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Heritage impact survey report for

THE PROPOSED 400/132KV VRYBURG SUBSTATION AND LOOP-IN LINES, NORTH WEST PROVINCE

THE PROJECT:
Development of a new electricity substation with associated loop-in lines.

THIS REPORT:
HERITAGE IMPACT SURVEY REPORT FOR THE PROPOSED 400/132KV VRYBURG SUBSTATION AND LOOP-IN LINES, NORTH WEST PROVINCE

Report No: 2008/JvS/054B
Status: Final
Revision No: 0
Date: October 2008

Prepared for:
Bohlweki SSI
Representative: Mr. M Hardy

Postal Address: PO Box 867, Gallo Manor, 2052
Tel: 011 798 6001
E-mail: march@ssi.co.za

Prepared by:
J van Schalkwyk (D Litt et Phil), Heritage Consultant
ASAPA Registration No.: 168
Principal Investigator: Iron Age, Colonial Period, Industrial Heritage

Postal Address: PO Box 26389, Monument Park, 0105
Mobile: 076 790 6777
Fax: 012 347 7270
E-mail: jvschalkwyk@mweb.co.za

EXECUTIVE SUMMARY

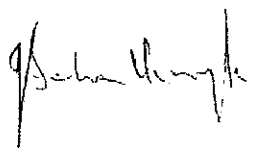
HERITAGE IMPACT SURVEY REPORT FOR THE PROPOSED 400/132KV VRYBURG SUBSTATION AND LOOP-IN LINES, NORTH WEST PROVINCE

Eskom plans to develop a 400/132kV substation with associated loop-in line in the Vryburg area of North West Province. For this purpose three alternative sites were identified.

The aim of the survey was to review the three areas that have been proposed as possible sites for the construction of the electricity substation and it associated loop-in lines.

Although a number of sites, dating to all periods of the past occur in the larger region, none were identified in the three sites proposed for the possible construction of the substation. Therefore, based on what was found and its evaluation, it is recommended that the development can continue in any of the three areas, on condition of acceptance of the following recommendations:

- If construction takes place and archaeological sites are exposed, it should immediately be reported to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk
Heritage Consultant

TECHNICAL SUMMARY

Property details						
Province	North West Province					
Magisterial district	Vryburg					
Topo-cadastral map	2724BA, 2724BB					
Closest town	Vryburg					
Farm name & no.	Kareeboom Fontein 725; Rosendal 673; Takwanen Bantu Reserve 662					
Portions/Holdings						
Coordinates	Centre point					
	No	Latitude	Longitude	No	Latitude	Longitude
	A	S 27.03337	E 24.94288	C	S 27.01252	S 24.74940
	B	S 27.04508	E 24.56576			

Development criteria in terms of Section 38(1) of the NHR Act	Yes/No
Construction of 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 exceeding 5000 sq m	Yes
Development involving three or more existing erven or subdivisions	
Development involving three or more erven or divisions that have been consolidated within past five years	
Rezoning of site exceeding 10 000 sq m	Yes
Any other development category, public open space, squares, parks, recreation grounds	

Development	
Description	Development of an electricity substation and loop-in lines
Project name	Vryburg Substation

Land use	
Previous land use	Agriculture
Current land use	Agriculture

Heritage sites assessment		
Site type	*Site significance*	*Site grading (Section 7 of NHRA)*
None		
Impact assessment		
Impact	*Mitigation*	*Permits required*
None		None

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GLOSSARY OF TERMS AND ABBREVIATIONS

STONE AGE

Early Stone Age	2 000 000 - 150 000 Before Present
Middle Stone Age	150 000 - 30 000 BP
Late Stone Age	30 000 - until c. AD 200

IRON AGE

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Late Iron Age	AD 1300 - AD 1830

HISTORIC PERIOD

Since the arrival of the white settlers - c. AD 1820 in this part of the country

ADRC	Archaeological Data Recording Centre
ASAPA	Association of Southern African Professional Archaeologists
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency

HERITAGE IMPACT SURVEY REPORT FOR THE PROPOSED 400/132KV VRYBURG SUBSTATION AND LOOP-IN LINES, NORTH WEST PROVINCE

1. INTRODUCTION

Eskom plans to develop a 400/132kV substation with associated loop-in line in the Vryburg area of North West Province. For this purpose three alternative sites were identified.

An independent heritage consultant was appointed by **Bohlweki SSI** to conduct a survey to locate, identify, evaluate and document sites, objects and structures of cultural importance found within the boundaries of three areas where the development is to take place.

