PHASE I HERITAGE IMPACT ASSESSMENT

PROPOSED VLAKVARKFONTEIN COLLIERY EXPANSION PROJECT

Date: 10 May 2011

Version: 1

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Reg No 2003/008940/07

ACKNOWLEDGEMENT OF RECEIPT

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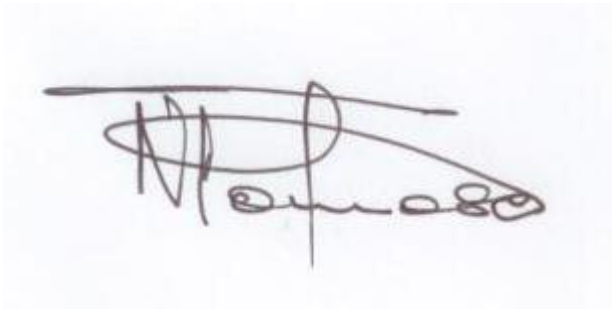

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Executive Summary

PGS Heritage & Grave Relocation Consultants was appointed by Ntshovelo Mining Resources (Pty) Ltd to undertake a Heritage Impact Report that forms part of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the Proposed Vlakvarkfontein Colliery Expansion Project, on the farm Vlakvarkfontein 213-IR in Delmas Mpumalanga Province, South Africa.

Heritage resources are unique and non-renewable and as such any impact on such resources must be seen as significant.

Eight heritage resources sites were located during the physical survey of the study area, they include: 5 built environment and landscape sites (**VVF01** to **VVF04**and **VVF08**) and 3 cemeteries of various sizes (**VVF05** to **VVF07**).

The archival and historical background search of the study area yielded a variety of results which include:

- The different uses of the farm Vlakvarkfontein 213-IR (Vlakvarkfontein 101 and portion of Mooimeisjesfontein 113 in old maps) in historic times. These include agricultural and economical activities (e.g. the store and mine activities as identified in the archival search and located during physical survey of the study area) as well as political activities (e.g. skirmish as argued by Birkholtz (2008)).
- Current mining and agricultural activities.
- Long occupation of the farm Vlakvarkfontein 213-IR by different groups is also attested to by the different built environment and landscape features and structures.

The findings of the impact evaluation on the sites from the mining activities concluded:

- The farmsteads and associated infrastructure will potentially be impact by mining activities in future, however the impact on these sites (**VVF02-04& VVF08**),based on the current mining layout is rated as *low*.
- The current and proposed mining activities will have a direct *negative very high* impact on two of the cemeteries (**VV05 -06**).
- The third cemetery **VVF07**, will potentially be impact by mining activities in future, however the impact on this site, based on the current mining layout, is rated as *low*.

In conclusion the study area proves to be a rich cultural landscape based on a variety of activities and events that have taken place in the farm Vlakvarkfontein 213-IR both in the past and in the present.

The following recommendations are made:

- A grave relocation process for sites **VVF05** and **VVF06** is recommended as a mitigation and management measure. This will involve necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA.
- If the mining layout changes from the proposed expansion, sites **VVF02**, **VVF03**, **VVF04 and VVF08** should be properly documented and recorded by a qualified heritage specialist before a destruction permit can be applied for with the SAHRA.
- It is further recommended that an overall heritage management plan (HMP) be developed for each of the heritage sites (**VVF02-08**) identified that will address short, medium and long term goals.

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Abbreviations

Abbreviations	***Description***
AIA	Archaeological Impact Assessment
ASAPA	Association of South African Professional Archaeologists
CRM	Cultural Resource Management
DEA	Department of Environment
DWA	Department of Water Affairs
EIA practitioner	Environmental Impact Assessment Practitioner
EIA	Environmental Impact Assessment
ESA	Early Stone Age
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&AP	Interested & Affected Party
LSA	Late Stone Age
LIA	Late Iron Age
MSA	Middle Stone Age
MIA	Middle Iron Age
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PGS	PGS Heritage & Grave Relocation Consultants
PHRA	Provincial Heritage Resources Agency
PSSA	Palaeontological Society of South Africa
ROD	Record of Decision
SADC	Southern African Development Community
SAHRA	South African Heritage Resources Agency
VVF	Vlakvarkfontein

Terms & Definition

Archaeological resources

This includes:

i. material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures;

ii. rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
iii. wrecks, being any vessel or aircraft, or any part thereof which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
iv. features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

Cultural significance

This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance

Development

This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in the change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

i. construction, alteration, demolition, removal or change in use of a place or a structure at a place;
ii. carrying out any works on or over or under a place;
iii. subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
iv. constructing or putting up for display signs or boards;
v. any change to the natural or existing condition or topography of land; and
vi. any removal or destruction of trees, or removal of vegetation or topsoil

Heritage resources

This means any place or object of cultural significance

1. INTRODUCTION

PGS Heritage & Grave Relocation Consultants was appointed by ContiCoal Vlakvarkfontein Colliery to conduct a Phase 1 Heritage Impact Assessment study for Vlakvarkfontein Colliery on the Farm Vlakvarkfontein 213-IR in Delmas, Mpumalanga Province , South Africa, as part of the Environmental Impact Assessment and Environmental Management Plan.

2. PROJECT DESCRIPTION

2.1Location

The Farm Vlakvarkfontein 213 IT is located in Delmas in Mpulanga Province, South Africa (***Figure 1***). It is situated 13km from Kendal Power Station to the east. Geographical it is positioned at latitude -26.0833333^{o}and longitude 28.883333^{o}.). It falls south of Abor Station, 12km from Kendal Station and east of Argent Station (***Figure 2***). The site is situated south of the railway-line linking Johannesburg and Middelburg and is ensconced between three main roads. The one in the north liking Johannesburg, Benoni, Pretoria and Middelburg and the other two joining the one from Johannesburg to Middelburg lead to Standerton in the south ***(Figure 2***).

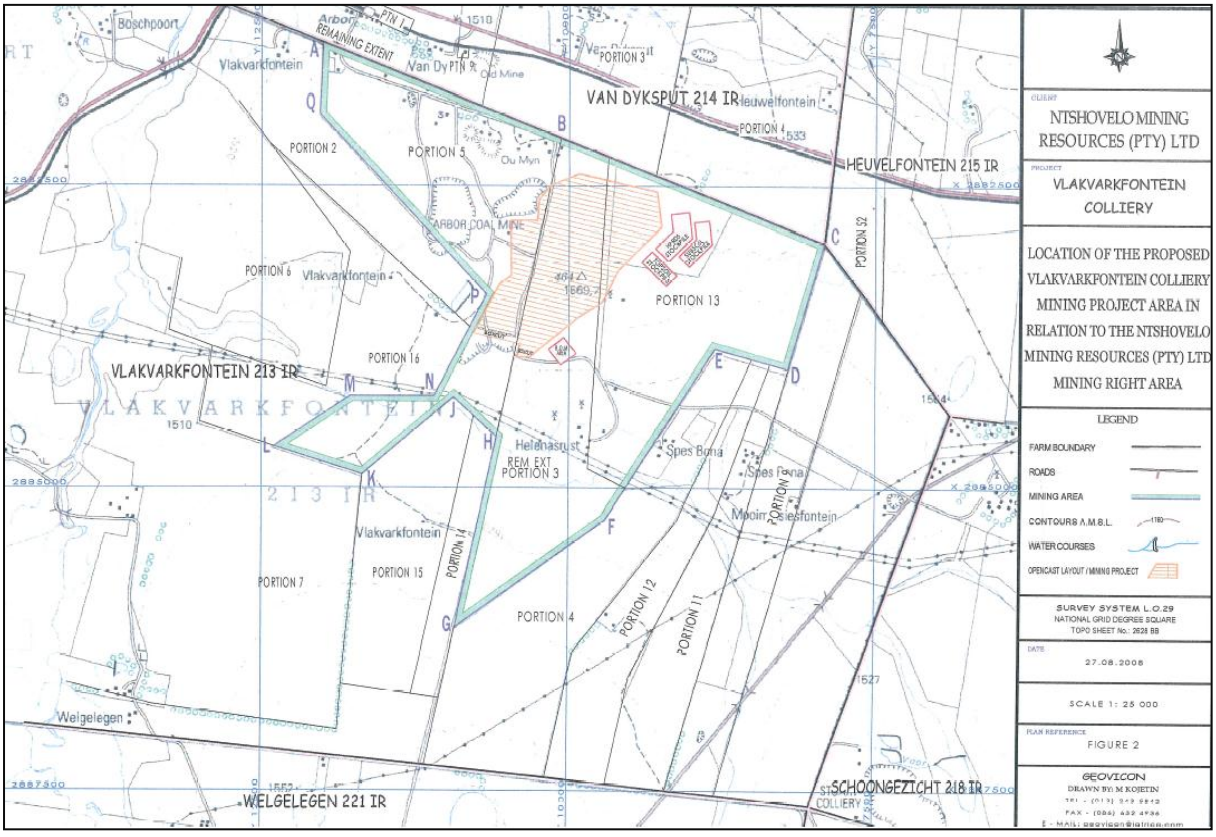


Figure 1 - Maps showing the size of the mine property, Vlakvarkfontein Colliery. © ContiCoal.

Figure 2 - Farm Vlakvarkfontein 101 (Mooimeisjesfontein – other old name of Vlakvarkfontein 213 IR) in relation to other farms, railway line to from Johannesburg to Middelburg and various main roads. ©Map Archives, Cullen Library, University of the Witwatersrand, Johannesburg, South Africa

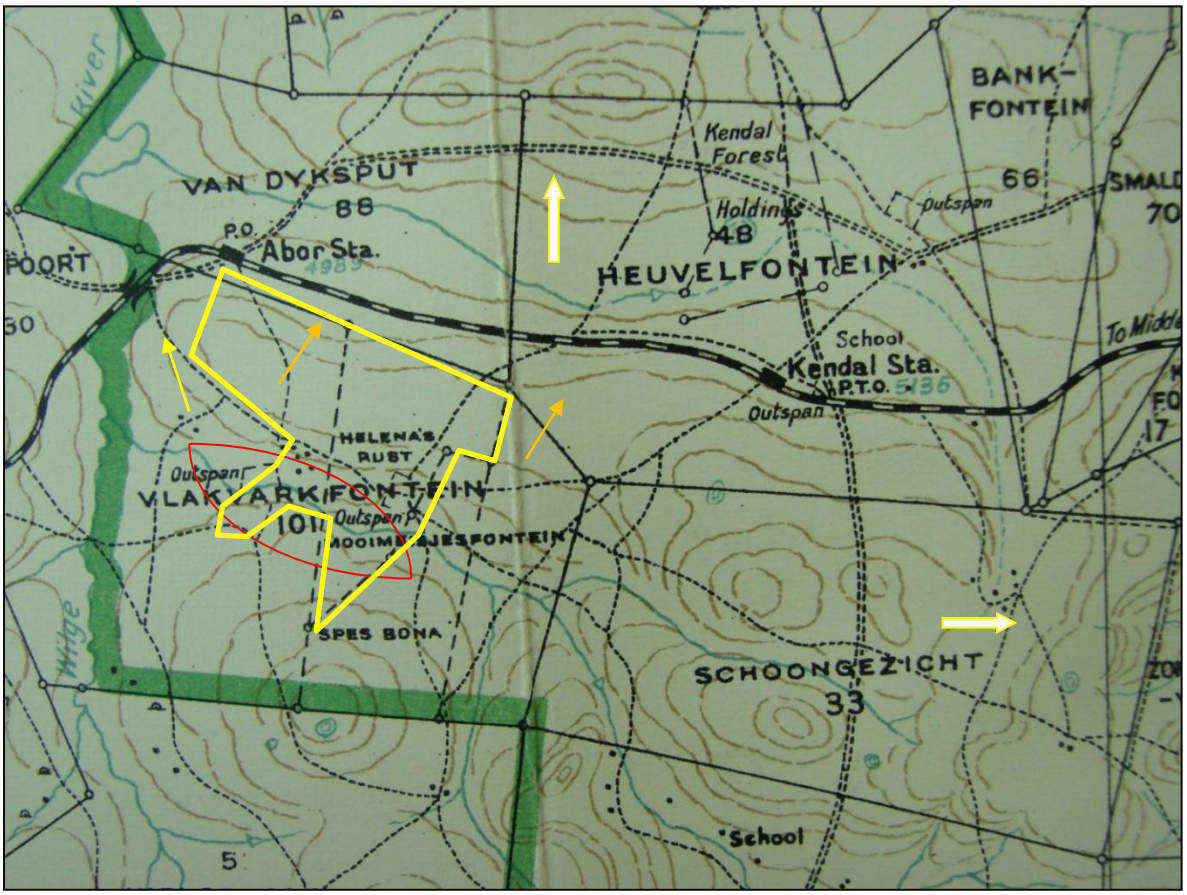


Figure 3 - 1928 Map showing Farm Vlakvarkfontein. ©Map Archives, Cullen Library, University of the Witwatersrand, Johannesburg, South Africa.

