



Archaetnos Culture & Cultural
Resource Consultants
BK 98 09854/23

**A REPORT ON A CULTURAL HERITAGE IMPACT ASSESSMENT FOR THE
PROPOSED POLOKWANE SMELTER SO₂ ABATEMENT PROJECT, LIMPOPO
PROVINCE**

For:

**WSP
WSP HOUSE
BRYANSTON PLACE
199 BRYANSTON DRIVE
2191**

REPORT NO.: AE01720V

By:

***Prof. A.C. van Vollenhoven (L.AKAD.SA.)
Accredited member of ASAPA (Accreditation number: 166)
Accredited member of SASCH (Accreditation number: CH001)***

24 April 2017

Archaetnos
P.O. Box 55
GROENKLOOF
0027
Tel: 083 291 6104
Fax: 086 520 4173
E-mail: antonv@archaetnos.co.za

Member: AC van Vollenhoven BA, BA (Hons), DTO, NDM, MA (Archaeology) [UP], MA (Culture History) [US], DPhil (Archaeology) [UP], Man Dip [TUT], D Phil (History) [US]

SUBMISSION OF REPORT

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It is the client's responsibility to do the submission via the SAHRIS System on the SAHRA website.

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EXECUTIVE SUMMARY

Purpose:

Archaetnos cc was requested by WSP| Parsons Brinckerhoff, Environment and Energy, Africa (WSP | Parsons Brinckerhoff) to conduct a cultural heritage impact assessment (HIA) for the proposed Polokwane Smelter SO₂ Abatement Project. This lies close to the town of Polokwane in the Limpopo Province.

Project description:

The Polokwane Smelter is an existing metallurgical industrial furnace where sulphide concentrates are smelted. The area upon which the WSA Plant and associated sulphide ore concentrate abatement equipment (development) is to be located, within the Polokwane Smelter complex. The area will be approximately 1 631.5 m² of road and 16 500 m² cleared area. In addition it is proposed that a new road be constructed on an area that currently consist of vegetation. The road will be approximately 4km long.

Methodology:

The methodology for the study includes a survey of literature and a field survey. The latter was conducted according to generally accepted HIA practices and was aimed at locating all possible objects, sites and features of cultural significance in the area of proposed development.

If required, the location/position of any site was determined by means of a Global Positioning System (GPS), while photographs were also taken where needed. The survey was undertaken by doing a physical survey via off-road vehicle and on foot, and covered as much as possible of the area to be studied. Certain factors, such as accessibility, density of vegetation, etc. may however influence the coverage.

All sites, objects features and structures identified were documented according to the general minimum standards accepted by the archaeological profession. Co-ordinates of individual localities were determined by means of the GPS. The information was added to the description in order to facilitate the identification of each locality.

Public consultation:

Public consultation was handled by WSP | Parsons Brinckerhoff. This included engagement with property owners and owners of adjacent properties, public meetings and engagement with interested and affected parties. Newspaper and site notices were placed.

Findings:

During the survey no sites of cultural heritage significance were identified within the immediate project area.

Recommendations:

- From a heritage perspective, no further work is necessary.

- The proposed development may therefore continue.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility. Due to the density of vegetation it also is possible that some sites may only become known later on. Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.

CURRICULUM VITAE OF SPECIALIST: PROF ANTON CARL VAN VOLLENHOVEN

Tertiary education

- BA 1986, University of Pretoria
- BA (HONS) Archaeology 1988 (cum laude), University of Pretoria
- MA Archaeology 1992, University of Pretoria
- Post-Graduate Diploma in Museology 1993 (cum laude), University of Pretoria
- Diploma Tertiary Education 1993, University of Pretoria
- DPhil Archaeology 2001, University of Pretoria.
- MA Cultural History 1998 (cum laude), University of Stellenbosch
- Management Diploma 2007 (cum laude), Tshwane University of Technology
- DPhil History 2010, University of Stellenbosch

Employment history

- *1988-1991*: Fort Klapperkop Military Museum - Researcher
- *1991-1999*: National Cultural History Museum. Work as Archaeologist, as well as Curator/Manager of Pioneer Museum (1994-1997)
- *1999-2002*: City Council of Pretoria. Work as Curator: Fort Klapperkop Heritage Site and Acting Deputy Manager Museums and Heritage.
- *2002-2007*: City of Tshwane Metropolitan Municipality. Work as Deputy Manager Museums and Heritage.
- *August 2007* – present – Managing Director for Archaetnos Archaeologists.
- *1988-2003*: Part-time lecturer in Archaeology at the University of Pretoria and a part-time lecturer on Cultural Resources Management in the Department of History at the University of Pretoria.
- *2014*: Part-time lecturer for the Honours degree in Museum Sciences in the Department of History and Heritage Studies at the University of Pretoria
- *2015*: Appointed extraordinary professor in history at the Mafikeng Campus of the Northwest University