This HIA report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and was done in accordance with Section 38 of the National Heritage Resources Act, No. 25 of 1999 and is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

The scope of work consisted of conducting a Phase 1 archaeological survey of the site in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act 25 of 1999).

This include:

- Conducting a desk-top investigation of the area
- A visit to the proposed development site

The objectives were to

- Identify possible archaeological, cultural and historic sites within the proposed development areas;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.

3. DEFINITIONS AND ASSUMPTIONS

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

- *Cultural 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 are 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.

- Sites regarded as having low significance have already been recorded in full and require no further mitigation. Sites with medium to high significance require further mitigation.

- The latitude and longitude of archaeological sites are to be treated as sensitive information by the developer and should not unduly be disclosed to members of the public.

4. STUDY APPROACH AND METHODOLOGY

4.1 **Extent of the Study**

This survey and impact assessment covers the area as presented in Section 5 and as illustrated in Figure 1.

4.2 **Methodology**

4.2.1 *Preliminary investigation*

4.2.1.1 Survey of the literature
A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological and historical sources were consulted - see the list of references below.

4.2.1.2 Data bases
The *Heritage Sites Database* and the *Environmental Potential Atlas* was consulted.

4.2.1.3 Other sources
Topocadastral and other maps were also studied - see the list of references below.

4.2.2 *Field survey*

The field survey was done according to generally accepted archaeological practices, and was aimed at locating all possible sites, objects and structures. The areas that had to be investigated, were identified by **Bohlweki SSI** by means of maps. The areas were investigated by walking across it in a number of transects. Special attention was given to topographical occurrences such as trenches, holes, outcrops and clusters of trees were investigated.

4.2.3 *Documentation*

All sites, objects and structures that are identified are documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities are determined by means of the *Global Positioning System* (GPS)[1] and plotted on a

[1] According to the manufacturer a certain deviation may be expected for each reading. Care was, however, taken to obtain as accurate a reading as possible, and then to correlate it with reference to the physical environment before plotting it on the map.

map. This information is added to the description in order to facilitate the identification of each locality.

Map datum used: Hartebeeshoek 94 (WGS84).

4.3 Limitations

None at present.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Site location

The study areas are all located south of the town of Vryburg in North West Province (see Fig. 1), on the following farms: Takwanen Bantu Reserve 662, Rosendal 673 and Kareeboom Fontein 725, on topocadastral maps 2724BA and 2724BB. For more detail, please see the Technical Summary presented above.

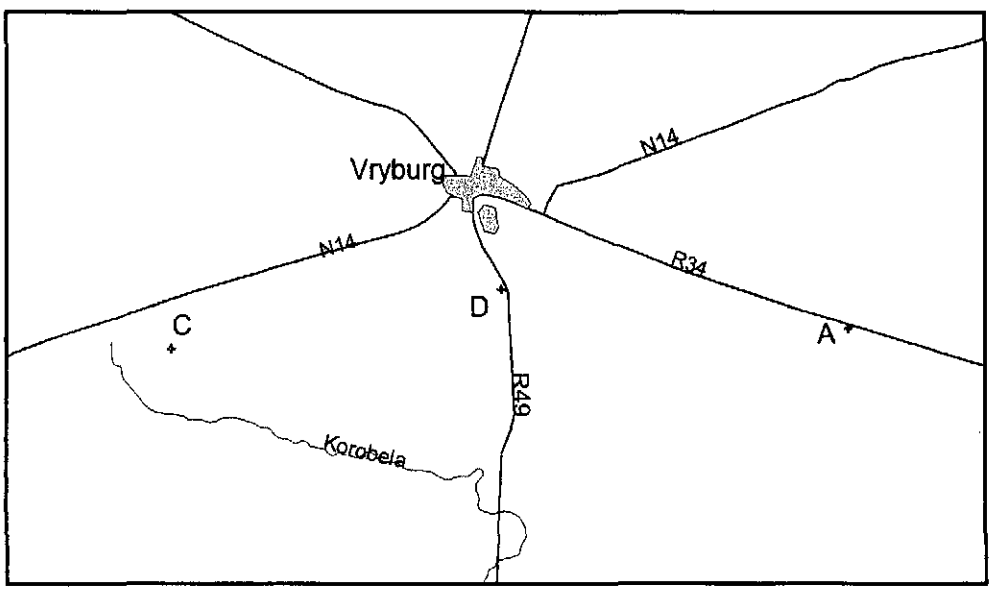

Fig. 1. Location of the study areas in regional context, indicated by the three green crosses.