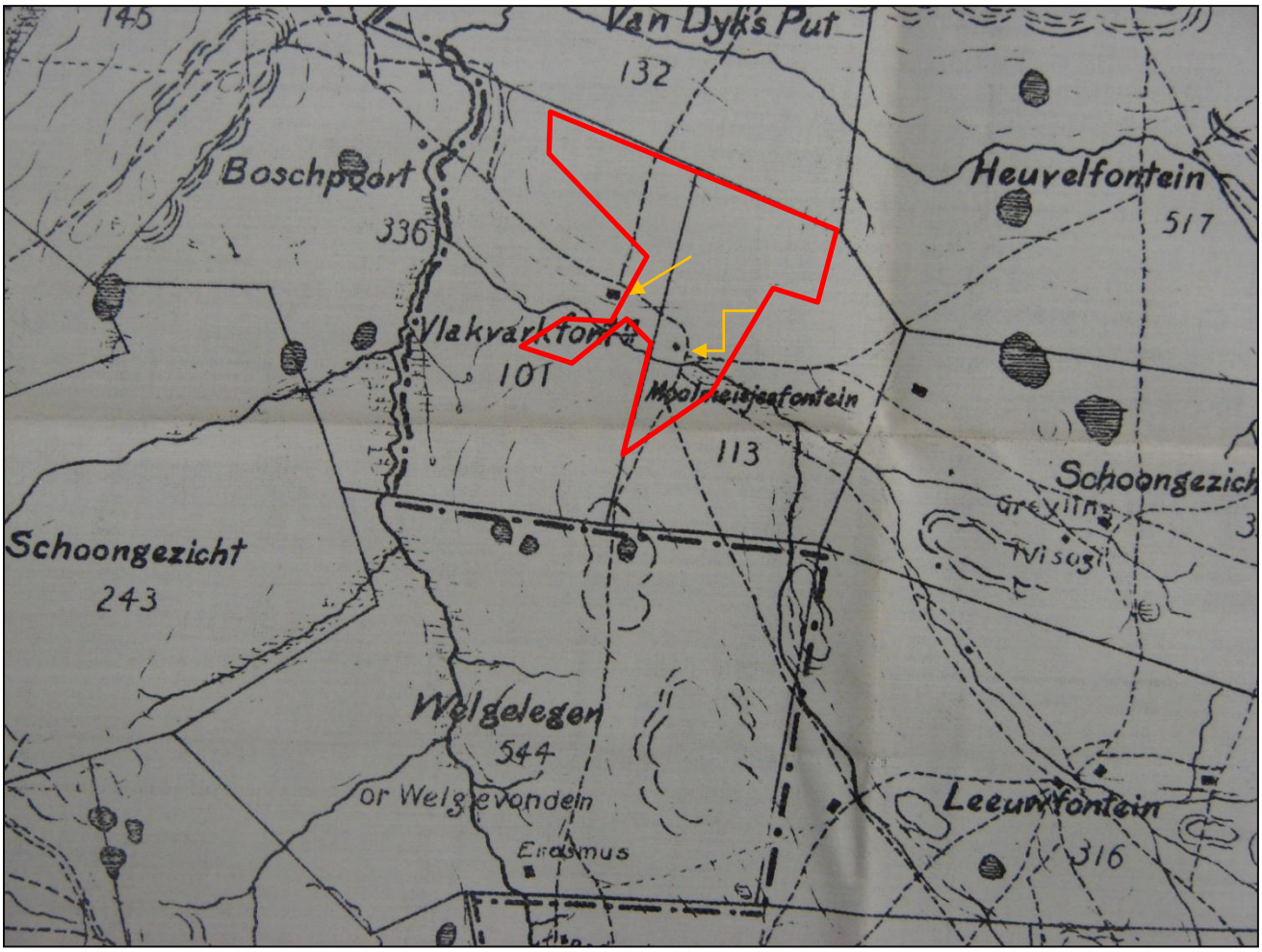


Figure 4 - Vlakvarkfontein & Mooimeisjesfontein in 1901. Note, there are only 2 structures in the property; one in the farm Vlakvarkfontein and the other in the farm Mooimeisjesfontein to the east. ©Map Archives, Cullen Library, University of the Witwatersrand, Johannesburg, South Africa

2.2 Methodology

This report, including all the relevant documentation (maps, tables and figures) is compiled by PGS for ContiCoal Vlakvarkfontein Colliery located on farm Vlakvarkfontein 213 IT as stipulated in the NHRA (no 25 of 1999), the NEMA (no 107 of 1998) and the MPRDA (28 of 2002). The study process involved three methodological steps: literature review, physical survey, data collation and report writing.

- Step I – ***Literature Review***:

  This involved a desktop study, archival and literature review (archaeological and heritage records) of the study area and its surrounding. The objective for conducting this form of study was to gather information about existing archaeological and heritage resources sites within the study area and its surrounding.

- Step II – ***Physical Survey***:

  A physical survey of the study area was conducted on foot and vehicle through the demarcated mine property by two qualified archaeologists in April 2011. The objective was to identify, locate and document heritage resources sites (archaeological, built environment & landscape and burial grounds & graves) within and adjacent to the demarcated mine property and proposed mine expansion footprint.

- Step III – ***Data Collection, Collation & Report Writing***:

  This involved recording the identified sites in the landscape using GPS (Global Position System), documenting them through site description process and photography. This was followed by collation of the data and information gathered in Step I and II and assessment of the identified heritage resources sites in terms of archaeological impact assessment criteria mapping them and report writing as well as making recommendations.

2.3 Physical Survey

2.3.1Site Survey

A controlled-exclusive physical survey of the site took place on 4 April2011 and covered an area of approximately 200 hectares. The surveyed area covers the Remaining Extent of Portion 3, Portion 13 and Portion 5 of the farm Vlakvarkfontein 213-IR as marked by the mine property boundary (***Figure 1***). The process involved walking the extent of the site on foot and traversing it on a vehicle to spot any unusual features on the landscape and uncultivated plots of lands in cultivated areas of the farm.

2.3.2 Description of the Affected Environment

The study site is highly disturbed from various *anthropogenic* activities that have taken place in Vlakvarkfontein 101 IT and portions of Mooimeisjesfontein which were, in the past, transferred to Vlakvarkfontein 213 IT. These activities include among others: agriculture (e.g. cattle farming), mining (e.g. coal mining) and settlement (e.g. farmsteads, shops, grave burials etc). Mining activities in the property date back as far as 1903 (**Figure 13 *and* Figure 14**). North-west, south and east of the study area, and outside the study area, are old mines (***Figure 4***).Within the study area and north of the current mining activities are old mines and a village settlement. North of the village and study area as drawn down in the map (***Figure 1***) is a railway line and old road which start to appear in the 1913 Map and its revised version of 1928 (***Figure 3***).

Current activities in the study area include mining (***Figure 1***) and agriculture. The eastern, south-eastern and western portions of the site are used for agricultural activities (***Figure 5***). The remaining extent of the property,

mainly the southern part is dominated by wetlands and a small stream/tributary that cuts through the remaining medium size plantation forest of eucalyptus trees on a high rise slope (***Figure 6***). The central parts of the property, east of the mining activities are mainly covered in long thatch grass species (***Figure 7***). A number of access and exit roads crisscross the farm, in the past there was a large number of them (***Figure 3 and 4***).

2.3.3 Aspects Regarding Visibility & Constraints

Due to the nature of archaeological cultural remains (artefacts) and sites mostly occurring below the surface, and without subtracting from heritage sites identified through extensive survey conducted at the site, the identified archaeological and heritage resources sites do not necessarily represent all archaeological sites located on the property. The subterranean nature of archaeological site and features and vegetation cover (both agricultural and natural) are among some of the reasons for this. Therefore, should any archaeological or heritage resources sites and features currently not included in the current heritage survey inventory be located or unearthed during mine expansion, work needs to stop and an immediate archaeologist be called to the site to observe the finds.

To mitigate this possibility aerial photographs, 1:250,000 and 1:50,000 maps of the area were consulted and literature on the area was studied before undertaking the survey. This also included a thorough archival search of the area to identify highly sensitive spots; the purpose was to identify topographical areas of possible historic and pre-historic activity. All sites discovered both inside and bordering the proposed development areas were plotted on 1:50 000 maps and their GPS co-ordinates noted. In addition digital photographs were used to document all the sites.

The same was done for the identification of built environment and landscape features as well as possible areas that may contain burial grounds and graves.

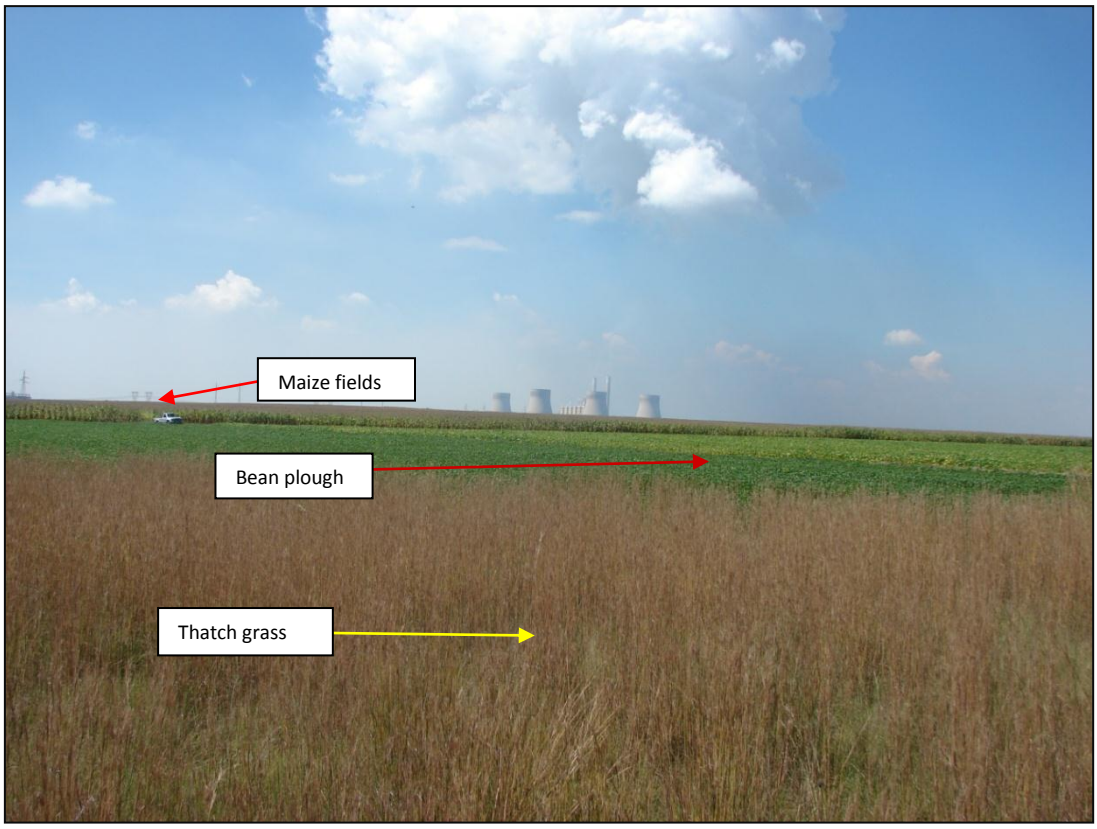


Figure 5 - Eastern portion of the study site dominated by agricultural activities. Note Kedal Power Station in the background. ©Tomose @ PGS

Figure 6 - Southern parts of the site covered in wetlands and a tributary that cuts across the farm. ©Tomose @ PGS

Figure 7 - Central parts of the farm covered in thatch grass. Note the remaining medium size forest in the background on a high rise slope and a truck and high rise soil dumps -indicative of mining activities above the forest trees. ©Tomose @ PGS

3. LEGISLATION REQUIREMENTS

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by the following legislation:

- National Environmental Management Act (NEMA) Act 107 of 1998;
- National Heritage Resources Act (NHRA) Act 25 of 1999;
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002; and
- Development Facilitation Act (DFA) Act 67 of 1995.

The following sections in each Act refer directly to the identification, evaluation and assessment of cultural heritage resources.

- National Environmental Management Act (NEMA) Act 107 of 1998
- Basic Environmental Assessment (BEA) – Section (23)(2)(d)

- Environmental Scoping Report (ESR) – Section (29)(1)(d)
- Environmental Impacts Assessment (EIA) – Section (32)(2)(d)
- Environmental Management Plan (EMP) – Section (34)(b)
- National Heritage Resources Act (NHRA) Act 25 of 1999
- Protection of Heritage resources – Sections 34 to 36; and
- Heritage Resources Management – Section 38
- Minerals and Petroleum Resources Development Act (MPRDA) Act 28 of 2002
- Section 39(3)
- Development Facilitation Act (DFA) Act 67 of 1995
- The GNR.1 of 7 January 2000: Regulations and rules in terms of the Development Facilitation Act, 1995. Section 31.

4. AREA BACKGROUND

4.1 Delmas

Delmas is a small farming town situated east of Johannesburg in Mpumalanga Province. Most of the farm in the area of Delmas specialise in maize farming and production. Other farms in the area specialise in wheat, potatoes, chicken and beans production. Other than agricultural activities, Delmas is also known for its coal mines - collieries dating back as far as the 1800s and early 1900's.

4.2 Archaeological and Historical Significance

Archival Search and Findings

Two archival search processes took place and they include *Map Archives* (***Figure 2, 3, 4***) and *Deeds and other Records*. The two archival search processes yielded the following findings about Vlakvarkfontein 213 - IR.

4.2.1 Map Archives

1903 Major Jackson Series Sheet shows the following about the study area and its surrounding:

- Two structures are depicted – possible early farmstead and the store (***Figure 4***– red arrows). The structures are definitely over 60 years old; however, only a store was located during the physical survey.
- On the southern boundary of the study area 3 mining activities are shown (2 between Vlakvarkfontein 101 and Welgelegen 544 and 1 between Mooimeisjesfontein 113 and Welgelegen 544). Other mining activities are shown in Boshpoort 336. This shows that mining activities were already in existence in the area before the survey and drawing of the map in 1903.

- A number of roads enter through Vlakvarkfontein 101 and splits through in Mooimeisjesfontein 113.