Other

- Published 75 articles in scientific and popular journals on archaeology and history.
- Author and co-author of over 580 unpublished reports on cultural resources surveys and archaeological work. A list of reports can be viewed on www.archaetnos.co.za
- Published a book on the Military Fortifications of Pretoria.
- Contributed to a book on Mapungubwe.
- Delivered more than 50 papers and lectures at national and international conferences.
- Member of SAHRA Council for 2003 – 2006.
- Member of the South African Academy for Science and Art.
- Accredited professional member of Association for South African Professional Archaeologists.
- Accredited professional member of the South African Society for Cultural History (Chairperson 2006-2008; 2012-2014).
- Has been editor for the SA Journal of Cultural History 2002-2004.
- Member of the Provincial Heritage Resources Agency, Gauteng's Council.
- Member of Provincial Heritage Resources Agency, Gauteng's HIA adjudication committee (Chairperson 2012-2019).

ASAPA Accreditation number: 166

SASCH Accreditation number: CH001

DECLARATION OF INDEPENDENCE

I, Anton Carl van Vollenhoven from Archaetnos, hereby declare that I am an independent specialist within the field of heritage management.

Signed:

A rectangular image showing a handwritten signature in black ink on a light-colored background. The signature is cursive and appears to read 'Anton Carl van Vollenhoven'.

Date: 24 April 2017

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LIST OF ACRONYMS:

AIA – Archaeological Impact Assessment
CMP – Cultural Management Plan
EAP – Environmental Assessment Practitioner
EIA – Environmental Impact Assessment
HIA – Heritage Impact Assessment
PIA – Palaeontological Impact Assessment
SAHRA –South African Heritage Resources Agency

1. INTRODUCTION

Archaetnos cc was requested by WSP| Parsons Brinckerhoff, Environment and Energy, Africa (WSP | Parsons Brinckerhoff) to conduct a cultural heritage impact assessment (HIA) for the proposed Polokwane Smelter SO₂ Abatement Project. This lies close to the town of Polokwane in the Limpopo Province (Figure 1-2).

The project was done as part of the Scoping and Environmental Impact Reporting Process. The client indicated the area to be surveyed. It was surveyed via foot and off-road vehicle.



FIGURE 1: LOCATION OF POLOKWANE IN THE LIMPOPO PROVINCE.

