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**ECO  
ASSESSMENTS  
ENVIRONMENTAL  
CONSULTANTS**

**ARCHAEOLOGICAL  
IMPACT ASSESSMENT**

**Proposed industrial  
development on portion  
159 of the farm  
Doornkloof 391 JR, Irene,  
Pretoria, Gauteng  
Province**

**Version 1.0**

**17 April 2008**

**Service provider**



**MATAKOMA - ARM**  
HERITAGE CONTRACTS UNIT

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- The results of the project;
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- Recommendations delivered to the Client.

## EXECUTIVE SUMMARY

As we know from legislation the surveying, capturing and management of heritage resources is an integral part of the greater management plan laid down for any major development or historic existing operation. With the proclamation of the National Heritage Resources Act 1999 (Act 25 of 1999) this process has been laid down clearly. This legislation aims to underpin the existing legislation, which only addresses this issue at a glance, and gives guidance to developers and existing industries to the management of their Heritage Resources.

The importance of working with and following the guidelines laid down by the South African Heritage Resources Agency cannot be overemphasised. This document forms part of the Environmental Scoping Report for the proposed industrial development on Portion 159 of the farm Doornkloof 391 JR, Irene, Gauteng.

The following outline the findings of the report:

During the survey 4 structures of cultural significance were identified. These four historical structures are grouped and marked as Site **MHC001** and **MHC002**.

The present owners of the property have gone to great lengths to preserve these known heritage sites and indicated that the proposed development will not impact on these sites.

How ever, these sites are protected by legislation and in complying with legislation and best practise it is recommended that:

- A Heritage Management plan must be drawn up for these sites to ensure the responsible future management of these sites.
- If any alteration or destruction of these sites is foreseen a destruction permit will be needed from SAHRA. To apply for a destruction permit a full Archival study must be conducted on the sites and a conservation architect must assess the significance of the structures.

- Before development starts especially where bedrock is to be affected a letter of exemption must be obtained from a Palaeontologist.

If these recommendations are adhered to there is from a Heritage Perspective no reason why the development can not commence.

### **General**

If during construction any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

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## **1. INTRODUCTION**

Matakoma ARM Heritage Contracts Unit was contracted by Eco Assessments to conduct a Archaeological Impact Assessment of the proposed Industrial development on Portion 159 of the farm Doornkloof 391 JR, Irene, Gauteng.

The aim of the study is to identify all heritage sites, document, and assess their importance within Local, Provincial and national context. From this we aim to assist the developer in managing the discovered heritage resources in a responsible manner, in order to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

The report outlines the approach and methodology utilised before and during the survey, which includes in Phase 1: Information collection from various sources and public consultations; Phase 2: Physical surveying of the area on foot and by vehicle; and Phase 3: Reporting the outcome of the study.

During the survey, three cultural heritage sites of significance were identified. General site conditions and features on sites were recorded by means of photos, GPS location, and description. Possible impacts were identified and mitigation measures are proposed in the following report.

This report must also be submitted to SAHRA provincial office for scrutiny.

## **2. APPROACH AND METHODOLOGY**

The aim of the study is to extensively cover all data available to compile a background history of the study area; this was accomplished by means of the following phases.

### **2.1 PHYSICAL SURVEYING**

Due to the nature of cultural remains, the majority that occur below surface, a physical walk through of the study area was conducted. Matakoma - ARM Heritage Contract Unit were appointed to conduct a survey of the footprint of the proposed development. The study area of 30ha was surveyed over one day, by means of vehicle and extensive surveys on foot.

Aerial photographs and 1:50 000 maps of the area were consulted and literature of the area were studied before undertaking the survey. The purpose of this was to identify topographical areas of possible historic and pre-historic activity. All sites discovered both inside and bordering the proposed development area was plotted on 1:50 000 maps and their GPS co-ordinates noted. 35mm photographs on digital film were taken at all the sites.

## **2.2 CONSULTATION**

The personnel from Salberg Concrete Products especially Ms Patricia Pretorius has been very helpful with sharing information from their archives. The curator from Smuts House Ms Elna Kruger shared her vast knowledge and literature on the farm Doornkloof. Mr Petrus Mutau who has an intimate knowledge of the study area was consulted about the occurrence of any graves in the study area, he indicated that he is not aware of any.

