Archaeological Scoping Report For The Proposed Witwatersrand Gold Fields: Acid Mine Drainage (Phase 1): Eastern Basin, Gauteng

Prepared For

AECOM SA (Pty) Ltd

By

HERITAGE
Contracts and Archaeological Consulting

22 Bergen Street

Valhalla

0185

VERSION 2.0
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ACKNOWLEDGEMENT OF RECEIPT

CLIENT: AECOM SA (Pty) Ltd

CONTACT PERSON: **Ishal Biseswar**

Email: ishal.biseswar@aecom.com

SIGNATURE: _____

LEADING CONSULTANT: Heritage Contracts and Archaeological Consulting CC

CONTACT PERSON: Jaco van der Walt

Heritage Contracts and Archaeological Consulting

Professional Member of the Association of Southern African Professional Archaeologist (#159)

I, Jaco van der Walt as duly authorised representative of Heritage Contracts and Archaeological Consulting CC, hereby confirm my independence as a specialist and declare that neither I nor the Heritage Contracts and Archaeological Consulting CC have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of which the client was appointed as Environmental Assessment practitioner, other than fair remuneration for work performed on this project.

SIGNATURE: _____

EXECUTIVE SUMMARY

Site name and location: The Witwatersrand Gold Fields: Acid Mine Drainage (Phase 1): Eastern Basin project is located at the Grootvlei Mine Shaft and the development includes a sludge disposal pipeline of approximately 30km. The Grootvlei Mine Shaft No. 3 is situated about 4.6km east of the Springs Central Business District (CBD).

1: 50 000 Topographic Map: 2628 AD

Consultant: AECOM SA (Pty) Ltd.

Developer TCTA

Heritage Consultant: Heritage Contracts and Archaeological Consulting CC (HCAC).

Contact person: Jaco van der Walt Tel: +27 82 373 8491 E –mail jaco.heritage@gmail.com.

Date of Report: 20 January 2014

Findings of the Assessment:

This report endeavoured to give an account of the history of the farm Grootvaly 124 IR and the area in which it is situated. Some particulars could be traced regarding the interactions between different groups of people in the vicinity. Information was also provided with regards to specific developments that took place on the farm Grootvaly 124 IR. Maps and sketches provide a further insight into how the land was occupied and to what period buildings in the area date to.

It is important to note that graves can be expected anywhere on the landscape and mines on the east rand are associated with unmarked graves and cemeteries. The entire mine infrastructure on the site is demolished and the remaining structures are in a derelict state and although the sites are older than 60 years and protected by the Heritage Act, these sites are of low significance because of the extensive destruction of the buildings. A permit to demolish will be needed from SAHRA.

No red flags were identified during the desktop study and planning can proceed. It is however recommended that a phase 1 study is conducted to prior to construction and that the correct process is followed to obtain destruction permits from SAHRA.

Disclaimer: *Although all possible care is taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. Heritage Contracts and Archaeological Consulting CC and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

Archaeological Consulting CC the full price for the work as agreed, shall be entitled to use for its own benefit and for the specified project only:

- The results of the project;
- The technology described in any report
- Recommendations delivered to the Client.

Contents

Figures

ABBREVIATIONS

AIA: Archaeological Impact Assessment
ASAPA: Association of South African Professional Archaeologists
BIA: Basic Impact Assessment
CRM: Cultural Resource Management
ECO: Environmental Control Officer
EIA: Early Iron Age*
EMP: Environmental Management Plan
ESA: Early Stone Age
GPS: Global Positioning System
HIA: Heritage Impact Assessment
LIA: Late Iron Age
LSA: Late Stone Age
MEC: Member of the Executive Council
MIA: Middle Iron Age
MPRDA: Mineral and Petroleum Resources Development Act
MSA: Middle Stone Age
NEMA: National Environmental Management Act
PRHA: Provincial Heritage Resource Agency
SADC: Southern African Development Community
SAHRA: South African Heritage Resources Agency

GLOSSARY

Archaeological site (remains of human activity over 100 years old)

Early Stone Age (2 million to 300 000 years ago)

Middle Stone Age (300 000 to 30 000 years ago)

Late Stone Age (30 000 years ago until recent)

Historic (approximately AD 1840 to 1950)

Historic building (over 60 years old)

Lithics: Stone Age artefacts

1. INTRODUCTION

Heritage Contracts and Archaeological Consulting CC was contracted by AECOM SA (Pty) Ltd to conduct a Heritage Scoping report for the proposed Witwatersrand Gold Fields: Acid Mine Drainage (Phase 1): Eastern Basin development.

The Acid Mine Drainage Project aims to neutralise and prevent surface decant of acidic water from mine voids before it reaches the surrounding environments. Infrastructure will be constructed at three locations which are the Randfontein Estates area (Western Basin), the ERPM South West Vertical Shaft area (Central Basin) and the Grootvlei Mine Shaft No. 3 area (Eastern Basin) which is the focus of this study. The site is located is situated about 4.6km east of the Springs (Figure 1).

The aim of the scoping report is to conduct a desktop study to identify possible heritage resources within the project area and to assess their importance within a Local, Provincial and National context. The study furthermore aims to assess the impact of the proposed project on non - renewable heritage resources and to submit appropriate recommendations with regards to the responsible cultural resources management measures that might be required 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 Heritage legislation.

The report outlines the approach and methodology utilized for the Scoping phase of the project. The report includes information collected from various sources and consultations. Possible impacts are identified and mitigation measures are proposed in the following report. It is important to note that no field work was conducted as part of the scoping phase but will be conducted as part of the Impact Assessment in the next phase.

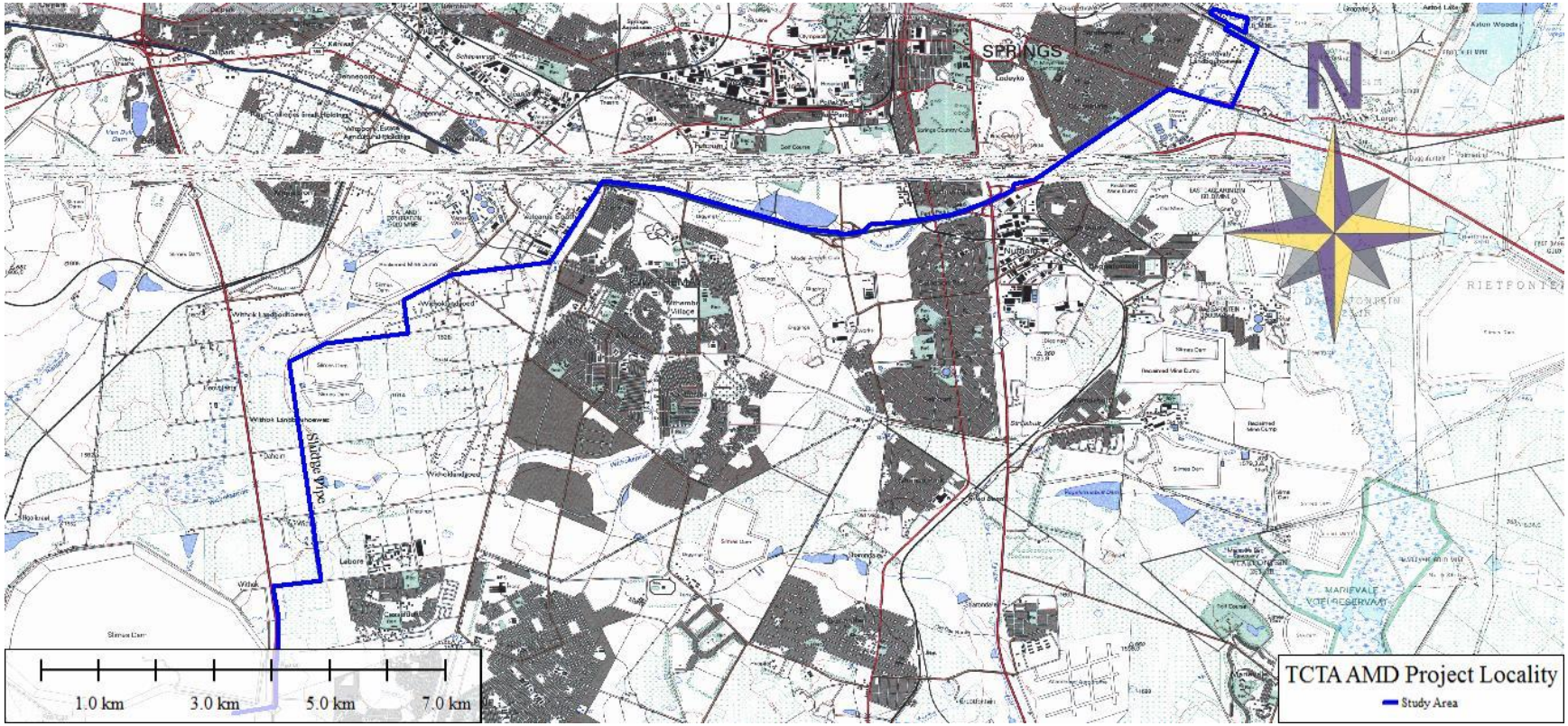


Figure 1: Location Map.

1.2 Terms of Reference

The main aim of this scoping report is to determine if any known heritage resources occur within the study area and to predict the occurrence of any possible heritage significant sites that might present a fatal flaw to the proposed project. The objectives of the scoping report were to:

- Conduct a desktop study:
  - Review available literature, previous heritage studies and other relevant information sources to obtain a thorough understanding of the archaeological and cultural heritage conditions of the area;
  - Gather data and compile a background history of the area;
  - Identify known and recorded archaeological and cultural sites;
  - Determine whether the area is renowned for any cultural and heritage resources, such as Stone Age sites, Iron Age sites, informal graveyards or historical homesteads.
- Report

The reporting of the scoping component is based on the results and findings of the desk-top study and a site visit, wherein potential issues associated with the proposed project will be identified, and those issues requiring further investigation through the IA Phase highlighted. Reporting will aim to identify the anticipated impacts, as well as cumulative impacts, of the operational units of the proposed project activity on the identified heritage resources for all 3 development stages of the project, i.e. construction, operation and decommissioning. Reporting will also consider alternatives should any significant sites be impacted on by the proposed project. This is done 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 Heritage Legislation.

1.3 Nature of the development

Construction activities at these locations will entail constructing infrastructure around shafts (For acid water abstraction), high density sludge (HDS) treatment plants, pipelines for both sludge and clear water disposal and roads and areas used for transportation and access.

The proposed project entails constructing the necessary infrastructure for the installation of pumps, for the pumping of Acid Mine Water from Grootvlei Shaft No.3, and the treatment thereof, which will consist of the following:

- Construction of Shaft Capping for Grootvlei Shaft No. 3;
- Demolition, removal and disposal of certain old mine infrastructure;
- Construction of a structural steel pump station superstructure, including foundations;
- Manufacture, supply and installation of a 130 ton Travelling Crane in the pump station superstructure;
- Exploration by probe to confirm that the shaft is clear for installation of three deep mine abstraction pumps;
- Procurement and Installation of three deep mine abstraction pumps;

- Construction of a 106ML/day High Density Sludge (HDS) Treatment Plant including all chemical storage facilities, treatment tanks, chemical dosing facilities, pipework, pumps, buildings and appurtenant works.;
- Construction of MCC Building and Generator Room;
- Construction of an approximately 30 km long sludge delivery pipeline (Provisional);
- Construction of a potable water supply pipeline for supply of potable water from Rand Water and a 0.1 km long raw AMD water pipeline;
- Construction of a Guard House;
- Construction of an Administration Building;
- Road works;
- Fencing;
- Site lighting;
- Transformer Yard;
- Supply and installation of Medium and Low Voltage Switch Gear;
- Construction of water monitoring boreholes.

1.4 The receiving environment

The Grootvlei Mine Shaft No. 3 is situated about 4.6km east of the Springs Central Business District (CBD). The site is accessible via the R29 Ermelo Road and Grootvaly Road through the suburb of Casseldale. The main land uses within the region used to be predominately mining however in recent times it has been replaced by engineering and manufacturing of economic importance (metals, chemicals, paper and foodstuffs).

The study area falls within the bioregion described by Mucina *et al* (2006) as the Mesic Highveld Grassland Bioregion with the vegetation described as Soweto and Eastern Highveld Grassland. Land use in the general area is characterized by mining.

2. APPROACH AND METHODOLOGY

The assessment is to be undertaken in two phases, a desktop study and an Archaeological Impact Assessment. The aim of this report is to cover archaeological and cultural heritage data available to compile a background history of the study area. In order to identify possible heritage issues or fatal flaws that should be avoided during development.

This was accomplished by means of the following phases (the results are represented in section 4 of this report):

2.1 Literature search

Utilising data for information gathering stored in the archaeological database at Wits University, published articles on the archaeology and history of the area. The aim of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves of the area.

2.2 Information collection

The SAHRA report mapping project (Version 1.0) and SAHRIS was consulted to further collect data from CRM practitioners who undertook work in the area to provide the most comprehensive account of the history of the area where possible.

2.3 Google Earth and mapping survey

Google Earth and 1:50 000 maps of the area were utilised to identify possible places where archaeological sites might be located.

2.4 Genealogical Society of South Africa

The database of the genealogical society was consulted to collect data on any known graves in the area.

3. LEGISLATION

For this project the National Heritage Resources Act, 1999 (Act No. 25 of 1999) is of importance and the following sites and features are protected:

a. Archaeological artefacts, structures and sites older than 100 years
b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
c. Objects of decorative and visual arts
d. Military objects, structures and sites older than 75 years
e. Historical objects, structures and sites older than 60 years
f. Proclaimed heritage sites
g. Grave yards and graves older than 60 years
h. Meteorites and fossils
i. Objects, structures and sites or scientific or technological value.

The national estate that includes the following:

a. Places, buildings, structures and equipment of cultural significance
b. Places to which oral traditions are attached or which are associated with living heritage
c. Historical settlements and townscapes
d. Landscapes and features of cultural significance
e. Geological sites of scientific or cultural importance
f. Archaeological and palaeontological importance
g. Graves and burial grounds
h. Sites of significance relating to the history of slavery
i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

Section 34 (1) of the act deals with structures which is older than 60 years. Section 35(4) of this act deals with archaeology, palaeontology and meteorites. Section 36(3) of the National Heritage Resources Act, deals with human remains older than 60 years. Unidentified/unknown graves are also handled as older than 60 until proven otherwise.

3.1 Heritage Site Significance and Mitigation Measures

The presence and distribution of heritage resources define a Heritage Landscape. In this landscape, every site is relevant. In addition, because heritage resources are non-renewable, heritage surveys need to investigate an entire project area. In all initial investigations, however, the specialists are responsible only for the identification of resources visible on the surface.

This section describes the evaluation criteria used for determining the significance of archaeological and heritage sites. National and Provincial Monuments are recognised for conservation purposes. The following interrelated criteria were used to establish site significance:

- The unique nature of a site;
- The integrity of the archaeological/cultural heritage deposit;
- The wider historic, archaeological and geographic context of the site;
- The location of the site in relation to other similar sites or features;
- The depth of the archaeological deposit (when it can be determined or is known);
- The preservation condition of the site;
- Potential to answer present research questions.