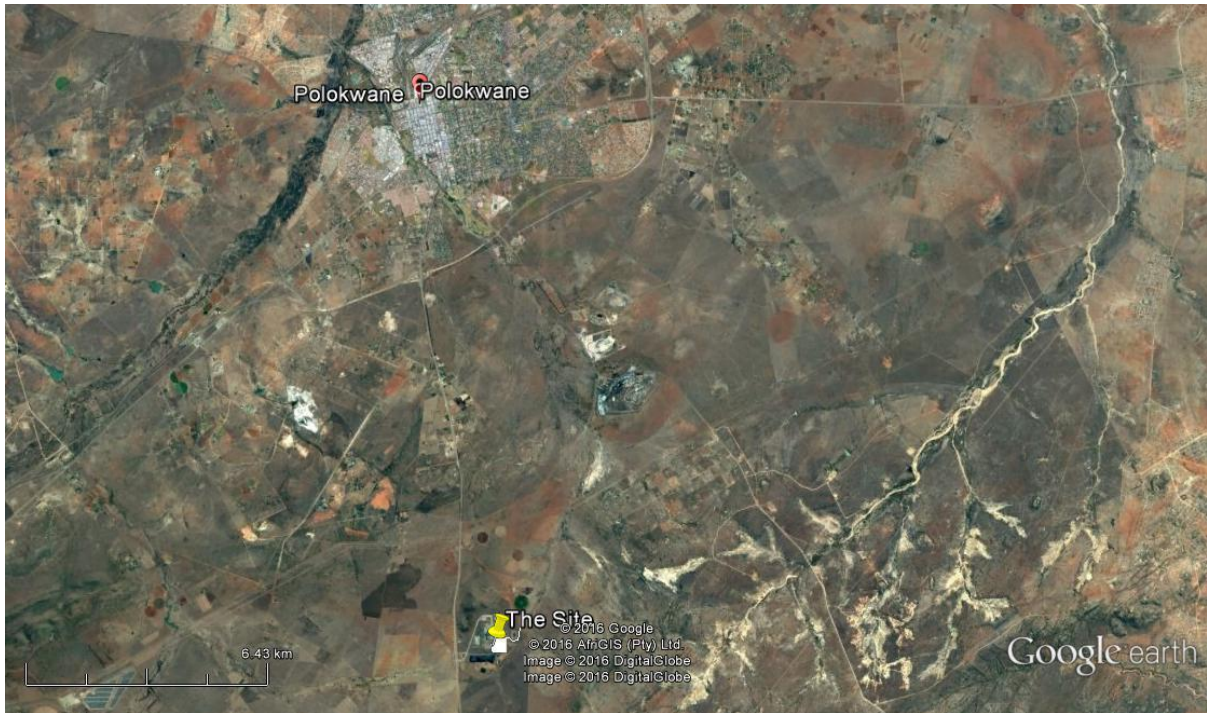


FIGURE 2: LOCATION OF THE SITE IN RELATION TO POLOKWANE.

2. PROJECT INFORMATION

2.1 LOCALITY

The Polokwane Smelter is located approximately 15 km towards the south of Polokwane. This is in the Limpopo Province.

2.2 PROJECT DESCRIPTION

The Polokwane Smelter is an existing metallurgical industrial furnace where sulphide concentrates are smelted. Wet concentrate is received and dried in a flash drier. The dry concentrate is smelted through an electric furnace, resulting in the recovery of platinum group metals (PGMs) and other base metals. The furnace matte is then tapped, cast and crushed. The resulting furnace slag is stockpiled at a dedicated slag storage facility. The furnace off-gas is currently cooled in a forced draft cooler (FDC) before entering a bag-house which de-dusts the off-gas. The off-gas is then vented into the atmosphere via a 150m stack.

The National Environmental Management Air Quality Act (No. 39 of 2004) (NEM:AQA) requires that furnaces at metallurgical industries be operated with efficient sulphide ore concentrate abatement systems by 2015, however Polokwane Smelter was given an extension until 2020. In order to comply with new South African legislation and associated more stringent emission standards, a sulphide ore concentrate abatement system must be installed at the Polokwane Smelter.

The proposed strategy to reduce SO₂ to achieve the Minimum Emission Standards (MES) is the installation of a WSA Plant that will convert the SO₂ contained in the off-gas into commercial-grade concentrated sulphuric acid (H₂SO₄). The exhaust from the WSA plant (containing reduced SO₂ concentrations) will be vented into the atmosphere, and the commercial grade sulphuric acid will be temporarily stored before being dispatched into the commercial market.

The area upon which the WSA Plant and associated sulphide ore concentrate abatement equipment (development) is to be located, within the Polokwane Smelter complex. The area will be approximately 1 631.5 m² of road and 16 500 m² cleared area. In addition it is proposed that a new road be constructed on an area that currently consist of vegetation. The road will be approximately 4km long (Figure 3).

TABLE 1: SUMMARY OF PROJECT SPECIFICS

Type of development	Mining smelter
Detail of proposed activities (NHRA section 38 triggers)	Area larger than 5 000m ² and linear development longer than 300m in length
Size of project	Approximately 1 631.5 m ² of road and 16 500 m ² cleared area. The road will be approximately 4km long.

2.3 APPLICANT AND EAP DETAILS

The applicant is Anglo American Platinum Limited and the EAP compiling the application is WSP | Parsons Brinckerhoff.



FIGURE 3: DEVELOPMENT PLAN.

3. TERMS OF REFERENCE

The Terms of Reference for the survey were to:

1. Identify objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the property (see Appendix A).
2. Document the found cultural heritage sites according to best practice standards for heritage related studies.
3. Study background information on the area to be developed.
4. Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value (see Appendix B).
5. Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions.
6. Recommend suitable mitigation measures to minimize possible negative impacts on the cultural resources by the proposed development.
7. Review applicable legislative requirements.

4. LEGISLATIVE REQUIREMENTS

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. The first of these are the National Heritage Resources Act (Act 25 of 1999) which deals with the cultural heritage of the Republic of South Africa. The second is the National Environmental Management Act (Act 107 of 1998) which inter alia deals with cultural heritage as part of the Environmental Impact Assessment process.

4.1 The National Heritage Resources Act

According to the above-mentioned act the following is protected as cultural heritage resources:

- a. Archaeological artifacts, structures and sites older than 100 years
- b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
- c. Objects of decorative and visual arts
- d. Military objects, structures and sites older than 75 years
- e. Historical objects, structures and sites older than 60 years
- f. Proclaimed heritage sites
- g. Grave yards and graves older than 60 years

- h. Meteorites and fossils
- i. Objects, structures and sites of scientific or technological value.

The national estate (see Appendix D) includes the following:

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

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources.

