

Environmental Impact Assessment and Air Emissions Licence for the Proposed Acetylene Gas Manufacturing Facility, located in Daleside, Gauteng

I, Natasha Higgitt, declare that -

General declaration:

- I act as the independent Heritage specialist in this application;
- I do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- I have performed the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I have complied with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signed

18 June 2014

Date



**HERITAGE STATEMENT FOR A PROPOSED
ACETYLENE GAS PRODUCTION FACILITY,
LOCATED NEAR WITKOPDORP,
DALESIDE, SOUTH OF JOHANNESBURG**

ERM SOUTHERN AFRICA (PTY) LTD

13 DECEMBER 2013



DIGBY WELLS
ENVIRONMENTAL

This document has been prepared by **Digby Wells Environmental**.

Report Title: **Heritage Statement for a Proposed Acetylene Gas Production Facility, located near Witkopdorp, Daleside, south of Johannesburg**

Project Number: **ERM2556**

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EXECUTIVE SUMMARY

Air Products South Africa (Pty) Ltd (Air Products) has commissioned Environmental Resources Management Southern Africa (Pty) Ltd (ERM) to conduct an Environmental Impact Assessment (EIA) and associated studies for the proposed acetylene gas production facility in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The proposed operation is referred to here as the project.

In order to comply with Section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA), a Heritage Statement Report (HSR) in support of a Notification of Intent to Develop (NID) was compiled detailing the current cultural landscape and possible sources of risk to cultural resources.

Air Products manufactures supplies and distributes a wide variety of industrial and speciality gas products and chemicals to the southern African region. In particular, Air Products are currently operating two acetylene gas production facilities. These existing facilities have been operational for more than 40 years in an area where encroachment by other industrial and residential dwellings has occurred over the years.

Air Products therefore intends to close down these existing acetylene production facilities and construct a new facility on a site that is positioned to have a reduced off-site risk to surrounding land-users.

The proposed acetylene gas production facility will produce acetylene gas from mixing raw calcium carbide with water. It is expected that the facility will produce a maximum of 14 400 m³ of acetylene gas per day.

Air Products has applied for an integrated Environmental Authorisation through an EIA in terms of the NEMA for the construction and operation of the proposed infrastructure:

The project area is situated in the Malmani Subgroup of the Chuniespoort Group of the Transvaal Supergroup. The Malmani Subgroup predominantly consists of dolomite and it is often known as the Malmani Dolomites formation.

The rocks of the Malmani Subgroup, which are of Precambrian age, are known to have extensive stromatolite fossils in the dolomite-rich stratigraphic units. Of particular importance are sinkholes and caves within the dolomitic units of the Malmani Subgroup that may contain sedimentary infill. In the Cradle of Humankind, these sedimentary infills have, over the years, yielded many important fossils such as the bones of animals and hominins.

The historical landscape was based on agriculture but the current landscape is primarily industrial and commercial with large parts having been altered through time by agriculture, industry and town development. Agricultural activities would have, over the years, destroyed most archaeological resources that may have been present. Industrial activities would further have destroyed any viable archaeological and palaeontology sites that may have existed pre-1999 and before the NHRA came into effect.

No heritage resources, including burial grounds or graves were identified within or near the project area; therefore there are no sources of risks associated with the project for heritage resources.

The first-hand results of the heritage screening assessment support the findings that no significant heritage resources exist. Digby Wells would recommend that no further heritage studies or mitigation measures are required.

Digby Wells thus proposes that a Letter for Exemption of further heritage studies/assessments with regards to the Proposed Acetylene Gas Production Facility be granted from the South African Heritage Resources Agency (SAHRA) and the Provincial Heritage Resources Authority - Gauteng (PHRA-G).

GLOSSARY OF ABBREVIATIONS AND TERMS

ASAPA	Association of Southern African Professional Archaeologists
EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
HSS	Heritage Screening Survey
MLM	Midvaal Local Municipality
NEMA	National Environmental Management Act, 1998
NHRA	National Heritage Resources Act, 1999
PIA	Palaeontological Impact Assessment
PHRA-G	Provincial Heritage Resources Authority
SDM	Sedibeng District Municipality

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1 INTRODUCTION

Air Products South Africa (Pty) Ltd (Air Products) has commissioned Environmental Resources Management Southern Africa (Pty) Ltd (ERM) to conduct an Environmental Impact Assessment (EIA) and associated studies for the proposed acetylene gas production facility in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The proposed operation is referred to here as the project.

ERM has subsequently appointed Digby Wells Environmental (Digby Wells) to complete the heritage component of the EIA in terms of Section 24(c) of the NEMA and Section 38 (8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

2 BACKGROUND INFORMATION OF PROJECT

2.1 Project Details

Air Products manufactures supplies and distributes a wide variety of industrial and speciality gas products and chemicals to the southern African region. In particular, Air Products are currently operating two acetylene gas production facilities. The development of the industrial area over time resulted in the encroachment on the existing facilities.