The criteria above will be used to place identified sites with in SAHRA's (2006) system of grading of places and objects which form part of the national estate. This system is approved by ASAPA for the SADC region. The recommendations for each site should be read in conjunction with section 11 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. REGIONAL OVERVIEW

4.1 General Information

4.1.1. Literature search

A search on the archaeological Wits data base yielded no known sites within the study area.

4.1.2. Information collection

Previous heritage studies were conducted in the general study area (SAHRIS). The studies by van der Walt (2008), van der Walt and van Schalkwyk (2012) were consulted for this report and found no sites of heritage significance in the area.

4.1 3. Public consultation

No public consultation was conducted during this study.

4.1.4. Google Earth and mapping survey

Google Earth and 1:50 000 maps of the area was utilised to identify possible places where archaeological sites might be located.

4.1.5. Genealogical Society of South Africa

No grave sites are indicated within the study area.

4.2 Historical Information Available on the Study Area

The following report will endeavour to give an account of the history of the greater area of the proposed development and also a brief overview of the history of the district in which it is located. The report has been divided into several sections that will focus on the following aspects:

- General history of human settlement in the area
- The history of black and white interaction in the farm area
- A history of specific land ownership and development of the farm, where this could be traced

It was necessary to use a number of sources in order to give an account of the history of the area under investigation. Sources include secondary source material, maps, electronic sources and archival documents. Although it was strived to include all available archival documentation and a range of primary and secondary sources, there are doubtlessly still sources to be found on the history of the area researched in this study.

In 1992 one W. H. Till did a thesis on the Grootvlei mine, specifically with regards to the reduction of pumping costs at this mine. This is a good source for more technical information on the geographical nature of this region:

Till, W. H. 1992. *The reduction of pumping costs at Grootvlei Mine*. B. Eng (Mining). Pretoria: University of Pretoria.

4.2.1. Maps Of The Area Under Investigation

Since the mid 1800's up until the present, the area where Grootvaly 124 IR is located today has been classified into various different districts. Since 1857, Grootvaly would have formed part of the Pretoria district. By 1866, Springs was located in the Heidelberg district. As of 1902 it however fell under the jurisdiction of the Witwatersrand district, in the East Rand ward. This remained the case up 1994, when South Africa was subdivided into new provinces, and the farm area formed part of the Gauteng province, within the Springs ward. (Geskiedenisatlas van Suid-Afrika 1999: 17, 22-27)

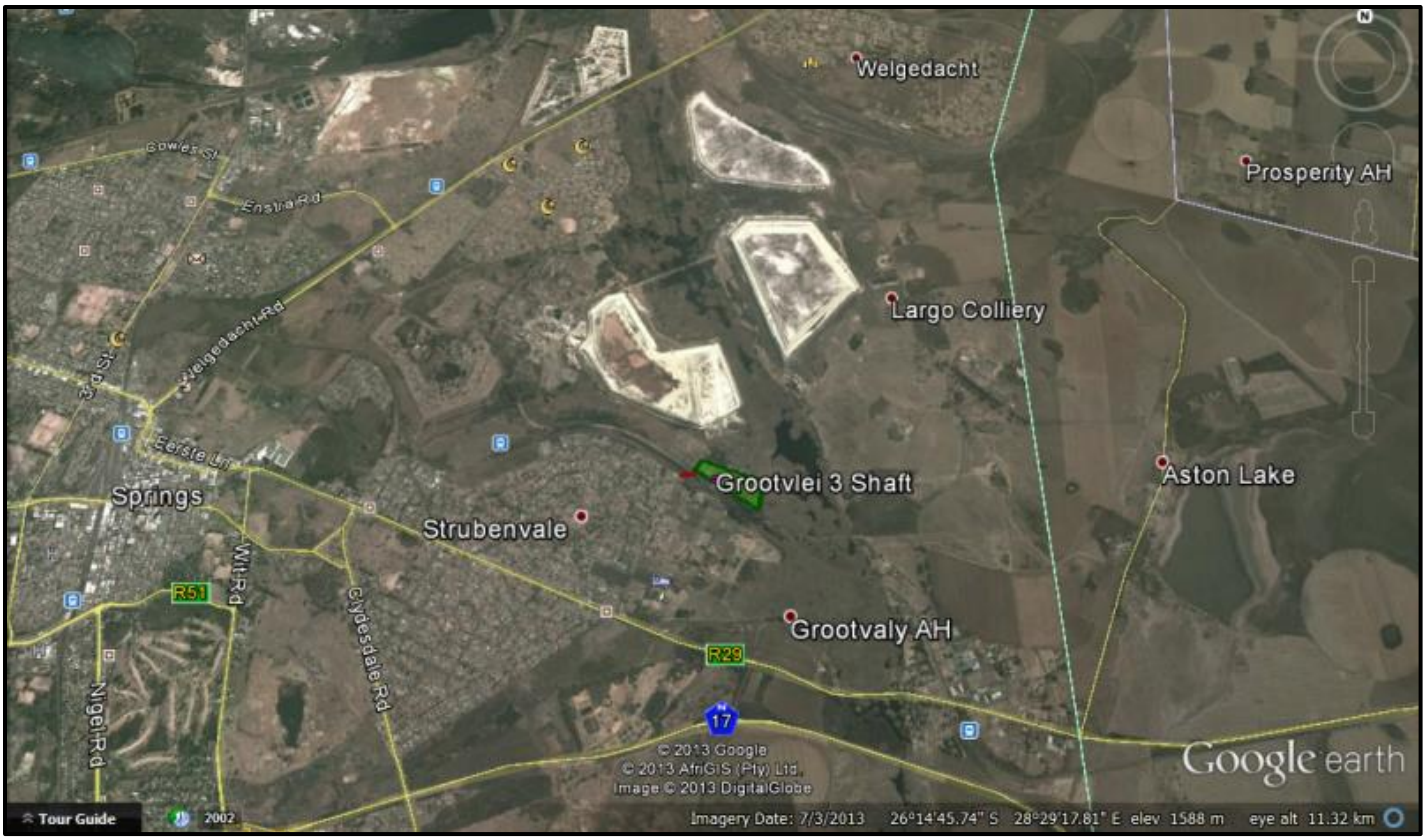


Figure 2: Google Earth image showing the location of the Grootvlei No 3 Shaft (as well as the area under investigation in green) in relation to Strubenvale, Springs, Welgedacht, Prosperity and Aston Lake. (Google Earth 2014)

Figure 3 : Google Earth image of the Grootvlei 3 Shaft area in relation to the Grootvlei Proprietary Mines and Strubenvale. (Google Earth 2014)

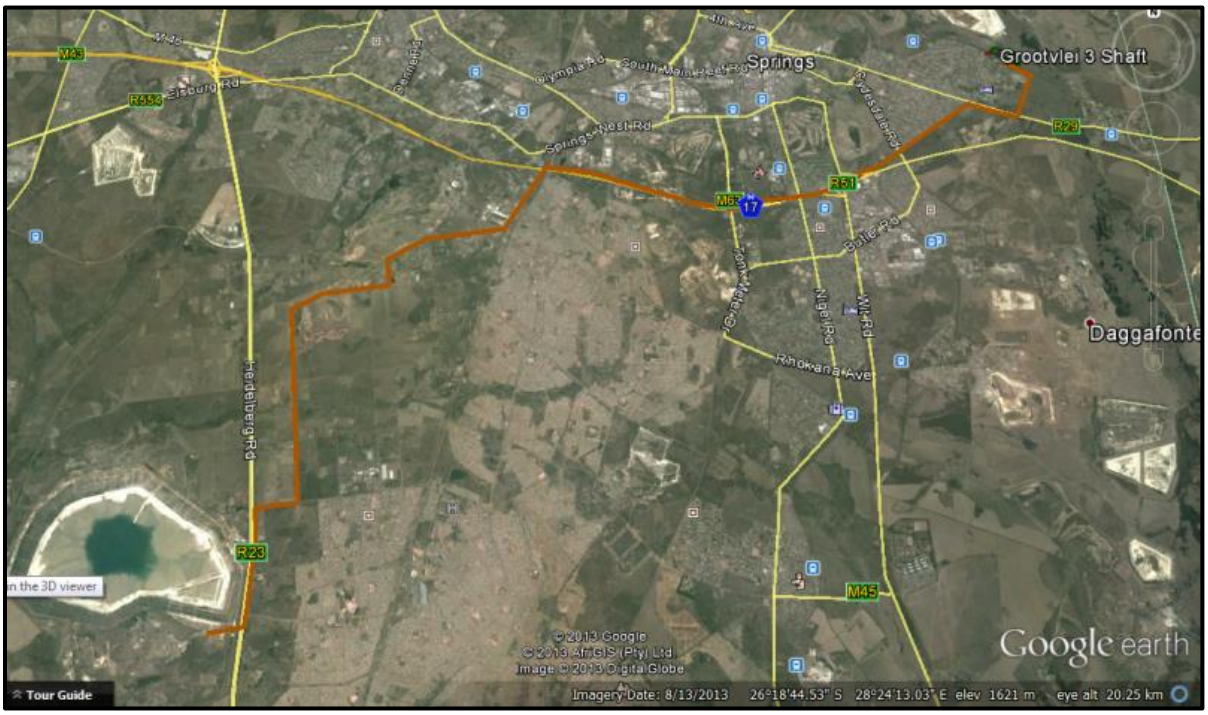


Figure 4 : Google Earth image showing the location of the Grootvlei No 3 Shaft, as well as the proposed pipeline that will be constructed from this site. (Google Earth 2014)

* Note that, for the purpose of this report, the area of focus is the No 3 Shaft at Grootvlei mine, and specific attention could not be given to all the individual properties on which the pipeline will be constructed. A general history of the area is however provided.

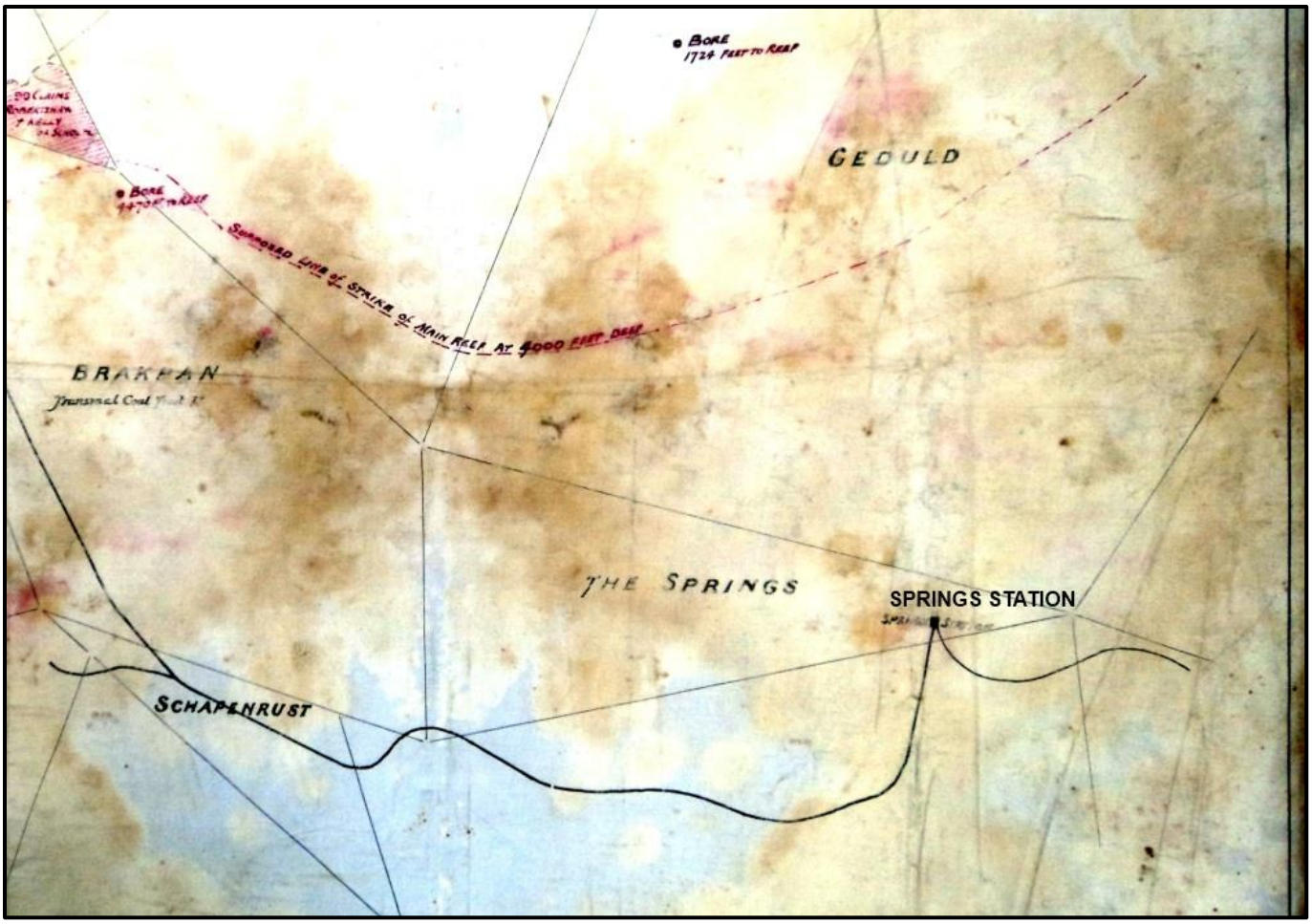


Figure 5 : 1903 Map of the Witwatersrand area. The area of Springs, as well as surrounding properties are shown. The only visible development in the Springs area is the Springs Railway Station. (NASA *SAB, Maps: 3/241*)

Figure 6: 1939 Map of the farm Grootvaly 5 and surrounding properties. The yellow dot to the northeast of the Strubenvale residential area indicates the location of the area under investigation. (NASA *SAB, Maps: 1/93*)

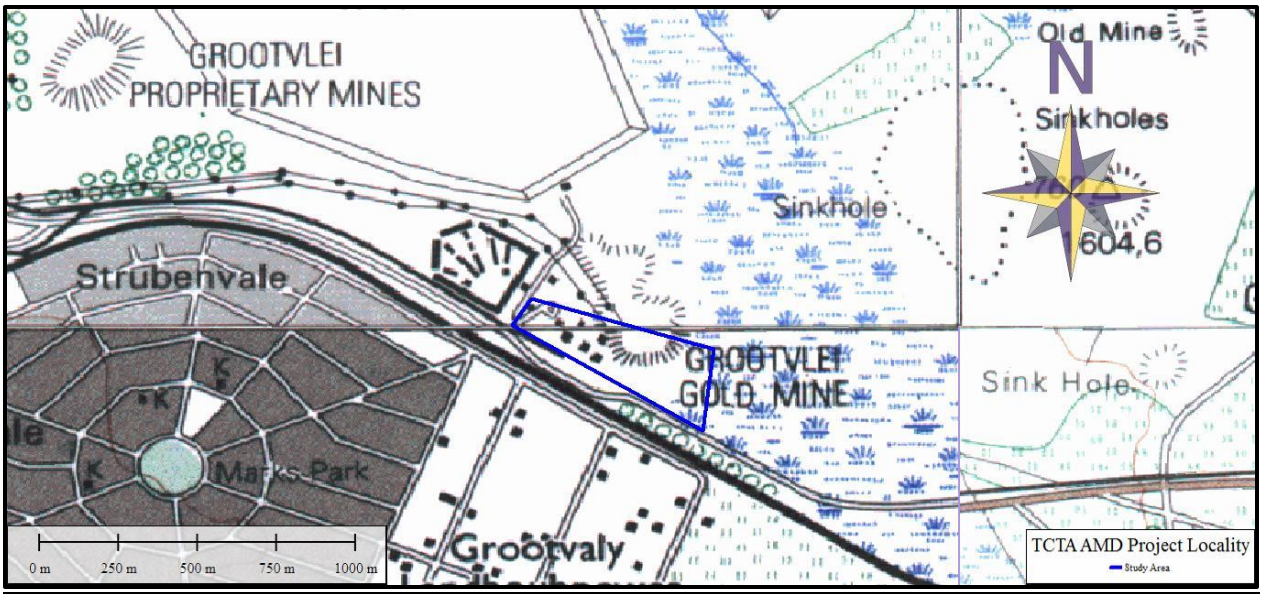


Figure 7 : 1991-2002 Topographical map of the property Grootvaly 124 IR. The area of focus for this study falls within the blue border, to the east of the Grootvlei mine compound and directly to the north of the Grootvaly Agricultural Holdings. By 2002, 5 buildings were present on this part of the property. A diggings site is located to the north hereof, and one can see a small body of perennial water in the vicinity of the marshland. Railways form the southern and north-eastern boundaries of the specific area under investigation. The Strubenvale residential area is located to the southwest of the area of study. (Topographical Map 2002 *2628AB;* Topographical Map 1991 *2628CA;* Topographical Map *2002 2628AD;* Topographical Map 1991 *2628BC)*

4.2.2. A Brief History of Human Settlement And Black And White Interaction In The Springs Area

J. S. Bergh's historical atlas of the four northern provinces of South Africa is a very useful source for researching local and regional history. This source serves as a helpful tool in plotting where certain events had taken place in the past.

