



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Ndau 2 Solar Energy Facility

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Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
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Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. **SPECIALIST INFORMATION**

2.

Specialist Company Name:			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	X	Percentage Procurement recognition
Specialist name:	FP Coetzee		
Specialist Qualifications:	BA (Hons) Archaeology		
Professional affiliation/registration:	Association of Southern African Professional Archaeologists (ASAPA) CRM REG NO #028 Affiliated with SAHRA and AMAFA		
Physical address:	99 van Deventer Road, Centurion,		
Postal address:			
Postal code:	0157	Cell:	0827077338
Telephone:		Fax:	
E-mail:	coetzfp@gmail.com		

3. **DECLARATION BY THE SPECIALIST**

I, FP Coetzee, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist



Name of Company:

Date

25/5/2023

4. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _____FP Coetzee_____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist



Name of Company

Date

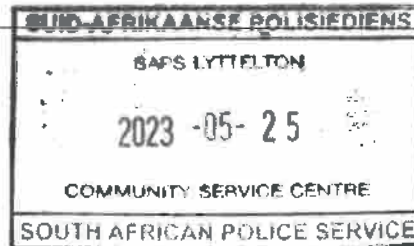
25/5/2023.

0825206-1
M. J. LEGODI
WARWANT OFFICER

Signature of the Commissioner of Oaths

Date

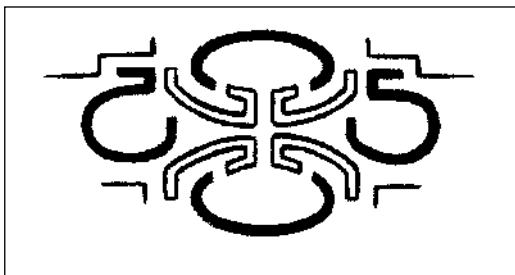
2023-05-25



**Cultural Heritage Site Sensitivity Verification:
Proposed ABO Ndau Solar Energy Facility & associated infrastructure ,
near Polokwane, Polokwane Local Municipality, Capricorn District
Municipality, Limpopo Province**

For

Project Applicant ABO Ndau Solar Energy Facility 2 (Pty) Ltd	Environmental Consultant Praxos 373 (Pty) Ltd
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By
Francois P Coetzee
Heritage Consultant
ASAPA Professional Member No: 028
99 Van Deventer Road, Pierre van Ryneveld,
Centurion, 0157
Tel: (012) 429 6297
Fax: (012) 429 6091
Cell: 0827077338
coetzfp@unisa.ac.za

Date:	June 2023
Version:	1 (Final Report)

Executive Summary

This site sensitivity verification report was conducted in accordance with the provisions of Sections 38(1) and 38(3) of the *National Heritage Resources Act* (Act No. 25 of 1999) (NHRA) and focuses predictive results as requested by Praxos 373 (Pty) Ltd. The project entails the proposed development and establishment of Solar PV Facilities along with associated infrastructure. The project site is situated in the area southwest of the Town of Polokwane, within the Polokwane Local Municipality, Capricorn District Municipality, Limpopo Province. The proposed 'Ndau Solar PV Cluster' consists of two solar energy facilities (Ndau 1 and Ndau 2); and one standalone battery energy storage system (Ndau BESS); and associated infrastructure including access roads. The larger cluster has been assessed holistically (to give effect to cumulative impact assessment) and each project has been assessed individually within their separate site verification reports.

The applicant proposes the development of Ndau 1, a photovoltaic (PV) solar energy generation facility, of up to 120 MWac in capacity, and associated infrastructure located on Portion 19 of the Farm Rietvley 13 KS; and the development of Ndau 2, a photovoltaic (PV) solar energy generation facility, of up to 80 MWac in capacity, and associated infrastructure located on Portion 5 of (Portion of Portion 2) and Remaining Extent of Portion 2 of the Farm Rotterdam 12 KS.

Note: This report focuses on the larger assessment area and specifically Ndau 2.

Conclusions of the site verification study

The access road associated with Ndau 2 runs northwards starting from the Pretoria-Polokwane railway which was officially opened in 1889. Care should be taken during construction phase not to damage any part of the railway line. Also, please note the following:

- A historical farmhouse complex is located at the centre of the Ndau 2 PV area which consists of the main house, outbuildings and a possible midden. The structures possibly date to the late 19th century.
- A graveyard is located at the centre of the Ndau 2 PV area which consists of at least 15 graves dating to the 1940s.
- Care should be taken during the construction phase to prevent any impact on these heritage remains which are older than 60 years and therefore protected under the NHRA (Act No. 25 of 1999).

No archaeological (both Stone Age and Iron Age) features, structures, assemblages or sites were recorded within PV Area 2. However, please note, archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (*cf.* **NHRA (Act No. 25 of 1999)**, Section 36 (6)).

Recommendations

It is recommended, from a cultural heritage perspective that the proposed development activities may proceed to the next phase of assessment, taking into account the historical farmhouse complex and associated graveyard. Mitigation measures will have to be put in place.

It is therefore recommended that a Phase 1 Heritage Assessment be conducted for the proposed Ndau 2 site.

Definitions and abbreviations

Midden:	Refuse that accumulates in a concentrated heap.
Stone Age:	An archaeological term used to define a period of stone tool use and manufacture
Iron Age:	An archaeological term used to define a period associated with domesticated livestock and grains, metal working and ceramic manufacture
LIA:	Late Iron Age sites are usually demarcated by stone-walled enclosures
NHRA:	National Heritage Resources Act (Act No. 25 of 1999)
SAHRA:	South African Heritage Resources Agency
SAHRIS:	South African Heritage Resources Information System
PHRA-G:	Provincial Heritage Resources Authority - Gauteng
GDARD:	Gauteng Department of Agriculture and Rural Development
HIA:	Heritage Impact Assessment
DMR:	Department of Mineral Resources
I&APs:	Interested and Affected Parties

I, Francois Coetzee, hereby confirm my independence as a cultural heritage specialist and declare that I do not have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of the listed environmental processes, other than fair remuneration for work performed on this project.



Francois P Coetzee
Cultural Heritage Consultant
Accredited Archaeologist for the SADC Region
Professional Member of ASAPA (CRM Section) Reg no: 28

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1. Introduction and Terms of Reference

Praxos 373 (Pty) Ltd, an independent environmental consultant, was appointed to undertake a Scoping and Environmental Impact Assessment according to the National Environmental Management Act, 1998 for the proposed construction of a Solar Photo Voltaic (PV) Facility at the Ndau Site, near Polokwane, Polokwane Local Municipality, Capricorn District Municipality, Limpopo Province. A cultural heritage desktop screening assessment and site sensitivity verification were requested by Praxos 373 (Pty) Ltd to determine the cultural and heritage sensitivity of the proposed development site and to predict the potential impact of the proposed development activities on cultural heritage remains.

2. Objectives

The cultural heritage sensitivity verification is to confirm the actual location and existence of sites on the ground versus that which has been identified by the National desktop screening tool. The site sensitivity verification will confirm or refute the need to employ the various specialists as identified in the screening report. The screening tool report does not form part of the specialist report.

The site sensitivity verification must be undertaken through the use of:

- A desktop analysis, using satellite imagery;
- A preliminary site inspection; and
- Any other available and relevant information.

As such, the verification survey is to confirm any cultural heritage remains consisting of both tangible and intangible archaeological and historical artefacts, structures (including graves), settlements and oral traditions of cultural significance, occurring in the area of the proposed development.

Note: This report focuses on the larger assessment area and specifically Ndau 2

3. Description of Physical Environment of Study Area

The study focused on a survey footprint/area (as provided by the Applicant/Praxos for potential PV and grid infrastructure development) situated southwest of Polokwane with the N1 transecting the region.

Table 1: Physical Environment

Farm Name(s) and Portions	<ul style="list-style-type: none"> • Rotterdam 12KS (Ndau 2 is situated on this farm) • Rietvley 13KS • Paddadorst 729LS • Bultfontein 730LS • Rietfontein 731LS • Schanhauzen 737LS • Hollandsdrift 15LS • Snymansdrift 738 LS • Wildebeesfontein 20LS
Size of Survey Area	Approximately 2000 ha
Magisterial District	Polokwane Local Municipality Capricorn District Municipality
1:50 000 Map Sheet	2329CD

	2429AA 2329CC 2429AB
1:250 0000 Map Sheet	2328 2428
Central Coordinates of the Development	24.023292°S 29.215833°E

The central parts of the survey area falls within the Savanna Biome, particularly the Central Bushveld Bioregion and more specifically the Polokwane Plateau Bushveld (SVcb23). The eastern section however falls within the Savanna Biome, particularly the Central Bushveld Bioregion and more specifically the Mamabolo Mountain Bushveld (SVcb24). The Polokwane Plateau Bushveld extends to the Limpopo Province and also include the higher-lying plains around Polokwane, north of the Strydpoort Mountains and south of the SVcb 20 Makhado Sweet Bushveld. The Mamabolo Mountain Bushveld extends to the Limpopo Province and also east and south of the Polokwane Plateau along the foothills of the west-facing part of the eastern escarpment and of the Strydpoort and Makapan Mountains. Also on main isolated hills and small mountains embedded within the Polokwane Plateau as far as Mogoshi Mountain in the west and De Loskop (near Mogwadi) and Renosterkoppies (around Zandriverspoort) to the north (Mucina & Rutherford 2006).

The survey footprint is characterised as a large open region with undulating hills. The region has mostly been used for agricultural farming. Infrastructure consists of railway lines, access roads, fences, residential areas and farming activities.

The Kuschke Nature Reserve is situated on the eastern periphery of the survey footprint, with the Percy Fyfe Nature Reserve situated along the western boundary of the potential PV site.

In Polokwane the average temperatures reach around 21–22 °C in January and fall to 11 °C in July. As with much of inland South Africa, Polokwane has experienced notably warmer seasons over the last decade than its long-term average. Polokwane has a dry climate with a summer rainy season and a pronounced dry spell during winter. Average annual rainfall is 495 mm, with December or (less often) January the wettest month and July the driest (SAExplorer 2022).

Table 2: Socio-economic environment of survey area

Current Zoning	Agricultural
Economic activities	Farming
Soil and basic geology	The underlying geology consists of medium-grained, yellowish, laminated sandstone of the Makgabeng Formation of the Waterberg Group. It is also characterized by granite, biotite granite-gneiss, pegmatite, lava and pyroclasts.
Prior activities	Farming
Socio Economic Environment	Polokwane's population is projected to grow at an average annual rate of 1.36% from 828 493 in 2019 to 886 551 in 2024. In 2019, the female population for the 20 to 34 years' age group amounts to 26.9% of the total female population while the male population group for the same age amounts to 30.2% of the total male population. In 2024, the male working age population at 29.5% still exceeds that of the female population working age population at 26.2%, although both are at a lower level compared to 2019.
Evaluation of Impact	An evaluation of the impact of the development on heritage resources

relative to the sustainable social and economic benefits NHRA (Act No. 25 of 1999, Section 38(3d)): **Positive**

The locality and extent of the survey footprint (initial study area assessed for the Ndaou cluster) are shown in Figure 1 – Figure 4 below).

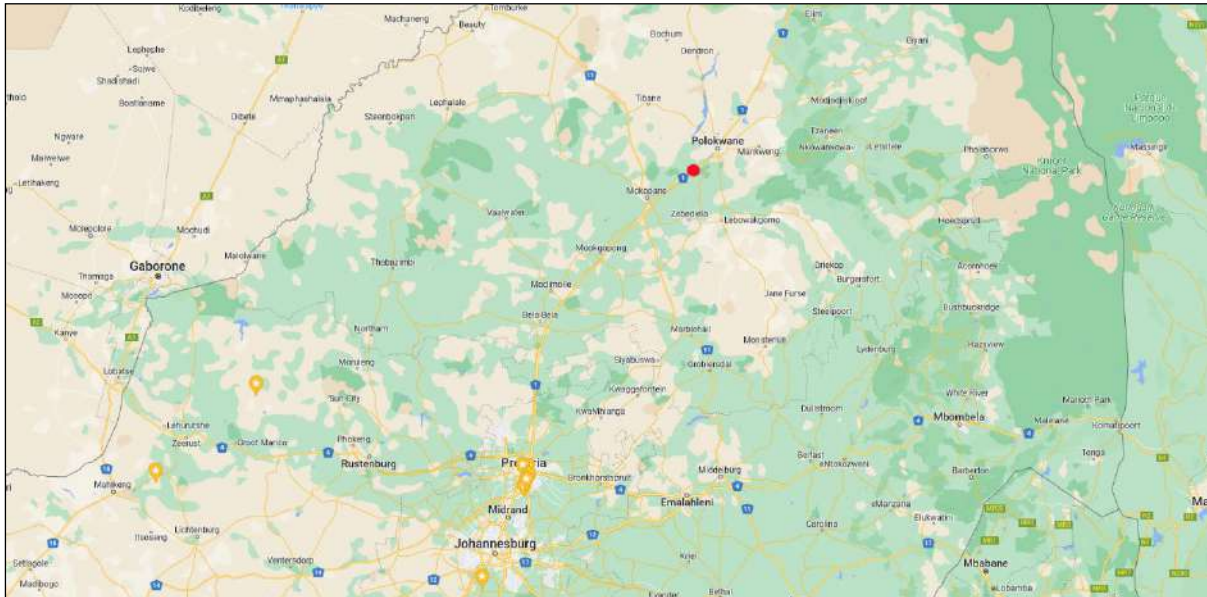


Figure 1: Regional map of the survey area (situated south west of Polokwane) (indicated by the red area)



