

Phase 1 Cultural Heritage Impact Assessment:

**THE PROPOSED PROSPECTING RIGHTS APPLICATION OF COAL, SITUATED ON THE FARMS
KLIPPOORTJE 187IR AND LANGLAAGTE 186IR, SEDIBENG DISTRICT MUNICIPALITY,
GAUTENG PROVINCE**

Prepared for:

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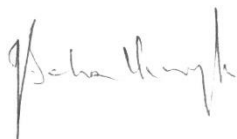


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Specialist competency:

Johan A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 40 years. Originally based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape Province, Northern Cape Province, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 70 papers, most in scientifically accredited journals. During this period, he has done more than 2000 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.



J A van Schalkwyk
Heritage Consultant
May 2019

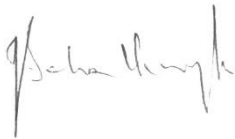


SPECIALIST DECLARATION

I, J A van Schalkwyk, as the appointed independent specialist, in terms of the 2014 EIA Regulations (as amended), hereby declare that I:

- I act as the independent specialist in this application;
- I 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 (as amended) and any specific environmental management Act;
- 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 have no vested interest in the proposed activity proceeding;
- 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;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study 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



J A van Schalkwyk
May 2019

EXECUTIVE SUMMARY

**Phase 1 Cultural Heritage Impact Assessment:
THE PROPOSED PROSPECTING RIGHTS APPLICATION OF COAL, SITUATED ON THE FARMS
KLIPPOORTJE 1871R AND LANGLAAGTE 1861R, SEDIBENG DISTRICT MUNICIPALITY, GAUTENG
PROVINCE**

Lwenzhe Resources and Exploration (Pty) Ltd proposes to prospect for coal on various portions of the farms Klippoortje 1871R and Langlaagte 1861R near Heidelberg in the Sedibeng District Municipality of Gauteng.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Nkhopele Holdings* to conduct a cultural heritage assessment to determine if the proposed prospecting activities would have an impact on any sites, features or objects of cultural heritage significance.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. The HIA consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

- The aim of the survey was firstly to determine if the location of the 15 identified bore hole positions would have a negative impact on heritage resources; and, secondly, to identify any other heritage resources in the region so that they can be avoided during the prospecting activities.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a limited Stone Age occupation, but since the 17th century was intensively occupied by Tswana-speaking peoples associated with the Late Iron Age. This was followed by a later colonial (farmer) component, which, over time gave rise to the establishment of towns as well as the development of large-scale mining activities.

Identified sites

During the physical survey, the following sites, features or objects of cultural significance were identified.

- 7.3.1 Cemetery: Large formal community (Heidelberg) cemetery with hundreds of graves. It also contains graves of the victims of one of the British concentration camp that was located in the vicinity.
- 7.3.2 Memorial: A commemorative plaque erected in the vicinity of the Black concentration camp in 2001. On it, it is stated that approximately 2000 people were incarcerated here, of which at least 400 died due to the poor living conditions in the camp.
- 7.3.3 Ruins of a farmhouse: Most of the structure has been demolished and it is only a few outer walls that remains. Some outbuildings also used to occur but were also demolished. Some garden features and trees remain.
- 7.3.4 Burial site: Informal burial site with fifty or more graves. These graves probably originated from people that stayed in the larger region. It is difficult to establish a definite number as most of them are marked only with stone cairns and it seems as if some of the stones marking the graves were moved during previous site clearing activities. Only a few graves have headstones with inscription, all indicating that the graves date prior to the 1960s.

Impact assessment and proposed mitigation measures

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

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Formal burial site					
7.3.1	Burial site	Section 36	High significance Grade 4-A	27 27	(1) Avoidance/Preserve
Concentration camp memorial					
7.3.2	Public monuments & memorials	Section 37	High significance Grade 4-A	27 27	(1) Avoidance/Preserve
Farmstead					
7.3.3	Built structure	Section 34	High significance Grade 4-C	27 27	(5) No further action required
Informal burial site					
7.3.4	Burial site	Section 36	High significance Grade 4-A	27 27	(1) Avoidance/Preserve

Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report. For this proposed project, the assessment has determined that no sites, features or objects of heritage significance occur in the study area. If heritage features are identified during construction, as stated in the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

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

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

Conditions for inclusion in the environmental authorisation:

- The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has a very high sensitivity of fossil remains to be found and therefore a field assessment and protocol for finds is required.
- Due to the uncertainty regarding the exact location of the concentration camp for Black people, as well as the fact that there might still be graves in the larger region, the area west of the tar road leading up to the existing cemetery should be seen as a no-go area for any development (see **Section 5 of Addendum**).
- Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk
Heritage Consultant
May 2019

TECHNICAL SUMMARY

Project description	
Description	Prospecting for coal by drilling of 15 bore holes
Project name	Klippoortje & Langlaagte Prospecting Rights Application

Applicant
Lwenzhe Resources and Exploration (Pty) Ltd

Environmental assessors
Nkhophele Holdings
Ms D Mulweli

Property details													
Province	Gauteng												
Magisterial district	Heidelberg & Nigel												
District municipality	Sedibeng												
Topo-cadastral map	2628AD												
Farm name	Klippoortje 187IR & Langlaagte 186IR												
Closest town	Heidelberg												
Coordinates	Centre point (approximate)												
	<table border="1"> <thead> <tr> <th>No</th> <th>Latitude</th> <th>Longitude</th> <th>No</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No	Latitude	Longitude	No	Latitude	Longitude	1					
No	Latitude	Longitude	No	Latitude	Longitude								
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Development criteria in terms of Section 38(1) of the NHR Act	Yes/No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	No
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	Yes
Development involving three or more existing erven or subdivisions	No
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 sq m	No
Any other development category, public open space, squares, parks, recreation grounds	No

Land use	
Previous land use	Farming
Current land use	Vacant

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GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Bioturbation: The burrowing by small mammals, insects and termites that disturb archaeological deposits.

Cumulative impacts: “Cumulative Impact”, in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

Debitage: Stone chips discarded during the manufacture of stone tools.

Factory site: A specialised archaeological site where a specific set of technological activities has taken place – usually used to describe a place where stone tools were made.

Historic Period: Since the arrival of the white settlers - c. AD 1830 - in this part of the country.

Holocene: The most recent time period, which commenced c. 10 000 years ago.

Iron Age (also referred to as **Early Farming Communities**): Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. As they produced their own iron tools, archaeologists call this the Iron Age.

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300
Later Iron Age	AD 1300 - AD 1830

Midden: The accumulated debris resulting from human occupation of a site.

Mitigation, means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

National Estate: The collective heritage assets of the Nation.

Pleistocene: Geological time period of 3 000 000 to 20 000 years ago.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 500 000 - 150 000 Before Present
Middle Stone Age	150 000 - 30 000 BP
Later Stone Age	30 000 - until c. AD 200

Tradition: As used in archaeology, it is a seriated sequence of artefact assemblages, particularly ceramics.

ACRONYMS and ABBREVIATIONS

ASAPA	Association of Southern African Professional Archaeologists
BCE	Before the Common Era (the year 0)

BP	Before Present (calculated from 1950 when radio-carbon dating was established)
CE	Common Era (the year 0)
ESA	Early Stone Age
EIA	Early Iron Age
HIA	Heritage Impact Assessment
I & AP's	Interested and Affected Parties
LIA	Late Iron Age
LSA	Later Stone Age
MIA	Middle Iron Age
MSA	Middle Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

COMPLIANCE WITH THE APPENDIX 6 OF THE 2014 EIA REGULATIONS (AS AMENDED)

Requirements of Appendix 6 – GN R982	Addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain-	
a) details of-	
i. the specialist who prepared the report; and	Front page
ii. the expertise of that specialist to compile a specialist report including a curriculum vitae;	Page i Addendum Section 6
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page ii
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1
(cA) an indication of the quality and age of base data used for the specialist report;	Section 4
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 7.3
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 4.2.2
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 4
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Addendum Section 5; Figure 16
g) an identification of any areas to be avoided, including buffers;	Section 8
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 16 Addendum Section 5
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 2
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 7
k) any mitigation measures for inclusion in the EMPr;	Section 9 & 10
l) any conditions for inclusion in the environmental authorisation;	Section 10
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 9
n) a reasoned opinion-	
i. whether the proposed activity, activities or portions thereof should be authorised;	Section 10
(iiA) regarding the acceptability of the proposed activity or activities; and	
ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 8, 9, 10
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	-
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	-
q) any other information requested by the competent authority.	-
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	-

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PROVINCE**

1. INTRODUCTION

1.1 Background

Lwenzhe Resources and Exploration (Pty) Ltd proposes to prospect for coal on various portions of the farms Klippoortje 1871R and Langlaagte 1861R near Heidelberg in the Sedibeng District Municipality of Gauteng.

Nkhopele Holdings was contracted as independent environmental consultant to undertake the EIA process for the above prospecting rights application.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, according to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Nkhopele Holdings* to conduct a cultural heritage assessment to determine if the proposed prospecting activities would have an impact on any sites, features or objects of cultural heritage significance.

This report forms part of the Environmental Impact Assessment (EIA) as required by the EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended and is intended for submission to the South African Heritage Resources Agency (SAHRA).

1.2 Terms and references

The aim of a full HIA investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective.

The result of this investigation is a heritage impact assessment report indicating the presence/absence of heritage resources and how to manage them in the context of the proposed development.

Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.

1.2.1 Scope of work

The aim of this study is to determine if any sites, features or objects of cultural heritage significance occur within the boundaries of the area where the prospecting activities is to take place. This included:

- Conducting a desk-top investigation of the area;
- A visit to the proposed development site.

The objectives were to:

- Identify possible archaeological, cultural and historic sites within the proposed development areas;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance.