In Southern Africa the domestication of the environment began only a couple of thousands of years ago, when agriculture and herding were introduced. At some time during the last half of the first millennium BC, people living in the region where Botswana, Zambia and Angola are today, started moving southward, until they reached the Highveld and the Cape in the area of modern South Africa. Over the centuries, as the sub-continent became fully settled, these agro-pastoralists, who spoke Bantu languages, started dominating all those areas which were ecologically suitable for their way of life. This included roughly the eastern half of modern South Africa, the eastern fringe of Botswana and the north of Namibia. There are no signs that Stone Age or Iron Age communities had been active in the modern day Springs area in the past, and at the beginning of the 19th century no prominent black tribe had settled in this area yet. This would soon change. The Difaqane (Sotho), or Mfekane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's. It came about in response to heightened competition for land and trade, and caused population groups like gun-carrying Griquas and Shaka's Zulus to attack other tribes. By 1827 Mzilikazi's Ndebele were moving through the area where Johannesburg is located today. This group went on raids to various other areas in order to expand their area of influence. By 1832 Zulu raiders however travelled

close by the Springs area to attack the Ndebele tribe. (Ross 1995: 6, 7; Packard 2001: 594; Geskiedenisatlas van Suid-Afrika 1999: 4-8, 10, 11, 14, 116-119)

During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers had gone on expeditions to the northern areas in South Africa, some already as early as the 1720's. One Hume travelled through the area north of Springs in 1830, but it does not seem that any of the early travellers visited this specific area. (Geskiedenisatlas van Suid-Afrika 1999: 13)

It was only by the late 1820's that a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek. This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. Between 1839 and 1840, farm boundaries were drawn up in an area that includes the present-day Springs. As can be expected, the migration of whites into the northern provinces would have a significant impact on the black people who populated the land. (Ross 2002: 39; Geskiedenisatlas van Suid-Afrika 1999: 15)

The area of interest for this report is located approximately 30 kilometers east of Johannesburg, in a region formerly known as the Far East Rand, within the larger Witwatersrand gold mining area. The first gold discovered in this part of the Witwatersrand was on the farm Varkensfontein in 1888, only two years after gold was first discovered in the Witwatersrand. The discovery of diamonds and gold in the northern provinces had very important consequences for South Africa. After the discovery of these resources, the British, who at the time had colonized the Cape and Natal, had intensions of expanding their territory into the northern Boer republics. This eventually led to the Anglo-Boer War, which took place between 1899 and 1902 in South Africa, and which was one of the most turbulent times in South Africa's history. (Till 1992: 1)

The situation in the Witwatersrand also served as a trigger for the commencement of the Anglo-Boer War. The rush of *uitlanders* (foreigners) that followed the discovery of gold in the Witwatersrand, and the resultant fear of the Afrikaners of being overwhelmed, caused President Kruger to resist the granting of the franchise to incomers. Increased resentment towards Kruger fuelled Cecil Rhodes' plot to oust Kruger's government. At the outbreak of the war in October 1899, Johannesburg provided a commando under Commandant B. J. Viljoen, whilst the *uitlanders* left for Lourenco Marques to join the British troops at Durban. To the south of the Magaliesberg range, between Johannesburg and Mafeking, stands the Witwatersrand range of hills. These hills were skilfully exploited by Boers during the guerrilla phase of the war, and especially by Assistant Commandant-general Koos de la Rey and Chief-commandant Christiaan de Wet. (Marix Evans 2000: 128-129, 163)

Some skirmishes were recorded near Springs. The Johannesburg Mounted Rifles British corps was founded in December 1900, and the greater portion of these troops was stationed in the Springs district in the early part of 1901. Here the Boer enemy was always in the vicinity, and opportunities for confrontation often came up. On 17 January 1901, Lieutenant S. A. Anderson and Captain D. W. Talbot ambushed Boer troops near Springs. (Angloboerwar.com 1999)

By the late 1940s mining was booming on the East Rand. There were 22 mines in operation working the Main and Kimberley reefs from more than 90 shafts. The area's prosperity however did not last; during the 1950's and 1960's many of the mines closed because their ore reserves had become depleted. The mines that stayed in operation started to mine their second reef low grade ore because the high grade ore

had been depleted. By 1992 only four operating mines were left in the East Rand. These were the following:

- Grootvlei Proprietary Mines Limited
- East Rand Proprietary Mines Limited
- Consolidated Modderfontein Mines Limited
- Marievale Proprietary Mines Limited

By the 1990's one of the major financial concerns at the Grootvlei mine was the large amount of ground water that had to be pumped to the surface in order to make mining activities possible. This water flowed out of rocks in the Transvaal sequence. This dolomite layer is an enormous reservoir of ground water which seeps into the underground mine works through fissures and cracks in the overlaying strata. It is due to extensive mining in the area that the overlying strata are fractured today. The porous dolomite layer acts as a sponge that absorbs all the rainwater that seeps into the ground. The source by W. H. Till can be consulted for further technical information on the Grootvlei gold mine. (Till 1992: 1-2)

4.2.3. Historical Overview of The Development Of The Farm Grootvaly 124 Ir

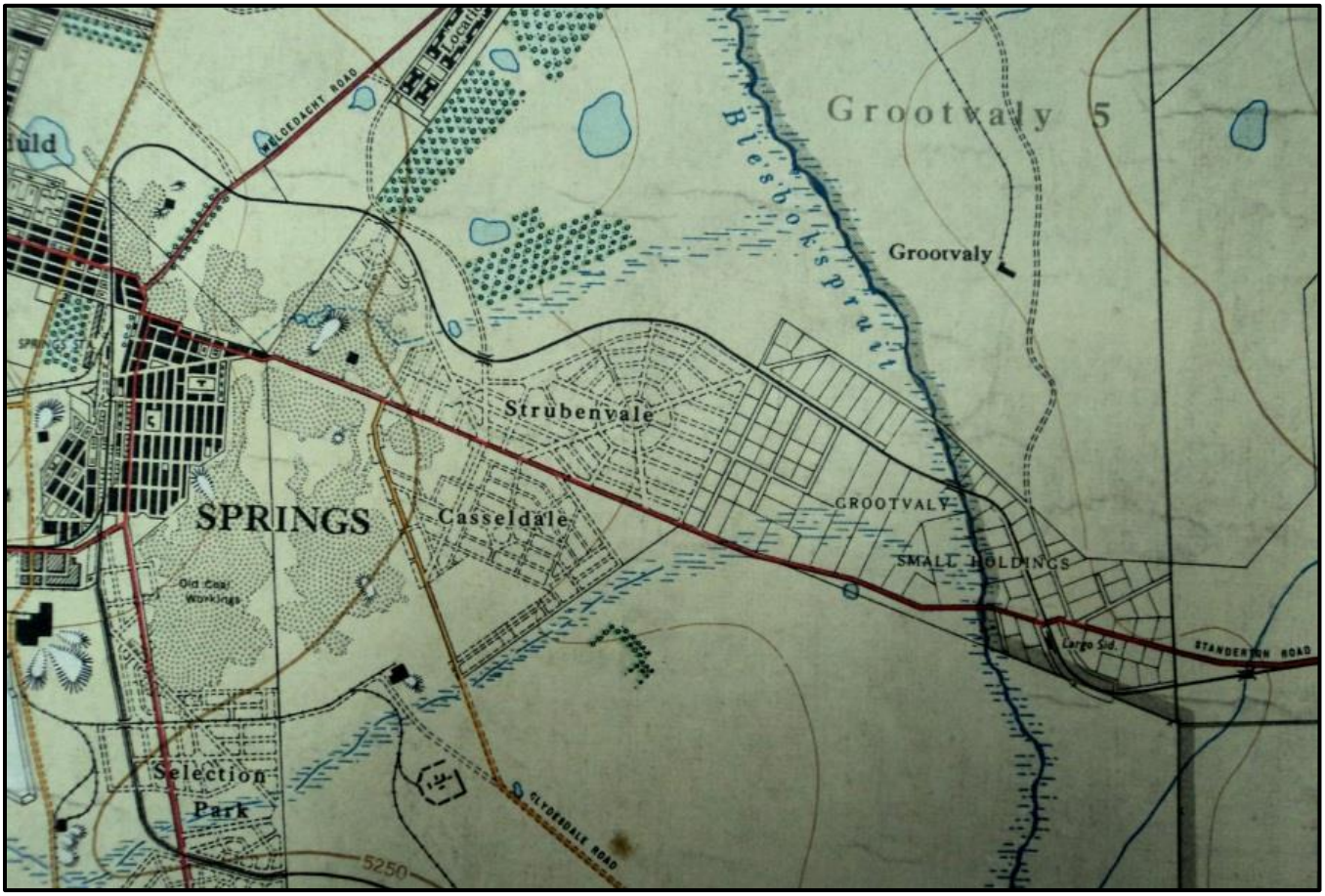


Figure 8 : 1935 Map of Grootvaly 5. No developments can yet be seen in the area to the northeast of Strubenvale, but the Grootvaly Small holdings had been established. (NASA *SAB, Maps: 2/107*)

In December 1928 the African and European Investment Company Ltd. started a process to establish a smallholding scheme in the south eastern portion of the farm Grootvaly No. 5, which belonged to them at the time. This development took place in an area directly to the south of where the area under investigation is situated. Permission for the sale of agricultural plots was procured in 1929.These plots were sold to white landowners, but many of these people allowed black families to reside on their land. Conditions on the plots were described as “unsanitary” in the early 1930s, and some of the plots had even been subdivided illegally. By 1952 the African and European Investment Co. Ltd. was still the owner of the Grootvaly small holdings, which consisted of 106 holdings together with an outspan. (NASA *SAB, CDB: 3/1032 TAD13/1/221*)

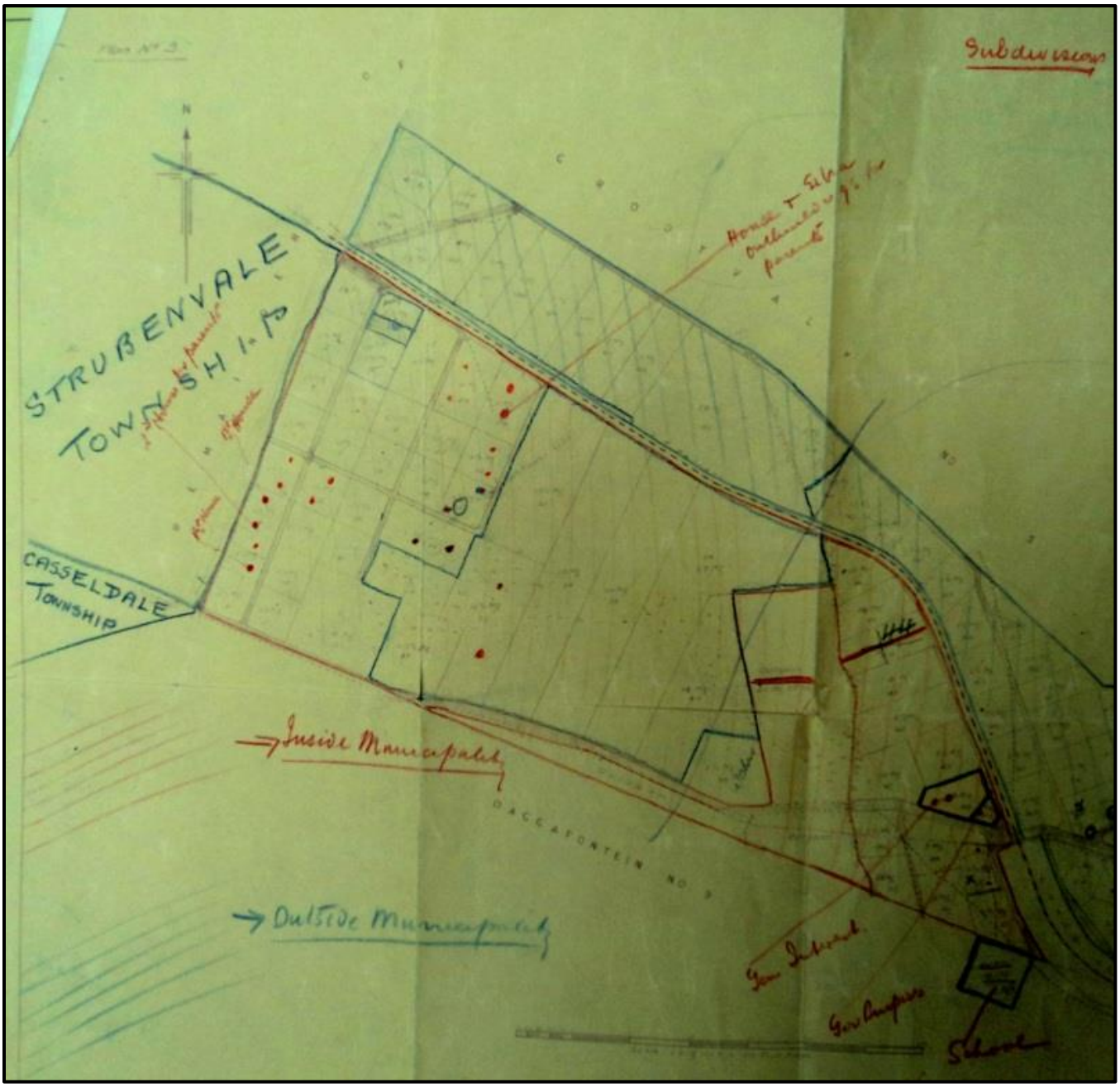


Figure 9: Maps of the Grootvaly agricultural holdings, located just to the southeast of the area under investigation. (NASA *SAB, CDB: 3/1032 TAD13/1/221*)