## **3. WORKING WITH LEGISLATION**

It is very important that cultural resources be evaluated according to the National Heritage Recourse Act. In accordance with the Act, we have found the following:

These sites are classified as important based on evaluation of the National Heritage Recourses Act 1999 (Act No 25 of 1999) section 3 (3).

A place or object is to be considered part of the national estate if it has cultural significance or other special value because of-

- (a) its importance in the community, or pattern of South Africa's history;
- (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;



- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- (h) 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
- (i) sites of significance relating to the history of slavery in South Africa.

(Refer to Section 9 of this document for assessment)

These sites should be managed through using the National Heritage Recourses Act 1999 (Act No 25 of 1999) sections 4,5 and 6 and sections 39-47.

Please refer to Section 9 for Management Guidelines.

## 4. ASSESSMENT CRITERIA

This chapter describes the evaluation criteria used for the sites listed below.

The significance of archaeological sites was based on four main criteria:

- **site integrity** (i.e. primary vs. secondary context),
- **amount of deposit, range of features** (e.g., stonewalling, stone tools and enclosures),
- **uniqueness** and
- **potential** to answer present research questions.

Management actions and recommended mitigation, which will result in a reduction in the impact on the sites, will be expressed as follows:

**A** - No further action necessary;

**B** - Mapping of the site and controlled sampling required;

**C** - Preserve site, or extensive data collection and mapping of the site; and

**D** - Preserve site

Impacts on these sites by the development will be evaluated as follows

## **4.1 IMPACT**

The potential environmental impacts that may result from the proposed development activities.

### **4.1.1 Nature and existing mitigation**

Natural conditions and conditions inherent in the project design that alleviate (control, moderate, curb) impacts. All management actions, which are presently implemented, are considered part of the project design and therefore mitigate against impacts.

## 4.2 EVALUATION

### 4.2.1 Site Significance

Site significance classification standards prescribed by the South African Heritage Resources Agency (2006) and approved by the Association for Southern African Professional Archaeologists (ASAPA) for the Southern African Development Community (SADC) region, were used for the purpose of this report.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	-	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)	-	High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium Significance	Recording before destruction
Generally Protected C (GP.C)	-	Low Significance	Destruction

### 4.2.2 Impact Rating

#### *VERY HIGH*

These impacts would be considered by society as constituting a major and usually permanent change to the (natural and/or social) environment, and usually result in **severe** or **very severe** effects, or **beneficial** or **very beneficial** effects.

**Example:** The loss of a species would be viewed by informed society as being of VERY HIGH significance.

**Example:** The establishment of a large amount of infrastructure in a rural area, which previously had very few

services, would be regarded by the affected parties as resulting in benefits with a VERY HIGH significance.

*HIGH*

These impacts will usually result in long term effects on the social and/or natural environment. Impacts rated as HIGH will need to be considered by society as constituting an important and usually long term change to the (natural and/or social) environment. Society would probably view these impacts in a serious light.

**Example:** The loss of a diverse vegetation type, which is fairly common elsewhere, would have a significance rating of HIGH over the long term, as the area could be rehabilitated.

**Example:** The change to soil conditions will impact the natural system, and the impact on affected parties (in this case people growing crops on the soil) would be HIGH.

*MODERATE*

These impacts will usually result in medium- to long-term effects on the social and/or natural environment. Impacts rated as MODERATE will need to be considered by society as constituting a fairly important and usually medium term change to the (natural and/or social) environment. These impacts are real but not substantial.

**Example:** The loss of a sparse, open vegetation type of low diversity may be regarded as MODERATELY significant.

**Example:** The provision of a clinic in a rural area would result in a benefit of MODERATE significance.

*LOW*

These impacts will usually result in medium to short term effects on the social and/or natural environment. Impacts rated as LOW will need to be considered by the public and/or the specialist as constituting a fairly unimportant and usually short term change to the (natural and/or social) environment. These impacts are not substantial and are likely to have little real effect.

**Example:** The temporary change in the water table of a wetland habitat, as these systems are adapted to fluctuating water levels.

**Example:** The increased earning potential of people employed as a result of a development would only result in benefits of LOW significance to people who live some distance away.

*NO SIGNIFICANCE*

There are no primary or secondary effects at all that are important to scientists or the public.

**Example:** A change to the geology of a particular formation may be regarded as severe from a geological perspective, but is of NO significance in the overall context.