1.2.2 Assumptions and Limitations

The investigation has been influenced by the following factors:

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

2. LEGISLATIVE FRAMEWORK

2.1 Background

Heritage Impact Assessments are governed by national legislation and standards and International Best Practise. These include:

- South African Legislation
 - National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA);
 - Mineral and Petroleum Resources Development Act, 2002 (Act No. 22 of 2002) (MPRDA);
 - National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA); and
 - National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- Standards and Regulations
 - South African Heritage Resources Agency (SAHRA) Minimum Standards;
 - Association of Southern African Professional Archaeologists (ASAPA) Constitution and Code of Ethics;
 - Anthropological Association of Southern Africa Constitution and Code of Ethics.
- International Best Practise and Guidelines
 - ICOMOS Standards (Guidance on Heritage Impact Assessments for Cultural World Heritage Properties); and
 - The UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972).

2.2 Heritage Impact Assessment Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the National Heritage Resources Act (Act No 25 of 1999, Section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority. The National Heritage Resources Act (Act No. 25 of 1999, Section 38) provides guidelines for Cultural Resources Management and prospective developments:

“38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as:

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site:*
 - (i) exceeding 5 000 m² in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.”*

And:

“38 (3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

- (a) The identification and mapping of all heritage resources in the area affected;*
- (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;*
- (c) an assessment of the impact of the development on such heritage resources;*
- (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
- (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*
- (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
- (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.”*

3. HERITAGE RESOURCES

3.1 The National Estate

The National Heritage Resources Act (No. 25 of 1999) defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
 - ancestral graves;
 - royal graves and graves of traditional leaders;
 - graves of victims of conflict;

- graves of individuals designated by the Minister by notice in the Gazette;
- historical graves and cemeteries; and
- other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;
- movable objects, including-
 - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - objects to which oral traditions are attached or which are associated with living heritage;
 - ethnographic art and objects;
 - military objects;
 - objects of decorative or fine art;
 - objects of scientific or technological interest; and
 - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- sites of significance relating to the history of slavery in South Africa.

A matrix (see Section 2 of Addendum) was developed whereby the above criteria were applied for the determination of the significance of each identified site. This allowed some form of control over the application of similar values for similar identified sites.

4. STUDY APPROACH AND METHODOLOGY

4.1 Extent of the Study

This survey and impact assessment cover all facets of cultural heritage located in the study area as presented in Section 5 below and illustrated in Figures 3 & 4.

4.2 Methodology

4.2.1.1 Survey of the literature

A survey of the relevant literature was conducted with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological and historical sources were consulted – see list of references in Section 11.

- Information on events, sites and features in the larger region were obtained from these sources.

4.2.1.2 Survey of heritage impact assessments (HIAs)

A survey of HIAs done for projects in the region by various heritage consultants was conducted with the aim of determining the heritage potential of the area – see list of references in Section 11.

- Information on sites and features in the larger region were obtained from these sources.

4.2.1.3 Data bases

The *Heritage Atlas Database*, various SAHRA databases, the *Environmental Potential Atlas*, the *Chief Surveyor General* and the *National Archives of South Africa* were consulted.

- Database surveys produced a number of sites located in the larger region of the proposed development.

4.2.1.4 Other sources

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

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

4.2.1.5 Museums

The Heidelberg Museum (Old Jail) was consulted regarding information on the location of the various concentration camps in the region.

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

The results of the above investigation are presented in Figure 1 below – see list of references in Section 11 – and can be summarised as follows:

- Stone walled settlement sites dating to the Late Iron Age occur to the north and southwest of the study area;
- Historic structures, inclusive of buildings, fortifications, infrastructure related features such as bridges and culverts occur in a sporadic manner across the landscape;
- Formal cemeteries are located in the town and surrounding townships;
- Informal burial sites occur sporadically throughout the country side.

*Based on the above assessment, the probability of cultural heritage sites, features and objects occurring in the study area is deemed to be **possible**.*

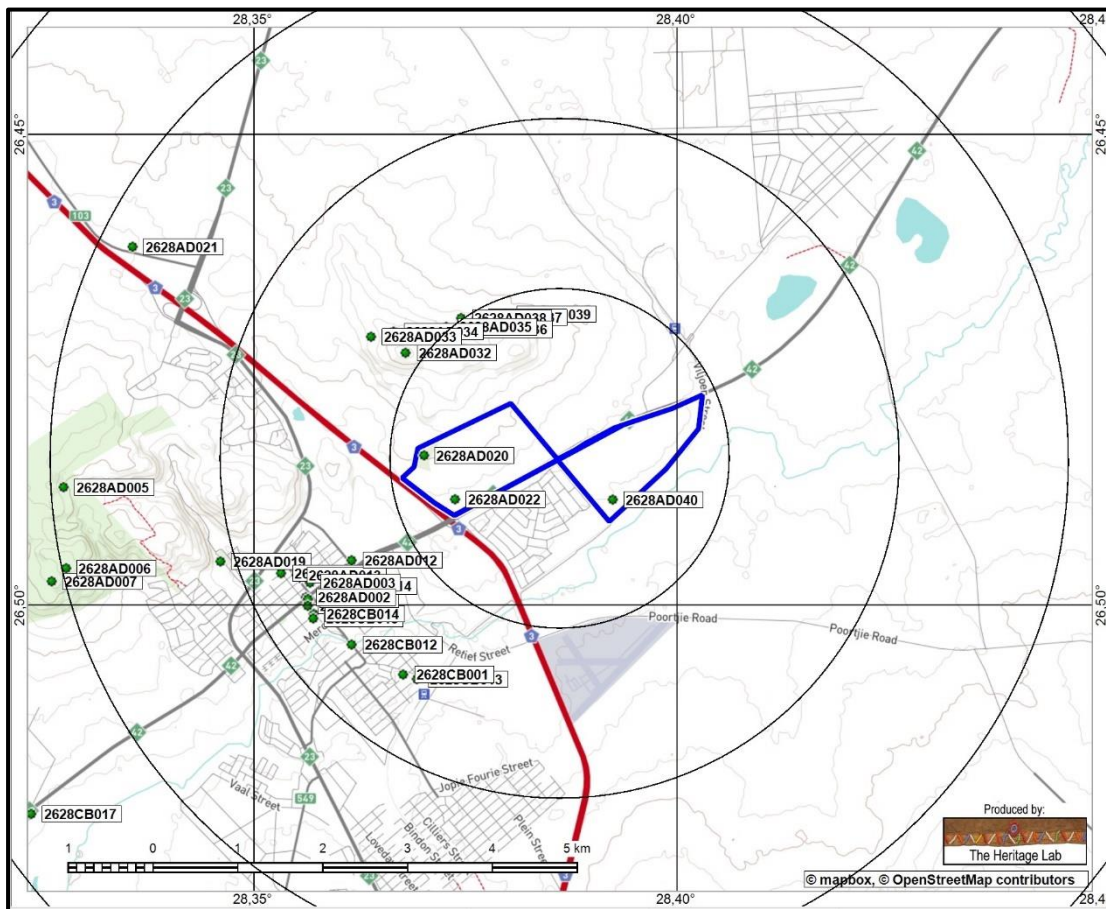


Figure 1. Location of known heritage sites and features in relation to the study area (Circles spaced at a distance of 2km: heritage sites = coded green dots – none known)

4.2.2 Field survey

The field survey was done according to generally accepted archaeological practices, and was aimed at locating all possible sites, objects and structures. The area that had to be investigated was identified by the *Nkhopele Holdings* by means of maps and *.kml* files indicating the development area. This was loaded onto an ASUS digital device and used in Google Earth during the field survey to access the areas.

The site was visited on 30 May 2019 and was investigated by inspecting the location of each of the proposed bore hole positions, as well as the larger area – see Fig. 2 below. Special attention was given to outcrops as well as areas identified from aerial photographs, e.g. showing a lack of vegetation or the occurrence of possible structures.

During the site visit, archaeological visibility was limited in some sectors due to dense vegetation (grass) growth (Fig. 3).

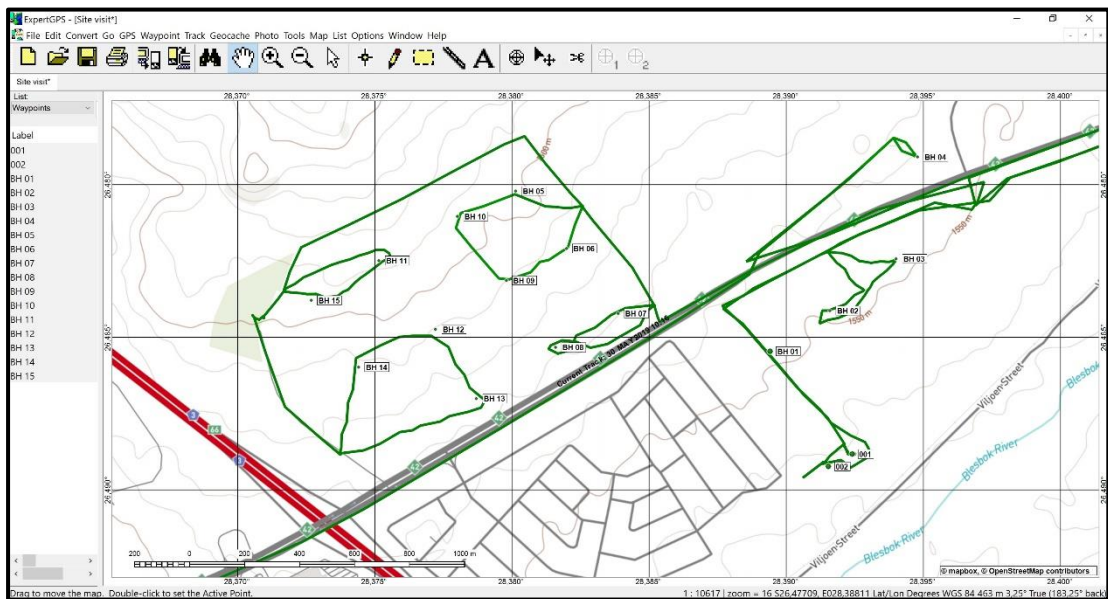


Figure 2. Map indicating the track log of the field survey (Track log = green line)



Figure 3. Vegetation encountered during the site visit

4.2.4 Documentation

All sites, objects and structures that are identified are documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities are determined by means of the *Global Positioning System* (GPS) and plotted on a map. This information is added to the description in order to facilitate the identification of each locality. Map datum used: Hartbeeshoek 94 (WGS84).