5.2 Site description

The geology of the area is quite complex, being made up of bands of tillite, shale and sand. The topography is rather flat and can be described as consisting of plains and pans. The

original vegetation is classified as Kalahari Plateau Bushveld. All three areas can be described as "green fields" and shows no signs of previous development.

5.3 **Archaeological sequence**

One of the more detailed studies on the area is that of Breutz (1959), whereas that of Lye and Murray (1980) is a more secondary source. The summary below is largely, though not exclusively, based on these two sources.

5.3.1 *Stone Age*

Habitation of the larger geographical area took place since Early Stone Age times. According to Breutz (1959), stone tools dating to all phases of the Stone Age are found frequently, especially in the vicinity of watercourses and hills.

However, the largest legacy dating to the Stone Age are the numerous sites with rock engravings found in the region. Some of the farms in the Vryburg region known to have rock engravings are Bernauw, Content, Gemsbok Laagte, Klipfontein, Kinderdam, Melalarig, Schatkist, Verdwaal Vlakte and Wonderfontein, to mention but a few.

5.3.2 *Iron Age*

As yet, no sites dating to the Early Iron Age have been reported from the region and most sites date to the Late Iron Age. According to Breutz (1959) stone walled sites dating to the Late Iron Age and which can be linked to the Tswana occupation of the area, are found on a number of farms in the region, e.g. Waai Hoek and Brul Pan. However, the historic most important one, named Dithakong, is located some distance to the north-west. This site was first visited by early travellers such as Lichtenstein and John Campbell in the early part of the 19th century.

5.3.3 *Historic period*

The town of Vryburg was founded in 1883 as the capital of the Republic of Stellaland. It attained municipal status in 1896. During the Anglo Boer War (1899-1902) a large concentration camp was established on the outskirts of the town.

The Tierkloof Institute, located to the south of Vryburg, on the farm Waterloo, was established in 1904 and served as centre for higher education for Tswana-speaking people.

5.4 **Identified sites**

5.4.1 *Stone Age*

A number of flakes and tools, probably dating to the Middle Stone Age were identified in all three of the study areas (Fig. 2). These artefacts are mostly made from chert and hornfels and occur as surface material. It is viewed to have a low significance.

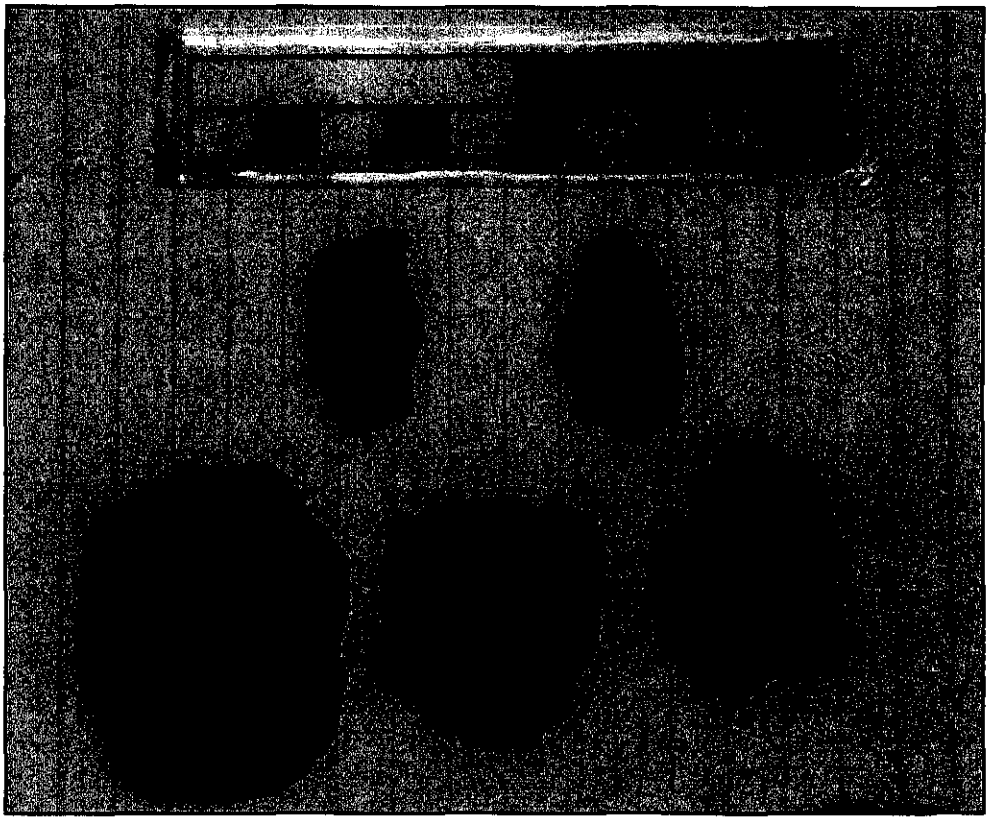

Fig. 2. Stone tools and flakes identified in the three study areas.

