



# G & A Heritage

Heritage Management Consultants



## NALEDI 1: PROPOSED RESIDENTIAL DEVELOPMENT ON ERF 2070/PK, TLADI IQ ON THE REMAINDER OF THE FARM SOWETO 387 IQ, WITHIN THE CITY OF JOHANNESBURG METROPOLITAN MUNICIPALITY IN THE GAUTENG PROVINCE.

Heritage Impact Assessment (HIA) Report

April 2022

# CREDIT SHEET

Stephan Gaigher (BA Hons, Archaeology, UP)

Principle Investigator for G&A Heritage Properties (Pty) Ltd.

Member of ASAPA (Site Director Status)

Cell: +27 73 752 6583

Email: [stephan@gaheritage.co.za](mailto:stephan@gaheritage.co.za)

## REPORT AUTHOR

Stephan Gaigher



***Disclaimer;** 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. G&A Heritage and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.*

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## SIGNED BY: STEPHAN GAIGHER

# MANAGEMENT SUMMARY

## **Project Name and Location**

Naledi 1: Proposed Residential Development on Erf 2070/PK, TLADI IQ on the Remainder of the farm Soweto 387 IQ, within the City of Johannesburg Metropolitan Municipality in the Gauteng Province.

## **Consultant**

G&A Heritage Management Properties (Pty) Ltd.

P.O. Box 522, Louis Trichardt, 0920

38 A Vorster Street, Louis Trichardt

Stephan Gaigher

+27 73 752 6583

stephan@gaheritage.co.za

## **Appointed By**

Galago Environmental for MBSA



## **Date of Report**

2 May 2022

## MANAGEMENT SUMMARY

The purpose of the management summary is to distil the information contained in the report into a format that can be used to give specific results quickly and facilitate management decisions. It is not the purpose of the management summary to repeat in shortened format all the information contained in the report, but rather to give a statement of results for decision making purposes.

This study focuses on the project Naledi 1: the proposed residential development on Erf 2070/PK, TLADI IQ on the Remainder of the farm Soweto 387 IQ, within the City of Johannesburg Metropolitan Municipality in the Gauteng Province.

This study encompasses the heritage impact investigation. A preliminary layout has been supplied to lead this phase of this study.

### Scope of Work

A Heritage Impact Assessment (including Archaeological, Cultural heritage, Built Heritage and Basic Palaeontological Assessment to determine the impacts on heritage resources within the study area.

The following is required to perform this assessment:

- A desk-top investigation of the area;
- A site visit to the proposed development site;
- Identify possible archaeological, cultural, historic, built and palaeontological sites within the proposed development area;
- Evaluate the potential impacts of construction and operation of the proposed development on archaeological, cultural, historical resources; built and palaeontological resources; and
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural, historical, built and palaeontological importance.

The purpose of this study is to determine the possible occurrence of sites with cultural heritage significance within the study area. The study is based on archival and document combined with fieldwork investigations.

### Findings and Recommendations

The study area, located on the Remainder on the farm Soweto 387 QI, within the City of Johannesburg Metropolitan Municipality in the Gauteng Province, was investigated during a field visit and through archival studies.

The study area was found to be devoid of any heritage sites with significance and severely altered from the natural landscape. It is recommended that obscured, subterranean sites be managed, if they are encountered.

### Fatal Flaws

No fatal flaws were identified.

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## ABBREVIATIONS

Abbreviation	Meaning
BP	Before Present
c.	circa
BCE	Before the Common Era
Bp	Before Present
CE	Common Era
ECO	Environmental Control Officer
EIA	Early Iron Age
ELO	Environmental Liaison Officer
ESA	Early Stone Age
ESMS	Environmental and Social Management System
ESSS	Environmental and Social Safeguard Standards
Fm	Femtometre ( $10^{-15}$ m)
GPS	Geographic Positioning System
HIA	Heritage Impact Assessment
ICP	Informed Consultation and Participation
LIA	Late Iron Age
LSA	Late Stone Age
KZN	KwaZulu-Natal
MSA	Middle Stone Age
MYA	Million Years Ago
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Agency
PIA	Palaeontological Impact Assessment
PS	Performance Standard
SAHRA	South African Heritage Resource Agency
SAHRIS	South African Heritage Information System
SAPS	South African Police Service
SHE	Safety, Health and Environment
SHEQ	Safety, Health, Environment and Quality
S&EIR	Scoping and Environmental Impact Reporting
Um	Micrometre ( $10^{-6}$ m)
WGS 84	World Geodetic System for 1984

## GLOSSARY OF TERMS

**'Archaeological'** means:

- a) Material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- b) Rock art, being a form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation; and
- c) Wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land or in the maritime cultural zone referred to in section 5 of the Maritime Zones Act 1994 (Act 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- d) Features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

**'Circa'** is used in front of a particular year to indicate an approximate date.

**'Grave'** means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. The South African Heritage Resources Agency (SAHRA) will only issue a permit for the alteration of a grave if it is satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned.

**'Paleontological'** means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

A **'place'** is defined as:

- a) A site, area or region;
- b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- c) A group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and (d) an open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.

**'Structures'** means any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

# 1. General

## 1.1 Project Location

The study area is located along Mogodumu Street near the Merafe Station on Seshotlo Street on Erf 2070/PK, TLADI IQ on the Remainder of the farm Soweto 387 IQ the City of Johannesburg Metropolitan Municipality, Gauteng Province.

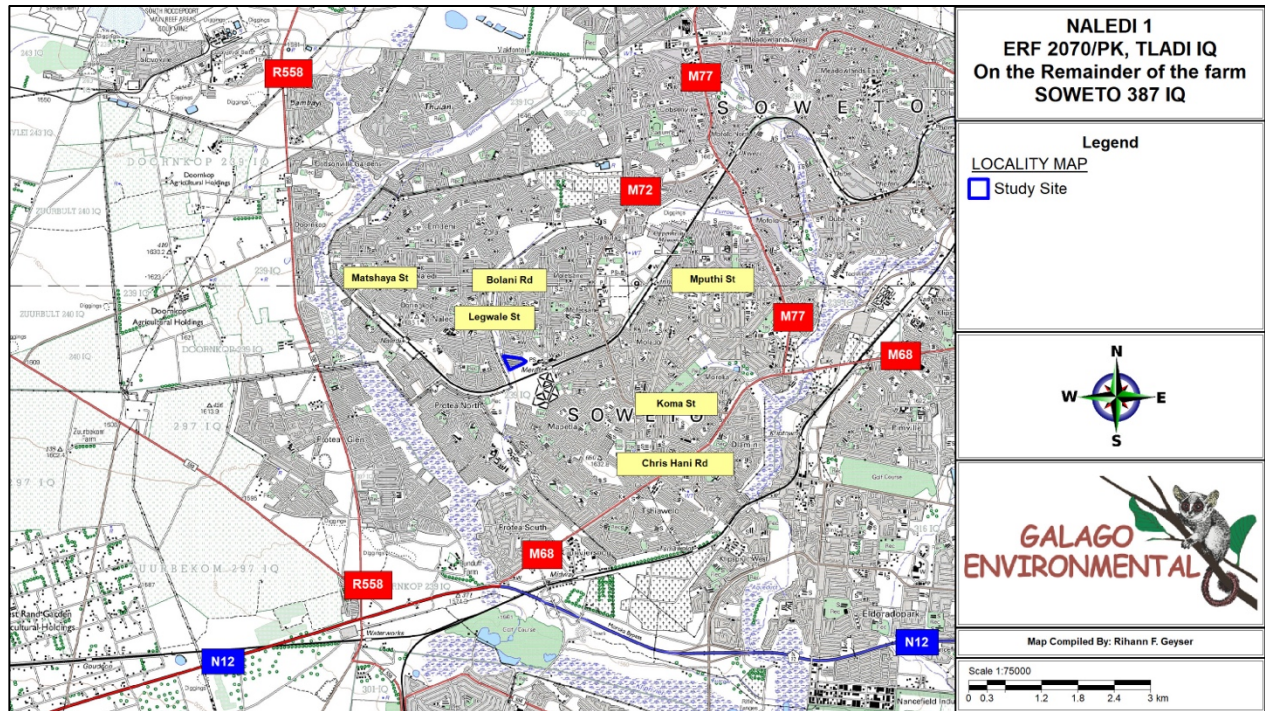


Figure 1. Naledi 1 Location Map

## 1.2 Project Description

G&A Heritage was appointed by *Galago Environmental* for *MBSA* to undertake a Heritage Impact Assessment (HIA) for the project Naledi 1: the proposed residential development on Erf 2070/PK, TLADI IQ on the Remainder of the farm Soweto 387 IQ, within the City of Johannesburg Metropolitan Municipality in the Gauteng Province.

The extent of the study area is approximately 4.53ha.

## 1.3 Technical Scope of HIA

This HIA focused only on the area to be directly affected by the proposed development and is meant to deliver, evaluate and inform on the following aspects:

- The identification and mapping of all heritage resources in the area affected;
- An assessment of the significance of such resources in terms of the heritage assessment criteria set out in the relevant legal descriptions, development proponent requirements and as per international best practise approaches and charters;
- An assessment of the impact of the development on such heritage resources;
- 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;
- 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.

The following categories of heritage objects are considered.

**Graves:** Places of interment including the contents, headstone or other marker of and any other structures on or associated with such place. This may include any of the following:

- 1) Ancestral graves,
- 2) Royal graves and graves of traditional leaders
- 3) Graves of victims of conflict i.e. graves of important individuals
- 4) Historical graves and cemeteries older than 60 years
- 5) Other human remains, buried or otherwise.

The removal of graves is subject to the following procedures:

- Notification of the impending removals (using local language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from the relevant controlling body;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

**Movable objects:** This includes objects such as historic or rare books and manuscripts, paintings, drawings, sculptures, statuettes and carvings; modern or historic religious items; historic costumes, jewellery and textiles; fragments of monuments or historic buildings; archaeological material; and natural history collections such as shells, flora, or minerals. Discoveries and access resulting from a project may increase the vulnerability of cultural objects to theft, trafficking or abuse. This may include any of the following:

- 1) Objects recovered from the soil or water including archaeological and paleontological objects and material, meteorites and rare geological specimens;
- 2) Ethnographic art and objects
- 3) Military objects
- 4) Objects of decorative art
- 5) Objects of fine art
- 6) Objects of scientific or technological interest
- 7) Books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings
- 8) Any other prescribed categories, but excluding any object made by a living person.

### Protection of Historic Battlefields

**Heritage “Places”:** A ‘place’ is defined as:

- a) A site, area or region;
- b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- c) A group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and
- d) An open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.
- e) Traditional Buildings used in cultural ceremonies.

**Heritage Structures:** Refers to single or groups of architectural works found in urban or rural settings providing evidence of a particular civilisation, a significant development or a historic event. It includes groups

of buildings, structures and open spaces constituting past or contemporary human settlements that are recognised as cohesive and valuable from an architectural, aesthetic, spiritual or socio-cultural perspective. This may also include any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

### **Archaeological Sites**

Archaeological sites comprise any combination of structural remains, artefacts, human or ecological elements and may be located entirely beneath, partially above, or entirely above the land or water surface. Archaeological material may be found anywhere on the earth's surface, singly or scattered over large areas. Such material includes burial areas, human remains, artefacts and fossils. Archaeological sites may include:

- a) Material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- b) Rock art, being a form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation; and
- c) Wrecks, being any vessel or aircraft, or any part thereof, which was wrecked, whether on land or in the maritime cultural zone, and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- d) Features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

**Paleontological resources:** Refers to any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

**Sacred or Spiritual Sites:** Refers to natural features with cultural significance, which may include sacred hills, mountains, landscapes, streams, rivers, waterfalls, caves and rocks; sacred trees or plants, groves and forests; carvings or paintings on exposed rock faces or in caves; and paleontological deposits of early human, animal or fossilised remains. This heritage may have significance to local community groups or minority populations.

## **1.4 Geographical / Spatial Scope of HIA**

The geographic and spatial scope of the HIA centres on the proposed residential development on Erf 2070/PK, TLADI IQ on the Remainder of the farm Soweto 387 IQ, within the City of Johannesburg Metropolitan Municipality in the Gauteng Province.

Any sites within the directly impacted study area that can be affected by the proposed development and, where known, are included in this report. Mitigation or secondary investigations take this footprint as the spatial parameters of the study area.

## **1.5 GPS Track Path**

The following image shows a plotting of the GPS track paths recorded during the fieldwork. Several files were combined, and this does not represent a single uninterrupted recording. GPX Files are available.