A Palaeontological Impact Assessment (PIA) is an assessment of palaeontological heritage. Palaeontology is a different field of study, and although also sometimes required by the South African Heritage Resources Agency (SAHRA)¹, should be done by a professional palaeontologist.

The different phases during the HIA process are described in Appendix E. An HIA must be done under the following circumstances:

- a. The construction of a linear development (road, wall, power line canal etc.) exceeding 300m in length
- b. The construction of a bridge or similar structure exceeding 50m in length
- c. Any development or other activity that will change the character of a site and exceed 5 000m² or involve three or more existing erven or subdivisions thereof
- d. Re-zoning of a site exceeding 10 000 m²
- e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

Structures

Section 34 (1) of the mentioned act states that no person may demolish any structure or part thereof which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

¹ Please consult SAHRA to determine whether a PIA is necessary.

A structure means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

Alter means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or the decoration or any other means.

Archaeology, palaeontology and meteorites

Section 35(4) of this act deals with archaeology, palaeontology and meteorites. The act states that no person may, without a permit issued by the responsible heritage resources authority (national or provincial):

- a. destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;
- b. destroy, damage, excavate, remove from its original position, collect or own any archaeological or paleontological material or object or any meteorite;
- c. trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or paleontological material or object, or any meteorite; or
- d. bring onto or use at an archaeological or paleontological site any excavation equipment or any equipment that assists in the detection or recovery of metals or archaeological and paleontological material or objects, or use such equipment for the recovery of meteorites.
- e. alter or demolish any structure or part of a structure which is older than 60 years as protected.

The above mentioned may only be disturbed or moved by an archaeologist, after receiving a permit from the South African Heritage Resources Agency (SAHRA). In order to demolish such a site or structure, a destruction permit from SAHRA will also be needed.

Human remains

Graves and burial grounds are divided into the following:

- a. ancestral graves
- b. royal graves and graves of traditional leaders
- c. graves of victims of conflict
- d. graves designated by the Minister
- e. historical graves and cemeteries
- f. human remains

In terms of Section 36(3) of the National Heritage Resources Act, no person may, without a permit issued by the relevant heritage resources authority:

- a. destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
- b. destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
- c. bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation, or any equipment which assists in the detection or recovery of metals.

Unidentified/unknown graves are also handled as older than 60 until proven otherwise.

Human remains that are less than 60 years old are subject to provisions of the Human Tissue Act (Act 65 of 1983) and to local regulations. Exhumation of graves must conform to the standards set out in the **Ordinance on Excavations (Ordinance no. 12 of 1980)** (replacing the old Transvaal Ordinance no. 7 of 1925).

Permission must also be gained from the descendants (where known), the National Department of Health, Provincial Department of Health, Premier of the Province and local police. Furthermore, permission must also be gained from the various landowners (i.e. where the graves are located and where they are to be relocated) before exhumation can take place. Human remains can only be handled by a registered undertaker or an institution declared under the **Human Tissues Act (Act 65 of 1983 as amended)**.

4.2 The National Environmental Management Act

This act (Act 107 of 1998) states that a survey and evaluation of cultural resources must be done in areas where development projects, that will change the face of the environment, will be undertaken. The impact of the development on these resources should be determined and proposals for the mitigation thereof are made.

Environmental management should also take the cultural and social needs of people into account. Any disturbance of landscapes and sites that constitute the nation's cultural heritage should be avoided as far as possible and where this is not possible the disturbance should be minimized and remedied.

4.3 The International Finance Corporations' performance standard for cultural heritage

This standard recognizes the importance of cultural heritage for current and future generations. It aims to ensure that clients protect cultural heritage in the course of their project activities.

This is done by clients abiding to the law and having heritage surveys done in order to identify and protect cultural heritage resources via field studies and the documentation of such resources. These need to be done by competent professionals (e.g.

archaeologists and cultural historians). Any possible chance find, encountered during the project development, also needs to be managed by not disturbing it and by having it assessed by professionals.

Impacts on the cultural heritage should be minimized. This includes the possible maintenance of such sites in situ, or when not possible, the restoration of the functionality of the cultural heritage in a different location. When cultural historical and archaeological artifacts and structures need to be removed, this should be done by professionals and by abiding to the applicable legislation. The removal of cultural heritage resources may, however, only be considered if there are no technically or financially feasible alternatives. In considering the removal of cultural resources, it should be outweighed by the benefits of the overall project to the affected communities. Again professionals should carry out the work and adhere to the best available techniques.

Consultation with affected communities should be conducted. This entails that such communities should be granted access to their cultural heritage if this is applicable. Compensation for the loss of cultural heritage should only be given in extra-ordinary circumstances.

