

**Heritage impact survey report for the
KOMATI WATER SCHEME AUGMENTATION PROJECT,
MPUMALANGA PROVINCE**

THE PROJECT:

Development of a 57km long water augmentation pipeline.

THIS REPORT:

HERITAGE IMPACT SURVEY REPORT FOR THE KOMATI WATER SCHEME AUGMENTATION PROJECT, MPUMALANGA PROVINCE

Report No: 2007/64
Status: Final
Revision No: 0
Date: December 2007

Prepared for:
SEF
Representative: Mr R Heydenrych
Tel: 012 349 1307
E-mail: reuben@sefsa.co.za
Postal Address: PO Box 74785, Lynnwood Ridge, 0040

Prepared by:
J van Schalkwyk (D Lit et Phil), Heritage Consultant
Tel: 012 347 7270
E-mail: jvschalkwyk@mweb.co.za
Postal Address: PO Box 26389, Monument Park, 0105

ASAPA Registration No. 164
Principal Investigator: Iron Age, Colonial Period, Industrial Heritage

EXECUTIVE SUMMARY

HERITAGE IMPACT SURVEY REPORT FOR THE KOMATI WATER SCHEME AUGMENTATION PROJECT, MPUMALANGA PROVINCE

The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural importance found within the boundaries of the area in which it is proposed to develop a pipeline for the transfer of water northwards to two areas.

The scheme is known as the Komati Water Augmentation project. It proposes to construct a 57 km long pipeline from Rietfontein Weir in the south, to Duvha Power Station in the north. A shorter off-take would supply water to Matla Power Station. The pipeline between Rietfontein and Duvha (50 km) would be 1 100mm in diameter; the off-take to Matla (7 km) would be 600 mm in diameter.

Although a number of sites of heritage significance have been identified in the larger region, none were found to be located in the proposed alignment. Therefore, based on what was found and its evaluation, it is recommended that the proposed development can continue 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.

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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 1000
Late Iron Age	AD 1000 - AD 1830

HISTORIC PERIOD

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

core - a piece of stone from which flakes were removed to be used or made into tools

ADRC	Archaeological Data Recording Centre
CSG	Chief Surveyor General
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency

HERITAGE IMPACT SURVEY REPORT FOR THE KOMATI WATER SCHEME AUGMENTATION PROJECT, MPUMALANGA PROVINCE

1. INTRODUCTION

An independent heritage consultant was appointed by Strategic Environmental Focus to conduct a survey to locate, identify, evaluate and document sites, objects and structures of cultural importance found within the boundaries of an area in which it is proposed to develop a water augmentation scheme.

The scheme is known as the Komati Water Augmentation project. It proposes to construct a 57 km long pipeline from Rietfontein Weir in the south, to Duvha Power Station in the north. A shorter off-take would supply water to Matla Power Station. The pipeline between Rietfontein and Duvha (50 km) would be 1 100mm in diameter; the off-take to Matla (7 km) would be 600 mm in diameter.

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 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 and 2.

4.2 Methodology

4.1 Preliminary investigation

4.1.1 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.

4.1.2 Data bases

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

4.1.3 Other sources

Aerial photographs were also consulted.

4.2 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 area that had to be investigated, was identified by SEF by means of maps. As this is a linear development the routes was followed, by using a vehicle, or, where necessary, by walking sections that were not accessible by vehicle.

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

Map datum used: Hartebeeshoek 94 (WGS84).

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.

4.4 Limitations

In most of the survey area, the vegetation was quite dense (see Fig. 3 and 4), seriously limiting the archaeological visibility.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Site location

The study area is located south of Witbank in Mpumalanga (see Figure 1). The scheme is known as the Komati Water Augmentation project. It proposes to construct a 57 km long pipeline from Rietfontein Weir in the south, to Duvha Power Station in the north. A shorter off-take would supply water to Matla Power Station. The pipeline between Rietfontein and Duvha (50 km) would be 1 100mm in diameter; the off-take to Matla (7 km) would be 600 mm in diameter.

5.2 Site description

The geology of the area is made up of arenite, with a few intrusions of rhyolite and dolorite. The original vegetation is classified as Moist Sandy Highveld Grassland, but, due to agricultural activities, very little of this remains. The topography of the area can be described as gently rolling plains.

For the most part, the proposed development will be following the existing road reserves. As these areas are already disturbed, the chance of finding any features of heritage significance in them are small.

5.3 Archaeological sequence

5.3.1 Stone Age

Habitation of the larger geographical area took place since at least Late Stone Age times. This is confirmed by the occurrence of a few small shelters that were occupied during the Later Stone Age. These sites all occur close to the various rivers, where cliff and overhangs occur.

5.3.2 Iron Age

Similarly, sites dating to the Late Iron Age are found in the larger geographical area. These are stone walled sites, dating to the post-1650 period. They can mostly be related to the Tswana-speakers, whereas others might belong to the Ndebele-speakers. These sites usually occur on ridges where stone is available for building purposes.