5.4 2 *Iron Age*

No sites, features or objects dating to the **Iron Age** were identified in the study areas.

5.4.3 *Historic period*

No sites, features or objects dating to the **Iron Age** were identified in the study areas.

6. SITE SIGNIFICANCE AND ASSESSMENT

6.1 **Statement of significance**

According to the NHR Act, Section 2(vi), the **significance** of heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the 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.

Sites regarded as having low significance are viewed as been recorded in full after identification and would require no further mitigation. Sites with a medium to high significance would require mitigation. Mitigation, in most cases the excavation of a site, is in essence destructive and therefore the impact can be viewed as high and as permanent.

- No sites, features or objects of cultural significance were identified in the study area.

6.2 **Impact assessment**

Impact analysis of cultural heritage resources under threat of the proposed development, are based on the present understanding of the development.

- As no sites, features or objects of cultural significance were identified in the study area, there would not be any impact.

7. IDENTIFICATION OF RISK SOURCES

A Heritage Impact Assessment is focused on two phases of a proposed development: **the construction** and **operation phases**. However, from a cultural heritage perspective, this distinction does not apply. Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted, can be written into the management plan, whence they can be avoided or cared for in the future.

The following project actions may impact negatively on archaeological sites and other features of cultural importance. The actions are most likely to occur during the construction phase of a project.

Construction phase:

Possible Risks	**Source of the risk**
Actually identified risks	
- damage to sites	Construction work
Anticipated risks	
- looting of sites	Curious workers

Operation phase:

Possible Risks	**Source of the risk**
Actually identified risks	
- damage to sites	Not keeping to management plans
Anticipated risks	
- damage to sites	Unscheduled construction/developments
- looting of sites	Visitors removing objects as keepsakes

8. RECOMMENDED MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on, can be written into the management plan, whence they can be avoided or cared for in the future.

8.1 **Objectives**

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the National Heritage Resources Act (Act No. 25 of 1999), should these be discovered during construction.

8.2.1 *Construction phase*

General management objectives and commitments:
- To avoid disturbing sites of heritage importance; and
- To avoid disturbing burial sites.

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction work.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).

9. RECOMMENDATIONS

Eskom plans to develop a 400/132kV substation with associated loop-in line in the Vryburg area of North West Province. For this purpose three alternative sites were identified.

The aim of the survey was to review the three areas that have been proposed as possible sites for the construction of the electricity substation and it associated loop-in lines.

Although a number of sites, dating to all periods of the past occur in the larger region, none were identified in the three sites proposed for the possible construction of the substation. Therefore, based on what was found and its evaluation, it is recommended that the

development can continue in any of the three areas, on condition of acceptance of the following recommendations:

- If construction takes place and archaeological sites are exposed, it should immediately be reported to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made.

10. REFERENCES

10.1 **Data bases**

Central State Archive, Pretoria (Photographs)

Environmental Potential Atlas, Department of Environmental Affairs and Tourism.

Heritage Atlas Database, Pretoria.

10.2 **Literature**

Acocks, J.P.H. 1975. *Veld Types of South Africa*. Memoirs of the Botanical Survey of South Africa, No. 40. Pretoria: Botanical Research Institute.

Breutz, P-L. 1959. *The tribes of Vryburg district*. Ethnological Publications No. 46. Pretoria: Government Printer.

Fock, G.J. & Fock, D. 1984. *Feldsbilder in Sudafrika. Teil II. Kinderdam und Kalahari*. Koln: Bohlau Verlag.

Holm, S.E. 1966. *Bibliography of South African Pre- and Protohistoric archaeology*. Pretoria: J.L. van Schaik.

Lye, W.F. & Murray, C. 1980. *Transformations on the Highveld: the Tswana and Southern Sotho*. Cape Town: David Philip.

Richardson, D. 2001. *Historic sites of South Africa*. Cape Town: Struik Publishers.

Van Riet Lowe, C. n.d. *The distribution of Prehistoric rock engravings and paintings in South Africa*. Archaeological Survey, Archaeological Series No. 7.

Van Warmelo, N.J. 1977. *Anthropology of Southern Africa in Periodicals to 1950*. Pretoria: Government Printer.