Critical cultural heritage may not be impacted on. Professionals should be used to advise on the assessment and protection thereof. Utilization of cultural heritage resources should always be done in consultation with the affected communities in order to be consistent with their customs and traditions and to come to agreements with relation to possible equitable sharing of benefits from commercialization.

5. METHODOLOGY

5.1 Survey of literature

A survey of literature was undertaken in order to obtain background information regarding the area. Sources consulted in this regard are indicated in the bibliography.

5.2 Reference to other specialist desktop studies

There are no known archaeological sites that occur at the locations where new developments are planned. Also there are no known records of archaeological sites that were available at the existing infrastructure areas. A number of heritage reports are known from previous studies in the Polokwane area (see later).

5.3 Public consultation and stakeholder engagement

Public consultation was handled by WSP | Parsons Brinckerhoff and the necessary report can be requested from them. This included engagement with property owners and owners of adjacent properties, public meetings and open days and engagement with interested and affected parties.

Newspaper notices were placed in English in January 2017. Site notices were placed on site and at public places in January 2017.

5.4 Physical field survey

The survey was conducted according to generally accepted HIA practices and was aimed at locating all possible objects, sites and features of cultural significance in the area of proposed development. One regularly looks a bit wider than the demarcated area, as the surrounding context needs to be taken into consideration.

If required, the location/position of any site was determined by means of a Global Positioning System (GPS)², while photographs were also taken where needed. The survey was undertaken by doing a physical survey via off-road vehicle and on foot and covered as much as possible of the area to be studied (Figure 4).

Certain factors, such as accessibility, density of vegetation, etc. may however influence the coverage. In this instance the under footing was extremely dense and the vegetation cover medium to high. Accordingly both the horizontal and the vertical archaeological visibility was influenced negatively. The survey took 2 hours to complete and the heritage specialist was accompanied by an official from the mine.

5.5 Documentation

All sites, objects features and structures identified were documented according to the general minimum standards accepted by the archaeological profession. Co-ordinates of individual localities were determined by means of the GPS. The information was added to the description in order to facilitate the identification of each locality.

5.6 Evaluation of Heritage sites

The evaluation of heritage sites is done by giving a field rating of each (see Appendix C) using the following criteria:

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

² A Garmin Oregon 550 with an accuracy factor of a few meters.



FIGURE 4: GPS TRACK OF THE SURVEYED AREA. NORTH REFERENCE IS TO THE TOP.

6. ASSUMPTIONS, GAPS, RESTRICTIONS, CONDITIONS AND LIMITATIONS

The following conditions and assumptions have a direct bearing on the survey and the resulting report:

1. Cultural Resources are all non-physical and physical man-made occurrences, as well as natural occurrences associated with human activity (Appendix A). These include all sites, structures and artifacts of importance, either individually or in groups, in the history, architecture and archaeology of human (cultural) development. Graves and cemeteries are included in this.
2. The significance of the sites, structures and artifacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the evaluation of any site is done with reference to any number of these aspects.
3. Cultural significance is site-specific and relates to the content and context of the site. Sites regarded as having low cultural significance have already been recorded in full and require no further mitigation. Sites with medium cultural significance may or may not require mitigation depending on other factors such as the significance of impact on the site. Sites with a high cultural significance require further mitigation (see Appendix C).

4. The latitude and longitude of any archaeological or historical site or feature, is to be treated as sensitive information by the developer and should not be disclosed to members of the public.
5. All recommendations are made with full cognizance of the relevant legislation.
6. It has to be mentioned that it is almost impossible to locate all the cultural resources in a given area, as it will be very time consuming. Developers should however note that the report should make it clear how to handle any other finds that might occur.
7. In this particular case the entire surveyed area has been disturbed by recent human activities, mainly mining infrastructure development. Accordingly these areas are seen as a low risk areas to reveal heritage sites due to it being almost entirely disturbed.
8. The vegetation cover in certain areas was high and dense, which had a negative effect on both the vertical and the horizontal archaeological visibility.

7. DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT

According to the 2011 Census, Polokwane has a total population of 628 999 people, of which 92,9% are black African, 5,2% are white, with the other population groups making up the remaining 1,9 %. Of those aged 20 years and older, 17,9% have some form of higher education, 29,6% has completed matric and only 6,8% had no schooling.

There are 178 001 households in the municipality, with an average household size of 4 persons per household. Nearly 83% of households have access to piped water either in their dwellings or in the yard. About 83% of households have access to electricity for lighting.

There are 230 475 people in the municipality who are economically active (employed or unemployed but looking for work). Of these 18,6% are unemployed.