5.3.3 Historic period

The historic period started c. 1830s, with the arrival of the first white settlers. Farms were set out and infrastructure followed later, e.g. the development of the NZASM railway line. Witbank was established in 1905, with other towns following later. During the Anglo Boer War, a number of battles and skirmishes took place in the region. Many farmsteads were burned down by the British during the War, contributing to the fact that there are only a few old

surviving farmsteads in the region. The most common feature dating to the historic period in the region, are small farm cemeteries that occur sporadically all over.

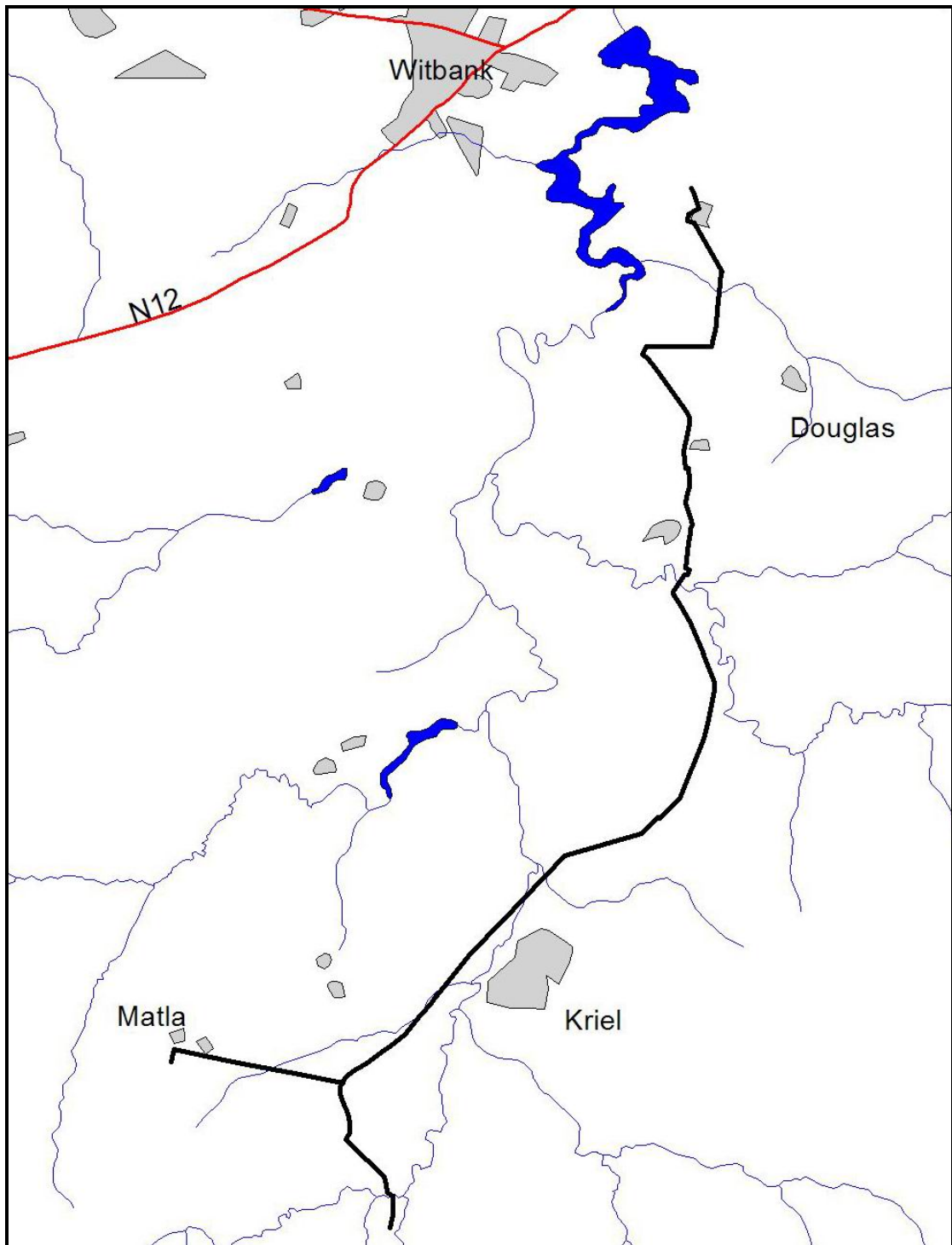


Fig. 1. Location of the study area (dark line) in regional context.

5.4 Identified sites

A number of sites were identified near the alignment of the proposed pipeline and their positions are indicated on the map in Fig. 2. However, none of these are located in the proposed alignment and would therefore not be impacted on by the development.

5.4.1 Stone Age

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

5.4.2 Iron Age

A number of stone walled sites dating to the **Late Iron Age** are known to occur in the southern section of the pipeline. However, none of these are close enough to be impacted on by the proposed development.

5.4.3 Historic period

A number of features dating to the **Historic period** were identified in the study area. These are informal farm cemeteries found in all over, as well as old farm labourer homesteads. Fortunately, none of these features are close enough to the proposed development so that it would have an impact on them.

