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Phase 1 Heritage Impact Assessment for Green Valley Part of Portion 477 and Portion 484 of the farm Driefontein 85 IR, Ekurhuleni Metropolitan Municipality



Issue date	17 September 2020
Heritage	African Heritage Consultants CC
Developer & Applicant	Balwin Properties Ltd
Environmental Practitioner	Dr Gwen Theron LEAP

Declaration of independence

This report has been compiled by Dr U.S. Küsel and Siegwalt Küsel. We declare that as independent consultants we have no business, financial, personal or other interest in the proposed development project, application or appeal in respect of which we were appointed other than fair remuneration for work performed in connection with the activity or application.

Note that a copy of the report will be lodged with SAHRA as stipulated by the NHRA (Act No. 25 of 1999), Section 38 (particularly subsection 4).



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List of acronyms

AIA	Archaeological Impact Assessment
ASAPA	Association of Southern African Professional Archaeologists
BAR	Basic Assessment Report
BIFs	Banded Ironstone Formations
BP	Before Present
CCS	Cryptocrystalline silicas
CFP	Chance Finds Procedure
CoJ	City of Johannesburg
CRM	Cultural Resources Management
DEA	Department of Environmental Affairs
EAA	Environmental Authorisation Application
EAP	Environmental Assessment Practitioner
EIA(I)	Early Iron Age
ESA	Earlier Stone Age
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
EIA	Environmental Impact Assessment
GIS	Geographic Information System
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HBEIA	Heritage Built Environment Impact Assessment
HMF	Heritage Management Framework
ICOMOS	International Council on Monuments and Sites
LCTs	Large Cutting Tools
LIA	Late Iron Age
LOM	Life of Mine
LSA	Later Stone Age
MPRDA	Mineral and Petroleum Resources Development Act (No. 28 of 2002)
MRA	International Council on Monuments and Sites
MSA	Middle Stone Age
NEMA	National Environmental Management Act (No. 107 of 1998)
NHRA	National Heritage Resources Act (No. 25 of 1999)
OES	Ostrich Eggshell
PHRAs	Provincial Heritage Resources Authorities
SACLAP	South African Council for the Landscape Architectural Profession
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
ToR	Terms of Reference
UDF	Urban Development Framework

1 Executive summary¹

1.1 Purpose

This Phase I Heritage impact Assessment was conducted as part of a NEMA Assessment process for the proposed development of portions of the farm Driefontein 85 Portion 484 IR and a Portion of Portion 377 of Driefontein 85 IR.

African Heritage Consultants CC (Registration No. 2001/077745/23) have been appointed by LEAP Landscape Architects and Environmental Planners to conduct a Phase 1 Cultural Heritage Resources Impact Assessment.

1.2 Findings

No heritage resources were located during the survey.

1.3 Recommendations

There is a medium probability of finding/exposing heritage resources in this locality during the construction phase.

- In the event that any sub-surface heritage resources or graves are unearthed all work has to be stopped until an assessment as to the significance of the site (or material) in question has been made by a heritage practitioner. The finds will need to be reported to SAHRA or an archaeologist. Note that no archaeological material that has been uncovered may be removed. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply. If human remains are uncovered, or previously unknown graves are discovered, a qualified archaeologist needs to be contacted and an evaluation of the finds made. If the remains are to be exhumed and relocated, the relocation procedures as accepted by South African Heritage Resources Agency (SAHRA) need to be followed. This includes

¹ Note that the structure of this report is according to the Minimum Standards for the Archaeological & Palaeontological Components of Impact Assessment Reports as required by SAHRA (2007) and the Draft proposals (2016e).

an extensive social consultation process.

1.4 Stakeholders

This report forms part of the environmental process and water use licence application that will be subject to consultation.

2 Terms of reference

African Heritage Consultants CC (Registration No. 2001/077745/23) have been appointed by LEAP Landscape Architects and Environmental Planners to conduct a Phase 1 Heritage Impact Assessment.

3 Background information on the project

3.1 Project description

This report details the results of the Heritage Impact Assessment conducted on 16 September 2020 for the proposed development of portions of the farm Driefontein 85 Portion 484 IR and A Portion of Portion 377 of Driefontein, 85- IR

Project title	Green Valley Development
1:250 000 Map Sheet	2628
1: 50 000 Map Sheet	Johannesburg 2628AA
Project location	26°11'55.67"S 28°13'33.52"E
Magisterial District	Boksburg
Province	Gauteng Province



Figure 1. *Google Earth map of the study area.*

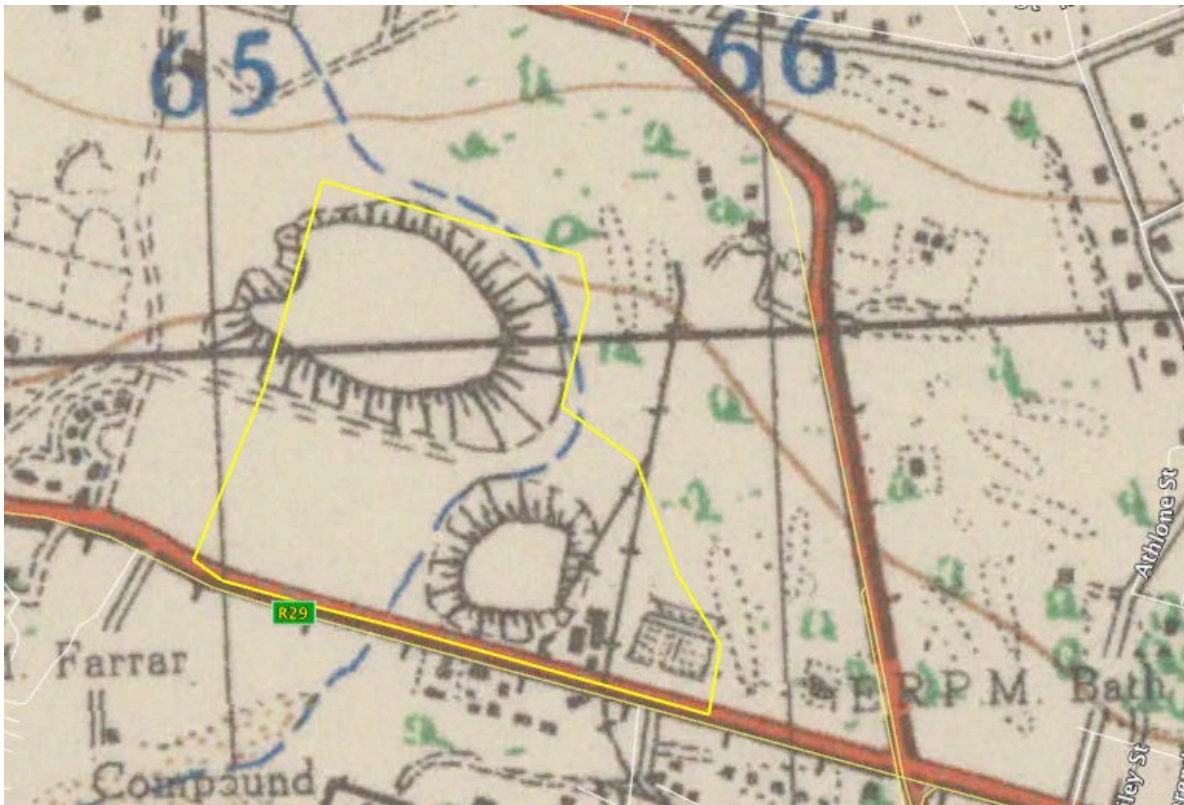


Figure 2. *Excerpt from Topocadastral quad sheet 2628AA Johannesburg 1939 edition 1 showing the study area in yellow*

3.2 Land use

The proposed land use will be residential.

3.3 Whether re-zoning and/or subdivision of land is involved

Rezoning will be required.

3.4 Developer and consultant contact detail

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Date of Report: 18 September 2020

4 Scope and purpose of the report

This report outlines the results of an HIA study conducted for the proposed residential portions of the farm Driefontein 85 Portion 484 IR and a Portion of Portion 377 of Driefontein, 85- IR

The purpose of the Heritage Impact Assessment (HIA) was to identify possible areas of heritage sensitivity and constraints that would affect the proposed development, and to provide assessments and recommendations on the mitigation and management of all documented heritage resources.

The report presents a general background to the project area with reference to the historical context. In addition, it sets out the methodologies that were applied during this particular HIA. The findings of the HIA are discussed, potential impacts are reviewed, and recommendations with regard to mitigation, if applicable, are made.

Note that Annexure B provides a background to the southern African heritage with a brief outline of the chronological succession of the various phases of settlement and also provides context for the known heritage resources of the immediate region.

5 Information on the authors

Dr Udo Küsel has more than 50 years of experience in heritage planning, development and management. From a strategic planning perspective, he was involved in the planning and the declaration of the Robben Island Museum as a National Cultural Institution. He also served as President of the South African Museums Association as well as the South African Cultural History Association. In 2001 he established African Heritage Consultants CC and has undertaken more than 1500 Heritage Impact Assessments and compiled numerous heritage management plans. As consultant he has been involved in the development of the Dzata Museum in Venda, the Tšate Site Museum in Sekhukhune and Thomo Cultural Village near Giyane to name but a few. He also served as a part-time lecturer in Museum and Heritage Studies at Pretoria University for 30 years. More recently he trained 30 unemployed people in Sekhukhune to undertake the recording of the heritage of the area. He supervised the project for three years and recorded 200 heritage sites in the area with the aim to develop the heritage resources of the region.

Siegwalt has been practicing for more than 20 years as both a Landscape Architect and an Archaeologist. He has broad experience in a diverse range of projects from the initial conceptualization through to implementation. He has an extensive working knowledge of the Government and Environmental sectors and development management processes. His in-depth experience in assessment, planning, development and management has led to his involvement in numerous strategic policy and planning formulations in both the public and the private sector. He has a strong bias towards heritage projects, large-scale planning, strategic and community projects. In addition, he has extensive experience as a field archaeologist having been involved in archaeological research, heritage surveys, sensitivity and probability mapping, site development, planning and management throughout his career.