Figure 2. Naledi 1 GPS Track Path

## 1.6 Temporal Scope

The proposed project will consist of three phases;

- 1) Planning
- 2) Development
- 3) Operational

Due to the nature of the proposed development, impacts on heritage sites are only anticipated during the development phase of the proposed project. The operational phase will not result in any further alterations to heritage on any significant scale.

## 2. Legislative Context

### 2.1 National Legislation

Section 38(1) of the South African Heritage Resources Act (25 of 1999) requires that a heritage study is undertaken for:

- (a) *Construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;*
- (b) *Construction of a bridge or similar structure exceeding 50 m in length; and*
- (c) *Any development, or other activity which will change the character of an area of land, or water –*
  - (1) Exceeding 10 000 m<sup>2</sup> in extent;*
  - (2) Involving three or more existing erven or subdivisions thereof; or*
  - (3) Involving three or more erven, or subdivisions thereof, which have been consolidated within the past five years; or*
- (d) *The costs of which will exceed a sum set in terms of regulations; or*
- (e) *Any other category of development provided for in regulations.*

While the above describes the parameters of developments that fall under this Act., Section 38 (8) of the NHRA is applicable to this development. This section states that;

- (8) *The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.*

In regard to a development such as this that falls under Section 38 (8) of the NHRA, the requirements of Section 38 (3) applies to the subsequent reporting, stating that;

- (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.*
    - 1) Ancestral graves,*
    - 2) Royal graves and graves of traditional leaders,*
    - 3) Graves of victims of conflict (iv) graves of important individuals,*
    - 4) Historical graves and cemeteries older than 60 years, and*
    - 5) Other human remains which are not covered under the Human Tissues Act, 1983 (Act No.65 of 1983 as amended);*
  - h) Movable objects, including:*
    - 1) Objects recovered from the soil or waters of South Africa including archaeological and paleontological objects and material, meteorites and rare geological specimens;*

- 2) Ethnographic art and objects;
- 3) Military objects;
- 4) Objects of decorative art;
- 5) Objects of fine art;
- 6) Objects of scientific or technological interest;
- 7) Books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings; and
- 8) Any other prescribed categories, but excluding any object made by a living person;
- i) Battlefields;
- j) Traditional building techniques.

A **'place'** is defined as:

- a) A site, area or region;
- b) A building or other structure (which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure);
- c) A group of buildings or other structures (which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures); and (d) an open space, including a public square, street or park; and in relation to the management of a place, includes the immediate surroundings of a place.

**'Structures'** means any building, works, device, or other facility made by people and which is fixed to land and any fixtures, fittings and equipment associated therewith older than 60 years.

**'Archaeological'** means:

- a) Material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- b) Rock art, being a form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation; and
- c) Wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land or in the maritime cultural zone referred to in section 5 of the Maritime Zones Act 1994 (Act 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which are older than 60 years or which in terms of national legislation are considered to be worthy of conservation;
- d) Features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

**'Paleontological'** means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

**'Grave'** means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. The South African Heritage Resources Agency (SAHRA) will only issue a permit for the alteration of a grave if it is satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned.

The removal of graves is subject to the following procedures as outlined by the SAHRA:

- Notification of the impending removals (using English, Afrikaans and local language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from the SAHRA;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

The limitations and assumptions associated with this heritage impact assessment are as follows;

- Field investigations were performed on foot and by vehicle where access was readily available.
- Sites were evaluated by means of description of the cultural landscape, direct observations and analysis of written sources and available databases.
- It was assumed that the site layout as provided by Galago Environmental for MBSA is accurate.
- We assumed that the public participation process performed as part of the Basic Assessment process was sufficiently encompassing not to be repeated in the Heritage Assessment Phase.

Table 1. Impacts on the NHRA Sections

Act	Section	Description	Possible Impact	Action
National Heritage Resources Act (NHRA)	34	Preservation of buildings older than 60 years	No impact	None
	35	Archaeological, paleontological and meteor sites	No impact	None
	36	Graves and burial sites	No impact	None
	37	Protection of public monuments	No impact	None
	38	Does activity trigger a HIA?	Yes	HIA

Table 2. NHRA Triggers

Action Trigger	Yes/No	Description
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.	No	N/A
Construction of a bridge or similar structure exceeding 50m in length.	No	N/A
Development exceeding 5000 m <sup>2</sup>	Yes	Proposed Naledi 1 Residential Development: 4.53ha.
Development involving more than 3 erven or sub divisions	No	N/A
Development involving more than 3 erven or sub divisions that have been consolidated in the past 5 years	No	N/A
Re-zoning of site exceeding 10 000 m <sup>2</sup>	No	N/A
Any other development category, public open space, squares, parks or recreational grounds	No	N/A

## 3. Methodology

### 3.1 Heritage Management

This study defines the heritage component of the EIA process being undertaken for project Naledi 1: the proposed residential development on Erf 2070/PK, TLADI IQ on the Remainder of the farm Soweto 387 IQ, within the City of Johannesburg Metropolitan Municipality in the Gauteng Province.

It is described as a first phase (HIA). This report attempts to evaluate both the accumulated heritage knowledge of the area and information derived from direct physical observations.

### 3.2 Inventory

Inventory studies involve the in-field survey and recording of archaeological resources within a proposed development area. The nature and scope of this type of study is defined primarily by the results of the overview study. In the case of site-specific developments, direct implementation of an inventory study may preclude the need for an overview.

There are several different methodological approaches to conducting inventory studies. Therefore, the proponent, in collaboration with the archaeological consultant, must develop an inventory plan for review and approval by the SAHRA prior to implementation (*Dincause, Dena F., H. Martin Wobst, Robert J. Hasenstab and David M. Lacy 1984*).

### 3.3 Evaluating Heritage Impacts

A combination of document research as well as the determination of the geographic suitability of areas and the evaluation of aerial photographs determined which areas could and should be accessed.

After plotting of the site on a GPS the areas were accessed using suitable combinations of vehicle access and access by foot.

Sites were documented by digital photography and geo-located with GPS readings using the WGS 84 datum. An aerial drone was used to evaluate the site from different heights and to improve coverage of the area.

Further techniques (where possible) included interviews with local inhabitants, visiting local museums and information centers and discussions with local experts. All this information was combined with information from an extensive literature study as well as the result of archival studies based on the SAHRA (South African Heritage Resource Agency) provincial databases.

This Heritage Impact Assessment relies on the analysis of written documents, maps, aerial photographs and other archival sources combined with the results of site investigations and interviews with effected people. Site investigations are not exhaustive and often focus on areas such as river confluence areas, elevated sites or occupational ruins.

The following documents were consulted in this study;

- South African National Archive Documents
- SAHRIS (South African Heritage Resources Information System) Database of Heritage Studies
- Historic Maps
- 1944, 1956, 1976, 1995, 2002 and 2007 Surveyor General Topographic Map series
- 1952 1:10 000 aerial photo survey
- Google Earth 2021 imagery
- Published articles and books
- JSTOR Article Archive

### 3.4 Site Visit / Fieldwork Details

Fieldwork for the HIA was done on the 28<sup>th</sup> of April 2022. Most of the area was found to be accessible by foot and vehicle. Areas of possible significance were investigated on foot. The survey was tracked using GPS and a track file in GPX format is available on request.

Where sites were identified it was documented photographically and plotted using GPS with the WGS 84 datum point as reference. GPX files are available on request from G&A Heritage.

The study area was surveyed using standard archaeological surveying methods. The area was surveyed using directional parameters supplied by the GPS and surveyed by vehicle and on foot. This technique has proven to result in the maximum coverage of an area.

Standard archaeological documentation formats were employed in the description of sites. Using standard site documentation forms as comparable medium, it enabled the surveyors to evaluate the relative importance of sites found. Furthermore, GPS (Global Positioning System) readings of all finds and sites were taken. This information was then plotted using a **Garmin Colorado** GPS (WGS 84- datum).

Indicators such as surface finds, plant growth anomalies, local information and topography were used in identifying sites of possible archaeological importance. Test probes were done at intervals to determine sub-surface occurrence of archaeological material. The importance of sites was assessed by comparisons with published information as well as comparative collections.

*Test excavation is that form of archaeological excavation where the purpose is to establish the nature and extent of archaeological deposits and features present in a location, which it is proposed to develop (though not normally to fully investigate those deposits or features) and allow an assessment to be made of the archaeological impact of the proposed development. It may also be referred to as archaeological testing' (DAHGI 1999a, 27).*

*'Test excavation should not be confused with, or referred to as, archaeological assessment which is the overall process of assessing the archaeological impact of development. Test excavation is one of the techniques in carrying out archaeological assessment which may also include, as appropriate, documentary research, field walking, examination of upstanding or visible features or structures, examination of aerial photographs, satellite or other remote sensing imagery, geophysical survey, and topographical assessment' (DAHGI 1999b, 18).*

### 3.5 Assumptions

It was assumed that the impacted area will be limited to the proposed development. It is furthermore assumed that the *PalaeoSensitivity* Map provided on the SAHRIS platform is comprehensive enough to inform on actions in this regard.

### 3.6 Gaps / Limitations / Uncertainty

Due to the dense informal occupation in the study area, it was difficult to make surface observations of heritage deposits in some areas.

### 3.7 Specialist Specific Methodology

The scope of work includes:

- the identification and assessment of archaeological, cultural, historic and built sites within the study area.
- Archival study of existing data and information for the study area.
- Site inspection and fieldwork.
- This site work includes communicating with local inhabitants to confirm possible locations of heritage and cultural sites.
- Impact assessment has been performed according to the methodology as described in the relevant Impact Evaluation

This HIA Methodology assists in evaluating the overall effect of a proposed activity on the heritage environment. The determination of the effect of a heritage impact on a heritage parameter is determined through a systematic analysis of the various components of the impact. This is undertaken using information that is available to the heritage practitioner through the process of heritage impact assessment. The impact evaluation of predicted impacts was undertaken through an assessment of the significance of the impacts.

### **3.8 Visual Impact Assessment Methodology**

Visual impacts of developments result when sites that are culturally celebrated are visually affected by a development. The exact parameters for the determination of visual impacts have not yet been rigidly defined and are still mostly open to interpretation. CNdV Architects and The Department of Environmental Affairs and Development Planning (2006) have developed some guidelines for the management of the visual impacts of wind turbines in the Western Cape, although these have not yet been formalised. In these guidelines they recommend a buffer zone of 1km around significant heritage sites to minimise the visual impact.

Visual impacts to scenic routes and sense of place are considered to be low as the proposed low-cost residential development will be constructed in an area that have already been developed.

## 4. Findings

### 4.1 Built Environment

Some structures associated with rural living were identified;

- Dirt and tar roads
- Fences
- Power lines
- Residential dwellings
- Business premises
- Footpaths

#### Mitigation

These structures are not historically significant.



