Cultural heritage impact assessment for
THE PLANNED BORROW PITS AND QUARRIES FOR THE IMPROVEMENT OF THE NATIONAL ROUTE N2, KM 60 (LEIDEN) TO KM 87.4 (CAMDEN), GERT SIBANDE DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE

CULTURAL HERITAGE ASSESSMENT FOR THE PLANNED BORROW PITS AND QUARRIES FOR THE IMPROVEMENT OF THE NATIONAL ROUTE N2, KM 60 (LEIDEN) TO KM 87.4 (CAMDEN), GERT SIBANDE DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE

Report No: 2016/JvS/078B
Status: Final
Revision No: 0
Date: December 2016

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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, for which a fair numeration is charged.

J A van Schalkwyk (D Litt et Phil)
Heritage Consultant
December 2016

EXECUTIVE SUMMARY

CULTURAL HERITAGE ASSESSMENT FOR THE PLANNED BORROW PITS AND QUARRIES FOR THE IMPROVEMENT OF THE NATIONAL ROUTE N2, KM 60 (LEIDEN) TO KM 87.4 (CAMDEN), GERT SIBANDE DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE

It is proposed to improve a section of the National Route N2, referred to as Section A, between Leiden (km 60.0) and Camden (km 87,4) in the Gert Sibande District Municipality of Mpumalanga Province. For this purpose a number of borrow pits and quarries have been identified where material will be sourced from for this purpose.

In accordance with Section 38 of the NHRA, an independent heritage consultant was therefore appointed by **Chameleon Environmental Consultants** 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 borrow pits and quarries.

The cultural landscape qualities of the region essentially consist of a two components. The first is a rural area in which the human occupation is made up of a limited pre-colonial (Stone Age and Iron Age) occupation and a much later colonial (farmer) component. The second component is an urban one consisting of a number of smaller towns, most of which developed during the last 150 years or less.

Identified sites:

Quarry 13 & 14

- Burial place
    - (7.3.3.1) A large informal burial place with probably more than 30 graves. At least half of them have no headstones with inscriptions. The site is fenced off and maintained by the local community.
        - This feature is viewed to have high significance on a local level – Grade III.
- Railway culverts
    - (7.3.3.2 – 7.3.3.4) Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. This route was abandoned when the new alignment was finished in 1975. The culverts vary in size and length. They were originally constructed with dressed sandstone. The original iron tracks and sleepers have been removed and only the gravel bed remains in the areas between the culverts.
        - These features are viewed to have high significance on a regional level – Grade III.
- Farming structure
    - (7.3.3.5) An old sheep dip constructed from concrete. It original had a pole and wire fence around it.
        - This feature is viewed to have low significance on a local level – Grade III.

BP 20

- Burial site:
    - (7.3.3.1) An informal burial site with at least five graves. This feature is viewed to have high significance on a local level – Grade III.

Impact assessment:

- (7.3.3.1) A large informal burial place with probably more than 30 graves near Q13-14. This site is located approximately 40 metres outside (east) of the larger development area and it is therefore unlikely that it would be impacted on by the proposed development.
    - The significance weighting for the impact on the identified sites is rated as low.
        - Mitigation: If the burial place is retained, it should be fenced off for the duration of the quarrying activities, leaving a buffer zone of at least five metres from the outer edge of the graves.
        - Requirements: If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures (see Appendix 5).

- An informal burial site with at least five graves near BP 20. It is located within 30 metres from the proposed access road to the borrow pits and it is anticipated that it would not be impacted on by the road improvement activities (see Appendix 6).
    - The significance weighting for the impact on the identified sites is rated as low.
        - Mitigation: If the burial places are retained, it should be fenced off with danger tape for the duration of the road improvement activities, leaving a buffer zone of at least five metres from the outer edge of the graves. If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures (see Appendix 5 for an outline of this).

- (7.3.3.2 – 7.3.3.4) Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. These features are located inside the larger identified area and some of them are also located on the identified access route. Therefore there is a high possibility that it might be impacted on by the quarrying activities.
    - The significance weighting for the impact on the identified sites is rated as medium.
        - Mitigation: It is recommended that these features are retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.
        - Requirements: If demolished, SAHRA permit after full documentation.

- (7.3.3.5) An old sheep dip constructed from concrete. This feature is located inside the larger identified area. Therefore there is a possibility that it might be impacted on by the quarrying activities.
    - The significance weighting for the impact on the identified sites is rated as medium.

- Mitigation: It is recommended that this feature is retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.

- Requirements: If demolished, SAHRA permit after full documentation.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view it is recommended that the proposed development be allowed to continue, on condition of acceptance of the proposed mitigation measures.

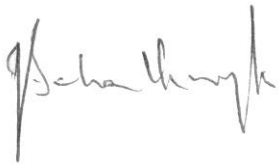
Conditions for inclusion in the environmental authorisation:

- It is recommended that the burial site is retained and it should be fenced off for the duration of the quarrying activities, leaving a buffer zone of at least five metres from the outer edge of the graves. If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures.

- It is recommended that the railway culverts are retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.

- It is recommended that the sheep dip is retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.

- Should archaeological sites or graves be exposed during quarrying activities, it must 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
December 2016

TECHNICAL SUMMARY

Property details						
Province	Mpumalanga					
Magisterial district	Ermelo					
District municipality	Gert Sibande					
Topo-cadastral map	2630CA					
Farm name	Mavieriestad 321IT, Weltevreden 289IT, Twyfelaar 298IT					
Closest town	Ermelo					
Coordinates	Centre points					
	No	Latitude	Longitude	No	Latitude	Longitude
	13	-26.72164	30.20571	14	-26.72148	30.20302
	15	-26.63522	30.16028	20	-26.72208	30.22833

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	No
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	Yes
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	Borrow pits and Quarries for accessing material for improving of a section of the N2 national route, Mpumalanga
Project name	Improvement of N2 Section A: Leiden to Camden, Mpumalanga Province

Land use	
Previous land use	Farming
Current land use	Farming

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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 - 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
Later 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 1830 - 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

CULTURAL HERITAGE ASSESSMENT FOR THE PLANNED BORROW PITS AND QUARRIES FOR THE IMPROVEMENT OF THE NATIONAL ROUTE N2, KM 60 (LEIDEN) TO KM 87.4 (CAMDEN), GERT SIBANDE DISTRICT MUNICIPALITY, MPUMALANGA PROVINCE

1. INTRODUCTION

As part of on-going process, it is proposed to improve a section of the N2 national route in Mpumalanga Province. In order to comply with relevant legislation, the agency managing this road, SANRAL, commissioned an environmental impact assessment. This report deals with issues pertaining to heritage resources.

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 therefore appointed by **Chameleon Environmental Consultants** 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 quarries to be used for the improvement of a section of the N2 road, referred to as Section A, between Leiden (km 60.0) and Camden (km 87,4) in the Gert Sibande District Municipality of Mpumalanga Province.

This 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) as amended and is intended for submission to the South African Heritage Resources Agency (SAHRA).

2. TERMS OF REFERENCE

The aim of a full HIA investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective.
The result of this investigation is a heritage impact assessment report indicating the presence/ absence of heritage resources and how to manage them in the context of the proposed development.
Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.

2.1 **Scope of work**

The aim of this study is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where the borrow pit and quarries are to be developed. This includes:

- 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.

2.2 **Limitations**

The investigation has been influenced by the following factors:

- It is assumed that the description of the proposed project, provided by the client, is accurate.
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA is required for such activities.
- It is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is sufficient and that is does not have to be repeated as part of the heritage impact assessment.
- The unpredictability of buried archaeological remains.
- This report does not consider the palaeontological potential of the site.

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.

A matrix was developed whereby the above criteria were applied for the determination of the significance of each identified site (see Appendix 1). This allowed some form of control over the application of similar values for similar identified sites.

4. STUDY APPROACH AND METHODOLOGY

4.1 **Extent of the Study**

This survey and impact assessment covers the area as presented in Section 6 below and illustrated in Figure 2.

4.2 **Methodology**

4.2.1.1 Survey of the literature

A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological and historical sources were consulted – see list of references in Section 10.

- Information on events, sites and features in the larger region were 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 the larger region of the proposed development.