Figure 2: Regional context of the survey footprint situated south west of Polokwane



Figure 3: Local context of the survey footprint (1:250 000 Topographical Maps 2328 and 2428)

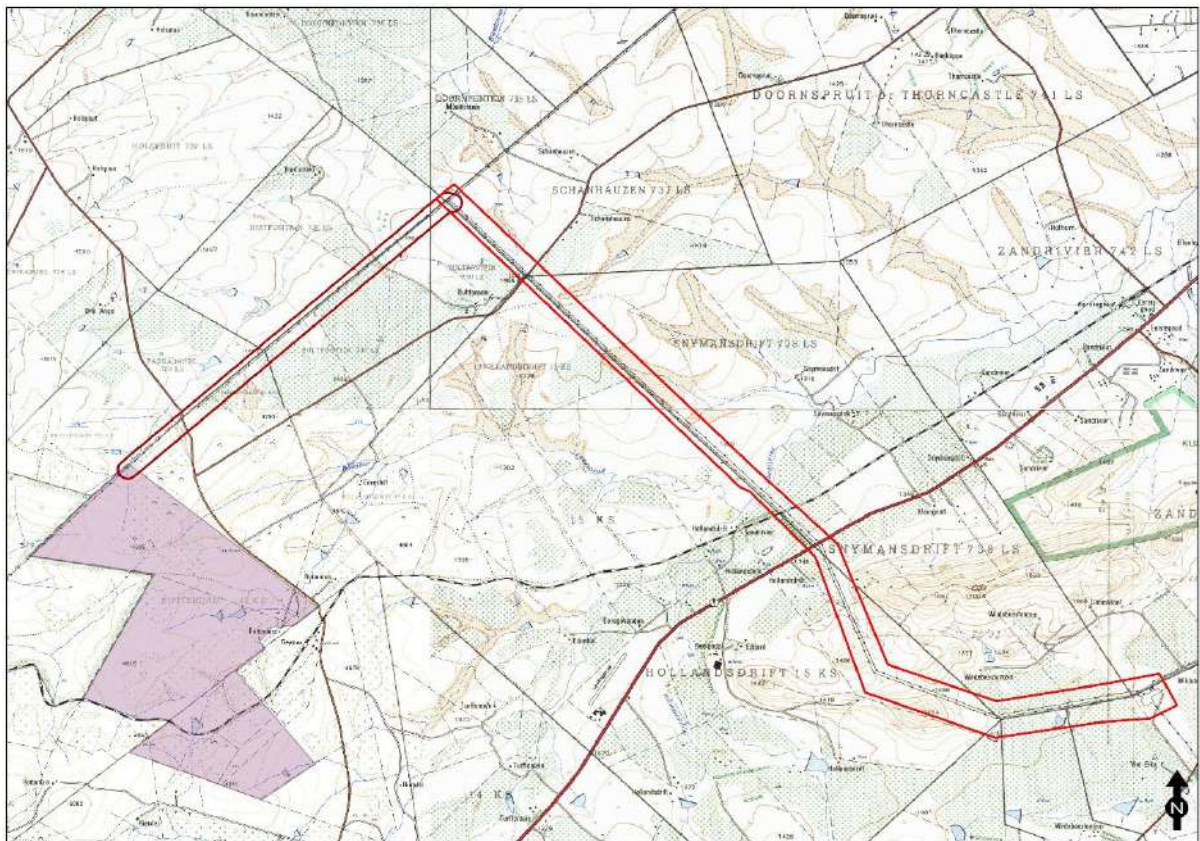


Figure 4: The survey area as indicated on the 1:50 000 topographic maps 2329CD, 2429AA, 2329CC and 2429AB

The location of Ndau 2 (the focus of this report) is shown in Figure 5 below.

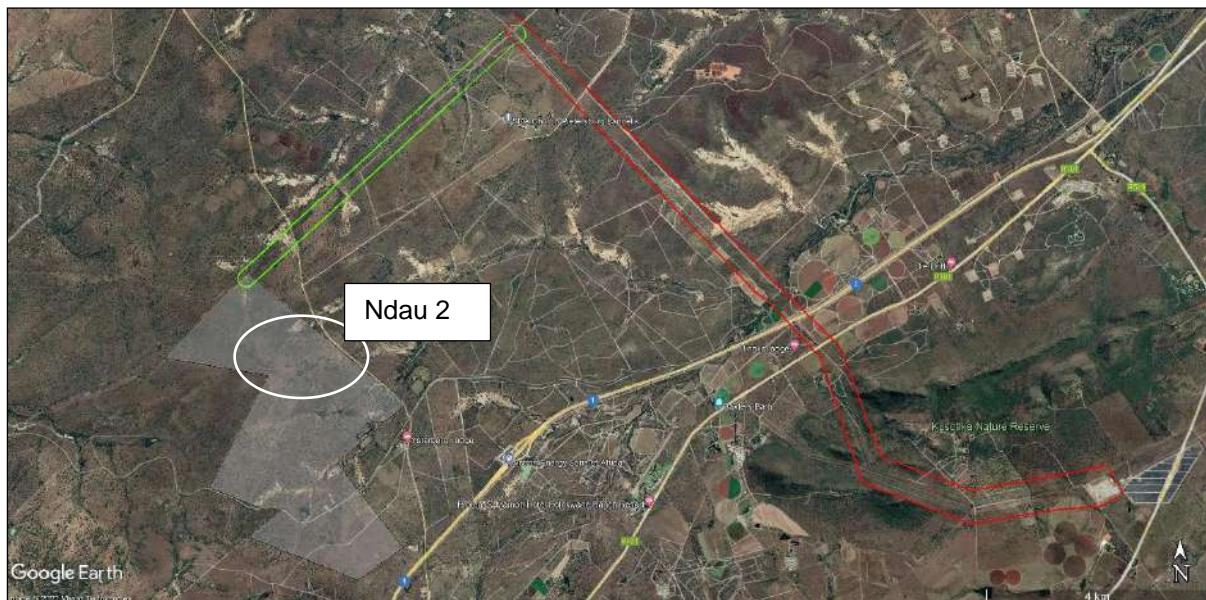


Figure 5: Survey area within local context (Google Earth Pro 2022)

4. Proposed Project Description

The project entails the proposed development and establishment of Solar PV Facilities along with associated infrastructure. The project site is situated in the area southwest of the Town of Polokwane, within the Polokwane Local Municipality, Capricorn District Municipality, Limpopo Province. The proposed ‘Ndau Solar PV Cluster’ consists of two solar energy facilities (Ndau 1 and Ndau 2); and one standalone battery energy storage system (Ndau BESS); and associated infrastructure including access roads. The larger cluster has been assessed wholistically (to give effect to cumulative impact assessment) and each project has been assessed individually within their separate site verification reports.

The applicant proposes the development of Ndau 1, a photovoltaic (PV) solar energy generation facility, of up to 120 MWac in capacity, and associated infrastructure located on Portion 19 of the Farm Rietvley 13 KS; and the development of Ndau 2, a photovoltaic (PV) solar energy generation facility, of up to 80 MWac in capacity, and associated infrastructure located on Portion 5 of (Portion of Portion 2) and Remaining Extent of Portion 2 of the Farm Rotterdam 12 KS.

Note: This report focuses on the larger assessment area and specifically Ndau 2

5. Legal Framework

The applicable legislation and guidelines used to compile this report is listed in Table 3 below:

Table 3: Legal framework

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE APPLIED
The National Heritage Resources Act (Act No. 25 of 1999)	Section 38, 34, 35, 36
World Heritage Convention Act (Act No. 49 of 1999)	Various sections
Thabazimbi Local Municipality (IDP) 2020-2021	Various sections

-Section 38 of the NHRA (Act No. 25 of 1999) stipulates that the following activities (relevant to the Ndau 2 proposal) trigger a heritage survey:

Table 4: Activities that trigger Section 38 of the NHRA

Development criteria in terms of Section 38(1a-e) of the NHRA (Act No. 25 of 1999)	Yes/No
Construction of road, wall, powerline, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 m ² in extent	Yes
Development involving three or more existing erven or subdivisions	Yes
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 m ²	Yes
Any other development category, public open space, squares, parks, recreation grounds	No

-The Field rating system as recommended by SAHRA is shown in Table 5 below:

Table 5: Field rating system to determine site significance

Field Rating	Grade	Significance	Recommended Mitigation
National Significance	Grade I	High significance	Conservation by SAHRA, national site nomination, mention any relevant international ranking. No alteration whatsoever without permit from SAHRA.
Provincial Significance	Grade II	High significance	Conservation by provincial heritage authority, provincial site nomination. No alteration whatsoever without permit from provincial heritage authority.
Local Significance	Grade III-A	High significance	Conservation by local authority, no alteration whatsoever without permit from provincial heritage authority. Mitigation as part of development not process advised.
Local Significance	Grade III-B	High significance	Conservation by local authority, no external alteration without permit from provincial heritage authority. Could be mitigated and (part) retained as heritage register site.
Generally Protected A	Grade IV-A	High/medium significance	Conservation by local authority. Site should be mitigated before destruction. Destruction permit required from provincial heritage authority.
Generally Protected B	Grade IV-B	Medium significance	Conservation by local authority. Site should be recorded before destruction. Destruction permit required from provincial heritage authority.
Generally Protected C	Grade IV-C	Low significance	Conservation by local authority. Site has been sufficiently recorded in the Phase 1 HIA. It requires no further recording before destruction. Destruction permit required from provincial heritage authority.

The following legislative aspects are furthermore noted:

- Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and they are valuable, finite, non-renewable and irreplaceable.
- All archaeological remains, features, structures and artefacts older than 100 years and historic structures older than 60 years are protected by the relevant legislation, in this case the **National Heritage Resources Act (NHRA) (Act No. 25 of 1999, Section 34 & 35)**. The Act makes an archaeological impact assessment as part of an EIA and

EMPR mandatory (see **Section 38**). No archaeological artefact, assemblage or settlement (site) may be moved or destroyed without the necessary approval from the **South African Heritage Resources Agency (SAHRA)**. Full cognisance is taken of this Act in making recommendations in this report.

- Cognisance will also be taken of the National Environmental Management Act (Act No 107 of 1998) when making any recommendations.
- Human remains older than 60 years are protected by the NHRA, with reference to Section 36. Human remains that are less than 60 years old are protected by the Regulations Relating to the Management of Human Remains (GNR 363 of 22 May 2013) made in terms of the National Health Act No. 61 of 2003 as well as local Ordinances and regulations.
- With reference to the evaluation of sites, the certainty of prediction is definite, unless stated otherwise.
- The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3, and the Australian ICOMOS (International Council on Monuments and Sites) Charter (also known as the Burra Charter) are used when determining the cultural significance or other special value of archaeological or historical sites.
- A copy of this report will be submitted on SAHRIS as stipulated by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), Section 38 (especially subsection 4) and the relevant Provincial Heritage Resources Authority (PHRA).
- Note that the final decision for the approval of permits, or the removal or destruction of sites, structures and artefacts identified in this report, rests with the SAHRA (or relevant PHRA).

6. Study Approach/Methodology

Geographical information (KML and shapefiles) on the proposed activities was supplied by Praxos 373 (Pty) Ltd. The most up-to-date Google Earth images and topographic maps were used to indicate the survey area. Topographic maps were sources from the Surveyor General. Please note that all maps are orientated with north facing upwards (unless stated otherwise).

6.1 Review of existing information/data

Additional information on the cultural heritage of the area was sourced from the following records:

- National Mapping Project by SAHRA (which lists heritage impact assessment reports submitted for South Africa);
- Environmental Potential Atlas (ENPAT);
- Online SAHRIS database;
- National Automated Archival Information retrieval System (NAAIRS);
- Maps and information documents supplied by the client; and

- Several heritage surveys have been conducted in the vicinity of the survey area (published and unpublished material) on the area (Murimbika 2005; Roodt 2007; Van Schalkwyk 2007).

The Surveyor General's maps of the farms within the survey footprint indicate that most of the farms were first surveyed in 1888, 1893 and some in the early 20th century. Also note the farm Rotterdam 12KS was allocated to Jan Geysler in 1892, after whom the local railway station was named (also see Addendum 2).

Although several heritage impact assessments have been completed in the general vicinity of the survey area, some also falls within the survey footprint. A survey conducted on the farm Rietfontein 743LS resulted in no recorded historical or archaeological finds (Murimbika 2005). A survey for a farming concern on the farms Snymansdrift 738LS and Schanhauzen 737LS yielded no historical or archaeological remains (Roodt 2007). An extended heritage survey of the area confirmed the rich archaeological remains in the region which include Middle and Later Stone Age sites and a large number of Iron Age settlements dating from AD 700 (Van Schalkwyk 2007).

A number of historical and archaeological sites were noted on the SAHRIS Database system as a number situated within the survey footprint. A cluster of stone-walled Late Iron Age settlements are indicated on the periphery and in the survey footprint (see Figure 6). Also note that there are several declared Provincial Heritage sites recorded near the survey footprint (SAHRIS Database July 2022) (see Figure 7).