6 Legislative framework

6.1 National Heritage Resource Act (NHRA)

The National Heritage Resources Act (NHRA) (Act No. 25 of 1999) is the primary legislative act dealing with the conservation and management of heritage resources. In brief the Act aims to promote good management of the National Estate, and to enable and encourage communities to nurture and conserve their legacy so that this may be bequeathed to future generations.

The NHRA clearly defines the national estate and sets out principles for the management of heritage resources, determines the constitution, powers, functions and duties of heritage authorities and provides a framework for the enforcement of the Act. All sites, heritage resources and archaeological remains are protected in terms of the National Heritage Resources Act (NHRA) Act No. 25 of 1999:

- All archaeological remains, artefactual features and structures older than 100 years and historical structures older than 60 years are protected by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999, section 35). No archaeological artefact, assemblage or settlement (site) may be moved or destroyed without the necessary approval from the South African Heritage Resources Agency (SAHRA).
- Human remains older than 60 years are protected by the National Heritage Resources Act Section 36. Human remains that are less than 60 years old are protected by the Human Tissue Act (Act 65 of 1983 as amended).

The following sections of the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) must be noted:

In terms of section 3 (1 & 2) of the NHRA, heritage resources of South Africa that are of cultural significance or other special value for the present community and for future generations and are considered part of the national estate and fall within the sphere of operations of heritage resources authorities include:

- (a) places, buildings, structures and equipment of cultural significance;

- (b) places to which oral traditions are attached or which are associated with living heritage;
 - (c) historical settlements and townscapes;
 - (d) landscapes and natural features of cultural significance;
 - (e) geological sites of scientific or cultural importance;
 - (f) archaeological and palaeontological sites;
 - (g) graves and burial grounds, including —
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves of victims of conflict;
 - (iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
 - (h) sites of significance relating to the history of slavery in South Africa;
 - (i) movable objects, including—
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).
- (3) Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—
- (a) its importance in the community, or pattern of South Africa's history;
 - (b) its possession of uncommon, rare or endangered aspects of South Africa's 30 natural or cultural heritage;
 - (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
 - (d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
 - (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
 - (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;

- (g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- (h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- (i) sites of significance relating to the history of slavery in South Africa.

Note that all sites and artefacts associated with the Anglo Boer War are sensitive. It is critical that this information be relayed to visitors, tour operators and private landowners. This message also needs to be reinforced through appropriate signage. From a tourism development and visitor management perspective there are a number of activities that can potentially trigger the need for a permit application or the submission of a Heritage Management Plan to SAHRA.

6.2 Grading and field rating

Section 7 of the NHRA distinguishes between three grades of declared (formally protected) heritage resources.

- National (**Grade I**): Heritage resources with qualities so exceptional that they are of special national significance.
- Provincial (**Grade II**): Heritage resources which, although forming part of the national estate, can be considered to have special qualities that make them significant within the context of a province or a region. All other declared heritage resources in the province are by default Grade II.
- Local (**Grade III**): Other heritage resources worthy of conservation. The Grade III tier is further split into three sub-categories, with IIIa = high, IIIb = medium and IIIc = low local significance (SAHRA 2005/2007, 2016e; Wiltshire 2013: 325).

Grading is intended to allow for the identification of the appropriate level of management for any given heritage resource. Grade I resources are intended to be managed by the national heritage authority. Provincial heritage resources authorities would manage Grade II sites. Grade III resources would be managed by the relevant local planning authority (Wiltshire 2013; Orton 2016). These bodies are responsible for grading, but anyone may make recommendations for grading. Unfortunately, only a few Provincial Heritage Resources

Authorities (PHRAs) are fully functional.

While **grading** is actually the responsibility of the heritage resources authorities, all reports must include **Field Ratings** for the site(s) discussed (proposals for grading), to comply with section 38 of the national legislation (SAHRA Draft Minimum Standards 2016e: 25-26):

- a) **Proposed Field Rating/Grade 1 National Resource:** The site is considered to be of Field Rating/Grade I and must be nominated as such (mention must be made of any relevant international ranking), a protected buffer zone must be proposed, these sites must be maintained *in situ* and a CMP must be recommended for the *in situ* conservation of the site;
- b) **Proposed Field Rating/Grade II Provincial Resource:** The site is considered to be of Field Rating/Grade II and must be nominated as such, a protected buffer zone must be considered, these sites must be maintained *in situ* and a CMP must be recommended for the *in situ* conservation of the site;
- c) **Proposed Field Rating/Grade IIIA Local Resource:** The site must be retained as a heritage register site (High significance) and so mitigation as part of the development process is not advised, a protected buffer zone must be considered, these sites must be maintained *in situ* and a CMP must be recommended for the *in situ* conservation of the site;
- d) **Proposed Field Rating/Grade IIIB Local Resource:** The site could be mitigated and (part) retained as a heritage register site (High/Medium significance). Mitigation of these sites must be subject to a formal permit application process lodged with the relevant heritage resources authority;
- e) **Proposed Field Rating/Grade IIIC Local Resource:** These are sites that have been assigned a Low field rating which, once adequately described in the Phase I Assessment, may be granted destruction authorisation at the discretion of the relevant heritage authority outside of the formal permitting process, (with regard to section 38(8) cases, this will be subject to the granting of the Environmental Authorisation).

6.3 International treaties, conventions and charters

South Africa is signatory to a number of international agreements, which have implications

for heritage conservation and management including the World Heritage Convention that places certain obligation on the state and civil society for the management of heritage resources.

South Africa as a member of the United Nations Organization for Education, Science and Culture (UNESCO) subscribes to and takes part in a number of the subsidiary programs including the International Council of Museums (ICOM), International Committee for Monuments and Sites (ICOMOS) and various other international conservation bodies under the umbrella of UNESCO.

Of these the most important and pertinent is the ICOMOS Charter for the Conservation of Places of Cultural Significance, commonly known as the Burra Charter. First adopted in 1979, with minor revisions made in 1981 and 1988 and more substantial changes in 1999, the Charter remains current with the latest version adopted in October 2013 (Australian ICOMOS Burra Charter 2013). The Charter is considered to be the international blueprint on the conservation of places of cultural significance (Patiwael *et al.* 2018). The Burra Charter accordingly sets the international standard for standard of practice for those who provide advice, make decisions about, or undertake work to places of cultural significance, including owners, managers and custodians (Burra Charter 2013).

7 Description of the property or affected environment

The proposed development is located on portions of the farm Driefontein 85 Portion 484 IR and a Portion of Portion 377 of Driefontein, 85 IR. During the mid-1890s East Rand Proprietary Mines Limited (ERPM) was a main player in the East Rand gold mining. ERPM was formed on 8 May 1893 with George Farrar as chairman and C.S. Goldmann, Lionel Phillips, J.C.A. Henderson and S.W. Jameson as directors (PGS 2011d).

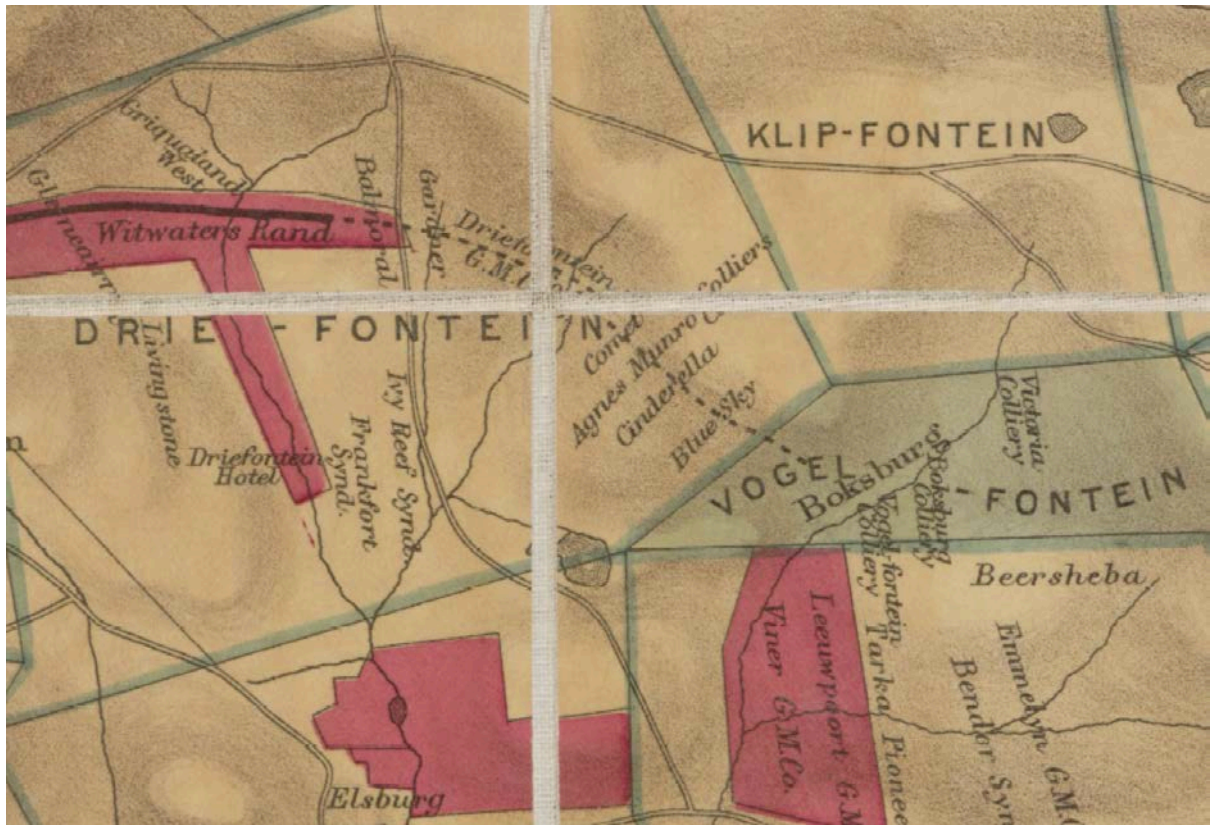


Figure 3. 1890 Witwatersrand Mendelssohn-Troy Map with Driefontein, Comet and Agnes Munro Colliers indicated within the study area.

In the period 1894 to 1895 ERPM focussed on the three gold mining companies Comet, St. Angelo and Driefontein. The current survey area is on the boundary of the Driefontein Consolidated Mines Ltd and Angelo Gold Mining Company Ltd, both registered in 1895.