8. DESCRIPTION OF THE PHYSICAL ENVIRONMENT

The entire surveyed area had been disturbed by recent human interventions. In the area where the plant will be extended to, this mostly consist of activities related to the smelter/ previous mining activities. Various heaps of rubble, stockpiles and bulldozes areas are visible (Figure 5-6). Other signs of disturbance include gravel roads, a conveyor and other infrastructure (Figure 7-8) and remains of concrete floors, low brick walls etc. (Figure 9).

The vegetation cover here varies between medium and high, but dense plants (Figure 10). These mostly consist of pioneer species such as sickle bush, weeds and grass.

The second part of the development are roads to be constructed. These mainly follows existing roads. The area along the routes are also disturbed showing open areas (Figure 11-12), as well as areas with medium to high grass, with a dense under footing (Figure 13-14).

This high, dense vegetation has a negative effect on both the horizontal as the vertical archaeological visibility. The area is however regarded as being a low risk one for containing archaeological and historical features, due to the disturbances.

The topography of the surveyed area is fairly flat with no outstanding features. No rivers or streams were noted.



FIGURE 5: VIEW OF DISTURBANCE IN THE PROJECT AREA.



FIGURE 6: VIEW OF STOCKPILE IN THE SURVEYED AREA.



FIGURE 7: VIEW OF VEGETATION IN THE SURVEYED AREA. ALSO NOTE THE CONVEYOR IN THE BACKGROUND.



FIGURE 8: GENERAL VIEW OF THE SURVEYED AREA.



FIGURE 9: NOTE OTHER SIGNS OF DISTURBANCE IN THE SURVEYED AREA.



FIGURE 10: VIEW OF VEGETATION IN THE SURVEYED AREA.



FIGURE 11: OPEN AREA ALONG PROPOSED ROAD.



FIGURE 12: OPEN AREA INDICATING EARLIER DISTURBANCE OF ENVIRONMENT.



FIGURE 13: DENSE VEGETATION IN THE SURVEYED AREA.



FIGURE 14: GEBERAL VIEW OF SURVEYED AREA ALONG PROPOSED ROADS.

9. PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT

The following comments related to heritage were received:

“It is typical capital behaviour to temper with archaeological sites for unsound reasons. Palmietfontein archaeological footprint close to Silicon would be inconsiderately affected as 'the offices, contractors' area and a proposed new roads will have to be cleared. If the environmental health of Palmietfontein area is distressed or compromised then why destroy it further just to erect working quarters?”

The comment does not seem to grasp the extent of the development, but does refer to the Palmietfontein archaeological area. This will be discussed below, but it can be indicated that it lies approximately 5km from the surveyed site, with some hills in between. Therefore no impact is foreseen.

10. HISTORICAL CONTEXT

No sites of cultural heritage significance were located during the survey. Some background information is given in order to place the surveyed area in a broad historical and geographical context and to contextualize possible finds that could be unearthed during construction activities.

A few heritage reports were completed around the town of Polokwane previously (SAHRA's SAHRIS database; Achaetnos database). These are included in the discussion below.

10.1 Stone Age

The Stone Age is the period in human history when lithic material was mainly used to produce tools (Coertze & Coertze 1996: 293). In South Africa the Stone Age can be divided in three periods. It is, however, important to note that dates are relative and only provide a broad framework for interpretation. The division for the Stone Age according to Korsman & Meyer (1999: 93-94) is as follows:

Early Stone Age (ESA) 2 million – 150 000 years ago
Middle Stone Age (MSA) 150 000 – 30 000 years ago
Late Stone Age (LSA) 40 000 years ago – 1850 - A.D.

Many Stone Age sites have been identified previously in the Capricorn District of the Limpopo Province (of which Polokwane forms the centre). No sites dating to the Early Stone Age were however identified (Bergh, 1999).

Middle Stone Age sites are known at Grace Dieu, the Wonder crater and Mwulu Cave close to Polokwane (Bergh, 1999; Phillipson, 1985; Mitchell 2002). During heritage surveys some Middle and Late Stone Age tools were identified at the Moletlane Mine close to Zebediela (SAHRA SAHRIS database).

Late Stone Age sites have been identified at an area to the south of Polokwane and at Makgabeng (Bergh, 1999; Inskip, 1978). Rock art are also associated with the Late Stone Age. Such sites were found in abundance in the Limpopo Province, but none close to Polokwane (Bergh, 1999).

From the above mentioned it is clear that Stone Age people did utilize and settled in the broader geographical area. There however are some hiatuses due to certain areas not having been researched before. One should therefore be on the lookout for stone tools when groundwork commences.

