

**Heritage impact assessment for the
PROPOSED MEDUPI POWER STATION CONVEYOR ROUTE,
LEPHALALE REGION, LIMPOPO PROVINCE**



HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED MEDUPI POWER STATION CONVEYOR ROUTE, LEPHALALE REGION, LIMPOPO PROVINCE

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Declaration:

I, J.A. van Schalkwyk, declare that I do not have any financial or personal interest in the proposed development, nor its developers or any of their subsidiaries, apart from the provision of heritage assessment and management services.



J A van Schalkwyk (D Litt et Phil)
Heritage Consultant
March 2010

EXECUTIVE SUMMARY

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED MEDUPI POWER STATION CONVEYOR ROUTE, LEPHALALE REGION, LIMPOPO PROVINCE

Eskom Holdings Limited proposes to build a conveyor belt to transport coal from Exxaro's Grootegeluk Mine in the Lephalale area to the new Medupi Power Station that is currently under construction. The total length of the conveyor route is just over 6km.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, according to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Savannah Environmental** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned develop is to take place.

- As no heritage sites occur in the study area, there would be no impact resulting from the proposed development.

Therefore, from a heritage point of view we recommend that the proposed development can continue. However, we request that if archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk
Heritage Consultant
March 2010

TECHNICAL SUMMARY

Property details						
Province	Limpopo					
Magisterial district	Ellisras					
Topo-cadastral map	2327CB, 2327DA					
Closest town	Lephalale					
Farm name/s	Enkelbult 462LQ, Turfvlakte 463LQ, Naauwontkomen 509LQ					
Portions/Holdings	Various					
Coordinates	Bend points					
	No	Latitude	Longitude	No	Latitude	Longitude
	1	S 23.65611	E 27.56617	2	S 23.66028	E 27.57314
	3	S 23.69639	E 27.56053	4	S 23.70172	E 27.55067

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	Yes
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	No
Development involving three or more existing erven or subdivisions	No
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 sq m	No
Any other development category, public open space, squares, parks, recreation grounds	No

Development	
Description	Development of a conveyor belt for transporting of coal
Project name	Medupi Conveyor Belt

Land use	
Previous land use	Farming
Current land use	Farming/mining

Heritage sites assessment		
<i>Site type</i>	<i>Site significance</i>	<i>Site grading (Section 7 of NHRA)</i>
None		
Impact assessment		
<i>Impact</i>	<i>Mitigation</i>	<i>Permits required</i>
None	None	None

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	II
TECHNICAL SUMMARY	III
TABLE OF CONTENTS.....	IV
GLOSSARY OF TERMS AND ABBREVIATIONS.....	V
1. INTRODUCTION.....	1
2. TERMS OF REFERENCE	1
3. HERITAGE RESOURCES.....	1
4. STUDY APPROACH AND METHODOLOGY	3
5. DESCRIPTION OF THE AFFECTED ENVIRONMENT	4
6. SITE SIGNIFICANCE AND ASSESSMENT	6
7. CONCLUSIONS.....	6
8. REFERENCES.....	8
APPENDIX 1: CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES.....	9
APPENDIX 2. RELEVANT LEGISLATION	11
APPENDIX 3: SURVEY RESULTS	12
APPENDIX 4: ILLUSTRATIONS	13

LIST OF FIGURES

	Page
Fig. 1. Location of the study area (green line) in regional context.....	4
Fig. 2. Location of the study area (green line). Known heritage sites are indicated in red.....	12
Fig. 3. The study area looking south-west.	13
Fig. 4. Where the conveyor will cross into Medupi Power Station.....	14
Fig. 5. The area adjacent to the slimes dam, showing earlier earth works.....	14
Fig. 6. Near the beginning of the route in the north-eastern sector.	15
Fig. 7. One of the old bore holes.....	15

GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Study area: Refers to the entire study area as indicated by the client in the accompanying Fig. 1 - 2.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

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: Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. These people, according to archaeological evidence, spoke early variations of the Bantu Language. Because they produced their own iron tools, archaeologists call this the Iron Age.

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

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

ABBREVIATIONS

ADRC	Archaeological Data Recording Centre
ASAPA	Association of Southern African Professional Archaeologists
CS-G	Chief Surveyor-General
EIA	Early Iron Age
ESA	Early Stone Age
LIA	Late Iron Age
LSA	Later Stone Age
HIA	Heritage Impact Assessment
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 ASSESSMENT FOR THE PROPOSED MEDUPI POWER STATION CONVEYOR ROUTE, LEPHALALE REGION, LIMPOPO PROVINCE

1. INTRODUCTION

Eskom Holdings Limited proposes to build a conveyor belt to transport coal from Exxaro's Grootegeluk Mine in the Lephalale area to the new Medupi Power Station that is currently under construction. The total length of the conveyor route is just over 6km.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, according to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Savannah Environmental** to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where it is planned to develop the conveyor route.