4.2.1.3 Other sources

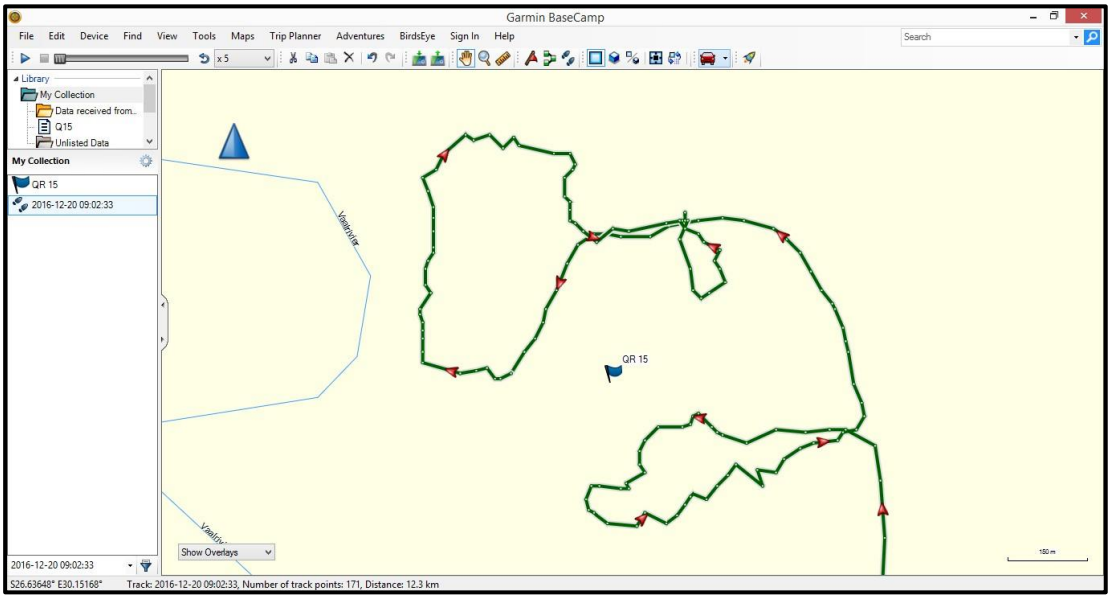
Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

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

4.2.2 *Field survey*

The 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 Chameleon Environmental Consultants by means of maps and .k*ml* files indicating the development area. This was loaded onto a Nexus 7 tablet and used in Google Earth during the field survey to access the areas.

The area was visited on 17 September & 20 December 2016. The quarry site were investigated by walking transects across it – see Fig. 1 below.



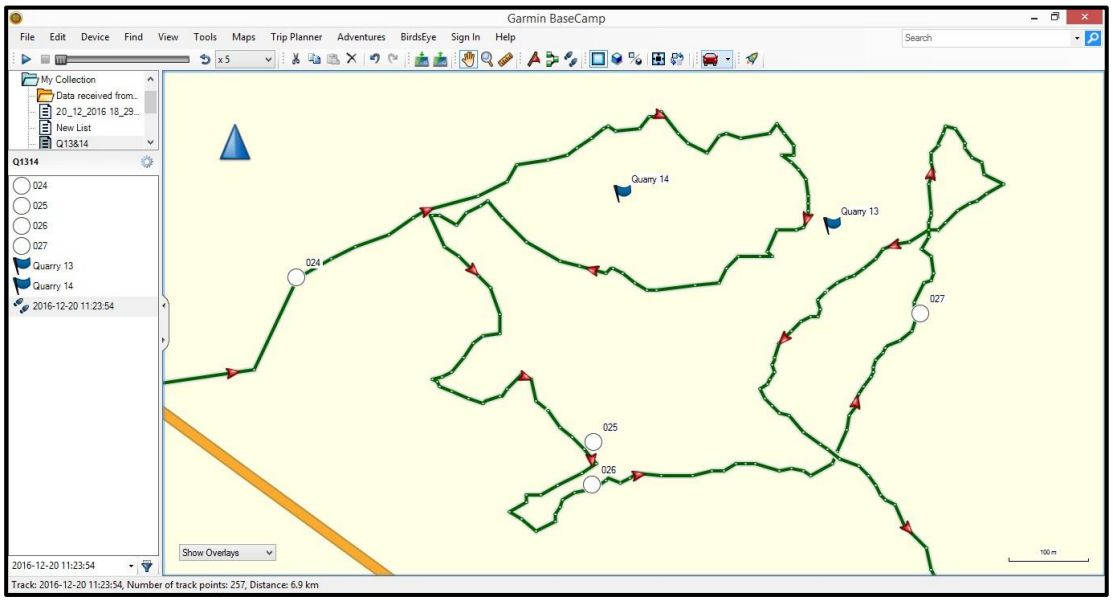


Fig. 1. Map indicating the track log of the field survey.
(Quarry 15 top and quarry 13-14 below)

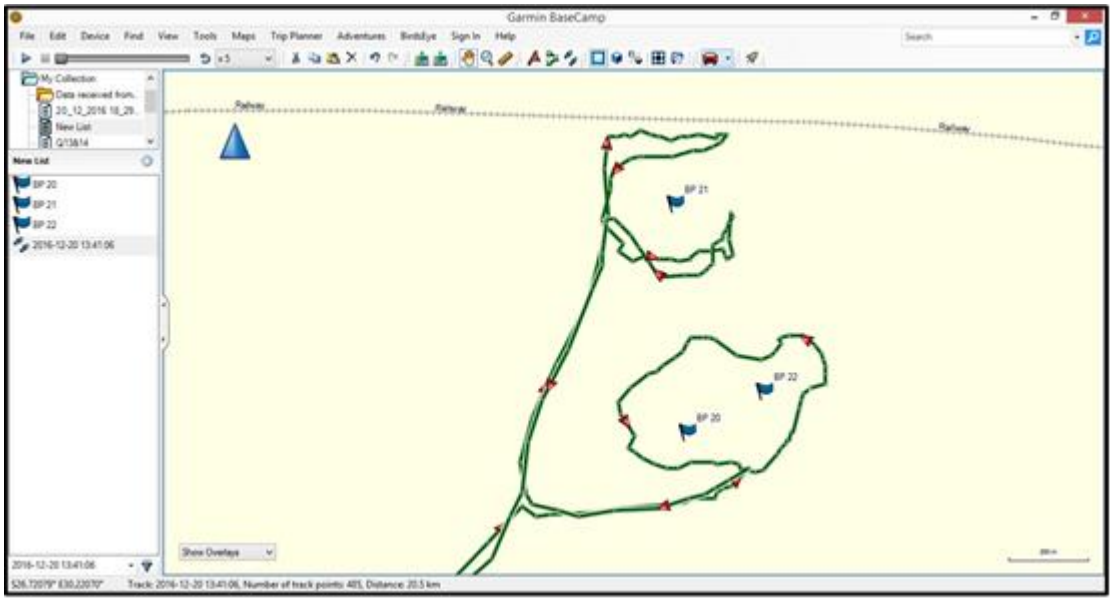


Fig 2. Map indicating the track log of the field survey for borrow pit 20

The following is relevant to the field survey:

- During the site visit the archaeological visibility was somewhat limited by the vegetation encountered after the recent good rains in the region.

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.

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld

GPS device. Photographic recording was done by means of a Canon EOS 550D digital camera.

Map datum used: Hartebeeshoek 94 (WGS84).

5. SITE SIGNIFICANCE AND ASSESSMENT

5.1 **Heritage assessment criteria and grading**

The National Heritage Resources Act, Act no. 25 of 1999, stipulates the assessment criteria and grading of heritage sites. The following grading 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.

A matrix was developed whereby the criteria, as set out in Sections 3(3) and 7 of the NHRA, were applied for each identified site (see Appendix 3). This allowed some form of control over the application of similar values for similar sites.

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.