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld GPS device. Photographic recording was done by means of a Canon EOS 550D digital camera.

5. PROJECT DESCRIPTION

5.1 Site location

The proposed prospecting activities is to take place on the northeastern outskirts of Heidelberg town. It is located on the eastern side of the N3 freeway and is bisected by the R42, Heidelberg/Nigel Road. As such it is located in the Sedibeng District Municipality of Gauteng Province (Fig. 4). For more information, see the Technical Summary on p. V above.

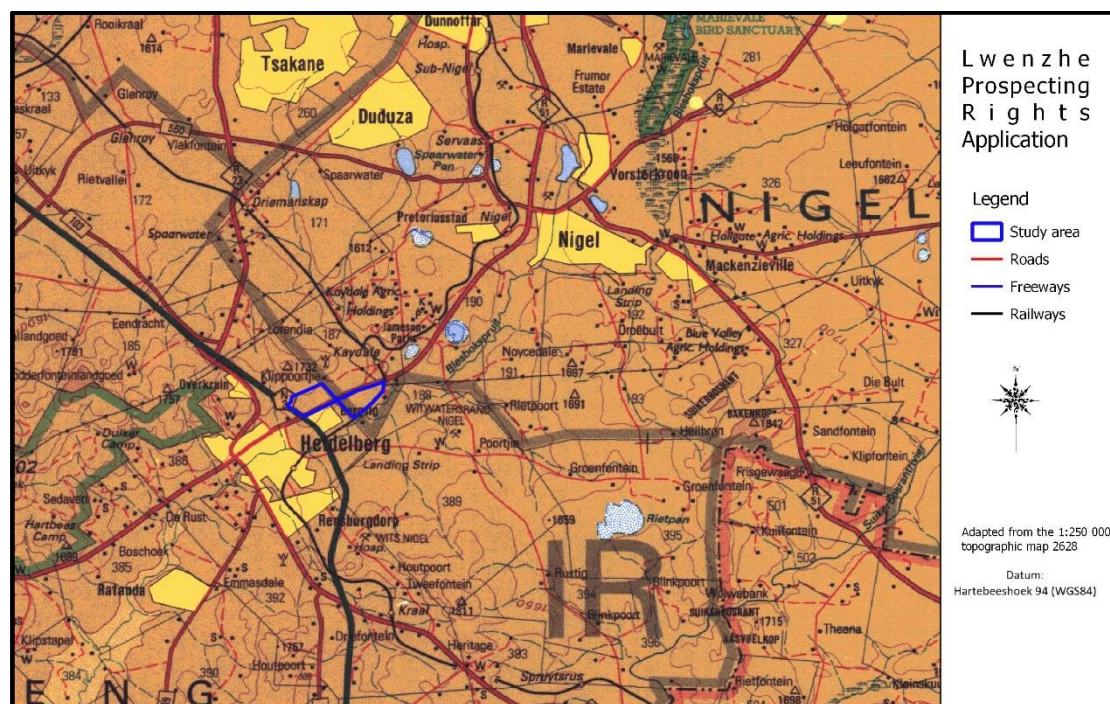


Figure 4. Location of the study area in regional context

5.2 Development proposal

- The following phases of the project, deemed relevant to this particular study, was extracted from the BAR (2019) document.

The prospecting activities to be carried out can be categorized in phases 1,2 and 3. With phase 1 being non-invasive, that is, activities that do not cause harm to the environment. Phase 2 and 3 however can be classified as invasive activities, these are activities that cause harm to the environment. Each phase depends on the results and success of the previous phase.

PHASE 1

Literature review: -

Desktop studies or literature review refers to a preliminary study that is carried out purely through research of available data or information about an area. This also includes visiting organizations like the council of geoscience in order to gather information about what has been done in the area. Desktop studies assist in site planning, selection of drilling points, and compiling a preliminary geological model of the area in the planning and designing of geological mapping. Desktop study will be repeated after the end of each phase to ensure that the information collected is integrated with existing information for a conversant decision.

Geological mapping: -

Geological mapping involves a Walkover Survey that is carried out in order to assess the area visually as well as identifying exposed geological features within the site. This will involve a geologists visiting and mapping the above listed farms. Thus, areas with potential coal outcrops identified during the desktop studies will be visited and verified. Mapping will be conducted such that accurate and meaningful structural and geological data may be derived from it and to communicate information gathered from the desktop study with mapping results.

Borehole planning: -

Borehole planning will involve drilling program design and implementation procedures to ensure that drilling is conducted as safe and as economic as possible. This phase will include cooperation between the drilling contractor, services contractors and geologists. The planning process will also ensure that the health and safety of all personnel working on the drilling sites and the environment are protected. The borehole planning will take in account 15 boreholes.

PHASE 2**Diamond drilling: -**

15 vertical core boreholes will be drilled at an average depth of 150 m (see Figure 5 for proposed borehole locations). Core sampling will occur there-after and the selected samples will be analysed.

All drilling to be undertaken will be diamond drilling using conventional equipment and TNW (60 mm) core size.

During this drilling programme samples are collected every meter and logging will be done by qualified geologist who will record the lithology. The drilling information will be used to construct ore thickness and overburden thickness.

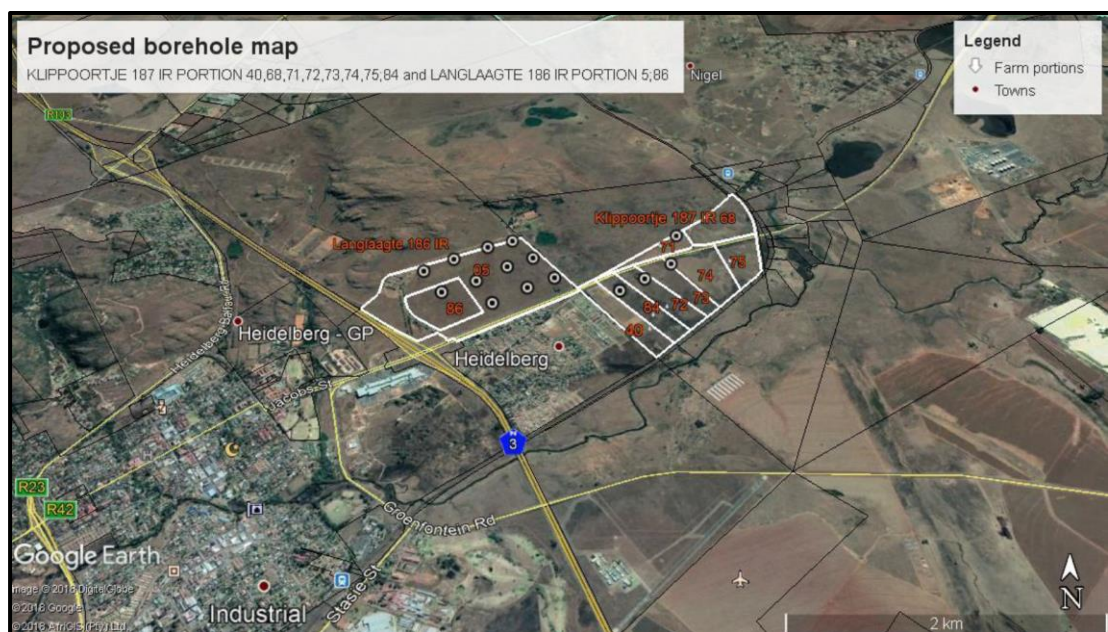


Figure 5. Layout of the proposed development
(Map supplied by: *Nkhopele Holdings*)

6. DESCRIPTION OF THE AFFECTED ENVIRONMENT

6.1 Natural Environment

The geology of a small central section of the study area is made up of fine- to coarse-grained sandstone, shale and coal seams belonging to the Karoo Supergroup. This is surrounded by quartzite and conglomerate belonging to the Witwatersrand Supergroup. The topography is described as hills and lowlands, changing to plains and pans to the northeast. The Blesbokspruit passes to the south of the study area, flowing from northeast to southwest.

In the southern section of the study area, the original vegetation is classified as Soweto Highveld Grassland, forming part of the Mesic Highveld Grassland Bioregion. In the northern section, the original vegetation is classified as Gold Reef Mountain Bushveld, which is part of the Central Bushveld Bioregion (Muncina & Rutherford 2006) (Fig. 6).