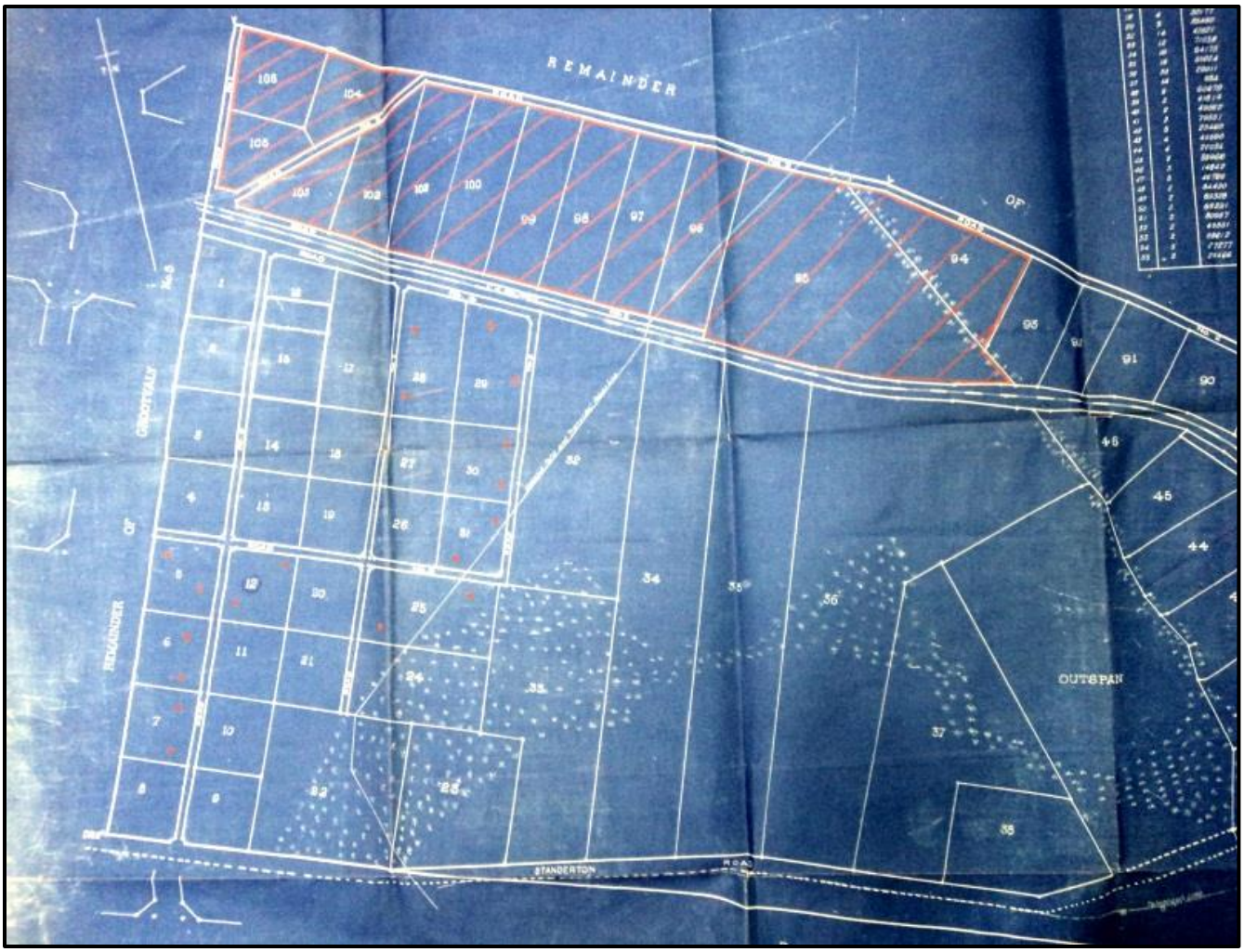


Figure 10 : Maps of the Grootvaly agricultural holdings, located just to the southeast of the area under investigation. (NASA *SAB, CDB: 3/1032 TAD13/1/221*)

On 6 July 1931 the proclamation of the farm Grootvaly No. 5 as a public digging for precious metals was recommended. This property fell under the jurisdiction of the Springs district and the mining district of Johannesburg at the time, and was registered in the name of the African European Investment Company, Limited. (NASA *SAB, URU: 1218 2055*)

On 4 May 1935, it was recommended that the exclusive right of mining precious metals on a certain area in extent approximately 400 claims, situated on the farm Grootvaly No. 5, be granted to Grootvlei Proprietary Mines Ltd., for a share of the profits deranged from the working of the area, determined by clause 10 of the mining lease entered into between the Government and the company. It is deduced that this area included Portion 20 of the property, near the later Shaft 3, on which the specific area of investigation is located. (NASA *SAB, URU: 1511 1205*)

On 5 October 1938 the Grootvlei Proprietary Mines Ltd received permission to use the surface of an area of proclaimed land, held under mining title, situated on the farm Grootvaly No. 5, for the purpose of a “Native cemetery”, with fencing. There is however no indication that this cemetery is located on or near

the specific portion of land under investigation. This is nevertheless something to keep in mind. (NASA *SAB, URU: 1751 2768*)

The Grootvlei Proprietary Mines Limited first received a permit to establish single black residential quarters in 1941. This housing development would be located 200 metres from the nearest town. (NASA *SAB, CDB: 15407 PB4/19/2/42/124/1*)

On 3 May 1946 it was recommended that the Town Council of Springs be permitted to use the surface of an area of proclaimed ground, held under mining title, situated on the farm Grootvaly No. 5 for the purpose of an extension to a non-European cemetery, with fencing, subject to the following special condition: “As this area forms part of land which is, or may be, undermined and liable to subsidence, settlement, shock and cracking due to mining operations past, present or future, the grantee accepts all liability for any damage thereto or to any structure thereon which may result from such subsidence, settlement, shock or cracking.” This is probably the cemetery already referred to, which was established in 1938. The cemetery was once again extended in 1948. (NASA *SAB, URU: 2339 1395;* NASA *SAB, URU: 2586 4034*)

In November 1954 the Minister of Justice consented to the granting of a permit to one G. A. R. Grieve to sell liquor at a sports club in a building on the Grootvlei Mine, situated a half mile from the border of the Payneville Native Location. This mine was owned by the Grootvlei Proprietary Mines Limited at the time. It is not certain where exactly this sports bar was located, and no maps are provided of the development. It is possible that this building may have been located in the area under investigation, since it belonged to the Grootvlei Proprietary Mines Ltd. (NASA *SAB, NTS: 7072 650/322*)

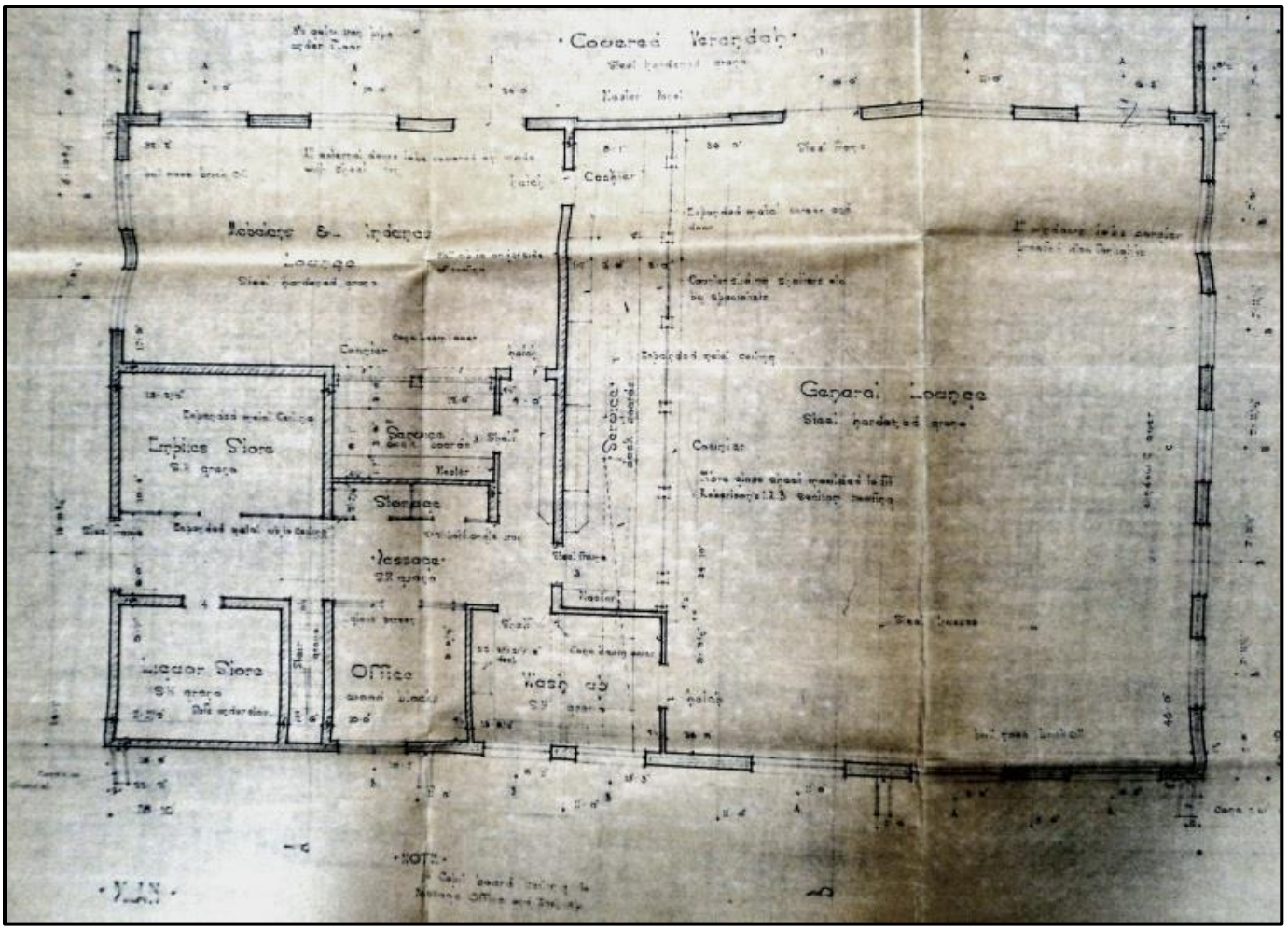


Figure 11: New compound bar building at No 3 Shaft compound owned by Grootvlei Pty. Mines Ltd. This is a top view of the stores and general lounge. (NASA *SAB, BAO: 4123 C167/3/505/3*)

By 1961 there were 71 Married quarters at the Grootvlei Proprietary Mines near Springs. By that time the No. 3 Shaft compound was already in existence on the farm Grootvaly No. 124. An employee of the mine, one Travers Heartly, applied to the government for a licence to sell liquor at the mine. He had plans drawn up of a compound bar with storage facilities and other amenities, and also sent these through in his application. (See images below) (NASA *SAB, BAO: 4123 C167/3/505/3*)