1913, 1928 (Revision) 1: 250, 000 Map reveals the following about the study area:

- Eight structures are depicted in a close cluster in Vlakvarkfontein 101 (***Figure 3***– red oval shape)
- A portion of Mooimeisjesfontein has outspan – indicative of presence of mining activities in the study area. Mooimeisjesfontein 113 in written in lower case than Vlakvarkfontein 101 which is in large case this is common when portions of one farm or total farm has be transferred to another farm or changed names. In the case this indicates that portions of Mooimeisjesfontein 113 were transferred to Vlakvarkfontein 101 (*see* Deeds and other Records search below 4. 2. 2)
- There is inclusion of names, *Helena Rust* and *Spes Bona* in the maps- *Spes Bona* is farmstead in the south-east boundary of the study site and falls outside the study area.
- A railway line with railway crossing and Abor Station are shown north of the study area. Far north-east of the study area Kendal Station – the railway line joining Benoni and Middelburg and was constructed and completed just before 1913.
- North of the railway is a main road also joining Benoni and Middelburg

4.2.2 Farm Ownership and Other Related Records

The archival search for farm ownerships and the different activities that took place in the farm Vlakvarkfontein 101 and Mooimeisjesfontein 113 reveal the following about the two farms:

In September 1903 an ***Application for Compensation*** for £650 was launched with the **Central Judicial Commission**, Pretoria, by Mr George Schulze (***Figure 8***). The compensation was for property taken from his shop situated in Vlakvarkfontein 101. In the Application Mr Schulze states that he had fully stocked the store in 1899 before leaving for Natal in 1899 during events or episodes leading to the outbreak of the II South African War (Anglo-Boer War). When he left Vlakvarkfontein for Natal he entrusted the store to a gentlemen referred in the application as Mr Harvey. On his return from Natal after the war in 1903 he found out that some of his store contents were taken by the Boer Commandos and British Soldiers during the war without any compensation for them (**Figure 9-*11***). The contents in the compensation inventory included among other things:
Clothes (e.g. Shorts, jackets, hats) and canned food stuffs (***Figure 12***)

During the physical survey of the study area a store was located on the northern parts of Vlakvarkfontein 213- IR. The structure also appears in the 1903 ***Major Jackson Series Map*** (***Figure 4***) and the 1913 and 1928(Revision) of the 1:250,000 map of the area (***Figure 2 and 3***). This gives it a relative date of 1890s based on the information provided in the archives that it was last stocked in 1899 by Mr George Schulze just before the war.

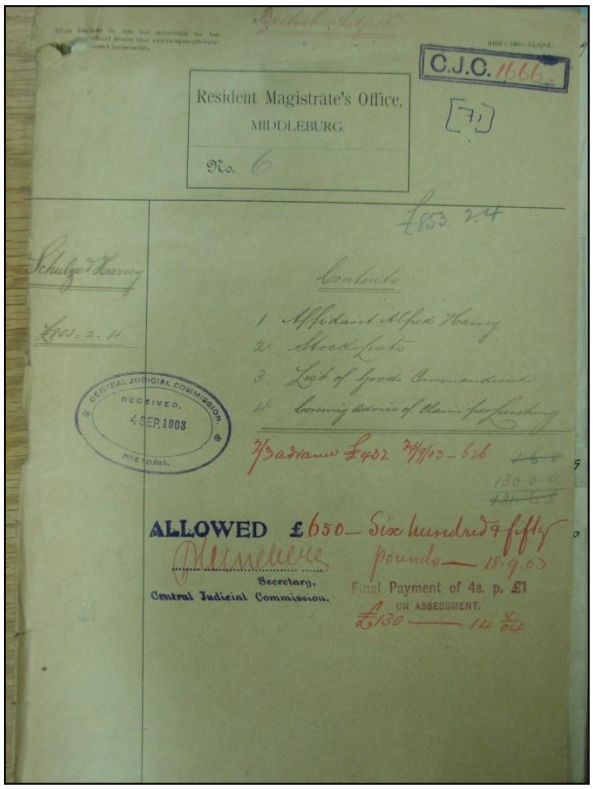


Figure 8 - Cover for application for compensation by Schulze. © National Archives South A, Pretoria.

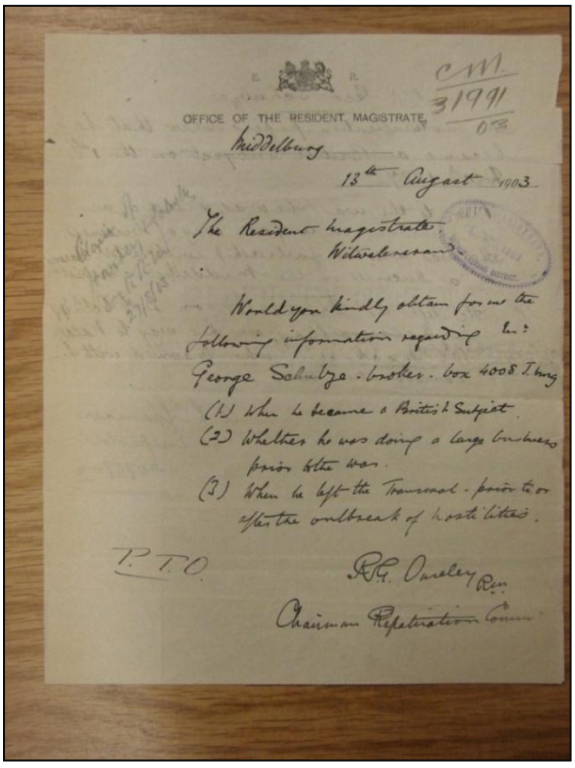
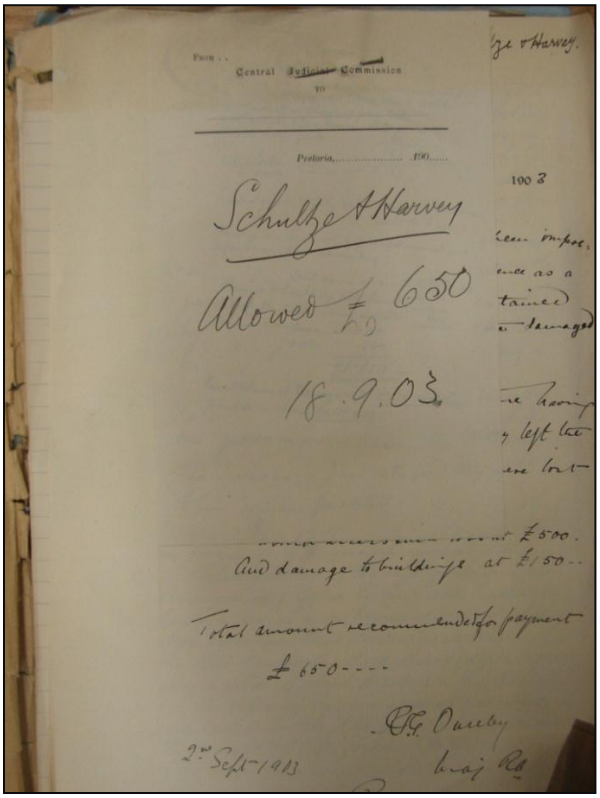


Figure 9 - Communication letter between Mr Schulze & the Chairman representing the Commission. © National Archives South A, Pretoria.

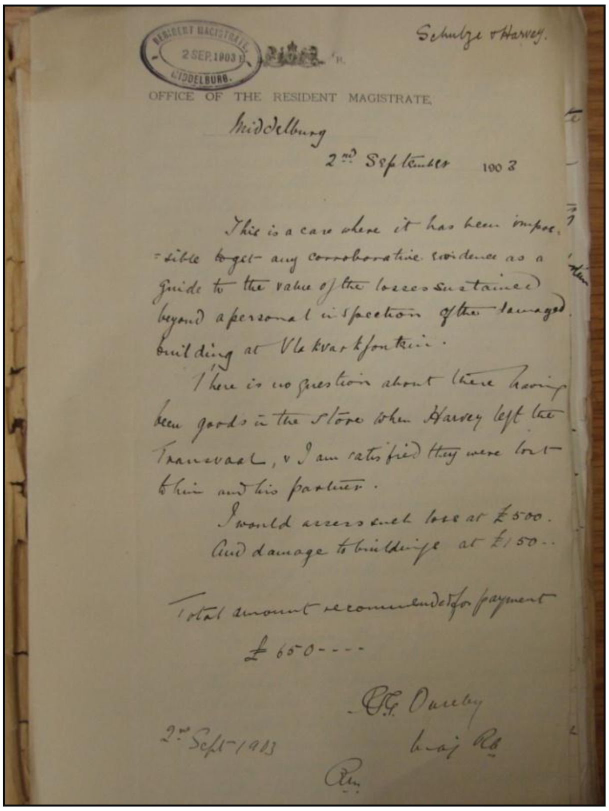


From...
Central Judicial Commission
to
Pretoria, ... 190....

Schulze & Harvey
Allowed £ 650
18.9.03

I would assess such loss at £500.
And damage to buildings at £150..
Total amount recommended for payment
£ 650----
G.G. Ouseley
2nd Sept 1903 Maj RE

Figure 10 - Communication letter from the Chairman. Note the surname Schulze & Harvey in the letter. © National Archives South A, Pretoria.



RESIDENT MAGISTRATE
2 SEP 1903
MIDDELBURG

Schulze & Harvey.

OFFICE OF THE RESIDENT MAGISTRATE,
Middelburg
2nd September 1903

This is a case where it has been impos-sible to get any corroborative evidence as a guide to the value of the losses sustained beyond a personal inspection of the damaged building at Vlakvarkfontein.

There is no question about there having been goods in the store when Harvey left the Transvaal, & I am satisfied they were lost to him and his partner.

I would assess such loss at £500.
And damage to buildings at £150..

Total amount recommended for payment
£ 650----

G.G. Ouseley
2nd Sept 1903 Maj RE

Figure 11 - Chairman's communication letter on Mr Schulze application for compensation. © National Archives South A, Pretoria.

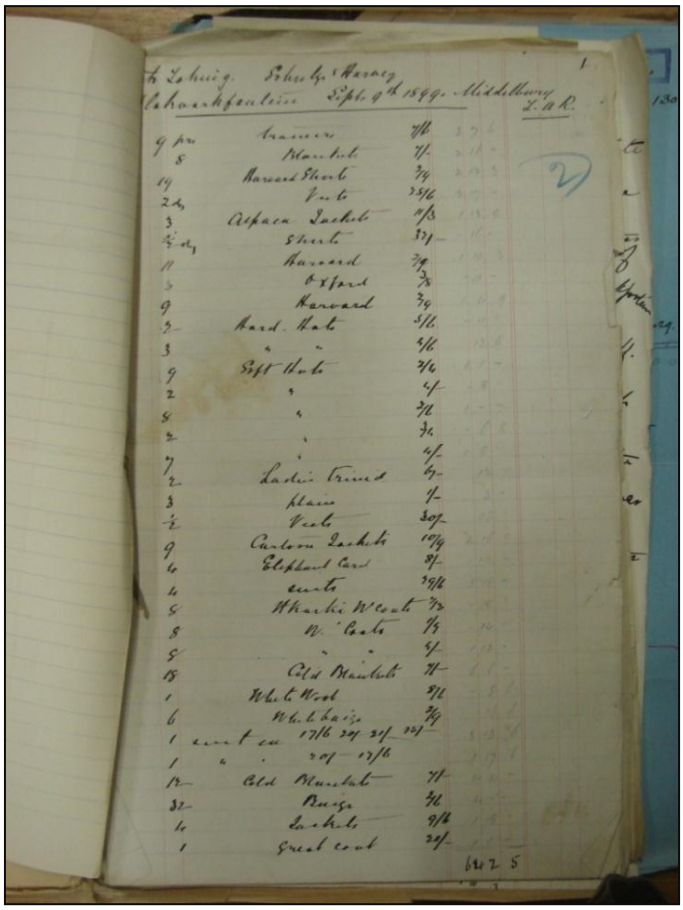


Figure 12 - Loss stock inventory. © National Archives South A, Pretoria.

In December 1903 the Mooimeisjesfontein portion of Vlakvarkfontein No. 101, District Middelburg, was proposed for prospecting, Mining Rights (**Figure 13**). The rights were given for a period of five years on payment of £ 600 by the Office of the Government Mining Engineer, Johannesburg (***Figure 14***). Further payments included:

- A payment £750 for the second year, £1,100 for the third year, £1,600 for the fourth year, and £2,500 for the fifth year with an option to purchase the Mineral Rights for £55,000 (***Figure 14***).

This marks the early formal mining activities in Vlakvarkfontein 101 as indicated in the inclusion of outspan in the 1913, 1:250 000 map (***Figure 2 and 3***).