Figure 4. 1938 Aerial photograph of the study area. Note the presence of several mining and related structures in the bottom righthand side.



Figure 5. 1941 Aerial photograph of the study area. Note the presence of several mining and related structures in the bottom righthand side.



Figure 6. 1968 Aerial photograph of the study area. Note the presence of several mining and related structures in the bottom righthand side.



Figure 7. 1996 Aerial photograph during reprocessing of historical tailings. Note that all structures had been removed.

7.1 Methodology

During the desktop phase a large number of potential sites were identified from the eight topographic 1:50 000 map editions that run from 1939 to 2010, historical aerial photography and a number of other documents that contained data on the history. Prior to the survey all potential sites were mapped from the desktop information and transferred to a GPS so that all the localities likely to have sites could be investigated.

7.2 Surveyed map area

The project site was visited on the 16th of September 2020. All potential areas that could contain heritage features were inspected on foot. The survey area is severely transformed and overgrown. Extensive dumping has occurred over the study area.



Figure 8. Tracks of surveyed area in white.



Figure 9. Extent of fill along the boundary with the golf course.



Figure 10. *Remains of unidentified structures adjacent to the golf course.*



Figure 11. *Remains of former mining infrastructure in the south-eastern corner of the site.*



Figure 12. Selection of firebrick fragments recorded on site. These date from the late 1890s to the 1930s.

7.2.1 Sources of information

7.2.1.1 Desktop study

Prior to conducting the site assessment, a desktop study of existing literature on the wider region was conducted to assess the heritage context. The relevant 1:50 000 topographical map sheet 2628AA Johannesburg was consulted for pointers to possible heritage resources.. The available maps and aerial photographs were scrutinised for any evidence of structural remains, and likely areas for archaeological features and heritage resources.

These maps and photographs included the following:

1:50 000 2628AA Johannesburg 1st edition 1939 and up to 9th edition 2010.

National Geospatial Information Aerial Photograph 1938: 133_012_06130.

National Geospatial Information Aerial Photograph 1941: 162_011_57626.

National Geospatial Information Aerial Photograph 1968: 603_022_08087.

National Geospatial Information Aerial Photograph 1976: 775_003_00305.

National Geospatial Information Aerial Photograph 1996: 989_038_05870.

The SAHRIS data base was also accessed for previous heritage reports that relate to the general region of the survey. The Catalogue of Stone Age artefacts from Southern Africa in

the British Museum is a valuable source too since it lists early collections of stone tools with the localities where these were obtained from (Mitchell 2002b).

7.2.1.2 Historical imagery, maps and the survey

These sources of data were applied to assist the foot site survey. Historical imagery and maps were scrutinised to identify potential sites, areas of disturbance and vegetation anomalies. The available aerial photographs were studied for any evidence of structural remains and also likely areas for archaeological features and heritage resources.

Prior to the field work all maps and diagrams of the proposed development provided by the Client were mapped and plotted on Google Earth and high-resolution aerial imagery and converted to .gpx format. The data were transferred to the mobile App GPS HD (Motion X) to allow for georeferencing during the field survey via Ipad and Iphone. GPS coordinates were recorded with a Garmin e-Trex 30 (Datum WGS84).

During the field survey the locality under review was systematically traversed on foot to ensure a high probability of site recording.

7.3 Constraints

All field surveys are limited to a degree by the available time budget. It is the considered opinion of the authors that sufficient time and efforts were allocated prior to and during the current survey to document possible heritage resources within the study area.

The general archaeological visibility on the site may be regarded good but some areas included extensive dumping.

From the historical maps and images, it is clear that the area was part of a former mining plant and that some structural remains were still present. No structures or sites of significance were located during the survey.

8 Background to the Study Area

8.1 Palaeontological sensitivity



The study area falls into the grey palaeo sensitivity zone and is severely transformed. No palaeontological studies are required.

Colour	Sensitivity	Required Action
Red	Very High	field assessment and protocol for finds is required
Orange/Yellow	High	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
Green	Moderate	desktop study is required
Blue	Low	no palaeontological studies are required however a protocol for finds is required
Grey	Insignificant/Zero	no palaeontological studies are required
White/Clear	Unknown	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 13. Extract from the palaeo sensitivity map indicating that the study area is within the grey zone where no studies are required (<https://sahris.sahra.org.za/map/palaeo>).

9 Heritage context based on previous impact assessments in the general region

Archaeological Impact Assessments (AIAs), Heritage Impact Assessments (HIAs) and academic publications on the prehistory and historical period generated a data base for the heritage resources of the Gauteng Province. These sources demonstrated a diverse cultural landscape with settlement and utilisation of the local resources starting from the deep past over a period of time that spans millions of years up to recent times. It documents the earliest occupations of hominins, Stone Age settlement, migrations of African farmers and subsequently the movement of white farmers into the region, mining, industrialization, urbanization, warfare and conflict. Please refer to Annexure A for an overview of the southern African cultural succession and a brief synthesis of the archaeological and other heritage resources that could be present within the study region.

Some of the more recent archaeological and heritage surveys previously conducted in the general region to record and mitigate heritage resources prior to development were consulted on the SAHRIS data base (September 2020).

The majority of impact assessments pointed out that the absence of heritage resources can be ascribed to the extensive agricultural, mining and industrial activities that have been carried out within the general region.

The following is a synopsis of some of the more recent HIAs and AIAs conducted around the study area.

2020

A report (Paleo Field Services 2020) on a Phase 1 HIA regarding a 24G application for an existing toll blending plant in Anderbolt, Boksburg, describes the area as highly degraded and with no underlying palaeontologically significant sediments or fossiliferous rocks.

2019

In a survey for the Airports Company South Africa (ACSA) proposed filling station on Jones Road, Ekurhuleni Metropolitan Municipality, no heritage resources were found to be present

in what is now highly disturbed environment (Environmental Management Programme: Airports Company South Africa (ACSA) 2017; Raath 2019).

2018

Gaigher (2018a) undertook an HIA based on archival research for the proposed establishment of the residential township Henville Extension 29, on the Remaining Extent of Portion 40, Farm Rietfontein 63 IR in the Ekurhuleni Metropolitan Municipality. No significant heritage resources were identified.

In another HIA for the proposed residential township Leachville Extension 2, situated on Portion 148 of the Farm Rietfontein 115 IR, no heritage resources or the remains of mining infrastructure were found.

Coetzee (2018) in a Phase 1 investigation for the proposed rehabilitation of the Boksburg Lake noted that no historical or archaeological structures, features, assemblages or artefacts were recorded during the survey.

Theron (2018) in a report for the Comet Extension 17 (Comet Village) – Township Establishment located on the farm Driefontein 85 IR, Ekurhuleni, remarked that the archaeological assessment found no sites or significant archaeological material. The scope of work of the Phase 1 comprised a heritage evaluation of the old ERPM mine town in Boksburg. The proposed development comprises the building of approximately 4000 new residential dwellings within the old ERPM Mine Village in Boksburg. The area was demarcated into three precincts (see Van der Walt, Birkholtz, & Naude 2012 & Theron 2018: 7-8 for detail). Appropriate mitigation measures were proposed that included identification and recording of all the significant features, finishes, fittings and contents in the existing buildings, assessment of their vulnerability during construction and various schedules for protection measures. (Also see previous reports by PGS 2011d; Van der Walt, Birkholtz, & Naude 2012).

2017

Coetzee (2017) undertook a Cultural Heritage Impact Assessment phase 1 investigation for an EIA for the proposed construction of an entertainment area and related infrastructure on Part

of Portion 477 and Portion 484 of the farm Driefontein near Muldersdrift. He recorded two sites: the first is a possible prospecting site and the other a historical stone-walled livestock enclosure.

Jaco van der Walt of HCAC (2017) undertook an HIA for the proposed expansion by the Mthunzi Chicken Supplier on Plot 62, Diana Road, Mapleton, in Ekurhuleni. No archaeological sites or heritage resources were identified.

In a follow-up of an HIA conducted by PGS (2011c), Botes-Marais (2017) revisited the heritage resources as identified since the residential development would impact on them, with the exception of the locality of the Black Concentration Camp.

2016

In view of the proposed attenuation pond and stormwater network to improve the current stormwater management in the Witfield area, the locality was surveyed for heritage resources (Van Schalkwyk 2016). A Palaeontological Impact Assessment was also undertaken (Bamford 2016). The area has been highly disturbed by agriculture activities, other developments and periodic flooding. No heritage resources were found.

2015

A final HIA report for two proposed township developments (Boksburg West Ext. 7 & Liliantion Ext. 7) on portions 410 and 411 of the farm Driefontein 85 IR, Boksburg, Gauteng for application for alterations and demolitions was undertaken by Pelsler (2015). Two houses and related structures of historical significance were recorded.

Higgitt and Nel (2015) in a prospecting right and environmental authorisation application for the 4L40 Slimes Dam on R/E Driefontein 85 IR, found no archaeological or heritage sites. in the project area. The geotechnical report noted that the underlying geological formations that comprise the Johannesburg and Turffontein Subgroups of the Witswatersrand Supergroup and the Dwyka Formation are assigned a low to insignificant palaeontological sensitivity.

2014

Digby Wells (2014) conducted a basic assessment for the construction of a pipeline associated with the Rondebult Wastewater Treatment Plant. The impacted localities were Klippoortjie 132 IR, Klippoortjie 110 IR, Leeuwpoort 113 IR and Rondebult 136 IR. The authors noted that the proposed pipeline will have limited and short-term impacts and that the environment has been heavily disturbed through historic mining, agricultural activities and urban development. No heritage resources were identified. Based on the findings from this study, it is unlikely that any heritage resources will remain in the area proposed for the routing of the pipeline.

2013

A Phase 1 HIA for the proposed replacement of J8 Shamrock Road-Leeuwpoort Pipeline noted the absence of heritage resources within the pipeline route. A run-down structure, historical building and a cemetery were found in close proximity of the pipeline (Mngomezulu 2013).