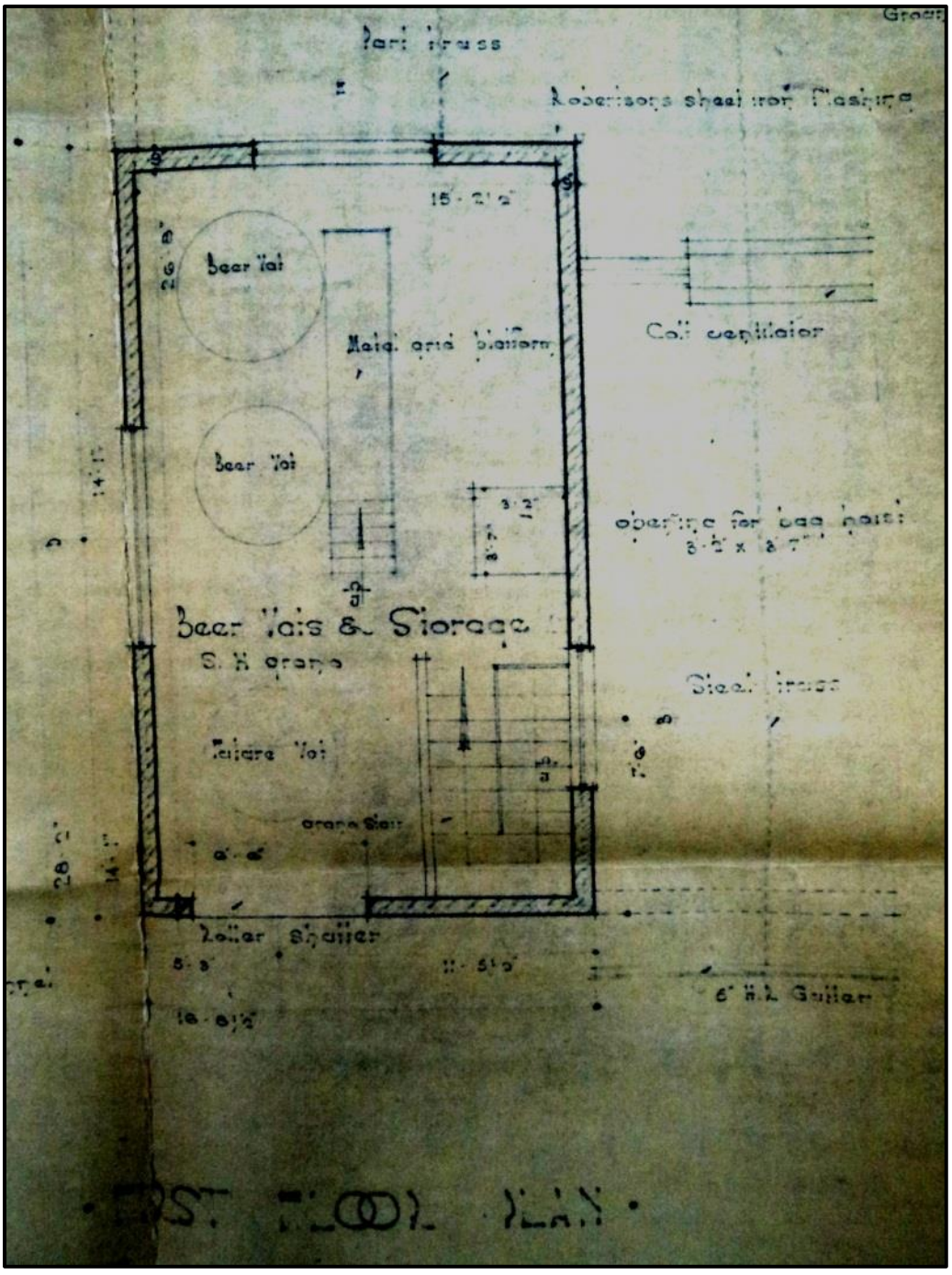
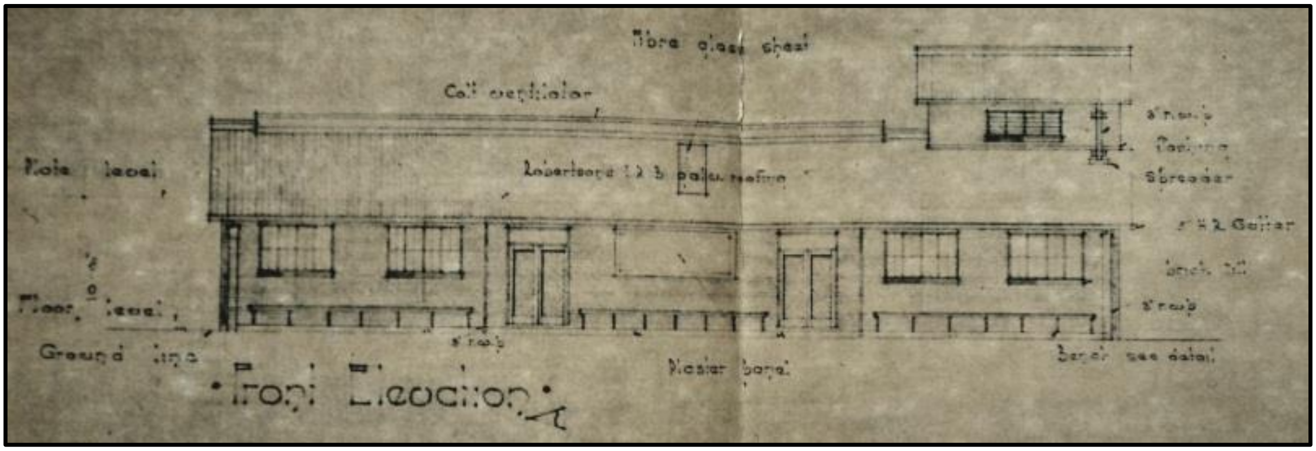
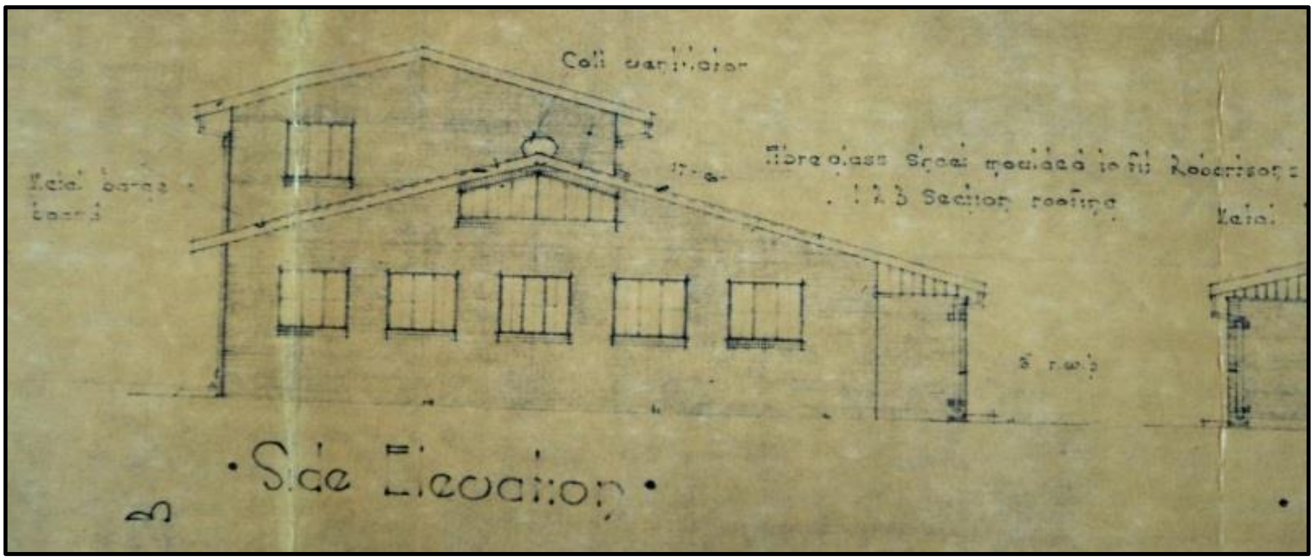


Figure 12: First floor plan – Beer vats and storage area. (NASA *SAB, BAO: 4123 C167/3/505/3*)


Fibre glass sheet
Cowl ventilator
Plate level
Floor level
Ground line
Master panel
Bench see detail
Front Elevation


Cowl ventilator
1 2 3 Section roofing
Side Elevation

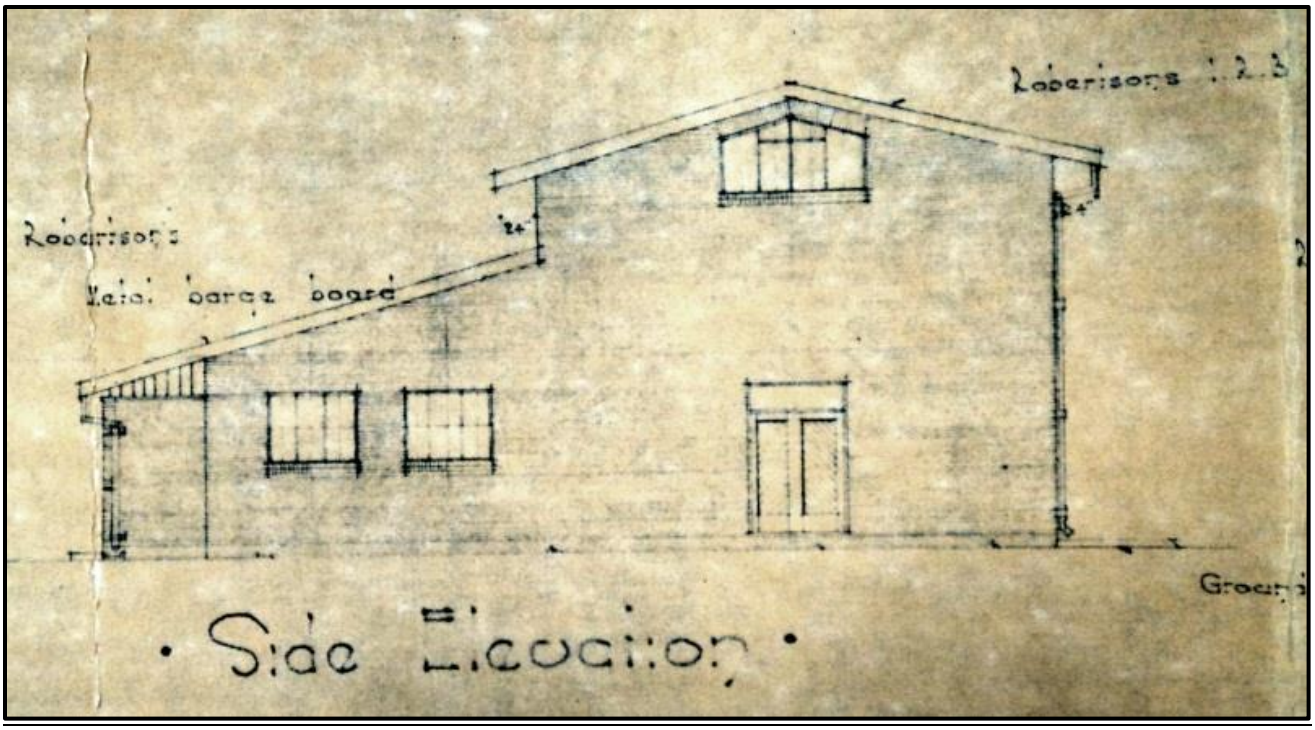


Figure 13: Side elevation. (NASA *SAB, BAO: 4123 C167/3/505/3*)

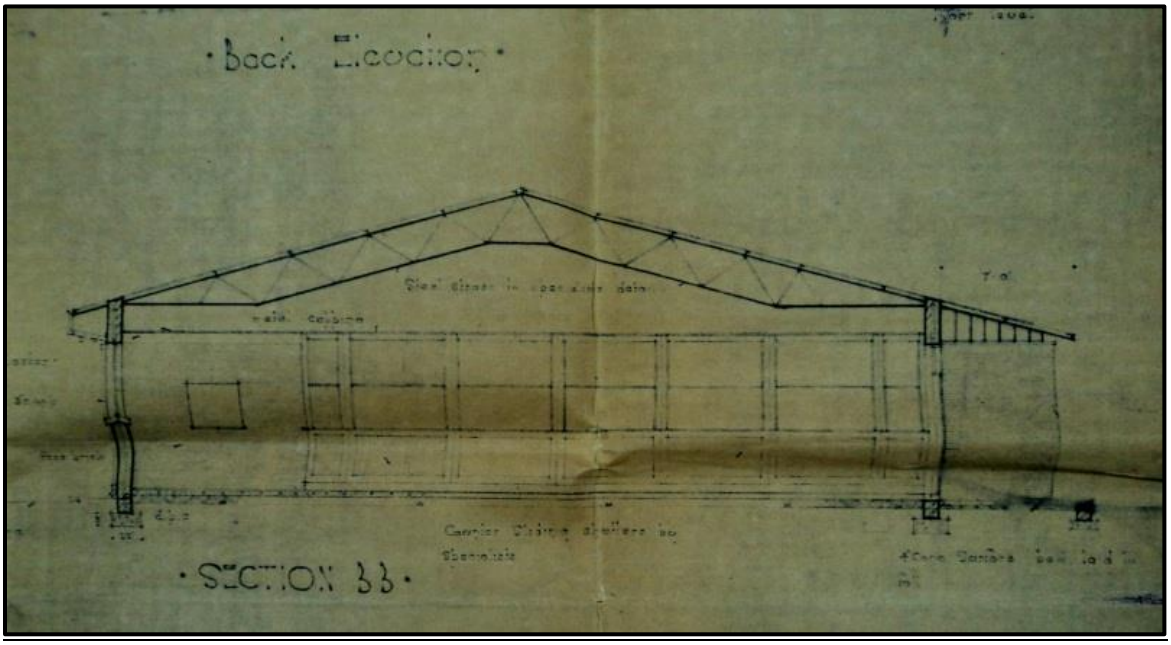


Figure 14: Back elevation. (NASA *SAB, BAO: 4123 C167/3/505/3*)

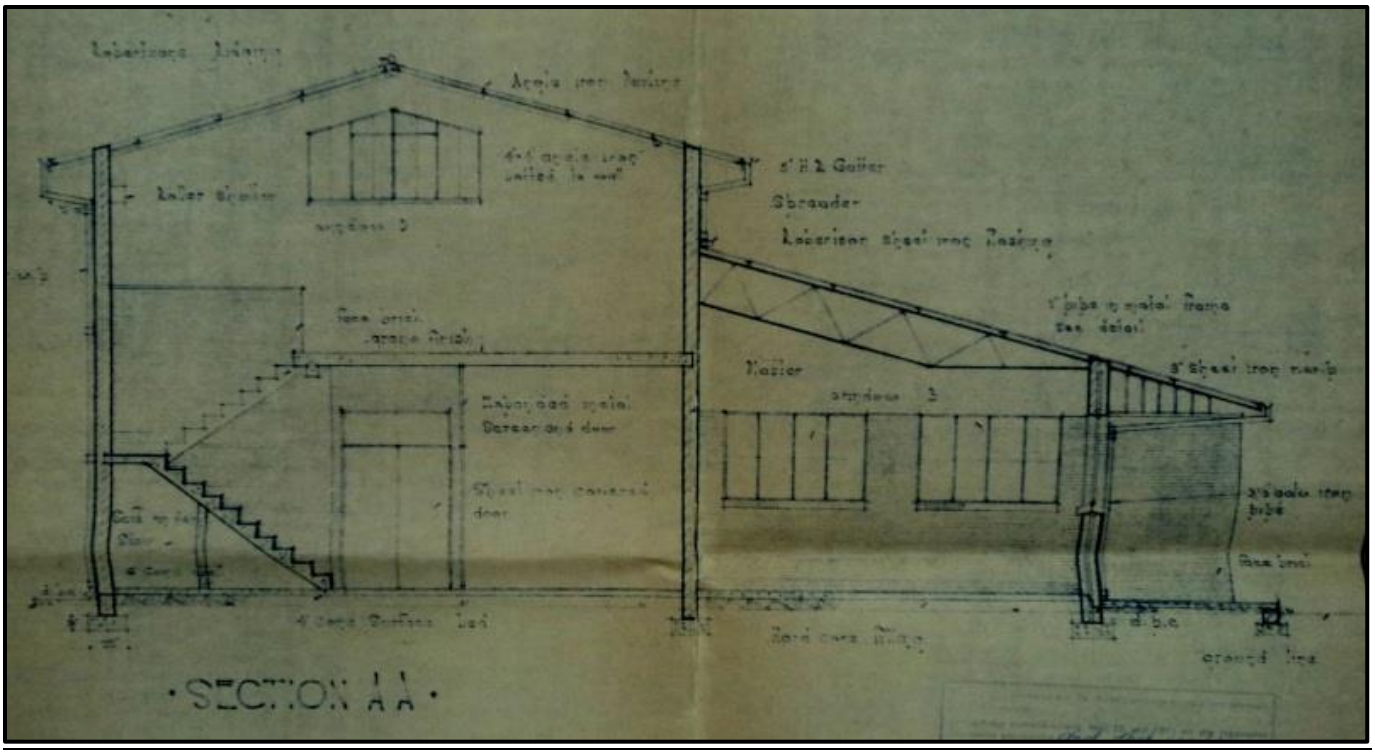


Figure 15 : Bar front elevation. (NASA *SAB, BAO: 4123 C167/3/505/3*)

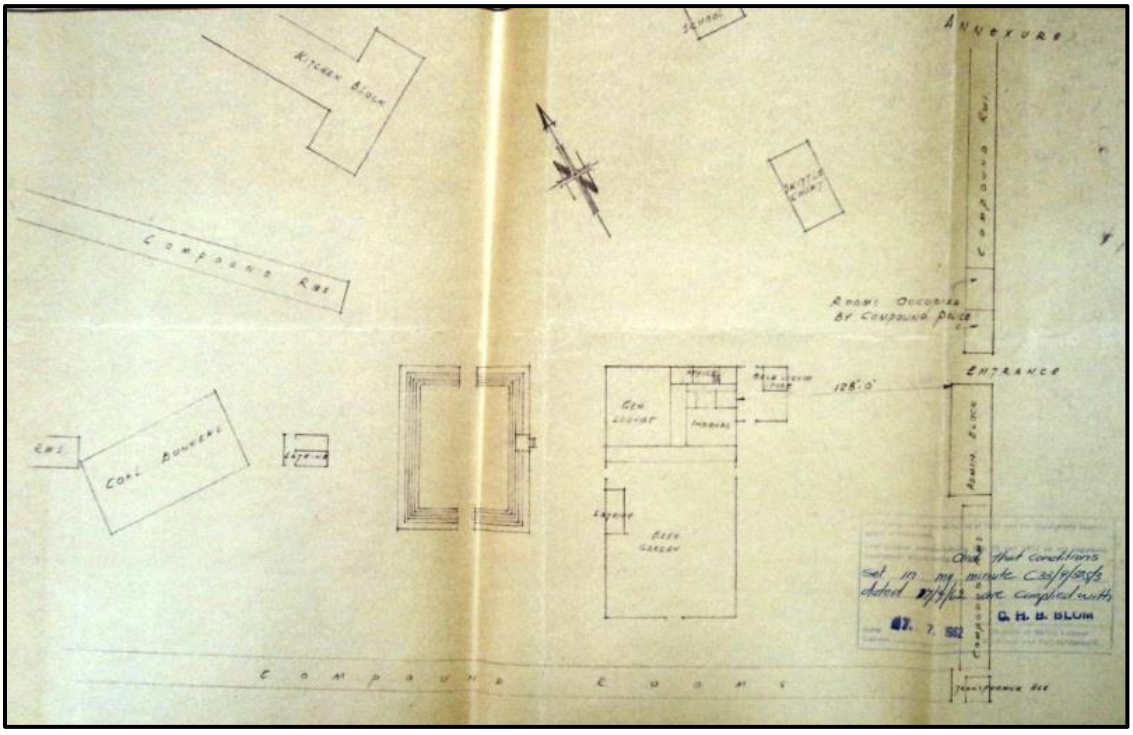


Figure 16: Site plan showing the new compound bar building at the No 3 Shaft compound for Grootvlei Pty. Mines Ltd. (NASA *SAB, BAO: 4123 C167/3/505/3*)