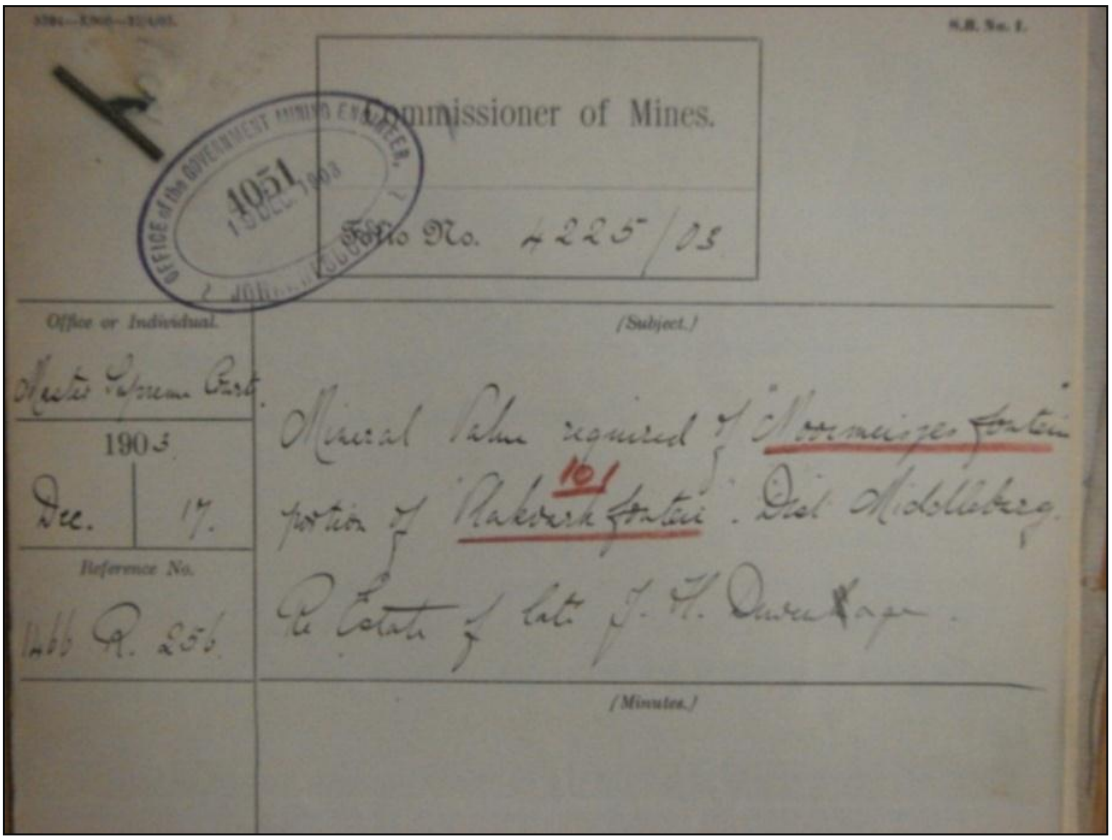
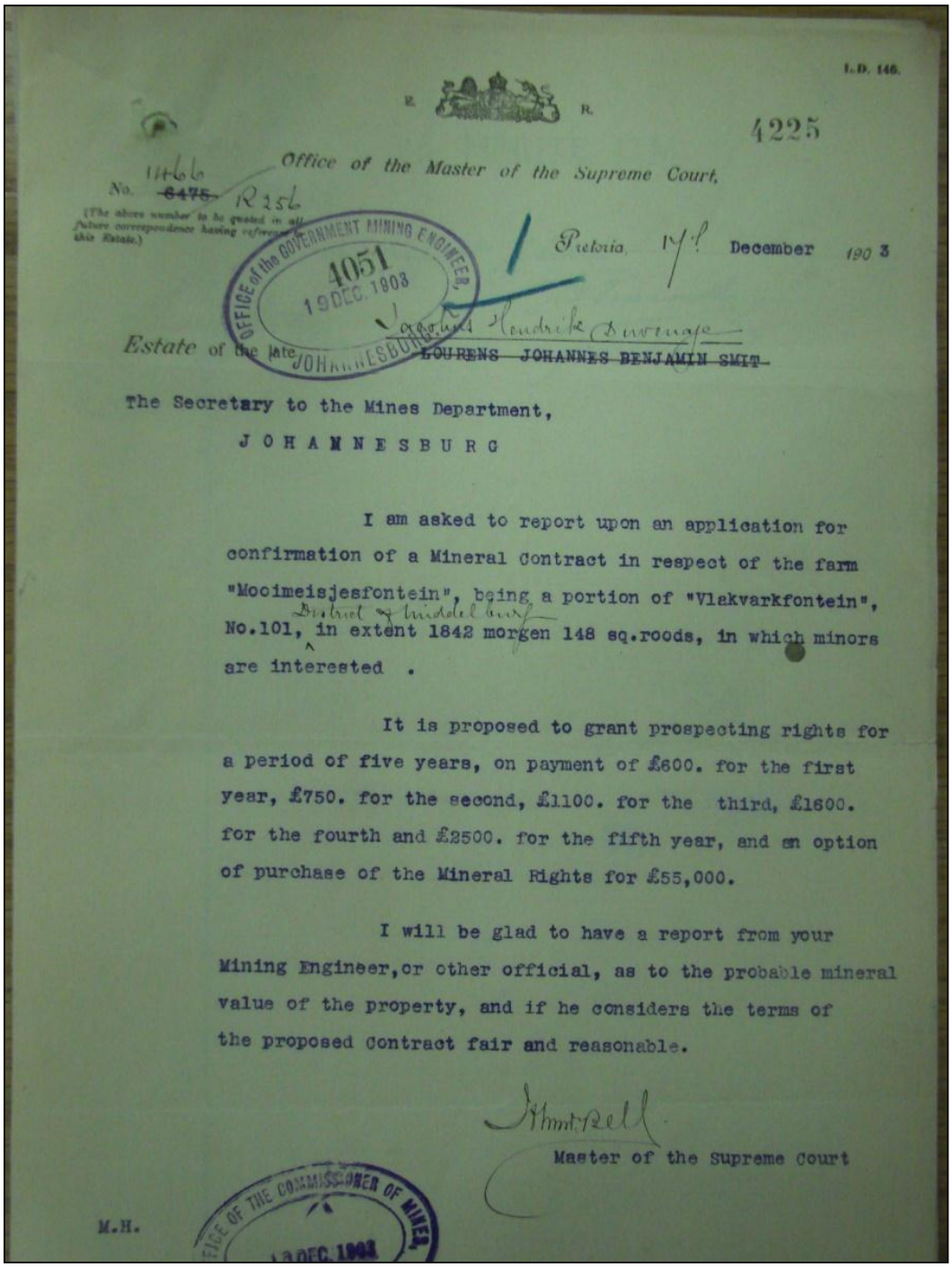


Figure 13 - Cover to the Mineral Application documents. © National Archives South A, Pretoria.

The 1908 records from **Cattle Permit Office**, **Department of Agriculture**, Transvaal shows illegal movement of stock, from farm Vlakvarkfontein 101, Middelburg to Pretoria by Mr C. S Roodt (***Figure 15***). The stock included fifty heads of cattle (***Figure 16 and 17***). According to Mr Roodt explanation of the events, he had moved the cattle to fetch a wagon in Pretoria. The search for title deed of the farm did not yield any fruitful results and it therefore not clear whether Mr Roodt was the owner of the farm or he leased it for cattle farming. But, during the physical survey of the study area, mining area, a big kraal and farmstead were located. This can be taken to suggest that cattle farming once took place at the farm, Vlakvarkfontein 101, and dates back as early as the 1900's.



L.D. 146.

R. R.

4225

Office of the Master of the Supreme Court,

No. ~~6475~~ 11466 R256

(The above number to be quoted in all future correspondence having reference to this Estate.)

Pretoria, 17th December 1903

OFFICE of the GOVERNMENT MINING ENGINEER, 4051 19 DEC. 1903 JOHANNESBURG

Estate of the late ~~LOURENS JOHANNES BENJAMIN SMIT~~ Gerard Hendrik Duvenage

The Secretary to the Mines Department,

J O H A N N E S B U R G

I am asked to report upon an application for confirmation of a Mineral Contract in respect of the farm "Mooimeisjesfontein", being a portion of "Vlakvarkfontein", No.101, District of Middelburg, in extent 1842 morgen 148 sq.roods, in which minors are interested .

It is proposed to grant prospecting rights for a period of five years, on payment of £600. for the first year, £750. for the second, £1100. for the third, £1600. for the fourth and £2500. for the fifth year, and an option of purchase of the Mineral Rights for £55,000.

I will be glad to have a report from your Mining Engineer, or other official, as to the probable mineral value of the property, and if he considers the terms of the proposed Contract fair and reasonable.

J Hmtrell

Master of the Supreme Court

M.H.

OFFICE OF THE COMMISSIONER OF MINES, 19 DEC 1903

Figure 14 - Application letter. © National Archives South A, Pretoria.

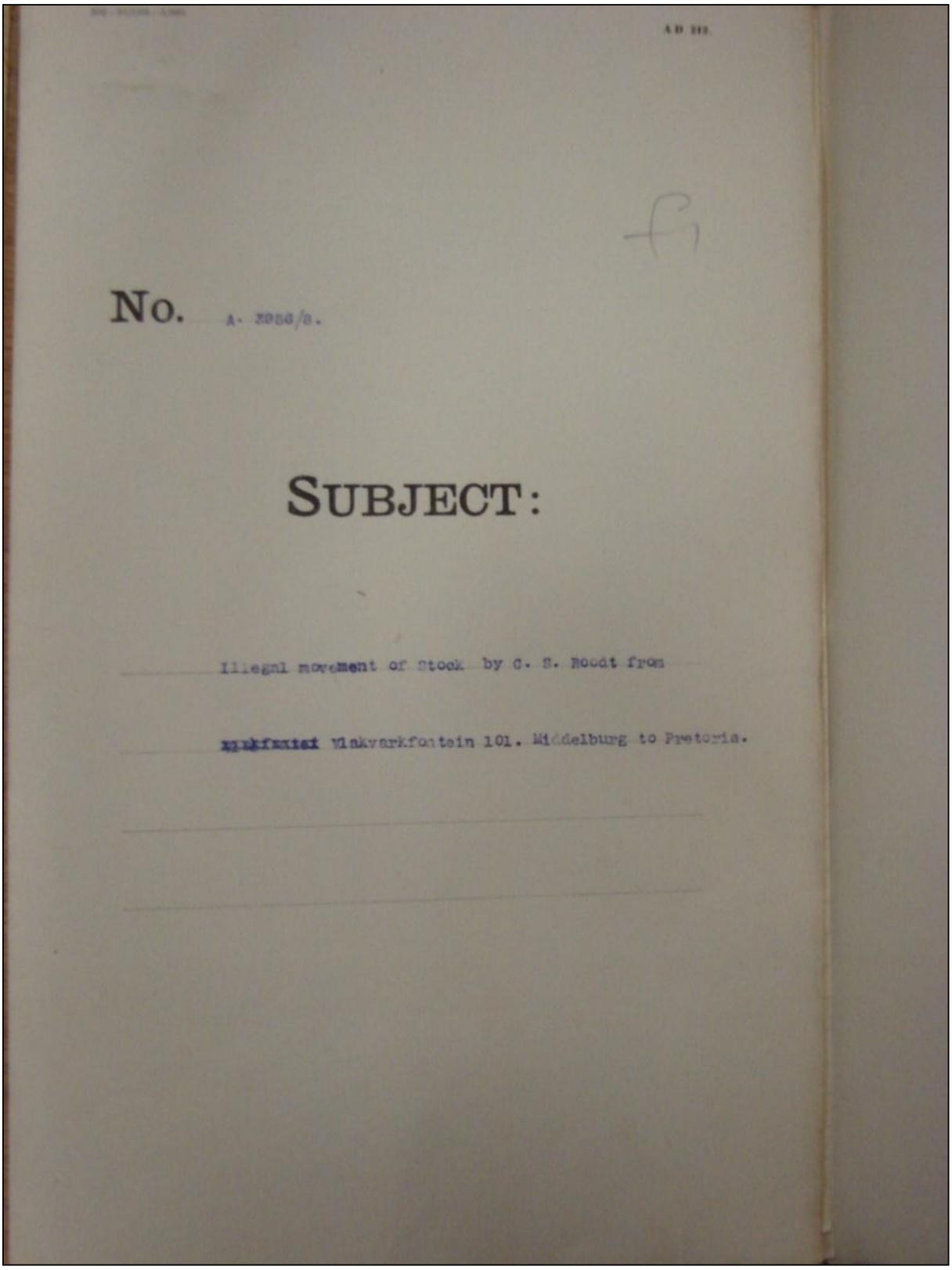
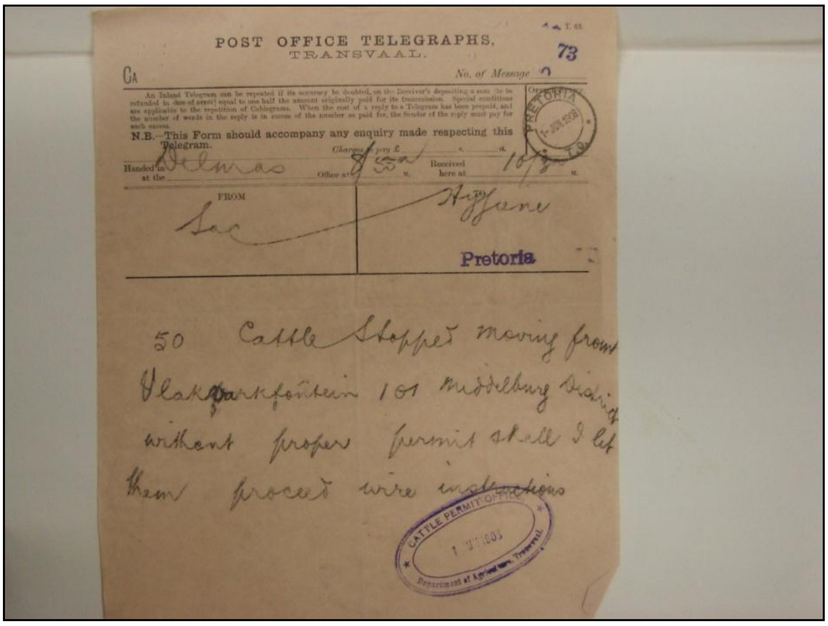