10.3 **Maps**

1: 50 000 Topocadastral maps – 2624DC, 2624DD, 2724BA, 2724BB

APPENDIX 1: CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES

Significance
The *significance* of the sites and artefacts are 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.

Matrix used for assessing the significance of each identified site/feature

1. Historic value			
Is it important in the community, or pattern of history			
Does it have strong or special association with the life or work of a person, group or organisation of importance in history			
Does it have significance relating to the history of slavery			
2. Aesthetic value			
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group			
3. Scientific value			
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage			
Is it important in demonstrating a high degree of creative or technical achievement at a particular period			
4. Social value			
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons			
5. Rarity			
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage			
6. Representivity			
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects			
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class			
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.			
7. Sphere of Significance	High	Medium	Low
International			
National			
Provincial			
Regional			
Local			
Specific community			
8. Significance rating of feature			
1. Low			
2. Medium			
3. High			

Significance of impact:

- low where the impact will not have an influence on or require to be significantly accommodated in the project design
- medium where the impact could have an influence which will require modification of the project design or alternative mitigation
- high where it would have a "no-go" implication on the project regardless of any mitigation

Certainty of prediction:

- Definite: More than 90% sure of a particular fact. Substantial supportive data to verify assessment
- Probable: More than 70% sure of a particular fact, or of the likelihood of that impact occurring
- Possible: Only more than 40% sure of a particular fact, or of the likelihood of an impact occurring
- Unsure: Less than 40% sure of a particular fact, or the likelihood of an impact occurring

Recommended management action:

For each impact, the recommended practically attainable mitigation actions which would result in a measurable reduction of the impact, must be identified. This is expressed according to the following:

1 = no further investigation/action necessary
2 = controlled sampling and/or mapping of the site necessary
3 = preserve site if possible, otherwise extensive salvage excavation and/or mapping necessary
4 = preserve site at all costs

Legal requirements:

Identify and list the specific legislation and permit requirements which potentially could be infringed upon by the proposed project, if mitigation is necessary.

APPENDIX 2. RELEVANT LEGISLATION

All archaeological and palaeontological sites, and meteorites are protected by the National Heritage Resources Act (Act no 25 of 1999) as stated in Section 35:

(1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and the maritime cultural zone shall be the responsibility of SAHRA.

(2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.

(3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

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

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;

(b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;

(c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or

(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

In terms of cemeteries and graves the following (Section 36):

(1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.

(2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.

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

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

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

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

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

The National Heritage Resources Act (Act no 25 of 1999) stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act:

- **Grade I**: Heritage resources with qualities so exceptional that they are of special national significance;
- **Grade II**: Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
- **Grade III**: Other heritage resources worthy of conservation, and which prescribes heritage resources assessment criteria, consistent with the criteria set out in section 3(3), which must be used by a heritage resources authority or a local authority to assess the intrinsic, comparative and contextual significance of a heritage resource and the relative benefits and costs of its protection, so that the appropriate level of grading of the resource and the consequent responsibility for its management may be allocated in terms of section 8.

Presenting archaeological sites as part of tourism attraction requires, in terms 44 of the Act, a Conservation Management Plan as well as a permit from SAHRA.

(1) Heritage resources authorities and local authorities must, wherever appropriate, co-ordinate and promote the presentation and use of places of cultural significance and heritage resources which form part of the national estate and for which they are responsible in terms of section 5 for public enjoyment, education. research and tourism, including-

(a) the erection of explanatory plaques and interpretive facilities, including interpretive centres and visitor facilities;
(b) the training and provision of guides;
(c) the mounting of exhibitions;
(d) the erection of memorials; and
(e) any other means necessary for the effective presentation of the national estate.

(2) Where a heritage resource which is formally protected in terms of Part I of this Chapter is to be presented, the person wishing to undertake such presentation must, at least 60 days prior to the institution of interpretive measures or manufacture of associated material, consult with the heritage resources authority which is responsible for the protection of such heritage resource regarding the contents of interpretive material or programmes.

(3) A person may only erect a plaque or other permanent display or structure associated with such presentation in the vicinity of a place protected in terms of this Act in consultation with the heritage resources authority responsible for the protection of the place.

APPENDIX 3: SURVEY RESULTS

See Appendix 1 for an explanation of the conventions used in assessing the cultural remains.

Map datum used: Hartebeeshoek 94 (WGS84).