### 4.2.3 Certainty

*DEFINITE:* More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment.

*PROBABLE:* Over 70% sure of a particular fact, or of the likelihood of impact occurring.

*POSSIBLE:* Only over 40% sure of a particular fact or of the likelihood of an impact occurring.

*UNSURE:* Less than 40% sure of a particular fact or likelihood of an impact occurring.

### 4.2.4 Duration

*SHORT TERM:* 0 to 5 years

*MEDIUM:* 6 to 20 years

*LONG TERM:* more than 20 years

*DEMOLISHED:* site will be demolished or is already demolished

Example

*Evaluation*

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	Moderate	Grade GP.B	Possible	Short term	B

## 5. HISTORICAL BACKGROUND OF AREA

As heritage surveys deal with the locating of heritage resources in a prescribed cartographic landscape, the study of archival and historical data, and especially cartographic material, can represent a very valuable supporting tool in finding and identifying such heritage resources.

The historical background and timeframe can be divided into the Stone Age, Iron Age and Historical timeframe. These can be divided as follows:

### ***Stone Age***

The Stone Age is divided in Early; Middle and Late Stone Age and refers to the earliest people of South Africa who mainly relied on stone for their tools.

*Early Stone Age:* The period from  $\pm$  2.5 million yrs -  $\pm$  250 000 yrs ago. Acheulean stone tools are dominant.

*Middle Stone Age:* Various lithic industries in SA dating from  $\pm$  250 000 yrs – 22 000 yrs before present.

*Late Stone Age:* The period from  $\pm$  22 000-yrs before present to the period of contact with either Iron Age farmers or European colonists.

### ***Iron Age***

The Iron Age as a whole represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. Similar to the Stone Age it can be divided into three periods:

*The Early Iron Age:* Most of the first millennium AD.

*The Middle Iron Age:* 10th to 13th centuries AD

*The Late Iron Age:* 14th century to colonial period.

### ***Historic Timeframe***

17th Century to present AD (1600 – 2000)

The historic timeframe intermingles with the later parts of the Stone and Iron Age, and can loosely be regarded as times when written and oral recounts of incidents became available

## **6. History of the farm Doornkloof**

The earliest historical writings of the period record that the Bakwena tribe, known as the Crocodile people, lived in the area in the early 1800's. When Mzilikazi (whose people became known as the Matabele) came to the area in 1825, he killed many of the Crocodile people and drove the rest away.

One of the Boer Voortrekkers, Daniel Elardus Erasmus, who left the Cape Colony in the 1830's to seek economic and political independence in the hinterland, settled in the area on a farm that became known as Doornkloof. Doornkloof became known as the "kerkplaas" of the district. When Daniel died in 1875 he left the farm to his three sons.

Fourteen years later Alois Hugo Nellmapius - a businessman who established a transport business between Lorenzo Marques and Pilgrims Rest, as well as a Gin and Whisky factory, the first gun powder factory in South Africa and the Irene Lime works - bought two thirds of the Doornkloof farm. The lime works is located on the farm Doornkloof and lime from this mine was used in building the Union Buildings in Pretoria. Nellmapius often entertained in a grand style on the farm and a frequent guest was Transvaal president, Paul Kruger.



Figure 1: A 1907 photograph of the kilns of the Irene Lime works.

Irene was first proclaimed a township in 1902 by Johannes Albertus van der Byl better known as Bertie who bought the Irene Estate in 1896. The Doornkloof farm had been renamed Irene Estate by Nellmapius after his daughter Irene. Bertie was first in the line of the Irene-born van der Byls who are now in their fifth generation.

During the Anglo-South African War the Irene Concentration Camp was established in 1901 on the farm Doornkloof, north of the Hennops River. The Irene Primary School was also established in the camp.

### **Smuts House**

The farm also has a close relationship with a former Prime Minister of South Africa, Gen. J C Smuts. Smuts House was the dwelling of General Jan Christiaan Smuts, twice the prime minister of South Africa, soldier, philosopher, botanist and grass expert and known internationally, among others for the creation of the term "holism". Previously a mess for British officers in Middelburg, Smuts bought the house for 300 pounds in 1908 and had it transported to Irene, where it was re-erected on the farm Doornkloof. The structure was initially



meant as a temporary home until a new house could be built on the kopje behind the house. The Smuts family however grew so attached to the house that they stayed there until the death of General Smuts on 11 September 1950.