Figure 3. Naledi 1

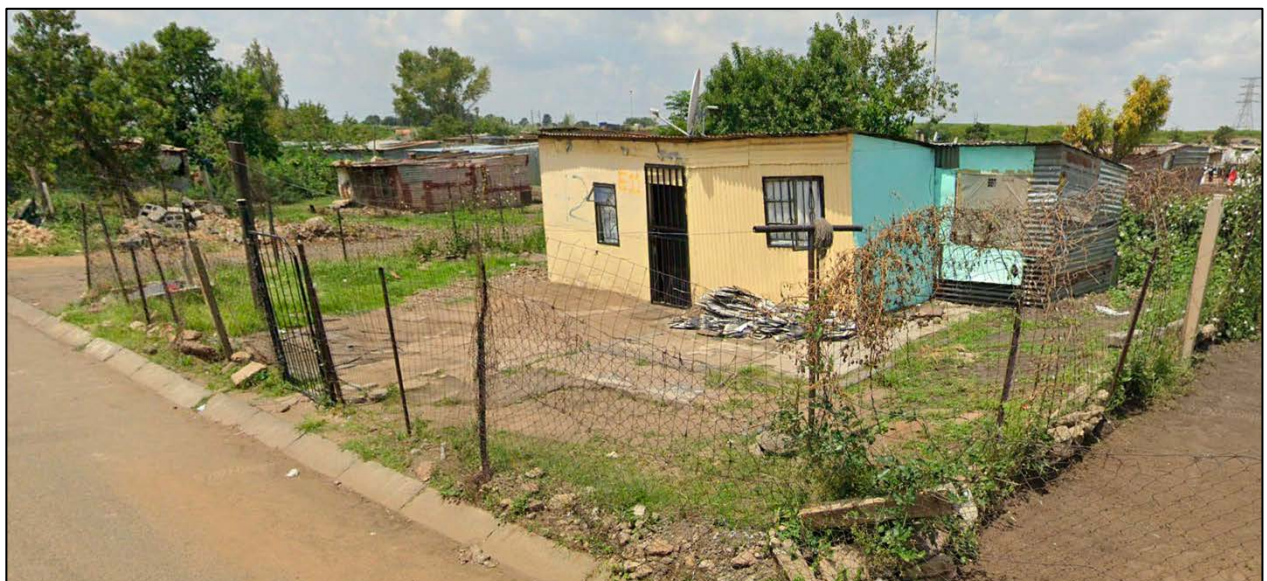


Figure 4. Naledi 1

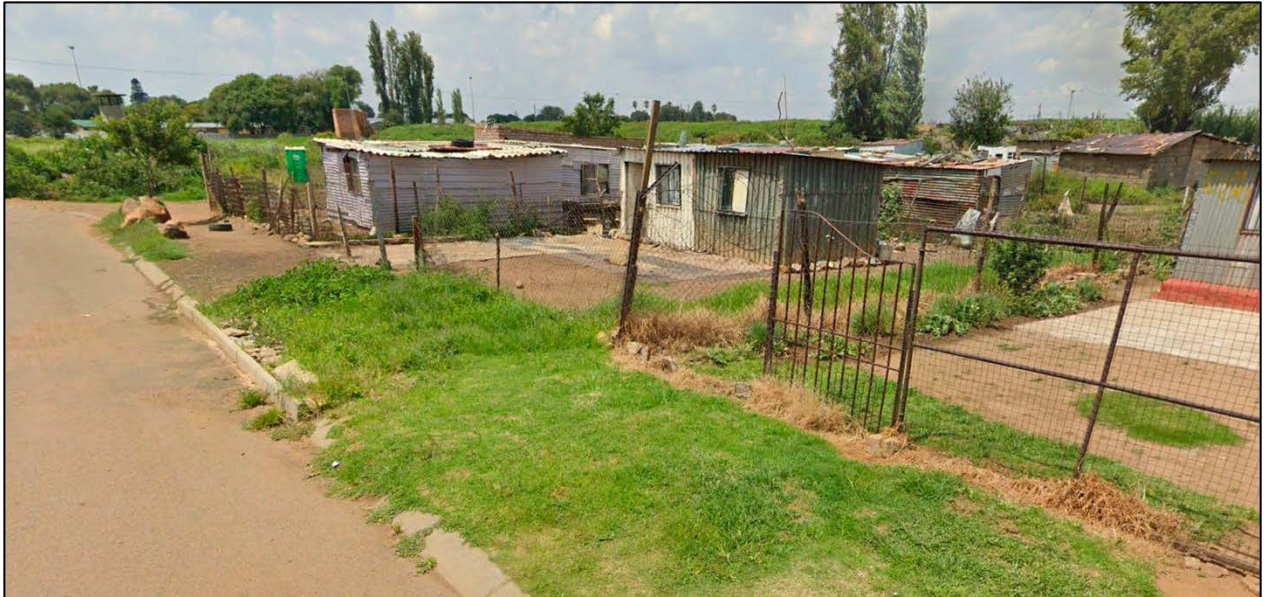


Figure 5. Naledi 1



Figure 6. Naledi 1

## 4.2 Cultural Landscape

The cultural landscape in Naledi 1 is strongly associated with urban and rural living with formal and informal dwellings.

Long term impacts on the cultural landscape are considered negligible as the proposed low-cost residential development will be in places that have previously been disturbed by developments and modern human activities.

## 4.3 Natural Landscape

The natural landscape of Naledi 1 is associated with urban development with little to no natural elements.

Landscape Type	Description	Occurrence still possible?	Likely occurrence?
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1 Paleontological	Mostly fossil remains. Remains include microbial fossils such as found in Baberton Greenstones	No	No
2 Archaeological	Evidence of human occupation associated with the following phases – Early-, Middle-, Late Stone Age, Early-, Late Iron Age, Pre-Contact Sites, Post-Contact Sites	No	No
3 Historic Built Environment	<ul style="list-style-type: none"> <li>- Historical townscapes/streetscapes</li> <li>- Historical structures; i.e. older than 60 years</li> <li>- Formal public spaces</li> <li>- Formally declared urban conservation areas</li> <li>- Places associated with social identity/displacement</li> </ul>	No	No
4 Historic Farmland	<p>These possess distinctive patterns of settlement and historical features such as:</p> <ul style="list-style-type: none"> <li>- Historical farm yards</li> <li>- Historical farm workers villages/settlements</li> <li>- Irrigation furrows</li> <li>- Tree alignments and groupings</li> <li>- Historical routes and pathways</li> <li>- Distinctive types of planting</li> <li>- Distinctive architecture of cultivation e.g. planting blocks, trellising, terracing, ornamental planting.</li> </ul>	No	No
5 Historic rural town	<ul style="list-style-type: none"> <li>- Historic mission settlements</li> <li>- Historic townscapes</li> </ul>	No	No
6 Pristine natural landscape	<ul style="list-style-type: none"> <li>- Historical patterns of access to a natural amenity</li> <li>- Formally proclaimed nature reserves</li> <li>- Evidence of pre-colonial occupation</li> <li>- Scenic resources, e.g. view corridors, viewing sites, visual edges, visual linkages</li> <li>- Historical structures/settlements older than 60 years</li> <li>- Pre-colonial or historical burial sites</li> <li>- Geological sites of cultural significance.</li> </ul>	No	No
7 Relic Landscape	<ul style="list-style-type: none"> <li>- Past farming settlements</li> <li>- Past industrial sites</li> <li>- Places of isolation related to attitudes to medical treatment</li> <li>- Battle sites</li> <li>- Sites of displacement,</li> </ul>	No	No
8 Burial grounds and grave sites	<ul style="list-style-type: none"> <li>- Pre-colonial burials (marked or unmarked, known or unknown)</li> <li>- Historical graves (marked or unmarked, known or unknown)</li> <li>- Graves of victims of conflict</li> <li>- Human remains (older than 100 years)</li> <li>- Associated burial goods (older than 100 years)</li> <li>- Burial architecture (older than 60 years)</li> </ul>	No	No
9 Associated Landscapes	<ul style="list-style-type: none"> <li>- Sites associated with living heritage e.g. initiation sites, harvesting of natural resources for traditional medicinal purposes</li> <li>- Sites associated with displacement &amp; contestation</li> <li>- Sites of political conflict/struggle</li> </ul>	No	No

	<ul style="list-style-type: none"> <li>- Sites associated with an historic event/person</li> <li>- Sites associated with public memory</li> </ul>		
10 Historical Farmyard	<ul style="list-style-type: none"> <li>- Setting of the yard and its context</li> <li>- Composition of structures</li> <li>- Historical/architectural value of individual structures</li> <li>- Tree alignments</li> <li>- Views to and from</li> <li>- Axial relationships</li> <li>- System of enclosure, e.g. defining walls</li> <li>- Systems of water reticulation and irrigation, e.g. furrows</li> <li>- Sites associated with slavery and farm labour</li> <li>- Colonial period archaeology</li> </ul>	No	No
11 Historic institutions	<ul style="list-style-type: none"> <li>- Historical prisons</li> <li>- Hospital sites</li> <li>- Historical school/reformatory sites</li> <li>- Military bases</li> </ul>	No	No
12 Scenic visual	<ul style="list-style-type: none"> <li>- Scenic routes</li> </ul>	No	No
13 Amenity landscape	<ul style="list-style-type: none"> <li>- View sheds</li> <li>- View points</li> <li>- Views to and from</li> <li>- Gateway conditions</li> <li>- Distinctive representative landscape conditions</li> <li>- Scenic corridors</li> </ul>	No	No

## 4.4 Battlefields and Concentration Camps

There are no battlefields or related concentration camp sites located within the study area. Geographically, the Battle of Doornkop lies closest to the area under investigation. Doornkop is a ridge on the western boundary of Johannesburg and much of the area covered by the British advance is now the suburban expanses of Roodepoort and Soweto.

In September and October of 1895 the Drift Crisis between the Cape Colony and the South African Republic (SAR) or Transvaal developed leading to the Jameson Raid carried out by the British colonial administrator Leander Starr Jameson, under the employment of Cecil Rhodes. It involved 500 British South African Company police launched from Rhodesia over the New Year's weekend of 1895-1896. The failed attempts to cause an uprising resulted in an embarrassment of the British government, the replacement of Rhodes as the Prime Minister of the Cape Colony and strengthening the Boer dominance over the Transvaal and the gold mines. The raid was a contributory cause of the Anglo-Boer War (1899-1902).

The battle of Doornkop the final battle in the occupation of Johannesburg. Over the course of 29 and 30 May 1900, the British troops under the command of General Roberts executed their attack on Johannesburg.

## 5. Measuring Impacts

In 2003 the SAHRA (South African Heritage Resources Agency) compiled the following guidelines to evaluate the cultural significance of individual heritage resources:

- **Type of Resource**
  - Place
  - Archaeological Site
  - Structure
  - Grave
  - Palaeontological Feature
  - Geological Feature
- **Type of Significance**
  - Historic Value
    - Important in the community, or pattern of history
    - Important in the evolution of cultural landscapes and settlement patterns
    - Important in exhibiting density, richness or diversity of cultural features illustrating the human occupation and evolution of the nation, province, region or locality.
    - Important for association with events, developments or cultural phases that have had a significant role in the human occupation and evolution of the nation, province, region or community.
    - Important as an example for technical, creative, design or artistic excellence, innovation or achievement in a particular period.
    - It has strong or special association with the life or work of a person, group or organisation of importance in history
    - Importance for close associations with individuals, groups or organisations whose life, works or activities have been significant within the history of the nation, province, region or community.
    - It has significance relating to the history of slavery
    - Importance for a direct link to the history of slavery in South Africa.
  - Aesthetic Value
    - It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
    - Important to a community for aesthetic characteristics held in high esteem or otherwise valued by the community.
    - Importance for its creative, design or artistic excellence, innovation or achievement.
    - Importance for its contribution to the aesthetic values of the setting demonstrated by a landmark quality or having impact on important vistas or otherwise contributing to the identified aesthetic qualities of the cultural environs or the natural landscape within which it is located.
    - In the case of an historic precinct, importance for the aesthetic character created by the individual components which collectively form a significant streetscape, townscape or cultural environment.
  - Scientific Value
    - It has potential to yield information that will contribute to an understanding of natural or cultural heritage
    - Importance for information contributing to a wider understanding of natural or cultural history by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.
    - Importance for information contributing to a wider understanding of the origin of the universe or of the development of the earth.
    - Importance for information contributing to a wider understanding of the origin of life; the development of plant or animal species, or the biological or cultural development of hominid or human species.

- Importance for its potential to yield information contributing to a wider understanding of the history of human occupation of the nation, Province, region or locality.
- It is important in demonstrating a high degree of creative or technical achievement at a particular period
- Importance for its technical innovation or achievement.

a) Does the site contain evidence, which may substantively enhance understanding of culture history, culture process, and other aspects of local and regional prehistory?

- internal stratification and depth
- chronologically sensitive cultural items
- materials for absolute dating
- association with ancient landforms
- quantity and variety of tool type
- distinct intra-site activity areas
- tool types indicative of specific socio-economic or religious activity
- cultural features such as burials, dwellings, hearths, etc.
- diagnostic faunal and floral remains
- exotic cultural items and materials
- uniqueness or representativeness of the site
- integrity of the site

b) Does the site contain evidence which may be used for experimentation aimed at improving archaeological methods and techniques?

- monitoring impacts from artificial or natural agents
- site preservation or conservation experiments
- data recovery experiments
- sampling experiments
- intra-site spatial analysis

c) Does the site contain evidence which can make important contributions to paleo environmental studies?

- topographical, geomorphological context
- depositional character
- diagnostic faunal, floral data

d) Does the site contain evidence which can contribute to other scientific disciplines such as hydrology, geomorphology, pedology, meteorology, zoology, botany, forensic medicine, and environmental hazards research, or to industry including forestry and commercial fisheries?

o Social Value / Public Significance

- It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons
- Importance as a place highly valued by a community or cultural group for reasons of social, cultural, religious, spiritual, symbolic, aesthetic or educational associations.
- Importance in contributing to a community's sense of place.

a) Does the site have potential for public use in an interpretive, educational or recreational capacity?

- integrity of the site
- technical and economic feasibility of restoration and development for public use
- visibility of cultural features and their ability to be easily interpreted
- accessibility to the public
- opportunities for protection against vandalism

- representativeness and uniqueness of the site
- aesthetics of the local setting
- proximity to established recreation areas
- present and potential land use
- land ownership and administration
- legal and jurisdictional status
- local community attitude toward development

b) Does the site receive visitation or use by tourists, local residents or school groups?

o Ethnic Significance

Does the site presently have traditional, social or religious importance to a particular group or community?

