cultural environmental grading

**NOTE:** Should any archaeological or cultural heritage resources as defined and protected by the NHRA 1999 and not reported on in this report be identified during the course of development the developer should immediately cease operation in the vicinity of the find and report the site to SAHRA.

*Recommendations:*

It is recommended that, with reference to cultural heritage compliance as per the requirements of the NHRA 1999, the proposed *Black Rock Powerline Project*, Black Rock near Hotazel, Northern Cape, proceeds as applied for including proposed extensions to the Klipkop Substation, construction of the Umtu Substation and development of the most suitable powerline route option (Line Route 4 or 5 or 6), as determined through the EIA.

**BLACK ROCK POWERLINE PROJECT**

**BLACK ROCK, NEAR HOTAZEL, NORTHERN CAPE**

Map Code	Site	Type / Period	Description	Co-ordinates	Preliminary Recommendations
<b>DEVELOPMENT AREA</b>					
KS	Klipkop Substation	-	-	S27°08'10.9"; E22°50'40.2"	N/A
US	Umtu Substation	-	-	S27°12'19.4"; E22°54'13.5"	N/A
-	Line Route 1	-	-	N/A	N/A
-	Line Route 2	-	-	N/A	N/A
-	Line Route 3	-	-	N/A	N/A

**No archaeological or cultural heritage sites were identified within the proposed Black Rock Powerline Project study site**

**Table 4:** Phase 1 AIA assessment findings – co-ordinate details

### 3) REFERENCES CITED

1. Ivuzi Environmental Consultants. 2009. Environmental Scoping Report: 132kV Powerline between Klipkop and Umtu Substations in the Northern Cape. Report to Eskom Holdings.
2. Kusel, U., van der Ryst, M. and Kusel, S. 2009. Cultural Heritage Impact Assessment of Manganese Mining Areas on the Farms Belgravia 264, Santoy 230, Gloria 226 and Nchwaining 267, at Black Rock, north of Kuruman, Kgalagadi District Municipality, Northern Cape Province. Report to Assmang mine.
3. South African Government. (No. 28) of 2002. Mineral and Petroleum resources Development Act.
4. South African Government. (No. 107) of 1998. *National Environmental Management Act*.
5. South African Government. (No. 25) of 1999. *National Heritage Resources Act*.
6. South African Heritage Resources Agency. 2007. *Minimum standards for the archaeological and heritage components of impact assessments*. Unpublished guidelines.