5.2 **Methodology for the assessment of potential impacts**

All impacts identified during the EIA stage of the study will be classified in terms of their significance. Issues were assessed in terms of the following criteria:

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected;
- The physical **extent**, wherein it is indicated whether:
  - 1 - the impact will be limited to the site;
  - 2 - the impact will be limited to the local area;
  - 3 - the impact will be limited to the region;
  - 4 - the impact will be national; or
  - 5 - the impact will be international;
- The **duration**, wherein it is indicated whether the lifetime of the impact will be:
  - 1 - of a very short duration (0–1 years);
  - 2 - of a short duration (2-5 years);
  - 3 - medium-term (5–15 years);
  - 4 - long term (> 15 years); or
  - 5 - permanent;
- The **magnitude** of impact, quantified on a scale from 0-10, where a score is assigned:
  - 0 - small and will have no effect;
  - 2 - minor and will not result in an impact;
  - 4 - low and will cause a slight impact;
  - 6 - moderate and will result in processes continuing but in a modified way;
  - 8 – high, (processes are altered to the extent that they temporarily cease); or
  - 10 - very high and results in complete destruction of patterns and permanent cessation of processes;
- The **probability** of occurrence, which describes the likelihood of the impact actually occurring and is estimated on a scale where:
  - 1 - very improbable (probably will not happen;
  - 2 - improbable (some possibility, but low likelihood);

- 3 - probable (distinct possibility);
- 4 - highly probable (most likely); or
- 5 - definite (impact will occur regardless of any prevention measures);

- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- The **status**, which is described as either positive, negative or neutral;
- The degree to which the impact can be reversed;
- The degree to which the impact may cause irreplaceable loss of resources; and
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

S = (E+D+M) x P; where

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance weightings** for each potential impact are calculated as follows (Table 1 below):

Table 1: Significance ranking

Significance of impact					
Extent	**Duration**	**Magnitude**	**Probability**	**Significance**	**Weight**
-	-	-	-	-	-
Points	**Significant Weighting**	**Discussion**			
< 30 points	Low	where this impact would not have a direct influence on the decision to develop in the area			
31-60 points	Medium	where the impact could influence the decision to develop in the area unless it is effectively mitigated			
> 60 points	High	where the impact must have an influence on the decision process to develop in the area			

6. PROJECT DESCRIPTION

This report does not deal with development projects outside of or even adjacent to the study area as is presented in Section 6 of this report. The same holds true for heritage sites, except in a generalised sense where it is used to create an overview of the heritage potential in the larger region.

6.1 **Site location**

It is proposed to improve a section of the National Route N2, referred to as Section A, between Leiden (km 60.0) and Camden (km 87,4) in the Gert Sibande District Municipality of Mpumalanga Province. For this purpose material will be sourced from borrow pits and quarries (Fig. 3 and 4). For more information, see the Technical Summary on p. iv above.

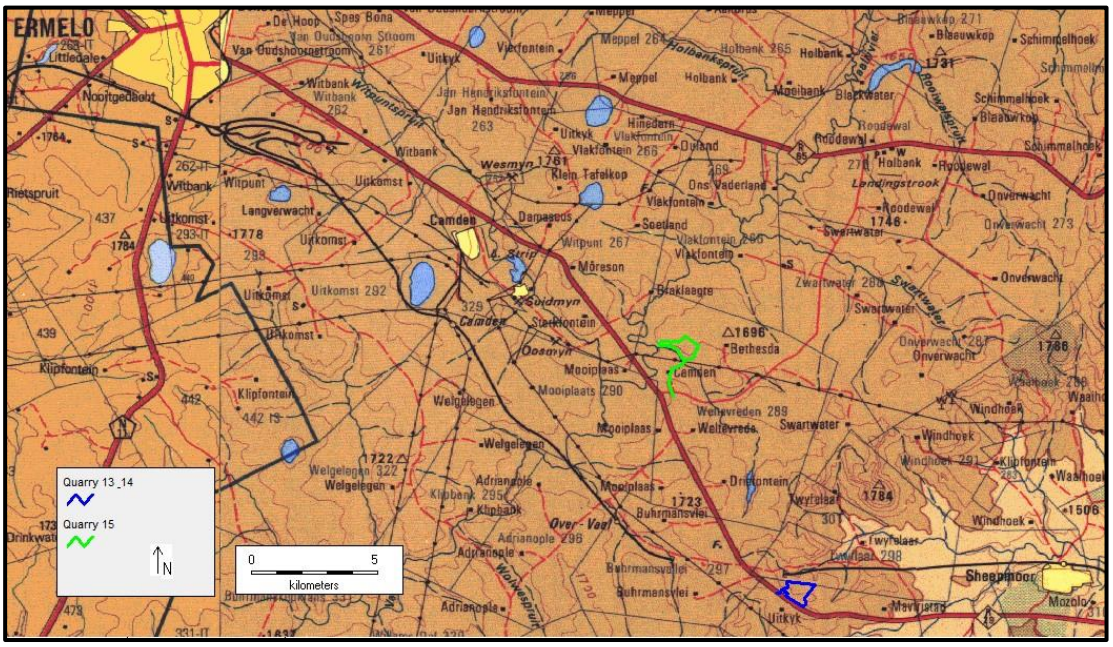


Fig. 3. The location of the quarries in regional context.
(Maps: 2628, 2630 – Chief Surveyor-General)

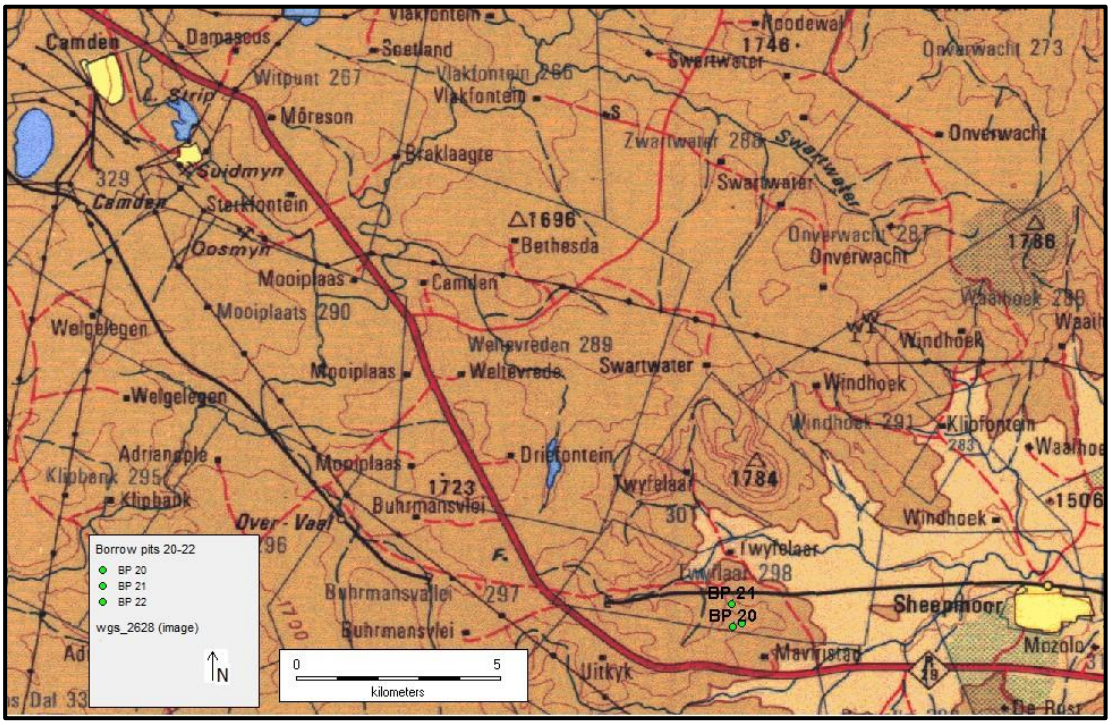


Fig. 4. The location of the borrow pit study area in regional context. (Maps: 2630 – Chief Surveyor-General)

6.2 **Development proposal**

It is proposed to improve a section of the National Route N2, referred to as Section A, between Leiden (km 60.0) and Camden (km 87,4) in the Gert Sibande District Municipality of Mpumalanga Province (Fig. 5). For this purpose material will be sourced from a number of borrow pits and quarries. The road improvement will be addressed in a separate report.