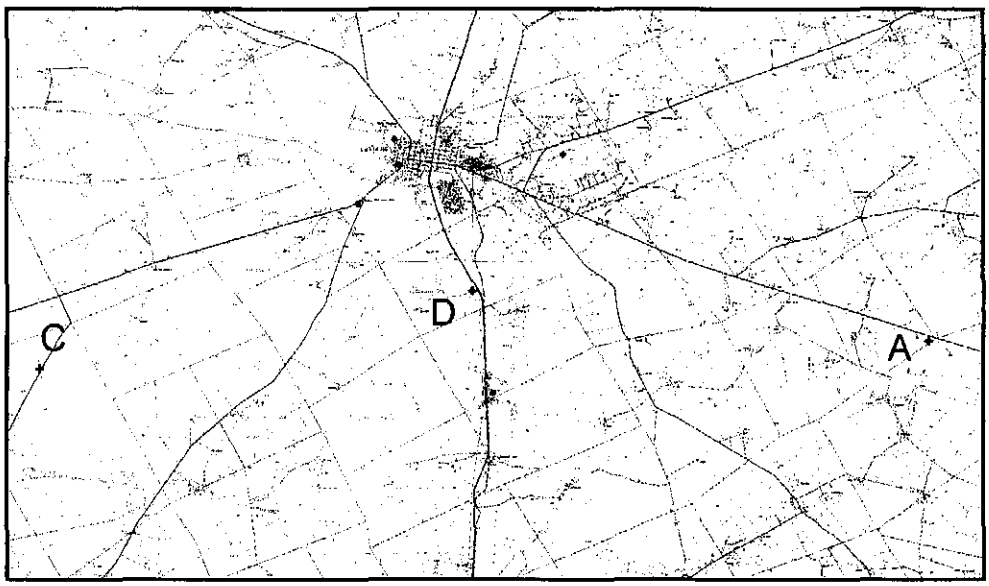

Fig. 3. Map showing the location of known heritage sites in the vicinity of the project.
(Maps 2624DC, 2624DD, 2724BA, 2724BB: Chief Directorate Survey and Mapping.)