10.2 Iron Age

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artifacts (Coertze & Coertze, 1996). In South Africa it can be divided in two separate phases according to Van der Ryst & Meyer (1999), namely:

Early Iron Age (EIA) 200 – 1000 A.D.
Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007) however indicates that a Middle Iron Age should be included. His dates, which are now widely accepted in archaeological circles, are:

Early Iron Age (EIA) 250 – 900 A.D.
Middle Iron Age (MIA) 900 – 1300 A.D.
Late Iron Age (LIA) 1300 – 1840 A.D.

Very few Early Iron Age sites have been identified and of the few known sites are all found on the southern side of Blouberg and the northern side of the Makgabeng Plateau. These include Silver leaves, Eiland and Beuley (Nel et.al. 2013: 20-23, Mitchell, 2002). No Middle Iron Age sites are known from this district (Bergh, 1999).

Late Iron Age sites are found in abundance throughout the Limpopo Province. In the Capricorn District it includes 35 sites to the south of Polokwane and 13 smelting sites in the Strydpoort Mountains (Bergh, 1999) as well as the Planknek site close to Polokwane (Mitchell, 2002).

Specific sites relating to archaeo-metallurgy were also identified. Sites where copper smelting were identified include sites between Tzaneen and Polokwane and along the Hout River. Sites where iron were worked include those at between Polokwane and Tzaneen (Bergh, 1999). More sites known are sites on the farm Icon (Huffman, 2007; Archaetnos database) and Matoks (Huffman, 2007).

Late Iron Age site were also identified during heritage surveys at the Lafarge Quarry close to Polokwane (SAHRA SAHRIS database). One site has been developed into a museum, being the Bakone Malapa Museum close to Polokwane. This is on the farm Palmietfontein. No declared national heritage sites from this period are located in the Capricorn District (Bergh, 1999; SAMA, 1991).

The lack of known sites is merely an indication that large parts of the district has not been surveyed in the recent past. Therefore chances are good that Iron Age material and may be identified in the project area, but due to it being relatively far from hills and the disturbance of the area, it is not seen as being a high risk.

10.3 Historical Age

The historical age started with the first recorded oral histories in the area. It includes the moving into the area of people that were able to read and write. This era is sometimes called the Colonial era or the recent past. Due to factors such as population growth and a decrease in mortality rates, more people inhabited the area during the recent historical past. Therefore much more cultural heritage resources have been left on the landscape. It is important to note that all cultural resources older than 60 years are potentially regarded as part of the heritage and that detailed studies are needed in order to determine whether these indeed have cultural significance.

Many of the early trade routes went through the area (Bergh 1999). White farmers settled in the area during the 1850's (Bergh 1999: 16). They were followed by the Berlin Missionaries and later other missionaries (Nel et.al. 2013: 21; Bergh 1999: 57).

It would be impossible to list everything older than 60 years. Sites, features and structures that were found in the sources are however included. Due to the large amount of information, these are only listed below:

- ZAR fortifications between Polokwane and Lydenburg and at Marabastad south of Polokwane.
- Mission stations, including Pietersburg.
- Battlefields from the Anglo-Boer War (1899-1902) including Fort Klipdam and Pietersburg to the north of Polokwane and Houtboschberg to the east of Polokwane.
- The Irish house in Polokwane.
- Old Dutch Reformed church (photographic museum) in Polokwane.
- Monuments indicating Voortrekker routes between Polokwane and Zebediela.
- Monument of General Piet Joubert on horseback with his wife at the town square in Polokwane as well as various other monuments in this town (Oberholster, 1972; Bergh, 1999; Van Tonder, 1977; SAMA, 1991).
- Monument for police sergeant JM Makwela at Turfloop (Van Tonder, 1977).
- Two block houses at Polokwane (Van Vollenhoven & Van den Bos, 1997; Ditsong Museum database).

Declared national heritage sites include the following:

- The first ore stamper for gold on the farm Eersteling close to Polokwane.
- The Louis Trigardt monument north of Polokwane.
- The Irish house, mentioned above.
- Dutch Reformed church in Polokwane.
- The trek route of Louis Tregardt.
- The old fort at Marabastad south of Polokwane, mentioned above (Oberholster, 1972; Bergh, 1999).
- Fort Klipdam north to Polokwane, mentioned above.
- First National Bank building, Polokwane (Oberholster, 1972).

During heritage surveys on various farms graves and historical ruins were identified. These refer to surveys in the Polokwane, Blouberg, Dendron and Zebediela areas (SAHRA SAHRIS database).

One may therefore expect to find buildings and structures of a similar age within the project area. This would also include graves. Some graves have indeed been identified close to Polokwane and some were relocated in the project area (SAHRA SAHRIS database; Archaetnos database).