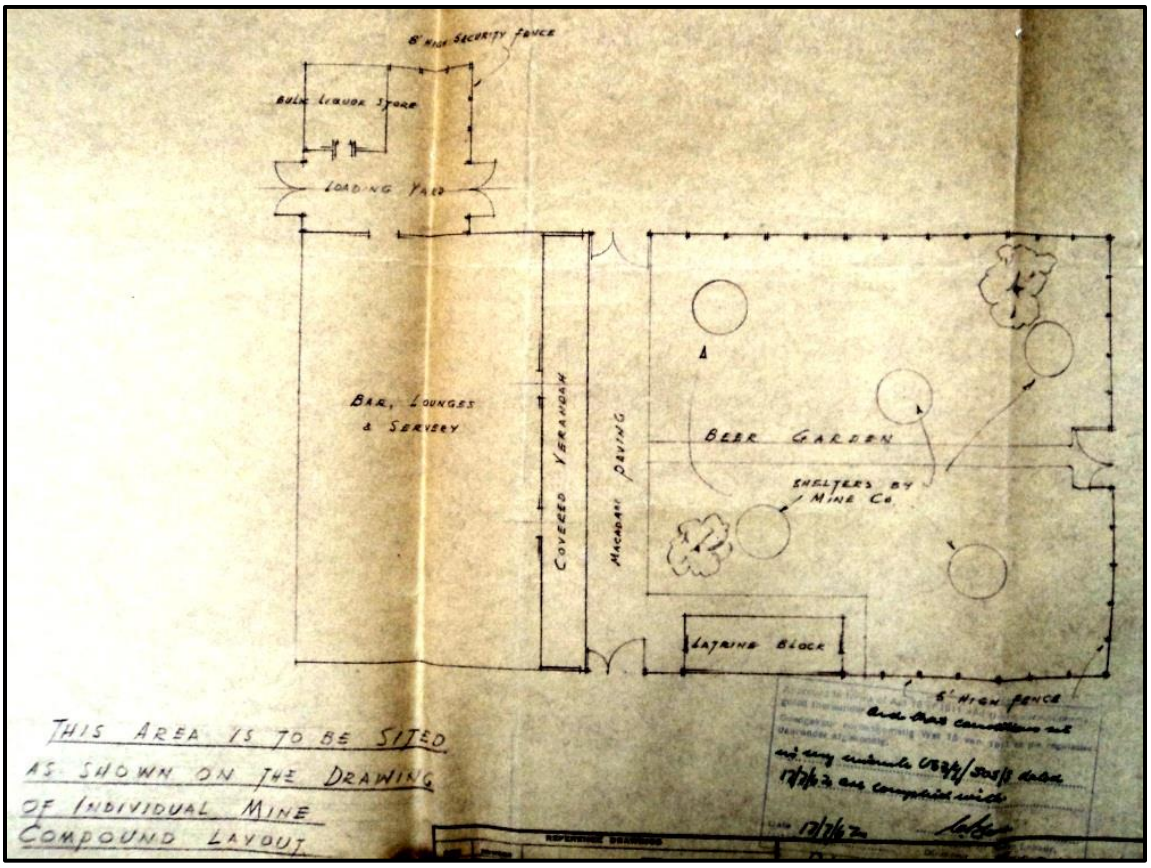


Figure 17 : Individual mine compound layout. One can see a bulk liquor store, the bar, lounges and server, a covered veranda, a beer garden and a latrine block. This area was fenced. (NASA *SAB, BAO: 4123 C167/3/505/3*)

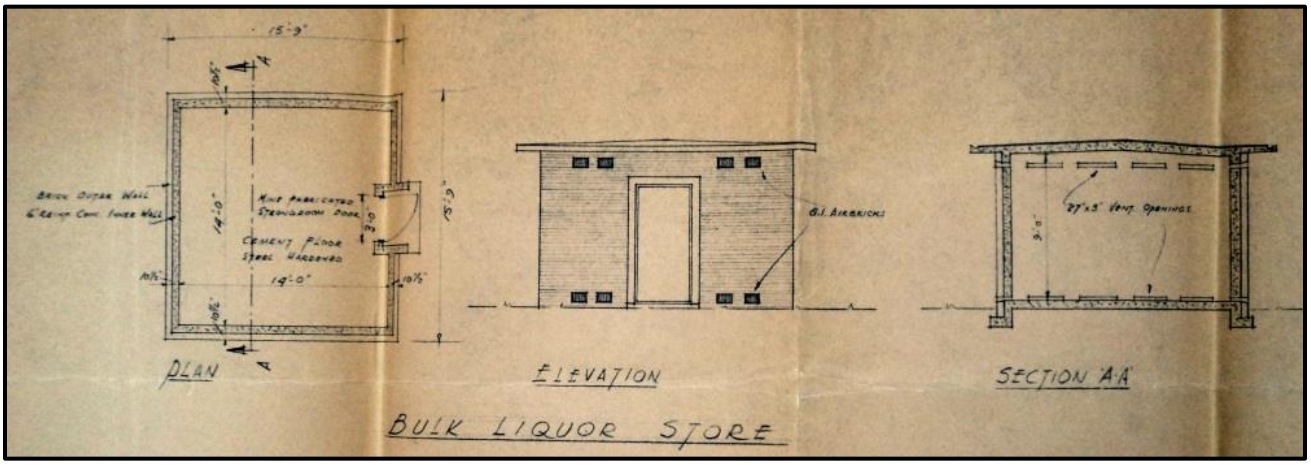


Figure 18: Plans of a typical bulk liquor store

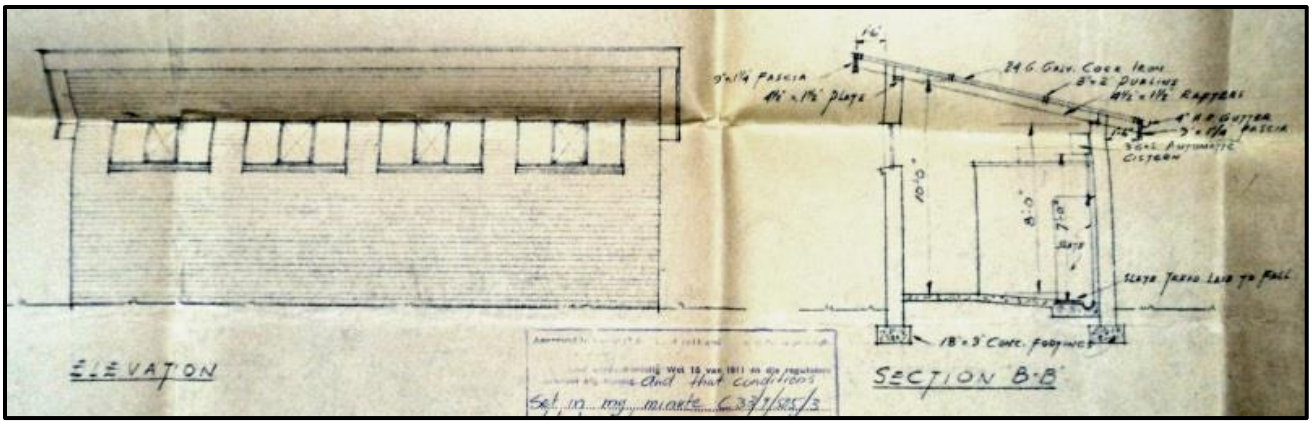


Figure 19: Plans of a latrine block in black compound bars. (NASA *SAB, BAO: 4123 C167/3/505/3*)

On 5 May 1962 the application was recommended by the National Liquor Board to the Minister of Justice, subject to certain regulations. However, in January 1963 the Bantu Affairs Commissioner at Springs wrote to the Chief Bantu Affairs Commissioner, stating that the preparation of the liquor-sale premises had been discontinued. This was due to the fact that the mine was obliged to buy "Bantu beer" from the local authority of Springs. The local authority could however not supply enough beer at that time. (NASA *SAB, BAO: 4123 C167/3/505/3;* NASA *SAB, BAO: 4183 C168/3/505/3*)

It seems that the mine company once again applied for permission to sell liquor in 1971, but it is not certain whether they were granted permit. One could however argue that, when the bar was eventually opened, the design might have been based on the earlier building plans, as seen above. (NASA *SAB, BAO: 4123 C167/3/505/3;* NASA *SAB, BAO: 4183 C168/3/505/3*)

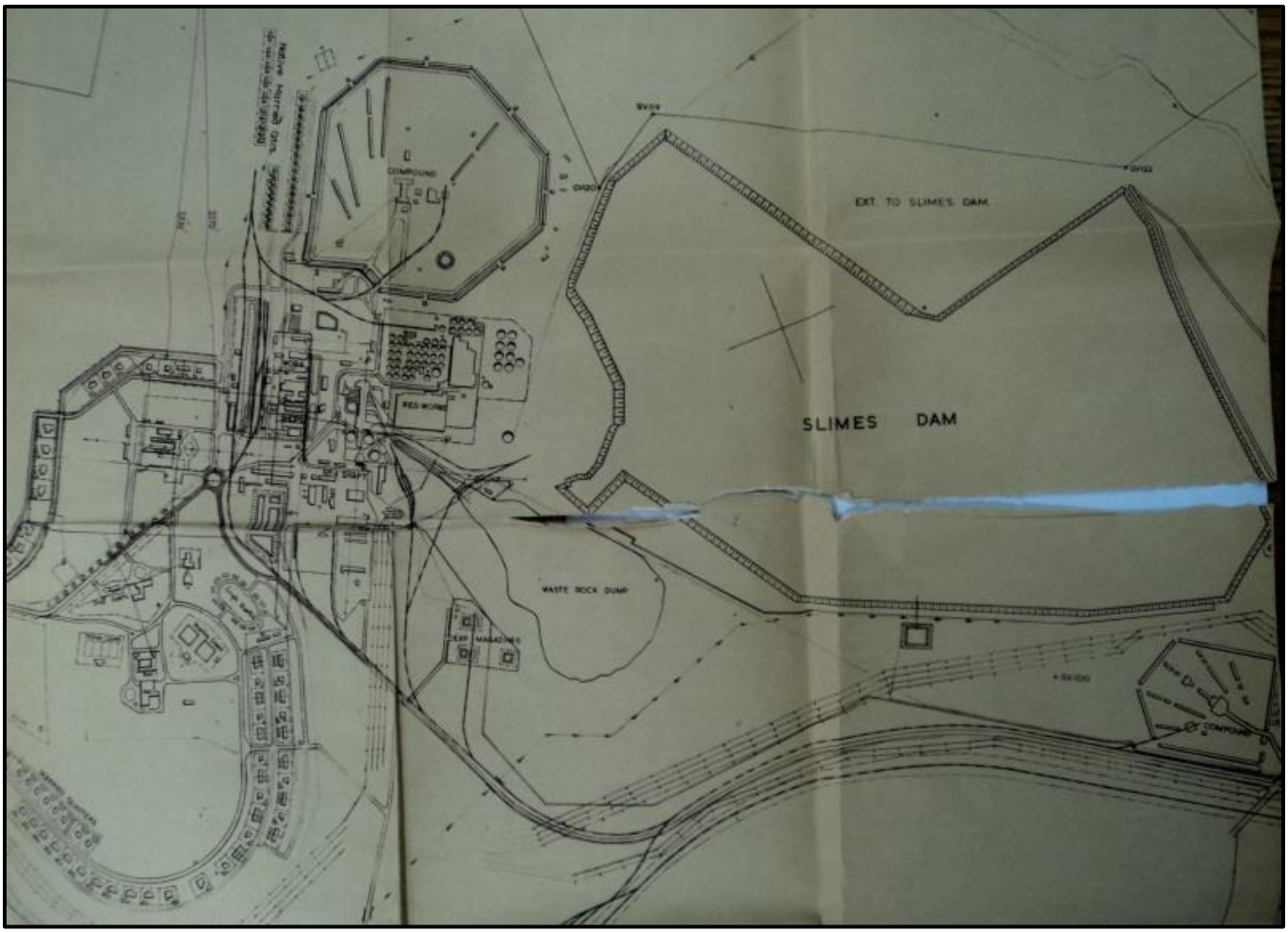


Figure 20 : General surface plan of the Grootvlei mine, with the No 3 Shaft compound on the right. (NASA *SAB, BAO: 2840 C33/5/505*)

By July 1968 the Grootvlei gold mine Shaft 3 compound was located 200 yards from the closest white residence, 1570 yards from the closest provincial road, 60 yards from the railway line and 3850 yards from the closest black residential area. The local manager was one W. F. Thomas, and M. J. Pretorius was the head compound manager. 3048 Black male labourers were working at the mine at the time, of which 2401 were accommodated in single quarters at the mine. Only 10 black male workers and 7 women were living at the mine's approved married quarters. There were no self-erected huts or other residences on the terrain. The outer perimeter of the compound was brick walled. There were 20 double bunks in each of the 153 sleeping rooms at the compound, and 20 persons could be housed per sleeping room. An inspector at the mine reported that the rooms were heated with coal stoves, and that the general condition of the rooms was good. Shower facilities with hot water were supplied, as well as sufficient sanitary and kitchen facilities. He noted that adequate food supplies, drinking water and refuge removal was also provided. Both the married and single quarters were in a good state. Adequate recreational facilities were also made available. (NASA *SAB, BAO: 2840 C33/5/505*)

On 19 February 1969 another report on the black housing provided by the Grootvlei Proprietary Mines was submitted by the Inspector of Bantu Labourers. The inspected area was the residential facilities of

the black labourers working at the No 3 Shaft on Grootvlei 124 RI, for the Grootvlei Mines Pty Ltd. (NASA *SAB, BAO: 2430 C31/3/505/3*)