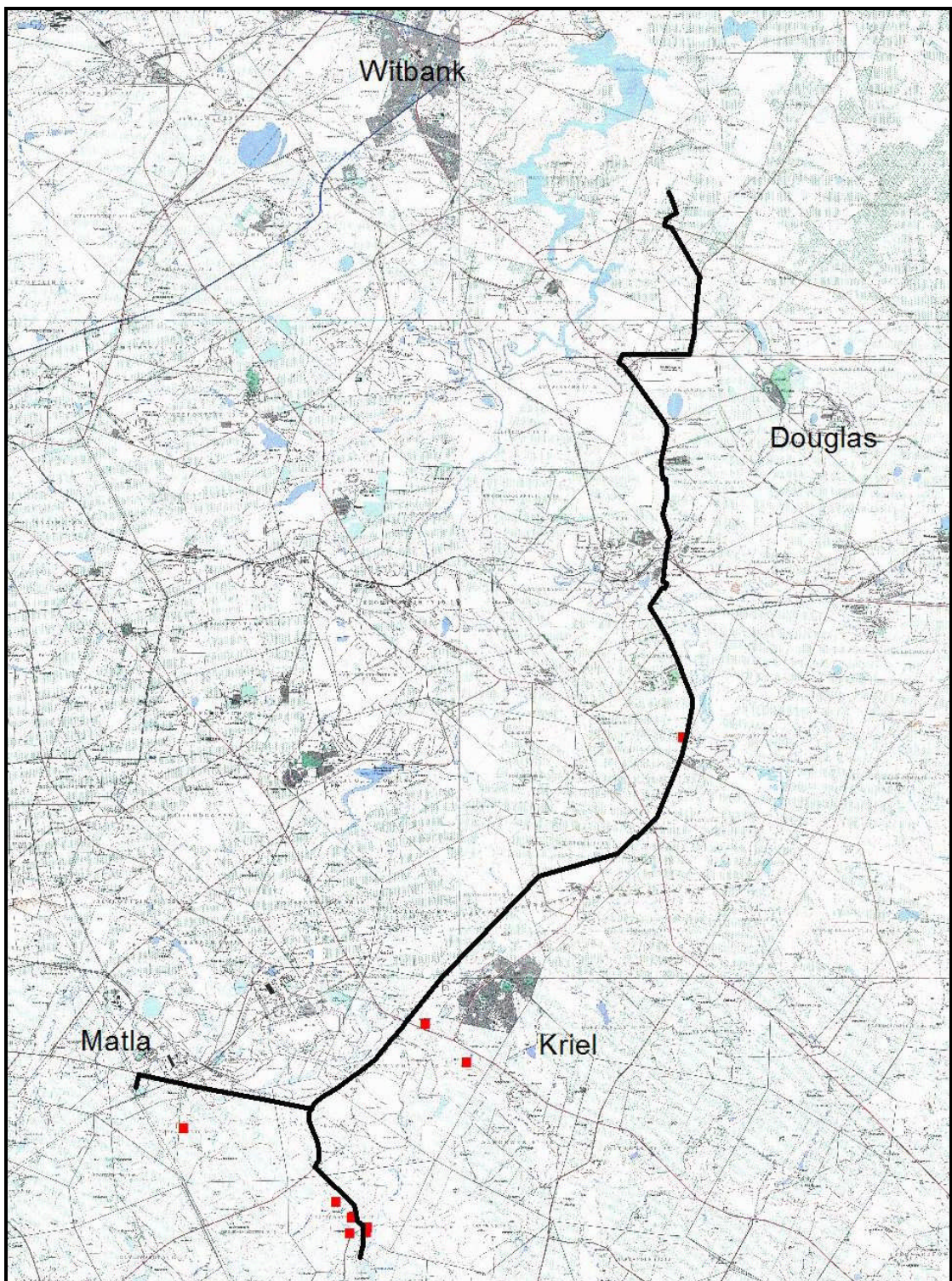


Fig. 2. The proposed pipeline, showing the location of the identified heritage sites (Map 2529CD, 2629AA, 2629AB, 2629AC, Government Printer, Pretoria).

6. 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 - looting of sites	Unscheduled construction/developments Visitors removing objects as keepsakes

7. RECOMMENDATIONS

The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural importance found within the boundaries of the area in which it is proposed to develop a pipeline for the transfer of water northwards to two areas.

Although a number of sites of heritage significance have been identified in the larger region, none were found to be located in the proposed alignment. Therefore, based on what was found and its evaluation, it is recommended that the proposed development can continue 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.

9. REFERENCES

9.1 Data bases

Heritage Sites Database, Pretoria.

Environmental Potential Atlas, Department of Environmental Affairs and Tourism.

9.2 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.

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

Nkangala District Municipality 2004. Formalization of Cultural and Historical sites. Pretoria: BKS (Pty) Ltd and Cultmatrix cc.

Praagh, L.V. (ed.) 1906. *The Transvaal and its mines*. London: Praagh & Lloyd.

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

9.3 Maps

1: 50 000 Topocadastral maps – 2529CD, 2629AA, 2629AB, 2629AC

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).

Sites identified = nil

APPENDIX 4: ILLUSTRATIONS



Fig. 3. The study area south of Duvha power station.



Fig. 4. A section of the study area next to the road in the vicinity of Van Dyksdrif.