11. CONCLUSION AND RECOMMENDATIONS

The survey of the indicated area was completed successfully. As indicated no sites of cultural heritage significance were identified within the proposed project area.

The following is recommended:

- From a heritage perspective, no further work is necessary.
- The proposed development may therefore continue.
- It should be noted that the subterranean presence of archaeological and/or historical sites, features or artifacts is always a distinct possibility. Due to the density of vegetation it also is possible that some sites may only become known later on. Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.

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APPENDIX A

DEFINITION OF TERMS:

Site: A large place with extensive structures and related cultural objects. It can also be a large assemblage of cultural artifacts, found on a single location.

Structure: A permanent building found in isolation or which forms a site in conjunction with other structures.

Feature: A coincidental find of movable cultural objects.

Object: Artifact (cultural object).

(Also see Knudson 1978: 20).

APPENDIX B

DEFINITION/ STATEMENT OF HERITAGE SIGNIFICANCE:

- Historic value: Important in the community or pattern of history or has an association with the life or work of a person, group or organization of importance in history.
- Aesthetic value: Important in exhibiting particular aesthetic characteristics valued by a community or cultural group.
- Scientific value: Potential to yield information that will contribute to an understanding of natural or cultural history or is important in demonstrating a high degree of creative or technical achievement of a particular period
- Social value: Have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
- Rarity: Does it possess uncommon, rare or endangered aspects of natural or cultural heritage.
- Representivity: Important in demonstrating the principal characteristics of a particular class of natural or cultural places or object or a range of landscapes or environments characteristic of its class or of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province region or locality.

APPENDIX C

SIGNIFICANCE AND FIELD RATING:

Cultural significance:

- Negligible – The site has no heritage significance, although it may be older than 60 years.
- Low - A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings. A site with minimal importance which is decreased by its bad state of decay.
- Low-Medium - A site of lesser importance, which is increased by a good state of preservation and contextual importance (e.g. a specific community).
- Medium - Any site, structure or feature being regarded less important due to a number of factors, such as date and frequency. Also any important object found out of context.
- Medium-High - A site that has high importance due to its age or uniqueness, but which decreases due to its bad state of decay.
- High - Any site, structure or feature regarded as important because of its age or uniqueness. Also any important object found within a specific context.
- Very High - A site of exceptional importance due to its age, uniqueness and good state of preservation.

Heritage significance:

- Grade I Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III Other heritage resources of local importance and therefore worthy of conservation

Field ratings:

National Grade I significance: The site should be managed as part of the national estate, should be nominated as Grad I site, should be maintained in situ with a protected buffer zone and a CMP must be recommended. Score above 50.

Provincial Grade II significance: The site should be managed as part of the provincial estate, should be nominated as Grade II site, should be maintained in situ with a protected buffer zone and a CMP must be recommended. Score between 40 and 50.

Local Grade IIIA: The site should be included in the heritage register and not be mitigated (high significance), should be maintained in situ with a protected buffer zone and a CMP must be recommended. Score between 36 and 40.

Local Grade IIIB: The site should be included in the heritage register and may be mitigated (high/ medium significance). Mitigation is subject to a permit application lodged with the relevant heritage authority. Score between 6 and 35.

Local Grade IIIC: The description in the phase 1 heritage report is seen as sufficient recording (low significance) and it may be granted destruction at the discretion of the relevant heritage authority without a formal permit application, subjected to the granting of Environmental Authorisation. Score below 5.

APPENDIX D

PROTECTION OF HERITAGE RESOURCES:

Formal protection:

National heritage sites and Provincial heritage sites – grade I and II

Protected areas - an area surrounding a heritage site

Provisional protection – for a maximum period of two years

Heritage registers – listing grades II and III

Heritage areas – areas with more than one heritage site included

Heritage objects – e.g. archaeological, palaeontological, meteorites, geological specimens, visual art, military, numismatic, books, etc.

General protection:

Objects protected by the laws of foreign states

Structures – older than 60 years

Archaeology, palaeontology and meteorites

Burial grounds and graves

Public monuments and memorials

APPENDIX E

HERITAGE IMPACT ASSESSMENT PHASES

1. Pre-assessment or scoping phase – establishment of the scope of the project and terms of reference.
2. Baseline assessment – establishment of a broad framework of the potential heritage of an area.
3. Phase I impact assessment – identifying sites, assess their significance, make comments on the impact of the development and makes recommendations for mitigation or conservation.
4. Letter of recommendation for exemption – if there is no likelihood that any sites will be impacted.
5. Phase II mitigation or rescue – planning for the protection of significant sites or sampling through excavation or collection (after receiving a permit) of sites that may be lost.
6. Phase III management plan – for rare cases where sites are so important that development cannot be allowed.