2. TERMS OF REFERENCE

The scope of work for this study consisted of:

- Conducting of a desk-top investigation of the area, in which all available literature, reports, databases and maps were studied;
- A visit to the proposed development area.

The objectives were to

- Identify possible archaeological, cultural and historic sites within the proposed development area;
- 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. HERITAGE RESOURCES

3.1 The National Estate

The NHRA (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
 - ancestral graves;
 - royal graves and graves of traditional leaders;
 - graves of victims of conflict;
 - graves of individuals designated by the Minister by notice in the Gazette;
 - historical graves and cemeteries; and
 - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
 - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - objects to which oral traditions are attached or which are associated with living heritage;
 - ethnographic art and objects;
 - military objects;
 - objects of decorative or fine art;
 - objects of scientific or technological interest; and
 - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of

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

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 Figures 1 - 2.

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.

- Very few publications deal with the region and none with the study area specifically. Some information was obtained on mining in the region (Coetzee 1976). A few heritage impact assessments have been done in the larger region, e.g. Van Schalkwyk (2005a, 2005b, 2006, 2008).

4.2.1.2 Data bases

The *Heritage Atlas Database*, the *Environmental Potential Atlas*, the *Chief Surveyor General* and the *National Archives of South Africa* were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development.
- No relevant information on the property could be found in the records of the Chief Surveyor-General, and a few general references were traced in the National Archives of South Africa.

4.2.1.3 Other sources

Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Information of a very general nature were obtained from these sources

4.2.2 Field survey

The area that had to be investigated was identified by **Savannah Environmental** by means of maps. As this is a linear development, the site was surveyed by walking the entire route.

4.3 Limitations

The vegetation was very dense and high during the site visit, limiting archaeological visibility to some extent.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Site location and description

The study area is located to the east and south of the Grootegeluk Coal Mine, which is situated to the west of the town of Lephalael in Limpopo Province. The development is linear in nature and crosses over the following farms: Enkelbult 462LQ, Turfvlakte 463LQ, Naauwontkome 509LQ. For more detail, please see the Technical Summary presented above.

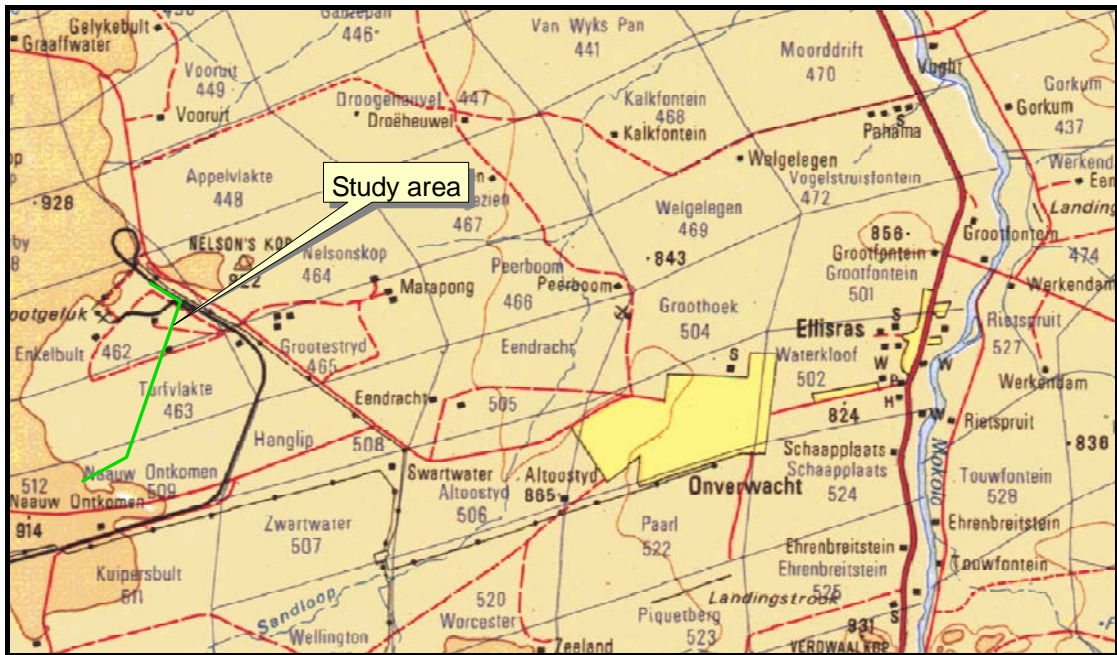


Fig. 1. Location of the study area (green line) in regional context.