### **Irene Dairy farm**

Not far from the house is another historic site, also situated on the site of the original Doornkloof farm the 112-year-old Irene Dairy. Named after Irene Nellmapius, daughter of a famous pre-Boer War financier, Alois Hugo Nellmapius, the dairy also gave the area its name. The farm is still run by the Van der Byl family, who bought the Irene estate in 1896.

### **Portion 159 of the farm Doornkloof**

This portion also belonged to Smuts family until it was bought by the present owners. Oral history has it that the foreman of the Smuts farm used to reside in the historical dwelling at site **MHC002** within the study area.

Deeds of sale indicated that the Klein Letaba Mining Company used to mine the lime on the border of the study area. It is important to distinguish between the Lime works owned by Nelmapius on the farm and the lime works and kilns in the study area.

## 6.1 Archival Maps

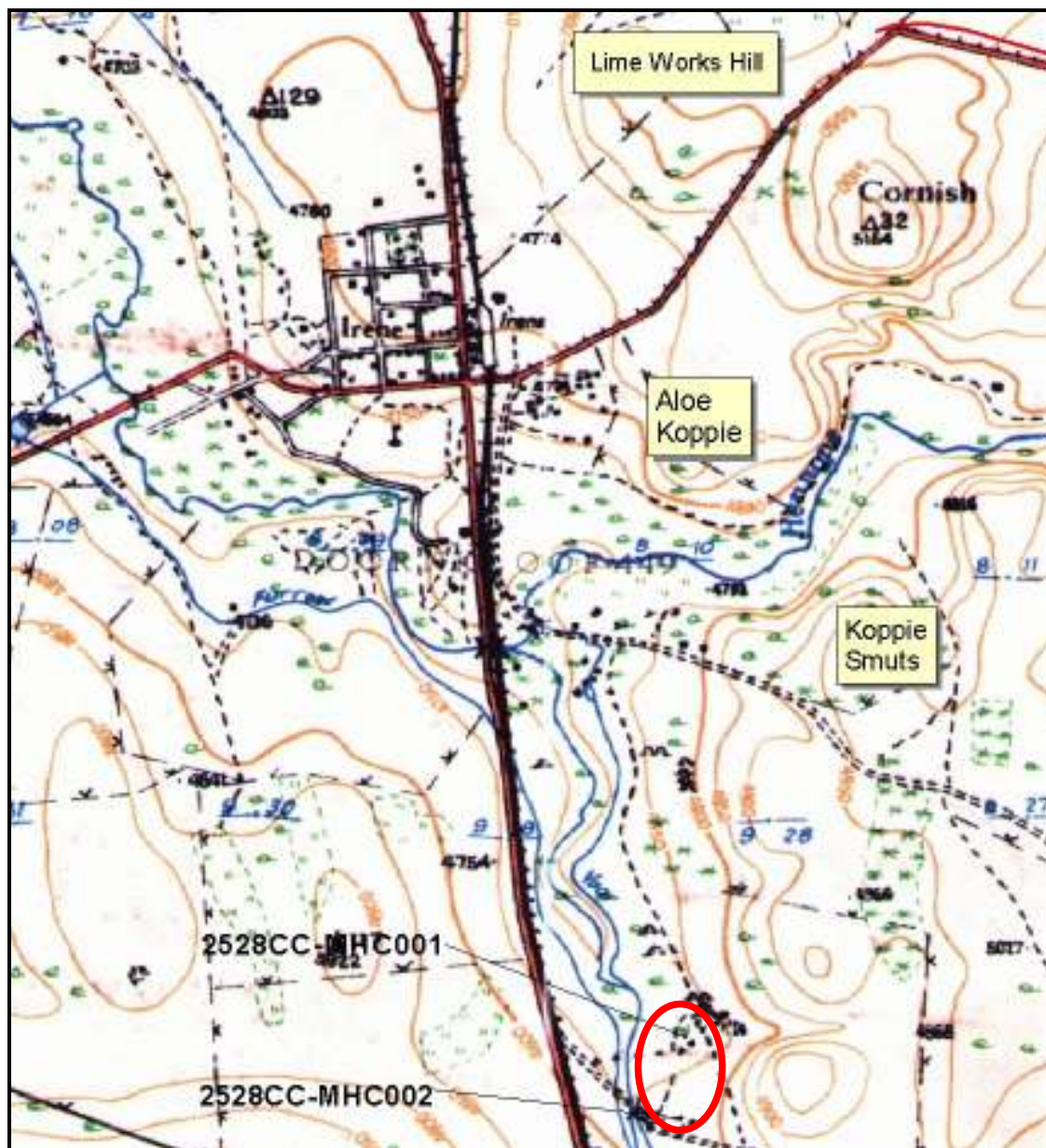


Figure 2: The depicted map represents an enlarged section of the Second Edition of the 2528CC Topographical Map. The map was drawn by the Trigonometrical Survey Office in 1943.

The study area is depicted in red. Note the presence of the historic buildings indicated in the study area.



## 7. SITES OF SIGNIFICANCE

The study area is located approximately 4km South-East of Irene and 20km South of Pretoria. Glen road lies directly to the West of the site.

### 6.1 SITE-MHC001

#### ***6.1.1 The identification and mapping of all significant heritage resources in the area.***

This is the location of two residential dwellings. The structures have been altered over the years but the original structure is marked by wooden floors and steel ceilings. More modern extensions to the structures are marked by wood block floors and cement floors. From the architecture of the structures it is clear that both houses are older than 60 years, this is confirmed by a study of archival maps. These structures are therefore protected by legislation.



Figure 4: *Historical dwelling nr1 viewed from the west*



Figure 5: *Historic dwelling nr2 viewed from the north*

**6.1.2 An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 3(3) of the National Heritage Recourses Act 1999 (Act No 25 of 1999).**

The site is of medium significance and is graded Grade GP.A

This site is classified based on evaluation of the National Heritage Recourses Act 1999 (Act No 25 of 1999)

- Section 3(3)(c) - its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- Section 3(3) (d) – its importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects;
- Section 3(3)(f) - its importance in demonstrating a high degree of creative or technical achievement at a particular period.

The impact on the site is seen as moderate.