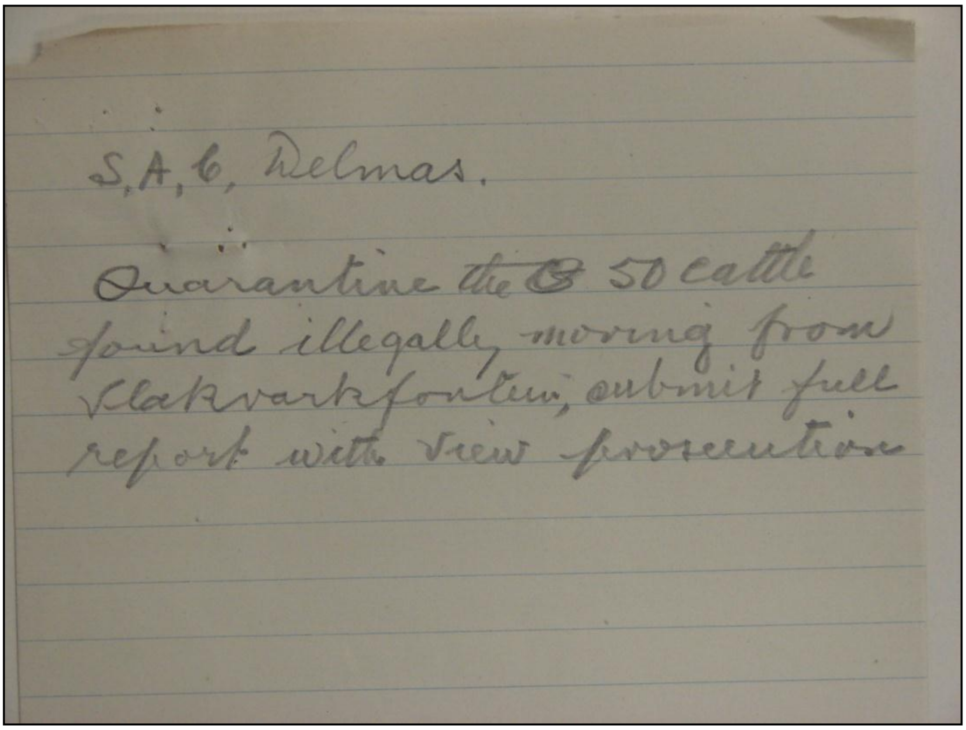
Figure 15 - Cover page to the illegal movement of stock file of the Stock Permit Agriculture Department Transvaal. © National Archives South A, Pretoria.


POST OFFICE TELEGRAPHS.
TRANSVAAL.
73
N.B.—This Form should accompany any enquiry made respecting this Telegram.
Handed in at the Delmas
FROM Sec
Pretoria

50 Cattle Stopped moving from Vlakvarkfontein 101 Middelburg Dist. without proper permit shall I let them proceed wire instructions

CATTLE PERMIT OFFICE
Department of Agriculture, Transvaal

Figure 16 - Telegraph communicating illegal movement of stock by Mr Roodt from Vlakvarkfontein 101© National Archives South Africa, Pretoria.

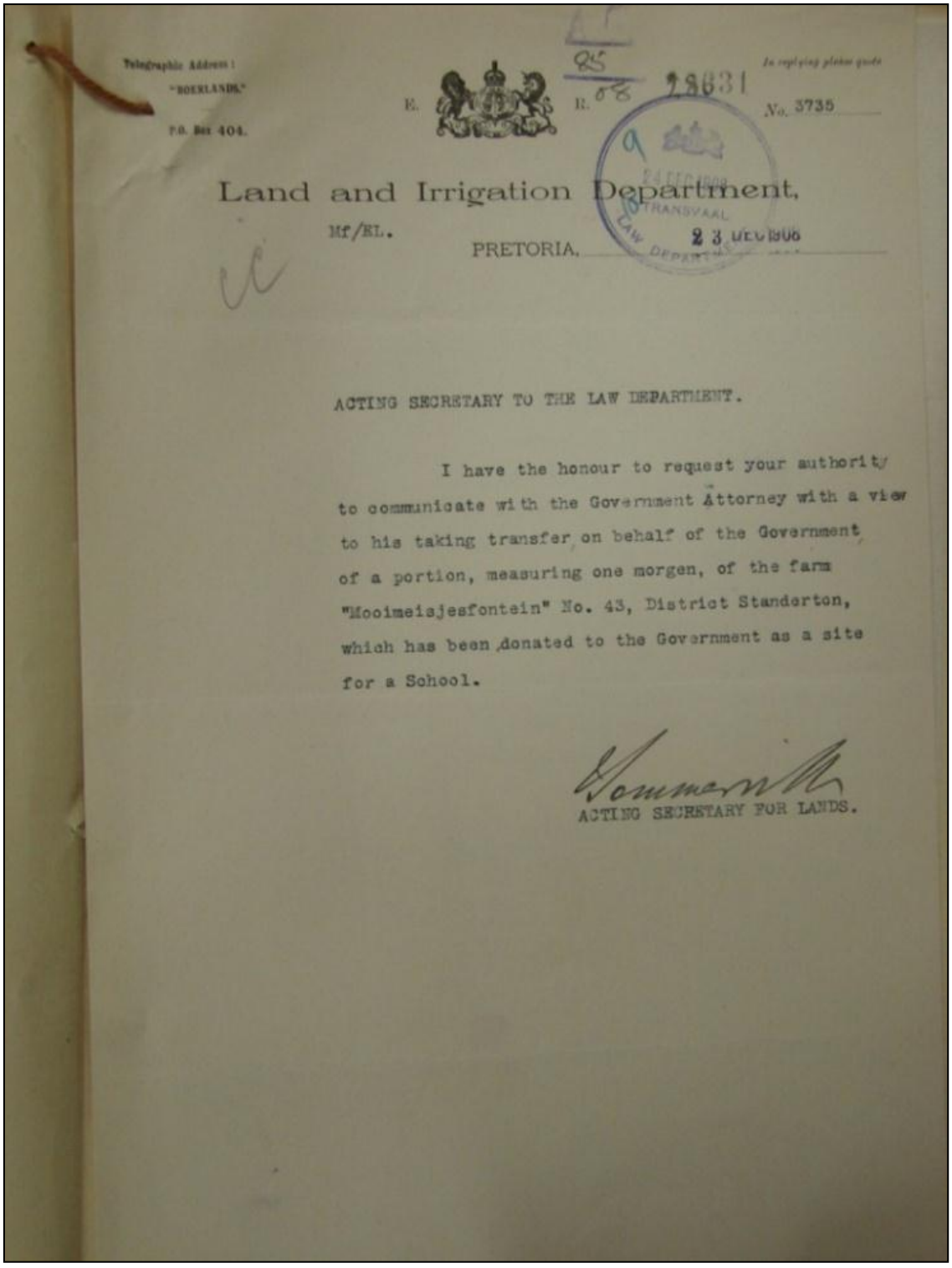

S.A.C. Delmas.

Quarantine the 50 cattle found illegally moving from Vlakvarkfontein, submit full report with view prosecution

Figure 17 - Letter sent to the Agriculture Department Transvaal for the illegal movement of 50 heads of cattle from Vlakvarkfontein. © National Archives South Africa, Pretoria.

In December 1908 records from the **Land and Irrigation Department**, Pretoria shows a transfer of the portion, measuring one morgen, Mooimeisjesfontein No. 43, District Standerton. This portion was being donated to the government as a site for a school (***Figure 18and 19***). The matter was handled and finalized by Mr J de V Roos

(*Figure 20*). A further search on the farm did not yield any results that relate it to 113 even though it was found in the same archive box file. Also there was no school or school ruins located during the physical survey of the study area. This could mean that Mooimeisjesfontein No. 43 is a total different farm from Mooimeisjesfontein 113.



Telegraphic Address:
"BOERLANDS."
P.O. Box 404.

E. 85 R. 88 28631 No. 3735

Land and Irrigation Department,

Mf/EL. PRETORIA. 23 DEC 1906

ACTING SECRETARY TO THE LAW DEPARTMENT.

I have the honour to request your authority to communicate with the Government Attorney with a view to his taking transfer on behalf of the Government of a portion, measuring one morgen, of the farm "Mooimeisjesfontein" No. 43, District Standerton, which has been donated to the Government as a site for a School.

ACTING SECRETARY FOR LANDS.

Figure 18 - Letter for the transfer of a portion of Mooimeisjesfontein No. 43 in form of donation to the government as a site for a school. © National Archives South Africa, Pretoria.

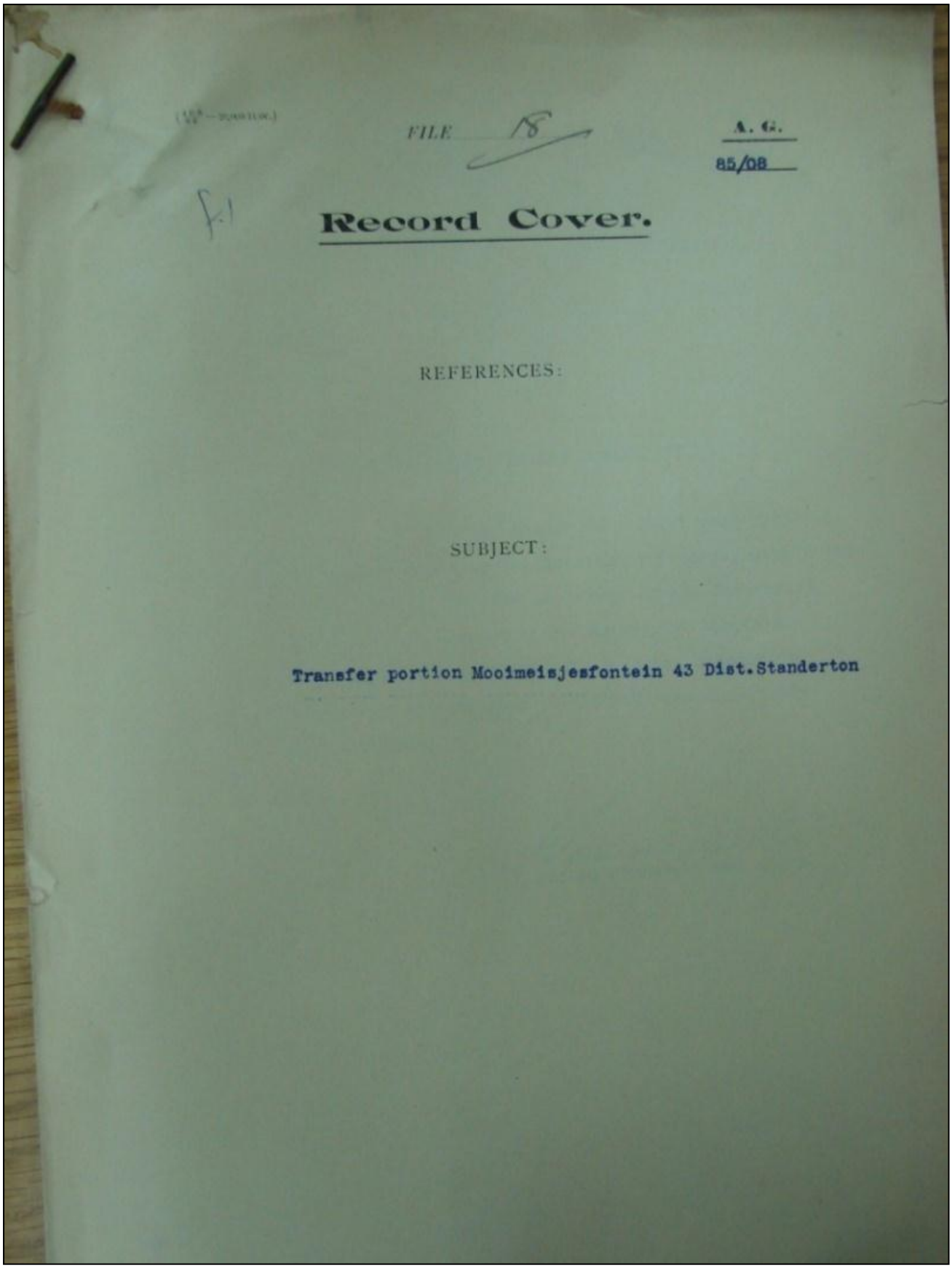
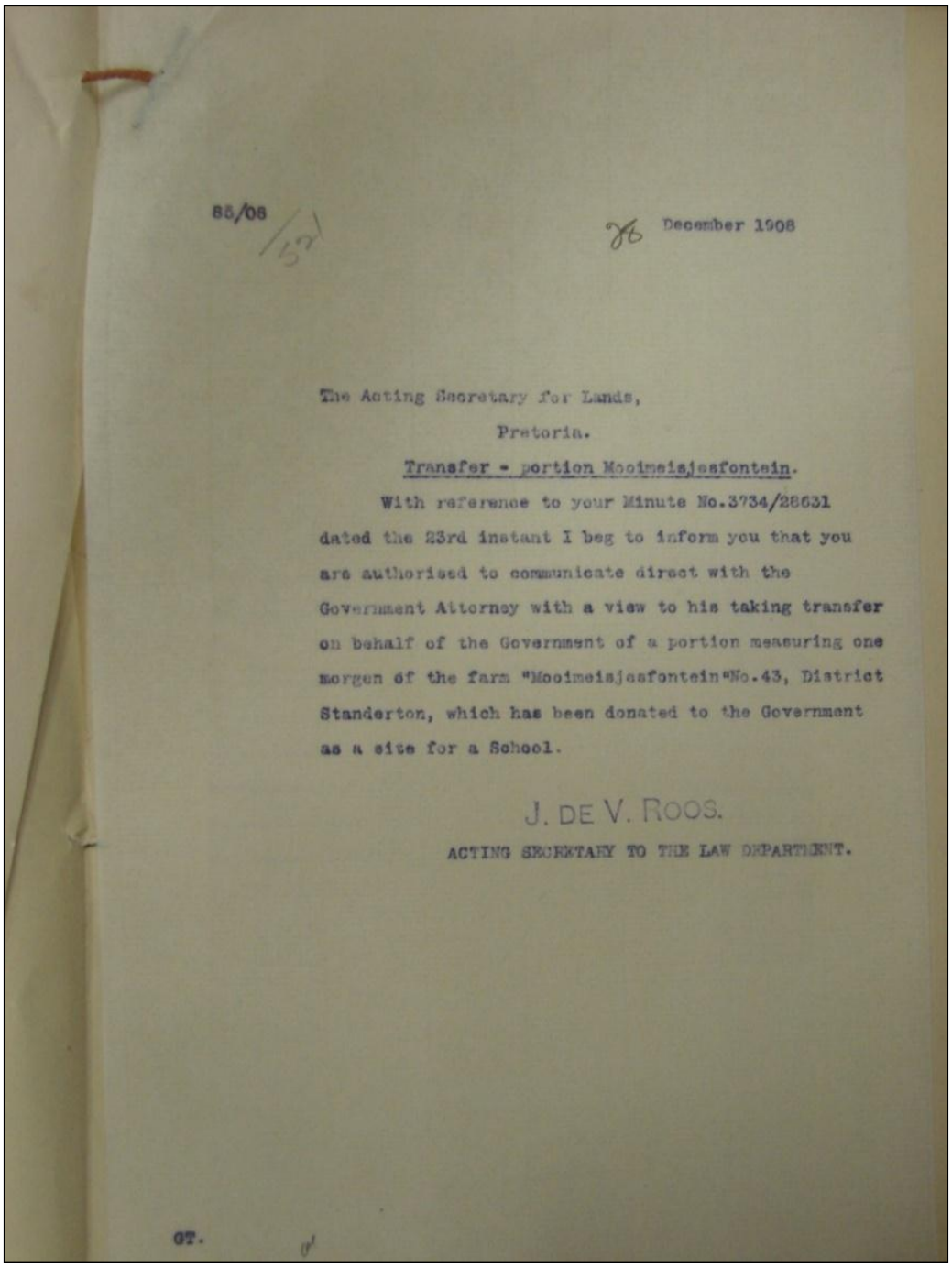


