

**Heritage impact assessment for the
PROPOSED P166-1/2 ROAD DEVELOPMENT, MBOMBELA,
MPUMALANGA PROVINCE**

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED P166-1/2 ROAD DEVELOPMENT, MBOMBELA, MPUMALANGA PROVINCE

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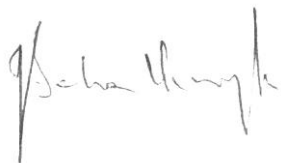
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Declaration:

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
July 2014

EXECUTIVE SUMMARY

HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED P166-1/2 ROAD DEVELOPMENT, MBOMBELA, MPUMALANGA PROVINCE

The P166-1/2 is a proposed new road which will run in parallel to the R40 road to White River in a northerly direction from Mbombela. Preliminary design has been done for the road more than twenty years ago and sections of this road proclaimed in the Provincial Gazette as a provincial road. This was done, however, before enactment of the National Environmental Management Act (NEMA), No 107 of 1998 (as amended), and its Regulations, and therefore no Environmental Authorisation in terms of these requirements was obtained. A short section of the route was constructed in 2010 for convenient access from the new N4 Nelspruit bypass to the Mbombela Stadium for the 2010 Soccer World Cup. Some township development and planning has also taken place in close proximity to the route.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by **Royal Haskoning DHV** 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 the proposed road development is to take place.

- Based on the survey it is our opinion that no sites, features and objects of heritage significance occur in the study area, i.e. the original alignment as well as the different alternatives that would prevent to proposed development from proceeding.

Sites that would prevent the proposed development from continuing are, for example, rock art sites, sites relating to conflict (e.g. the popular struggle) or very large burial places. At present, none of these are known to occur in the study area.

As for the most suitable route, it is judged that the original P166 route (the red route in Fig. 9) should be used, except in the region of Phumulani as here it has already been occupied by an informal settlement. For this section the Phumulani Alternative 2 route should be selected.

However, experience has taught that a route represented by a line on the map can be misleading and that some margin of error has to be accepted. It is therefore recommended that once the final route has been selected and pegged out by surveyors, a full walk-down of that route should be done by a heritage specialist. Any sites that are encountered at that stage can then be subjected to applicable mitigation measures.

Furthermore, due to the physical constraints that were encountered during the field survey (see Section 2.3), the proposed the management measures (see Section 7) should be put in place prior to development taking place and that they are adhered to for the period of construction.



J A van Schalkwyk
Heritage Consultant
July 2014

TECHNICAL SUMMARY

Property details	
Province	Mpumalanga
Magisterial district	Nelspruit, Witrivier
Local municipality	Mbombela
Topo-cadastral map	2530BD, 2530DB, 2531AC
Closest town	Mbombela
Farm name	Various

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 regional road
Project name	P166-1/2

Land use	
Previous land use	Agriculture
Current land use	Agriculture/Vacant

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Study area: Refers to the entire study area as indicated by the client in the accompanying Fig. 1 and 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. As 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 P166-1/2 ROAD DEVELOPMENT, MBOMBELA, MPUMALANGA PROVINCE

1. INTRODUCTION

The P166-1/2 is a proposed new road which will run in parallel to the R40 road to White River in a northerly direction from Mbombela. Preliminary design has been done for the road more than twenty years ago and sections of this road proclaimed in the Provincial Gazette as a provincial road. This was done, however, before enactment of the National Environmental Management Act (NEMA), No 107 of 1998 (as amended), and its Regulations, and therefore no Environmental Authorisation in terms of these requirements was obtained. A short section of the route was constructed in 2010 for convenient access from the new N4 Nelspruit bypass to the Mbombela Stadium for the 2010 Soccer World Cup. Some township development and planning has also taken place in close proximity to the route.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (NHRA), Act 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 **Royal Haskoning DHV** 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 the proposed road development is to take place.

An earlier scoping report (Van Schalkwyk 2012) was done for the same project and that report should be read in conjunction with the current report. As a result of the findings of the original, larger scoping report, some changes have been made to the alternative route alignments.

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 is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

2.1 Scope of work

The aim of this assessment, broadly speaking, is 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 road.

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; and
- 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; and
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.

2.2 Assumptions

- It is assumed that the Social Impact Assessment and Public Participation Process might also result in the identification of sites, features and objects and that these then will also have to be considered in the EIA.
- It is assumed that a Paleontological Review will be done by a suitably qualified specialist.