Name	Property	Coordinates
BP20	Rem Portion of the farm Mavieriestad No. 321-IT	S 26.72208, E 30.22833
Quarry 13-14	Remainder of the farm Mavieriestad 321IT	S 26.72164, E 30.20571 S 26.72148, E 30.20302
Quarry 15	Remainder 4 of the farm Weltevreden 289IT	S 26.63522, E 30.16028

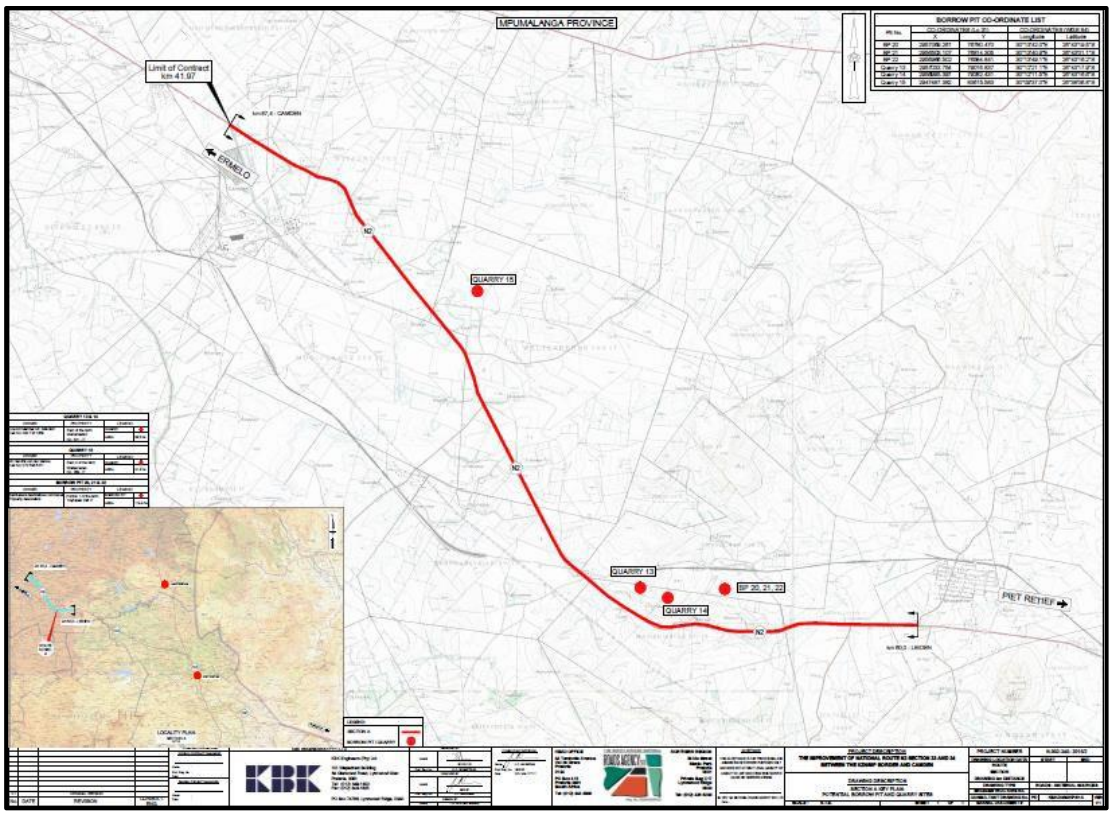


Fig. 5. The location of the borrow pit and quarries in relation to the N2 road (section A).