Air Products therefore intends to close down these existing acetylene production facilities and construct a new facility on a site that is positioned to have a reduced off-site risk to surrounding land-users.

The proposed acetylene gas production facility will produce acetylene gas from mixing raw calcium carbide with water. It is expected that the facility will produce a maximum of 14 400 m³ of acetylene gas per day.

A rotating screw conveyor will be used to feed calcium carbide granules (25 mm – 50 mm) into a reaction chamber which is filled with water. The feed rate of calcium carbide is determined by the withdraw rate of gas flow. The acetylene gas bubbles to the surface and is drawn off under low pressure. It is then cooled by passing through a heat exchanger where chilled water is used as the cooling medium. The acetylene gas then passes through a low pressure dryer where excess moisture is removed. The gas is then compressed to a pressure of 2 300 kPa before being filled into the cylinders which are stored on site prior to distribution.

A by-product of the production process is a slurry of calcium hydroxide (i.e. lime). This slurry is drained from the chamber and pumped into holding ponds where the calcium hydroxide settles out. Air Products intention is to sell this by-product for use in various markets (i.e. agriculture).

The proposed acetylene production facility will comprise the following components:

- Turn bins, used to store and feed the calcium carbide into the system;
- Generator tank where the reaction takes place to produce the acetylene gas;
- Ammonia scrubber to remove any particles of ammonia from the acetylene gas. This has been included in the facility design for quality control purposes;
- Chilled recycled water is used throughout the process of acetylene gas production;
- Dryer, use of silica gel to remove moisture from the gas process; and
- Compressor, used to compress the gas to an adequate pressure for filling into acetylene gas cylinders.

The reaction between calcium carbide and water produces an exothermic reaction and recycled water controls the gas temperature. Approximately 223 m³ of water will be consumed in a 24 hour shift, this is recycled process water. Water will be supplied via the Midvaal Local Municipality for domestic usage and as back up to the plant operation. The facility operation is designed to recycle 80% to 90% of water thus there is no water disposed of into stormwater drains. Furthermore, rainwater will also be harvested from surface water run-off and all roof drainage. This water will be stored and used as process or fire water.

It has been confirmed with Air Products that there will be no boilers or burners as part of the proposed facility. The proposed facility will also comprise storage vessels for the proposed site, which may be used as office space.

Access to the site is planned via Tillet Road which is an existing (dirt) road that will be re-surfaced with the appropriate aggregate for heavy duty vehicles that are expected to access and exit the proposed site. Furthermore, a ring road is also proposed around the facility to allow for effective movement of traffic around the facility (i.e. supplier and customer vehicles). The existing house and associated outbuildings located on Stand 89 will be kept intact and refurbished to serve as offices for the plant.

2.2 Relevant Contact Details

The contact details of the developer, consultant, specialist and landowner are provided in Table 2-1 to Table 2-4.

Table 2-1: Developer contact details

ITEM	COMPANY CONTACT DETAILS
Company	Air Products South Africa (Pty) Ltd
Contact person	Tom MacLean
Tel no	+27 11 570 5000
Fax no	+27 11 570 5294
Cell no	+27 82 566 6354
E-mail address	macleant@airproducts.co.za
Postal address	4 Spencer Road, Spartan Extension 1, Kempton Park, Johannesburg, 1620

Table 2-2: Consultant contact details

ITEM	COMPANY CONTACT DETAILS
Company	Environmental Resources Management Southern Africa (Pty) Ltd
Contact person	Kasantha Moodley
Tel no	011 798 4300
Fax no	011 804 2289
Cell no	082 290 1440
E-mail address	Kasantha.moodley@erm.com
Postal address	1 st Floor Building 32, The Woodlands Office Park, Woodlands Drive, Woodmead, 2148

Table 2-3: Specialist contact details

ITEM	COMPANY CONTACT DETAILS
Company	Digby Wells Environmental
Contact person	Johan Nel
Tel no	011 789 9495
Fax no	011 789 9498
Cell no	072 288 5496
E-mail address	Johan.nel@digbywells.com
Postal address	Private Bag X10046, Randburg, 2125

Table 2-4: Landowner contact details

ITEM	CONTACT DETAILS
Title Deed Owner	Air Products South Africa (Pty) Ltd
Contact person	Tom MacLean
Tel no	011 798 4300
Cell no	082 290 1440
Postal address	4 Spencer Road, Spartan Extension 1, Kempton Park, Johannesburg

3 TERMS OF REFERENCE

ERM requested Digby Wells to complete a Heritage Statement in support of a NID that will be incorporated into environmental assessment reports for the environmental authorisation of the project in accordance with Section 2 (4) a; 24 (1) c and 24 (7) b of the NEMA and Section 38 of the NHRA.