2.3 Limitations

The investigation has been influenced by the following factors (see Fig. 1):

- The unpredictability of archaeological remains occurring below the surface.
- Not all the properties could be accessed as it is private land and is fenced off.
- In some areas the vegetation was very high and dense, limiting archaeological visibility.
- Part of the original road alignment has been occupied by a large informal settlement.



Fig. 1. Illustrating some of the factors that had an impact on the field survey.

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 and 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, historical sources and heritage impact assessment reports were consulted – see list of references below.

- Information of a very general nature was obtained from these sources.

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 adjacent areas.

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 was obtained from these sources.

4.2.2 Field survey

The area that had to be investigated was identified by **Royal Haskoning DHV** by means of maps. The site was surveyed on 5 May 2014 by following the route as close as possible. However, see Section 2.3 above for the problems that were encountered. As a result the site was visited again on 4 July 2014 after the grass has burned down, which increased visibility dramatically (see Fig. 2 for photographs taken in the same place two months apart).

The *kml* file indicating the road and the alternatives, as supplied by SANRAL, was loaded onto a Nexus 7 tablet. This was used, in Google Earth, during the field survey to follow the routes as closely as possible.



Fig. 2. Photographs indicating the vegetation after it burned down.
(Although the photographs were taken in nearly the same location, the aspect might differ.)

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) 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).

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld GPS device (Fig. 3). Photographic recording was done by means of a Canon EOS 550D digital camera.

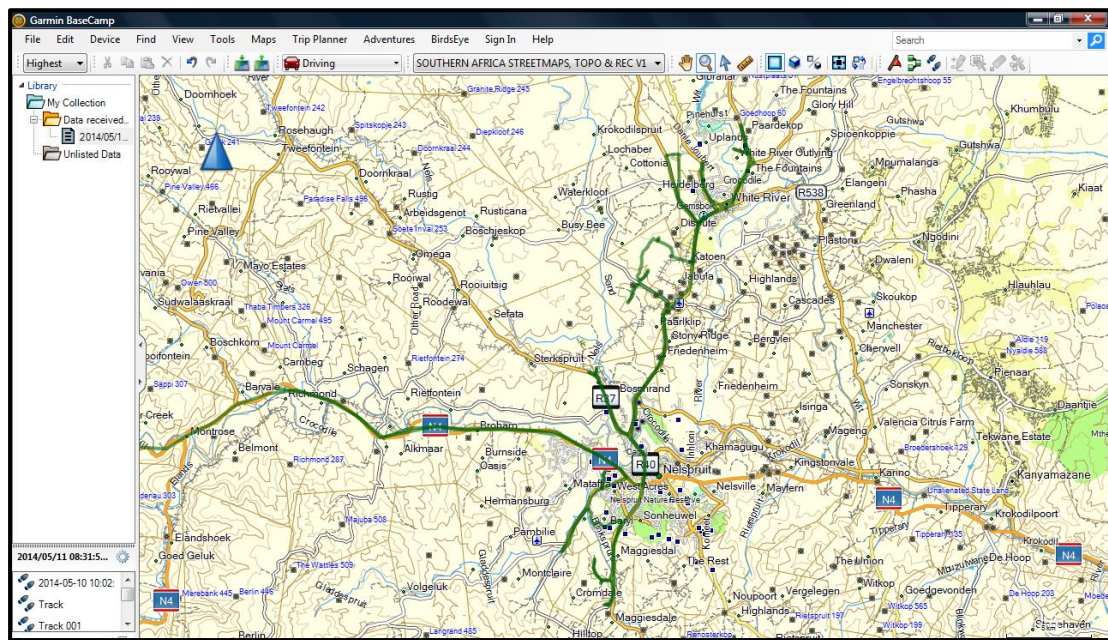


Fig. 3. Track log showing the route of the survey.

5. DESCRIPTION OF THE AFFECTED ENVIRONMENT

5.1 Site location and description

The P166-1/2 is a proposed new road which will run in parallel to the R40 road to White River in a northerly direction from Mbombela. A short section of the route was constructed in 2010 for convenient access from the new N4 Nelspruit bypass to the Mbombela Stadium for the 2010 Soccer World Cup. Some township development and planning has also taken place in close proximity to the route (Fig. 1).

A number of smaller hills and outcrops occur, giving the area a broken topography. The geology is largely made up of granite. The original vegetation of the area is classified as Sour Lowveld Bushveld. However, much of this has been subjected to agricultural activities, e.g. citrus orchards, sugar cane, etc. The development of these activities, most of which are located close to the river for irrigation purposes, would have had a negative impact on any heritage resources that might have occurred here.