The following declared National and Provincial heritage sites occur near the survey footprint:

- Provincial heritage site: Irish House, Market Street, Polokwane (Ref: 9/2/253/0001)
- Provincial heritage site: Fort Louis Campbell, Marabastad (Ref: 9/2/253/0007)
- Provincial heritage site: First Gold Power Plant (Ref: 9/2/253/0004-002)
- Provincial Heritage site: Makapans Cave (Ref: 9/2/257/0002)
- Provincial Heritage Site: Limeworks at Makapansgat (Ref: 9/2/257/0003)
- Provincial Heritage Site: Old stone house (Ref: 9/2/257/0003)

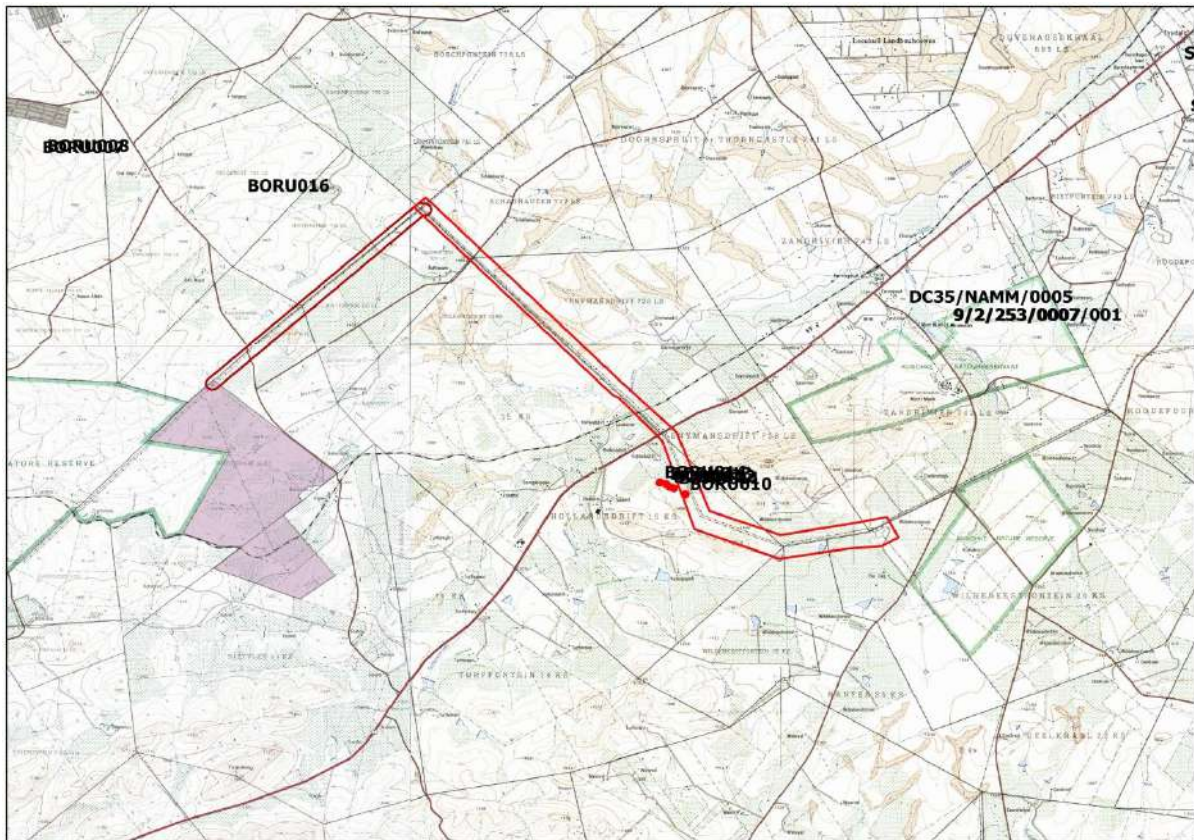


Figure 6: Recorded sites situated near and inside the survey footprint (SAHRIS as at July 2022)

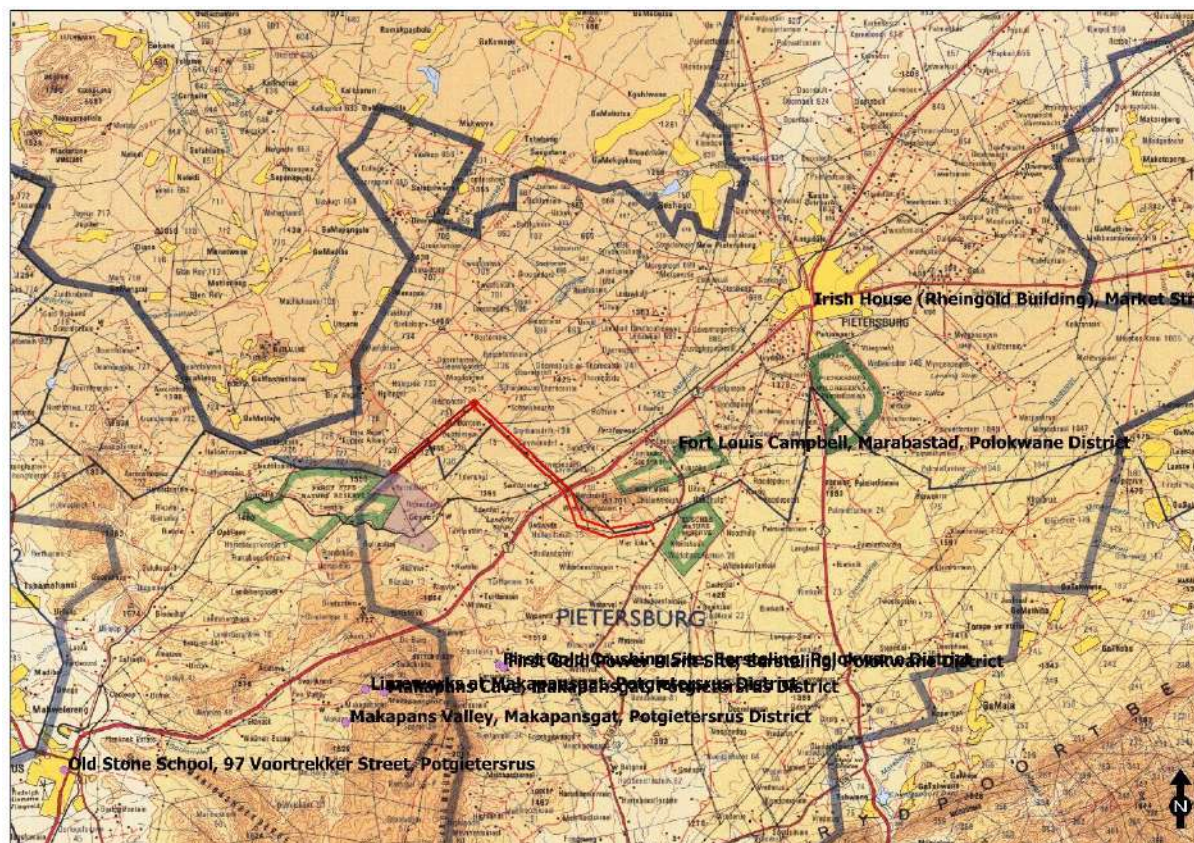


Figure 7: Declared heritage sites situated within the larger region of the survey footprint (SAHRIS as at July 2022)



Figure 8: The farms within the survey footprint indicated on Jeppe's Map dating to 1899

A number of possible historical settlements and a historical mine were recorded on the 1:50000 maps dating to 1986 (refer to Figures 10 to 12).

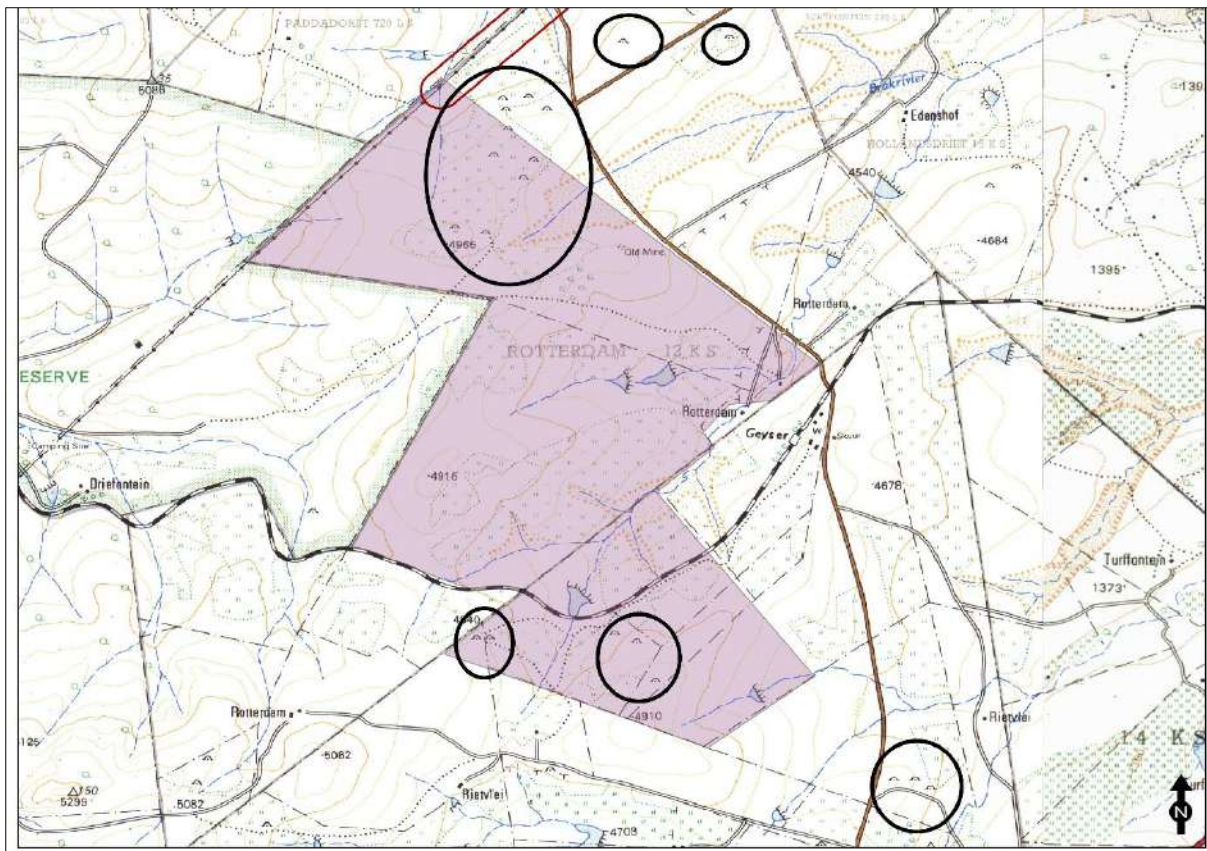


Figure 9: The possible heritage sites as indicated on the 1:50 000 topographic map (1968)

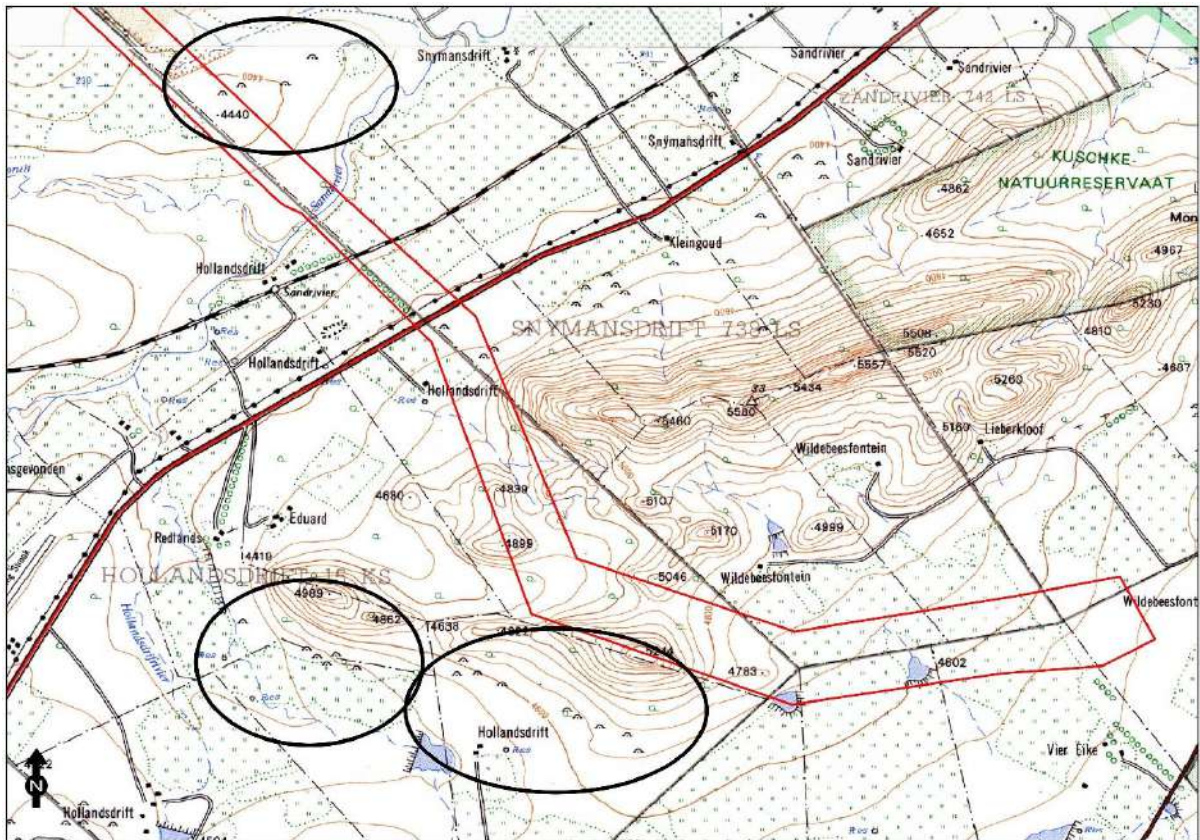


Figure 10: The possible heritage sites as indicated on the 1:50 000 topographic map (1986)