It was noted that the compound was in a good condition at the time of inspection. The compound manager, W. F. Thomas, apparently enjoyed the confidence of the black workers. At this time 2270 black, male workers made up the labour strength at the mine, of which 1158 lived in single quarters and 10 in approved married quarters, without their wives. Note that the number of mine workers was reduced by almost 800, and that about 1200 fewer persons were housed in single quarters than in the previous year. The compound was constructed of bricks, with corrugated iron roofs. As in 1968, the compound consisted of 153 sleeping rooms with 20 double-tier bunks in every room. No mattresses were provided. The condition of this compound was described as being neat and tidy. All other necessary amenities were provided, including shower facilities with hot water, latrines and urinals, a kitchen, cold storage and refuse removal. Sufficient rations were also provided to workers, and medical facilities were provided by the hospital at the No. 4 compound. (NASA *SAB, BAO: 2430 C31/3/505/3*)

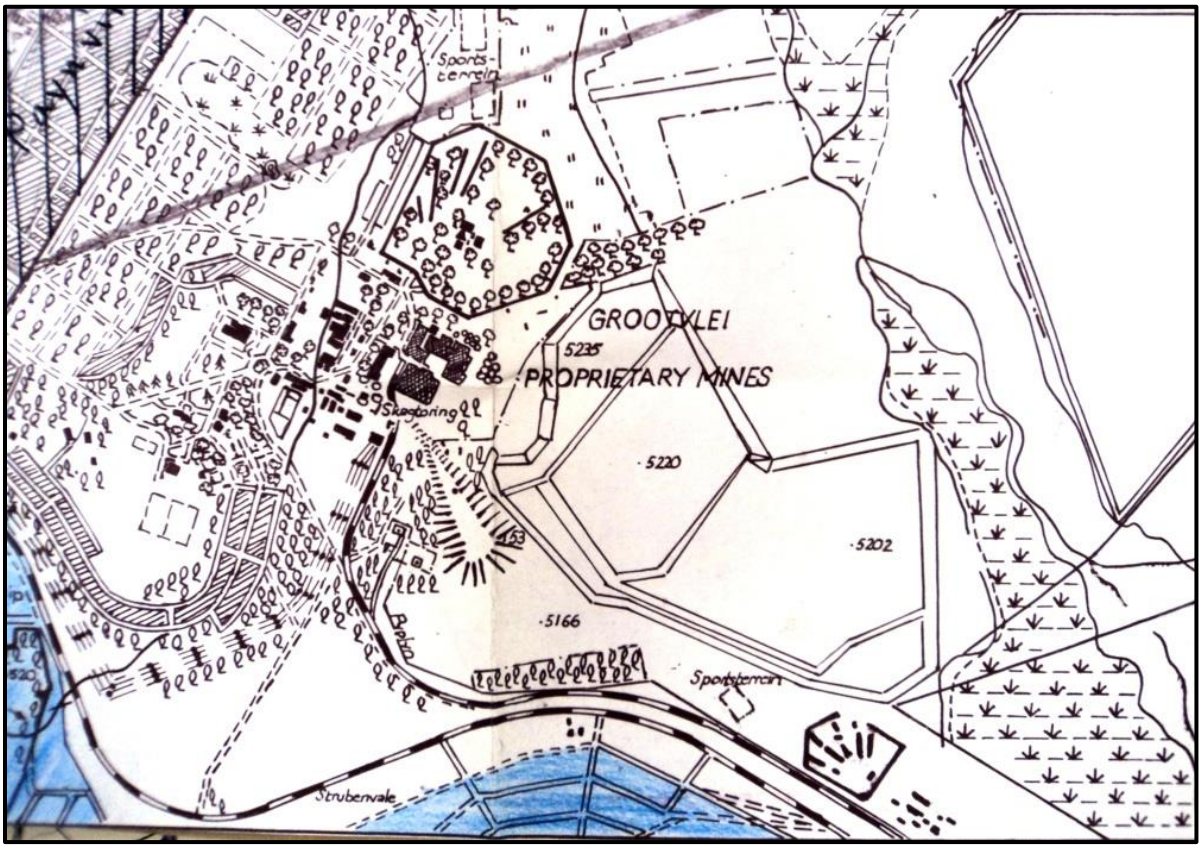


Figure 21: 1970s Map of the area of investigation. Note that a number of buildings had been erected in the area under investigation, to the southeast of the mine compound. (NASA *SAB, GMO: 2/477 12/3*)

In 1973 Grootvlei Proprietary Mines Limited lost their permit to operate single black residential quarters on Grootvaly 124 IR. The mine had perhaps closed temporarily due to the general decline in the profitability of mining activities in the East Rand. (See 4. A brief history of human settlement and black and white interaction in the Springs area) By 19 February 1980 the company however again applied for and received a permit to establish single black residential quarters, presumably in the existing buildings, but also in a number of new buildings. After 1973 the buildings were used as dog kennels, but the mine

had bought it back in 1980, with the view of renovating the compound to accommodate 1000 single black mineworkers. (NASA *SAB, CDB: 15407 PB4/19/2/42/124/1;* NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

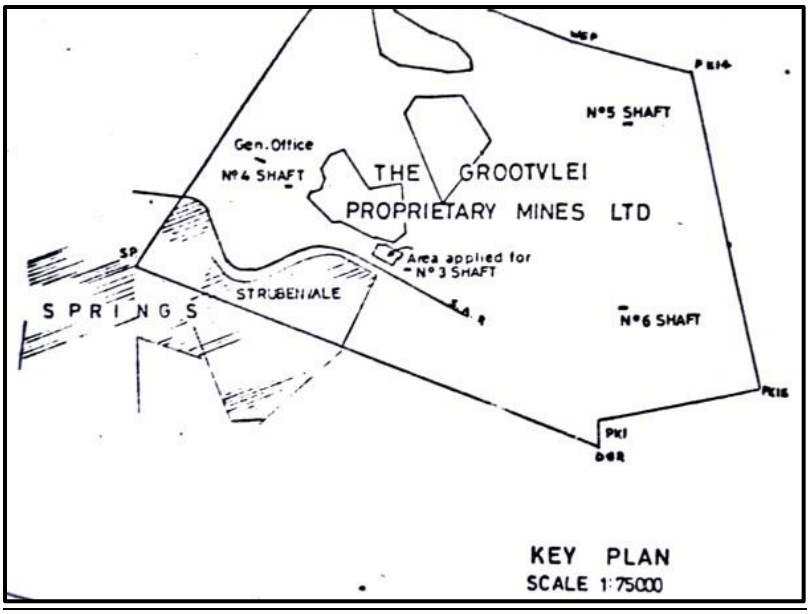


Figure 22: 1980 Map of Grootvlei mine area. The compound was located on Portion 20 of Grootvaly 124 IR. One can see that a number of existing buildings on the land to the southeast of the compound area. (NASA *SAB, CDB: 15407 PB4/19/2/42/124/1*)

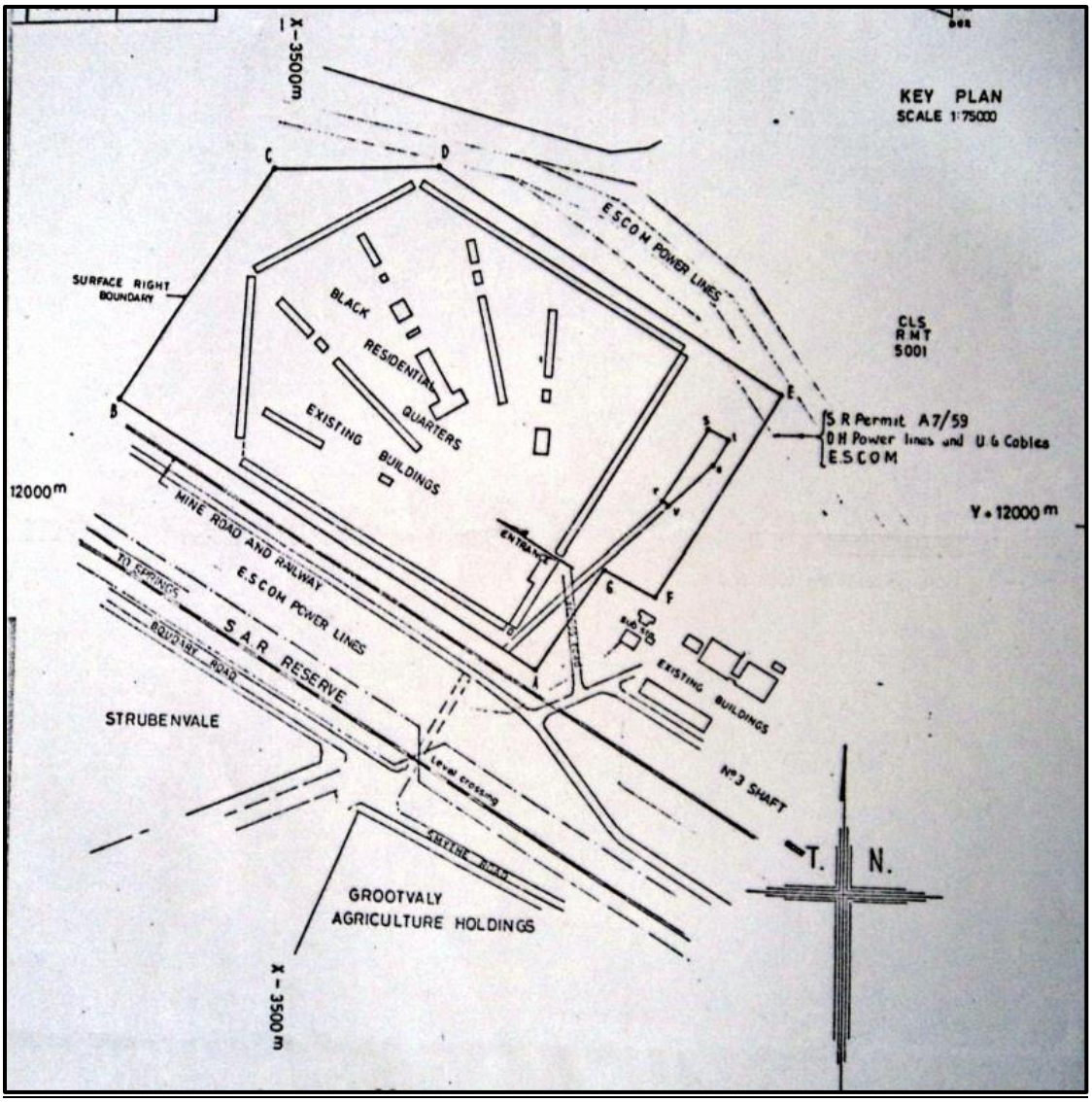


Figure 23: 1980 Map of Grootvlei mine area. The compound was located on Portion 20 of Grootvaly 124 IR. One can see that a number of existing buildings on the land to the southeast of the compound area. (NASA *SAB, CDB: 15407 PB4/19/2/42/124/1*)

Although there were initially no objections from a legal perspective to reopen the compound, the Springs community was greatly opposed to this development. Several letters and petitions to the Director-General of Mineral and Energy Affairs highlighted the following concerns:

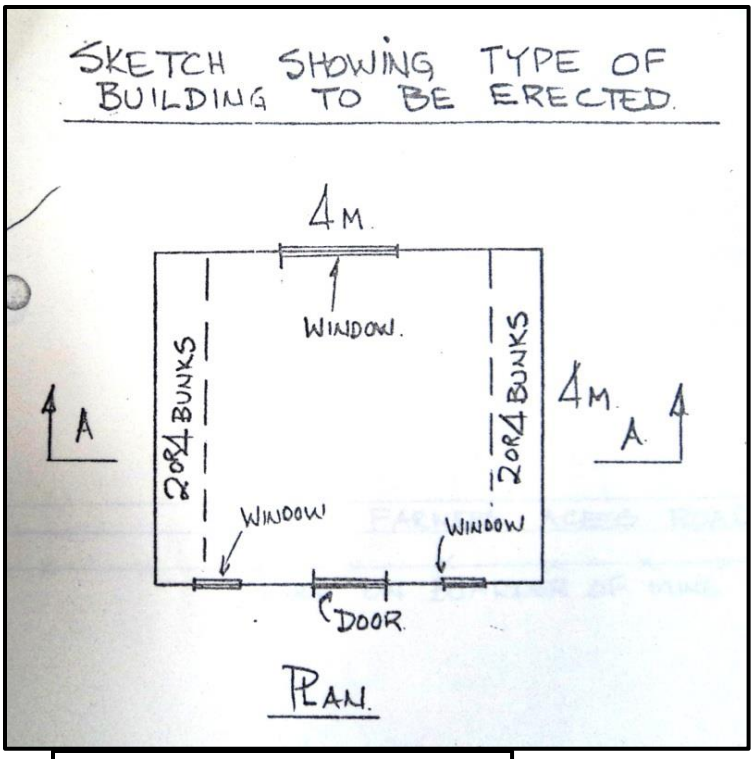
The Shaft 3 compound had been erected close to the residential area of Strubenvale, and since it closed in 1973, Strubenvale had expanded into the direction of the compound. It was believed that the compound would not be opened again.

According to a letter from a resident of Strubenvale, this white residential area had been greatly degraded by the presence of black mine workers in the area. A great number of black pedestrians through the residential area had caused problems like littering and had caused safety concerns for its residents.

A railway divided the compound area from Strubenvale, and in a petition it was asked that all footbridges and other crossings between the Grootvlei mine lands and Strubenvale would be closed permanently. It was also asked that the areas would be separated by a security fence. (NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

It is not certain whether these conditions were met, whether in part or in full, but the authorities believed that the erection of bar facilities in the compound area would help to curb the movement of black people into the white residential area. By 1981 1700 black labourers were already resident at the mine. (NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

The images below indicate the plans for the new, temporary residential buildings that would be constructed at the No 3 Shaft compound.



NOTES.