2012

A Phase 1 HIA for the proposed development of the ERPM Mine Village, Boksburg, was conducted (Van der Walt, Birkholtz & Naude 2012). No heritage resources were identified in the heavily disturbed area where historical mining, agricultural activities and urban development took place. The authors noted that the study area is extensively developed and has numerous derelict buildings related to the historic mining village of the East Rand Proprietary Mines. The study area was divided into three precincts. The Built Environment features of the mining village were documented. Recommendations on the conservation of the architectural significance of the mine village were made. The mining village is older than 100 years and while the buildings are derelict, the village is defined as 'archaeological' according to the Definitions (Section 2) of the National Heritage Resources Act (No. 25 of 1999) and therefore comments and possible future permitting must be obtained from the SAHRA APM Unit (SAHRA 2013).

Index (2012) provides background information for the proposed township development on Portions 397 and 399 of the farm Driefontein 85 IR, Ekurhuleni Metropolitan Municipality where Business Venture Inv. 1103 (Pty) Ltd intends to develop a high-density residential

township. There is a low probability that any heritage resources remain on the land in view of past extensive mining activities.

2011

Archaetnos (2011) conducted a Phase 1 AIA for the rehabilitation of the Libradene Wetland in Boksburg. The property is within the Upper Vaal Water Management Area, and specifically the Natalspruit quaternary catchment on the upper reaches of the Elsburgspruit, a tributary of Natalspruit. The area has been extensively disturbed by residential developments. No heritage resources were identified. In view of the sensitivity of the wetland, various mitigation measures were proposed.

PGS (2011a) conducted a Phase 1 HIA for the proposed development of Farrar Park Ext. 1 Boksburg. An archival and historical study revealed buildings associated with the East Rand Yacht Club as well as a pipeline. The field survey recorded five buildings. No mitigation measures were required for any of the recorded sites.

A subsequent Phase 1 HIA for the proposed development of Farrar Park Ext. 2 Boksburg by PGS (2011b) identified two poorly preserved structures during the field survey. Mitigation measures for Site 1 were proposed.

PGS (2011c) conducted a Phase 1 HIA for the proposed Leeuwpoort North Development on the Remainder of Portion 51 and 52 as well as Portion 2 of Portion 22 of the Farm Leeuwpoort 113 IR. Eight heritage sites were identified, numbered from LPT-1 to LPT-8 in their report. These included the remains of mining, a missionary structure, a hospital and concentration camps.

PGS (2011d) were appointed to undertake a Phase 1 HIA for a proposed light industrial development known as Comet Ext. 14. The proposed development is located on Portion 403 of the farm Driefontein 85 IR, Boksburg, Ekurhuleni Metropolitan Municipality. The area was significant in the operation of the ERPM, which was in the past one of the largest gold mines. They conducted a detailed archival and historical study in view of the historical importance of the remains of the mining infrastructure. The Central Workshops and Main Stores of the

ERPM Mine located in the immediate area had been in use for more than 100 years. Boksburg developed from the mining ventures. They recorded 48 buildings (8 older than 100 years, 19 older than 60 years and 21 buildings younger than 60 years); several closed mineshafts; the remains of the former railway network; and a historical midden from the late 1890s. They recommended appropriate mitigation measures (see PGS 2011d for a synthesis of the mining developments and infrastructure and an illustrated inventory).

2008

Prins (2008) in a Cultural HIA of Delmore Park, Extension 7 and associated infrastructure reported an absence of heritage resources in what is currently a highly disturbed area.

10 Findings

10.1 Infrastructure and other buildings

Despite the representative local history of the immediate region no heritage or archaeological resources were identified during the desktop study or the field assessment.

11 Assumptions and limitations

The field study surveyed the surface only, a procedure that cannot locate buried archaeological and/or palaeontological sites. While not detracting by any means from the extensiveness of the fieldwork undertaken by the authors, it is necessary to point out that heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors may account for this, such as ephemeral indications of graves, dense vegetation cover in some parts of the surveyed area, and the subterranean nature of certain archaeological sites that are buried through sediment accumulations.

12 Conclusions and recommendations

12.1 Recommendations

No heritage resources were identified from the desktop study or recorded during the field survey.

From a heritage perspective it is subsequently recommended that the proposed development may proceed.

12.2 Possible finds emanating from the development

There is a medium probability of finding/exposing heritage resources during the construction phase.

- In the event that any sub-surface heritage resources or graves are unearthed all work has to be stopped until an assessment as to the significance of the site (or material) in question has been made by a heritage practitioner. Note that no archaeological material that has been uncovered may be removed. This applies to graves and cemeteries as well. In the event that any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply. If human remains are uncovered, or previously unknown graves are discovered, a qualified archaeologist needs to be contacted and an evaluation of the finds made. If the remains are to be exhumed and relocated, the relocation procedures as accepted by SAHRA need to be followed. This includes an extensive social consultation process.
- If any archaeological material is uncovered during the course of development, then work in the immediate area should cease. The find will need to be reported to SAHRA or an archaeologist.

13 References

Archaetnos Culture & Cultural Resource Consultants. 2011. A Phase 1 Archaeological Impact Assessment for the rehabilitation of the Libradene Wetland in Boksburg, Gauteng Province. For: DWV Environmental Consulting.

Archaetnos Culture & Cultural Resource Consultants. 2012. A Phase 1 Archaeological Impact Assessment for the rehabilitation of the Boksburg Lake downstream wetland in Boksburg, Gauteng Province. For: DWV Environmental Consulting.

Bamford, M. 2016. Palaeontological Impact Assessment for the proposed Witfield stormwater management project, Gauteng Province.

Barham, L. & Mitchell, P. 2008. *The First Africans. African Archaeology from the Earliest Toolmakers to most Recent Foragers*. Cambridge: Cambridge University Press.

Brill, F. & Reboredo, R. 2018. Failed fantasies in a South African context: the case of Modderfontein, Johannesburg. *Urban Forum* 30: 171–189. <https://doi.org/10.1007/s12132-018-9348-1>.

Behrens, J. 1999. Ethnic Identity and Process: European Migrant Workers at Modderfontein Dynamite Factory. Unpublished MA, University of the Witwatersrand.

Behrens, J. 2004. Navigating the Liminal. An Archaeological Perspective on South African Industrialisation. In: Lane, P. & Reid, A. (eds) *African Historical Archaeologies*. New York: Plenum Press.

Behrens, J. 2005. The dynamite factory: an industrial landscape in late-Nineteenth-century South Africa. *Historical Archaeology* 39(3): 61-74.

Bergh, J.S. (red.). 1999. *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Pretoria: J.L. van Schaik.

Boeyens, J. & Hall, S. 2009. Tlokwa oral traditions and the interface between history and archaeology at Marothodi. *South African Historical Journal* 61(3): 457-481, DOI: 0.1080/02582470903189717.

Coetzee, F.P. 2017. Cultural Heritage Impact Assessment: Phase 1 investigation for an Environmental Impact Assessment for the proposed construction of an entertainment area, chalets, camps, cultural huts, septic tank and restaurant on the farm Driefontein 179, Portion 90, Muldersdrift, Mogale City Local Municipality, West Rand District Municipality, Gauteng Province. For: GKM Consulting (Pty) Ltd.

Coetzee, F.P. 2018. Cultural Heritage Impact Assessment: Phase 1 Investigation for the Proposed Rehabilitation of the Boksburg Lake, Ekurhuleni Metropolitan Municipality, Gauteng. For: SRK Consulting (South Africa) (Pty) Ltd.

Cartwright, A.P. 1964. *The Dynamite Company: the Story of African Explosives and Chemical Industries*. Johannesburg: Purnell & Sons (S.A.).

Colman, M. 2019. Frankenwald Booklet. *Contested Land. The story of Frankenwald*. Johannesburg: Cullen Library, Wits University.

Davey, J. 2012. The Dynamite Press. A Publishing House and Book Village in a Historical and Industrial Precinct (Modderfontein) in northeast Johannesburg. Unpublished MA Architecture, U.P.

Deacon, H.J. 1972. A review of the Post-Pleistocene in South Africa. *South African Archaeological Society Goodwin Series* 1: 26-45.

Deacon, H.J. & Deacon, J. 1999. *Human Beginnings in South Africa*. Cape Town: David Phillips.

Digby Wells Environmental. 2014. Basic assessment for the construction of a pipeline associated with the Rondebult Wastewater Treatment Plant. Prepared for: Ergo Mining (Pty) Ltd.

Environmental Management Programme: Airports Company South Africa (ACSA). 2017. Proposed Filling Station on Jones Road, Ekurhuleni Metropolitan Municipality, EOH Coastal & Environmental Services.

Gaigher, S. 2018a. Heritage Impact Assessment for the proposed establishment of a residential township, to be called Henville Extension 29, on Remaining Extent of Portion 40, Farm Rietfontein 63 IR in the Ekurhuleni Metropolitan Municipality, Gauteng Province.

Gaigher, S. 2018b. Heritage Impact Assessment for the proposed residential township, Leachville Extension 2, situated on Portion 148 of the Farm Rietfontein 115 IR, in the Ekurhuleni Metropolitan Municipality, Gauteng Province.

Hall, S.L. 2012. Identity and political centralisation in the western regions of Highveld, c. 1770–c.1830: An archaeological perspective. *Journal of Southern African Studies* 38 (2): 301-308. Special issue: rethinking South Africa's Past. Essays on history and archaeology.

Higgitt, N. & Nel, J. June 2015. Prospecting right and environmental authorisation application for the 4L40 Slimes Dam on R/E Driefontein 85 IR.

Huffman, T.N. 2007. *Handbook to the Iron Age: The Archaeology of pre-Colonial Farming Societies in Southern Africa*. University of KwaZulu-Natal Press, Scottsville.

Huffman, T.N. 2009. Heritage Assessment for the Modderfontein Project Gauteng. A Phase I report prepared for Seaton Thompson & Associates.

Index. 2012. Proposed township development on Portion 397 and 399 of the farm Driefontein 85 IR, Ekurhuleni Metropolitan Municipality. Environmental Impact Assessment Process.

Jeppe, F. 1899. *Jeppe's Map of the Transvaal*. London: Edward Stanford.

Jurmain, R., Kilgore, L. & Trevathan, W. 2013. *Physical Anthropology. The Essentials*. 9th ed. Wadsworth Cengage Learning.