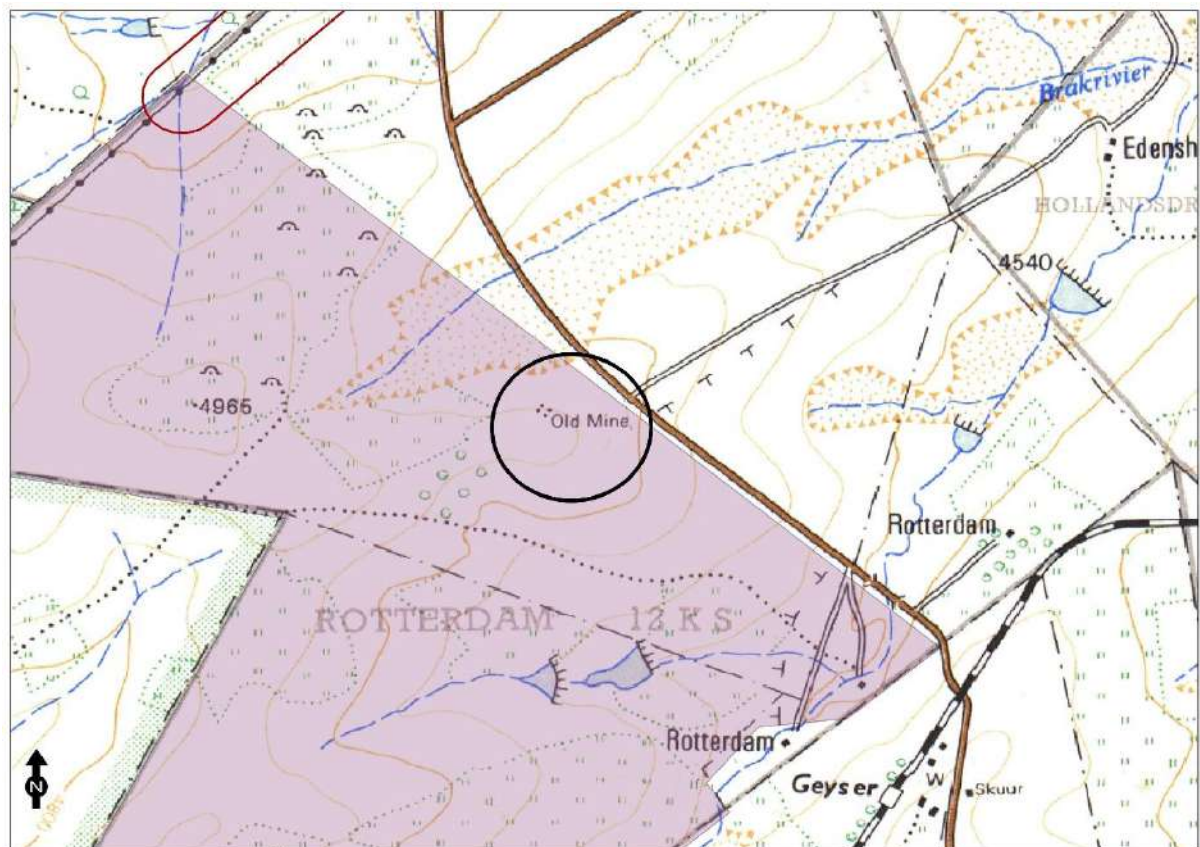


Figure 11: The possible historical mine as indicated on the 1:50 000 topographic map (1986)

After integrating the location of all possible sites that were identified during the desktop screening study the following map was compiled (see Figure 13). Please note that the data from old topographical maps and the SAHRIS database were primarily sourced.



Figure 12: Heritage sensitivity after the screening process

6.2 Palaeontological sensitivity

The palaeontological sensitivity map was extracted from the SAHRIS database and indicates a grey (zero) and blue (low) sensitivity for both the farms (refer to Figure 13). As a result, no palaeontological assessment will be required for the survey footprints

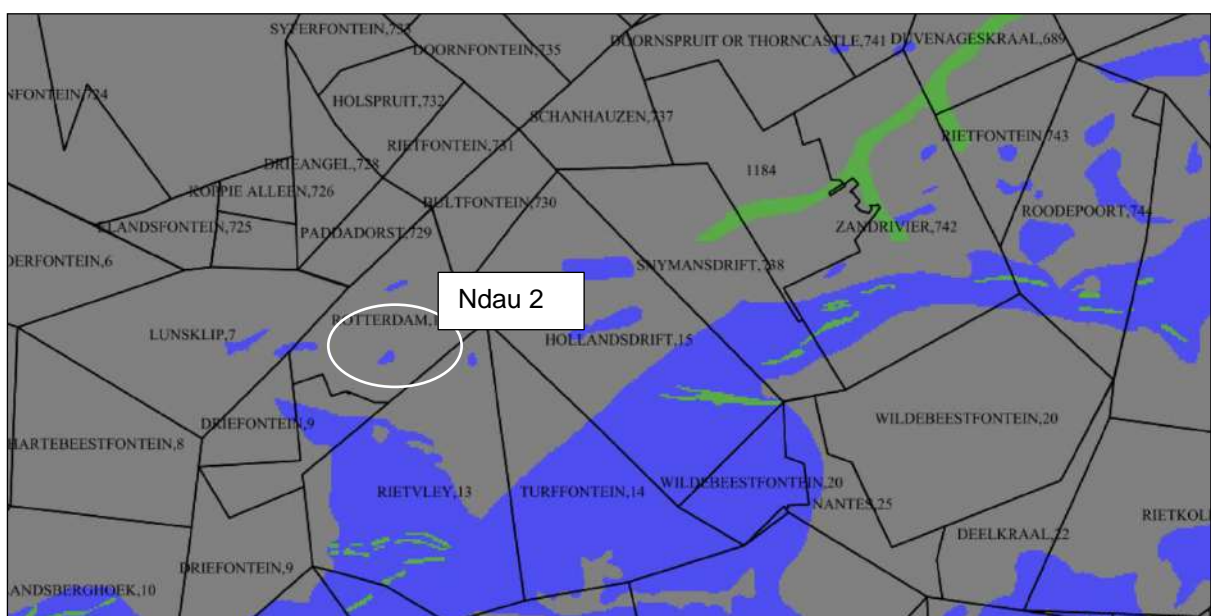


Figure 13: Palaeontological sensitivity of the region (SAHRIS 2022)

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	Will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

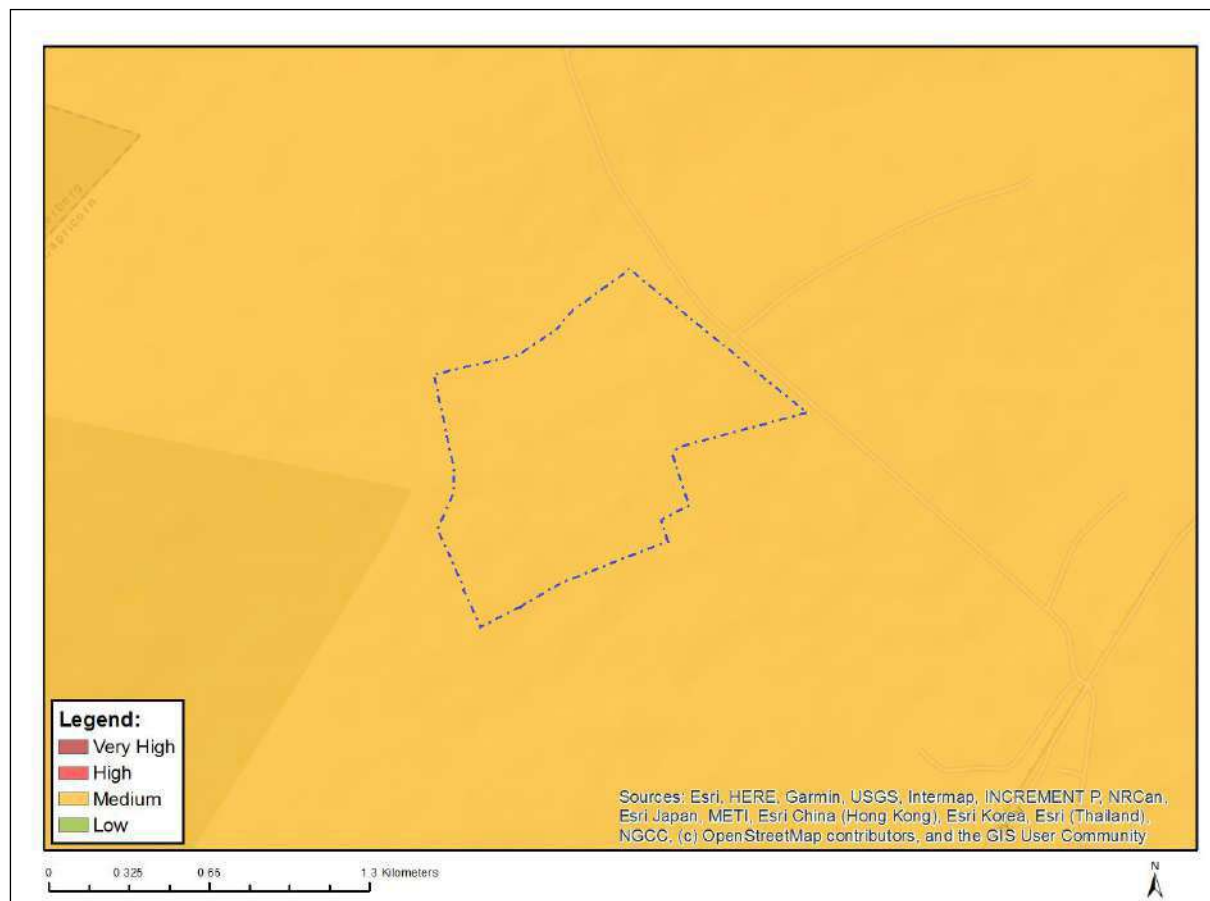


Figure 14: Medium Paleo sensitivity rating awarded by the DFFE Screening Tool

Based on the site verification results, the specialist **disputes the DFFE screening** tool rating of medium sensitivity, as the site should be rated as having a **LOW Palaeontological sensitivity**.

7. Verification of Ndau 2

7.1 Field Investigation

The field verification survey for Ndau 2 was conducted on 31 May 2023. The strategy during this survey was to conduct a thorough investigation of the various sections of the Ndau 2 site that form part of the application. The aim was therefore to conduct a detailed pedestrian (foot) and predictive survey of the survey footprint. Existing infrastructure was used to gain access to the area followed by detailed pedestrian investigations. No physical restrictions were encountered and the survey area was readily accessible.

7.2 Verification Results

The access road associated with Ndau 2 runs northwards starting from the Pretoria-Polokwane railway which was officially opened in 1889. Care should be taken during construction phase not to damage any part of the railway line. Also, please note the following:

- A historical farmhouse complex is located at the centre of Ndau 2 PV Area which consists of the main house, outbuildings and a possible midden. The structures possibly date to the late 19th century.
- A graveyard is located at the centre of the Ndau 2 PV Area which consists of at least 15 graves dating to the 1940s.
- Care should be taken during the construction phase to prevent any impact on these heritage remains which are older than 60 years and therefore protected under the NHRA (Act No. 25 of 1999).

No archaeological (both Stone Age and Iron Age) features, structures, assemblages or sites were recorded within Ndau 2 PV Area.

The Ndau 2 site which was surveyed in relation to the broader study area is shown in **Figure 15**.

The heritage sites on the Ndau 2 site are shown in **Figure 16**.