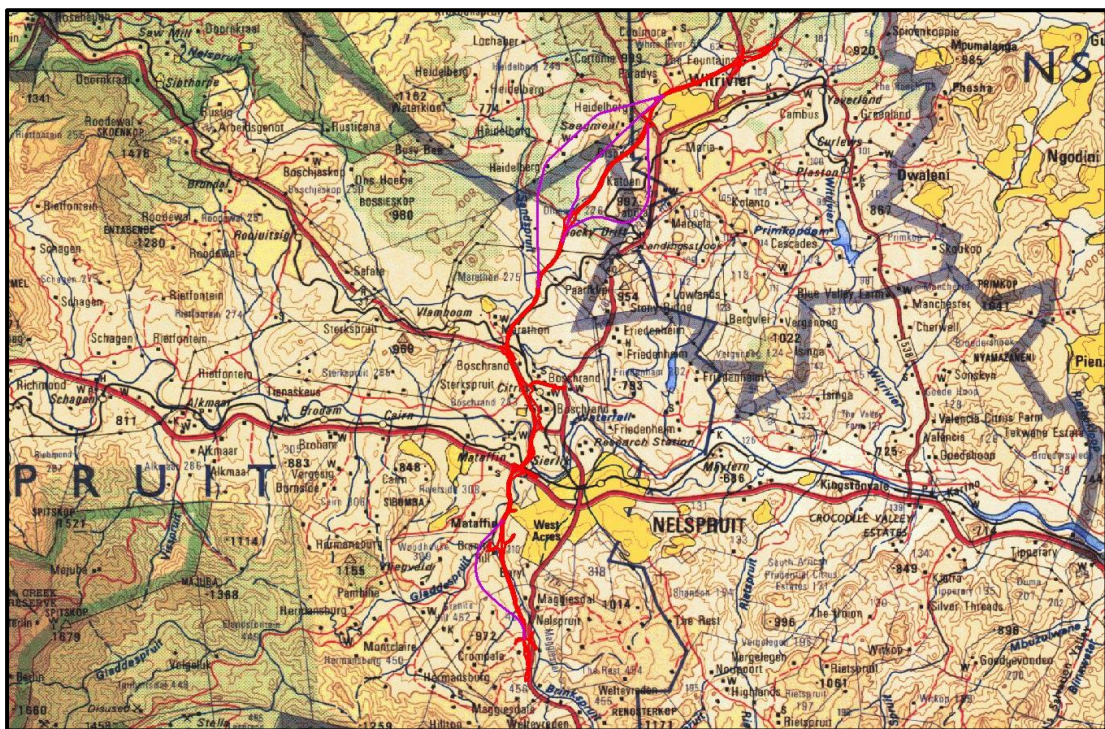


Fig. 4. Location of the study area in regional context (red line).
(Map 2530: Chief Surveyor-General)

The photographs below (Fig. 4) give an overview of the route alignment and alternatives – starting from south and travelling northwards.





Fig. 5. Views of the study area.

5.2 Development proposal

The section of the P166-1/2 under review starts at Maggiesdal, south of Nelspruit, where an interim connection to the R40-2 needs to be defined, and ends north of White River where it meets the R40-4, as indicated in Figure 1. This section of the route is approximately 45 kilometres long, and follows an alignment in part close proximity to newly established townships or planned areas of developments.

In addition three alternative routes are planned at Phumulani, in the northern part of the proposed road development and one alternative in the southern section at Maggiesdal