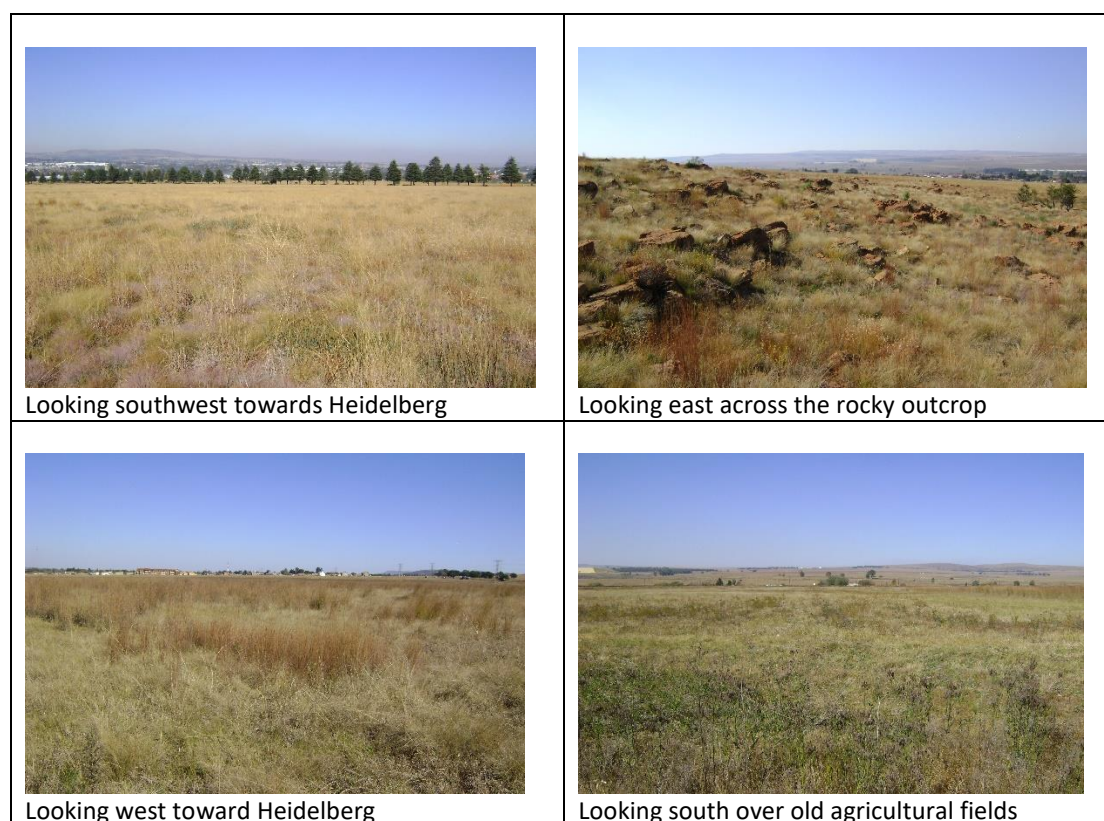


Figure 6. Views over the study area

The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area (indicated by the white arrow in Fig. 7) has a very high sensitivity of fossil remains to be found and therefore a field assessment and protocol for finds is required.

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	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

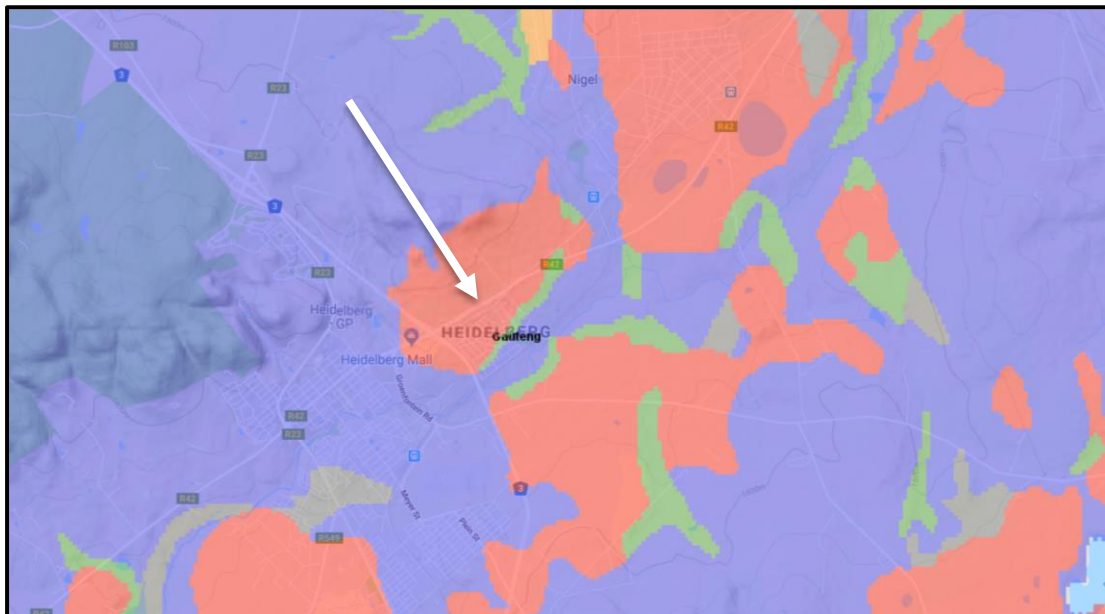


Figure 7. The Palaeontological sensitivity of the study area (arrowed)

6.2 Cultural Landscape

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

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a limited Stone Age occupation, but since the 17th century was intensively occupied by Tswana-speaking peoples associated with the Late Iron Age. This was followed by a later colonial (farmer) component, which, over time gave rise to the establishment of towns as well as the development of large-scale mining activities.

6.2.1 Stone Age

This section of the highveld area has been inhabited since Early Stone Age (ESA) times. Tools dating to this period are mostly found in the vicinity of watercourses, e.g. the Vaal River gravels in the Vereeniging area. The original dating and evolutionary scheme for the development of tools during this early period, was based on a study of the river terrace gravels of the Vaal River, referred to as the *Older*, the *Younger* and the *Youngest gravels* (Söhnge, Visser & Van Riet-Lowe 1937; Breuil 1948). However, on

subsequent investigation, the findings derived from this proved to be unacceptable as it was based on incorrect interpretations of the river gravels. It was only with the excavation of similar material from sealed, stratified sites, that it was realised that the material from the river gravels was not in its primary context, having been uncovered and washed about over many millennia.

During Middle Stone Age (MSA) times (c. 150 000 – 30 000 BP), people became more mobile, occupying areas formerly avoided (Thakeray 1992). The MSA is a technological stage characterized by flakes and flake-blades with faceted platforms, produced from prepared cores, as distinct from the core tool-based ESA technology. Open sites were still preferred near watercourses. These people were adept at exploiting the huge herds of animals that passed through the area, on their seasonal migration.

Late Stone Age (LSA) people had even more advanced technology than the MSA people and therefore succeeded in occupying even more diverse habitats. Also, for the first time we now get evidence of people's activities derived from material other than stone tools. Ostrich eggshell beads, ground bone arrowheads, small bored stones and wood fragments with incised markings are traditionally linked with the LSA. The LSA people have also left us with a rich legacy of rock art, which is an expression of their complex social and spiritual beliefs.

6.2.2 Iron Age

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

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

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

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

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

From the air, these homesteads and towns are easily recognised and it is also possible to determine variations in smaller detail. In its simplest form they resemble a 'fried eggs': that is, the central cattle kraal formed an inner circle and the smooth outer wall the second (Fig. 8). In others the layout consists of a group of large primary stone walled enclosures, with associated dwellings linked to it. The latter usually occur in groups of four to five units, facing the associated livestock pens to the centre of the settlement (Huffman 2007; Mason 1968; Maggs 1976; Taylor 1979).



Figure 8. Typical Late Iron Age stone walled settlements north of the study area (mage: Google Earth)

6.2.3 Historic period

White settlers moved into the area during the first half of the 19th century. They were largely self-sufficient, basing their survival on cattle/sheep farming and hunting. Originally, few towns were established and it remained an undeveloped area, with Heidelberg being the only town in the region. Heidelberg originated as a trading post, it was laid out on the farm Langlaagte in 1866 and achieved municipal status in 1903 (Fig. 9).



Figure 9. Heidelberg as seen from the north west in c. 1895 (Gros 1895)

However, after the discovery of coal and later gold a number of new towns were established. The closest is Nigel, which was established in 1909. It was laid out on the farm Varkensfontein and it became a municipality in 1930. The railway line (original alignment) was completed in 1895, with the branch line to Springs via Nigel completed in around 1909.

During the Anglo-Transvaal War (1880-1881), Heidelberg temporarily served as capital for the ZAR. From here they orchestrated their attack on the British soldiers, for example at the Battle of Bronkhorstspuit, where the British were soundly defeated.

During the Second South African War (1899-1902) a number of skirmishes occurred in the larger area. One of these was when a burgher commando under leadership of Piet Viljoen ambushed a squadron of Scots Greys under the command of B Hamilton near Heidelberg on the 18 February 1902 (Kruger 1974; Bergh 1999).

Three concentration camps were established by the British in the vicinity of Heidelberg – two for white prisoners, mostly women and children and one for Black people. Today all that remains of these camps are the graves, mainly of the white women and children who died there. One camp was at Heidelberg Kloof, west of the town and the other on the way out of town towards Nigel. Apparently, the concentration camp for Black people was also located in the latter region, although up until now various researchers have failed to determine its exact position.

All sources consulted are of the opinion that very little information regarding the Black concentrations camps are very limited, more so on their specific locality and size and, more importantly, on the number of people who died while being incarcerated (Kessler 1999, 2003; Ploeger 1999; Pretorius 2007; Pretorius & Pretorius 2011; <https://www2.lib.uct.ac.za/mss/bccd/Histories/Heidelberg>). It is generally accepted that this camp was situated southwest of the camp cemetery and that it has largely been destroyed when the N3 National Route was built during the early 1970s.

A plaque was erected in the vicinity of the camp in 2001 (Fig. 10). On it, it is stated that approximately 2000 people were incarcerated here, of which at least 400 died due to the poor living conditions in the camp.



Figure 10. Plaque commemorating the victims of the Black concentration camp

- Due to the uncertainty regarding the exact location of the camp, as well as the fact that there might still be graves in the larger region, the area west of the tar road leading up to the existing cemetery should be seen as a no-go area for any development (see Section 5 of **Addendum** below).

6.3 Site specific review

Although landscapes with cultural significance are not explicitly described in the NHRA, they are protected under the broad definition of the National Estate (Section 3): Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate.

The examination of historical maps and aerial photographs help us to reconstruct how the cultural landscape has changed over time as it shows how humans have used the land.

- Based on a study of old maps and aerial photographs of the larger region in general and the study area specifically, the following can be said.

One of the oldest maps of the region is the Imperial Military Map dating to 1900 (Fig. 11), depicting Heidelberg, some roads, the railway line and the various farms. The 1944 version of the 1:50 000 topographic map (Fig. 12) shows more detail. The town cemetery is indicated as well as a number of farm labourer homesteads on the farm Klippoortje.

These features are clearly visible on the 1953 version of the official aerial photograph (Fig. 13), with the addition of the military base to the northeast of the cemetery. Other prominent features are the road towards Nigel as well as the railway line.

On the 1976 version of the official aerial photograph (Fig. 14), the construction of the N3 freeway and the various intersections can clearly be seen. It is also clear that the railway line has been moved from east to the west of the Blesbokspruit, significantly shortening the route. It is also much clearer that the area is now being cultivated, even up to the point where the various labourer homesteads used to be.