***Impact Evaluation***

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	Low significance	Grade GP.A	Possible	Short term	C

## 6.2 SITE-MHC002

### ***6.1.1 The identification and mapping of all significant heritage resources in the area.***

This is the location of a historical dwelling and a lime kiln. The dwelling has been altered over the years but the main structure is marked by wooden floors. From the architecture of the structure it is clear that the house is older than 60 years. This is confirmed by a study of archival maps therefore the structure is protected by legislation.

The lime kilns exact date is unknown, how ever the mine seized operations around 1940. Archival maps did not indicate the presence of the lime kilns but a remarkable resemblance in architecture can be found with the 1907 kilns of the Irene Lime works (Figure 1). This is one of the best preserved examples of kilns in Gauteng and is also protected by legislation.



Figure 6: *Historical dwelling viewed from the west*



Figure 7: *Historic Lime Kilns*

**6.1.2 An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 3(3) of the National Heritage Recourses Act 1999 (Act No 25 of 1999).**

The site is of medium significance and is graded Grade GP.A

This site is classified based on evaluation of the National Heritage Recourses Act 1999 (Act No 25 of 1999)

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- Section 3(3)(f) - its importance in demonstrating a high degree of creative or technical achievement at a particular period.



The impact on the site is seen as moderate.

***Impact Evaluation***

Impact	Impact Significance	Heritage Significance	Certainty	Duration	Mitigation
Negative	Low significance	Grade GP.A	Possible	Short term	C

## **7. ASSUMPTIONS AND LIMITATIONS**

Due to the nature of cultural remains that occur, in most cases, below surface, the possibility remains that some cultural remains may not have been discovered during the survey. Although MATAKOMA-ARM surveyed the area as thorough as possible, it is incumbent upon the developer to inform the relevant heritage agency should further cultural remains be unearthed or laid open during the process of development.

## **8. LEGAL AND POLICY REQUIREMENTS**

In areas where there has not yet been a systematic survey to identify conservation worthy places, a permit is required to alter or demolish any structure older than 60 years. This will apply until a survey has been done and identified heritage resources are formally protected.

Archaeological and palaeontological sites, materials, and meteorites are the source of our understanding of the evolution of the earth, life on earth and the history of people. In the new legislation, permits are required to damage, destroy, alter, or disturb them. People who already possess material are required to register it.