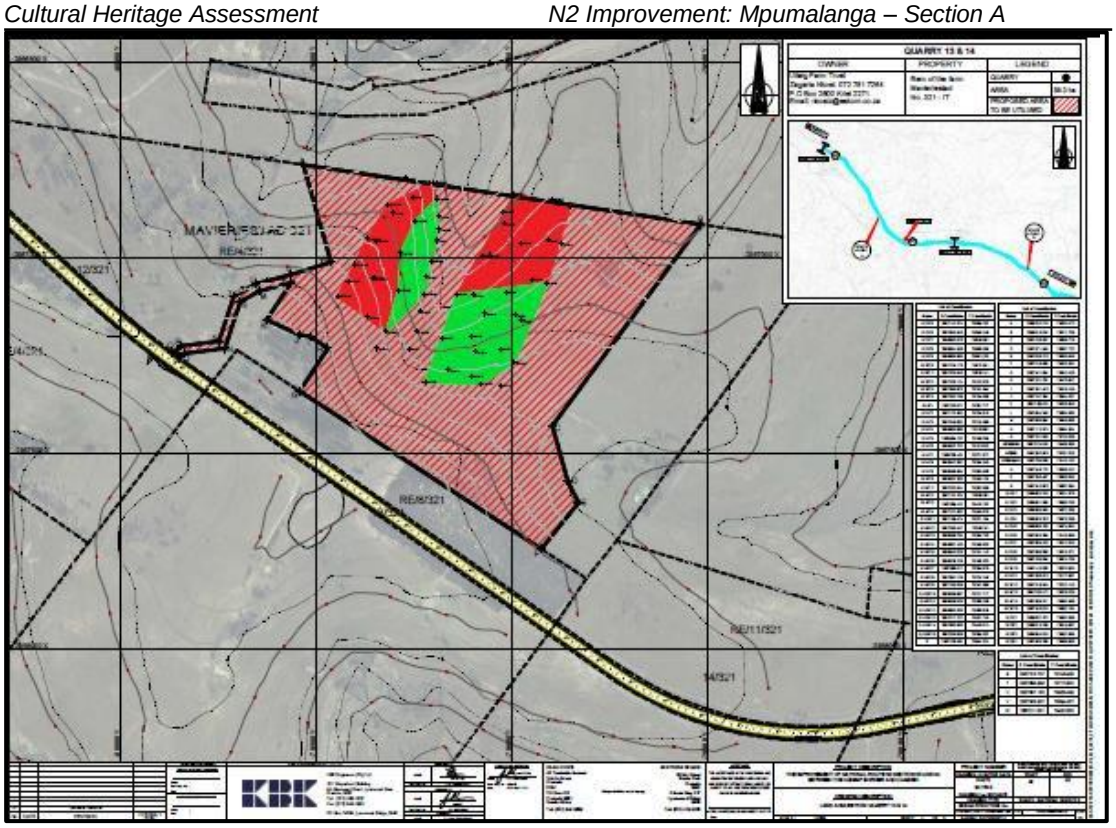


Fig 6: The layout of quarry 13-14

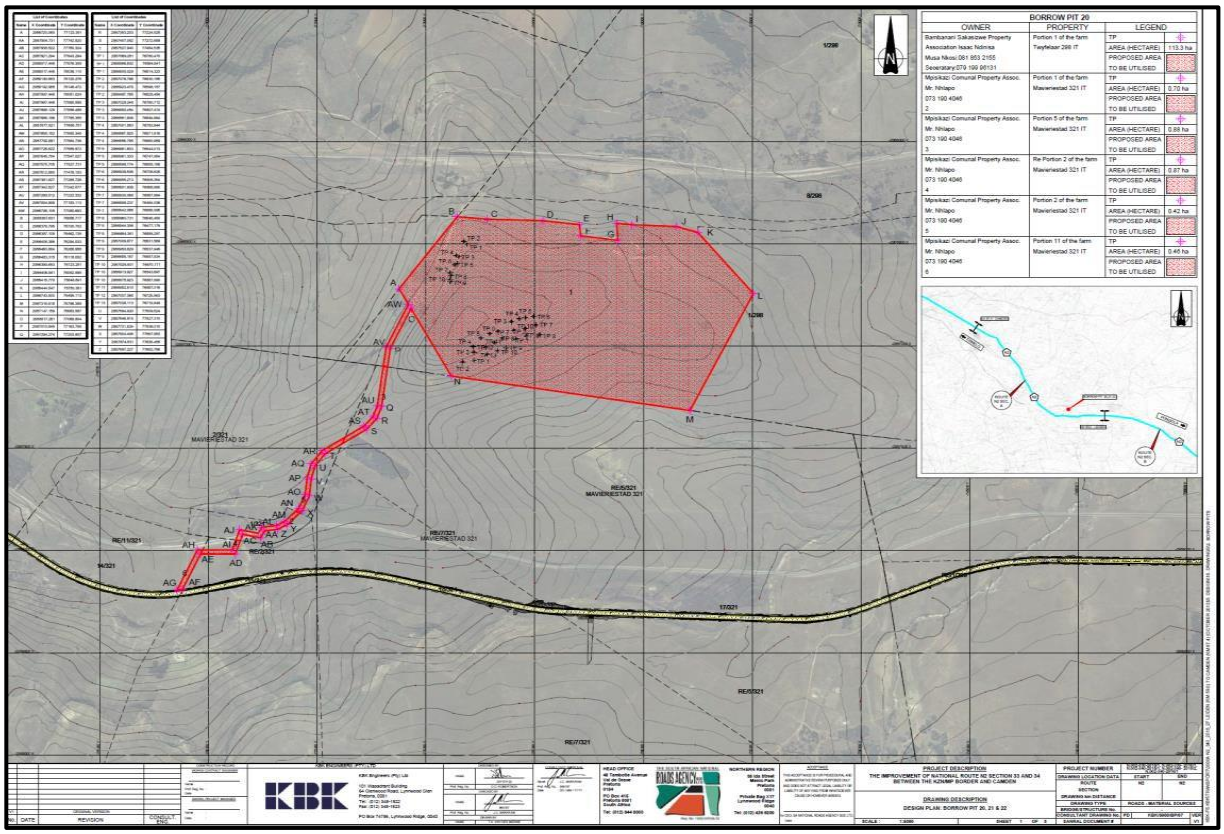


Fig 7: The layout of BP 20

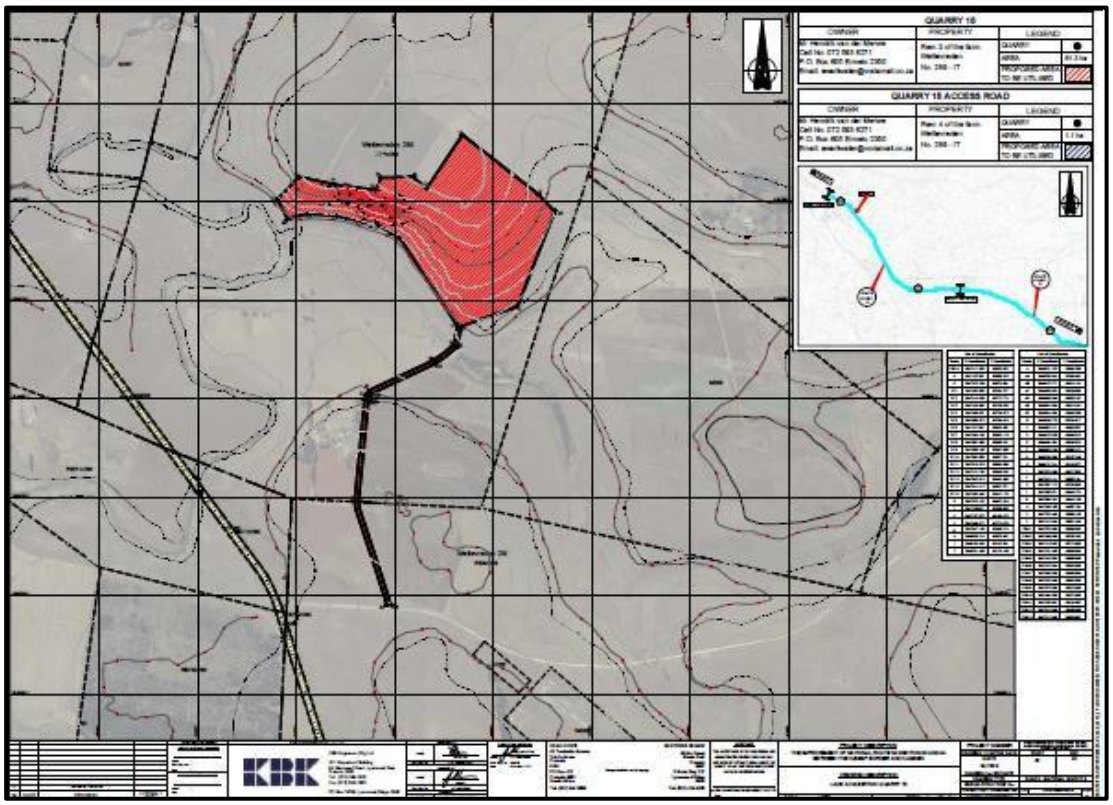


Fig. 8. The layout of quarry 15.

7. DESCRIPTION OF THE AFFECTED ENVIRONMENT

7.1 **Site description**

The geology of the region is made up of mudstone, with a number of dolerite intrusions, which forms the higher ridges. The vegetation is made up of Moist Upland Grassland. The topography is described as irregular undulating lowlands with hills.

All the mining areas are currently being used for grazing. Sections of quarry area 13 and 14 have been subjected to agricultural practices and still exhibit contour ridges. In addition, an old railway line crosses over the southern part of the site.


Borrow pit 20


Borrow pit 20


Borrow pit 20

Fig. 9. Views over the study area BP 20.


Quarry 13-14


Quarry 13-14

Fig. 10. Views of the study area Q13-14


Quarry 15


Quarry 15

Fig. 11. Views over the study area Q15.

7.2 **Overview of the region**

The aim of this section is to present an overview of the history of the larger region in order to eventually determine the significance of heritage sites identified in the study area, within the context of their historic, aesthetic, scientific and social value, rarity and representivity – see Section 3.2 and Appendix 1 for more information.

The cultural landscape qualities of the region essentially consist of a two components. The first is a rural area in which the human occupation is made up of a limited pre-colonial (Stone Age and Iron Age) occupation and a much later colonial (farmer) component. The second component is an urban one consisting of a number of smaller towns, most of which developed during the last 150 years or less.

Early history

Very little habitation of the highveld area took place during Stone Age times. Tools dating to the Early Stone Age period are mostly found in the vicinity of larger watercourses, e.g. the Vaal River, or in sheltered areas such as the Magaliesberg. During Middle Stone Age (MSA) times (c. 150 000 – 30 000 BP), people became more mobile, occupying areas formerly avoided. The MSA is a technological stage characterized by flakes and flake-blades with faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology. Open sites were still preferred near watercourses.

Late Stone Age (LSA) people had even more advanced technology than the MSA people and therefore succeeded in occupying even more diverse habitats. Some sites are known to occur in the region. These are small rock shelters found in the sandstone cliffs near rivers and are located to the east and north of the study area. Some of these even contain rock paintings (Van Schalkwyk 2003a, 2003b). The region surrounding Chrissiesmeer, to the north of the study area, is well-known for the fact that some San people occupied it up to historic times.

The low density of occupation of the region during Stone Age times can probably be attributed to the cold winters that are common in the region, as well as the lack of suitable rock shelters that could be used for staying in.

Iron Age

Iron Age people started to settle in southern Africa c. AD 300, with one of the oldest known sites at Broederstroom south of Hartebeespoort Dam dating to AD 470. Having only had cereals (sorghum, millet) that need summer rainfall, Early Iron Age (EIA) people did not move outside this rainfall zone, and neither did they occupy the central interior highveld area. Because of their specific technology and economy, Iron Age people preferred to settle on the alluvial soils near rivers for agricultural purposes, but also for firewood and water.

The occupation of the larger geographical area (including the study area) did not start much before the 1500s. By the 16th century things changed, with the climate becoming warmer and wetter, creating condition that allowed Late Iron Age (LIA) farmers to occupy areas previously unsuitable, for example the treeless plains of the Free State and the Mpumalanga highveld.

This wet period came to a sudden end sometime between 1800 and 1820 by a major drought lasting 3 to 5 years. The drought must have caused an agricultural collapse on a large, subcontinent scale.

This was also a period of great military tension. Military pressure from Zululand spilled onto the highveld by at least 1821. Various marauding groups of displaced Sotho-Tswana moved across the plateau in the 1820s. Mzilikazi raided the plateau extensively between 1825 and 1837. The Boers trekked into this area in the 1830s. And throughout this time settled communities of Tswana people also attacked each other.

As a result of this troubled period, Sotho-Tswana people concentrated into large towns for defensive purposes. Because of the lack of trees they built their settlements in stone. These stone-walled villages were almost always located near cultivatable soil and a source of water.

Large numbers of stone-walled archaeological sites, which are dated to the Late Iron Age (c. AD 1640 - AD 1830s), are known from the larger study region. These sites are conventionally associated with Nguni-speaking people, although a second viewpoint is that it was built by Sotho-speakers. The alternative interpretation by a specific individual that these sites are of Hindu origin is discounted here.

From the air, these homesteads and towns are easily recognised and it is also possible to determine variations in smaller detail. Various researchers (Evers 1975, Marker & Evers 1976, Mason 1968 and Collet 1982) have attempted a classification of the stone walled sites on the Mpumalanga escarpment area. Of these, the work of Mason was the most extensive. However, he only focussed on homestead areas. By using site layout, he identified eight ruin classes. Collet (1982) subdivided the settlement units as:

- Simple ruins which consist of an isolated circular enclosure, and
- Complex ruins which consist of two or more contiguous circular or semi-circular enclosures.

Evers (1975) and Marker & Evers (1976) also considered other elements such as agricultural activities (terracing) and pathways (cattle track) as system of communication between settlements. According to Marker & Evers (1976:160) the combination between the three attributes forms a settlement. The current survey in the study area, have identified a fourth category of sites, namely initiation sites, which falls into a category of sites that are considered to have special meaning.

Ethno-history

Whereas it is impossible to correlate any living group of people to Early Iron Age communities, it is possible, by using ethnographic evidence, to identify some of the groups of people that entered the region in pre-colonial times (i.e. the Later Iron Age) and are currently

settled in the larger region. The Tswana-speakers were located to the south and west in the study area, with the Ndzundza Ndebele (Nguni-speakers) to the north. The eastern section of the study area was occupied by Swazi-speakers, also of Nguni origin.