- ethnographic or ethno-historic reference
- documented local community recognition or, and concern for, the site

o Economic Significance

What value of user-benefits may be placed on the site?

- visitors' willingness-to-pay
- visitors' travel costs

o Scientific Significance

a) Does the site contain evidence, which may substantively enhance understanding of historic patterns of settlement and land use in a particular locality, regional or larger area?

b) Does the site contain evidence, which can make important contributions to other scientific disciplines or industry?

o Historic Significance

a) Is the site associated with the early exploration, settlement, land use, or other aspect of southern Africa's cultural development?

b) Is the site associated with the life or activities of a particular historic figure, group, organization, or institution that has made a significant contribution to, or impact on, the community, province or nation?

c) Is the site associated with a particular historic event whether cultural, economic, military, religious, social or political that has made a significant contribution to, or impact on, the community, province or nation?

d) Is the site associated with a traditional recurring event in the history of the community, province, or nation, such as an annual celebration?

o Public Significance

a) Does the site have potential for public use in an interpretive, educational or recreational capacity?

- visibility and accessibility to the public
- ability of the site to be easily interpreted
- opportunities for protection against vandalism
- economic and engineering feasibility of reconstruction, restoration and maintenance
- representativeness and uniqueness of the site
- proximity to established recreation areas
- compatibility with surrounding zoning regulations or land use
- land ownership and administration
- local community attitude toward site preservation, development or destruction
- present use of site

b) Does the site receive visitation or use by tourists, local residents or school groups?

o Other

- Is the site a commonly acknowledged landmark?
- Does, or could, the site contribute to a sense of continuity or identity either alone or in conjunction with similar sites in the vicinity?
- Is the site a good typical example of an early structure or device commonly used for a specific purpose throughout an area or period of time?
- Is the site representative of a particular architectural style or pattern?

For each predicted impact, criteria are described. These criteria include the **magnitude** (size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale), as well as the **probability** (likelihood). The methodology is quantitative and generated through a spreadsheet but requires professional judgement in the application of the criteria.

When assessing impacts, broader considerations are also considered, these include the **confidence** with which the assessment was undertaken, the **reversibility** of the impact and the resource **irreplaceability**.

#### Calculations

(as applied in the excel spreadsheet 'Naledi 1.xls') – Available on request.

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **magnitude** (size or degree scale), which also includes the **type** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

$$\text{Consequence} = \text{type} \times (\text{magnitude} + \text{duration} + \text{extent}).$$

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

$$\text{Significance} = \text{consequence} \times \text{probability}$$

Depending on the numerical result, the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

The following tables show the scales used to classify the above variables and define each of the rating categories.

## 5.1 Magnitude

The magnitude refers to the degree of alteration of the affected environmental receptor. The relevant descriptor for magnitude is selected by the user (refer to Table).

Table 3. Description of magnitude and assigned numerical values

Numerical Rating	Magnitude	
	Category	Descriptors
1	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
2	Very low	Natural and/ or social functions and/ or processes are slightly altered
3	Low	Natural and/ or social functions and/ or processes are somewhat altered

4	<b>Moderate</b>	Natural and/ or social functions and/ or processes are moderately altered
5	<b>High</b>	Natural and/ or social functions and/ or processes are notably altered
6	<b>Very high</b>	Natural and/ or social functions and/ or processes are majorly altered
7	<b>Extremely high</b>	Natural and/ or social functions and/ or processes are severely altered

\*NOTE: Where applicable, the magnitude of the impact is related to a relevant standard or threshold or is based on specialist knowledge and understanding of that particular field.

## 5.2 Duration

The duration refers to the length of permanence of the impact on the environmental receptor. The relevant descriptor for duration is selected by the user (refer to Table).

Table 4. Description of duration and assigned numerical values

Numerical Rating	Duration	
	Category	Descriptors
1	<b>Immediate</b>	Impact will self-remedy immediately
2	<b>Brief</b>	Impact will not last longer than 1 year
3	<b>Short term</b>	Impact will last between 1 and 5 years
4	<b>Medium term</b>	Impact will last between 5 and 10 years
5	<b>Long term</b>	Impact will last between 10 and 15 years
6	<b>On-going</b>	Impact will last between 15 and 20 years
7	<b>Permanent</b>	Impact may be permanent, or in excess of 20 years

## 5.3 Extent

The extent refers to the geographical scale of impact on the environmental receptor. The relevant descriptor for extent is selected by the user (refer to Table).

Table 5. Description of extent and assigned numerical values

Numerical Rating	Extent	
	Category	Descriptors
1	<b>Very limited</b>	Impacts very limited / felt in isolated areas of the study area
2	<b>Limited</b>	Impacts limited to specific parts of the study area
3	<b>Local</b>	Impacts felt mostly throughout the study area
4	<b>Municipal area</b>	Impacts felt outside the study area, at a municipal level
5	<b>Regional</b>	Impacts felt outside the study area, at a regional / provincial level
6	<b>National</b>	Impacts felt outside the study area, at a national level

7	<b>International</b>	Impacts felt outside the study area, at an international level
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## 5.4 Probability

To calculate the significance of an impact, the probability (or likelihood) of that impact occurring is also taken into account. (Refer to Table).

Table 6. Definition of probability ratings

Numerical Rating	Probability	
	Category	Descriptors
1	<b>Highly unlikely / None</b>	Expected never to happen
2	<b>Rare / improbable</b>	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
3	<b>Unlikely</b>	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
4	<b>Probable</b>	Has occurred here or elsewhere and could therefore occur
5	<b>Likely</b>	The impact may occur
6	<b>Almost certain / Highly probable</b>	It is most likely that the impact will occur
7	<b>Certain / Definite</b>	There are sound scientific reasons to expect that the impact will definitely occur

## 5.5 Significance

These are auto-calculated in the spreadsheet as described above and includes the following categories in Table 11. This table is for illustration only.

Table 7. Application of significance ratings

Range		Significance rating
-147	-109	Major (-)
-108	-73	Moderate (-)
-72	-36	Minor (-)
-35	-1	Negligible (-)
0	0	Neutral
1	35	Negligible (+)
36	72	Minor (+)
73	108	Moderate (+)
109	147	Major (+)

The following, broader considerations will also be considered. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Tables 12, 13 and 14 respectively.

Table 8. Definition of confidence ratings

Rating	Descriptor
<b>Low</b>	Judgement is based on intuition
<b>Medium</b>	Determination is based on common sense and general knowledge
<b>High</b>	Substantive supportive data exists to verify the assessment

Table 9. Definition of reversibility ratings

Rating	Descriptor
<b>Low</b>	The affected environment will not be able to recover from the impact - permanently modified
<b>Medium</b>	The affected environment will only recover from the impact with significant intervention
<b>High</b>	The affected environmental will be able to recover from the impact

Table 10. Definition of irreplaceability ratings

Rating	Descriptor
<b>Low</b>	The resource is not damaged irreparably or is not scarce
<b>Medium</b>	The resource is damaged irreparably but is represented elsewhere
<b>High</b>	The resource is irreparably damaged and is not represented elsewhere

## **5. Description of Affected Environment**

### **5.1 Map of Key Features**

No key features were identified within the Naledi 1 project study area.

### **5.2 Documented Sites**

The area was accessed by vehicle and investigated on foot. The area has been mostly disturbed from green field condition and is strongly associated with urban, informal living. The study area was found to be devoid of any heritage sites with significance and severely altered from the natural landscape.

## 6. Baseline

Context Relevant to Project Location, Design, Operation, or Mitigation Decisions

### 6.1 Palaeontology

The palaeontology of Gauteng is well researched in areas. The discovery of the Sterkfontein skeletons put this area in the forefront of palaeontology worldwide. The rule of “absence of evidence is not evidence of absence” should be applied to this area. Taken the rich palaeontology of Western Gauteng it is conceivable that similar finds could be made in this area.

The area falls mostly within the “Blue” demarcation on the *PalaeoSensitivity* Map. SAHRA states that in this case no Palaeontological studies are required, however, a protocol for finds is required.

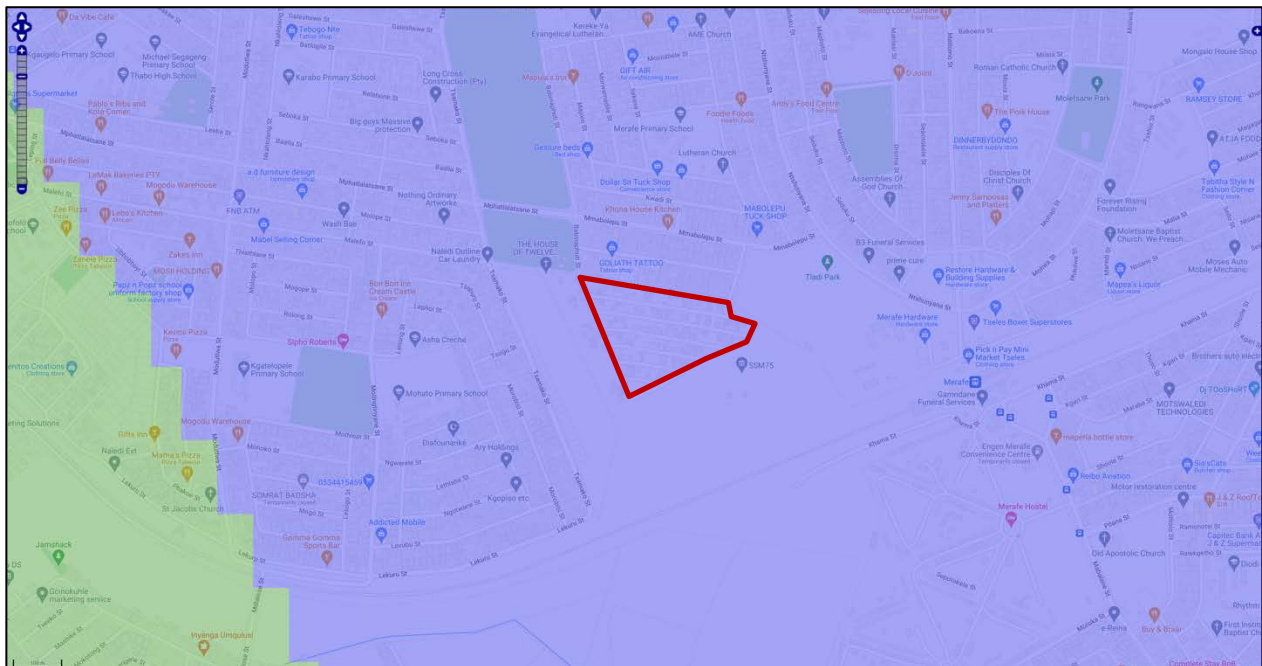


Figure 7. Paleo Sensitivity Map

Table 11. Palaeontological Sensitivity

Colour	Sensitivity	Action Required
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 area will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

### 6.2 Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, Middle Stone Age and Earlier Stone Age. Each of these phases

contain sub-phases or industrial complexes, and within these we can expect regional variation regarding the characteristics and time ranges. The three main phases can be divided as follows;

- Later Stone Age: associated with Khoi and San societies and their immediate predecessors. Recent to 30 000 years ago.
- Middle Stone Age: associated with Homo sapiens and archaic modern humans. 30 000 to 300 000 years ago.
- Earlier Stone Age: associated with early Homo groups such as Homo habilis and Homo erectus. 400 000 to 2 million years ago.

Stone Age sites are usually associated with stone artefacts found scattered on the surface or as part of deposits in caves and rock shelters.

No substantial number of Stone Age sites from any period of the Stone Age is known to exist in this area – primarily as a result of a lack of research and general ignorance amongst the layman in recognizing stone tools that often may occur. However, it is possible that the first humans in the area may have been preceded by Homo erectus, who roamed large parts of the world during the Acheulian period of the Early Stone Age, 500 000 years ago. The predecessors of Homo erectus, Australopithecus, which is considered to be the earliest ancestor of modern humans, lived in the Blaauwbank Valley around Krugersdorp (today part of the Cradle of Humankind – a World Heritage Site) several million years ago.

During the Middle Stone Age, 200 000 years ago, modern man or Homo sapiens emerged, manufacturing a wider range of tools, with technologies more advanced than those from earlier periods. This enabled skilled hunter-gatherer bands to adapt to different environments. From this time onwards, rock shelters and caves were used for occupation and reoccupation over very long periods of time (Mitchell 2002). Two Middle Stone Age sites at the Withoek Spruit (Brakpan) were researched 17 years ago, but no information on this discovery has been published.