Sites identified that might be impacted by the development: Nil

APPENDIX 4: ILLUSTRATIONS

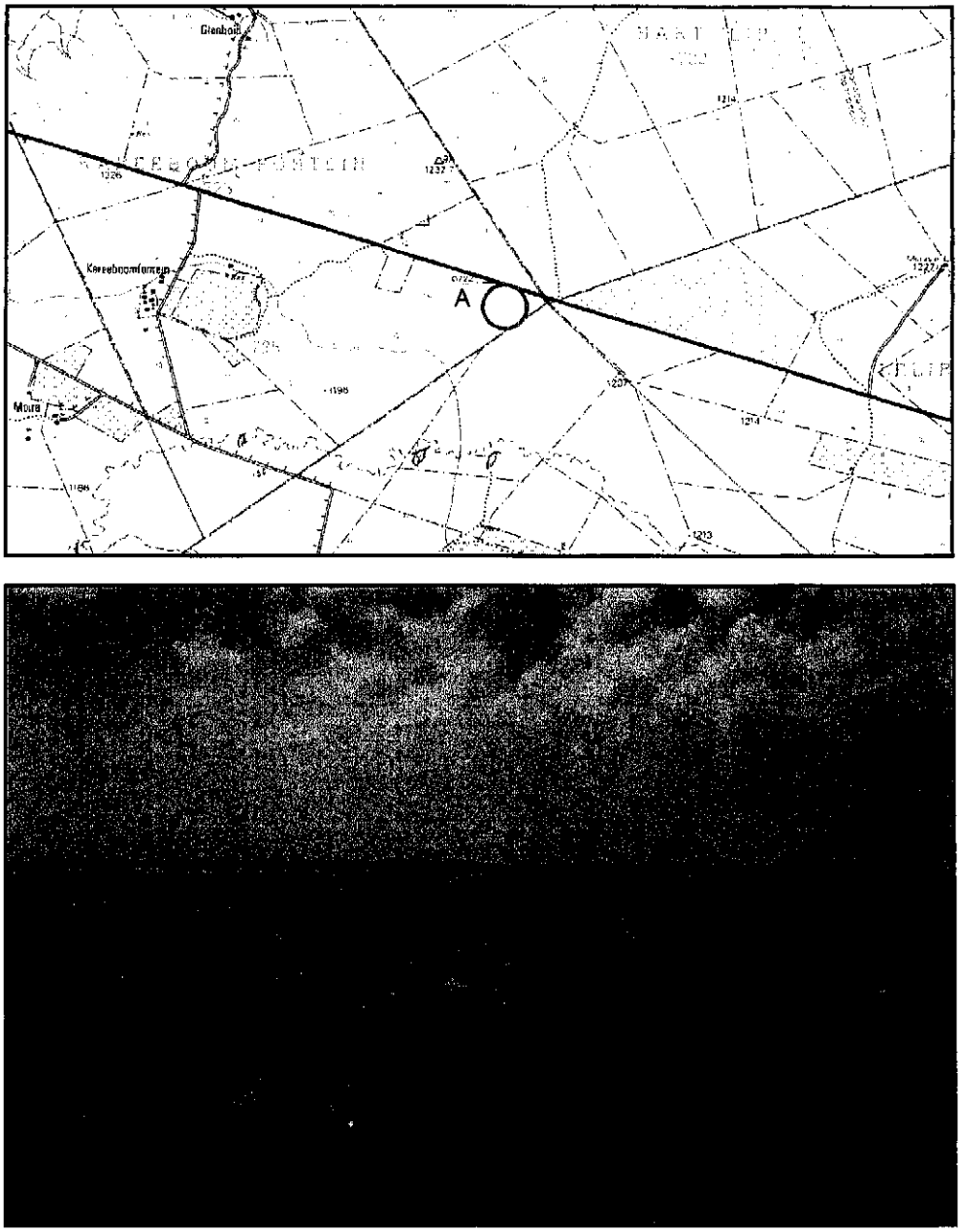

Fig. 4. Location of and view over Site A.

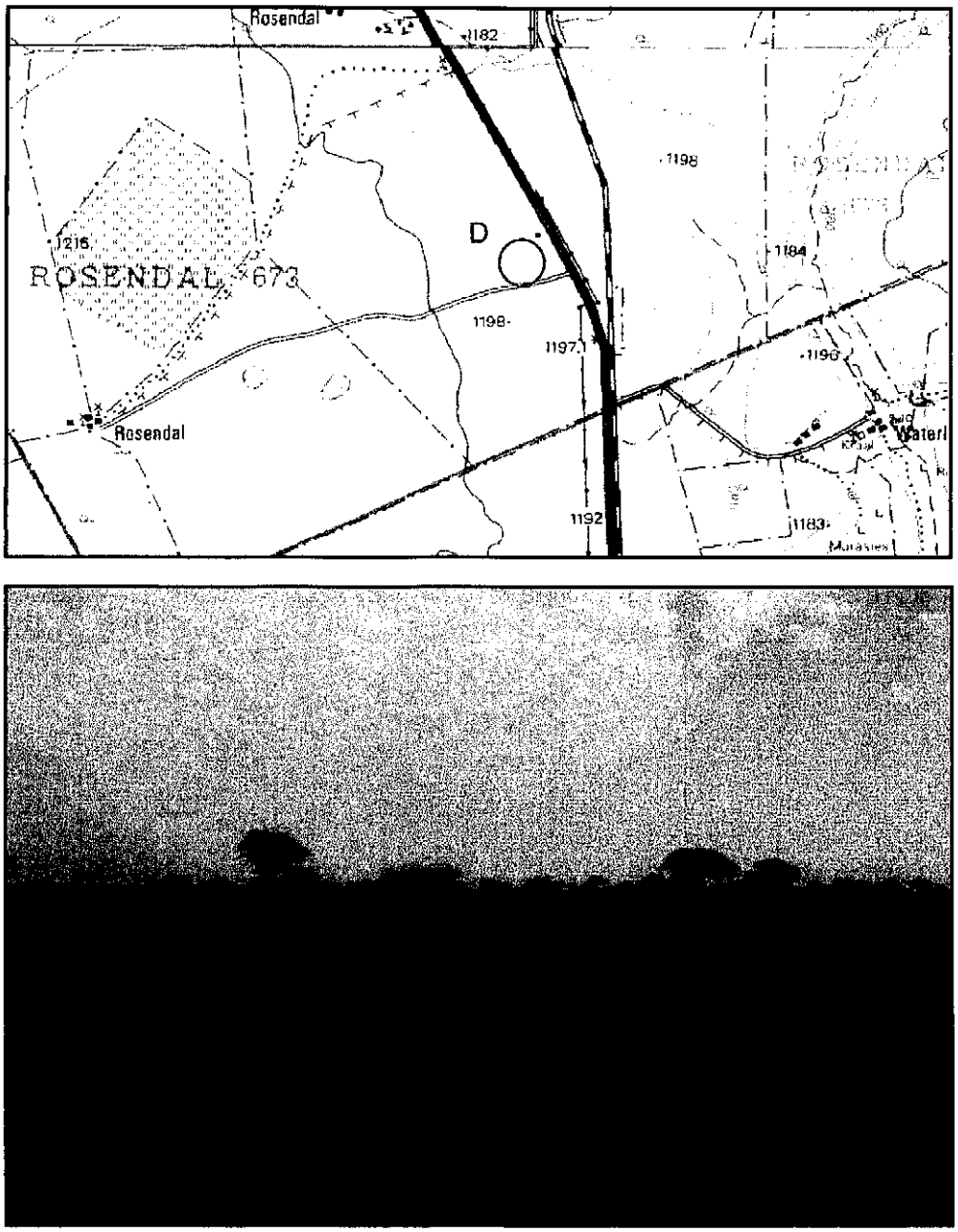

Fig. 5. Location of and view over Site D.