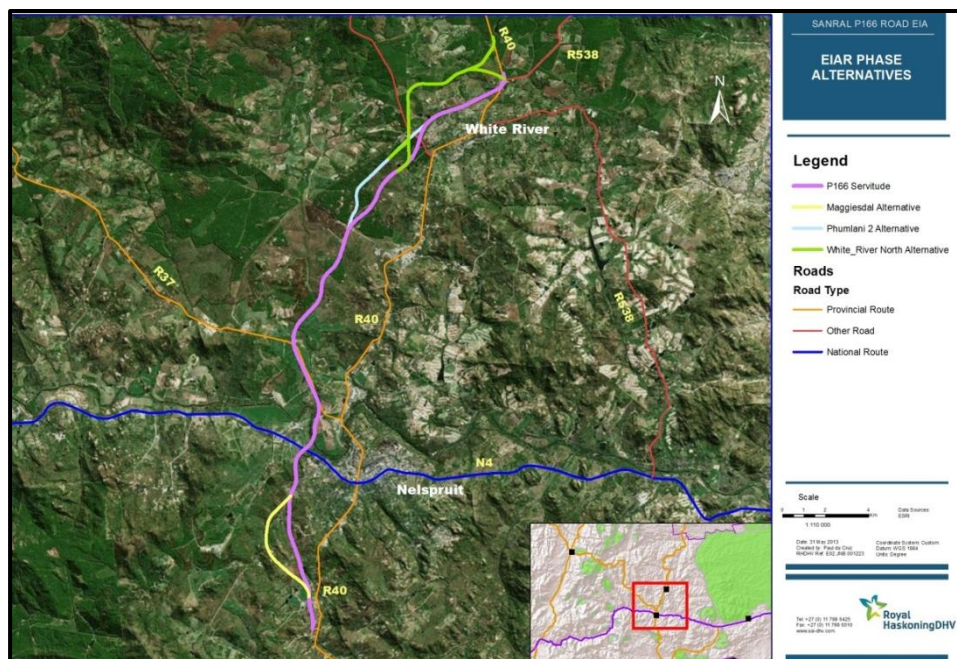


Fig. 6. Aerial view of the proposed development.

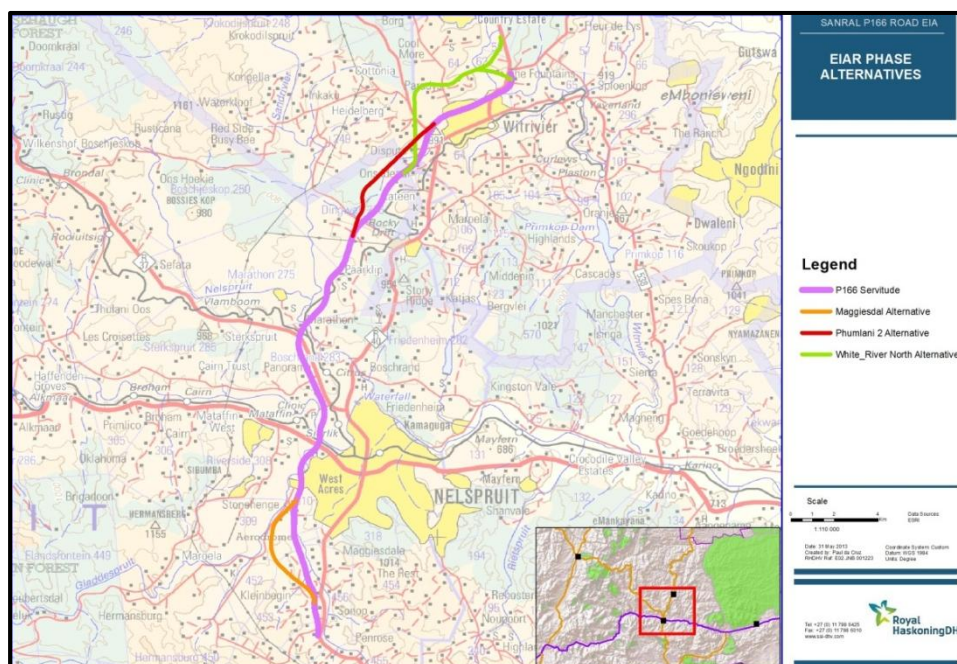


Fig. 7. Layout of the proposed development, showing the alternatives.

5.3 Overview of the region

5.3.1 Stone Age

Human occupation of the region started at least during the Middle Stone Age and continued through to the Later Stone Age. Because of the high impact of agricultural development, as well as the dense vegetation cover in the undeveloped area, very few indications of Stone Age occupation were identified during the survey. What was found was a number of stone tools, flakes and cores, dating to the Middle and Later Stone Age, as surface finds. As these objects are surface finds, they are out of context and are viewed to have a very low significance.

A number of rock shelters containing San rock art are known to exist in the region. These usually occur in shelters located on the granite outcrops. It is our understanding that most of the area has been extensively surveyed (e.g. Van Schalkwyk, et al 1996), although it is always possible that new sites might be identified.

5.3.2 Iron Age

Iron Age people moved into southern Africa by c. AD 200, entering the area either by moving down the coastal plains, or by using a more central route. It seems more likely that the first option was what brought people into the study area. From the coast they followed the various rivers inland. One of the earliest dated sites is located near Tzaneen (Silver Leaves). Some sites dating to this and a slightly later period, were identified at Plaston (Evers 1977) and at Vergenoeg and The Curlews (Van Schalkwyk & Teichert 2007)

Being cultivators, they preferred the rich alluvial soils close to rivers to settle on. Consequently, as the study area is in close proximity to the Crocodile River, one would expect settlement sites dating to the Early Iron Age to occur here. Unfortunately, large sections of this area has been subjected to agricultural activities, being ploughed over annually, or are used for orchards. These activities would have had a negative impact on any heritage sites that might have occurred here. Furthermore, the areas not in use for agricultural activities, are densely vegetated, which also makes the detection of sites very difficult.