Historic period

White settlers moved into the area during the first half of the 19th century. They were largely self-sufficient, basing their survival on cattle/sheep farming and hunting. Few towns were established and it remained an undeveloped area until the discovered of coal and later gold. However, the area remained up till today, a largely farming orientated community. Much of the heritage potential of the study area is therefore located within the many farmsteads in the area. Farmhouses and related structures (e.g. barns, sheds, etc.), as well as cemeteries dot the landscape. Equally important, are the homesteads, related structures and cemeteries of the farm labourers living on these farms.

The town of Ermelo was established in 1879 on the farm Nooitgedacht. This was the result of the fact that the region has become a big stopover for people travelling between the coast and the gold fields in on the Witwatersrand. Later it was decided to establish a church in the region, which quickly led to the development of the town. The area also became known for the agricultural research station, named Nooitgedacht, where, for example, the Nooitgedachter horse breed was bred for the first time.

A railway line from Davel via Piet Retief and Paulpietersburg to Vryheid was completed in 1911. Although a number of roads linked the region to the coast and the interior, it was only during the 1970s that the section between Ermelo, via Piet Retief to Richards Bay was upgraded to National Road status (Floor 1985).

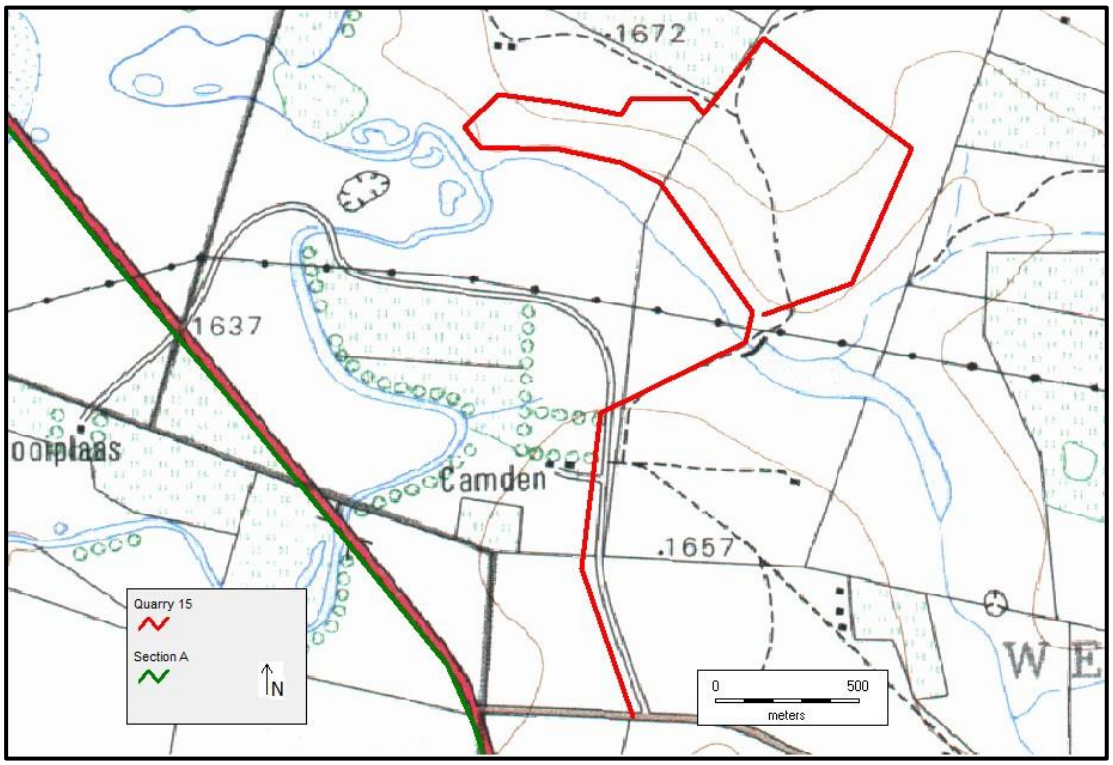
7.3 **Identified sites**

The following sites, features and objects of cultural significance were identified in the study area – see Appendix 6 for a detailed discussion of each individual site.

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 2. Summary of identified heritage resources in the study area.

IDENTIFIED HERITAGE RESOURCES			
NHRA category	*Number*	*Coordinates*	*Impact rating*
Formal protections (NHRA)			
National heritage site (Section 27)	None	-	-
Provincial heritage site (Section 27)	None	-	-
Provisional protection (Section 29)	None	-	-
Listed in heritage register (Section 30)	None	-	-
General protections (NHRA)			
Structures older than 60 years (Section 34)	7.3.3.2 7.3.3.3 7.3.3.4 7.3.3.5	-26.72222, 30.19905 -26.72453, 30.20281 -26.72698, 30.20782 -26.72405, 30.20283	Medium Medium Medium Medium
Archaeological site or material (Section 35)	None	-	-
Palaeontological site or material (Section 35)	None	-	-
Graves or burial grounds (Section 36)	7.3.3.1	-26.72262, 30.20699 (Q13-14) -26.72875, 30.21969 (BP20)	Low
Public monuments or memorials (Section 37)	None	-	-
Other			
Any other heritage resources (describe)	None	-	-


1672
1637
oonplaas
Camden
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Quarry 15
Section A
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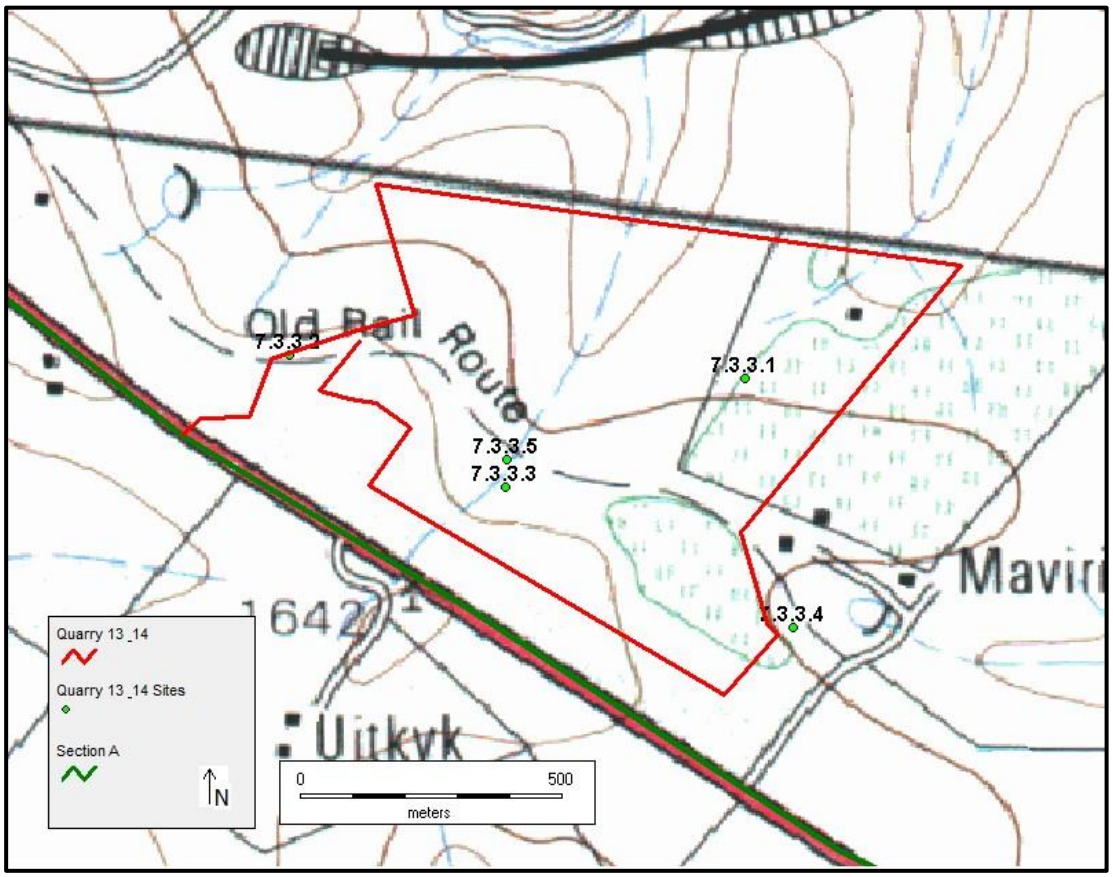
Old Rail Route
7.3.3.1
7.3.3.1
7.3.3.5
7.3.3.3
7.3.3.4
Mavir
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Uitkyk
Quarry 13_14
Quarry 13_14 Sites
Section A
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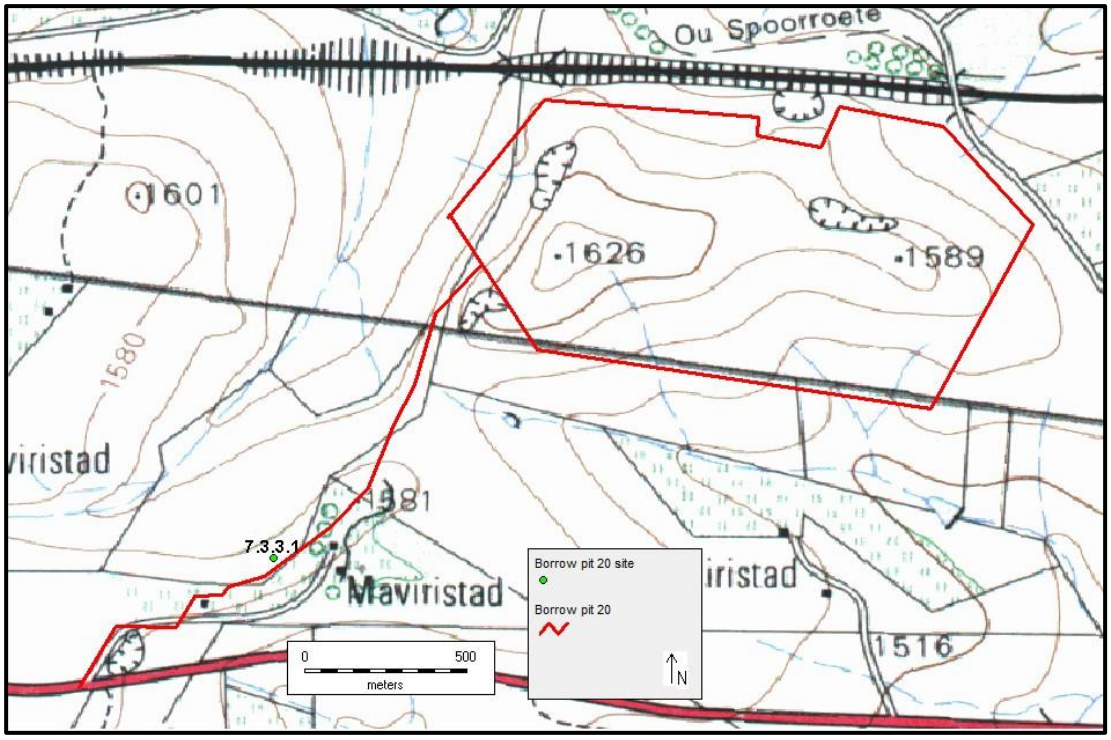