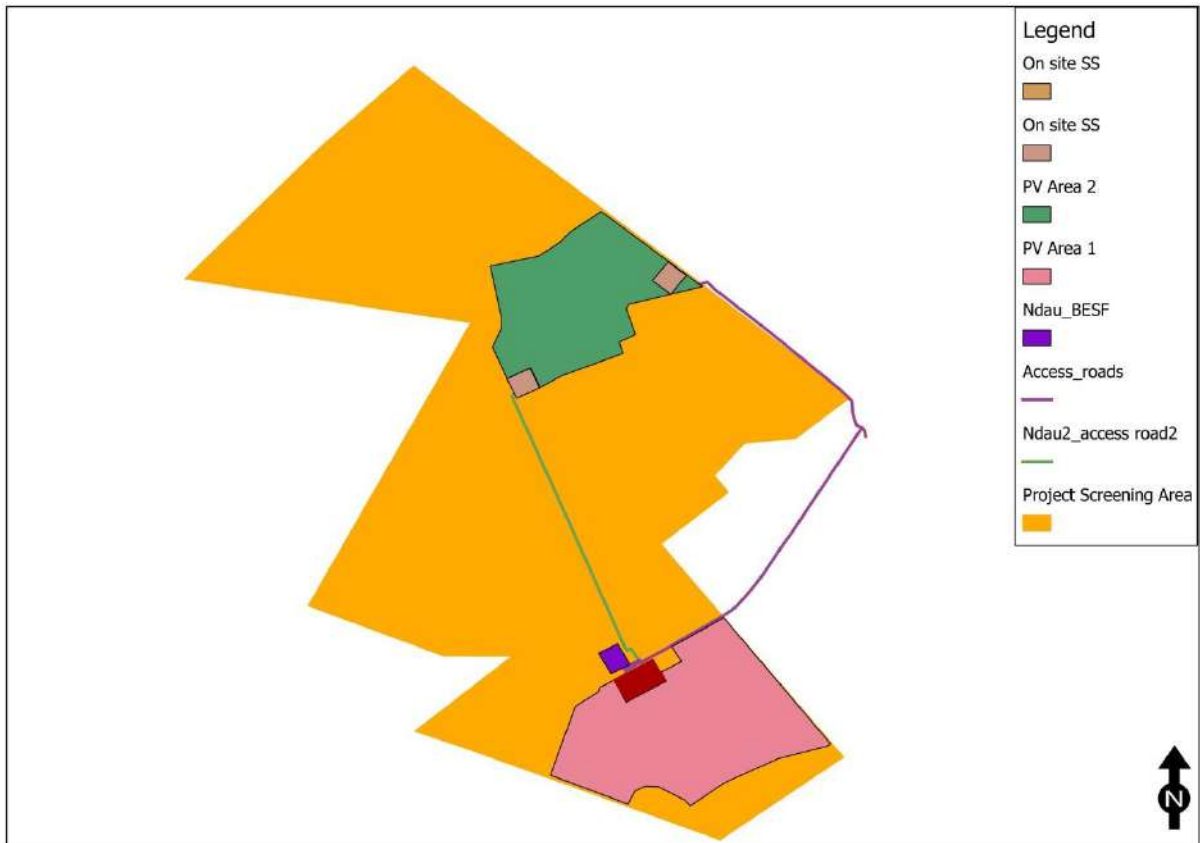


Figure 15: The Ndau PV Area 2 area in relation to the original screening footprint and PV cluster

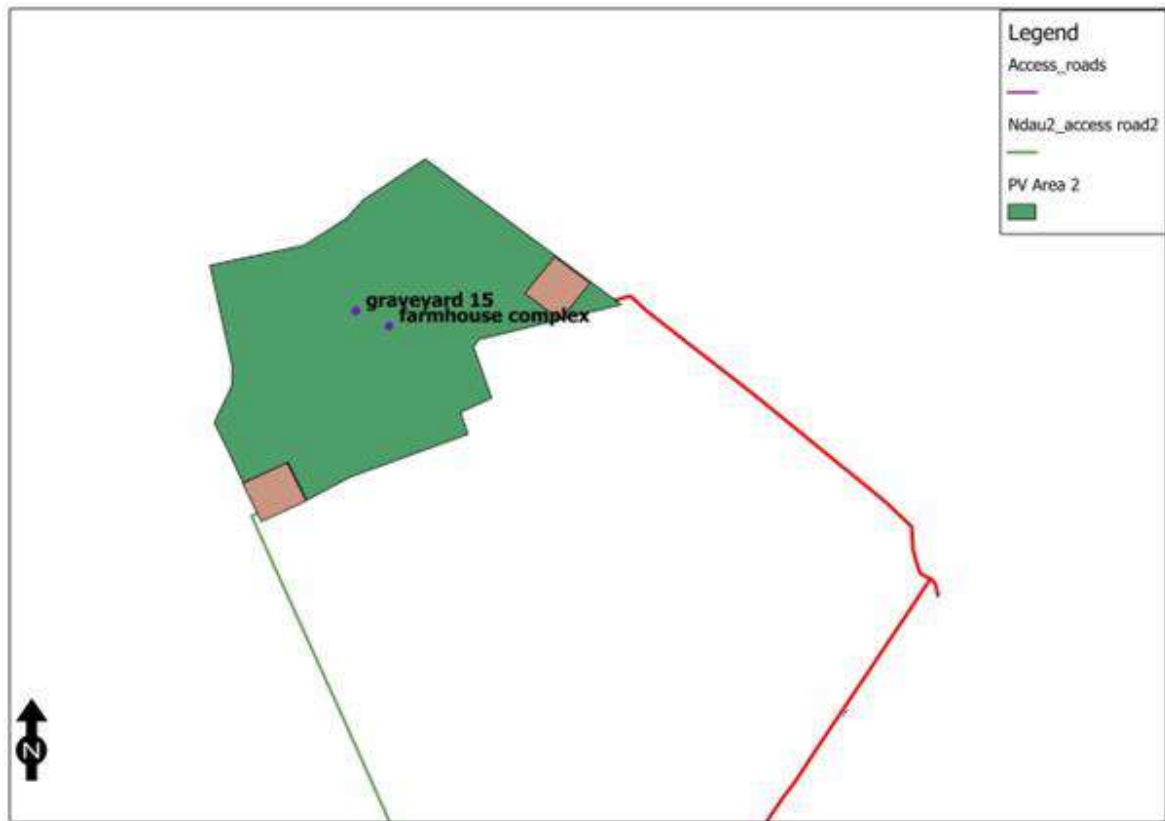


Figure 16: Ndau PV Area 2 and the access roads in relation to the location of the heritage sites



Figure 17: Low sensitivity rating awarded by the DFFE Screening Tool

Based on the field verification, the specialist **agrees with the DFFE screening** tool sensitivity rating for the Ndau 2 site as having a **low sensitivity**, as the grave and old farmhouse complex can be avoided with proper layout planning.



Figure 18: Grave site on the left, old farmhouse complex on the right

8. Recommendations and Conclusions

It is recommended, from a cultural heritage perspective that the proposed development activities may proceed to the next phase of assessment, taking into account the historical farmhouse complex and associated graveyard. Mitigation measures will have to be put in place.

It is therefore recommended that a Phase 1 Heritage Assessment be conducted for the proposed Ndau 2 site.

Also, please note:

Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (*cf.* NHRA (Act No. 25 of 1999), Section 36 (6)).

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Addendum 1: Archaeological and Historical Sequence

The table provides a general overview of the chronological sequence of the archaeological periods in South Africa.

PERIOD	APPROXIMATE DATES
Earlier Stone Age	more than 2 million years ago to >200 000 years ago
Middle Stone Age	<300 000 years ago to >20 000 years ago
Later Stone Age (Includes hunter-gatherer rock art)	<40 000 years ago up to historical times in certain areas
Early Iron Age	c. AD 200 - c. AD 900
Middle Iron Age	c. AD 900 – c. AD 1300
Late Iron Age (Stonewalled sites)	c. AD 1300 - c. AD 1840 (c. AD 1640 - c. AD 1840)

< = less than; > = greater than

Archaeological Context

Stone Age Sequence

Concentrations of Early Stone Age (ESA) sites are usually present on the flood-plains of perennial rivers and may date to over 2 million years ago. These ESA open sites may contain scatters of stone tools and manufacturing debris and secondly, large concentrated deposits ranging from pebble tool choppers to core tools such as handaxes and cleavers. The earliest hominins who made these stone tools, probably not always actively hunted, instead relying on the opportunistic scavenging of meat from carnivore kill sites.

Middle Stone Age (MSA) sites also occur on flood plains, but are also associated with caves and rock shelters (overhangs). Sites usually consist of large concentrations of knapped stone flakes such as scrapers, points and blades and associated manufacturing debris. Tools may have been hafted but organic materials, such as those used in hafting, seldom preserve. Limited drive-hunting activities are also associated with this period.

Sites dating to the Later Stone Age (LSA) are better preserved in rock shelters, although open sites with scatters of mainly stone tools can occur. Well-protected deposits in shelters allow for stable conditions that result in the preservation of organic materials such as wood, bone, hearths, ostrich eggshell beads and even bedding material. By using San (Bushman) ethnographic data a better understanding of this period is possible. South African rock art is also associated with the LSA.

The following chronological sequence was recently established by prominent Stone Age archaeologists (Lombard et al 2012):

Later Stone Age

- Age Range: recent to 20-40 thousand years ago

- General characteristics: expect variability between assemblages, a wide range of formal tools, particularly scrapers (microlithic and macrolithic), backed artefacts, evidence of hafted stone and bone tools, borers, bored stones, upper and lower grindstones, grooved stones, ostrich eggshell (OES) beads and other ornaments, undecorated/decorated OES fragments, flasks/flask fragments, bone tools (sometimes with decoration), fishing equipment, rock art, and ceramics in the final phase.
 - **Ceramic or Final Later Stone Age**
 - Generally < 2 thousand years ago
 - MIS 1
 - Contemporaneous with, and broadly similar to, final Later Stone Age, but includes ceramics
 - Economy may be associated with hunter-gatherers or herders

Technological characteristics

- Stone tool assemblages are often microlithic
- In some areas they are dominated by long end scrapers and few backed microliths; in others formal tools are absent or rare
- Grindstones are common, ground stone artefacts, stone bowls and boat-shaped grinding grooves may occur
- Includes grit- or grass-tempered pottery
- Ceramics can be coarse, or well-fired and thin-walled; some times with lugs, spouts and conical bases; sometimes with decoration; sometimes shaped as bowls
- Ochre is common
- Ostrich eggshell (OES) is common
- Metal objects, glass beads and glass artefacts also occur
- **Final Later Stone Age**
 - 100 – 4000 years ago
 - MIS 1
 - Hunter-gatherer economy

Technological characteristics

- Much variability can be expected
- Variants include macrolithic (similar to Smithfield [Sampson 1974]) and/or microlithic (similar to Wilton) assemblages
- Assemblages are mostly informal (Smithfield)
- Often characterised by large untrimmed flakes (Smithfield)
- Sometimes microlithic with scrapers, blades and bladelets, backed tools and adzes (Wilton-like)
- Worked bone is common
- OES is common
- Ochre is common
- Iron objects are rare
- Ceramics are absent
- **Wilton**
 - 4000 – 8000 years ago

- MIS 1
- At some sites continues into the final Later Stone Age as regional variants (e.g. Wilton Large Rock Shelter and Cave James)

Technological characteristics

- Fully developed microlithic tradition with numerous formal tools
 - Highly standardised backed microliths and small convex scrapers
 - OES is common
 - Ochre is common
 - Bone, shell and wooden artefacts occur
- **Oakhurst**
 - 7000 – 12 000 years ago
 - MIS 1
 - Includes Albany, Lockshoek and Kuruman as regional variants

Technological characteristics

- Flake based industry
 - Characterised by round, end, and D-shaped scrapers and adzes
 - Wide range of polished bone tools
 - Few or no microliths
- **Robberg**
 - 12 000 to 18 000 years ago
 - MIS 2

Technological characteristics

- Characterised by systematic bladelet (<26mm) production and the occurrence of outils ecailles or scaled pieces
 - Significant numbers of unretouched bladelets and bladelet cores
 - Few formal tools
 - Some sites have significant macrolithic elements
- **Early Late Stone Age**
 - 18 000 – 40 000 years ago
 - MIS 2-3
 - Informal designation
 - Also known as transitional MSA-LSA
 - Overlapping in time with final Middle Stone Age

Technological Characteristics

- Characterised by unstandardised, often microlithic, pieces and includes the bipolar technique
- Described at some sites, but not always clear whether assemblages represent a real archaeological phase or a mixture of LSA/MSA artefacts

Middle Stone Age

- Age Range: 20 000 – 30 000 years ago

- General characteristics: Levallois or prepared core techniques occur in which triangular flakes with convergent dorsal scars, often with faceted striking platforms, are produced. Discoidal systems and intentional blade production from volumetric cores also occur; formal tools may include unifacially and bifacially retouched points, backed artefacts, scrapers, and denticulates; evidence of hafted tools; occasionally includes marine shell beads, bone points, engraved ochre nodules, engraved OES fragments, engraved bone fragments, and grindstones.
- In the sequence below we highlight differences or characteristics that may be used to refine interpretations depending on context.
- **Final Middle Stone Age**
 - 20 000 – 40 000 years ago
 - MIS 3
 - Informal designation partly based on the Sibudu sequence

Technological characteristics

- Characterised by high regional variability that may include, e.g. bifacial tools, bifacially retouched points, hollow-based points
- Triangular flake and blade industries (similar to Strathalan and Melikane)
- Small bifacial and unifacial points (similar to Sibudu and Rose Cottage Cave)
- Sibudu point characteristics: short, stout, lighter in mass compared to points from the Sibudu technocomplex, but heavier than those from the Still Bay
- Can be microlithic
- Can include bipolar technology
- Could include backed geometric shapes such as segments, as well as side scrapers

Sibudu

- 45 000 – 58 000 years ago
- MIS 3
- Previously published as informal late Middle Stone Age and post-Howieson's Poort at Sibudu
- Formerly known post-Howieson's Poort, MSA 3 generally, and MSA III at Klasies River