Figure 19 - Cover to the transfer documents of the farm Mooimeisjesfontein. © National Archives South Africa, Pretoria.



85/08

December 1908

The Acting Secretary for Lands,

Pretoria.

Transfer - portion Mooimeisjesfontein.

With reference to your Minute No.3734/28631 dated the 23rd instant I beg to inform you that you are authorised to communicate direct with the Government Attorney with a view to his taking transfer on behalf of the Government of a portion measuring one morgen of the farm "Mooimeisjesfontein"No.43, District Standerton, which has been donated to the Government as a site for a School.

J. DE V. ROOS.

ACTING SECRETARY TO THE LAW DEPARTMENT.

GT.

Figure 20 - Transfer letter of the portion of Mooimeisjesfontein. © National Archives South Africa, Pretoria.

4.2.3 Other relevant archival information

An archival search conducted by Birkholtz (2008) for the "*Proposed Argent Siding: Heritage Impact Assessment* "shows that during the South African War (II Anglo-Boer War) a skirmish took place in Mooimeisjesfontein on the 17th of October 1901 between the Boers and the British. This coincide with the movement of the Boer Commandos southwards after Pretoria in 1901 and the 'Heidelberger's' (one of the Boer Commandos group) eastwards from Heidelberg, Benoni to Standerton and Middelburg (Uys, 1981). The skirmish resulted in death (from the British side)

of Major F. C. Minshull – Ford D. S. O and trooper Mark Crampton (Birkholtz, 2008). Up to 1912 their graves were located in Boschpoort which is the farm west of Vlakvarkfontein 213-IR (and 101 in the old maps). No memorial or any other signage was found in Mooimeisjesfontein relating to the skirmish during both the current archival search and field survey. This could be partly because their burial and reburials took place elsewhere.

4.2.4 Archival Search Concluding Remarks

The history of mining activities in the broader area of Vlakvarkfontein dates before 1900, while on Vlakvarkfontein mining only commenced after 1903. The archival search for the two farms ownership did not yield any positive result except for association with a number of people; notably that of Mr Roodt and illegal cattle movement and the association with Mr Schulze and his claim for compensation in the period following the end of the war.

In conclusion no direct ownership of the farm Vlakvarkfontein 101 (as documented on the maps in ***Figure 2, 3 and 4***) and Mooimeisjesfontein was found through the archival search. However, the search gives a good historical overview of events that took place in the landscape. Other heritage studies of the broader area around Vlakvarkfontein 213-IR have yielded results from various activities that took place in the past. Birkholtz's (2008) research and Hutten's (2010) survey on the farm Boschpoort resulted in the identification of graves not very far from Vlakvarkfontein southern boundary (Hutten, *Per. Comm*., April 2011).

5. PHYSICAL SURVEY AND THE IDENTIFIED HERITAGE RESOURCES SITES

5.1 Introduction

The physical survey of the study area, Vlakvarkfontein 213-IR (Vlakvarkfontein 101 and portions of Mooimeisjesfontein 113 on the old maps) was conducted on 4 April 2011. The PGS team consisted of two archaeologists (both accredited ASAPA Professional archaeologists). Eight sites were located during the survey and they included three cemeteries of various sizes, built environment and landscape structures such as recent and historic buildings/house/shop structures (e.g. Old Store) and reservoirs/dams. Below is the description of the 8 sites located during the physical survey.

5.2 Site Descriptions and Evaluation

5.2.1. VVF01

GPS Coordinates: S26 03 41.8 E28 54 08.2

Site Type: Built Environment & Landscape

Site Description:

The site VVF 01 consists of two modern and dilapidated house structures and a reservoir which is also in a dilapidated state and in disused (***Figure 21 & Figure 22***). The two structures are both without roofs, windows, and doors – ruins. They are built using cement and mapara bricks. Mampara brick is common with the late 1980s, 1990s and 2000-to date construction projects. The site extent is approximately 40mx 30m combined.

Approximate Age: *Less than 60 years old*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Low	Grade GP.C

Potential Impact (*DuringProposed Mine Expansion*): *Low*- the site falls directly within the current proposed mine expansion area and will be impacted.

Proposed Management Measure: *Destruction*. The current site documentation measures through photography, GPS coordinate to locate and marked the site on the landscape were sufficient enough as means of site documentation.

Figure 21 -Structure No.1. ©Tomose @ PGS

Figure 22 - Structure No.2 and reservoir. ©Tomose @ PGS

5.2.2. *VVF02*

GPS Coordinates: S26 04 17.3 E28 54 03.1

Site Type: Built Environment & Landscape

Site Description:

The Site VVF02 is a farmstead; it consists of an old Transvaal pitch-roof house (***Figure 23***), a shed located close to the house (*Figure **24***), a windmill north of the house (*Figure **25***), another shed about 20m from the south east of the house and a dilapidated rondawel structure (*Figure **26***), a cottage (modern) and ruin structure (*Figure **27***) and a reservoir (***Figure 28***). The house looks, from the outside, to have been modernised over the years through continuous alterations. The farmstead together with all its structures covers an area of approximately 800m$^{2.}$

Approximate Age: *60 years old*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Low	Grade GP.B

Potential Impact (*During Proposed Mine Expansion*): *Low*- the site falls outside the current proposed mine expansion area but may be affected by long term mine expansion and mine activitiesin the future.

Proposed Management Measure: Currently None - However, should the mine wish to expand further into the area where the site is located - a Phase II HIA will need to be conducted before destruction.

Figure 23 - VVF 02 Transvaal pitch-roof house. Note the shed south of the house. ©Tomose @ PGS

Figure 24 - Shed south of the house in Figure 23. ©Tomose @ PGS.

Figure 25 - Windmill, north of the house in Figure 23., still operational. ©Tomose @ PGS

Figure 26 - Dilapidated roundavel, small square structure in front, a modern cottage & dilapidated old shed in fabricated brick- no roof, windows, and door. ©Tomose @ PGS

Figure 27 - South view of the 30m distant shed and modern cottage. ©Tomose @ PGS

Figure 28 - Reservoir right of the cottage from the southern view point. ©Tomose @ PGS

5.2.3. VVF03

GPS Coordinates: S26 04 23.1 E28 54 01.4

Site Type: Built Environment & Landscape

Site Description:

VVF03 is a stone and mortar kraal (*Figure **29***). The kraal looks to have been added on over time; evidence of recent cement layer on the kraal north wall (*Figure **30***). The kraal is currently unutilised; evident in the high levels of grass cover and other plain species in and around it (***Figure 31***). The site is approximately 30m x 30m in size.

Approximate Age: *60 years old close proximity to structures indicated in the 1901 map*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Low	Grade GP.B

Potential Impact (*During Proposed Mine Expansion*): *Low*- the site falls outside the current proposed mine expansion area but may be affected by long term mine expansion and mine activitiesin the future.

Proposed Management Measure: Currently None - However, should the mine wish to expand further into the area where the site is located - a Phase II HIA will need to be conducted before destruction.

Figure 29 -Stone and mortar kraal, note small window openings on the side of the kraal wall. © Tomose @ PGS

Figure 30 - Cement layer, north face of the kraal. Note the window opening; stones have fall on the window.

©Tomose @ PGS

Figure 31 - Entrance to the kraal; note the level of grass cover and other plant species. ©Tomose @ PGS

5.2.4. VVF04

GPS Coordinates: S26 04 20.5 E28 53 52.7

Site Type: Built Environment & Landscape

Site Description:

The site VVF04 is a stone enclosure, about 500m south-west of VVF03 (*Figure **32***). Structures heavily overgrown (***Figure 33***). The plant species at the site are different from the rest of other plant and grass species throughout the mining area; this is suggestive of some sort of occupation. The proximity of this feature to the farmstead is therefore suggestive of labour quarters. It is approximately 40m x 40m in size.

Approximate Age: *60 years old close proximity to structures indicated in the 1901 map*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Moderate	Grade GP.B

Potential Impact (*During Proposed Mine Expansion*): *Low*- the site falls outside the current proposed mine expansion area but may be affected by long term mine expansion and mine activitiesin the future.

Proposed Management Measure: Currently None - However, should the mine wish to expand further into the area where the site is located - a Phase II HIA will need to be conducted before destruction.

Figure 32 - Stone ruin s of what looks to have been the labour quarters of the farmstead, VVF02, south-west of VVF02. ©Tomose @ PGS

Figure 33 - Stone structure covered in different plant species. ©Tomose @ PGS.

5.2.5. VVF05

GPS Coordinates: S26 03 52.6 E28 53 44.5

Site Type: Cemetery (Cemetery No. 1)

Site Description:

Site **VVF05** is a small cemetery with 8 graves aligned in three rows. The cemetery total size it is approximately 6m x 9m in size and it is fenced off from the rest of the site (***Figure 34***). All graves have headstones and dressing and all are orientated West-East (a typical grave orientation position); however, all have crudely constructed dressings and headstones using cement and various types of bricks (***Figure 35***). Two of the graves, have inscriptions on the back of the headstones reading MahlGgu (***Figure 23***) and Mahlaggu (***Figure 24***): a popular Ndebele surname Mahlangu wrongly spelt in the case because according to an old men spoken to during the survey in the nearby village the graves are said to belong to the Mahlangu family which still resides in the village. The two inscribed graves have grave goods, two yellow/cream bowls with black rims (***Figure 39***). All the graves in the cemetery are painted in white.

Approximate Age: *60 years old*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Very High	Grade GP.A

Potential Impact(*During Proposed Mine Expansion*): *Very High*- the site falls directly within the proposed mine expansion area.

Proposed Management Measure: Phase II HIA – Proposed Cemetery Relocation

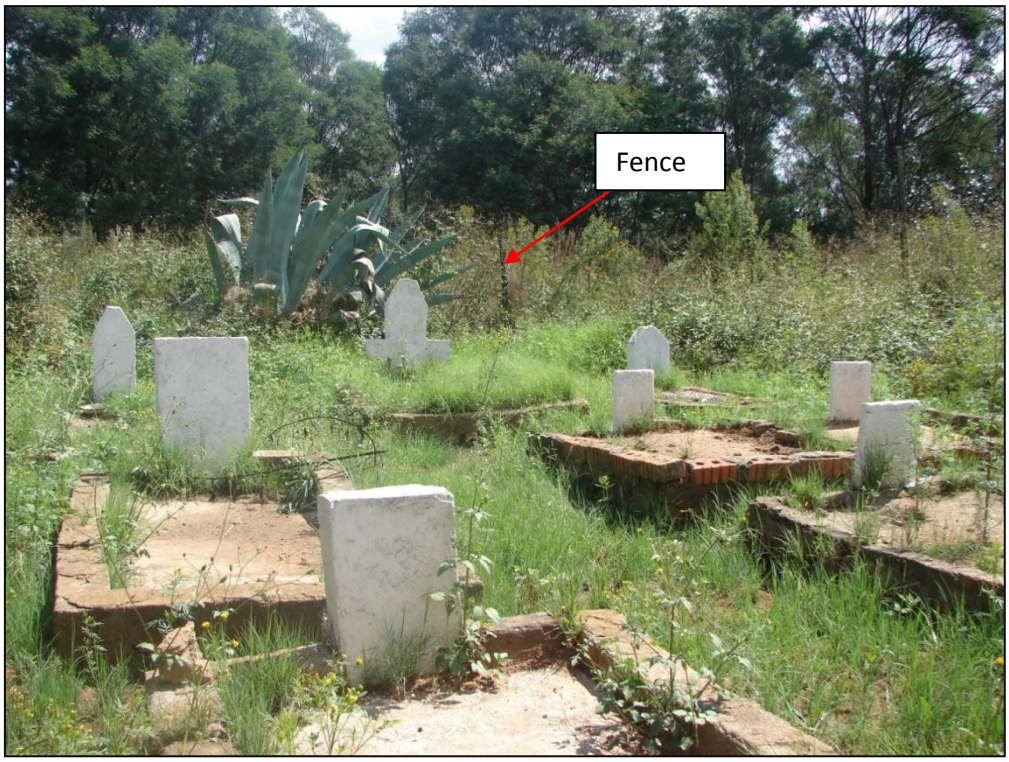


Figure 34 - Cemetery with 8 graves. Note the fence. ©Tomose @ PGS.