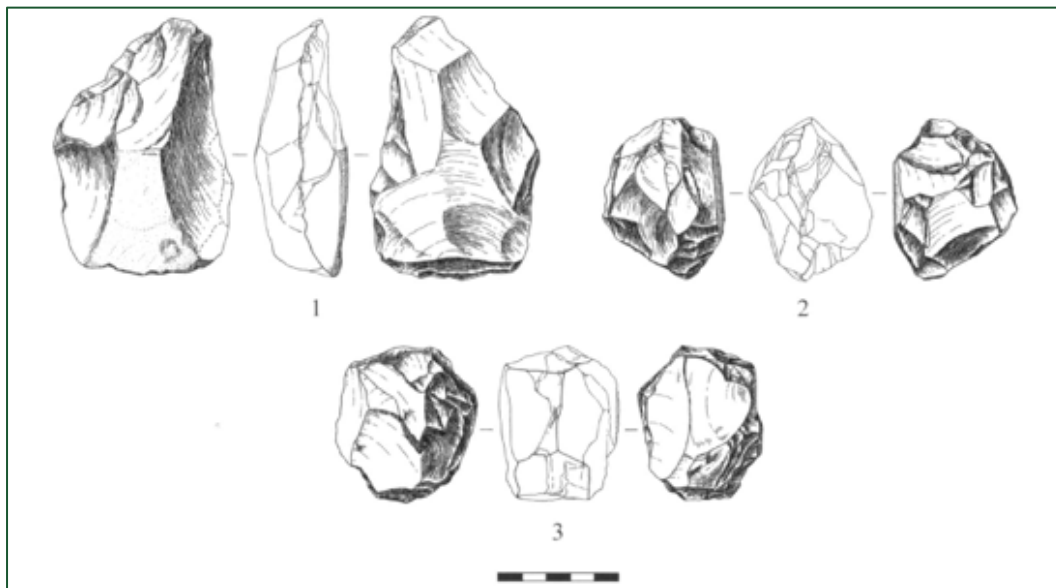


Figure 8. (1) handaxe on flake; (2) thick discoidal core; (3) polyhedral core (Pollarolo, Kuman, Bruxelles, 2010)

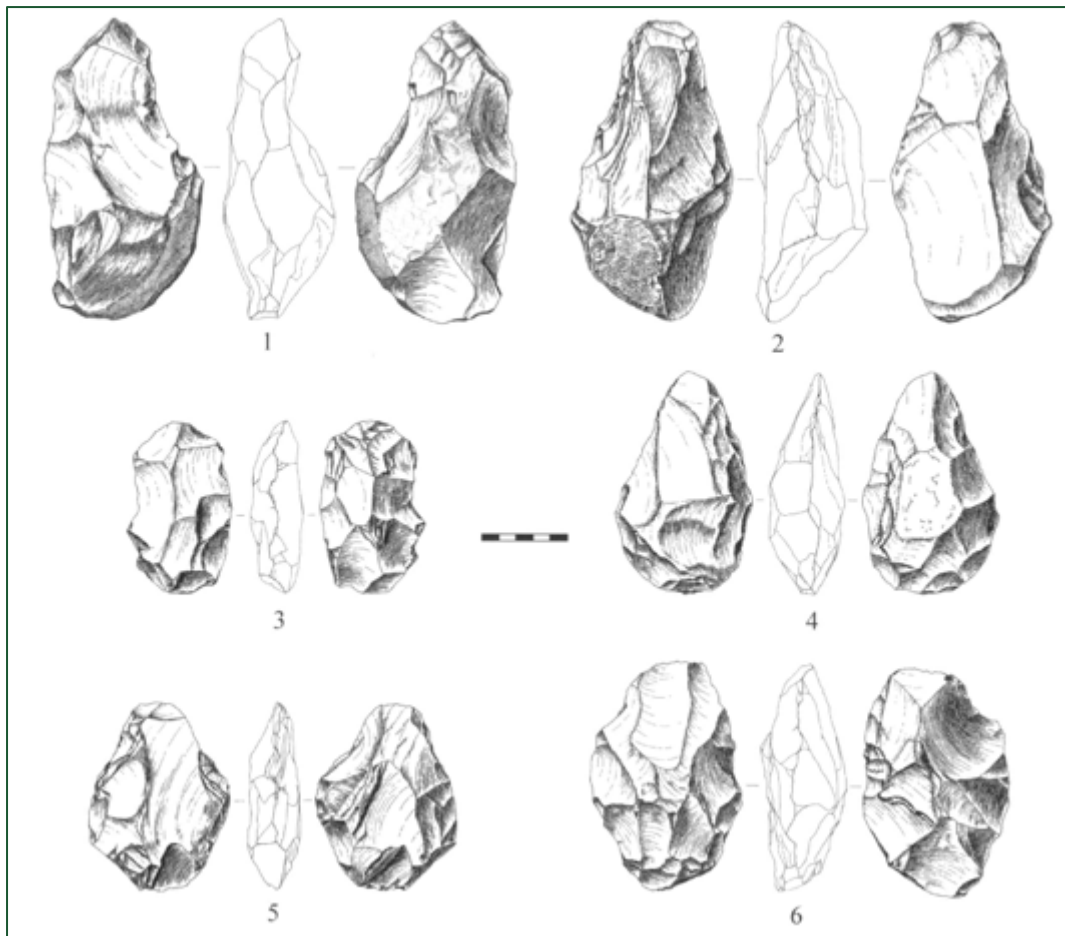


Figure 9. (1,2) Handaxes with large side removal; (3-6) handaxes (Pollarolo, Susino, Kuman, Bruxelles, 2010)

The Late Stone Age, considered to have started some 20 000 years ago, is associated with the predecessors of the San and Khoi Khoi. San hunter-gatherer bands with their small (microlithic) stone tools may have lived in Eastern Gauteng, as a magnificent engraving site near Duncanville attests to their presence in Vereeniging, south of, but close to Ekurhuleni. Stone Age hunter-gatherers lived well into the 19th century in some places in SA but may not have been present in Brakpan when the first European colonists crossed the Vaal River during the early part of the 19th century. Stone Age sites may occur all over the area where an unknown number may have been obliterated by mining activities, urbanization, industrialization, agriculture and other development activities during the past decades (Morris 2004).

## 6.3 Iron Age

The Iron Age as a whole represents the spread of Bantu speaking people and includes both pre-historic and historic periods. It can be divided into three distinct periods:

- Early Iron Age: most of the first millennium AD.
- Middle Iron Age: 10<sup>th</sup> to 13<sup>th</sup> centuries AD.
- Late Iron Age: 14<sup>th</sup> century to colonial periods.

The Iron Age is characterized by the ability of these early people to manipulate and work iron ore. Very few archaeological studies have been conducted in the area, but van der Walt (2012) and van Schalkwyk (2013, 2015) did not find any archaeological sites during their surveys. However, van Schalkwyk (2013, 2015) identified some burial sites in Winterveld.

A considerable number of Late Iron Age, stone walled sites, dating from the 18<sup>th</sup> and the 19<sup>th</sup> centuries (some of which may have been occupied as early as the 16<sup>th</sup> century), occur along and on top of the rocky ridges of the eastern part of the Klipriviersberg towards Alberton. These settlements and features in these

sites, such as huts, were built with dry stone, reed and clay available from the mountain and the Klip River (Mason 1968, 1986).

The Late Iron Age sites within Ekurhuleni's south-eastern border are a 'spill-over' from a larger concentration which are located further towards the west, in the Witwatersrand, while large concentrations of stone walled sites are also located directly to the south of Johannesburg, in the mountainous area around the Suikerbosrand in Heidelberg. The stone walled settlements are concentrated in clusters of sites and sometimes are dispersed over large areas making them vulnerable to developments of various kinds. A site consists of a circular or elliptical outer wall that is composed of a number of scalloped walls facing inwards towards one or more enclosures. Whilst the outer scalloped walls served as dwelling quarters for various family groups, cattle, sheep and goat were stocked in the centrally located enclosures. Huts with clay walls and floors were built inside the dwelling units. Pottery and metal items are common on the sites. However, iron and copper were not produced locally on these sites (Killick 2004).

*Some 100 years earlier, African farmers in the Fokeng cluster built stonewalled settlements in the Tshwane area that emphasised the centre/side axis. From the air, these earlier settlements resemble a 'fried egg'; that is, a smooth outer ring about 60 metres across enclosed in a central cattle byre about 20 metres in diameter. When these early BaFokeng people moved north across the Vaal River, they met the ancestors of Southwest Sotho-Tswana, such as BaRolong and BaThlaping. Their interaction helped to create a new type of stonewalling called Klipriviersburg. Besides Johannesburg, Klipriviersburg walling is also found around Pretoria. All of these people were mixed farmers; that is, they herded cattle as well as sheep and goats, and they cultivated sorghums, millets and various beans and peas. They were also capable of making metal tools and jewellery.*

*The earliest evidence of metal working in the region comes from the site Broederstroom west of Pretoria. Archaeologists have uncovered the remains of at least two stratified villages there that date back to between AD 550 and 700, each with evidence of iron forging. Two major technological steps characterise ancient iron production: smelting and forging. Technically, iron ore is reduced in a furnace to create a bloom. During this smelting process, silica in the host rock melts, flowing off as slag leaving the bloom behind. The bloom has to be forged in an oxidised atmosphere, usually in an open hearth. In both smelting and forging, bellows attached to clay pipes help the operators reach the necessary high temperatures. Culturally, Bantu-speaking people in the recent past compared the smelting process to childbirth, a private and sacred affair. Consequently, the smelter was usually secluded outside the settlement. Forging, in contrast, was comparable to raising the child; and so the forge was located in a public area in the centre of the homestead. The forges at Broederstroom follow this pattern. (<http://www.sahistory.org.za/topic/prehistory-pretoria>)*

### **Melville Koppies**

The granite ridge referred to as Melville Koppies has a rich prehistoric history. The majority of the work done in this area was done during the 1960 by Prof. Reviel Mason. Seen by some as a radical in terms of research methods (he famously used dynamite to excavate the Makapansgat deposits!) he nonetheless was invaluable in raising interest in the prehistory of this area of Johannesburg and was key in the preservation actions taken as a result of his research. Mason believed that "archaeology is not limited to the distant past but recorded wherever human action leaves its mark on the landscape...". He identified eight archaeological sites on what we call Melville Koppies Central:

- Stone Age camps 250 000 and 100 000 years old.
- Ancestral Tswana Iron Furnace 500 years old.
- African Iron Furnace Models.
- A second Tswana Iron Furnace.
- Tswana hut floor and pottery - 300 years old.
- 1880s gold prospecting.
- 1900s gun emplacement.
- Early 1900s quarries.

The Stone Age camps were revealed in the same excavation, in 1963, which uncovered the 100-year-old furnace. The furnace is on a living floor about 50cm below the present ground-level. The 100 000-year-old camp is about a metre below that, and the 250 000-year-old floor another metre below that.

Part of the excavation was filled in on completion. The furnace and small parts of the older living floors are preserved under glass in a shelter near the lecture hut.

The artefacts discovered are housed at the University of the Witwatersrand. The Melville Koppies Reserve have Stone Age artefacts on display, but they are part of a collection donated to them over the years.

Mason's 250 000BP date places these remains in the Middle Stone Age. He himself uses the term "Fauresmith", which is not common parlance today. The tools would have been made by people called "Archaic Homo Sapiens", meaning that they were anatomically similar to modern humans, but the remains they have left do not make it clear whether they were like us in mind and consciousness or not. Their way of life would have been that of hunter-gatherers and scavengers.

The 100 000-year-old evidence is that of fully modern humans. The commonly accepted "out of Africa" theory today proposes that humans left Africa perhaps 80 000 years ago, equipped with the full human "toolkit" - tools, language, art, control of fire, song, and sociability.

The Iron Age evidence is that of a culture which reached the Witwatersrand possibly 500 years ago. The people were the ancestors of the present Tswana population. The knowledge of iron working came from far north in Africa. People with these skills were also part of a culture which combined pastoralism - goats, sheep, and cattle - with agriculture. They farmed sorghum, millet, and legumes.

The community on Melville Koppies probably survived until the turmoil of the 1820s.

Mason proposes that during these years the Melville Koppies settlement was part of a trading network which included communities at Klipriviersberg, Lonehill, Melville Koppies, and the Magaliesberg area.

More agriculturally prosperous, the south (Klipriviersberg) would have traded cattle and grain for iron from the northern Witwatersrand, copper from the Magaliesberg, and specularite from the Boons and Tarlton area. Specularite, Iron Sulphite  $\text{Fe}_2\text{O}_3$ , is a glittering mineral of no value except for body decoration. It also seems that copper was used only as jewellery. Mason describes a burial of a teenage girl at Klipriviersberg who was adorned with copper earrings and iron beads and anklets. The ability to trade for cosmetics and jewellery as far as Melville Koppies and the Magaliesberg tells us that these communities - or at least some of them - were not living in desperate poverty.