A few pieces of pottery were noticed in ploughed areas during the field survey. Unfortunately, all of it was non-diagnostic (i.e. it did not have any decorations), with the result that it could not be identified or dated.

5.3.3 Historic period

The historic period started in the 1840s. Due to the presence of malaria, few people settled here and most, being traders, hunter and miners, only passed through the area. Nelspruit as town was proclaimed only in 1905. As time went by, the area was divided into farms and more and more people settled on a permanent basis.

The Pretoria – Lorenzo-Marques (Maputo) railway line, also known as the NZASM line, was built through the region during the 1880s. A number of features, e.g. bridges, culverts, stations, houses, good sheds, etc. still exist and forms part of this feature.

The railway line from Nelspruit northwards to Sabie and Graskop was built in 1913. A branch line towards Plaston was completed in 1926. This split off from the original line to the north of the Citrus halt on the farm Boschrand.

During the 1920s the old national road (now the N4) was built. Later, it was realigned in some places and upgraded. As a result some of the bridges and culverts that formed part of this road still exist, although it is not used any more.

Public participation revealed the existence of sites and cemeteries in the region of Penryn College, located south of Rocky Drift on the road to White River. These sites have been confirmed by a previous survey (Celliers 2006). All of these sites are located on the east of the old railway line and consists of old farm labourer homesteads and burial places. The sites identified by Celliers conform to the 1943 1:50 000 topocadastral map (Fig. 8) as well as the 1986 version. Only a very few settlement site are indicated west of the railway line.