In addition, the NHRA legislative framework as well as other relevant legislation and best practice were considered. The various legislation and standards are discussed below.

3.1 Legislative Framework

3.1.1 National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)

The NEMA stipulated under Section 2(4)(a) that sustainable development requires the consideration of all relevant factors including (iii) the disturbance of landscapes and sites that constitute the nation's cultural heritage must be avoided, or where it cannot be altogether avoided, is minimised and remedied. Section 24 (1) states that in the potential impact on (a) the environment, (b) socio-economic conditions; and (c) the cultural heritage must be considered, investigated and assessed prior to any activities that require authorisation or permission by law.

3.1.2 National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)

Section 38(8) - The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (*replaced by NEMA*), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991) (*replaced by the Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)*), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage

resources authority with regard to such development have been taken into account prior to the granting of the consent.

4 EXPERTISE OF THE SPECIALISTS

Shahzaadee Karodia Khan has completed a Bachelor of Arts (BA) degree in Archaeology and Anthropology, a Bachelor of Science (BSc) Honours degree in Palaeontology, and a Master of Science (MSc) degree in Archaeology at the University of the Witwatersrand (WITS). Mrs Khan currently holds the position of Assistant Heritage Consultant and Palaeontological Specialist at Digby Wells.

Natasha Higgitt has completed a BA Honours degree in Archaeology at the University of Pretoria. She currently holds the position of Assistant Heritage Consultant at Digby Wells, where she has worked for over two years with experience in HIA's in Limpopo and Mpumalanga. She has experience in international heritage and social projects in Liberia.

Justin du Piesanie has completed an MSc degree in Archaeology at the University of the Witwatersrand. Mr du Piesanie currently holds the position of Heritage Consultant at Digby Wells.

All of the above specialists are members of the Association of Southern African Professional Archaeologists (ASAPA) and all have Cultural Resources Management Accreditation Status. The curriculum vitae of the specialists are presented in Appendix A.

5 METHODOLOGY

5.1 Literature Review

Relevant and available published works such as academic journals, academic books, unpublished theses and reports, previous palaeontological and heritage assessments, and websites were reviewed.

5.2 Historical Layering

A review of historical maps such as the Major Jackson Series (MJS) and the Jeppes Collection maps, previous 1:50 000 topographical maps and aerial imagery was completed. Aerial imagery was overlaid to assess the changes in the receiving environment over time. Published geological maps and the new PalaeoSensitivity Map courtesy of the Council of Geoscience and available on the South African Heritage Resources Information System (SAHRIS) website were also assessed.

5.3 Heritage Screening Survey

A Heritage Screening Survey (HSS) was conducted for the project on 28th November 2013 on the directly affected stands in the project area. The aim of the HSS was to identify and record heritage resources on the site. The results of the HSS are discussed in Section 6.3 of this Heritage Statement.

5.4 Site Naming

All sites in the study area identified as part of the desktop study are presented in Appendix B.

5.4.1 Confirmed Sites Identified During Desktop Study

Sites may be identified based on previous relevant reports. The site names and / or numbering that were used in the original reports will be used but prefixed with the relevant SAHRA report number if available followed by reference to the relevant NHRA section. For example, a heritage resources identified by Roodt (1999) described as an archaeological site and numbered Site 1 in that report will be:

1999-SAHRA-0021/S.35-1

If the relevant report does not have a SAHRA report number, then the site names and / or numbering that were used in the original reports will be used, but prefixed with the relevant author followed by reference to the relevant NHRA section. For example, a heritage resource identified by Van Schalkwyk (2007) and described as an archaeological site and numbered '1' in that report will be:

Van Schalkwyk-2007/S.35-1

5.4.2 Unconfirmed Sites Identified During Desktop Study

Potential sites not previously identified but noted as a result of historical layering, desktop studies or through indicators such as vegetation, were names using the Digby Wells project number, followed by the map sheet number and reference to the relevant NHRA section suffixed with the site number:

ERM2556/2628CA/S.35-001

6 STATE OF THE RECEIVING ENVIRONMENT/CULTURAL LANDSCAPE

6.1 General Description of the Affected Environment

6.1.1 Location Data

The project falls under the jurisdiction of the Midvaal Local Municipality (MLM) and is situated in the Sedibeng District Municipality (SDM) of Gauteng. The towns are Daleside, Witkopdorp and Johannesburg. Detailed location data are provided in Table 6-1.