Not only the smelting furnace at Melville Koppies, but also the kloof - through which Beyers Naudé Drive now runs - means that it lay on a major trading route. The British regarded the kloof as an important enough access through the Witwatersrand to maintain a gun emplacement on the Koppies during the South African War.

A less noticed heritage on the Melville Koppies is that of the last "Stone Age" peoples. These of course are the San or Khoisan. Mason does not mention the San living floor on Melville Koppies Central. But he does write about the "cave" on Melville Koppies West.

The "cave" is more like a small rock overhang than a cave in the way speleologists think of one. But it was excavated, and in it were found a grooved stone used by the San to shape arrows and to grind ostrich shell beads.

Also found were bones of hunted animals, and a Zebra tooth. The San had a complicated relationship with the iron using pastoralists. There is evidence at Broederstroom that they may have cooperated with the settlement as hunters - for hunting and gathering, not pastoralism and agriculture, was their way of life. But they were possibly also enslaved or killed.

Mason refers to the cave as a "refuge". This is because it is likely that the settlement in the 1820s fled the invasion by Mzilikatsi and some may have used the cave as a temporary hiding place. ([www.mk.org.za](http://www.mk.org.za))

## 6.4 Historic Era

The first inhabitants of this area were Stone Age hunter-gatherers who roamed here some 50 000 years ago. Remnants of their weapons were found in the Rynfield area and near Cranbourne Station many years ago.

The first Voortrekker parties crossed the Vaal River and started occupying the area in the 1830's. Farmers started moving into the area and declared farms for themselves, especially after the signing of the Sand River convention in 1852.

The first major modern settlements in Johannesburg were loosely planned, as they grew up quickly in order to service the need for labour in the gold mines on the Witwatersrand. However, the population of Johannesburg increased rapidly, and the city quickly established formal neighbourhoods, most of which were racially mixed as labourers lived together. The earliest formal settlement to house people of all races, Kliptown, is located near today's Soweto.

The township of Soweto was created in the 1930's when the government separated black and white citizens. Black people were moved out of Johannesburg by using the "Native Urban Areas Act" in 1923. The name of the township derived from a competition initiated by William Carr (Chair of Non-European Affairs) in 1959. The City Council settled on the acronym SOWETO (South-west Townships) in 1963.

Serious riots in 1976 sparked by the ruling that the Afrikaans language be used in African schools, resulted with 176 students killed and more than 1000 injured. Reforms followed, but riots flared up again in 1985 and continued until the first multiracial elections in April of 1994.

## 6.5 Archival Research

Three main sources of information regarding the heritage sensitivity of this area could be identified. These were;

- Scientific publications on heritage related research in the area
- Previous heritage studies in the area as per the SAHRIS database
- Historic maps and figures as available in the National Archive

### Scientific publications

Several publications on heritage related work in this area could be sourced. These include, but are not limited to;

- J. C. Cohn. "The Bead Collection of the Archaeological Survey, Johannesburg." The South African Archaeological Bulletin, vol. 14, no. 54, 1959, pp. 75–78, <https://doi.org/10.2307/3886641>. Accessed 28 Apr. 2022.
- DELMAS, ADRIEN, and PALOMA DE LA PEÑA. "INTRODUCTION: TOWARDS A HISTORY OF ARCHAEOLOGY FROM SOUTH AFRICA." Goodwin Series, vol. 12, 2019, pp. 1–7, <https://www.jstor.org/stable/26643034>. Accessed 28 Apr. 2022.
- NAIDU, SAIREENI LATISHA. "A PRELIMINARY STUDY USING REMOTE SENSING AND GIS TO DETERMINE THE EXTENT OF URBAN EXPANSION OF SOUTHERN JOHANNESBURG AND ITS EFFECT ON IRON AGE STONE-WALLED STRUCTURES." The South African Archaeological Bulletin, vol. 74, no. 211, 2019, pp. 78–86, <https://www.jstor.org/stable/26898146>. Accessed 28 Apr. 2022.
- Partridge, T. C. "A Middle Stone Age and Iron Age Site at Waterval, North West of Johannesburg." The South African Archaeological Bulletin, vol. 19, no. 76, 1964, pp. 102–10, <https://doi.org/10.2307/3888550>. Accessed 28 Apr. 2022.
- Revil J. Mason. "The Excavations of Four Caves near Johannesburg." The South African Archaeological Bulletin, vol. 6, no. 23, 1951, pp. 71–79, <https://doi.org/10.2307/3886752>. Accessed 28 Apr. 2022.
- SADR, KARIM. "THE EFFECT OF URBAN SPRAWL ON ARCHAEOLOGICAL SITES BETWEEN JOHANNESBURG AND THE RIVER VAAL: A GIS STUDY." The South African Archaeological Bulletin, vol. 72, no. 205, 2017, pp. 71–79, <http://www.jstor.org/stable/26407520>. Accessed 28 Apr. 2022.
- SADR, KARIM. "KWENENG: HOW TO LOSE A PRECOLONIAL CITY." The South African Archaeological Bulletin, vol. 74, no. 209, 2019, pp. 56–62

## 6.6 SAHRIS Database Studies

An extensive search into the SAHRIS database resulted in the identification of the following heritage related studies that have been performed over the last decade in the study area. Only studies within a radius of 50km from the study area were considered.

- Van Schalkwyk, J., Naude, M. 2004. Heritage Impact Assessment for the Proposed Waste Blending Project, Roodepoort District, Gauteng.
- Birkholtz, P. 2001. Heritage Impact Assessment Bram Fischerville Ext 7 – Rand Leases Property Development.
- Birkholtz, P. 2006. Phase 1 Heritage Impact Assessment for the Proposed Jameson Field Ext 1 Residential Township Development, Gauteng Province.
- Fourie, W. 2008. Heritage Scoping: Construction of a Flood Attenuation Facility located on Erf 1676, Moroka, Soweto.
- Van Schalkwyk, J. 2003. A Survey of Heritage Resources in the Proposed Dobsonville X9 Development, Dobsonville, Soweto.
- Van Schalkwyk, J. 2003. A Survey of Heritage Resources in the Proposed Naledi Extension 1 Urban Development, Naledi, Soweto.
- Van Schalkwyk, J. 2003. A Survey of Cultural Resources for the Proposed Aeroton Cemetery, Johannesburg.
- Huffman, T. 1997. Archaeological Survey of the Baralink Node Development.
- Fourie, W. 2007. Devland Ext 36 – Proposed Development on Portion 12 of the farm Misgund 322 IQ, Johannesburg, Gauteng Province.
- Van Vollenhoven, A., Pelser, A. 2007. A Report of a Cultural Heritage Impact Assessment on Erf 85, Chamdor, Krugersdorp for the William Tell Practice Baords and Medium Density Manufacturing Plant.
- Pelser, A. 2017. Report on a Desktop Cultural Heritage Assessment for the Proposed Houghton Estate Extension 1 Residential Development Located on the Remaining Extent of Portion 1 of Houghton Estate 56IR, Houghton, Gauteng.
- Van Der Walt, J. 2017. Notification of Intent to Develop for the Proposed Upgrading of Jan Smuts Road to Dual Carriage Way from Northworth Drive to Bolton Road and from 8<sup>th</sup> Avenue to Kent Road, Rosebank, Johannesburg, Gauteng Province.
- Coetzee, F.P. 2016. Cultural Heritage Assessment of the Proposed 37.5 ML Underground Linksfield Reservoir, City of Johannesburg, Gauteng Province.
- Coetzee, F.P. 2015. Cultural Heritage Assessment of the Proposed Construction of the Additional Meredale Reservoir (210 MI) (Eikenhof System), City of Johannesburg Metropolitan Municipality, Gauteng.
- Kusel, U. 2016. Phase 1 Cultural Heritage Resources Impact Assessment for the Proposed Development on Portions of the Klipspruit Township, Nancefield Precint, Soweto, Johannesburg, Gauteng Province.
- Van Ryneveld, K. 2015. HIA – Construction of the Celebration Sewer Pipeline B on Various Agricultural Holdings, North Riding, City of Johannesburg Metropolitan Municipality, Gauteng.
- De Jong, R.C. 2014. Final Heritage Impact Assessment Report Version 3: Proposed Huddle Park Golf Course Development, Johannesburg.
- Kruger, N. 2017. Archeological Impact Assessment (AIA) of areas demarcated for the Proposed Zandspruit Township Establishment on Portions 16, 22, 23, 26, 42, 51, 55, 56, 59, 67, 68, 72, 73, 76, 104, 105, 144 and 160 of the Farm Zandspruit 191-IQ and Holding 43 Sonedal, A.H., City of Johannesburg, Gauteng Province.
- Birkholtz, P. 2015. Proposed Development of the G14 Pipeline by Rand Water: Heritage Impact Assessment for the Proposed Development of the G14 Pipeline between Forest Hill and Turffontein Nek, Southern Johannesburg, Johannesburg Metropolitan Municipality, Gauteng Province.
- Van Schalkwyk, J. 2006. Review of Cultural Heritage Resources in the Modderfontein Area, East of Johannesburg, Gauteng.
- Breetzke, S. 2014. Proposed Alternations and Additions to House Breetzke – Erf 120 & 121 of Forest Town, Gauteng, 5 Cluny Road, Johannesburg.

- Van Schalkwyk, J. 2015. Heritage Impact Assessment for the Proposed Widening of Conrad Drive Bridge and Erosion Protection Measures, Braamfontein Spruit, Blairgowrie, Johannesburg District Municipality, Gauteng Province.

### Relevance of Listed Heritage Studies for the Study Area

Of specific value for this project are the following reports with their findings as listed below.

Birkholtz, P. 2001. Heritage Impact Assessment Bram Fischerville Ext 7 – Rand Leases Property Development.

- One Stone Age site was identified at the coordinates: S26° 11' 19.5" E27° 51' 05.9"

Brikholtz, P. 2006. Phase 1 Heritage Impact Assessment for the Proposed Jameson Field Ext 1 Residential Township Development, Gauteng Province.

- 7 Sites were identified within the study area. Three of which can be associated with the Jameson Raid and Battle (2 January 1896). Three buildings older than 60 years were identified and one cemetery located on site.
- VLK-1. Kraal and Vlaktefontein Monument. (Y: -26.20857, X: 27.807573)
- VLK-2. Tree stump marking the spot where Jameson surrendered to the Boer forces on 2 January 1896. (Y: -26.20732, X: 27.807187)
- VLK-3. Jameson Raid Memorial. (Y: -26.20707, X: 27.806102)
- VLK-4. Waenhuis or Stables older than 60 years. (Y: -26.20757, X: 27.808309)
- VLK-5. Face brick dwelling estimated to have been built between 1935 and 1950. (Y: -26.20763, X: 27.807397)
- VLK-6. Yellow and orange face brick building estimated to have been built between 1930 and 1955. (Y: -26.2076, X: 27.807584).
- VLK-7. Cemetery older than 60 years. (Y: -26.20705, X: 27.802694)

Van Schalkwyk, J. 2003. A Survey of Heritage Resources in the Proposed Naledi Extension 1 Urban Development, Naledi, Soweto.

- One site with two circular stone structures reminds the author of Anglo Boer War blockhouses at the coordinates S26° 15' 39.9" E27° 49' 46.5"

Huffman, T. 1997. Archaeological Survey of the Baralink Node Development

- Site 6: Low stone half circle about 4 x 2 m in diameter was identified on the ridgetop in the centre of the hill. The author associates the site with the Anglo Boer War. No GPS Coordinates are provided in the report.
- Sites 1 to 4: Present day religious sites at the coordinates S26° 16' 30" E27° 56' 20" at Kopje 1.
- Sites 5 to 8: Present day religious sites at the coordinates S26° 16' 00" E27° 55' 15" at Kopje 2.

Van Vollenhoven, A., Pelser, A. 2007. A Report of a Cultural Heritage Impact Assessment on Erf 85, Chamdor, Krugersdorp for the William Tell Practice Boards and Medium Density Manufacturing Plant.

- Five Buildings older than 60 years identified at the coordinates S26° 09' 01" E27° 48' 12"
- One cemetery identified outside the study area. No GPS Coordinates are provided in the report.

## 6.7 Historical Typographical Maps

Especially during the evaluation of historic structures, the use of archived historic maps is very handy. They give a direct chronological reference for such sites and lead the investigation on the ground.

The following historic map sets are relevant for this study (in chronological order).