Lombard, M., Wadley, L., Deacon, J., Wurz, S., Parsons, I., Mohapi, M. Swart, J. & Mitchell, P. 2012. South African and Lesotho Stone Age sequence updated. *South African Archaeological Bulletin* 67: 123-144.

Marais-Botes, L. 2017. Follow-up Phase 1 Heritage Impact Assessment (HIA) for the proposed Parkdene X 7 mixed use development on part of the remaining extent of the farm Leeuwoort IR, Boksburg, Ekurhuleni Metropolitan Municipality, Gauteng Province. For: Bokamoso Landscape Architects & Environmental Consultants.

Mason, R. 1962. *Prehistory of the Transvaal*. Johannesburg: Witwatersrand University Press.

Mason, R.J. 1968. Transvaal and Natal Iron Age settlement revealed by aerial photography and excavation. *African Studies* 27(4): 167-180, DOI: 10.1080/00020186808707294.

Mason, R.J. 1986. *Origins of Black People of Johannesburg and the SOUTHERN WESTERN CENTRAL Transvaal, AD 350–1880*. Johannesburg. University of the Witwatersrand Archaeological Research Unit, Occasional Paper 16.

Mason R.J. 1988. *Kruger Cave Late Stone Age, Magaliesberg*. Johannesburg. University of the Witwatersrand Archaeological Research Unit, Occasional Paper 18.

McCarthy, T.S. & Rubidge, B.S. 2005. *The Story of Earth and Life – a southern African Perspective on the 4.6 Billion Year Journey*. Cape Town: Struik.

Mitchell, P.J. 2002a. *The Archaeology of southern Africa*. Cambridge: Cambridge University Press.

Mitchell, P.J. 2002b. *Catalogue of Stone Age Artefacts from southern Africa in the British Museum*. The British Museum Occasional Paper 108. London: The British Museum.

Mngomezulu, M. 2013. Phase 1 Heritage Impact Assessment for the proposed replacement of J8 Shamrock Road-Leeuwoort Pipeline. Prepared for Rand Water.

Mucina, L. & Rutherford, M.C. 2006. *The Vegetation Map of South Africa, Lesotho and Swaziland*. Pretoria: SANBI.

Orton, J. 2016. Scoping Heritage Impact Assessment for the proposed Hotazel Solar Farm, Kuruman Magisterial District, Northern Cape. Unpublished report for: Aurecon South Africa (Pty) Ltd.

Paleo Field Services. 2020. Phase 1 Heritage Impact Assessment with regards to a 24G application for an existing toll blending plant located in Anderbolt, Boksburg, Gauteng Province.

Patiwael, P.R., Groote, P. & Vanlay, F. 2018. Improving heritage impact assessment: an analytical critique of the ICOMOS guidelines. *International Journal of Heritage Studies*, DOI: 10.1080/13527258.2018.1477057.

Pelser, A. 2015. Final HIA report for proposed township developments (Boksburg West Ext.7 & Liliantion Ext.7) located on Portions 410 & 411 Of The Farm Driefontein 85 IR, Boksburg, Gauteng for application for alterations and demolitions.

PGS Heritage and Grave Relocation Consultants. 2011a. Phase 1 Heritage Impact Assessment: Proposed Development of Farrar Park Ext. 1 Boksburg, Ekurhuleni Metropolitan Municipality, Gauteng Province. Unpublished report (SAHRIS Case ID: 362).

PGS Heritage and Grave Relocation Consultants. 2011b. Phase 1 Heritage Impact Assessment: Proposed Development of Farrar Park Ext. 1 Boksburg, Ekurhuleni Metropolitan Municipality, Gauteng Province. Unpublished report.

PGS Heritage and Grave Relocation Consultants. 2011c. Phase 1 Heritage Impact assessment for the proposed Leeuwpoort North Development on Remainder, Remainder of Portion 51 and 52 as well as Portion 2 of Portion 22 of the Farm Leeuwpoort 113 IR.

PGS Heritage and Grave Relocation Consultants. 2011d. Phase 1 Heritage Impact Assessment: Proposed Comet Extension 14 Development Located on Portion 43 of the Farm Driefontein 85 IR, Boksburg, Ekurhuleni Metropolitan Municipality, Gauteng Province. Appointed by Marsh (Pty) Ltd

Prins, F. 2008. Cultural Heritage Impact Assessment of Delmore Park, Extension 7 Development.

Raath, G. 2019. Airports Company South Africa (ACSA) proposed filling station on Jones Road, Ekurhuleni Metropolitan Municipality.

Sadr, K. 2012. The origins and spread of dry laid, stone-walled architecture in pre-colonial Southern Africa. *Journal of Southern African Studies* 38(2): 257-263, DOI: 10.1080/03057070.2012.683697.

SAHRA. 1999. *National Heritage Resources Act No. 25 of 1999*. Cape Town: RSA Government Gazette.

SAHRA. 2005/2007. *Minimum STANDARDS for the Archaeological and the Palaeontological Components of Impact Assessment Reports*.

SAHRA. 2012. Driefontein 85 IR BID. Our Ref: 9/2/258/0184

SAHRA. 2013. ERPM Mine Village. Our Ref: 9/2/253/0008.

SAHRA. 2014. ERG2203 - Basic Assessment Rondebult Water Pipeline.

SAHRA. 2015a. Final comment. Delmore Park Extension 7. Our Ref: 9/2/253/0008.

SAHRA. 2015b. Final comment. 4L40 Slimes Dam Prospecting Right Application Our Ref: 8016.

SAHRA. 2016a. Henville x 29. CaseID: 12433.

SAHRA. 2016b. Final HIA Report for proposed Township Developments (Boksburg West Ext. 7 & Liliantion Ext. 7). Our Ref: 9066.

SAHRA. 2016c. Witfield Stormwater Management. Our Ref: 9515.

SAHRA. 2016d. Witfield Stormwater Management. Our Ref: 9540.

SAHRA 2016e. *Minimum Standards for Heritage Specialist Studies in terms of Section 38 (1) and 38(8) National Heritage Resources Act (No. 25 of 1999)*, pp 1-36. DRAFT. Cape Town: South African Heritage Resources Agency.

SAHRA. 2018. Proposed development of the ERPM Mine Village, Boksburg, Gauteng. Our Ref: 12645.

SAHRA. 2019. Airports Company South Africa (ACSA) Proposed filling station on Jones Road, Ekurhuleni Metropolitan Municipality. Our Ref: 10709.

South African Heritage Resources Agency (SAHRA). *Report Mapping Project*. Version 1.0, 2009.

The Burra Charter. 2013. *The Australia ICOMOS Charter for Places of Cultural Significance*. Australia ICOMOS Incorporated International Council on Monuments and Sites.

Theron, G. 2018. Comet Extension 17 (Comet Village) – Township Establishment GAUTENG Provincial Heritage Resources Agency Gauteng (PHRAG).

Tucker, R.F., Viljoen, R.P. & Viljoen, M.J. 2016. a review of the Witwatersrand Basin - The World's Greatest Goldfield. *Episodes* 39(2): 105-133.

Van der Walt, J. 2017. Heritage Impact Assessment for the proposed Mthunzi Chicken Supplier, Gauteng Province. Client: CSIR.

Van der Walt, J., Birkholtz, P. & Naude, M. 2012. Phase 1 Heritage Impact Assessment for the proposed development of the ERPM Mine Village, Boksburg, Gauteng.

Van Schalkwyk, June 2016. Cultural Heritage Statement for the proposed Witfield stormwater network, Ekurhuleni Metropolitan Municipality, Gauteng Province.

Venter, P. 1950. Die Groei van Onderwysaangeleenthede in Johannesburg. 1885-1920. Unpublished PhD dissertation, Potchefstroomse Universiteitskollege vir C.H.O.

Viljoen, M. 2009. The life, death and revival of the central Rand Goldfield. World Gold Conference 2009. *The Southern African Institute of Mining and Metallurgy*: 131-138.

Wadley, L. 2013a. Recognizing complex cognition through innovative technology in Stone Age and Palaeolithic sites. *Cambridge Archaeological Journal* 23:163-183 DOI:10.1017/S0959774313000309.

Wadley, L. 2013b. Theoretical frameworks for understanding African hunter-gatherers. In: Mitchell, P. & Lane, P. (Eds). *Papers from the Pre-Colonial Catalytic Project*, edited by *The Oxford Handbook of African archaeology*. Oxford: Oxford University Press, pp. 355–66.

Wadley, L. 2015. Those marvellous millennia: the Middle Stone Age of Southern Africa, *AZANIA: Archaeological Research in Africa* 50(2):155–226. DOI: 10.1080/0067270X.2015.1039236.

Wadley, L. 2016. Technological transformations imply cultural transformations and complex cognition. In: *The Nature of Culture*. Springer Netherlands, pp. 57–63.

Wiltshire, N. 2013. The use of SAHRIS as a state sponsored digital heritage repository and management system in South Africa. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Volume II-5/W1: 325–330.

Aerial photographs and maps

1:50 000 2628AA Johannesburg 1st edition 1939 and up to 9th edition 2010.

National Geospatial Information Aerial Photograph 1938: 133_012_06130.

National Geospatial Information Aerial Photograph 1941: 162_011_57626.

National Geospatial Information Aerial Photograph 1968: 603_022_08087.

National Geospatial Information Aerial Photograph 1976: 775_003_00305.

National Geospatial Information Aerial Photograph 1996: 989_038_05870.

WEB

<https://boksburghistorical.wordpress.com/>.

[https://commons.wikimedia.org/wiki/File:South Africa and its future \(1903\) \(14779148271\).jpg](https://commons.wikimedia.org/wiki/File:South_Africa_and_its_future_(1903)_14779148271.jpg).

<http://www.theheritageportal.co.za/article/early-history-boksburg>.

<https://www.sahistory.org.za/place/boksburg-witwatersrand>.

14 Annexure A

The following table provides an overview of the southern African chronological sequence, the main attributes associated with a particular period, and cultural groups associated with each of the periods.