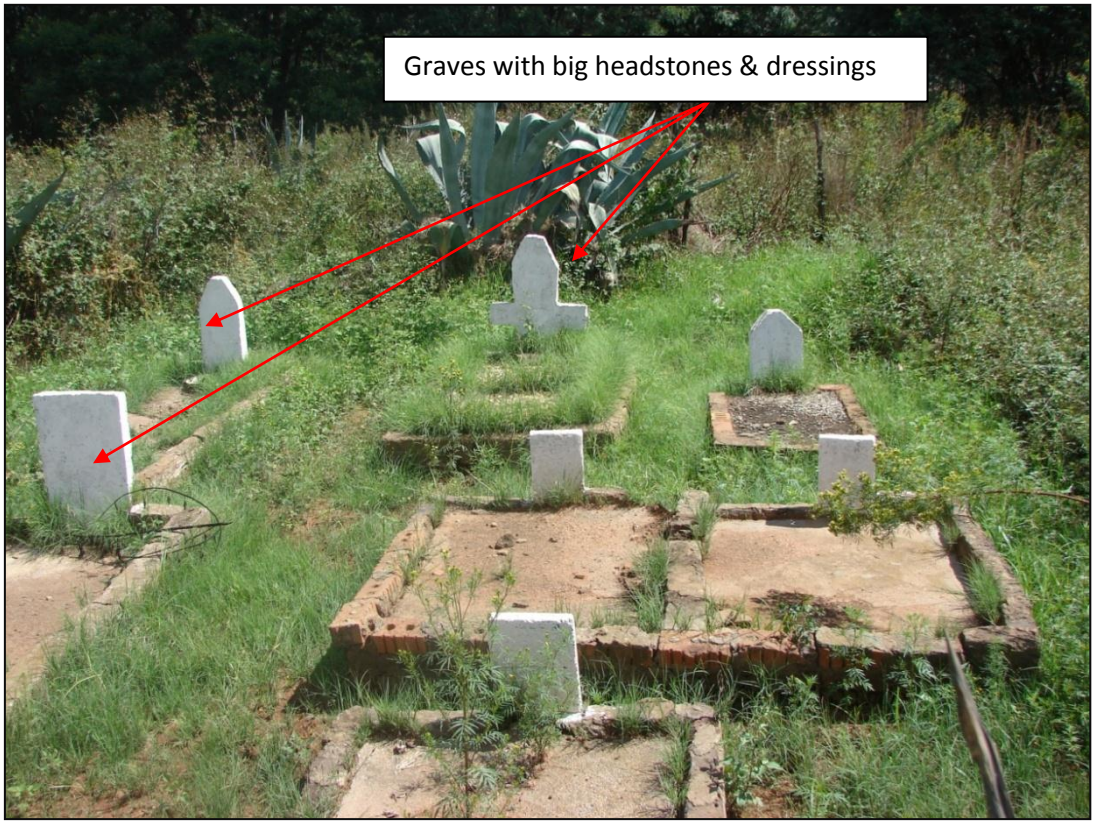


Figure 35 - Three graves with big headstones and dressings. ©Tomose @ PGS.

Figure 36 - Cross headstone with the Mahlangu surname wrongly spelt to MahlaGgu. ©Tomose @ PGS.

Figure 37 - Plinth headstone (big) with the Mahlangu surname wrongly spelt to Mahlaggu. ©Tomose @ PGS.

Figure 38 - Two enamel bowls placed on the grave with cross headstone. ©Tomose @ PGS.

Figure 39 - Enamel bowls on a grave with big plinth headstone. ©Tomose @ PGS.

5.2.6. VVF06

GPS Coordinates: S26 03 07.0 E28 53 54.9

Site Type: Cemetery (Cemetery No. 2)

Description:

This site is an old cemetery with approximately 20 identifiable graves. The cemetery is 8m x 15 m big. All the graves are oriented West-East in two rows. The graves have stone mound/pile dressings (*Figure **40***); some just a small stone, and two have cement headstones and dressings (*Figure **41***). One of the cement headstones has fallen down (***Figure 42***). No inscriptions were found in the two graves with cement dressing and headstone. According to the old man spoken to in the village, Mr. Mtshweni, the graves have long been there and he does not know the descendants of the deceased.

Approximate Age: *Older than 60 years*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Moderate to High	Grade GP.A

Potential Impact(*DuringProposed Mine Expansion*): *Moderateto High* - the site fallsdirectly adjecent to the proposed mine expansion area and will possibly be affected through the blasting and other mining activities such as dust and debris as well as trucks footprint and stock piles.The impact will be ***Secondary Impact,*** cumulative impact.

Proposed Management Measure: *In situ* management of the site through fencing and a sufficient buffer to protect against vehicle damage. If at any stage the cemetery will be directly impacted by mining activity a Phase II HIA – Proposed Cemetery Relocation is recommended.

Figure 40 - Stone mound/pile dressing in Cemetery No.2. ©Tomose @ PGS.

Figure 41 - Two graves with cement dressing and headstones. The headstone of the grave to the right in the picture has fallen (Figure 6c below). ©Tomose @ PGS.

Figure 42 - Fallen headstone from one of the two graves with cement dressings and headstones. ©Tomose @ PGS.

5.2.7. VVF07

GPS Coordinates: S26 02 43.0 E28 53 01.2

Site Type: Cemetery (Cemetery No. 3)

Site Description:

This site is a modern village cemetery, with approximately 150 graves. All graves are orientated West-East in rows of more than three graves aligned next to each other. This cemetery is located within the mine boundary and is flanked by village dwellings on the east (*Figure **43***) and west (*Figure **44***). Some of the graves in the cemetery are fenced off from the rest (***Figure 45***), with some having granite headstones and dressings and others humble heads stones and dressings. The cemetery is located on the northern end of the study area near the old mine diggings.

Approximate Age: *60 years old and less/recent (still active cemetery)*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Low	Grade GP.A

Potential Impact(*During Proposed Mine Expansion*): *Low* - the site falls outside the current proposed mine expansion area but may be affected by long term mine expansions and mine activities in the future .

Proposed Management Measure: Currently None - However, should the mine wish to expand further into the area where the site is located - a Phase II HIA will need to be conducted before cemetery relocation.

Figure 43 - Modern Village cemetery with + 150 graves. © Tomose @ PGS.

Figure 44 - Village cemetery viewed from east. ©Tomose @ PGS.

Figure 45–Village cemetery viewed from west. © Tomose @ PGS.

5.2.8. VVF08

GPS Coordinates: S26 02 37.4 E28 52 52.1

Site Type: Built Environment & Landscape

Site Description:

The site **VVF08** is a historic store, constructed with corrugated iron sheets on the left and right side façades (*Figure **46***); the front and back façades are built of burnt clay bricks and clay butter for mortar (*Figure **47***). The store is a pitch-roof structure with a back extension for dwelling (*Figure **48***). There is also a small cottage attached to the store, right back of the store (*Figure **49***). The store is typical of the old Transvaal and Union South Africa stop shops along Main Roads and Railways Stations and/or wagon roads. The shop and its cottage still have old electricity connection ports on the roof (***Figure 50***). The total size of the store it cottage and other out building is about 30m x 24m.

Approximate Age: *112 years old*

Site Significance:

Impact	**Impact Significance**	**Heritage Significance**
Negative	Low	Grade GP.A

Potential Impact (*During Proposed Mine Expansion*): *Low* -site falls outside the current proposed mine expansion area but may be affected by long term mine expansion and mine activitiesin the future.

Proposed Management Measure: Phase II HIA is recommended if the store is to be impacted by the mining activities at any stage – the site is unique and represent one of the old Transvaal stop stores/shops linking two or more towns. The material that it is made of is also of unique. It is, however, of local significance in terms of field rating.

Figure 46 - Left, south, façade of the shop built from Corrugated Iron Sheets, note the veranda on the right end of the picture and the back extension to the left end of the picture. © Tomose @ PGS.

Figure 47 - Front façade of the store built from clay bricks. © Tomose @ PGS.

Figure 48 - Extension of the right end of the shop-view from front façade. © Tomose @ PGS.

Figure 49 - Back cottage; note the Burnt clay bricks. © Tomose @ PGS.

Figure 50 - Historic electricity port connections on the shop roof. © Tomose @ PGS.

6. IMPACT ASSESSMENT AND RECOMMENDATIONS

6.1 Potential Impact during Mine Expansion and its Associated Activities

ISSUE	Impact on archaeological sites
POTENTIAL IMPACTS	No archaeological sites were identified during the physical survey of the study area. The unidentified archaeological sites and the discovery of such sites during the proposed mine expansion and its associated activities (*blasting, excavations, earthmoving and other mining activities*) can seriously hamper the mine expansion timelines.
EMP	Management measures to be included in the EMP for chance finds

ISSUE	**Impact on burials and grave(incl. cemeteries) sites**
POTENTIAL IMPACT	Three cemeteries were identified during the physical survey of the study area. Two cemeteries, cemetery 1 (**VVF05**) and 2 (**VVF06**), will be negatively impacted by the proposed mine expansion and its associated activities (*blasting, excavation, earthmoving and other mining*). The impact of mining on these two sites will be high. Cemetery 3 (**VVF07**) falls outside the propose mine expansion area and will not be impacted by the current mine expansion process. The impact of mining on this site will be low Without limiting the extent of current finds and survey - unidentified burials and graves and the discovery of such sites during the expansion programme can seriously hamper the mine expansion timelines.
EMP	In the event that these graves and cemeteries cannot be avoided a grave relocation processes needs to be started. Such a process impacts on the spiritual and social fabric of the next of kin and associated communities.

ISSUE	**Impact on built environment and landscape sites**
POTENTIAL IMPACT	Five built environment and landscape sites were identified during the survey. Their potential impact is evaluated to be between ***Moderate to Low*****.** Four sites fall east (**VVF01**) and south east (**VVF02 – 04**) of the propose mine expansion and the potential impact of mining is low.**VVF01** is of low heritage significance and will be affected. However, **VVF02 – 04**couldpotentially be affected in the near future should the mine expand further east and south east. One site, of high heritage significance (**VVF08**), falls north west of the propose mine expansion area and its potential impact is low – it will not be affected by the current mine expansion process.
EMP	If the planned mining layout changes in future and the sites VVF02-04 and VVF08 is impacted by mining activities a Phase II HIA will be required to mitigate such impacts.

6.3 Confidence in Impact Assessment

It is necessary to realise that the heritage resources sites located during study area physical survey do not necessarily represent all the possible heritage resources present within the study area. Various factors account for this, including the subterranean nature of some heritage resources sites.

The impact assessment conducted for heritage sites assumes the possibility of finding heritage resources during the project life and has been conducted as such.

7. CONCLUSIONS AND RECOMMENDATIONS

The archival and historical background search of the study area yielded a variety of results which include:

- The different uses of the farm Vlakvarkfontein 213-IR (Vlakvarkfontein 101 and portion of Mooimeisjesfontein 113 in old maps) in historic times. These include agricultural and economical activities (e.g. the store and mine activities as identified in the archival search and located during physical survey of the study area) as well as political activities (e.g. skirmish as argued by Birkholtz (2008)).
- Current mining and agricultural activities.
- Long occupation of the farm Vlakvarkfontein 213-IR by different groups is also attested to by the different built environment and landscape features and structures.

The findings of the impact evaluation on the sites from the mining activities concluded:

- The farmsteads and associated infrastructure will potentially be impact by mining activities in future, however the impact on these sites (**VVF02-04 & VVF08**), based on the current mining layout is rated as *low*.
- The current and proposed mining activities will have a direct *negative very high* impact on two of the cemeteries (**VVF05 -06**).
- The third cemetery **VVF07**, will potentially be impact by mining activities in future, however the impact on this site, based on the current mining layout, is rated as *low*.

In conclusion the study area proves to be a rich cultural landscape based on a variety of activities and events that have taken place in the farm Vlakvarkfontein 213-IR both in the past and in the present.

Based on the above conclusions on the significance of heritage resources located in Vlakvarkfontein 213-IR and it being described as a rich cultural landscape the following recommendations are made:

- A grave relocation process for sites **VVF05** and **VVF06** is recommended as a mitigation and management measure. This will involve necessary social consultation and public participation process before grave relocation permits can be applied for with the SAHRA.
- If the mining layout changes from the proposed expansion, sites **VVF02**, **VVF03**, **VVF04 and VVF08** should be properly documented and recorded by a qualified heritage specialist before a destruction permit can be applied for with the SAHRA.

- It is further recommended that an overall heritage management plan (HMP) be developed for each of the heritage sites (**VVF02-08**) identified that will address short, medium and long term goals.

8. MITIGATION MEASURES

8. 1. Management Guidelines

The National Heritage Resources Act (Act 25 of 1999) states that, any person who intends to undertake a development categorised as-

(a) the construction of a road, wall, transmission line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m^2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

In the event that an area previously not included in an archaeological or cultural resources survey is to be disturbed, the South African Heritage Resources Agency (SAHRA) needs to be contacted. An enquiry must be lodged with them into the necessity for a Heritage Impact Assessment.

2. In the event that a further heritage assessment is required it is advisable to utilise a qualified heritage practitioner preferably registered with the Cultural Resources Management Section (CRM) of the Association of Southern African Professional Archaeologists (ASAPA).