On the last photograph (Fig. 15) dating to 2018, the cemetery, military base and two labourer homestead (close to the railway line) can be seen. However, it also shows the farmstead which appears for the first time on the 2001 version of the topographic map but is currently in ruins.

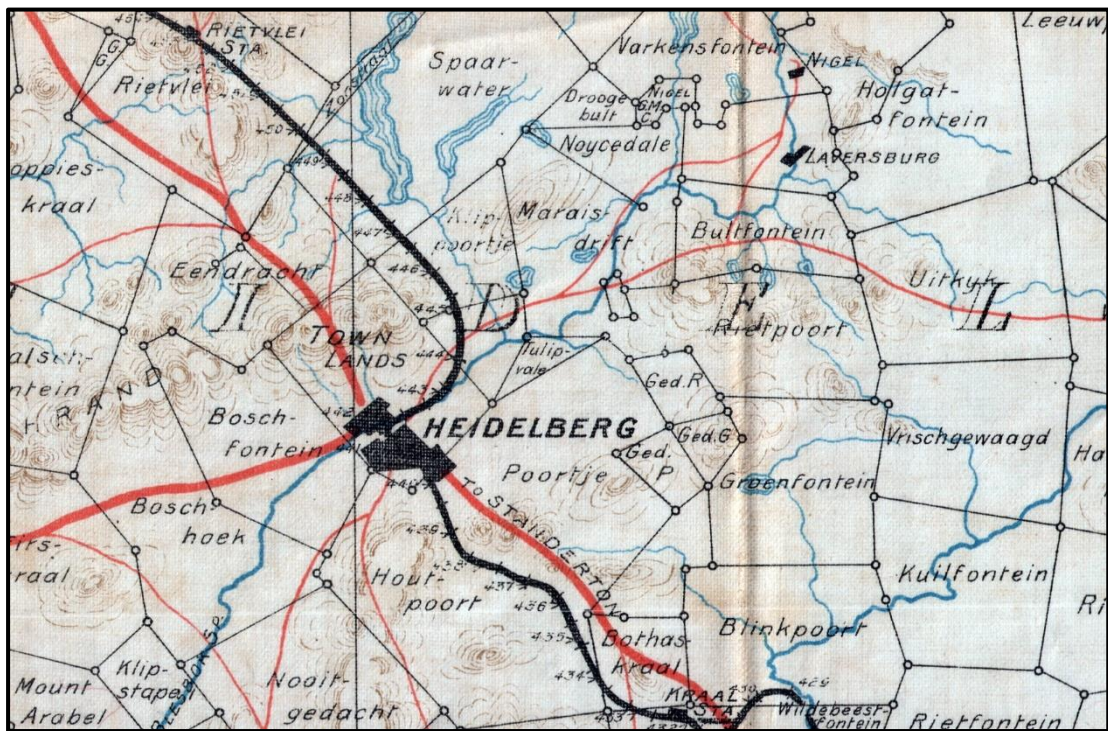


Figure 11. Section of the Imperial Map of South Africa (Heidelberg), 1900 (Compiled for Field Intelligence Department, Cape Town)

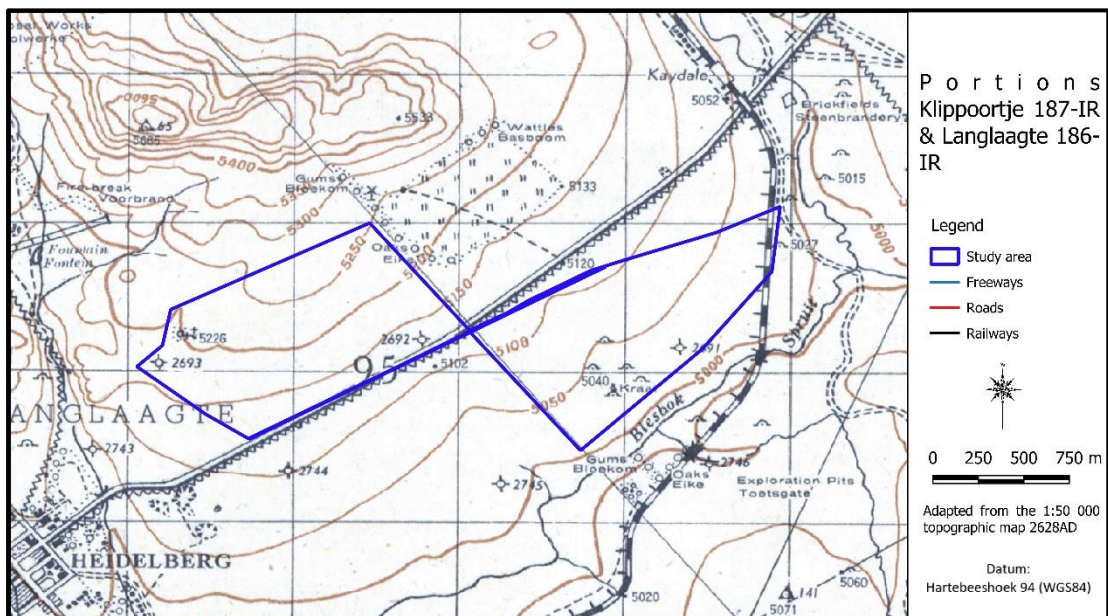


Figure 12. Study area on the 1944 version of the topographic map

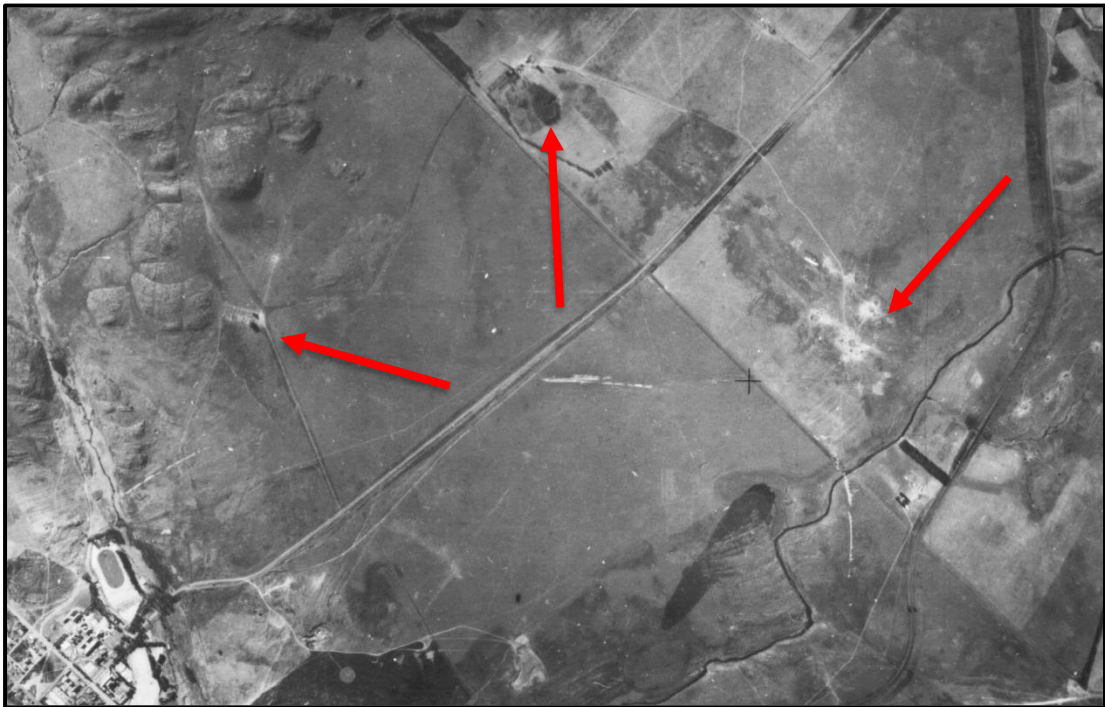


Figure 13. Study area on the 1953 version of the aerial photograph
(Photograph: 303_013_00283)

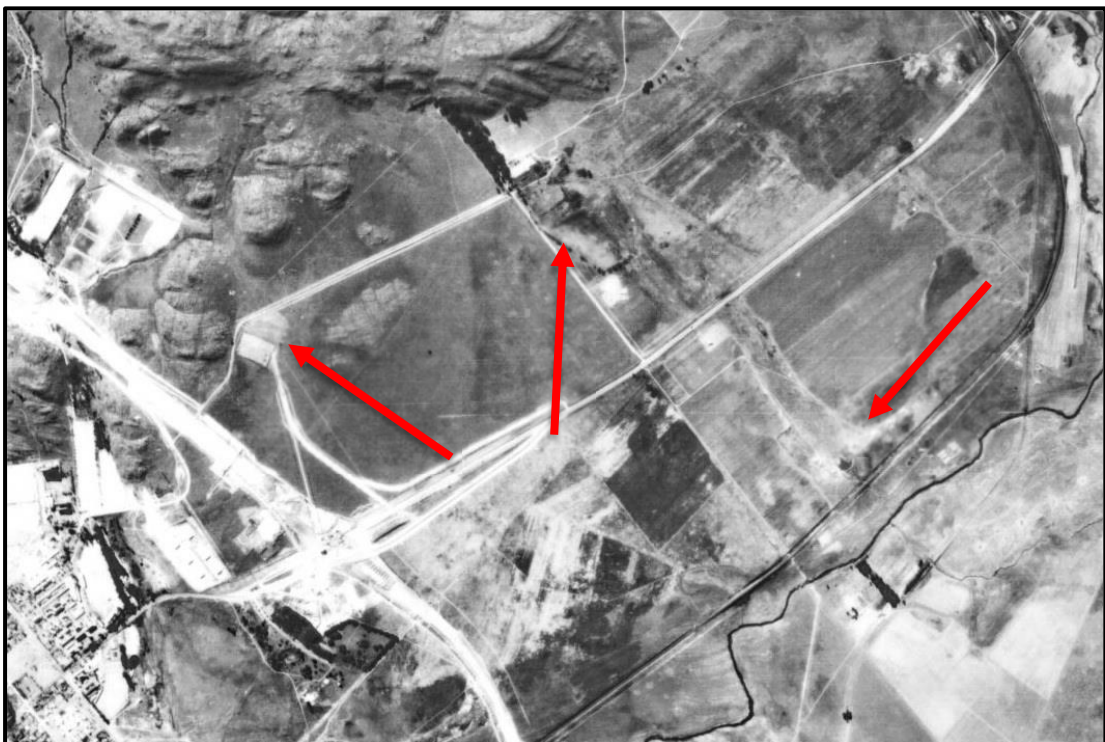


Figure 14. Study area on the 1976 version of the aerial photograph
(Photograph: 775_007_00418)