The southern African chronological sequence		
Cultural period and approximate ages	Cultural groups	Technological attributes and tool types
Earlier Stone Age (ESA) >2 m—>200 000 ya ²	Early hominins Australopithecines <i>Homo habilis</i> <i>Homo erectus</i> archaic <i>Homo sapiens</i>	Large cutting tools (LCTs), scrapers and flaked forms. Some use of flaked bone as tools.
Middle Stone Age (MSA) <300 000 —>20 000 ya	Archaic and fully modern <i>Homo sapiens</i>	A reduction in tool size. Blades, convergent points and awls made on prepared core types to produce uniform tool forms, also scrapers and other tool types. Flaked products were often further shaped through secondary retouch to produce a range of formal tool types. Decorative items, body ornaments and ochre use become apparent. Rare engravings and rock art.
Later Stone Age (LSA) <40/20 000 ya up to historical times	<i>Homo sapiens</i> San hunter-gatherers Khoekhoe herders	An extended range of microlithic tool types, often used as inserts for bow-and-arrow hunting. Characteristic tools include scrapers, borers, and arrow heads. Ostrich eggshell (OES) beads and flasks — sometimes decorated— are prolific. Trade/barter items include glass, iron and copper beads, and pigments. Leather working, basketry, bone implements and armatures for arrows are common. Bow-and-arrow hunting and snaring. San and herder ceramics. Domestic animals: sheep, goats, cattle and dogs. Rock art. Polished stone tools and grooved stones used to shape different bone implements.
Early Iron Age (EIA) c. AD 200—c. AD 900	Bantu-speaking African farming communities	Distinct pottery styles for the various pottery expressions, metal working, subsistence agriculture, domestic animals, trade and barter. Upper and lower grinding

² Ya = years ago

		stones.
Middle Iron Age c. AD 900—c. AD 1300	Bantu-speaking African farming communities	Distinct pottery for the various ethnic groups, metal working, subsistence agriculture, domestic animals, trade and barter.
Late Iron Age (LIA) c. AD 1300 – c. AD 1840 Stone-walled LIA sites: c. AD 1640—c. AD 1840	Bantu-speaking African farming groups and Europeans	Characteristic pottery traditions associated with each of the main divisions, metal working, subsistence agriculture, domestic animals, trade and barter. Upper and lower grinding stones and other stone implements. Farmer rock art. Stone-walled settlements.
Colonial Period c. 1650	Bantu-speaking African farming groups and Europeans	Historical structures, industrial metals, glass, porcelain and ceramics.
Historical Period c. 1850	Various African groups, groups of mixed origin and Europeans	Historical structures, industrial metals, glass, porcelain and ceramics.

The following section provides a synthesis of the cultural succession of settlements within the southern African archaeological context.

14.1.1 Stone Age

Archaeological traces in the form of mostly stone tools suggest a widespread presence for tool-producing Plio-Pleistocene hominins in southern Africa. The South African Stone Age sequence is chronologically divided into the Earlier Stone Age (ESA), the Middle Stone Age (MSA) and the Later Stone Age (LSA) based on the concept of techno- or industrial complexes. Each of the subdivisions is formed by a group of industries where the assemblages share attributes or common traditions (Deacon 1972; Deacon & Deacon 1999; Lombard *et al.* 2012).

The australopithecines were gradually displaced by *Homo habilis*, a genus that evolved into the more advanced *Homo ergaster/erectus* by 1.8 million years BP. The large stone cutting tools (LCTs) associated with these hominins form part of the Oldowan and Acheulean industries of the ESA. Most ESA localities with stone tools in South Africa are associated with the hominin species known as *Homo erectus*, and the more recent ESA assemblages with

archaic *Homo sapiens* (Barham & Mitchell 2008).³

By >250 000 years BP, the large cleavers and handaxes of the ESA were discontinued and replaced by a larger variety of smaller tools and weapons of diverse shapes and sizes and made by using different techniques. The MSA typologies following on the ESA represent greater specialization in the production of stone tools, in particular flake, blade and scraper tools and also in a more extended range of specialized, formal lithic tool types. These changes in technology mark the beginning of the MSA.

The MSA is known for typically prepared centripetal cores that delivered specific convergent/pointed flakes and a range of flake blades. Flaked products often retain the characteristic faceted striking platform that derives from this technique. Several other core types were also used to produce blank forms. Many of these were shaped by secondary trimming to produce a range of formal tool types. This period is moreover characterized by regional lithic variability, evidence for symbolic signalling, polished bone tools, portable art and decorative items.

The main developments during the MSA are cognitive, cultural and physical modernity (Wadley 2013a, 2013b, 2015, 2016). The MSA, which lasted almost half a million years, is associated with early modern humans with complex cognition, novel behaviours and transformative technologies. During the MSA early humans still settled in the open near water sources but also in caves and shelter localities. The MSA marks the transition from the more archaic *Homo* species to anatomically modern humans, *Homo sapiens sapiens* (Jurmain *et al.* 2013).

It is now generally accepted that the MSA was fully replaced by a mostly microlithic LSA marked by a series of new technological developments and cultural innovations (Wadley 2013a, 2013b). The LSA is marked by a series of technological innovations, social transformations and also noticeable demographic changes (Mitchell 2002a). The transition from the MSA to the LSA is vague. Dates proposed for the transitional period range from

³ ESA stone tools were found in the Kloofendal Nature Reserve.

around 60/40 000 – 20 000 years ago based on a series of dates obtained through diverse dating methods, palaeoclimatic inferences as well as lithic technologies and diagnostic tool types as artefactual markers of a particular period.

The major changes comprise the replacement of MSA lithic technologies by LSA microlithic stone-working traditions and more widespread signs of symbolic and ritual activity in the form of art and decorative items, specifically objects made for personal adornment, such as pendants and the ubiquitous ostrich (*Struthio camelus*) eggshell (OES) beads (Mitchell 2002a). During the LSA small (microlithic) tools, bone tools and weapon armatures and a range of decorative items as well as rock art were produced.

Hunter-gatherer societies (and the later San) relied to a large extent on bow-and-arrow hunting with poisoned tips, and also snaring. Veld foods and medicinal plants were gathered. Ceramics were used and/or produced by hunter-gatherers and Khoekhoe herders towards the terminal phases of the LSA over a period of around 2000 years. Many of these stone tools and other material cultural items were still manufactured and used when the first Europeans settled in southern Africa in the 17th century AD. Information recorded about the lifestyles of the Khoekhoe herders and the San (Bushmen) at the time of the arrival of Europeans provides some insight into the immediate past history of these indigenous people.

Evidence for Stone Age communities on the Highveld comprises the complete sequence of the southern African Stone Age (Mason 1962, 1988).

14.1.2 Rock Art

Thousands of painted and engraved sites dating from the LSA have been recorded throughout Southern Africa and many more are still being found every year. Paintings and engravings were also executed on loose slabs of stone and some were used as markers for storage pits and in burials. Rock art in the form of paintings, but in particularly the many and diverse categories of engravings on the highveld, are well-documented, for example at Maanhaarrand and Olifantspoort in the Rustenburg region (Mason 1986; RARI Wits Database).

14.1.3 Settlement by African farmers

The migrations into southern Africa and the expansion of Early Iron Age (EIA) African farming societies are apparent from AD 400 onwards. Pioneer Sotho-Tswana and other ethnic groups settled in semi-permanent villages, cultivated a range of crops, raised livestock, made ceramic containers, mined ore and smelted metals and engaged in trade or barter. The Late Iron Age (LIA) was accompanied by aggregations of large numbers of communities that were often marked by extensive stonewalled settlements, or enclosures demarcated with poles and brushwood.

It was only during the second millennium at around AD 1600 that African communities settled the study region more densely, and these were mainly Tswana groups. The Highveld in general contains a great many Sotho-Tswana stone-walled structures from settlements that date to the Iron Age and the historical period (Mason 1986; Huffman 2007; African Heritage Consultants 2016). The more recent histories of groups such as the Tlokwa, Kgatla, Fokeng, Kwena, Po, and others have been documented through ethnographic reports and oral histories (Boeyens & Hall 2009; Boeyens 2012; Hall 2012).

The greater Klipriviersberg area is located within the municipal areas of Johannesburg, Ekurhuleni and Midvaal. The prehistory of the Klipriviersberg begins with the Stone Age (Cousins *et al.* 2014). The area contains numerous stone-walled Iron Age Tswana settlements that date from c. 1500 (Mason 1968; Sadr 2012). The African farmer ceramics at most of the Klipriviersberg settlements of the study region are representative of the Uitkoms facies — a merger of Ntsuanatsatsi and Olifantspoort ceramics (Huffman 2007: 431). Klipriviersberg walling and the Uitkoms facies pottery that characterise most of the Highveld sites, date from the 17th to the 19th centuries. Huffman (2007: 433) puts a final date to Klipriviersberg walling at around 1823 with the arrival of Mzilikazi and his Nguni people in the area. The subsequent unrest in the interior resulted in clashes between the different Sotho-Tswana and the incoming Nguni that caused widespread displacements during the so-called the *difaqane* (Bergh 1999).



Figure 14. *Klipriviersberg-type settlements (after Huffman 2007: African Heritage 2016: 21).*

14.1.4 Broader historical context for the area

The first white settlers to move into the region from the early 18th century onwards were frontiersmen, hunters, traders, missionaries and farmers. White hunters explored the general region from the 1800s (Bergh 1999). The area was settled in the early 1900s by white farming colonists. Whereas pockets of agricultural land still remain, the bulk of these farms were subsequently industrialized through mining activities or rezoned for towns and residential suburbs.

Historical sites, formal cemeteries and informal graves associated with farming practices and mining ventures occur in the general area. The discovery of mineral resources and the associated developments contributed significantly to the struggle for supremacy that culminated in the Anglo Boer War of 1899-1902. The research area was the scene for several battles and skirmishes during this war (<http://angloboerwar.com/forum/11-research/10384-books-on-the-boer-war>). The war cemetery from World War II is also an attraction. Several coloured soldiers have been buried at this locality (<http://www.sahistory.org.za/places/springs>).

The discovery of the rich gold fields of the region resulted in conflict and transformation of traditional political and economic systems. The first white farms on the Witwatersrand, an

area known then as the Overvaalsche (later the Transvaal), were established by the 1840s (Venter 1950). Localities and suburbs such as Doornfontein, Klipriviersberg, Langlaagte, Braamfontein and Turffontein reference some of these early farms.