Technological characteristics

- Most points are produced using Levallois technique
- Most formal retouch aimed at producing unifacial points
- Sibudu unifacial point (type fossil) characteristics: faceted platform; shape is somewhat elongated with a mean length of 43.9 mm), a mean breadth of 26.8 mm and mean thickness of 8.8 mm (L/B ratio 1.7); their mean mass is 11.8 g
- Some plain butts
- Rare bifacially retouched points
- Some side scrapers are present
- Backed pieces are rare

- **Howieson's Poort**

- 58 000 – 66 000 years ago
- MIS 3-4

Technological characteristics

- Characterised by blade technology
- Includes small (<4 cm) backed tools, e.g. segments, scrapers, trapezes and backed blades
- Some denticulate blades
- Pointed forms are rare or absent
- **Still Bay**
 - 70 000 – 77 000 years ago
 - MIS 4-5a

Technological characteristics

- Characterised by thin (<10 mm), bifacially worked foliate or lanceolate points
- Semi-circular or wide-angled pointed butts
- Could include blades and finely serrated points (Lombard et al. 2010)
- **Pre-Still Bay**
 - 72 000 – 96 000 years ago
 - MIS 4-5

Technological characteristics

- Characteristics currently being determined / studied
- **Mossel Bay**
 - 77 000 to —105 000 years ago
 - MIS 5a-4
 - Also known as MSA II at Klasies River or MSA 2b generally

Technological characteristics

- Characterised by recurrent unipolar Levallois point and blade reduction
- Products have straight profiles; percussion bulbs are prominent and often splintered or ring-cracked
- Formal retouch is infrequent and restricted to sharpening the tip or shaping the butt
- **Klasies River**
 - 105 000 to —130 000 years ago
 - MIS 5d-5e
 - Also referred to as MSA I at Klasies River or MSA 2a generally

Technological characteristics

- Recurrent blade and convergent flake production
- End products are elongated and relatively thin, often with curved profiles
- Platforms are often small with diffused bulbs
- Low frequencies of retouch
- Denticulate pieces
- **Early Middle Stone Age**
 - Suggested age MIS 6 to MIS 8 (130 000 to —300 000 years ago)
 - Informal designation

Technological characteristics

- This phase needs future clarification regarding the designation of cultural material and sequencing
- Includes discoidal and Levallois flake technologies, blades from volumetric cores and a generalised toolkit
- **Earlier Stone Age**
 - Age range: >200 000 to 2 000 000 years ago
 - General characteristics: early stages include simple flakes struck from cobbles, core and pebble tools; later stages include intentionally shaped handaxes, cleavers and picks; final or transitional stages have tools that are smaller than the preceding stages and include large blades.
 - In the sequence below we highlight differences or characteristics that may be used to refine interpretations depending on context.
- **ESA-MSA transition**
- 200 to —600 thousand years ago
- MIS 7-15

Technological characteristics

- Described at some sites as Fauresmith or Sangoan
- Relationships, descriptions, issues of mixing and ages yet to be clarified
- Fauresmith assemblages have large blades, points, Levallois technology, and the remaining ESA components have small bifaces
- The Sangoan contains small bifaces (<100 mm), picks, heavy and light-duty denticulated and notched scrapers
- The Sangoan is less well described than the Fauresmith
- **Acheulean**
 - 300 thousand to —1.5 million years ago
 - MIS 8-50

Technological characteristics

- Bifacially worked handaxes and cleavers, large flakes > 10 cm
- Some flakes with deliberate retouch, sometimes classified as scrapers
- Gives impression of being deliberately shaped, but could indicate result of knapping strategy
- Sometimes shows core preparation
- Generally found in disturbed open-air locations
- **Oldowan**
 - 1.5 to >2 million years ago
 - MIS 50-75

Technological characteristics

- Cobble, core or flake tools with little retouch and no flaking to predetermined patterns
- Hammerstones, manuports, cores
- Polished bone fragments/tools

Iron Age Sequence

In the northern regions of South Africa at least three settlement phases have been distinguished for early prehistoric agropastoralist settlements during the **Early Iron Age** (EIA). Diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. The first phase of the Early Iron Age, known as **Happy Rest** (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of **Diamant** is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the **Eiland** tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Limpopo Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. These sites are usually located on low-lying spurs close to water.

The Late Iron Age (LIA) settlements are characterised by stone-walled enclosures situated on defensive hilltops c. AD 1640 - AD 1830). This occupation phase has been linked to the arrival of ancestral Northern Sotho, Tswana and Ndebele (Nguni-speakers) in the northern regions of South Africa with associated sites dating between the sixteenth and seventeenth centuries AD. The terminal LIA is represented by late 18th/early 19th century settlements with multichrome Moloko pottery commonly attributed to the Sotho-Tswana. These settlements can in many instances be correlated with oral traditions on population movements during which African farming communities sought refuge in mountainous regions during the processes of disruption in the northern interior of South Africa, resulting from the so-called difaqane (or mfecane).

Sites that were identified during the survey are archaeological sites dated to the later (stone walled) phase of the Late Iron Age (c. AD 1640 - AD 1830s) also known as the Late Moloko. These sites all conform to a general settlement layout that forms part of a certain worldview. As such, the livestock enclosures are situated in the central area of a settlement. The court (kgotla) is also located in this central area and is associated with men (men are usually also buried here). The surrounding scalloped walling is where the houses are situated and is associated with women. This type of settlement layout is generally known as the Central Cattle Pattern (CCP).

Ethno-historical Context

The northern section of the study area is almost exclusively inhabited by people of Tlokwa origin. It is said that the origin of all Tlokwa people can be traced to Tlokweg on the Mooi River near Potchefstroom, where they had the thakadu (ant-bear) as their totem. From here can be traced the Tlokwa tribes of North West Province, Free State, Lesotho, KwaZulu-Natal, Botswana and Limpopo Province. Exactly when this segregation took place, can no longer be determined with any clarity. It is however justifiable to estimate that the northward movement of the Tlokwa took place before the year 1700. According to tradition, they first settled at Moletane in the Potgietersrus district, but early in the eighteenth century they moved further northward (Botha 1983:163; Krige 1937:350; Van Warmelo 1953; Transvaal Native Affairs Department 1905).

The southern part of the study area is occupied by a number of different Ndebele-speaking (e.g. Moletlane, Maune) and Sotho-speaking (Moletse and Koni) groups. These groups are very diverse in origin and history. Some entered the area from the north, others from the south east and, others from the direction of Botswana. As such this gave rise to complex history, which

is still largely under researched. From the middle of the 1800s, the Berlin Mission Society had a number of mission stations in the then Northern Transvaal. The results of their missionary labours were, according to their own reporting, not as successful as they had hoped. It was in matters outside the church that they contributed much to the creation of the 'Sotho' as a social, political and cultural entity. They established the first schools and hospitals. They played an important role in political matters on a number of occasions, in some cases taking the side of the local people (e.g. the Hananwa in 1894), or the government of the day (e.g. Sekhukhune in 1876). They also documented much of the life of the Sotho-speakers in early colonial times. The Berlin Mission Society was active in the area until 1962.

Polokwane

In the 1840s, Voortrekkers under the leadership of Andries Potgieter established Zoutpansbergdorp, a town 100 km to the northwest. This settlement had to be abandoned because of clashes with the local tribes. They founded a new town in 1886 and named it 'Pietersburg' in honour of Voortrekker leader Petrus Jacobus Joubert. The British built a concentration camp at Pietersburg during the Boer War to incarcerate almost 4000 Boer women and children. The town officially became a city on 23 April 1992.

Addendum 2: Surveyor General Farm Diagram

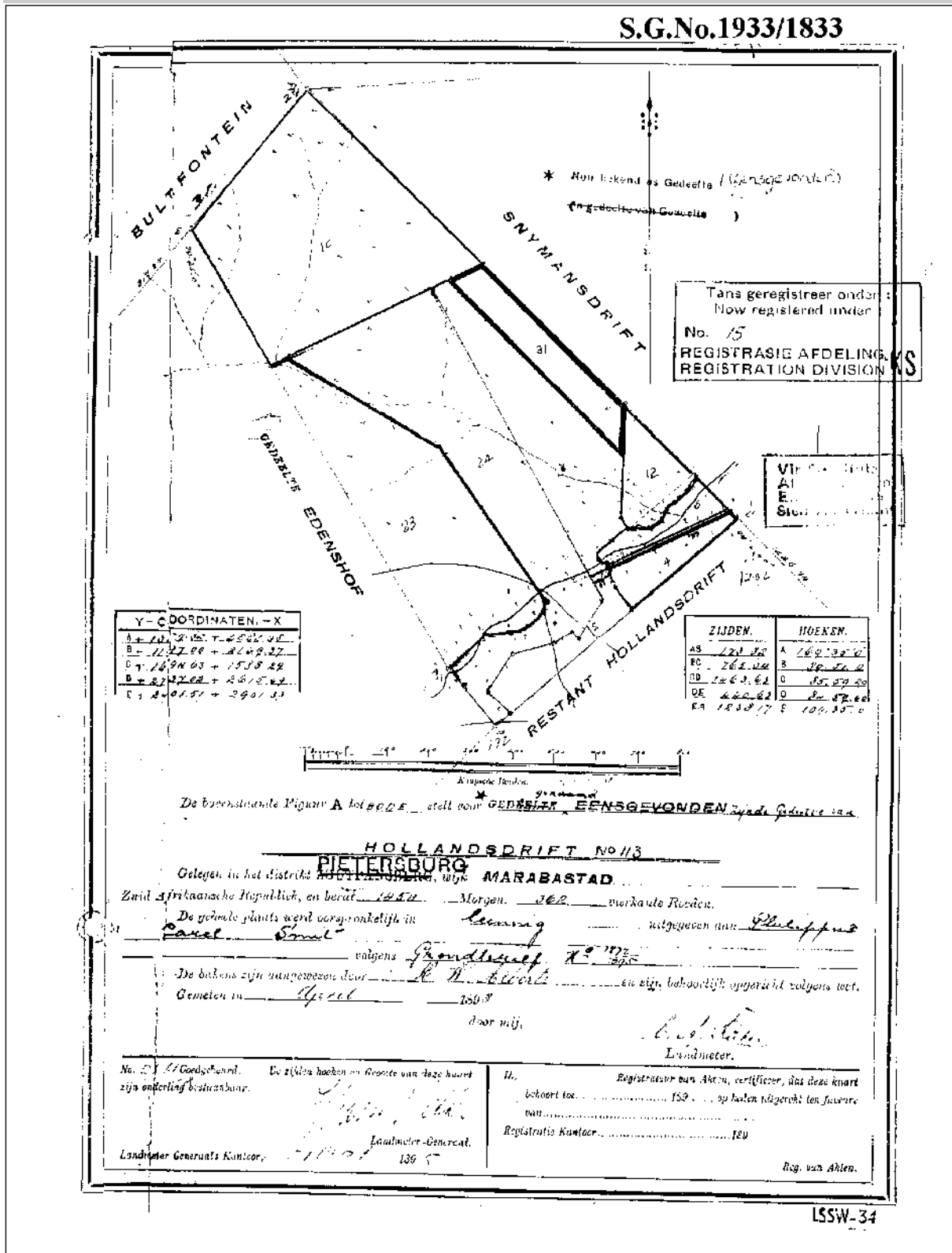


Figure 19: Surveyor General's map of the farm Hollandsdrift 15KS which was first surveyed in the 1898

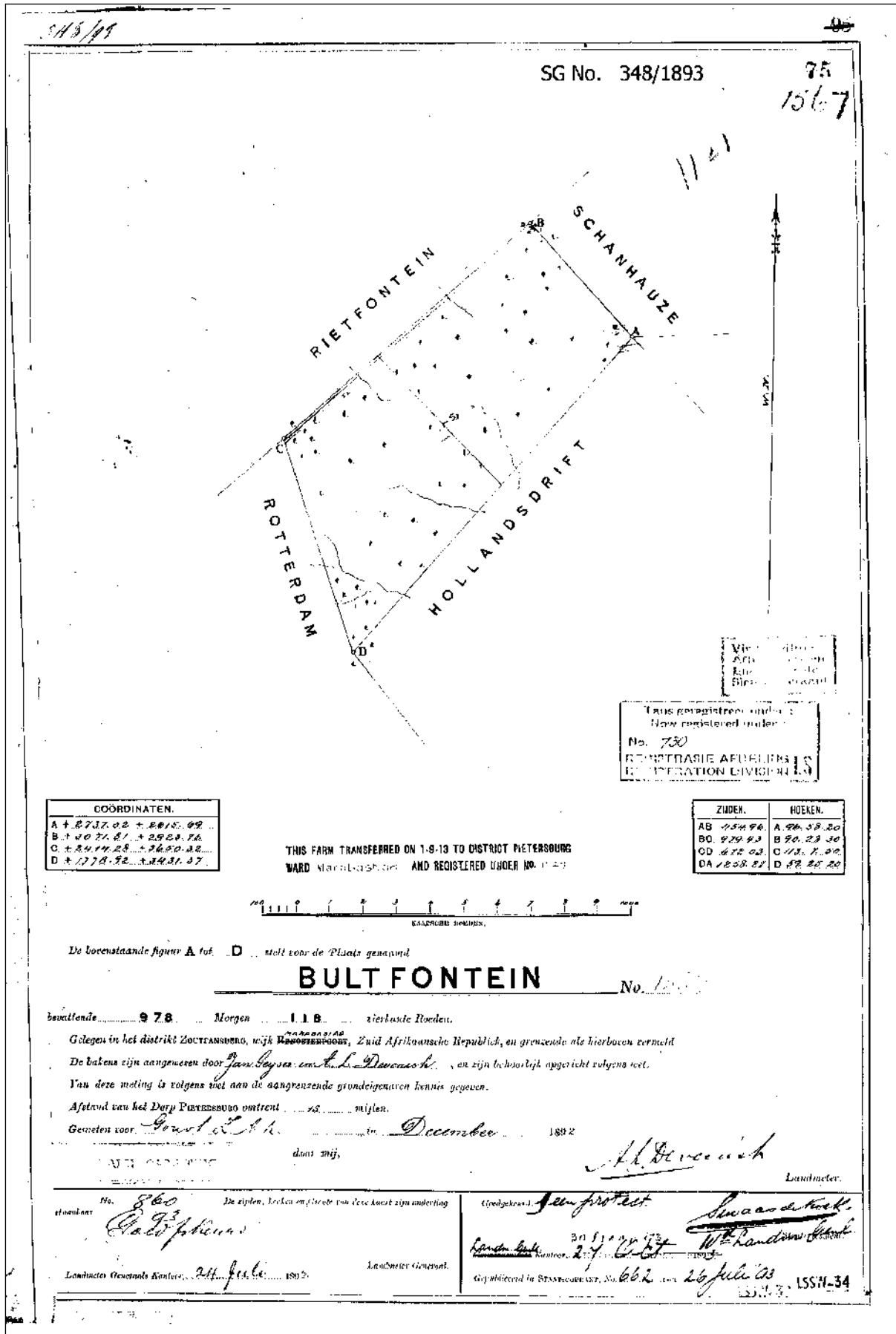


Figure 20: Surveyor General's map of the farm Bultfontein 730LS which was first surveyed in the 1893