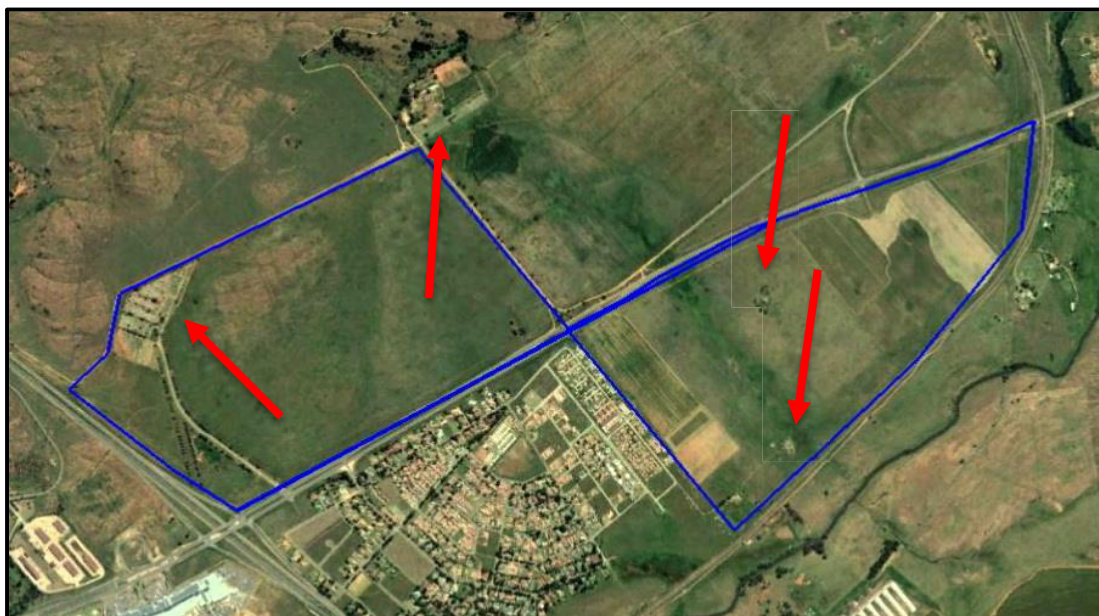


Figure 15. Aerial view of the study area (2018)
(Image: Google Earth)

7. SURVEY RESULTS

During the physical survey, the following sites, features and objects of cultural significance were identified in the study area (Fig. 16). For more detail see the discussion of each site in **Section 5** of the **Addendum**:

7.1 Stone Age

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

7.2 Iron Age

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

7.3 Historic period

- 7.3.1 Cemetery: Large formal community (Heidelberg) cemetery with hundreds of graves. It also contains graves of the victims of one of the British concentration camp that was located in the vicinity.
- 7.3.2 Memorial: A commemorative plaque erected in the vicinity of the Black concentration camp in 2001. On it, it is stated that approximately 2000 people were incarcerated here, of which at least 400 died due to the poor living conditions in the camp.

- 7.3.3 Ruins of a farmhouse: Most of the structure has been demolished and it is only a few outer walls that remains. Some outbuildings also used to occur but were also demolished. Some garden features and trees remain.
- 7.3.4 Burial site: Informal burial site with fifty or more graves. These graves probably originated from people that stayed in the larger region. It is difficult to establish a definite number as most of them are marked only with stone cairns and it seems as if some of the stones marking the graves were moved during previous site clearing activities. Only a few graves have headstones with inscription, all indicating that the graves date prior to the 1960s.

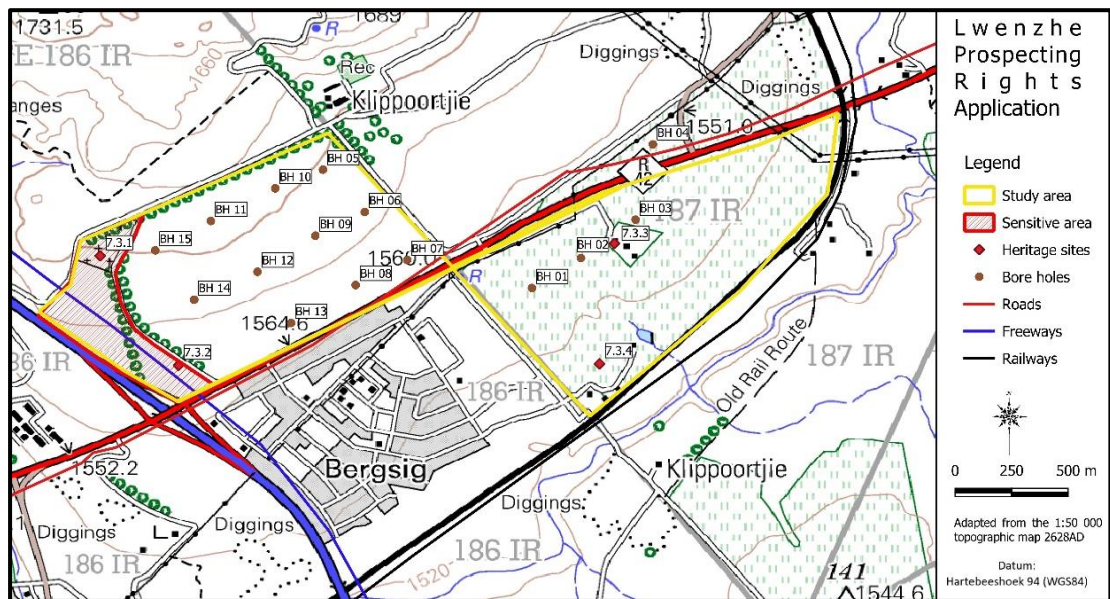


Figure 16. Location of heritage sites in the study area

8. RESULTS: STATEMENT OF SIGNIFICANCE AND IMPACT RATINGS

8.1 Impact assessment

Heritage impacts are categorised as:

- Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;
- Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment;
- Cumulative impacts that are combinations of the above.

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development and is summarised in Table 1 below:

Table 1: Impact assessment

IDENTIFIED HERITAGE RESOURCE: Old farmstead		
Nature: The prospecting activities would not have an impact on this structure.		
	Without mitigation	With mitigation
Extent	Site	Site

Duration	Permanent	Permanent			
Intensity	Low	Low			
Probability	Probable	Probable			
Significance	Medium (27)	Low (27)			
Status (positive or negative)	Neutral	Neutral			
Reversibility	Non-reversible	Non-reversible			
Irreplaceable loss of resources?	Yes	No			
Can impacts be mitigated	Yes				
Mitigation: Full documentation					
Cumulative impact: Loss of information regarding settlement in the region.					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Old farmstead					
7.3.3	Built structures	Section 34	High significance Grade 4-AC	27 27	(5) No further action required

IDENTIFIED HERITAGE RESOURCE: Formal burial site					
Nature: The prospecting activities would not have an impact on this feature.					
			Without mitigation		With mitigation
Extent			Site		Site
Duration			Permanent		Permanent
Intensity			Low		Low
Probability			Probable		Probable
Significance			Medium (27)		Low (27)
Status (positive or negative)			Neutral		Neutral
Reversibility			Non-reversible		Non-reversible
Irreplaceable loss of resources?			Yes		No
Can impacts be mitigated			Yes		
Mitigation: Full documentation					
Cumulative impact: Loss of information regarding early settlement in the region.					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Formal burial site					
7.3.1	Burial site	Section 36	High significance Grade 4-A	27 27	(1) Avoidance/Preserve

IDENTIFIED HERITAGE RESOURCE: Informal burial site					
Nature: The prospecting activities would not have an impact on this feature.					
			Without mitigation		With mitigation
Extent			Site		Site
Duration			Permanent		Permanent
Intensity			Low		Low
Probability			Probable		Probable
Significance			Medium (27)		Low (30)
Status (positive or negative)			Neutral		Neutral
Reversibility			Non-reversible		Non-reversible
Irreplaceable loss of resources?			Yes		No
Can impacts be mitigated			Yes		
Mitigation: Full documentation					
Cumulative impact: Loss of information regarding early settlement in the region.					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Informal burial site					
7.3.4	Burial site	Section 36	High significance Grade 4-A	27 27	(1) Avoidance/Preserve

IDENTIFIED HERITAGE RESOURCE: Possible location of Concentration Camp					
Nature: The prospecting activities would not have an impact on this feature.					
			Without mitigation	With mitigation	
Extent			Site	Site	
Duration			Permanent	Permanent	
Intensity			Low	Low	
Probability			Probable	Probable	
Significance			Medium (27)	Low (30)	
Status (positive or negative)			Neutral	Neutral	
Reversibility			Non-reversible	Non-reversible	
Irreplaceable loss of resources?			Yes	No	
Can impacts be mitigated			Yes		
Mitigation: Full documentation					
Cumulative impact: Loss of information regarding historic events in the region.					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Public monument and Memorial					
7.3.2	Concentration camp memorial	Section 37	High significance Grade 4-A	27 27	(1) Avoidance/Preserve

9. MANAGEMENT AND MITIGATION MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

Sources of risk were considered with regards to development activities defined in Section 2(viii) of the NHRA that may be triggered and are summarised in Table 3A and 3B below. These issues formed the basis of the impact assessment described. The potential risks are discussed according to the various phases of the project below.

9.1 Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities.

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;

- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).