Fig. 12. Location of the identified sites.
Quarry No. 15 top; Quarry 13-14 middle, BP 20
bottom (Map 2630CA: Chief Surveyor-General)

7.3.1 *Stone Age*

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

7.3 2 *Iron Age*

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

7.3.3 *Historic period*

Quarry 13-14

- Burial place
    - (7.3.3.1) A large informal burial place with probably more than 30 graves. At least half of them have no headstones with inscriptions. The site is fenced off and maintained by the local community.
        - This feature is viewed to have high significance on a local level – Grade III.
- Railway culverts
    - (7.3.3.2 – 7.3.3.4) Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. This route was abandoned when the new alignment was finished in 1975. The culverts vary in size and length. They were originally constructed with dressed sandstone. The original iron tracks and sleepers have been removed and only the gravel bed remains in the areas between the culverts.
        - These features are viewed to have high significance on a regional level –

Grade III.

- Farming structure
    - (7.3.3.5) An old sheep dip constructed from concrete. It original had a pole and wire fence around it.
        - This feature is viewed to have low significance on a local level – Grade III.

BP 20

- Burial site:
    - (7.3.3.1) An informal burial site with at least five graves.
        - This feature is viewed to have high significance on a local level – Grade III.

7.4 **Impact assessment**

Heritage impacts are categorised as:

- Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;
- Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment;
- Cumulative impacts that are combinations of the above.
    - The impacts of the proposed road improvement could be direct or physical but will not be indirect and cumulative.

Impacts can be managed through one or a combination of the following measures:

- Mitigation
- Avoidance
- Compensation
- Enhancement (positive impacts)
- Rehabilitation
- Interpretation
- Memorialisation

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

- (7.3.3.1) A large informal burial place with probably more than 30 graves at Q13-14. This site is located approximately 40 metres outside (east) of the larger development area and it is therefore unlikely that it would be impacted on by the proposed development.
    - The significance weighting for the impact on the identified sites is rated as low.
        - Mitigation: If the burial place is retained, it should be fenced off for the duration of the quarrying activities, leaving a buffer zone of at least five metres from the outer edge of the graves.
        - Requirements: If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures (see Appendix 5).
- An informal burial site with at least five graves at BP20. It is located within 30 metres

from the proposed access road to the borrow pit and it is anticipated that it would not be impacted on by the road improvement activities (see Appendix 6).

- The significance weighting for the impact on the identified sites is rated as low.

Mitigation: If the burial places are retained, it should be fenced off with danger tape for the duration of the road improvement activities, leaving a buffer zone of at least five metres from the outer edge of the graves. If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures (see Appendix 5 for an

- (7.3.3.2 – 7.3.3.4) Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. These features are located inside the larger identified area and some of them are also located on the identified access route. Therefore there is a high possibility that it might be impacted on by the quarrying activities.
    - The significance weighting for the impact on the identified sites is rated as medium.
        - Mitigation: It is recommended that these features are retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.
        - Requirements: If demolished, SAHRA permit after full documentation.
- (7.3.3.5) An old sheep dip constructed from concrete. This feature is located inside the larger identified area. Therefore there is a possibility that it might be impacted on by the quarrying activities.
    - The significance weighting for the impact on the identified sites is rated as medium.
        - Mitigation: It is recommended that this feature is retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.
        - Requirements: If demolished, SAHRA permit after full documentation.

8. MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the 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.

8.1 **Objectives**

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the 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).

8.2 **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.

9. RECOMMENDATIONS

It is proposed to improve a section of the National Route N2, referred to as Section A, between Leiden (km 60.0) and Camden (km 87,4) in the Gert Sibande District Municipality of Mpumalanga Province. For this purpose a number of borrow pits and quarries have been identified where material will be sourced from for this purpose.

The cultural landscape qualities of the region essentially consist of a two components. The first is a rural area in which the human occupation is made up of a limited pre-colonial (Stone Age and Iron Age) occupation and a much later colonial (farmer) component. The second component is an urban one consisting of a number of smaller towns, most of which developed during the last 150 years or less.

Identified sites:

Quarries 13 & 14

- Burial place
    - (7.3.3.1) A large informal burial place with probably more than 30 graves. At least half of them have no headstones with inscriptions. The site is fenced off and maintained by the local community.
        - This feature is viewed to have high significance on a local level – Grade III.
- Railway culverts
    - (7.3.3.2 – 7.3.3.4) Three old railway culverts that formed part of the original

railroad alignment which was constructed in 1911. This route was abandoned when the new alignment was finished in 1975. The culverts vary in size and length. They were originally constructed with dressed sandstone. The original iron tracks and sleepers have been removed and only the gravel bed remains in the areas between the culverts.

- These features are viewed to have high significance on a regional level – Grade III.

- Farming structure
  - (7.3.3.5) An old sheep dip constructed from concrete. It original had a pole and wire fence around it.
    - This feature is viewed to have low significance on a local level – Grade III.

BP 20

- Burial site:
  - (7.3.3.1) An informal burial site with at least five graves. This feature is viewed to have high significance on a local level – Grade III.

Impact assessment:

- (7.3.3.1) A large informal burial place with probably more than 30 graves near Q13-14. This site is located approximately 40 metres outside (east) of the larger development area and it is therefore unlikely that it would be impacted on by the proposed development.
  - The significance weighting for the impact on the identified sites is rated as low.
    - Mitigation: If the burial place is retained, it should be fenced off for the duration of the quarrying activities, leaving a buffer zone of at least five metres from the outer edge of the graves.
    - Requirements: If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures (see Appendix 5).