1. HUTS ARE STANDARD 4 x 4m F.S.M's THAT MOST CONSTRUCTION COMPANIES USE.

2. HUTS ARE MADE OF 19mm THICK PRESSED WOOD SHEETS AND GALV. ZINC ROOF.

Figure 24: Proposed layout of temporary black residential quarters on Portion 20 of Grootvaly 124 IR. (NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

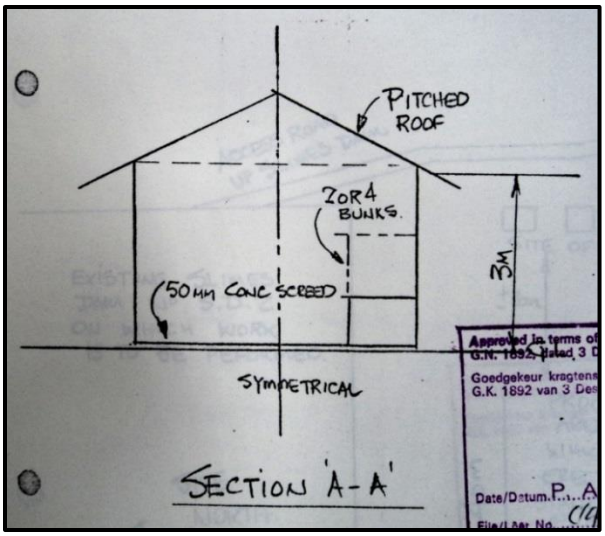


Figure 25: Proposed layout of temporary black residential quarters on Portion 20 of Grootvaly 124 IR. (NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

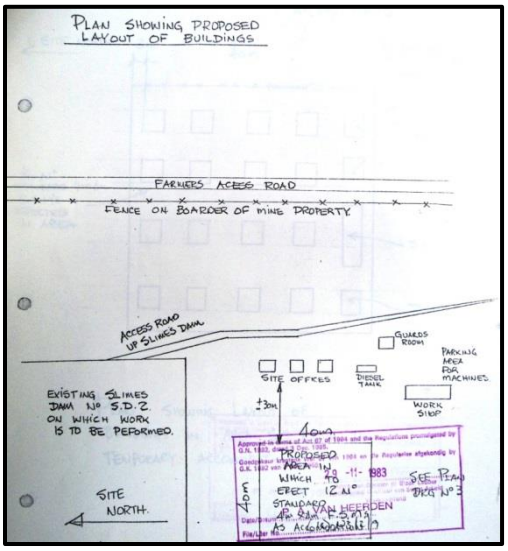


Figure 26: Proposed layout of temporary black residential quarters on Portion 20 of Grootvaly 124 IR. (NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

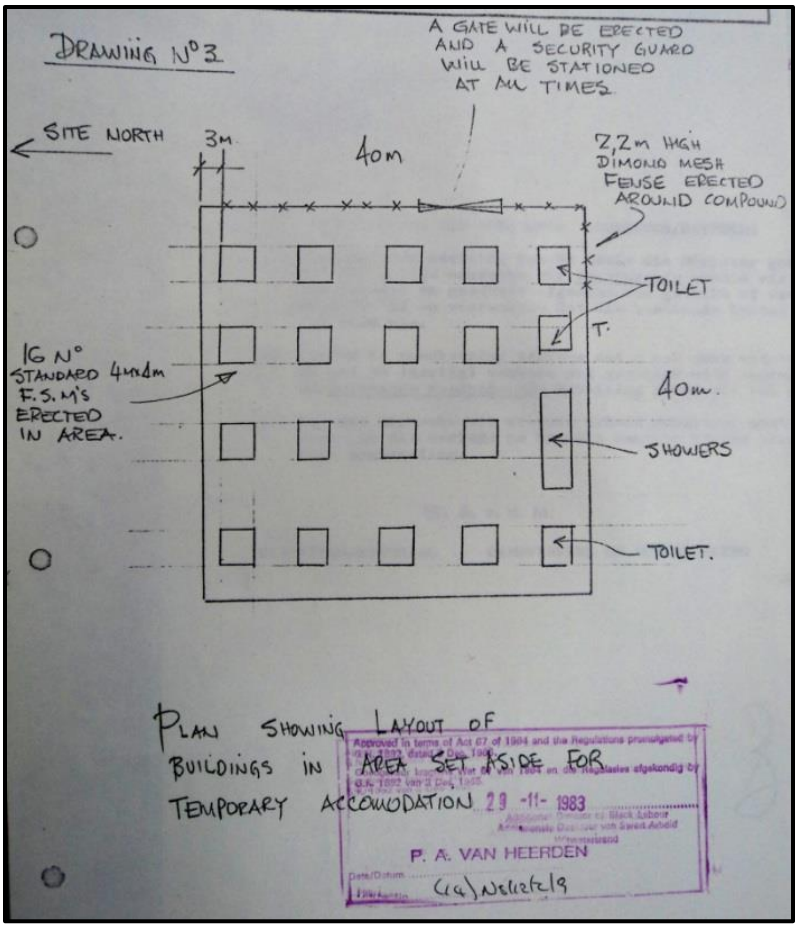


Figure 27: Proposed layout of temporary black residential quarters on Portion 20 of Grootvaly 124 IR. (NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

In January 1982 the Director General of Cooperation and Development granted permission for the housing of all black workers resident at the Grootvlei Mine, and gave permission for the hiring of up to 30 more workers, given that appropriate accommodation would be provided to these labourers. On 29 November 1983 the Director of Labour at the Witwatersrand granted the application for the erection of temporary housing at Grootvlei Proprietary Mines Ltd, on the condition that these houses would be vacated and demolished by 5 December 1983. (NASA *SAB, BAO: 3/4374 A12/2/6/S47/8*)

In 1982 the African and European Investment Company Limited applied to establish a trading site on land owned by the Grootvlei Proprietary Mines Limited. As shown on the map, the envisioned site was located to the east of the No 3 Shaft compound, within the area under investigation. Neither the city council of Springs or the Grootvlei Pty. Mines Ltd. had any objections against the development. The establishment of a trading site near the mine's black workers' residential quarters was considered a necessary development, since the residents of the white residential area of Strubenvale had complained of black mineworkers streaming into their area. It was anticipated that the establishment of trading sites near the mine residences would allay the movement of black workers into Strubenvale. Unfortunately no indication is given if this trading site was eventually established at the site under investigation. No plans for the building could be found in the file. (NASA *SAB, CDB: 15408 PB4/19/2/42/124/4*)

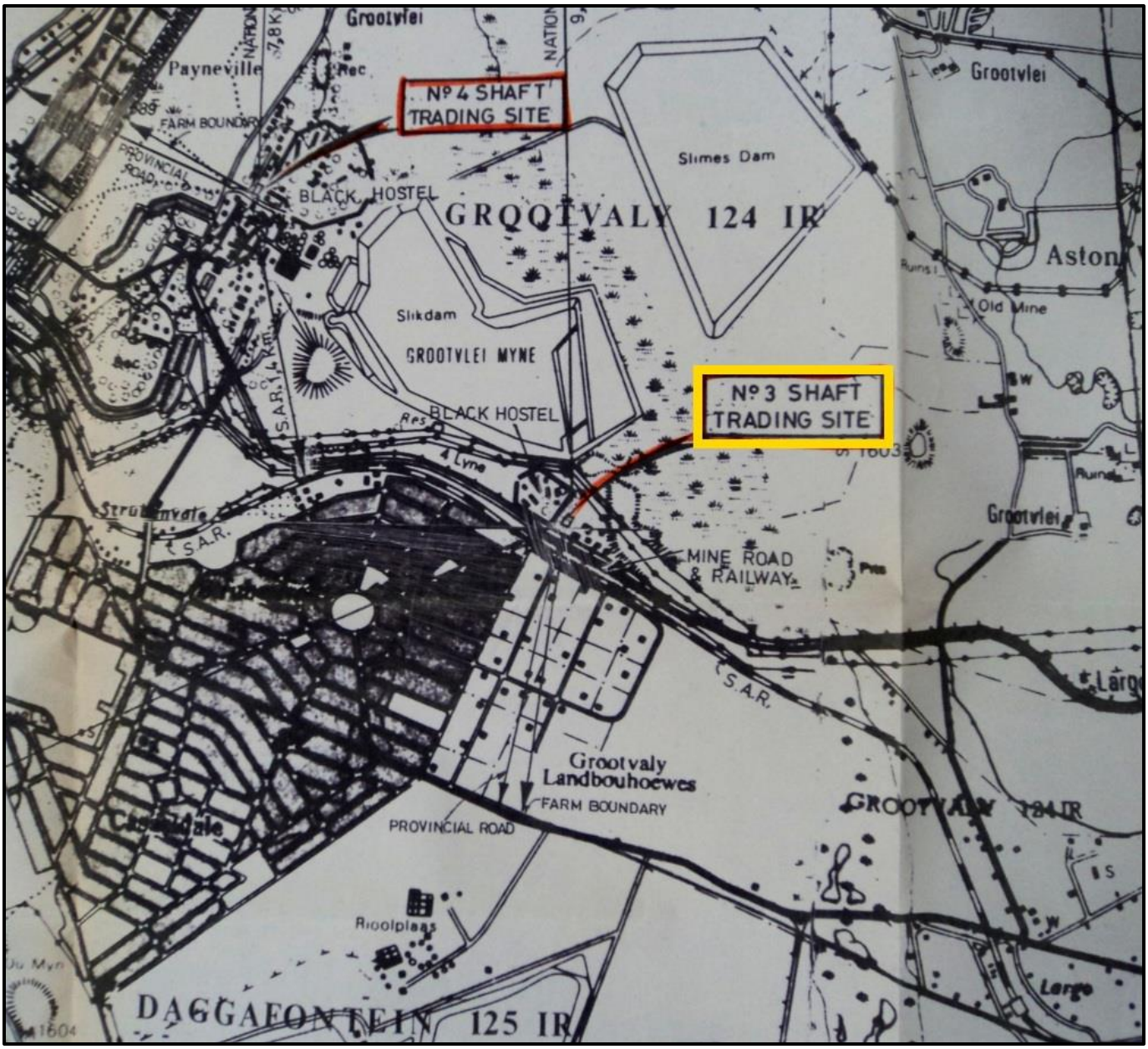


Figure 28 : 1982 Map of proposed trading site at Shaft 3. (NASA *SAB, CDB: 15408 PB4/19/2/42/124/4*)

5. BASELINE STUDY-DESCRIPTION OF SITES

The area earmarked for the TCTA AMD Eastern Basin site is highly disturbed by previous mining activities. The area is covered by ruins of demolished buildings associated with mining infrastructure (Figure 29 – 35). The area traversed by the proposed sludge pipeline of approximately 3 km including sections close to the highway as well as sections in undeveloped areas.

Figure 29. Demolished structure on site

Figure 30. Demolished structure on site

Figure 31. Demolished structure on site .

Figure 32. Demolished structure on site

Figure 33. Site conditions in the Northern section of the study area.

Figure 34: Site conditions in the Northern section of the study area.

Figure 35: Demolished structure on site

Figure 36: Study area viewed from the east.

Figure 37: Site conditions of the area.

Figure 38: Demolished structures on site.

Figure 39: Demolished structures on site

Figure 40: Demolished structure on site.

6 PROBABILITY OF OCCURRENCE OF SITES

Based on the above information, it is possible to determine the probability of finding archaeological and cultural heritage sites within the study area to a certain degree. For the purposes of this section of the report the following terms are used – low, medium and high probability. Low indicates that no known occurrences of sites have been found previously in the general study area, medium probability indicates some known occurrences in the general study area are documented and can therefore be expected in the study area and a high probability indicates that occurrences have been documented close to or in the study area and that the environment of the study area has a high degree of probability having sites.

» Palaeontological landscape

Fossil remains. Such resources are typically found in specific geographical areas, e.g. the Karoo and are embedded in ancient rock and limestone/calcrete formations exposed by road cuttings and quarry excavation: *Medium to High*

» Archaeological And Cultural Heritage Landscape

NOTE: *Archaeology is the study of human material and remains (by definition) and is not restricted in any formal way as being below the ground surface*.

*Archaeologica*l remains dating to the following periods can be expected within the study area:

» Stone Age finds

ESA: *Low Probability*
MSA*: Low-Medium Probability*
LSA: Low Probability
LSA –Herder: Low Probability

» Iron Age finds

EIA: *Low Probability*
MIA*: Low Probability*
LIA: Low Probability

» Historical finds

Historical period: *Medium Probability*
Historical dumps: *Medium Probability*
Structural remains: *Medium - High Probability*
Cultural Landscape*: Medium Probability*

» Living Heritage
For example rainmaking sites: *Low Probability*

» Burial/Cemeteries

Burials over 100 years: *Low-Medium Probability*
Burials younger than 60 years*: Medium Probability*

Subsurface excavations including ground levelling, landscaping, and foundation preparation can expose any number of these.

7. ASSUMPTIONS AND LIMITATIONS

The study area was not subjected to a field survey. It is assumed that information obtained for the wider area is applicable to the study area.

8. FINDINGS

The heritage scoping study revealed that the following heritage sites, features and objects that can be expected within the study area.

8.1. Palaeontological

Any mining, construction or servitude operations for this project could potentially impact on the fossil record of South Africa based on the SAHRIS fossil sensitivity map.

8.2. Archaeology

8.2.1 Archaeological finds

No archaeological sites are on record for the area. No Iron Age sites are expected although isolated MSA artefacts may occur in the general study area.

8.2.2 Nature of Impact

The construction phase of the project could directly impact on surface and subsurface archaeological sites.

8.2.3 Extent of impact

The project could have a low impact on a local scale.

8.3. Historical period

8.3.1 Historical finds: I

Including middens, structural remains and cultural landscape. The study area has been used extensively for mining from the 1930's and the demolished remains of structures dating from the 1940's are found in the study area.

8.3.2 Nature of Impact

The construction of the project can directly impact on what is left of the buildings.

8.3.3 Extent of impact

The construction of the project could have a low impact on a local scale.

8.4. Burials and Cemeteries

8.4.1 Burials and Cemeteries

Graves and informal cemeteries can be expected anywhere on the landscape.

8.4.2 Nature of Impact

The construction and operation of the proposed project could directly impact on marked and unmarked graves.

8.4.3 Extent of impact

The project could have a low to medium impact on a local scale.

9. POTENTIAL SIGNIFICANCE OF HERITAGE RESOURCES

Based on the current information obtained for the area at a desktop level it is anticipated that any sites that occur within the proposed development area will have a Generally Protected B (GP.B) field rating and all sites should be mitigatable and no red flags are identified.

10. CONCLUSIONS AND RECOMMENDATIONS

This scoping study revealed that a range of heritage sites occur in the larger region and similar sites can be expected within the study area. Every site is relevant to the Heritage Landscape, but it is anticipated that no site in the study area could have conservation value. The following conclusions are applicable to the following sites:

» Archaeological sites

If any sites occur in the study area they could be mitigated either in the form of conservation of the sites with in the development or by a Phase 2 study where the sites will be recorded and sampled before the client can apply for a destruction permit for these sites prior to development.

» Historical finds and Cultural landscape

Although the remnants structures older than 60 years are expected in the area, the extent of the damage to these structures means that they are of low heritage significance and that the structures can easily be recorded before the client can apply for a destruction permit for these sites prior to development.

» Burials and cemeteries

Formal and informal cemeteries as well as pre-colonial graves occur widely across Southern Africa. It is generally recommended that these sites are preserved with in a development. These sites can how ever be relocated if conservation is not possible, but this option must be seen as a last resort and is not advisable. The presence of any grave sites must be confirmed during the field survey.

11. PLAN OF STUDY

Due to the fact that unmarked graves may occur in the study area as indicated by the scoping study (for example the natives' cemetery dating to 1938) and that possible archaeological sites may occur in the general study area a phase 1 AIA is recommended prior to construction. This will ensure compliance with the National Heritage Resources Act (Act 25 of 1999).

During this study sites of archaeological, historical or places of cultural interest must be located, identified, recorded, photographed and described. During this study the levels of significance of recorded heritage resources must be determined and mitigation proposed should any significant sites be impacted upon, ensuring that all the requirements of SAHRA are met.

12. LIST OF PREPARERS

Jaco van der Walt (Archaeologist and project manager)

Liesl Bester (Archival Specialist)

13. STATEMENT OF COMPETENCY

The author of the report is a member of the Association of Southern African Professional Archaeologists and is also accredited in the following fields of the Cultural Resource Management (CRM) Section, member number 159: Iron Age Archaeology, Colonial Period Archaeology, Stone Age Archaeology and Grave Relocation. Jaco is also an accredited CRM Archaeologist with SAHRA and AMAFA.

Jaco has been involved in research and contract work in South Africa, Botswana, Mozambique, Zimbabwe, Tanzania and the DRC and conducted well over 300 AIAs since he started his career in CRM in 2000. This involved several mining operations, Eskom transmission and distribution projects and infrastructure developments. The results of several of these projects were presented at international and local conferences.

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