The management of heritage resources are integrated with environmental resources and this means that before development takes place heritage resources are assessed and, if necessary, rescued.

In addition to the formal protection of culturally significant graves, all graves, which are older than 60 years and are not in a cemetery (such as ancestral graves in rural areas), are protected. The legislation protects the interests of communities that have interest in the graves: they may be consulted before any disturbance takes place.

The graves of victims of conflict and those associated with the liberation struggle will be identified, cared for, protected and memorials erected in their honour.

Anyone who intends to undertake a development must notify the heritage resource authority and if there is reason to believe that heritage resources will be affected, an impact assessment report must be compiled at the developer's cost. Thus developers will be

able to proceed without uncertainty about whether work will have to be stopped if a heritage resource is discovered.

According to the National Heritage Act (Act 25 of 1999 section 32) it is stated that:

An object or collection of objects, or a type of object or a list of objects, whether specific or generic, that is part of the national estate and the export of which SAHRA deems it necessary to control, may be declared a heritage object, including –

- objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects, meteorites and rare geological specimens;
- visual art objects;
- military objects;
- numismatic objects;
- objects of cultural and historical significance;
- objects to which oral traditions are attached and which are associated with living heritage;
- objects of scientific or technological interest;
- books, records, documents, photographic positives and negatives, graphic material, film or video 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), or in a provincial law pertaining to records or archives; and
- any other prescribed category.

If it is necessary to refer to any of the above-mentioned objects, the National Heritage Act (Act 25 of 1999 Sections 31-38) is included in Appendix 2.

Under the National Heritage Resources Act (Act No. 25 of 1999), provisions are made that deal with, and offer protection, to all historic and pre-historic cultural remains, including graves and human remains.

- Graves younger than 60 years fall under Section 2(1) of the Removal of Graves and Dead Bodies Ordinance (Ordinance no. 7 of 1925) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the National Department of Health and the relevant Provincial Department of Health and must be submitted for final approval to the Office of the relevant Provincial Premier.

This function is usually delegated to the Provincial MEC for Local Government and Planning, or in some cases the MEC for Housing and Welfare. Authorisation for exhumation and reinterment must also be obtained from the relevant local or regional council where the grave is situated, as well as the relevant local or regional council to where the grave is being relocated. All local and regional provisions, laws and by-laws must also be adhered to. In order to handle and transport human remains the institution conducting the relocation should be authorised under Section 24 of Act 65 of 1983 (Human Tissues Act).

- Graves older than 60 years, but younger than 100 years fall under Section 36 of Act 25 of 1999 (National Heritage Resources Act) as well as the Human Tissues Act (Act 65 of 1983) and are the jurisdiction of the South African Heritage Resource Agency (SAHRA). The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of Act 25 of 1999) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation. If the grave is not situated inside a formal cemetery but is to be relocated to one, permission from the local authority is required and all regulations, laws and by-laws set by the cemetery authority must be adhered to.

## 9. ASSESSMENT AND RECOMMENDATIONS

*A locality map is provided in **Annexure A***

During the survey 4 structures of cultural significance were identified. These four historical structures are grouped and marked as Site **MHC001** and **MHC002**.

The present owners of the property have gone to great lengths to preserve these known heritage sites and indicated that the proposed development will not impact on these sites.

These sites are protected by legislation and in complying with legislation and best practise it is recommended that:

- A Heritage Management plan must be drawn up for these sites to ensure the responsible future management of these sites.
- If any alteration or destruction of these sites is foreseen a destruction permit will be needed from SAHRA. To apply for a destruction permit a full Archival study must be conducted on the sites and a conservation architect must assess the significance of the structures.
- Before development starts especially where bedrock is to be affected a letter of exemption must be obtained from a Palaeontologist.

If these recommendations are adhered to there is from a Heritage Perspective no reason why the development can not commence.

### **General**

If during construction any possible finds are made, the operations must be stopped and a qualified archaeologist be contacted for an assessment of the find.