South Africa has produced more than a third of the total gold mined throughout history (Viljoen 2009). The Witwatersrand Basin is known as 'The World's Greatest Goldfield' (Tucker et al. 2016). As early as 1855 a report was submitted to the government on gold discovered by P.J. Marais on the Witwatersrand, but there was no follow-up (Venter 1950). The story of gold on the Witwatersrand began shortly after the discovery of gold at various localities from 1884 onwards.

The main reef was found on Langlaagte in the Kliprivier area in 1886 by George Harrison and George Walker (Venter 1950). The farm Langlaagte (formerly Langeleegte) was originally owned by Johannes Matthys Smit in 1853 and comprised 2260 morgen (Venter 1950). The main reef continued for almost 100 miles. Harry Struben put nine claims along the reef, which he named Crown Reef. Some excavations on the claims of the discoverers of the Main Reef Group of Conglomerates of the Witwatersrand can be seen in a memorial park adjoining the Main Reef Road (SAHRIS accessed May 2020). This set in motion a tremendous gold rush and the establishment of camps. After the surface loads were mined, the sinking of shafts to extract the deeper deposits and the associated infrastructure necessitated the formation of large mining houses with the ability and finances to establish industrialised mines.

The development of deep-level mining on the Witwatersrand in the mid-1880s led to the establishment of a dynamite factory at Modderfontein, northeast of Johannesburg, in 1895. Houses and infrastructure had to be provided and various villages were established for the town of Modderfontein. To gain more data on the various dwellings and compounds at Modderfontein, surface collections of archaeological material were made and several middens associated with residential and industrial localities excavated to gain a better understanding of the life and material culture of the inhabitants of Modderfontein (see Behrens 1999, 2004, 2005 for detail on the developments at Modderfontein).

14.1.5 A synthesis of the history of Boksburg

Originally, Boksburg was laid out in 1887 to serve the surrounding gold mines. It was named after the State Secretary of the South African Republic, Eduard Bok. The Main Reef Road linked Boksburg to all the other major mining towns on the Witwatersrand and the Angelo Hotel was used as a production post.

Prior to 1860, the present municipal area of Boksburg and its immediate environs comprised mainly Boksburg developed post 1860 in the area of the farms Leeuwpoort, Klippoortje, Klipfontein and Driefontein. Carl Ziervogel bought the farm Leeuwpoort in 1875. In September 1886 a prospector Pieter Killian found quartz reefs on Leeuwpoort. He also discovered quartz reefs on the farm Vogelfontein.

Samples of the quartz were sent to Pretoria for assaying. These indeed confirmed that they contained gold. Killian then informed Dr W.E. Bok, Secretary of State for the Transvaal Republic, of the outcome. On 10 March 1887 the two farms were proclaimed as public diggings. Carl Ziervogel, established the first gold mine on the East Rand, the Ziervogel Gold Mining Company. Cornish miners were brought out to work the diggings.

The huge outlay necessary for development result in the closing of the mine. Abe Bailey of the Barnato Group, which also owned the Johannesburg Consolidated Investment Company (JCI), bought the farm Leeuwpoort in 1894 for £100,000. JCI established E.R.P.M. Ltd. Over the years JCI also developed many residential suburbs.

Gold was also found at Elsburg, 8 km to the southwest, a stopping point for coaches and wagon traffic. The first Government offices were built at Elsburg, of which Boksburg was a suburb. Originally, Boksburg was laid out in 1887 to serve the surrounding gold mines since the mining operations were centred on Boksburg. Land for the new town was released by having the boundaries of the farms Leeuwpoort, Driefontein and Klipfontein moved back from the point where they converged. The newly-created farm was called Vogelfontein, on which 1000 stands of 50x50 feet each were created.

In 1887 the first auction stands were auctioned off. The discovery of coal deposits on the boundary of the town in 1888 resulted in the first mining for coal in the Transvaal. Coal

ensured that the gold mining industry would grow to a formidable size. It was incorporated as a town in 1903. The town was named after the State Secretary of the South African Republic, Eduard Bok. Boksburg served as the Administrative Centre of the East Rand. Several historical buildings from the early period remain. In 1890 a railway, the Rand Tram, was built by the Netherlands-South African Railway Company (NZASM) to link Boksburg to Johannesburg. The line was subsequently extended to Brakpan and Springs, where large deposits of high quality coal had been found. The Main Reef Road linked Boksburg to all the other major mining towns on the Witwatersrand. (<http://www.theheritageportal.co.za/article/early-history-boksburg>).

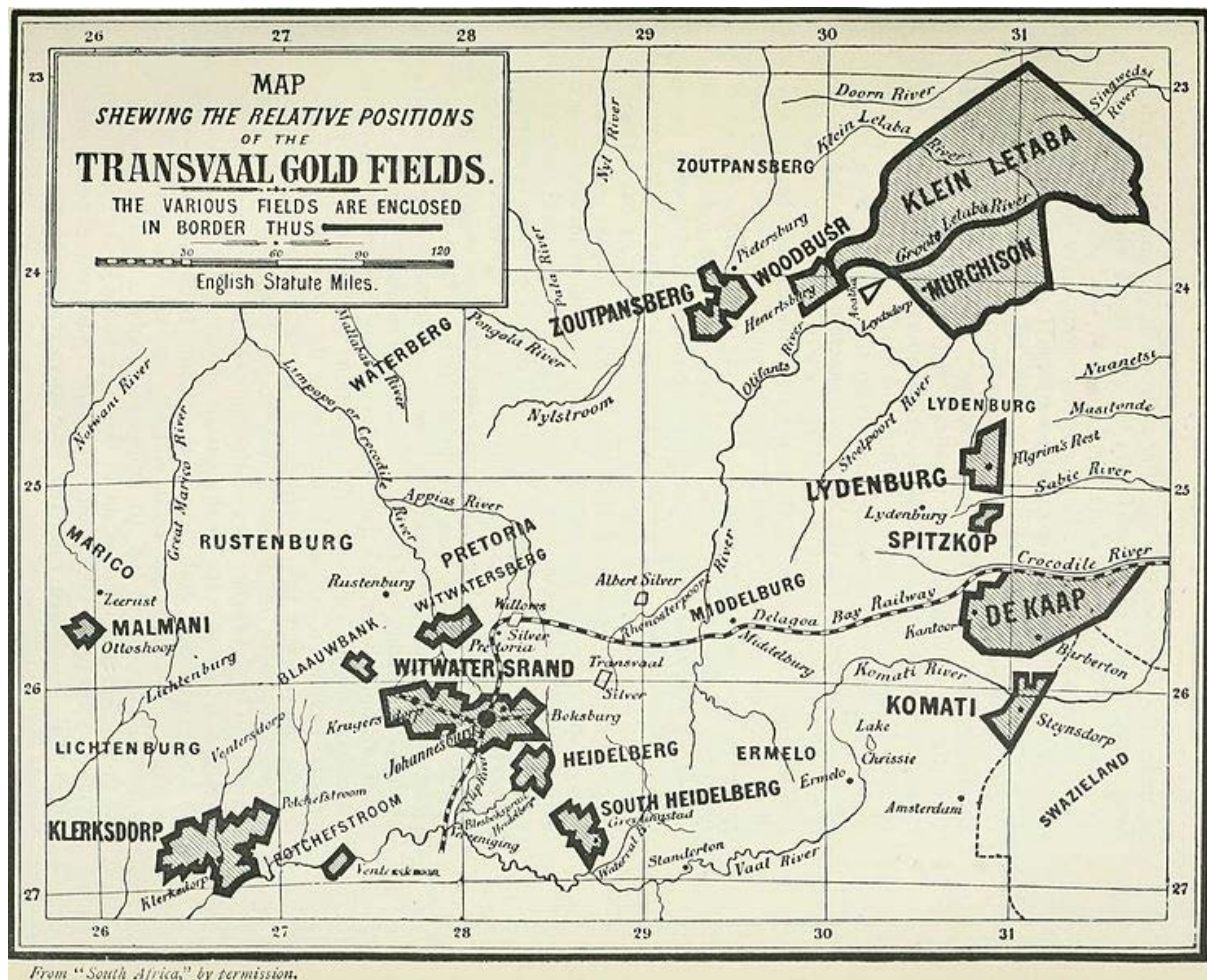


Figure 15. Map showing the relative position of Boksburg in 1903 [https://commons.wikimedia.org/wiki/File:South_Africa_and_its_future_\(1903\)_14779148271.jpg](https://commons.wikimedia.org/wiki/File:South_Africa_and_its_future_(1903)_14779148271.jpg).