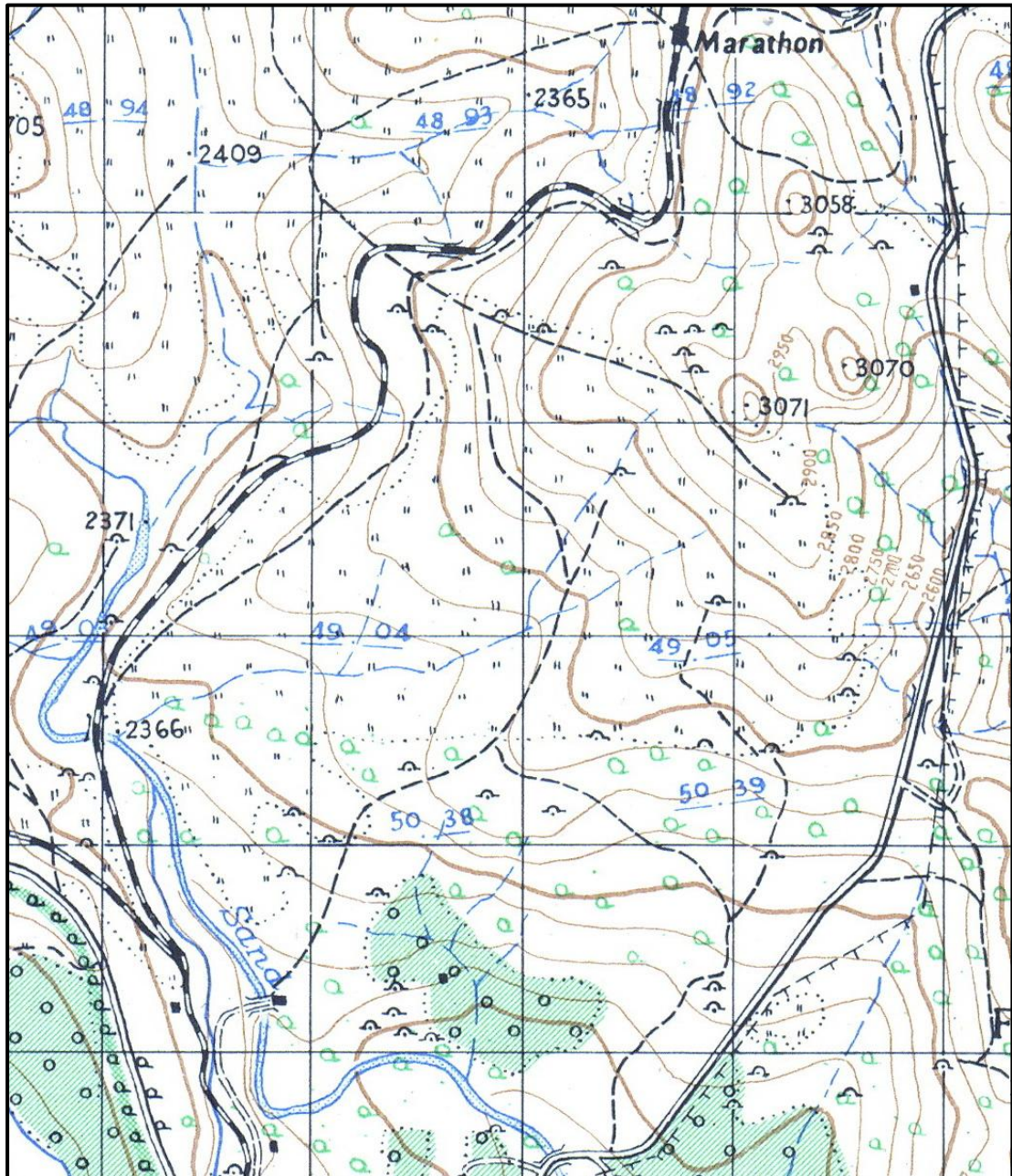


Fig. 8. The 1943 cadastral map showing the location of labourer homesteads.

5.4 Identified sites

The following sites, features and objects of cultural significance were identified in the larger region of the study area (Fig. 9):