9.2 Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

Table 2A: Construction Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	The identified risk is damage or changes to resources that are generally protected in terms of Sections 27, 28, 31, 32, 34, 35, 36 and 37 of the NHRA that may occur in the proposed project area.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance		
Activity / issue	Mitigation: Action/control	Responsibility	Timeframe
1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
Monitoring	See discussion in Section 9.2 above		

Table 2B: Operation Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	It is unlikely that the negative impacts identified for pre-mitigation will occur if the recommendations are followed.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance		
Activity / issue	Mitigation: Action/control	Responsibility	Timeframe
1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
Monitoring	See discussion in Section 9.2 above		

9.3 Mitigation measures

Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

For the current study, the following mitigation measures are proposed (see **Section 4** of the **Addendum** for a discussion of all mitigation measures):

- 7.3.1 Cemetery: (1) Avoidance/Preserve: Because of its location within the larger project development area, it would be possible to avoid this site.
 - This site is located inside the proposed prospecting area, but as it is well defined and fenced off, it is unlikely that it would be impacted on by the proposed prospecting activities. The closest bore hole point is more than 100m away.
- 7.3.2 Memorial: (1) Avoidance/Preserve: Because of its location within the larger project development area, it would be possible to avoid this site.
 - Due to the uncertainty regarding the exact location of the concentration camp, as well as the fact that there might still be graves in the larger region, the area west of the tar road leading up to the existing cemetery should be seen as a no-go area for any development (see Section 5 of **Addendum** below).
- 7.3.3 Ruins of a farmhouse: (5) No further action required.
 - This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.
- 7.3.4 Burial site: (1) Avoidance/Preserve: Because of its location within the larger project development area, it would be possible to avoid this site.
 - This site is located inside the proposed development area, but far away from any of the bore hole sites and therefore there is little likelihood that it would be impacted on by the proposed development.

10. CONCLUSIONS AND RECOMMENDATIONS

Lwenzhe Resources and Exploration (Pty) Ltd proposes to prospect for coal on various portions of the farms Klippoortje 1871R and Langlaagte 1861R near Heidelberg in the Sedibeng District Municipality of Gauteng.

This report describes the methodology used, the limitations encountered, the heritage features that were identified and the recommendations and mitigation measures proposed relevant to this. The HIA consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

- The aim of the survey was firstly to determine if the location of the 15 identified bore hole positions would have a negative impact on heritage resources; and, secondly, to identify any other heritage resources in the region so that they can be avoided during the prospecting activities.

The cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a limited Stone Age occupation, but since the 17th century was intensively occupied by Tswana-speaking peoples associated with the Late Iron Age. This

was followed by a later colonial (farmer) component, which, over time gave rise to the establishment of towns as well as the development of large-scale mining activities.

Identified sites

During the physical survey, the following sites, features or objects of cultural significance were identified.

- 7.3.1 Cemetery: Large formal community (Heidelberg) cemetery with hundreds of graves. It also contains graves of the victims of one of the British concentration camp that was located in the vicinity.
- 7.3.2 Memorial: A commemorative plaque erected in the vicinity of the Black concentration camp in 2001. On it, it is stated that approximately 2000 people were incarcerated here, of which at least 400 died due to the poor living conditions in the camp.
- 7.3.3 Ruins of a farmhouse: Most of the structure has been demolished and it is only a few outer walls that remains. Some outbuildings also used to occur but were also demolished. Some garden features and trees remain.
- 7.3.4 Burial site: Informal burial site with fifty or more graves. These graves probably originated from people that stayed in the larger region. It is difficult to establish a definite number as most of them are marked only with stone cairns and it seems as if some of the stones marking the graves were moved during previous site clearing activities. Only a few graves have headstones with inscription, all indicating that the graves date prior to the 1960s.

Impact assessment and proposed mitigation measures

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

IDENTIFIED HERITAGE RESOURCES					
Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation	Proposed mitigation (Refer to definitions in Section 12.3)
Formal burial site					
7.3.1	Burial site	Section 36	High significance Grade 4-A	27 27	(1) Avoidance/Preserve
Concentration camp memorial					
7.3.2	Public monuments & memorials	Section 37	High significance Grade 4-A	27 27	(1) Avoidance/Preserve
Farmstead					
7.3.3	Built structure	Section 34	High significance Grade 4-C	27 27	(5) No further action required
Informal burial site					
7.3.4	Burial site	Section 36	High significance Grade 4-A	27 27	(1) Avoidance/Preserve

Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report. For this proposed project, the assessment has determined that no sites, features or objects of heritage significance occur in the study area. If heritage features are identified during construction, as stated in

the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

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

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

Conditions for inclusion in the environmental authorisation:

- The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has a very high sensitivity of fossil remains to be found and therefore a field assessment and protocol for finds is required.
- Due to the uncertainty regarding the exact location of the concentration camp for Black people, as well as the fact that there might still be graves in the larger region, the area west of the tar road leading up to the existing cemetery should be seen as a no-go area for any development (see **Section 5 of Addendum**).
- Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

11. REFERENCES

11.1 Data bases

Chief Surveyor General
Environmental Potential Atlas, Department of Environmental Affairs and Tourism.
Heritage Atlas Database, Pretoria
National Archives of South Africa (NASA)
SAHRA Archaeology and Palaeontology Report Mapping Project (2009)
SAHRIS Database

11.2 Literature

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Söhnge, P.G., Visser, D.J.L. & Van Riet Lowe, C.1937. *The Geology and Archaeology of the Vaal River Basin*. Geological Survey Memoir No. 35. Pretoria: Government Printer.

Thackeray, A.I. 1992. The Middle Stone Age south of the Limpopo River. *Journal of World Prehistory* 6(4):385-440.

Van der Walt, J. 2008. *Heritage Impact Assessment application for mining permits for the Arup Transnet NMPP Alliance borrow-pits, Gauteng*. Johannesburg: Unpublished report.

Van Schalkwyk, J.A. 2008. *Heritage impact assessment of Portions 73 and 74 of the farm Langlaagte 1861R, Heidelberg Magisterial District, Gauteng Province*. Pretoria: Unpublished report 2008/JvS/019.

11.3 Archival sources, maps and aerial photographs

1: 50 000 Topographic maps

Google Earth

Aerial Photographs: Chief Surveyor-General

TAB #_#_16137_#

11.4 Websites

<https://ruralexploration.co.za/Heidelberg.html>

<https://www2.lib.uct.ac.za/mss/bccd/Histories/Heidelberg/>

12. ADDENDUM

1. Indemnity and terms of use of this report

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

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

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

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

2. Assessing the significance of heritage resources and potential impacts

A system for site grading was established by the NHRA and further developed by the South African Heritage Resources Agency (SAHRA 2007) and has been approved by ASAPA for use in southern Africa and was utilised during this assessment.

2.1 Significance of the identified heritage resources

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

Matrix used for assessing the significance of each identified site/feature

1. SITE EVALUATION				
1.1 Historic value				
Is it important in the community, or pattern of history				
Does it have strong or special association with the life or work of a person, group or organisation of importance in history				
Does it have significance relating to the history of slavery				
1.2 Aesthetic value				
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group				
1.3 Scientific value				
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage				
Is it important in demonstrating a high degree of creative or technical achievement at a particular period				
1.4 Social value				
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons				
1.5 Rarity				
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage				
1.6 Representivity				
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects				
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class				
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.				
2. Sphere of Significance		High	Medium	Low
International				
National				
Provincial				
Regional				
Local				
Specific community				
3. Field Register Rating				
1.	National/Grade 1: High significance - No alteration whatsoever without permit from SAHRA			
2.	Provincial/Grade 2: High significance - No alteration whatsoever without permit from provincial heritage authority.			
3.	Local/Grade 3A: High significance - Mitigation as part of development process not advised.			

4.	Local/Grade 3B: High significance - Could be mitigated and (part) retained as heritage register site	
5.	Generally protected 4A: High/medium significance - Should be mitigated before destruction	
6.	Generally protected 4B: Medium significance - Should be recorded before destruction	
7.	Generally protected 4C: Low significance - Requires no further recording before destruction	

2.2 Significance of the anticipated impact on heritage resources

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

Nature of the impact

A description of what causes the effect, what will be affected and how it will be affected.

Extent

The physical **extent**, wherein it is indicated whether:

- 1 - The impact will be limited to the site;
- 2 - The impact will be limited to the local area;
- 3 - The impact will be limited to the region;
- 4 - The impact will be national; or
- 5 - The impact will be international.

Duration

Here it should be indicated whether the lifespan of the impact will be:

- 1 - Of a very short duration (0–1 years);
- 2 - Of a short duration (2-5 years);
- 3 - Medium-term (5–15 years);
- 4 - Long term (where the impact will persist possibly beyond the operational life of the activity); or
- 5 - Permanent (where the impact will persist indefinitely).

Magnitude (Intensity)

The magnitude of impact, quantified on a scale from 0-10, where a score is assigned:

- 0 - Small and will have no effect;
- 2 - Minor and will not result in an impact;
- 4 - Low and will cause a slight impact;
- 6 - Moderate and will result in processes continuing but in a modified way;
- 8 - High, (processes are altered to the extent that they temporarily cease); or
- 10 - Very high and results in complete destruction of patterns and permanent cessation of processes.

Probability

This describes the likelihood of the impact actually occurring and is estimated on a scale where:

- 1 - Very improbable (probably will not happen);
- 2 - Improbable (some possibility, but low likelihood);
- 3 - Probable (distinct possibility);
- 4 - Highly probable (most likely); or
- 5 - Definite (impact will occur regardless of any prevention measures).

Significance

The significance is determined through a synthesis of the characteristics described above (refer to the formula below) and can be assessed as low, medium or high:

$S = (E+D+M) \times P$; where

S = Significance weighting

E = Extent
 D = Duration
 M = Magnitude
 P = Probability

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

Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&AP's and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.
- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

Status

- The status, which is described as either positive, negative or neutral.

Reversibility

- The degree to which the impact can be reversed.

Mitigation

- The degree to which the impact can be mitigated.