- An informal burial site with at least five graves near BP 20. It is located within 30 metres from the proposed access road to the borrow pits and it is anticipated that it would not be impacted on by the road improvement activities (see Appendix 6).
  - The significance weighting for the impact on the identified sites is rated as low.
    - Mitigation: If the burial places are retained, it should be fenced off with danger tape for the duration of the road improvement activities, leaving a buffer zone of at least five metres from the outer edge of the graves. If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures (see Appendix 5 for an outline of this).

- (7.3.3.2 – 7.3.3.4) Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. These features are located inside the larger identified area and some of them are also located on the identified access route. Therefore there is a high possibility that it might be impacted on by the quarrying activities.
    - The significance weighting for the impact on the identified sites is rated as medium.
        - Mitigation: It is recommended that these features are retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.
        - Requirements: If demolished, SAHRA permit after full documentation.
- (7.3.3.5) An old sheep dip constructed from concrete. This feature is located inside the larger identified area. Therefore there is a possibility that it might be impacted on by the quarrying activities.
    - The significance weighting for the impact on the identified sites is rated as medium.
        - Mitigation: It is recommended that this feature is retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.
        - Requirements: If demolished, SAHRA permit after full documentation.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view it is recommended that the proposed development be allowed to continue, on condition of acceptance of the proposed mitigation measures.

Conditions for inclusion in the environmental authorisation:

- It is recommended that the burial site is retained and it should be fenced off for the duration of the quarrying activities, leaving a buffer zone of at least five metres from the outer edge of the graves. If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures.
- It is recommended that the railway culverts are retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.
- It is recommended that the sheep dip is retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.
- Should archaeological sites or graves be exposed during quarrying activities, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

10. **REFERENCES**

10.1 **Data bases**

Chief Surveyor General
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Heritage Atlas Database, Pretoria.
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SAHRA Archaeology and Palaeontology Report Mapping Project (2009)

10.2 **Literature**

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10.3 **Maps and aerial photographs**

1: 50 000 Topocadastral maps
Google Earth

APPENDIX 1: INDEMNITY AND TERMS OF USE OF THIS REPORT

The findings, results, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and the author reserve the right to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field, or pertaining to this investigation.

Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. The author of this report will not be held liable for such oversights or for costs incurred as a result of such oversights.

Although the author exercises due care and diligence in rendering services and preparing documents, he accepts no liability and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the author and by the use of the information contained in this document.

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APPENDIX 2. SPECIALIST COMPETENCY

Johan (Johnny) van Schalkwyk

J A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 30 years. Based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape, Northern Cape, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 60 papers, many in scientifically accredited journals. During this period he has done more than 2000 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, road-, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.

APPENDIX 3 CONVENTIONS USED TO ASSESS THE IMPACT OF PROJECTS ON HERITAGE RESOURCES

Significance

According to the NHRA, Section 2(vi) the **significance** of a heritage sites and artefacts is determined by it aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

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 4. 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 l 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 5. RELOCATION OF GRAVES

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.

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 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.

APPENDIX 6: INVENTORY OF IDENTIFIED CULTURAL HERITAGE SITES

Location	No. 7.3.3.1	Burial place	S 26.72262, E 30.20699

Description
A large informal burial place with probably more than 30 graves. At least half of them have no headstones with inscriptions. The site is fenced off and maintained by the local community.

Significance of site/feature	High on a local level – Grade III

Impact assessment
This site is located approximately 40 metres outside (east) of the larger development area. It is therefore unlikely that it would be impacted on by the proposed development.

Significance of impact					
Extent	**Duration**	**Magnitude**	**Probability**	**Significance**	**Weight**
1	5	4	2	20	Low

Mitigation
If the burial place is retained, it should be fenced off for the duration of the quarrying activities, leaving a buffer zone of at least five metres from the outer edge of the graves. This demarcation with danger tape should be done in consultation with the local community. If the graves cannot be retained, it should be relocated, but only on condition of following the correct procedures (see Appendix 5).

Requirements
Most of the graves seem to be younger than 60 years and therefore a permit for their relocation from SAHRA is not required. However, all other requirements should be adhered to – see Appendix 5.

References
1: 50 000 topocadastral map

Location	No. 7.3.3.1	Burial place	-26.72875, 30.21969
Description			
A small informal burial site with a minimum of five graves. Only two have headstones, but legible inscriptions. The others are are only marked with stone piles.			

Significance of impact					
Extent	**Duration**	**Magnitude**	**Probability**	**Significance**	**Weight**
1	5	4	2	20	Low

Requirements
As these graves do not have headstones legible names and dates, it is recommended that a permit for their relocation should be obtained from SAHRA. All other requirements should also be adhered to – see Appendix 5.

References
1: 50 000 topocadastral map

Location	No. 7.3.3.2 No. 7.3.3.3 No. 7.3.3.4	Railway culvert Railway culvert Railway culvert	S 26.72222, E 30.19905 S 26.72453, E 30.20281 S 26.72698, E 30.20782

Description

Three old railway culverts that formed part of the original railroad alignment which was constructed in 1911. This route was abandoned when the new alignment was finished in 1975, to accommodate larger and longer trains to export resources (coal and iron ore) through Richards Bay harbour.

The culverts vary in size and length. They were originally constructed with dressed sandstone, but were later repaired with concrete.

The original iron tracks and sleepers have been removed and only the gravel bed remains in the areas between the culverts.

Significance of site/feature	High on a regional level – Grade III

Impact assessment

These features occur in the larger identified area. Some of these are also located on the identified access route. It should be remembered that this is a linear feature – an impact on a single culvert is therefore an impact on the whole.

Significance of impact

Extent	Duration	Magnitude	Probability	Significance	Weight
4	5	4	4	52	Medium

Mitigation

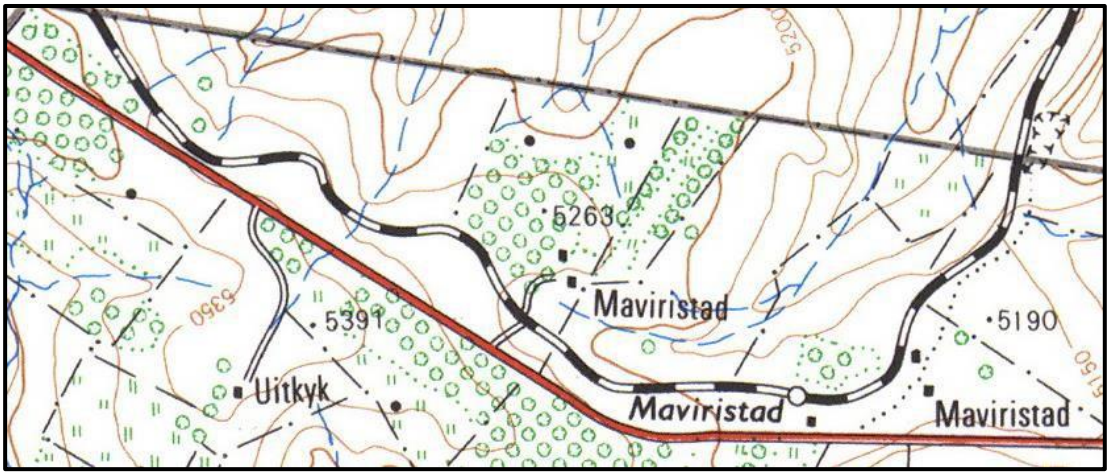
It is recommended that these features are retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished or upgraded, it should be documented in full prior to development taking place.

Requirements

As these structures are older than 60 years, a permit for its destruction must be obtained from SAHRA. Such a permit will only be issued on condition of its full documentation (mapping and photographing).

References

1: 50 000 topocadastral map



The original alignment of the railway line as indicated on the 1968 version of the 1:50 000 map.

7.3.3.2

7.3.3.3

7.3.3.4

Location	No. 7.3.3.5	Sheep dip	S 26.72405, E 30.20283
Description			
An old sheep dip constructed from concrete. It original had a pole and wire fence around it.			

Significance of site/feature	Low on a local level – Grade III

Impact assessment
This feature is located inside the larger identified area. Therefore there is a possibility that it might be impacted on by the quarrying activities.

Significance of impact					
Extent	**Duration**	**Magnitude**	**Probability**	**Significance**	**Weight**
4	5	4	4	44	Medium

Mitigation
It is recommended that this feature is retained and that it is fenced off with danger tape if quarrying activities take place in its vicinity. If that is not possible and must be demolished, it should be documented in full prior to construction taking place.

Requirements
As these structures are older than 60 years, a permit for its destruction must be obtained from SAHRA. Such a permit will only be issued on condition of its full documentation (mapping and photographing).

References
1: 50 000 topocadastral map

7.3.3.5