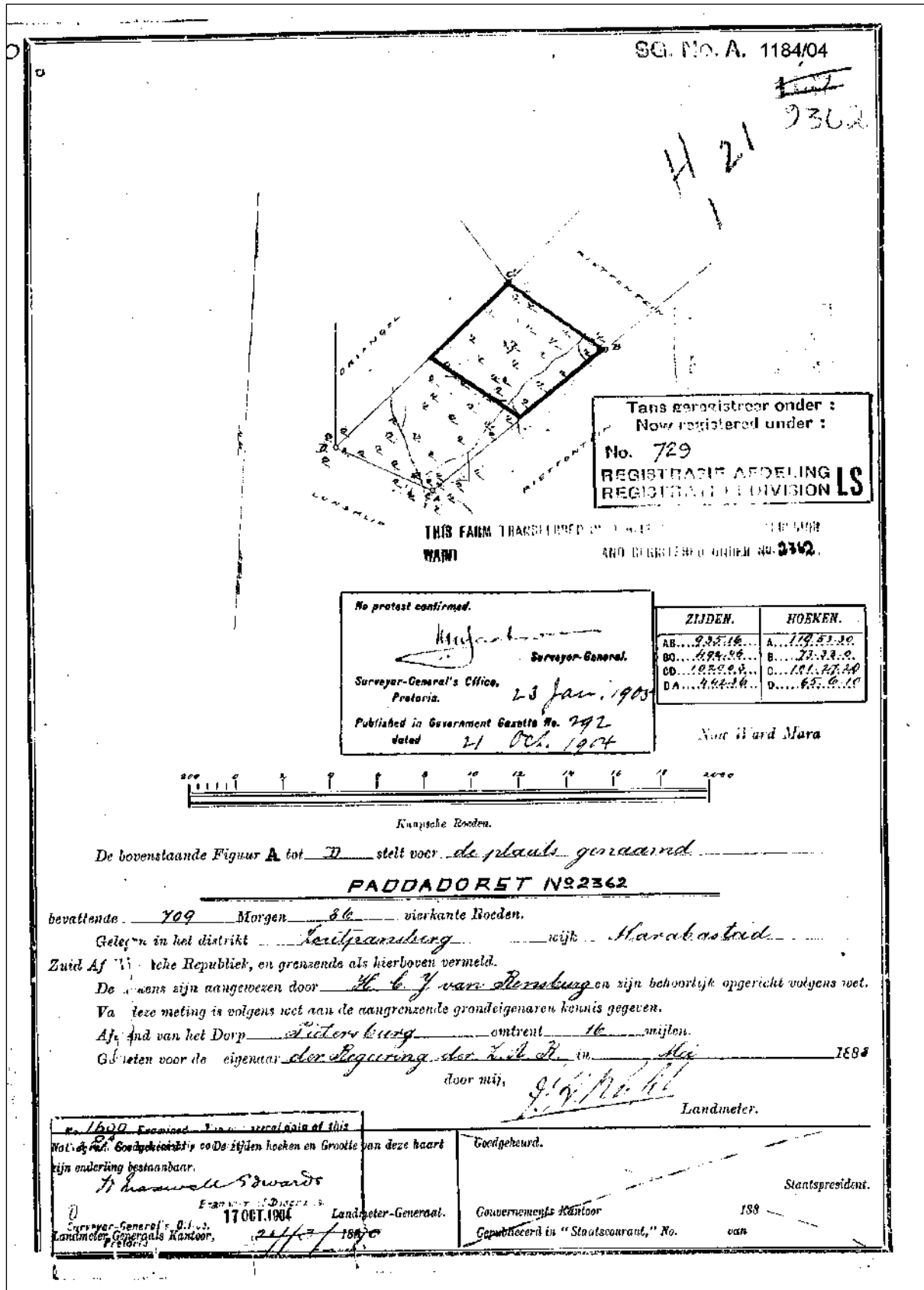


Figure 21: Surveyor General's map of the farm Paddadoret 729LS which was first surveyed in the 1888

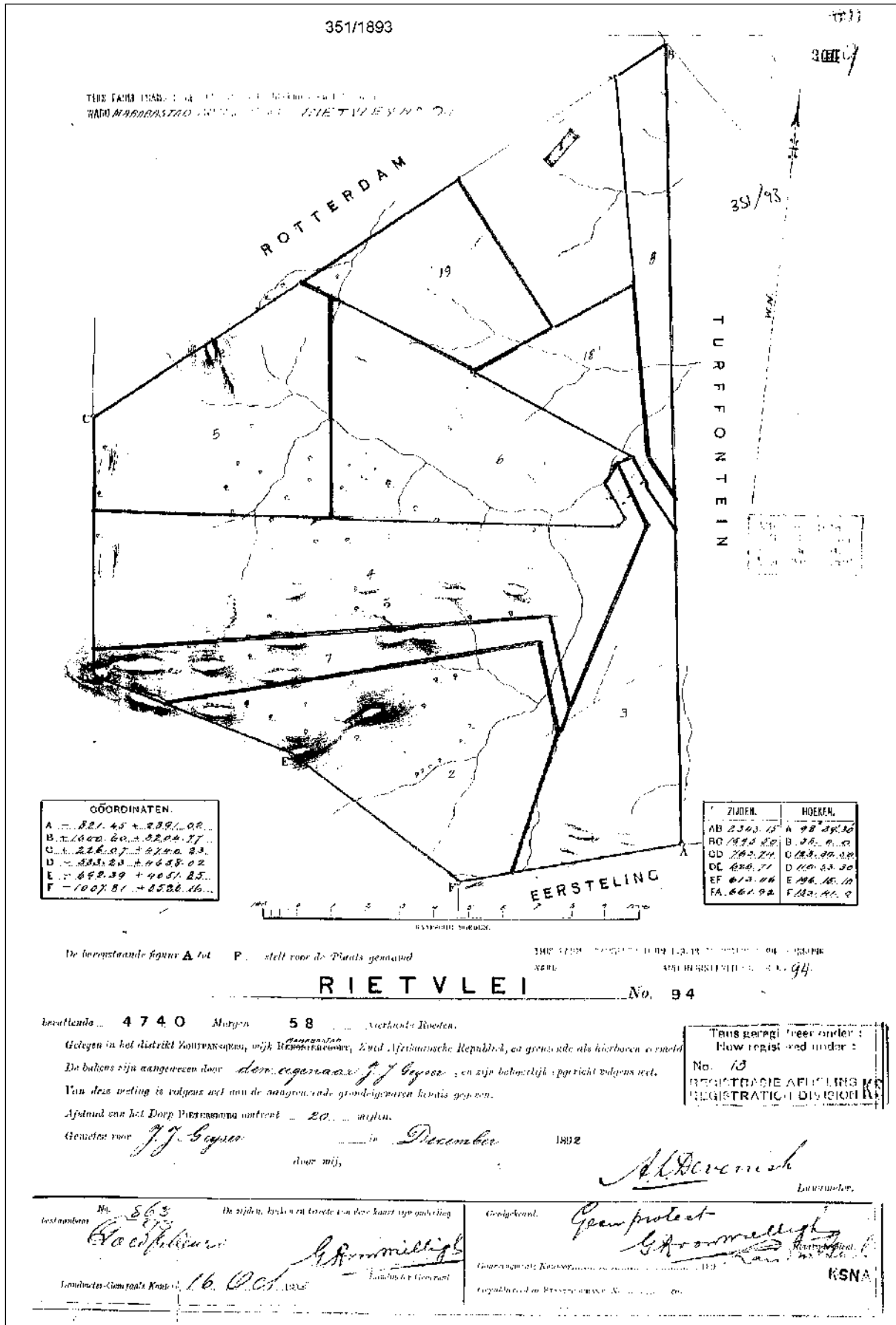


Figure 22: Surveyor General's map of the farm Rietvlei 13KS which was first surveyed in the 1893

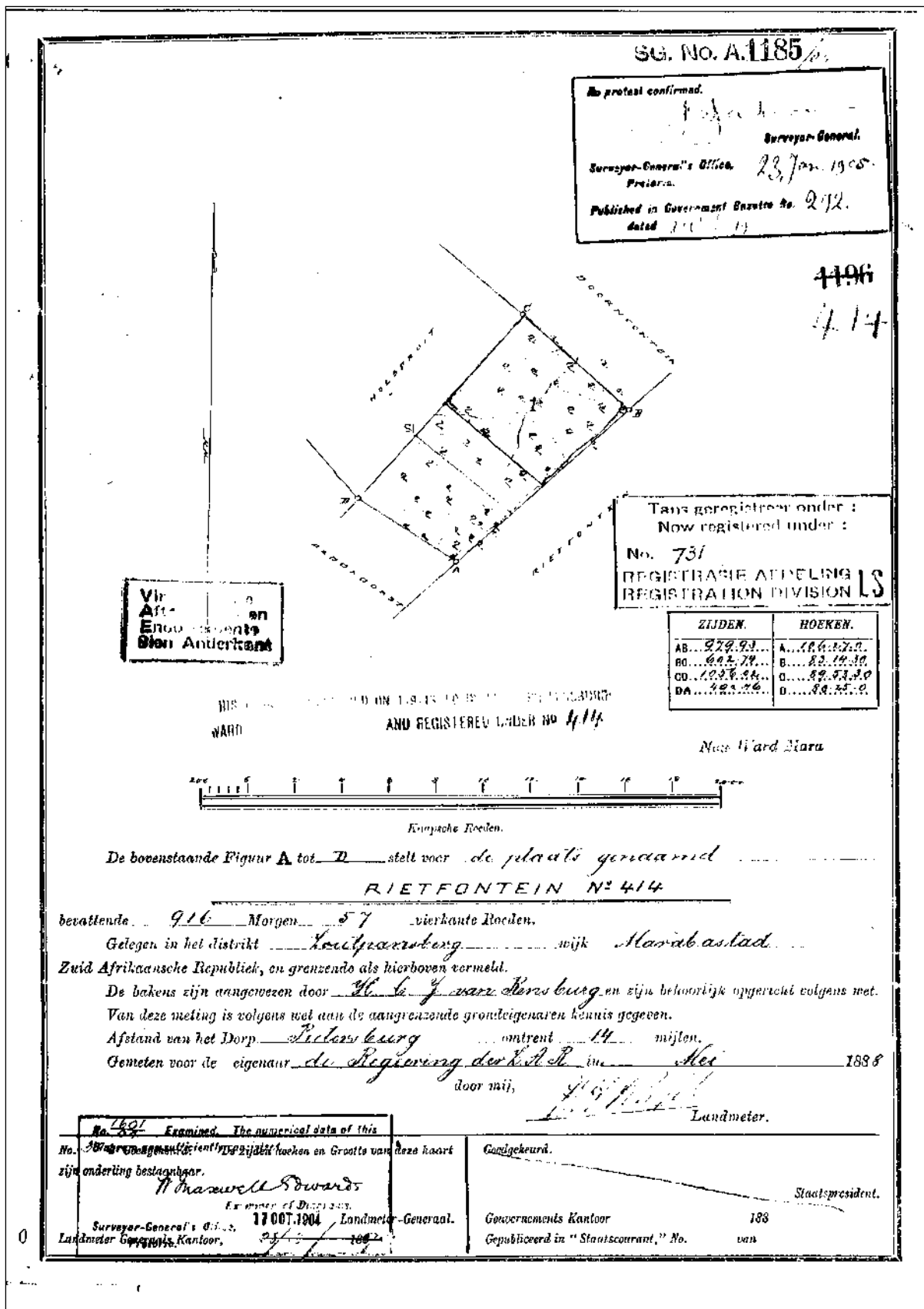


Figure 23: Surveyor General's map of the farm Roetfontein 731LS which was first surveyed in the 1898