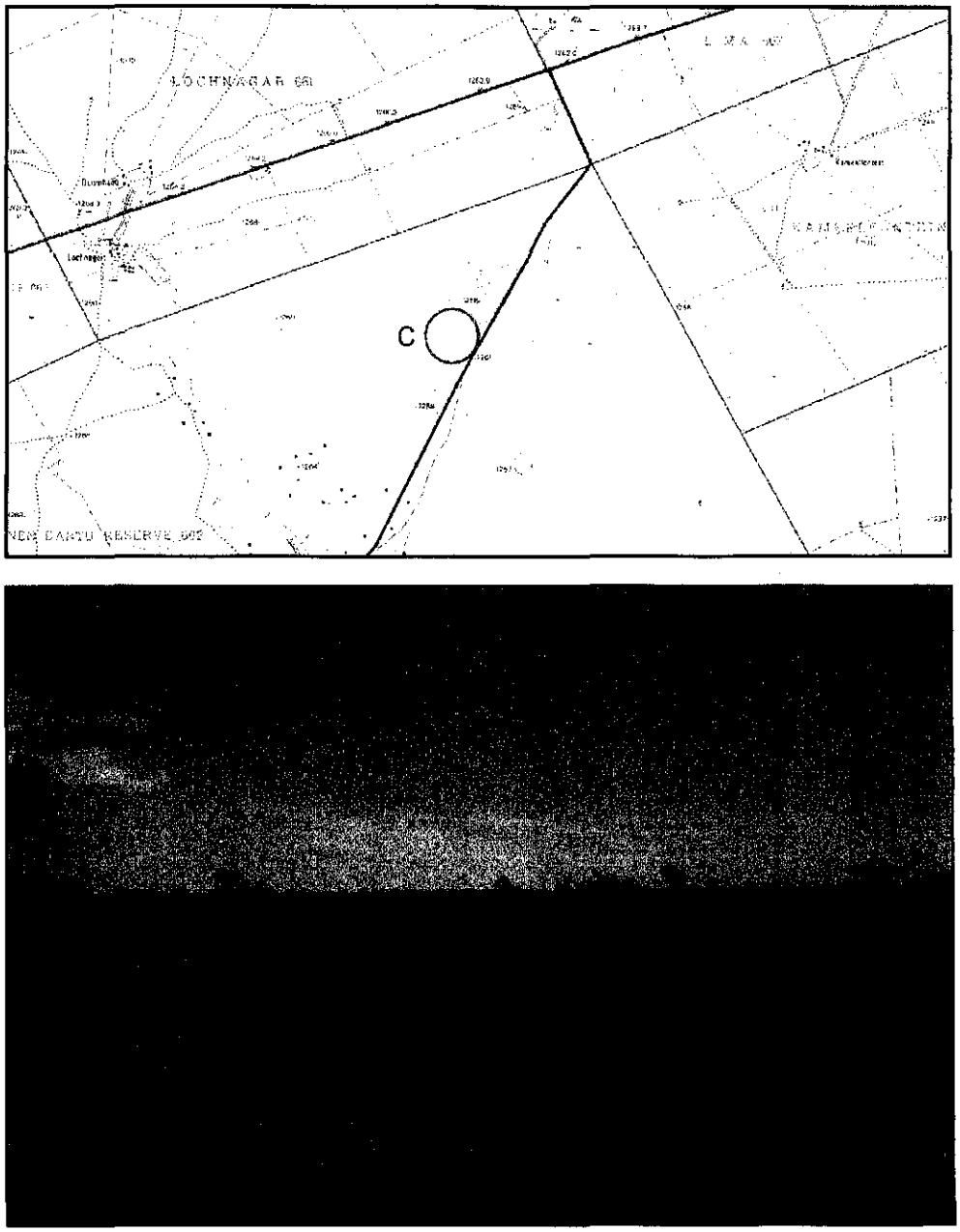

Fig. 6. Location of and view over Site C.