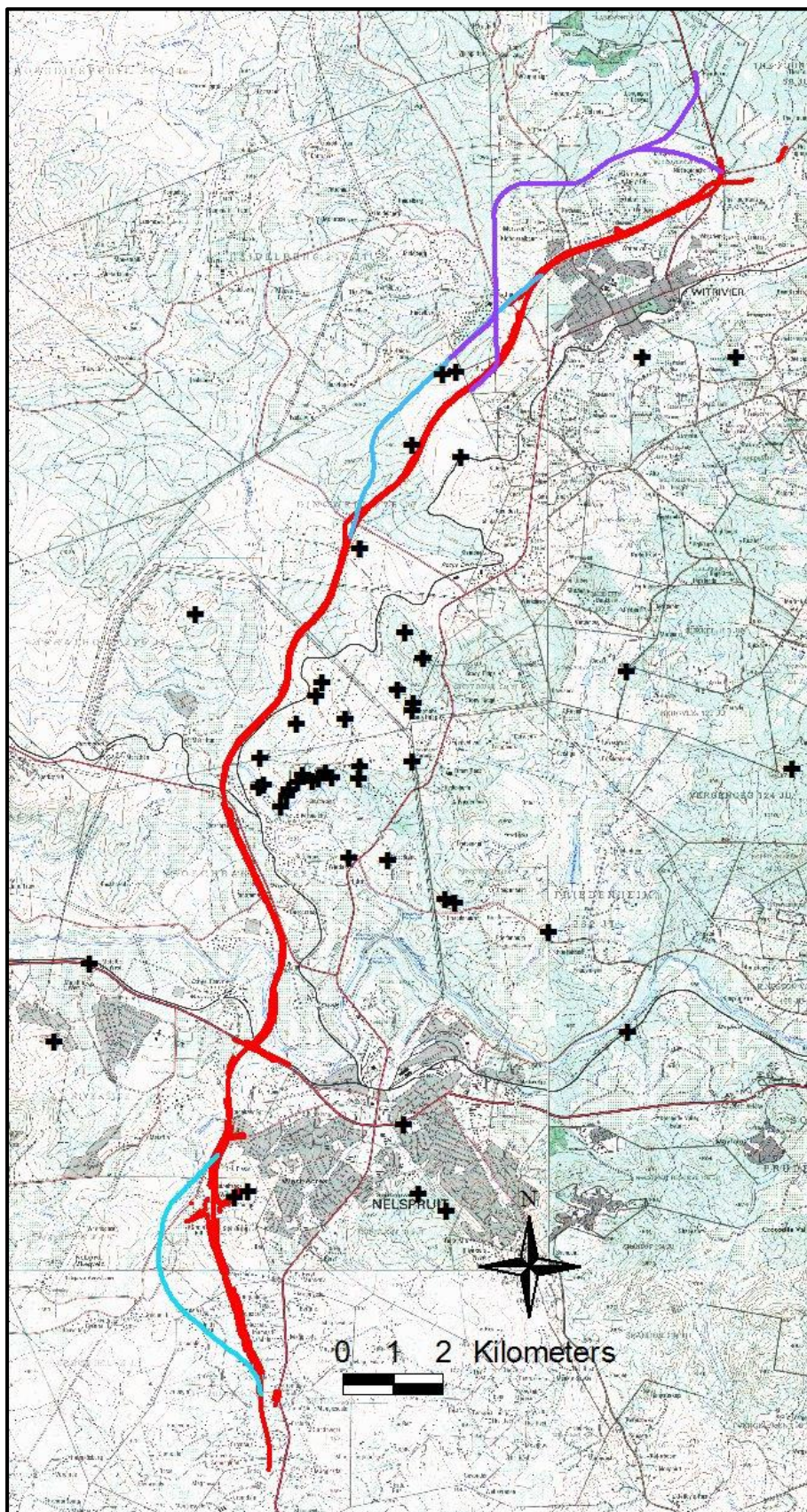


Fig. 9. The study area showing the location of known heritage sites.
(Map 2530BD, 2530DB, 2531AC, 2531CA: Chief Surveyor-General)

5.4.1 Stone Age

Sites/find spots dating to the Middle and Later Stone Age are known to occur in the larger region. Some of the Later Stone Age also contains rock art. However, no sites, features or object dating to the Stone Age have been identified in the alignment of the P166 road or the proposed alternatives.

5.4.2 Iron Age

Sites/find spots dating to the Early and Late Iron Age are known to occur in the larger region. However, no sites, features or object dating to the Iron Age have been identified in the alignment of the P166 road or the proposed alternatives.

5.4.3 Historic period

A large number of sites/find spots dating to the historic period are known to occur in the larger region. These vary from farm labourer homesteads and informal burial places to elements of infrastructure such as bridges. No sites, features or objects of cultural significance dating to the historic period have been identified in the alignment of the P166 road or the proposed alternatives.

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 application of mitigation measures would allow the development activities to continue.

6.2 Statement of significance

A matrix was developed whereby the above criteria, as set out in Sections 3(3) and 7 of the NHRA, No. 25 of 1999, were applied for each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar sites. Three categories of significance are recognized: low, medium and high. 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 a grading as identified in the table below.

Table 1. Summary of identified heritage resources in the region of the study area.

Identified heritage resources	
<i>Category, according to NHRA</i>	<i>Identification/Description</i>
Formal protections (NHRA)	
National heritage site (Section 27)	None
Provincial heritage site (Section 27)	None
Provisional protection (Section 29)	None
Place listed in heritage register (Section 30)	None
General protections (NHRA)	
structures older than 60 years (Section 34)	None
archaeological site or material (Section 35)	Yes
palaeontological site or material (Section 35)	None
graves or burial grounds (Section 36)	Yes
public monuments or memorials (Section 37)	None
Other	
Any other heritage resources (describe)	None

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.

A range of heritage sites are known to exist in the larger region (see Fig. 9). None of these would be directly impacted on by the proposed development, as is indicated by the information presented in Table 2 below: their location (coordinates), type of site, significance and distance from the proposed development. This would assist in managing the sites during the construction of the road – see Section 7.

Table 2: Heritage sites in the larger region.

Number	Latitude	Longitude	Classification	Significance	Alignment	Distance
1	-25.39770	30.97342	Burial place	High significance	Main alignment	2010m
2	-25.40133	30.97595	Burial place	High significance	Main alignment	2300m
3	-25.41045	30.97585	Burial place	High significance	Main alignment	2620m
4	-25.41128	30.96658	Burial place	High significance	Main alignment	2000m
5	-25.41288	30.95648	Burial place	High significance	Main alignment	1280m
6	-25.39872	30.95898	Burial place	High significance	Main alignment	588m
7	-25.41395	30.95825	Burial place	High significance	Main alignment	1460m
8	-25.41350	30.95937	Burial place	High significance	Main alignment	1540m
9	-25.41322	30.96167	Burial place	High significance	Main alignment	120m
10	-25.41227	30.96058	Burial place	High significance	Main alignment	1510m