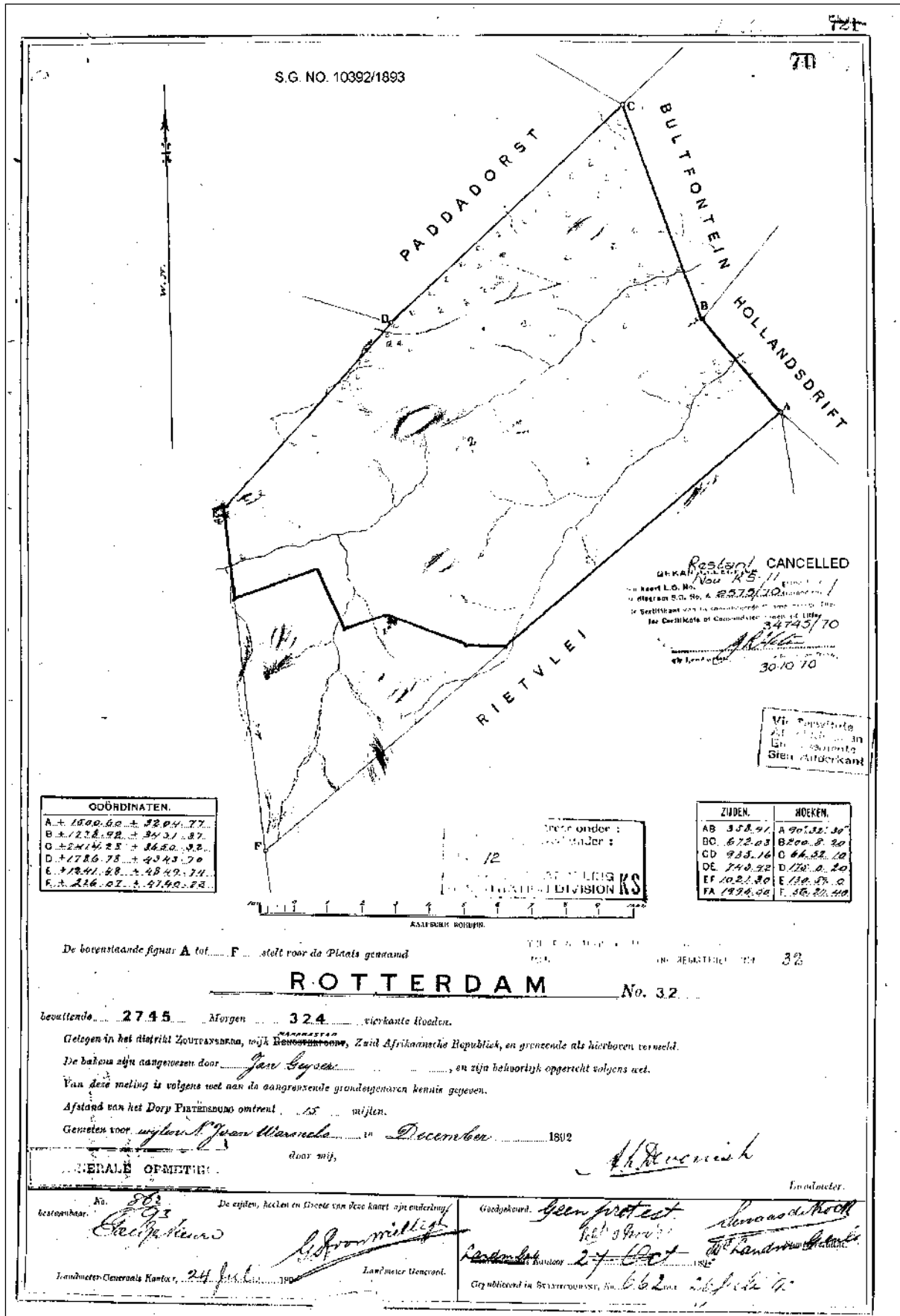


Figure 24: Surveyor General's map of the farm Rotterdam 12KS which was first surveyed in the 1892

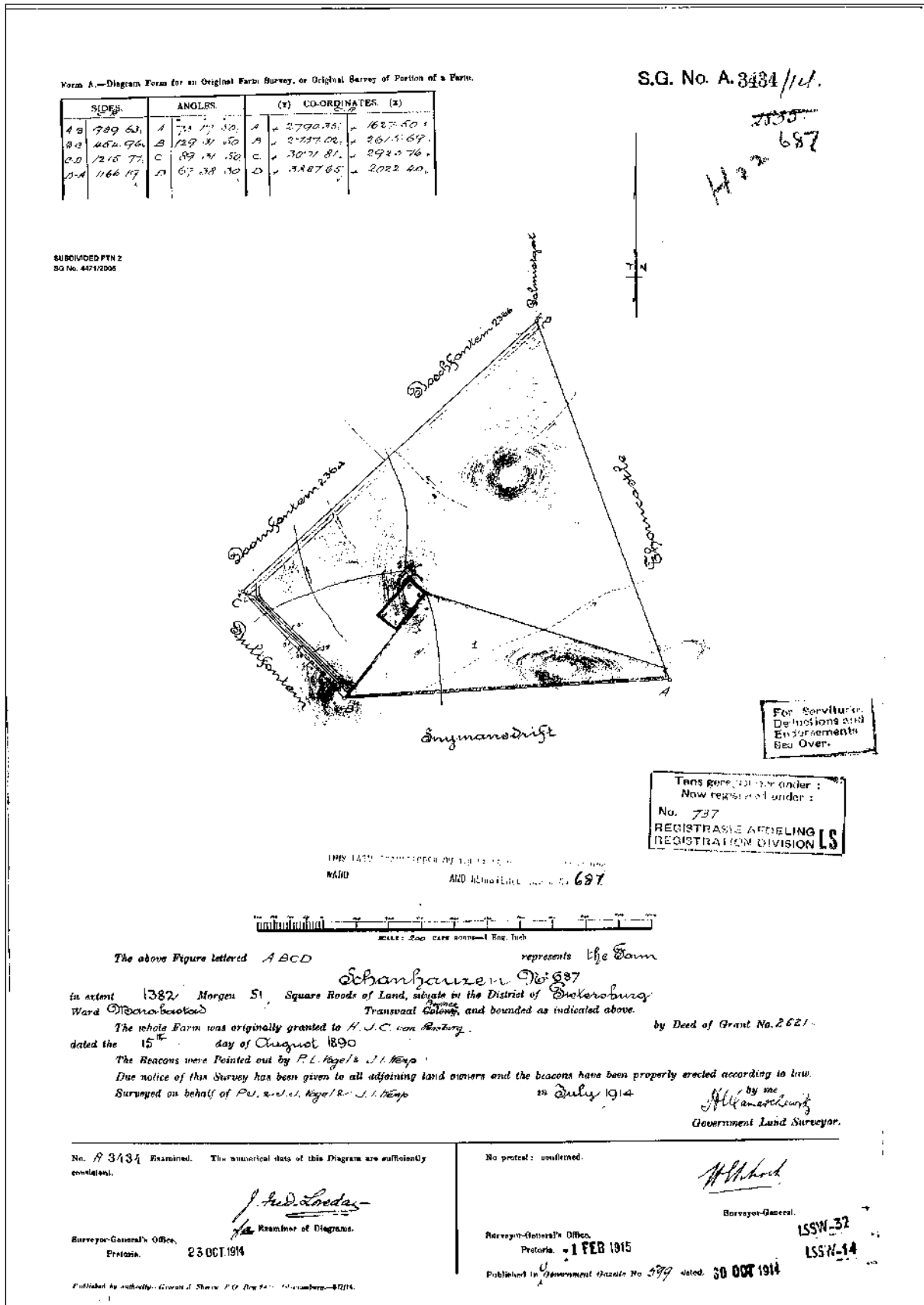


Figure 25: Surveyor General's map of the farm Schanhausen 737LS which was first surveyed in the 1914

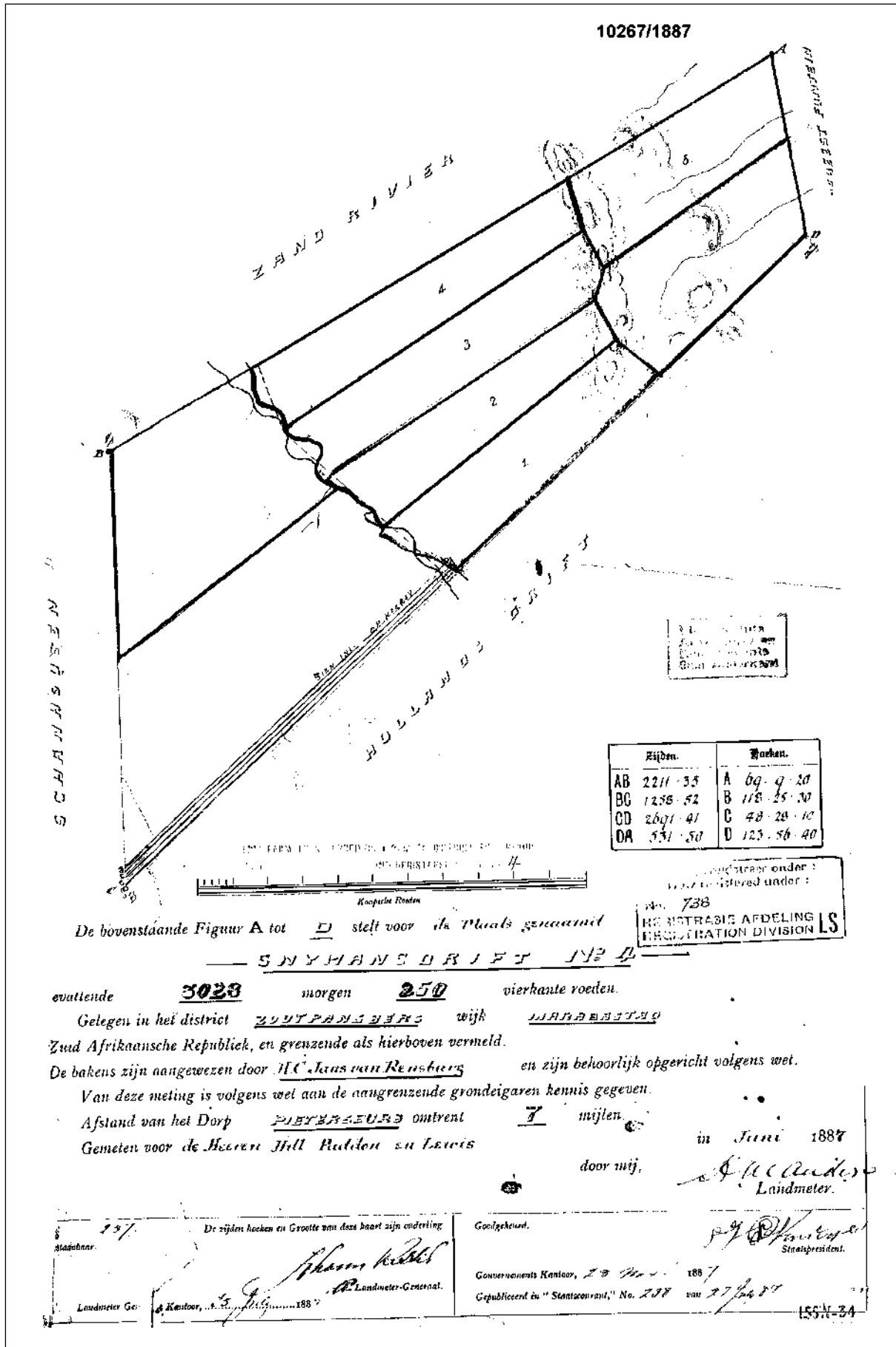


Figure 26: Surveyor General’s map of the farm Snymansdrift 738LS which was first surveyed in the 1887

Addendum 3: Relocation of Graves

Marked graves younger than 60 years do not fall under the protection of the NHRA (Act No. 25 of 1999) with the result that exhumation, relocation and reburial can be conducted by an undertaker. This will include logistical aspects such as social consultation, purchasing of plots in cemeteries, procurement of coffins, etc. Other legislative measures which may be pertinent include the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), Regulations Relating to the Management of Human Remains (GNR 363 of 22 May 2013) made in terms of the National Health Act No. 61 of 2003, Ordinance on Exhumations (Ordinance No. 12 of 1980) as well as any local and regional provisions, laws and by-laws that may be in place.

Marked graves older than 60 years are protected by the NHRA (Act No. 25 of 1999) and as a result an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. Note that unmarked graves are by default regarded as older than 60 years and therefore also falls under the NHRA (Act No. 25 of 1999, Section 36).

The relocation of graves entails the following procedure:

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

Information needed for the SAHRA permit application

- The permit application must be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.
- A letter of permission from the landowner granting permission to the developer to exhume and relocate the graves.
- A letter (or proof of purchase of the plots) from the new cemetery confirming that the graves will be reburied there.

- Details of the farm name and number, magisterial district and GPS coordinates of the gravesite.

Graves are generally be classified into four categories. These are:

- Graves younger than 60 years;
- Graves older than 60 years, but younger than 100 years;
- Graves older than 100 years; and
- Graves of victims of conflict or of individuals of royal descent.