## **10. LIST OF PREPARES**

Jaco van der Walt, BA (Hon) Archaeology (Wits)

## **11. REFERENCES**

### **11.1 ARCHAEOLOGICAL PAPERS**

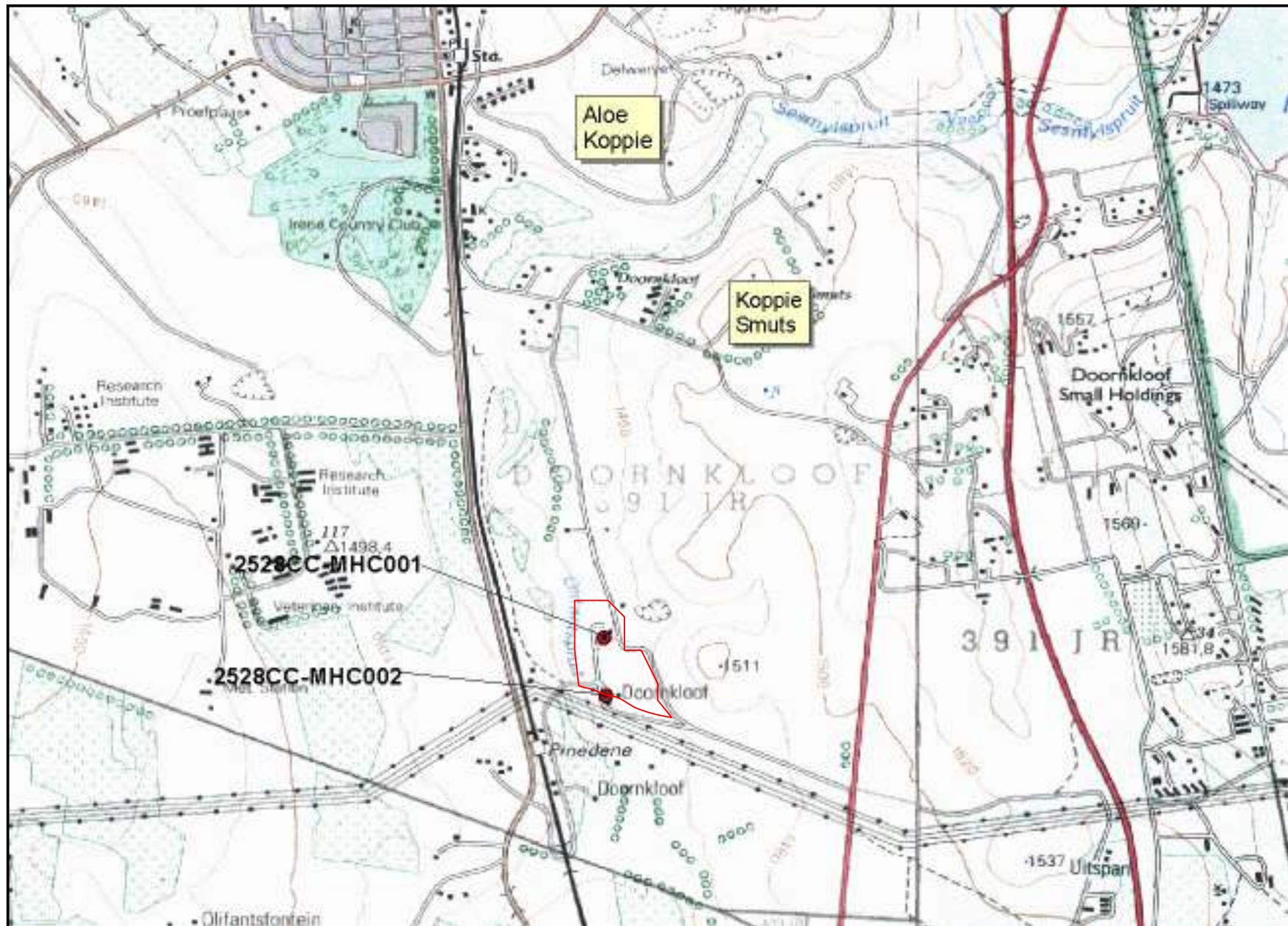
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### **11.2 CULTURAL HERITAGE PAPERS**

- Australia ICOMOS. The Burra Charter (The Australian ICOMOS charter for places of cultural significance). 2002.
- Standard and Guidance for Archaeological Desk-Based Assessment. 1994.
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# **ANNEXURE A: Locality Map**

DOORNKLOOF PORTION 159 - ARCHAEOLOGICAL IMPACT ASSESSMENT







 **ECO** assessments

**Figure 1: Aerial Locality Map**

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DOORNKLOOF PORTION 159 - ARCHAEOLOGICAL IMPACT ASSESSMENT