The topography of the area is very flat, with very few features (e.g. hills, outcrops or rock shelters, rivers) that usually drew people to settle in its vicinity, are found in the area. Only a few small hills or outcrops occur. All the rivers crossing the area are non-perennial. The biggest river, the Makolo, passes some distance to the east of the study area, flowing from south to north.

The geology is made up of alternating bands of arenite and shale, with a basalt intrusion to the west of the study area. All is overlain by sand, probably aeolic in origin, having been laid down from the west.

The area can be described as typical savanna, with the original vegetation consisting of Mixed Bushveld, with a section to the north classified as Sweet Bushveld.

In the recent past, all of these properties were used for cattle farming. As a result, farming related infrastructure was developed. When the properties were bought up by Kumba

Resources the land use on most farms changed to game farming and, as a result, people moved off the farms.

For about a third of the route, the conveyor will pass through an area that has been subjected to mining activities. Thereafter it roughly follows the alignment of an old farm road, up to the border of the farm Naauwontkomen. The last section has been impacted on by the recent development of the Medupi Power Station.

5.2 Regional overview

Probably because of the somewhat inhospitable environment, being very flat, hot and dry (average rainfall of 436 mm per annum) and with few sources of surface water, people did not settle in large numbers in the area in the past. As a result, only a few sites of cultural significance were identified in the study area.

In the larger region, in areas where there are outcrops, especially close to rivers, rock art sites have been documented. The ones closest to the study area are located on the farm Grootfontein 501LQ, on the northern outskirts of the town of Lephale. Other rock art sites are found further away to the south and the east.

Early and Later Iron Age sites are similarly found to the south and the east, as well as to the north. As these people were agro-pastoralists (and did not have the technology to extract subterranean water), they preferred to settle in areas where such resources were readily available.

The historic period starts off quite late in this part of the country. Probably one of the earliest published sources that refer to the area, in a generalised sense, is that of the explorer Thomas Baines who passed through the area during the early 1870s. Although for other sections of his travels he gives detailed descriptions of the local population, he does not comment on anybody in this particular area. Although his rendering of the various rivers and other topographical features are quite accurate for the time, he seems to imply that there were no communities settled here (Baines 1877).

Similarly, Van Warmelo (1935) in his encyclopaedic work on the distribution of various Bantu-speaking groups show an area largely devoid of communities, with only a few isolated occurrences, all possibly farm-workers. The closest community indicated by him are the Seleka, who reside approximately 50 km to the north. To the south, it seems from his maps that the area also used to be claimed by the Seleka. This is a very Sothoised group of Ndebele whom have also lived amongst the Ngwato in Botswana and their arrival in the area date to late Pre-colonial times.

In the town of Lephale (Ellisras) there is a cemetery containing the graves of some of the earliest white settlers in the area. The town of Ellisras was only laid out in December 1960, and was named after two of the pioneer families in the area, Ellis and Erasmus. In 2002, the name was changed to Lephale. This latter name is taken from the Phalala River, which is derived from the Tswana verb 'to flow' or 'one which overflows' (Raper 2004: 86, 204).

5.3 Identified sites

The following cultural heritage resources are known to exist or are expected to exist in the study area:

5.3.1 Stone Age

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

5.3.2 Iron Age

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

5.3.3 Historic period

- No sites, features or objects dating to the historic period were identified in the study area.

6. SITE SIGNIFICANCE AND ASSESSMENT

6.1 Heritage assessment criteria and grading

The NHRA 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, on a local authority level.

The occurrence of sites with a Grade I significance will demand that the development activities be drastically altered in order to retain these sites in their original state. For Grade II and Grade III sites, the applicable of mitigation measures would allow the development activities to continue.

6.2 Statement of significance

In terms of Section 7 of the NHRA, all the sites currently known or which are expected to occur in the study area are evaluated to have Grade III significance.

6.3 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 heritage sites occur in the study area, there would be no impact resulting from the proposed development activities.

7. CONCLUSIONS

The aim of the survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the area in which it is proposed to develop a conveyor belt for the transportation of coal.

- As no heritage sites occur in the study area, there would be no impact resulting from the proposed development.

Therefore, from a heritage point of view we recommend that the proposed development can continue. However, we request that if archaeological sites or graves are exposed during construction work, it should immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

8. REFERENCES

8.1 Data bases

Chief Surveyor General

Environmental Potential Atlas, Department of Environmental Affairs and Tourism.

Heritage Atlas Database, Pretoria.

National Archives of South Africa

8.2 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.

Baines, T. 1877. *The gold regions south eastern Africa*. London: Edward Stanford.