- 2627BD\_1944
- 2627BD\_1956
- 2627BD\_1976
- 2627BD\_1995
- 2627BD\_2002
- 2627BD\_2007

The historic maps show no heritage significant site indicators within the study area.

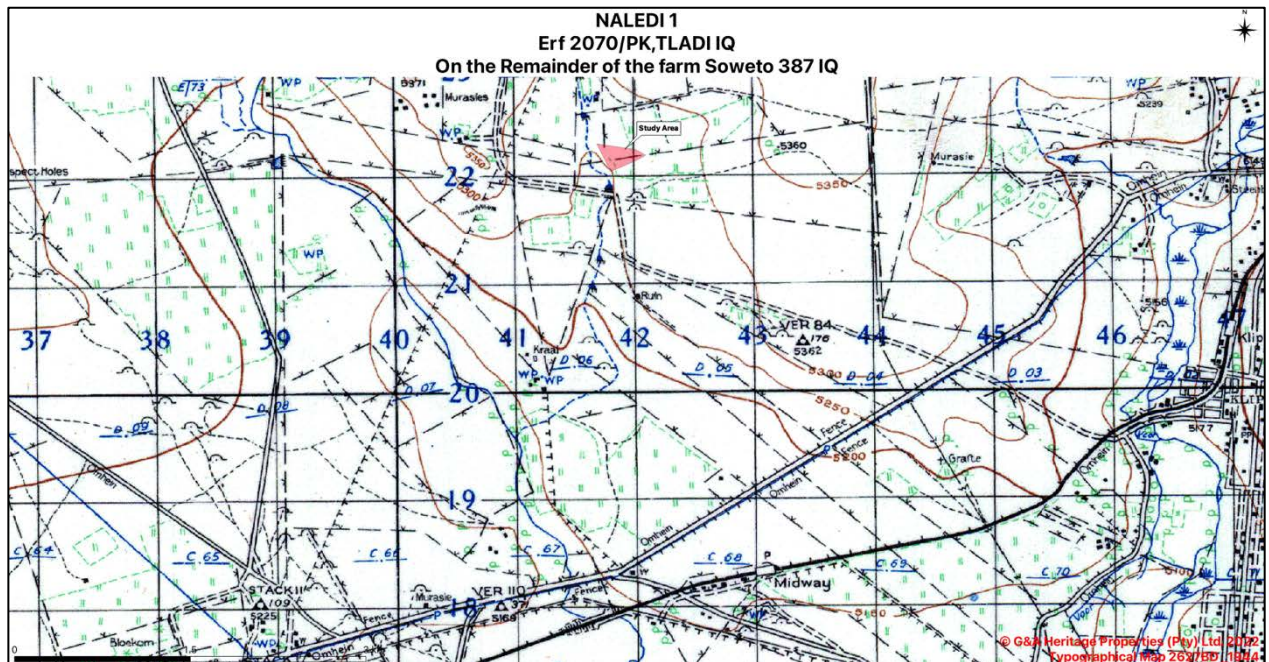


Figure 10. 2627BD\_1944 Topographic Map

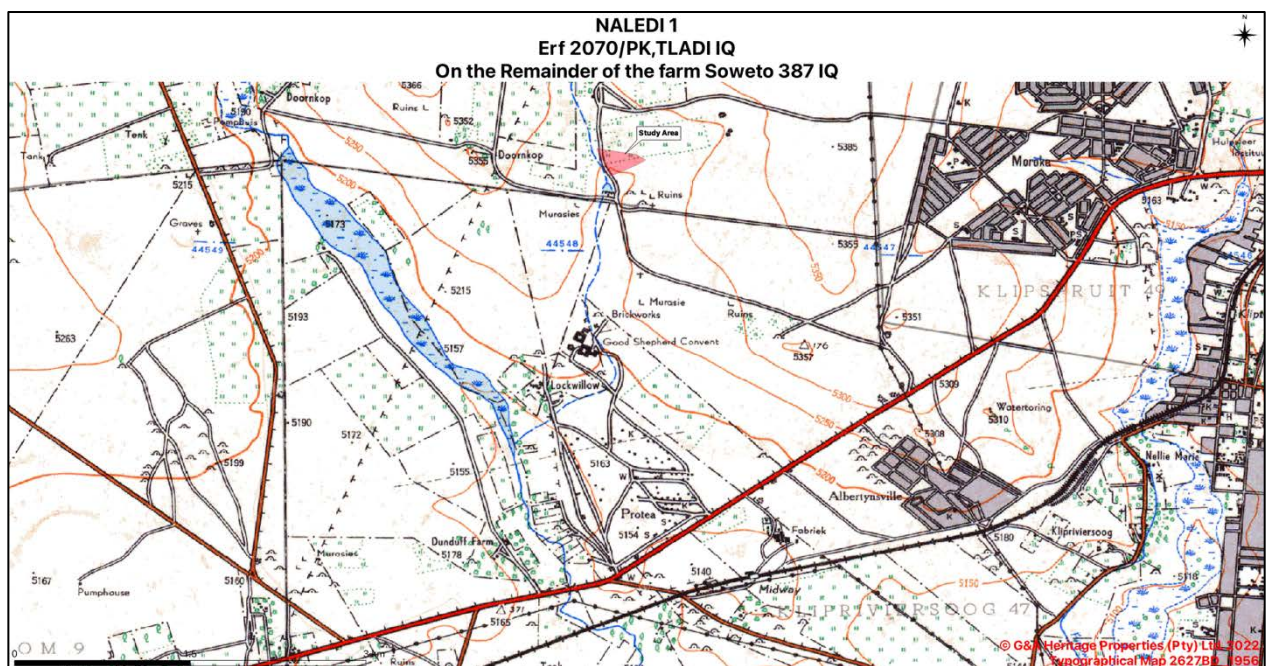


Figure 11. 2627BD\_1956 Topographic Map

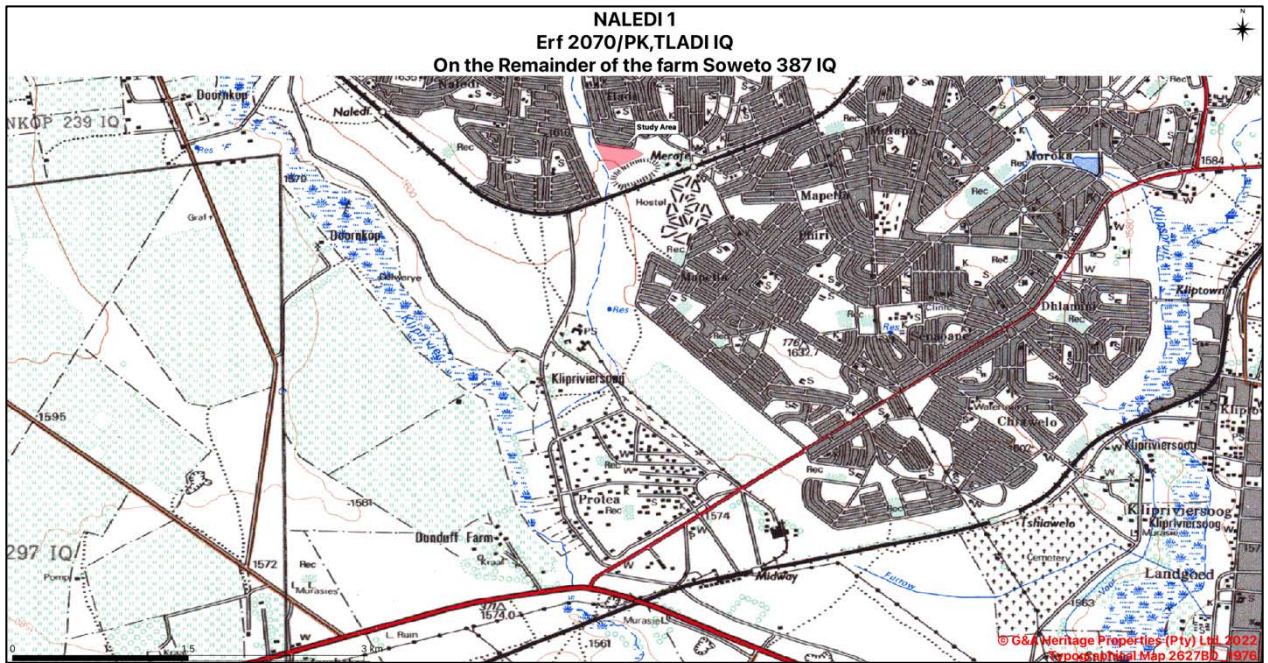


Figure 12. 2627BD\_1976 Topographic Map

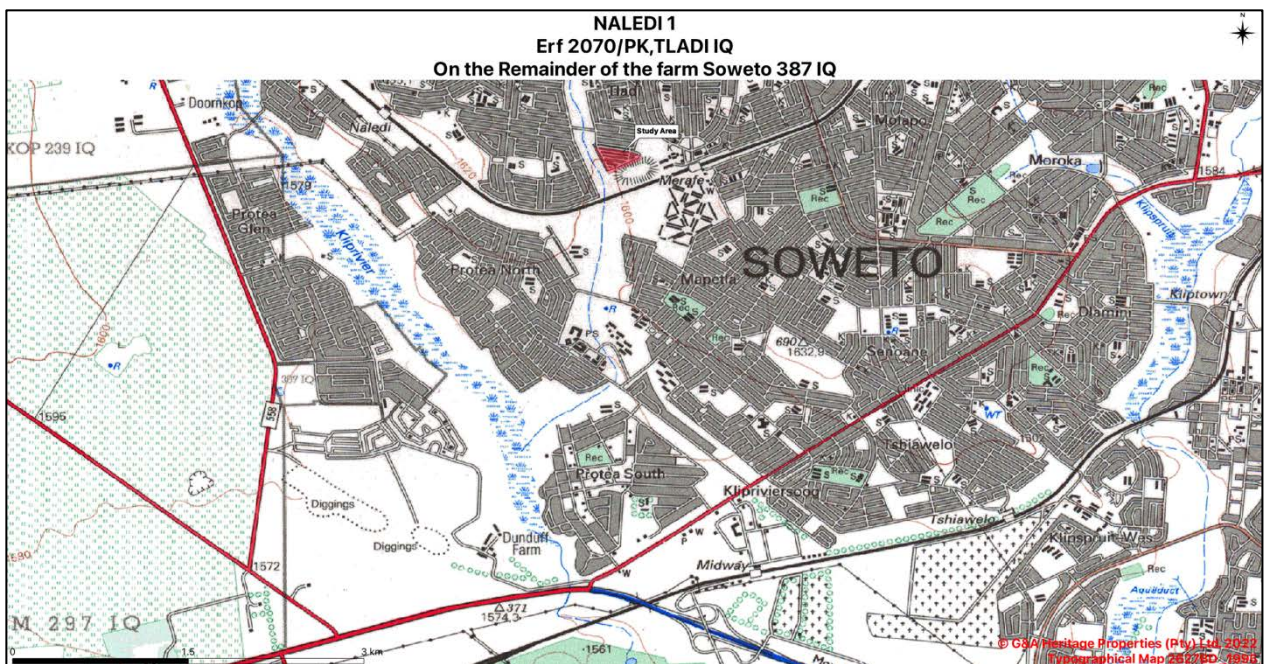


Figure 13. 2627BD\_1995 Topographic Map

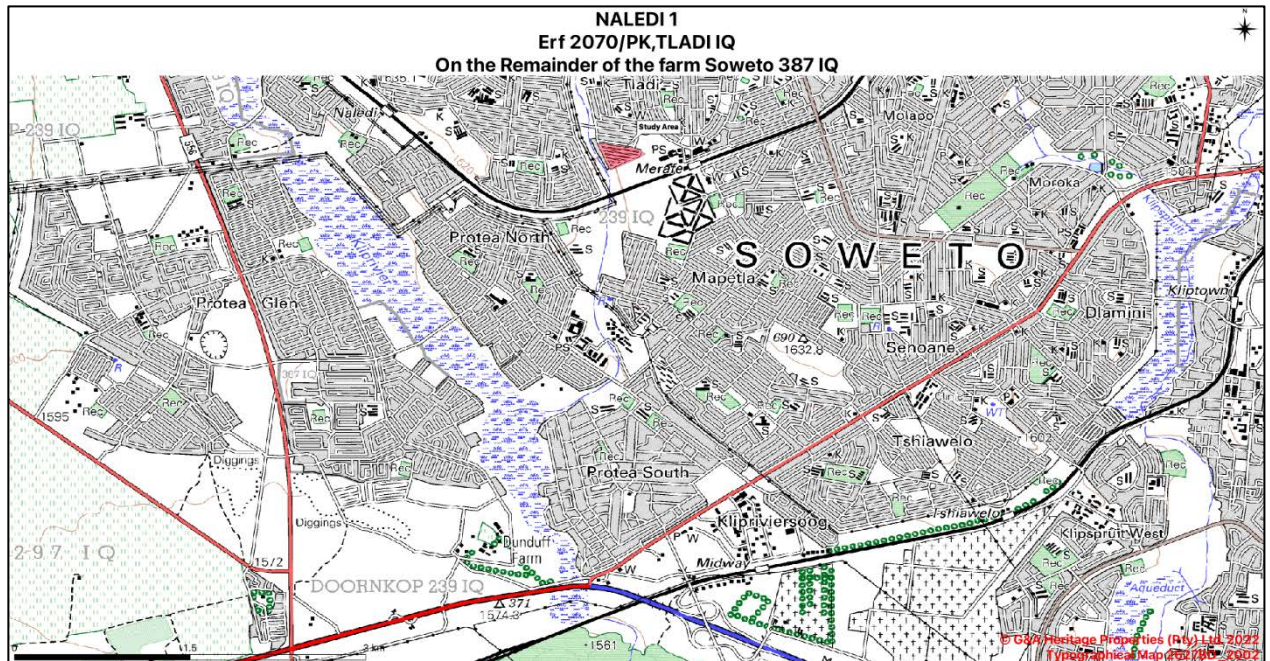


Figure 14. 2627BD\_2002 Topographic Map

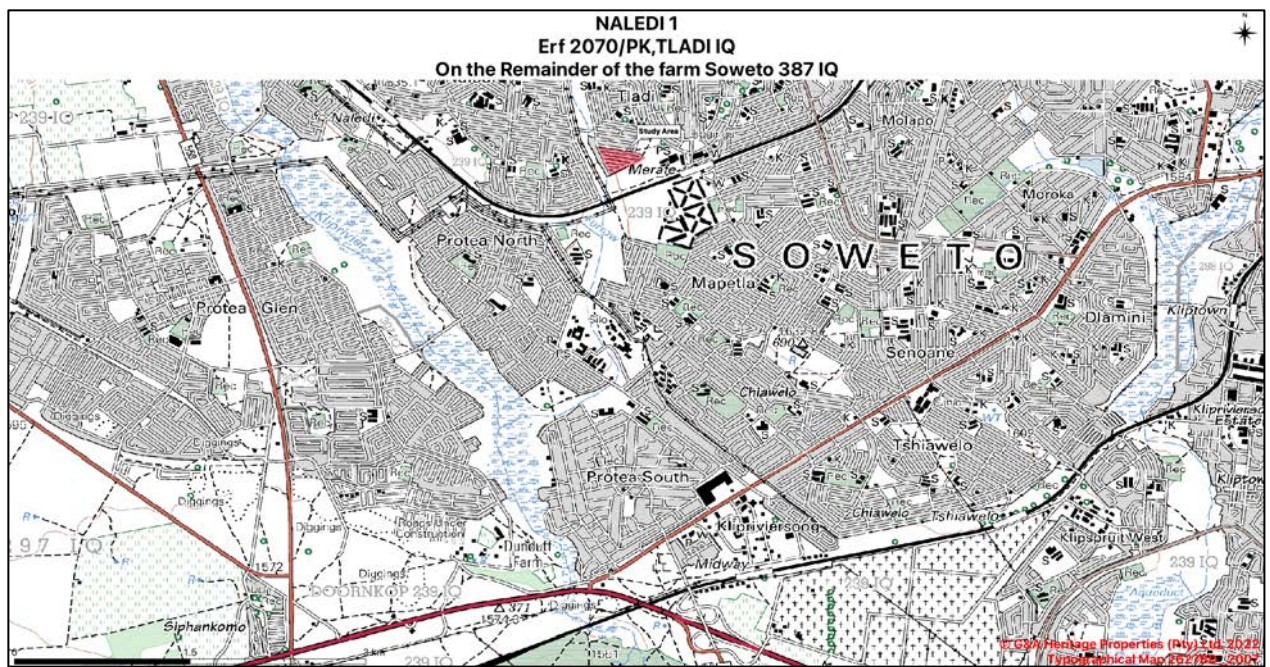


Figure 15. 2627BD\_2007 Topographic Map

## 7. Potential Heritage Impacts and Proposed Mitigation

### Heritage Impact Assessment

#### 7.1 Introduction and scope

This component will evaluate the potential impact that the proposed development could have on heritage sites and objects of community, cultural or scientific value. This includes archaeological, cultural heritage, built heritage and basic paleontological assessments to determine the impacts on heritage resources within the study area.

The scope of work includes:

- Identification and assessment of archaeological, cultural, historic, built and paleontological sites within the study area
- Archival study of existing data and information for the study area
- Site inspection and fieldwork: 28 April 2022. This site work includes communicating with local inhabitants to confirm possible locations of heritage and cultural sites.
- Compilation of a Heritage Impact Assessment (HIA) Report.

## 8. Conclusions and Recommendations

The sites for the project Naledi 1: the proposed residential development on Erf 2070/PK, TLADI IQ on the Remainder of the farm Soweto 387 IQ, within the City of Johannesburg Metropolitan Municipality in the Gauteng Province was investigated during a field visit and through archival studies.

The study area was found to be devoid of any heritage sites with significance and severely altered from the natural landscape. It is recommended that obscured, subterranean sites be managed, if they are encountered.

Provided the recommendations in this report is followed there is no reason, from a heritage point of view, why this development cannot continue.

## 9. Chance Finds Protocol

It is important to note that, although unlikely, sub-surface remains of heritage sites could still be encountered during construction of the project. Such sites would offer no surface indication of their presence due to the high state of alterations in some areas as well as heavy vegetation cover in other areas. The following indicators of unmarked sub-surface sites could be encountered:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate);
- Bone concentrations, either animal or human;
- Ceramic fragments such as pottery shards either historic or pre-contact;
- Stone concentrations of any formal nature.

The following recommendations are given should any sub-surface remains of heritage sites be identified as indicated above:

- All operators of excavation equipment should be made aware of the possibility of the occurrence of sub-surface heritage features and the following procedures should they be encountered.
- All construction in the immediate vicinity (50m radius of the site) should cease.
- The heritage practitioner should be informed as soon as possible.
- Mitigation measures (such as refilling etc.) should not be attempted.
- The area in a 50m radius of the find should be cordoned off with hazard tape.
- Public access should be limited.
- The area should be placed under guard.
- No media statements should be released until such time as the heritage practitioner has had enough time to analyze the finds.

Should any archaeological, palaeontological, or cultural heritage resources, including graves or human remains (as defined and protected by the NRA 1999) be identified during the vegetation cleaning, surface scraping, trenching, excavation or construction phases of the development, it is recommended that the process as described below is followed.

### On-site Reporting Process:

- The identifier should immediately notify his / her supervisor of the find(s).
- The identifier's supervisor should report the incident to the on-site SHE / SHEQ officer within 24 hours of the find(s).
- Should the find(s) relate to human remains, the on-site SHE / SHEQ officer should immediately notify the nearest SAPS station of the find(s).
- The on-site SHE / SHEQ officer should report the find(s) to the appointed ECO / ELO officer within 24 hours after the find(s) was / were reported by the relevant supervisor.
- Within 72 hours of the find(s) being reported to the SHE / SHEQ officer, the ECO / ELO officer should ensure that the find(s) is reported on the SAHRIS Database, and the relevant heritage specialist is contacted to make arrangements for a heritage inspection.
- Should the find(s) relate to human remains, the ECO / ELO officer should ensure that the heritage inspection coincides with the SAPS inspection, to verify if the find(s) is / are of forensic, authentic (informal / older than 60 years) or archaeological (older than 100 years) origin.
- The heritage specialist should compile a heritage site inspection report based on the site-specific findings. The report should make recommendations for the destruction, conservation or mitigation of the find(s) and prescribe a recommended way forward for the development. The report should be submitted to the ECO / ELO officer, who should ensure submission thereof on the SAHRIS database.
- SAHRA / the relevant PHRA will state legal requirements for the development to proceed in the SAHRA / PHRA comments on the heritage inspection report.