Nature:		
	Without mitigation	With mitigation
Construction Phase		
Probability		
Duration		
Extent		
Magnitude		
Significance		
Status (positive or negative)		
Operation Phase		
Probability		
Duration		
Extent		
Magnitude		
Significance		
Status (positive or negative)		
Reversibility		
Irreplaceable loss of resources?		
Can impacts be mitigated		

3. Mitigation measures

- *Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.*

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

- Avoidance
- Investigation (archaeological)
- Rehabilitation
- Interpretation
- Memorialisation
- Enhancement (positive impacts)

For the current study, the following mitigation measures are proposed, to be implemented only if any of the identified sites or features are to be impacted on by the proposed development activities:

- (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall). Depending on the type of site, the buffer zone can vary from
 - 10 metres for a single grave, or a built structure, to
 - 50 metres where the boundaries are less obvious, e.g. a Late Iron Age site.
- (2) Archaeological investigation/Relocation of graves: This option can be implemented with additional design and construction inputs. This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards. This can only be done by a suitably qualified archaeologist.
 - This option should be implemented when it is impossible to avoid impacting on an identified site or feature.
 - This also applies for graves older than 60 years that are to be relocated. For graves younger than 60 years a permit from SAHRA is not required. However, all other legal requirements must be adhered to.
 - Impacts can be beneficial – e.g. mitigation contribute to knowledge
- (3) Rehabilitation: When features, e.g. buildings or other structures are to be re-used. Rehabilitation is considered in heritage management terms as an intervention typically involving the adding of a new heritage layer to enable a new sustainable use.
 - The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
 - Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
 - Conservation measures would be to record the buildings/structures as they are (at a particular point in time). The records and recordings would then become the 'artefacts' to be preserved and managed as heritage features or (movable) objects.
 - This approach automatically also leads to the enhancement of the sites or features that are re-used.

- (4) Mitigation is also possible with additional design and construction inputs. Although linked to the previous measure (rehabilitation) a secondary though 'indirect' conservation measure would be to use the existing architectural 'vocabulary' of the structure as guideline for any new designs.
 - The following principle should be considered: **heritage informs design**.
 - This approach automatically also leads to the enhancement of the sites or features that are re-used.

- (5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.
 - Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation in order to ensure that no undetected heritage/remains are destroyed.

4. Relocation of graves

If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.

If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

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

Information needed for the SAHRA permit application

- The permit application needs to be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.
- If graves have not been identified and there are no headstones to indicate the grave, these are then unknown graves and should be handled as if they are older than 60 years. This information also needs to be given to SAHRA.
- A letter from the landowner giving permission to the developer to exhume and relocate the graves.
- A letter from the new cemetery confirming that the graves will be reburied there.
- Details of the farm name and number, magisterial district and GPS coordinates of the gravesite.

5. Inventory of identified cultural heritage sites

NHRA Category	Structures older than 60 years - Section 34
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7.3.3. Type: Built structures. **Farm:** Klippoortje 187-IR. **Coordinates:** S 26,48349; E 28,39307

Description

Ruins of a farmhouse. Most of the structure has been demolished and it is only a few outer walls that remains. Some outbuildings also used to occur but were also demolished. Some garden features and trees remain.



Significance of site/feature	Generally protected: High significance - Grade 4-C
Reasoned opinion: From the material used in its construction and the fact that it is not indicated on early topographic maps, it is judged not to be old and therefore do not have any significance.	

Impact assessment
Although this site is located inside the prospecting area, it is far from the any of the bore hole positions and therefore there is no possibility that it might be impacted on.

Mitigation
(5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.

Significance of impact: before/after mitigation					
Extent	Duration	Intensity	Probability	Significance	Weight
1	5	3	3	27	Low
1	5	3	3	27	Low

Requirements
No further action required

References
-

NHRA Category	Public Monuments and Memorials - Section 37
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7.3.2. Type: Commemorative plaque. **Farm:** Klippoortje 187-IR. **Coordinates:** S 26,48349; E 28,39307

Description
 A commemorative plaque erected in the vicinity of the Black concentration camp in 2001. On it, it is stated that approximately 2000 people were incarcerated here, of which at least 400 died due to the poor living conditions in the camp.



Significance of site/feature	Generally protected: High significance - Grade 4-C
Reasoned opinion:	Burial sites and sites of conflict are viewed as having high emotional and sentimental value.

Impact assessment
 Although this site is located inside the prospecting area, it is far from the any of the bore hole positions and therefore there is no possibility that it might be impacted on. Due to the uncertainty regarding the exact location of the concentration camp for Black people, as well as the fact that there might still be graves in the larger region, the area west of the tar road leading up to the existing cemetery should be seen as a no-go area for any development



Mitigation
 (1) Avoidance/Preserve: Because of its location within the larger prospecting area, it would be possible to avoid this site.

Significance of impact: before/after mitigation					
Extent	Duration	Intensity	Probability	Significance	Weight
1	5	3	3	27	Low
1	5	3	3	27	Low

Requirements
 No further action required

References
 -

NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
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7.3.1. Type: Burial site. Farm: Langlaagte 186-IR Coordinates: S 26,36075; E 28,43305	
Description	
Large formal community (Heidelberg) cemetery with hundreds of graves. It also contains graves of the victims of the British concentration camp that was located in the vicinity.	
	
Monument and concentration camp burials	View over the Typical grave

Significance of site/feature	Generally protected: High significance – Grade IV-A
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. In addition, as it contains graves of concentration camp victims, which has a high emotional value attached to them.	

Impact assessment
This site is located inside the proposed prospecting area, but as it is well defined and fenced off, it is unlikely that it would be impacted on by the proposed on by the proposed prospecting activities. The closest bore hole point is more than 100m away.

Mitigation
(1) Avoidance/Preserve: Because of its location within the larger prospecting area, it would be possible to avoid this site.

Significance of impact: before/after mitigation					
Extent	Duration	Intensity	Probability	Significance	Weight
1	5	3	3	27	Low
1	5	3	3	27	Low

Requirements
Conservation by local authority. Sites should be mitigated before impact. Permit required from provincial heritage authority, as well as other institutions – see Section 4 of the Addendum.

References
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7.3.4. Type: Burial site. **Farm:** Klippoortje 187-IR **Coordinates:** S 26,48882; E 28,39241

Description
 Informal burial site with fifty or more graves. These graves probably originated from people that stayed in the larger region. It is difficult to establish a definite number as most of them are marked only with stone cairns and it seems as if some of the stones marking the graves were moved during previous site clearing activities. Only a few graves have headstones with inscription, all indicating that the graves date prior to the 1960s.



General overview of the burial site



Few of the graves with headstones

Significance of site/feature | Generally protected: High significance – Grade IV-A

Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.

Impact assessment

This site is located inside the proposed development area, but far away from any of the bore hole sites and therefore there is little likelihood that it would be impacted on by the proposed development.

Mitigation

(1) Avoidance/Preserve: Because of its location within the larger prospecting area, it would be possible to avoid this site.

Significance of impact: before/after mitigation

Extent	Duration	Intensity	Probability	Significance	Weight
1	5	3	3	27	Low
1	5	3	3	27	Low

Requirements

Conservation by local authority. Sites should be mitigated before impact. Permit required from provincial heritage authority, as well as other institutions – see Section 4 of the Addendum.

References

-

6. Curriculum vitae

Johan Abraham van Schalkwyk

Personal particulars

Date of birth: 14 April 1952
Identity number: 520414 5099 08 4
Marital status: Married; one daughter
Nationality: South African

Current address: home

62 Coetzer Ave, Monument Park, Pretoria, 0181
Mobile: 076 790 6777; E-mail: jvschalkwyk@mweb.co.za

Qualifications

1995 DLitt et Phil (Anthropology), University of South Africa
1985 MA (Anthropology), University of Pretoria
1981 BA (Hons), Anthropology, University of Pretoria
1979 Post Graduate Diploma in Museology, University of Pretoria
1978 BA (Hons), Archaeology, University of Pretoria
1976 BA, University of Pretoria

Non-academic qualifications

12th HSRC-School in Research Methodology - July 1990
Dept. of Education and Training Management Course - June 1992
Social Assessment Professional Development Course - 1994
Integrated Environmental Management Course, UCT - 1994

Professional experience

Private Practice
2017 - current: Professional Heritage Consultant

National Museum of Cultural History

1992 - 2017: Senior researcher: Head of Department of Research. Manage an average of seven researchers in this department and supervise them in their research projects. Did various projects relating to Anthropology and Archaeology in Limpopo Province, Mpumalanga, North West Province and Gauteng. Headed the Museum's Section for Heritage Impact Assessments.
1978 - 1991: Curator of the Anthropological Department of the Museum. Carried out extensive fieldwork in both anthropology and archaeology

Department of Archaeology, University of Pretoria

1976 - 1977: Assistant researcher responsible for excavations at various sites in Limpopo Province and Mpumalanga.

Awards and grants

1. Hanisch Book Prize for the best final year Archaeology student, University of Pretoria - 1976.
2. Special merit award, National Cultural History Museum - 1986.
3. Special merit award, National Cultural History Museum - 1991.
4. Grant by the Department of Arts, Culture, Science and Technology, to visit the various African countries to study museums, sites and cultural programmes - 1993.
5. Grant by the USA National Parks Service, to visit the United States of America to study museums, sites, tourism development, cultural programmes and impact assessment programmes - 1998.
6. Grant by the USA embassy, Pretoria, under the Bi-national Commission Exchange Support Fund, to visit cultural institutions in the USA and to attend a conference in Charleston - 2000.
7. Grant by the National Research Foundation to develop a model for community-based tourism - 2001.

8. Grant by the National Research Foundation to develop a model for community-based tourism - 2013. In association with RARI, Wits University.

Publications

Published more than 70 papers, mostly in scientifically accredited journals, but also as chapters in books.

Conference Contributions

Regularly presented papers at conferences, locally as well as internationally, on various research topics, ranging in scope from archaeology, anthropological, historical, cultural historical and tourism development.

Heritage Impact Assessments

Since 1992, I have done more than 2000 Phase 1 and Phase 2 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.