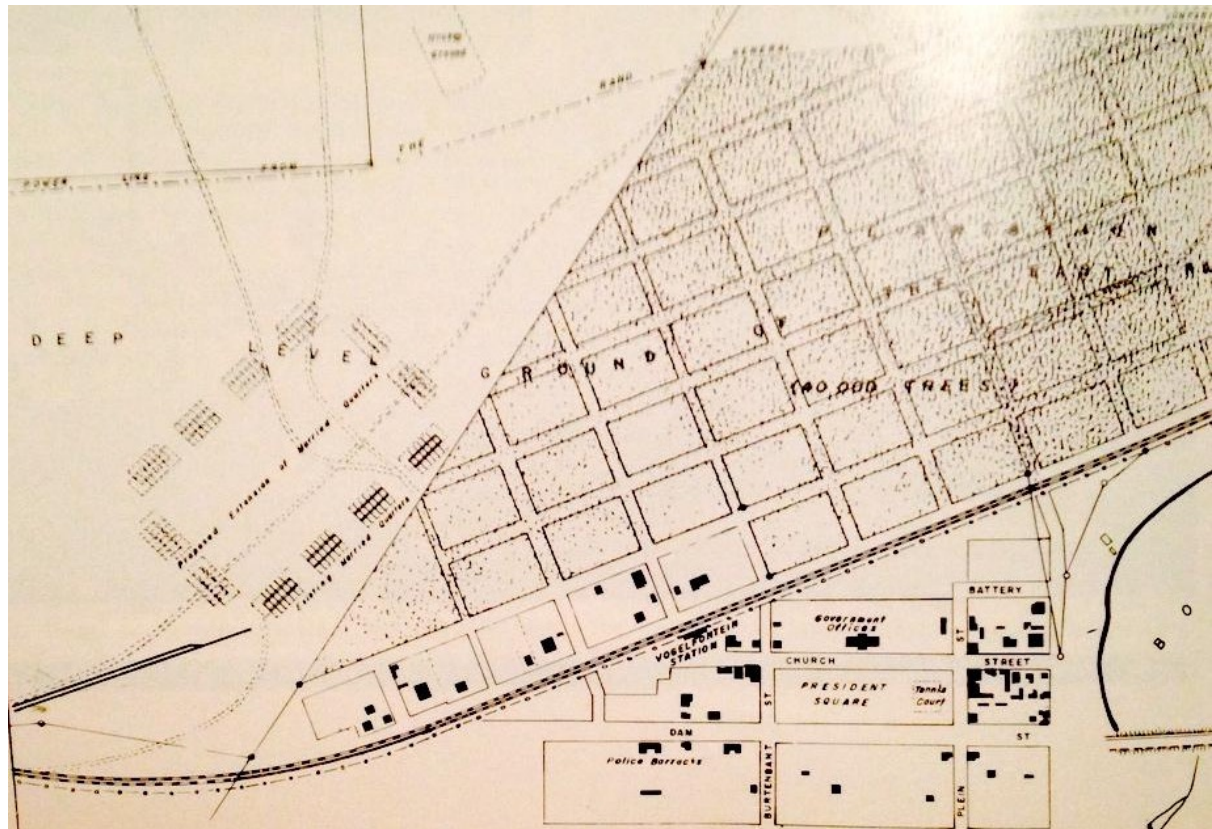


Figure 16. *The western part of the town earlier known as Vogelfontein* (<http://www.theheritageportal.co.za/article/what-was-boksburg-1903>).

14.1.6 East Rand Proprietary Mines Limited (ERPM)

During the mid-1890s ERP was a main player in the East Rand gold mining. ERPM was formed on 8 May 1893 with George Farrar as chairman and C.S. Goldmann, Lionel Phillips, J.C.A. Henderson and S.W. Jameson as directors. The company had capital of £650,000 of which £420,000 went to the H.F. Syndicate, while £150,000 was set aside as working capital and £80,000 kept as reserve (PGS 2011d).

In the period 1894 to 1895 ERPM focussed on the three gold mining companies Comet, St. Angelo and Driefontein. These three were reconstructed by ERPM through the provision of both working capital and much needed land. The aim was to extend the life of all three mines by 40 years. In February 1895 Comet was reconstructed as the New Comet Gold Mining Co. Ltd with George Farrar, Georges Rouliot, J.E.A. Henderson, C.S. Goldmann, James Hay and Abe Bailey as directors.

Driefontein Consolidated Mines Ltd and Angelo Gold Mining Company Ltd were both registered in 1895. By 1895 ERPM held 89 252 out of a total of 120 000 shares in the Driefontein Gold Mining Company Ltd, 109 090 out of a total of 150 000 shares in Angelo Mines Ltd, 100 000 shares in the Driefontein Consolidated Mines and 64 364 out of a total of 75 000 shares in the New Comet Gold Mining Company, 62 494 out of a total of 93 000 shares in the Angus Munro Gold Mining Company Ltd, 78 417 out of a total of 100 000 shares in the Cinderella and 109 155 shares out of a total of 150 000 shares in the New Blue Sky. ERPM also acquired over 410 shares to the south of Driefontein Consolidated, Angelo Mines and New Comet. The main part of their mines fell within New Comet (see PGS 2011d for a synthesis of the history of gold mining on the East Rand and the impact of the South African of 1899).

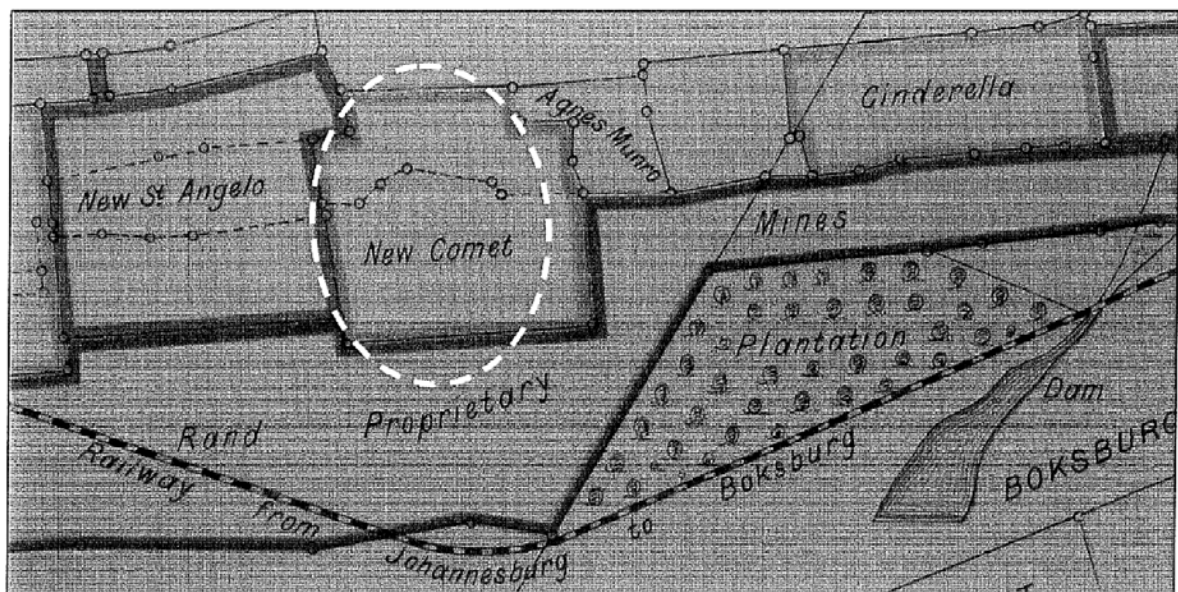


Figure 17. Map indicating the main ERPM holdings (PGS 2011d : 18).

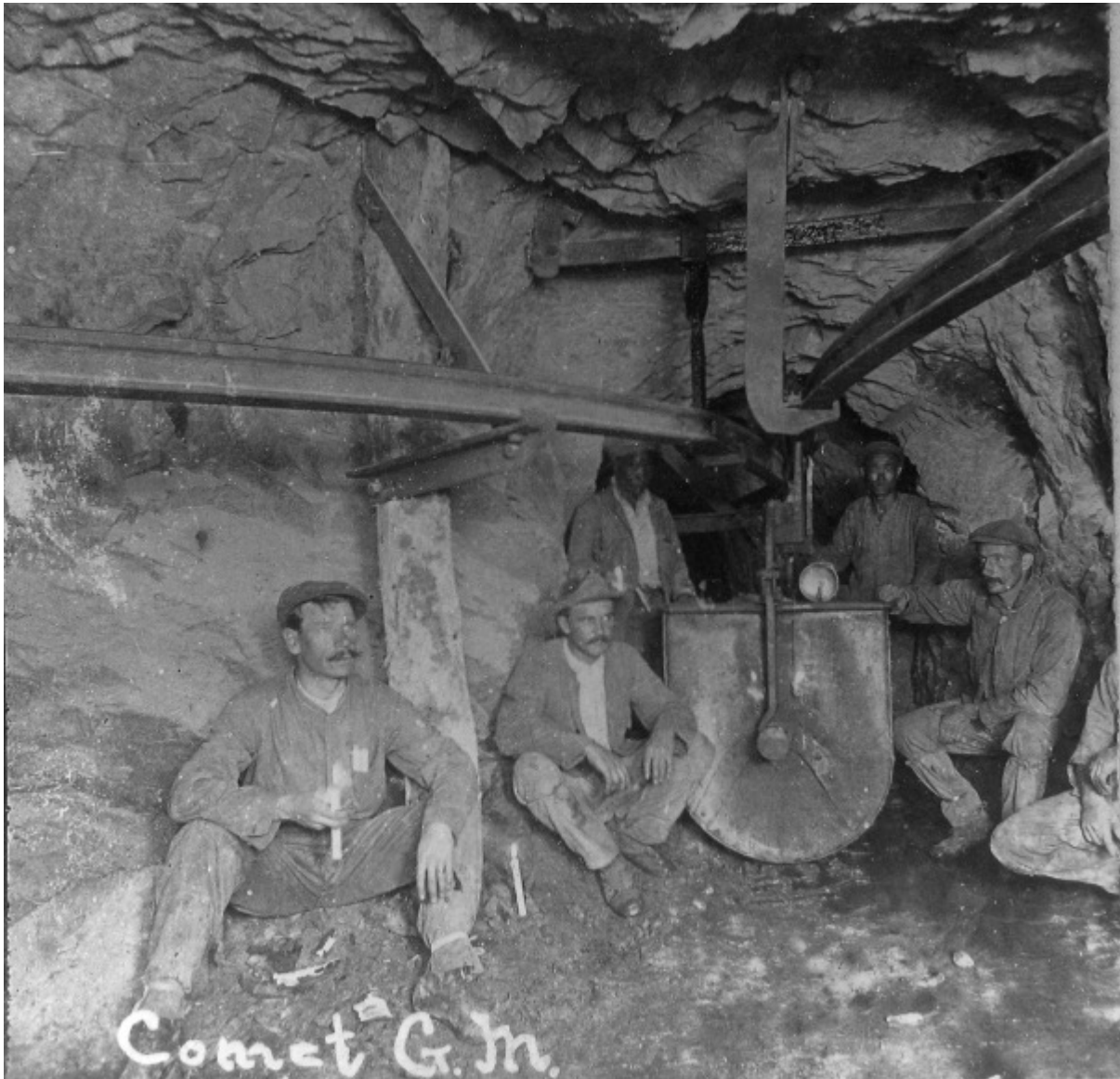


Figure 18. Mine workers inside the Comet Mine (<http://www.theheritageportal.co.za/article/what-was-boksburg-1903>).



Figure 19. *The ERPM school* (<http://www.theheritageportal.co.za/article/early-history-boksburg>).

The first school in Boksburg is still standing today. The ERPM Golf Club was established in 1903 when 3 holes were built around the building. This structure was also used as the first clubhouse and is situated on the right hand side of the first fairway.