This survey and evaluation must include:

(a) The identification and mapping of all heritage resources in the area affected;

(b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Cultural Resources Act;

(c) An assessment of the impact of the development on such heritage resources;

(d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

(e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

(f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and

(g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.

3. It is advisable that an information section on cultural resources be included in the SHEQ training given to contractors involved in surface earthmoving activities. These sections must include basic information on:
    a. Heritage;
    b. Graves;
    c. Archaeological finds; and
    d. Historical Structures.

This module must be tailor made to include all possible finds that could be expected in that area of construction.

4. In the event that a possible find is discovered during construction, all activities must be halted in the area of the discovery and a qualified archaeologist contacted.
5. The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures.
6. If mitigation is necessary, an application for a rescue permit must be lodged with SAHRA.
7. After mitigation an application must be lodged with SAHRA for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.
8. If during the initial survey sites of cultural significance is discovered, it will be necessary to develop a management plan for the preservation, documentation or destruction of such a site. Such a program must include an archaeological/palaeontological monitoring programme, timeframe and agreed upon schedule of actions between the company and the archaeologist.
9. In the event that human remains are uncovered or previously unknown graves are discovered a qualified archaeologist needs to be contacted and an evaluation of the finds made.
10. If the remains are to be exhumed and relocated, the relocation procedures as accepted by SAHRA needs to be followed. This includes an extensive social consultation process.

The definition of an archaeological/palaeontological monitoring programme is a formal program of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a

specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

The purpose of an archaeological monitoring programme is:

- To allow, within the resources available, the preservation by record of archaeological/palaeontological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works
- To provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological/palaeontological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard.
- A monitoring is not intended to reduce the requirement for excavation or preservation of known or inferred deposits, and it is intended to guide, not replace, any requirement for contingent excavation or preservation of possible deposits.
- The objective of the monitoring is to establish and make available information about the archaeological resource existing on a site.

PGS can be contacted on the way forward in this regard.

Table 1: Roles and responsibilities of archaeological and heritage management

ROLE	RESPONSIBILITY	IMPLEMENTATION
A responsible specialist needs to be allocated and should sit in at all relevant meetings, especially when changes in design are discussed, and liaise with SAHRA.	The client	Archaeologist and a competent archaeology supportive team
If chance finds and/or graves or burial grounds are identified during construction or operational phases, a specialist must be contacted in due course for evaluation.	The client	Archaeologist and a competent archaeology supportive team
Comply with defined national and local cultural heritage regulations on management plans for identified sites.	The client	Environmental Consultancy and the Archaeologist
Consult the managers, local communities and other key stakeholders on mitigation of archaeological sites.	The client	Environmental Consultancy and the Archaeologist
Implement additional programs, as appropriate, to promote the safeguarding of our cultural heritage. (i.e. integrate the archaeological components into employee induction course).	The client	Environmental Consultancy and the Archaeologist,
If required, conservation or relocation of burial grounds and/or graves according to the applicable regulations and legislation.	The client	Archaeologist, and/or competent authority for relocation services
Ensure that recommendations made in the Heritage Report are adhered to.	The client	The client
Provision of services and activities related to the management and monitoring of significant archaeological sites.	The client	Environmental Consultancy and the Archaeologist
After the specialist/archaeologist has been appointed, comprehensive feedback reports should be submitted to relevant authorities during each phase of development.	Client and Archaeologist	Archaeologist

8.2 All Aspects of the Project

8.2.1 Historical and Heritage

Based on the findings of the HIA, all stakeholders and key personnel should undergo an archaeological/palaeontological induction course during this phase. Induction courses generally form part of the employees' overall training and the archaeological/palaeontological component can easily be integrated into these training sessions. Two courses should be organised – one aimed more at managers and supervisors, highlighting the value of this exercise and the appropriate communication channels that should be followed after chance finds, and

the second targeting the actual workers and getting them to recognize artefacts, features and significant sites. This needs to be supervised by a qualified archaeologist. This course should be reinforced by posters reminding operators of the possibility of finding archaeological/palaeontological sites.

The project will encompass a range of activities during the construction phase, including ground clearance/earthmoving, blasting, establishment of construction camps area and small scale infrastructure development associated with the project.

It is possible that cultural material will be exposed during operations and may be recoverable, but this is the high-cost front of the operation, and so any delays should be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, but construction trenches do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project and these must be catered for. Temporary infrastructure is often changed or added to the subsequent history of the project. In general these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

During the construction phase, it is important to recognize any significant material being unearthed, making and to make the correct judgment on which actions should be taken. A responsible archaeologist/palaeontologist must be appointed for this commission. This person does not have to be a permanent employee, but needs to sit in at relevant meetings, for example when changes in design are discussed, and notify SAHRA of these changes. The archaeologist would inspect the site and any development recurrently, with more frequent visits to the actual workface and operational areas.

In addition, feedback reports can be submitted by the archaeologist to the client and SAHRA to ensure effective monitoring. This archaeological monitoring and feedback strategy should be incorporated into the Environmental Management Plan (EMP) of the project. Should an archaeological/palaeontological site or cultural material be discovered during construction (or operation), such as burials or grave sites, the project needs to be able to call on a qualified expert to make a decision on what is required and if it is necessary to carry out emergency recovery. SAHRA would need to be informed and may give advice on procedure. The developers therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the material and data are recovered. The project thus needs to have an archaeologist/palaeontologist available to do such work. This provision can be made in an archaeological/palaeontological monitoring programme.

8.2.2 Graves

In the case where a grave is identified during construction the following measures must be taken.

Mitigation of graves will require a fence around the cemetery with a buffer of at least 20 meters.

If graves are accidentally discovered during construction, activities must cease in the area and a qualified archaeologist be contacted to evaluate the find. To remove the remains a rescue permit must be applied for with SAHRA and the local South African Police Services must be notified of the find.

Where it is then recommended that the graves be relocated a full grave relocation process that includes comprehensive social consultation must be followed.

The grave relocation process must include:

i. A detailed social consultation process, that will trace the next-of-kin and obtain their consent for the relocation of the graves, that will be at least 60 days in length;
ii. Site notices indicating the intent of the relocation
iii. Newspaper Notice indicating the intent of the relocation
iv. A permit from the local authority;
v. A permit from the Provincial Department of health;
vi. A permit from the South African Heritage Resources Agency if the graves are older than 60 years or unidentified and thus presumed older than 60 years;
vii. An exhumation process that keeps the dignity of the remains intact;
viii. An exhumation process that will safeguard the legal implications towards the developing company;
ix. The whole process must be done by a reputable company that are well versed in relocations;
x. The process must be conducted in such a manner as to safeguard the legal rights of the families as well as that of the developing company.

9. LIST OF PREPARES

PGS Heritage and Grave Relocation Consultants have seconded the following specialist to this project:

Team Leader, Archival Research and Evaluation – Nkosinathi Tomose (MSc (Archaeology),

Field Archaeologist –Marko Hutten (BA (Hon) Archaeology)

Principal Investigator - Wouter Fourie (BA (Hon) Archaeology)

10. REFERENCES

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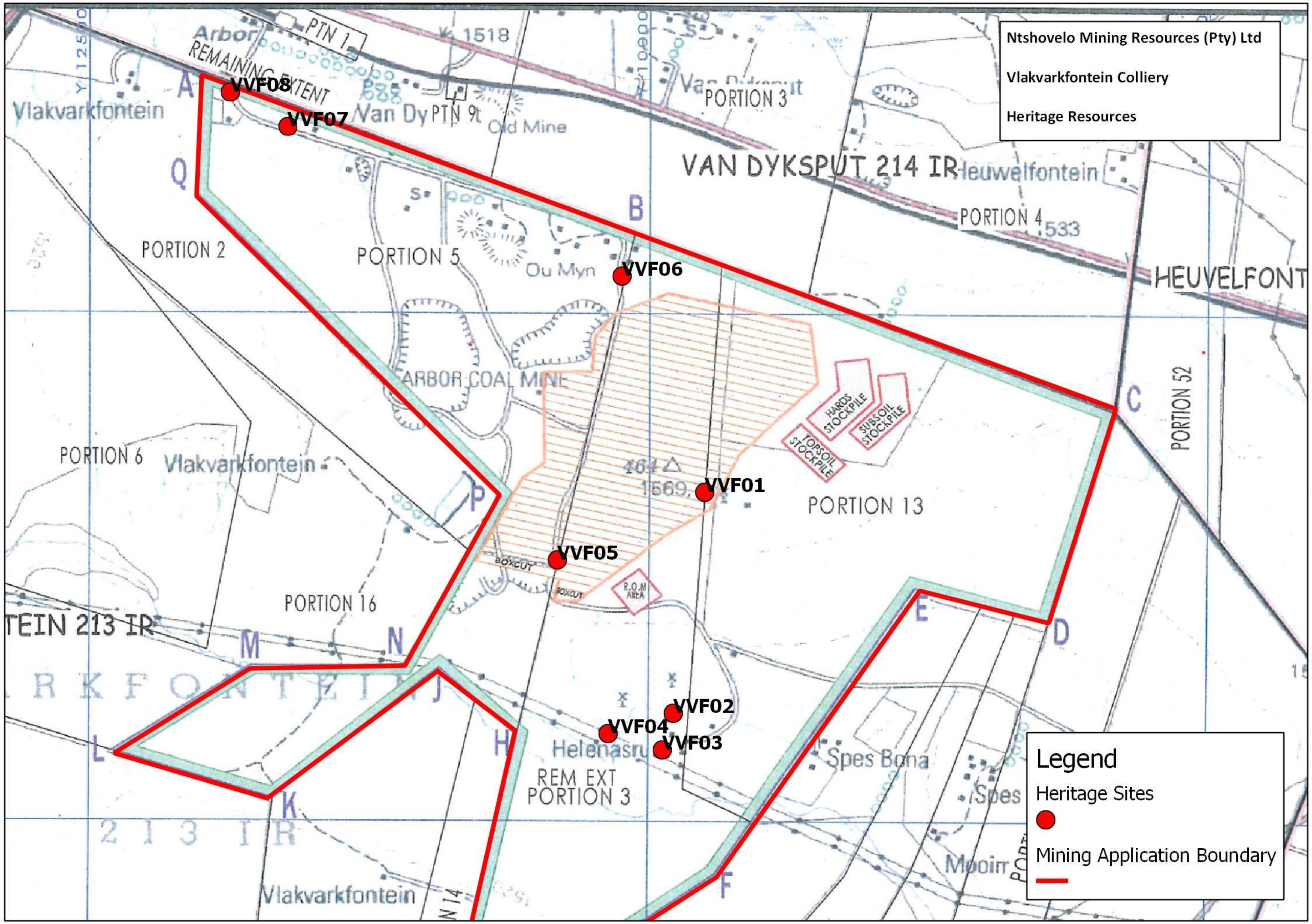
APPENDIX A

MAP OF HERITAGE RESOURCES


Ntshovelo Mining Resources (Pty) Ltd
Vlakvarkfontein Colliery
Heritage Resources
Legend
Heritage Sites
Mining Application Boundary
VVF01
VVF02
VVF03
VVF04
VVF05
VVF06
VVF07
VVF08
VAN DYKSPUT 214 IR
PORTION 2
PORTION 3
PORTION 4
PORTION 5
PORTION 6
PORTION 13
PORTION 16
PORTION 52
REM EXT PORTION 3
ARBOR COAL MINE
HARDS STOCKPILE
SUBSOIL STOCKPILE
TOPSOIL STOCKPILE
R.O.M AREA
BOXCUT
Vlakvarkfontein
Spes Bona
Helenasrus
Ou Myn
Old Mine
HEUVELFONT
TEIN 213 IR
213 IR

APPENDIX B

IMPACT AND HERITAGE SIGNIFICANCE ASSESSMENT CRITERIA

1. IMPACT ASSESSMEN METHODOLOGY & APPROACH

1.1. Alternative Assessment

The section below outlines the assessment methodologies that will be utilised in the final detailed study of each of the proposed alignments before the construction of the substation and transmission line.

This chapter describes the evaluation criteria utilised for the sites listed in this report and those to be identified during the ground thruthing of the final alignment.

The significance of archaeological sites is 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),
- density of scatter (dispersed scatter)
    - Low - <10/50m2
    - Medium - 10-50/50m2
    - High - >50/50m2

- 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 - No-go or relocate pylon position
D - Preserve site, or extensive data collection and mapping of the site; and
E - Preserve site

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

Impact

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

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 impacts.

1.2. Evaluation Methods

1.2.1 Site Significance

Site significance classification standards prescribed by SAHRA (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.

Table 2: Site significance classification standards as prescribed by SAHRA

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.A)	-	Low Significance	Destruction

1.2.2 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: Impact of development activities such a mining directly on a National Heritage Site that could cause the destruction of such a site.

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 impact on a heritage site with a rating of Local, Provincial or National heritage that will require major mitigation work to collect data for further research and/or preserve the site during and after construction.

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 impact on a heritage site with a heritage rating of Generally Protected A that will require some form of mitigation to collect data for further research or preserve the site during and after construction.

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 impact on a heritage site with a rating of Generally Protected B or C that would not require any or very little mitigation work

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.

1.2.3 Certainty

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

- PROBABLE: Over 70% certainty of a particular fact, or of the likelihood of an impact occurring.
- POSSIBLE: Only over 40% certainty of a particular fact, or of the likelihood of an impact occurring.
- UNSURE: Less than 40% certainty of a particular fact or likelihood of an impact occurring.

1.2.4 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 of Evaluation Table to be utilised in HIA

Impact	**Impact Significance**	**Heritage Significance**
Negative	Moderate	Grade GP.B