11	-25.41413	30.95570	Homestead	Low significance	Main alignment	1305m
12	-25.41650	30.95375	Burial place	High significance	Main alignment	1100m
13	-25.41537	30.95403	Homestead	Low significance	Main alignment	1210m
14	-25.41460	30.94955	Shed	Low significance	Main alignment	745m
15	-25.41488	30.94867	Water pump	Low significance	Main alignment	620m
16	-25.41352	30.96640	Burial place	High significance	Main alignment	2090m
17	-25.38763	30.97455	Burial place	High significance	Main alignment	1520m
18	-25.39213	30.97788	Burial place	High significance	Main alignment	2050m
19	-25.40972	30.94895	Burial place	High significance	Main alignment	510m
20	-25.40280	30.96415	Burial place	High significance	Main alignment	1240m
21	-25.39630	30.96002	Burial place	High significance	Main alignment	600m
22	-25.40368	30.95550	Burial place	High significance	Main alignment	540m
23	-25.41843	30.95258	Burial place	High significance	Main alignment	950m
24	-25.40013	30.97607	Burial place	High significance	Main alignment	2300m
25	-25.39217	30.97787	Burial place	High significance	Main alignment	2320m
26	-25.35433	30.97590	Early Iron Age	Low significance	Main alignment	130m
27	-25.35640	30.98445	Farm labourer homestead	Low significance	Main alignment	710m
28	-25.34133	30.98375	Farm labourer homestead	Low significance	Pumulani 2 Alternative	270m
29	-25.34195	30.98140	Farm labourer homestead	Low significance	Pumulani 2 Alternative	150m
30	-25.48770	30.94440	Farm labourer homestead	Low significance	Main alignment	55m
31	-25.48650	30.94690	Farm labourer homestead	Low significance	Main alignment	210m
32	-25.37278	30.96667	Rock art	High significance	Main alignment	300m
33	-25.38432	30.93750	Stone Age	Medium significance	Main alignment	1880m
34	-25.42753	30.96471	Historic: Bridge	Medium significance	Main alignment	1705m
35	-25.43472	30.98166	Burial place	High significance	Main alignment	3010m
36	-25.43548	30.98342	Irrigation system	Medium significance	Main alignment	3135m
37	-25.42788	30.97163	House	Low significance	Main alignment	2320m

- As no sites, features or objects are currently known to occur in the original alignment or any of the proposed alternatives, there would be no impact as a result of the proposed development.

7. RECOMMENDED MANAGEMENT MEASURES

Due to the physical constraints that were encountered during the field survey (see Section 2.3 above), it is proposed that the following management measures are put in place prior to development taking place and that they are adhered to for the period of construction.

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 proposed 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.

7.1 Sensitive areas

The following areas are deemed to be sensitive from the point of heritage and special care should be taken when construction takes place:

- River banks
- Rocky outcrops

7.2 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 NHRA, should these be discovered during construction activities.

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 activities.
- 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 heritage practitioner 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).

7.3 Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

8. 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 the P166 or any of the proposed alternatives.

- Based on the survey it is our opinion that no sites, features and objects of heritage significance occur in the study area, i.e. the original alignment as well as the different alternatives that would prevent to proposed development from proceeding.

Sites that would prevent the proposed development from continuing are, for example, rock art sites, sites relating to conflict (e.g. the popular struggle) or very large burial places. At present, none of these are known to occur in the study area.

As for the most suitable route, it is judged that the original P166 route (the red route in Fig. 9) should be used, except in the region of Phumulani as here it has already been occupied by an informal settlement. For this section the Phumulani Alternative 2 route should be selected.

However, experience has taught that a route represented by a line on the map can be misleading and that some margin of error has to be accepted. It is therefore recommended that once the final route has been selected and pegged out by surveyors, a full walk-down of that route should be done by a heritage specialist. Any sites that are encountered at that stage can then be subjected to applicable mitigation measures.

Furthermore, due to the physical constraints that were encountered during the field survey (see Section 2.3 above), the proposed the management measures (see Section 7) should be put in place prior to development taking place and that they are adhered to for the period of construction.

9. REFERENCES

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9.2 Literature

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9.3 Maps and aerial photographs

1: 50 000 Topocadastral maps: 2530BD, 2530DB, 2531AC
Google Earth

APPENDIX 1: CONVENTIONS USED TO ASSESS THE SIGNIFICANCE OF 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		

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.

APPENDIX 3: RELOCATION OF GRAVES

What follows below is a somewhat generic approach on the steps and procedures to follow if graves are to be relocated:

- If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.
- If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.
- SAHRA allows only archaeologists with an accreditation as Principal Investigator for the Relocation of Graves, to oversee such a process.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention to relocate the graves needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.
- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any items found in the grave.

Information needed for the SAHRA permit application

- The permit application needs to be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.
- If graves have not been identified and there are no headstones to indicate the grave, these are then unknown graves and should be handled as if they are older than 60 years. This information also needs to be given to SAHRA.

- A letter from the landowner giving permission to the developer to exhume and relocate the graves.
- A letter from the new cemetery confirming that the graves will be reburied there.
- Details of the farm name and number, magisterial district, and GPS coordinates of the gravesite.