- The developer should proceed with implementation of the SAHRA / PHRA comment requirements, which may well stipulate permit specifications to proceed.
  - Should the permit specifications stipulate further Phase 2 archaeological investigations (including grave mitigation), a suitable accredited heritage specialist should be appointed to conduct the work according to the applicable SAHRA / PHRA process.

- The heritage specialist should apply for the permit.
- Upon issue of the SAHRA / PHRA permit, the Phase 2 heritage mitigation program may commence.
- Should the permit specifications stipulate destruction of the find(s) under a SAHRA / PHRA permit, the developer should immediately proceed with the permit application.
- Upon the issue of the SAHRA / PHRA permit, the developer may legally proceed with the destruction of the archaeological, palaeontological or cultural heritage resource(s).
- Upon completion of the Phase 2 heritage mitigation program, the heritage specialist will submit a Phase 2 report to the ECO / ELO officer, who should in turn ensure the submission thereof on the SAHRIS database.
- Report recommendations may include that the remainder of a heritage site be destroyed under a SAHRA / PHRA permit.
- Should the find(s) relate to human remains of forensic origin, the matter will be directly addressed by SAPS. A SAHRA / PHRA permit will not be applicable.

NOTE: the SAHRA / PHRA permit and process requirements relating to the mitigation of human remains requires suitable advertising of the find(s), consultation, mitigation and re-interment / deposition process.

#### Duties of the Supervisor:

1. The supervisor should ensure that all activities in the vicinity of the find(s) are ceased immediately upon the reporting thereof by the identifier.
2. The supervisor should ensure that the location of the find(s) is secured within 24 hours of the reporting thereof by means of a temporary fence allowing for a 5 – 10m heritage conservation buffer zone around the find(s). The temporary conserved area should be sign-posted as a “No Entry – Heritage Site” zone.
3. Where development was impacted on the resource, no attempt should be made to remove artefacts / objects / remains further from their context and should any artefacts / objects / remains that has / have been removed should be collected and placed within the conservation area or kept for safekeeping with the SHE / SHEQ officer.
4. It is imperative that where development has impacted on any archaeological, palaeontological or cultural heritage resources, the context of the find(s) be preserved as much as possible for interpretive and sample testing purposes.
5. The supervisor should record the name, company and capacity of the identifier and compile a brief report describing the events surrounding the find(s).
6. The report should be submitted to the SHE / SHEQ officer at the time of the incident report.

#### Duties of the SHE / SHEQ officer:

1. The SHE / SHEQ officer should ensure that the location of the find(s) is recorded with a GPS. A photographic record of the find(s), including implementation of temporary conservation measures, should be compiled. Where relevant a scale bar, or object that can indicate the scale, should be inserted in the photographs for interpretive purposes.
2. The SHE / SHEQ officer should ensure that the supervisor's report, GPS co-ordinate and photographic record of the find(s) are submitted to the ECO / ELO officer.
3. Should the find(s) relate to human remains, the SHE / SHEQ officer should ensure that the mentioned reporting be made available to the SAPS at the time of the incident report.
4. Any retrieved artefacts / objects / remains should, in consultation with the ECO / ELO officer, be kept in a safe place (preferable on site).

#### Duties of the ECO / ELO officer:

1. The ECO / ELO officer should ensure that the incident is reported on the SAHRIS Database. (The ECO / ELO officer should ensure that he / she is registered on the relevant SAHRIS case with SAHRIS authorship to the case at the time of appointment to enable heritage reporting.)
2. The ECO / ELO officer should ensure that the incident report is forwarded to the heritage specialist for interpretive purposes at his / her soonest opportunity and prior to the heritage site inspection.
3. The ECO / ELO officer should facilitate appointment of the heritage specialist by the developer / construction consultant for the heritage inspection.
4. The ECO / ELO officer should facilitate access by the heritage specialist to any retrieved artefacts / objects / remains that have been kept in safekeeping.

5. Should the find(s) relate to human remains, the SHE / SHEQ officer should facilitate coordination of the heritage site inspection and the SAPS site inspection.
6. The ECO / ELO officer should facilitate heritage reporting and heritage compliance requirements by SAHRA / the relevant PHRA, between the developer / construction consultant, the heritage specialist, the SHE / SHEQ officer (where relevant) and the SAPS (where relevant).

Duties of the Developer / Construction Consultant:

1. The developer / construction consultant should ensure that an adequate heritage contingency budget is accommodated within the project budget to facilitate and streamline the heritage compliance process in the event of identification of incidental archaeological, palaeontological and / or cultural heritage resources during the course of the vegetation cleaning, surface scraping, trenching, excavation or construction phases of the development, when resources not visible at the time of the surface assessment may be exposed.

## 10. References

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