Coetzee, C.B. (ed.) 1976. *Mineral resources of the Republic of South Africa*. Handbook No. 7, Geological Survey. Pretoria: Government Printer.

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

Raper, P.E. 2004. *South African place names*. Johannesburg: Jonathan Ball Publishers.

Van Schalkwyk, J.A. 2005a. *Heritage impact scoping report for the proposed new Matimba B power station, Lephalale district, Limpopo Province*. Unpublished report 2005KH060. Pretoria: National Cultural History Museum.

Van Schalkwyk, J.A. 2005b. *Heritage survey report of the Kumba properties at Grootegeluk Mine, Lephalale area, Limpopo Province*. Unpublished report 2005KH090. Pretoria: National Cultural History Museum.

Van Schalkwyk, J.A. 2006. *Heritage impact scoping report for the proposed re-alignment of the Steenbokpan road, Matimba B power station, Lephalale district, Limpopo Province*. Unpublished report 2006KH016. Pretoria: National Cultural History Museum.

Van Schalkwyk, J.A. 2008. *Heritage survey report for the development of a water reservoir and pipelines for the new Medupi Power Station, Ellisras magisterial district, Limpopo Province*. Unpublished report.

Van Warmelo, N.J. 1935. *A Preliminary survey of the Bantu Tribes of South Africa*. Ethnological Publications No. 5. Pretoria: Government Printer.

8.4 Maps and aerial photographs

1: 50 000 Topocadastral maps: 2327CB, 2327DA

Google Earth

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

Significance

According to the NHRA, Section 2(vi) the **significance** of heritage sites and artefacts is determined by its 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.

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
- 5 = retain graves

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;
- (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.

APPENDIX 3: SURVEY RESULTS

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

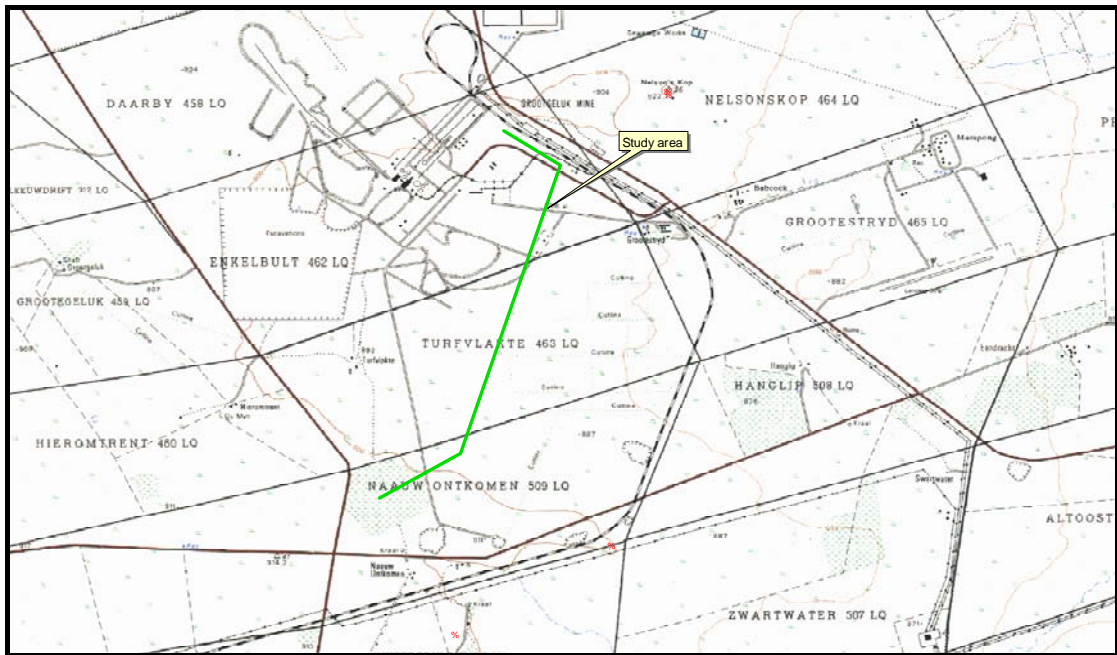


Fig. 2. Location of the study area (green line). Known heritage sites are indicated in red. (Map 2430CA: Chief Surveyor-General).

Sites identified in study area: Nil

APPENDIX 4: ILLUSTRATIONS



Fig. 3. The study area looking south-west.



Fig. 4. Where the conveyor will cross into Medupi Power Station.



Fig. 5. The area adjacent to the slimes dam, showing earlier earth works.



Fig. 6. Near the beginning of the route in the north-eastern sector.



Fig. 7. One of the old bore holes.