Table 6-1: Location details for the project

Province	Gauteng Province
Magisterial district	Midvaal Magisterial District

District municipality	Sedibeng District Municipality
Local municipality	Midvaal Local Municipality
Nearest town	Daleside
1:50 000 topographical map	2628CA Meyerton
Relative centre coordinates of project area	Latitude: -26.506757 Longitude: 28.053026
Recording method	Google Earth

The facility is proposed to be built on Stand 88 and 89 of Valley Settlements Agricultural Holdings, Witkopdorp, Daleside, south of Johannesburg. The land is bound by Tillet Road to the east, a manufacturing facility to the north, vacant and undeveloped land to the west and construction equipment maintenance and storage facility to the south.

The new proposed facility will be constructed in the centre of the two properties, which have been bought by Air Products. The proposed site selected for the facility is considered suitable in terms of space available as well as the surrounding land-use which is primarily commercial and light industrial use.

6.1.2 Location Maps

The regional settings of the project area are depicted in Plan 1, Plan 2 and Plan 3 in Appendix C.

6.1.2.1 Site Maps

The following site maps are available in Appendix C:

- Plan 4: Geological setting of the project area;
- Plan 5: Identified heritage resources in the project and study areas 1:50 000; and
- Plan 6: Infrastructure layout of the Proposed Acetylene Gas Production Facility
- Plan 7: Heritage Screening Survey

6.1.3 Rezoning and / or Land Subdivision

The project area will not require rezoning as the proposed site is largely undeveloped (one vacant residence only) and is currently zoned for industrial 3 purposes.

6.2 Literature Review

6.2.1 Geology

The project area is situated in the Malmani Subgroup of the Chuniespoort Group of the Transvaal Supergroup. The Transvaal Supergroup is an extensive geological sedimentary rock sequence extending across much of the northern part of South Africa and into Botswana (Eriksson & Altermann, 1998). The rocks of the Malmani Subgroup were formed in the Precambrian age between 2.6 and 2.5 billion years ago, making these rocks one of the oldest formations known.

The Malmani Subgroup predominantly consists of dolomite and it is often known as the Malmani Dolomites formation. Dolomite is a type of limestone rock that forms in warm, shallow seas from the slow accumulation of the remains of marine micro-organisms and fine-grained sediment. The dolomites are characterised by fossils of algae formations that are known as stromatolites that contain high levels of calcium carbonate.

Over long periods of time, ground water erodes away the calcium carbonate matrix found within the dolomite layers which results in the occurrence of underground solution cavities. When the cavities break through to the surface due to erosion or collapse, they form sinkholes and caves. Once the sinkhole or cave is exposed to the surface, it will begin to fill in with sediment and if occupied by carnivores, the infill will include animal bones.

6.2.2 Palaeontology

The rocks of the Malmani Subgroup, which are of Precambrian age, are known to have extensive stromatolite fossils in the dolomite-rich stratigraphic units. Of particular importance are sinkholes and caves within the dolomitic units of the Malmani Subgroup that may contain sedimentary infill. In the Cradle of Humankind, these sedimentary infills have, over the years, yielded many important fossils such as the bones of animals and hominins.

The fossil heritage potential of the geology corresponds with the PalaeoSensitivity Map which indicated that the area has very high sensitivity (based on the occurrence of dolomite rocks).

A Palaeontological Impact Assessment (PIA) for the installation of a water pipeline at Kliprivier was conducted by Rubidge (2008) approximately 10 km north of the project area. During the PIA, no Quaternary sinkhole and cave infill deposits were found (Rubidge, 2008). In addition, the rock outcrops of the Transvaal Supergroup were also surveyed however at most places these outcrops were covered by thick soil and scree deposits (Rubidge, 2008). No fossils were found at the outcrops.

Satellite imagery surveys of the project area showed that the area has been disturbed by development and industrial and commercial activities. No outcrops were observed.

6.2.3 Stone Age

The Stone Age is divided into the following:

- Early Stone Age (ESA) - 2.5 million years ago (mya) to about 250 000 years ago;
- Middle Stone Age (MSA) - 250 000 years ago to 22 000 years Before Present (BP); and
- Later Stone Age (LSA) - 22 000 BP to the period of contact with either Iron Age farmers or European colonialists.

The Stone Age is fairly well researched and understood in southern Africa. Within the study area, there have been numerous HIAs and Archaeological Impact Assessments (AIAs) completed in which a number of Stone Age sites have been recorded (Huffman, 2007a; Huffman, 2007b; Huffman, 2008; Huffman & Schoeman, 2004; Huffman, et al., 1991; Van Schalkwyk, 2007). ESA artefacts that may occur include cores, flakes and bifaces made from quartzite and dolerite and are scattered along hillsides or found in quarries and along roads (Huffman, et al., 1991). MSA artefacts such as prepared cores and triangular flakes can also be found in scatters along hillsides, quarries, roads and dolerite outcrops (Huffman, 2007a; Huffman, et al., 1991). At the closest identified site, approximately 8 km north-west of the project area, various Oakhurst (about 14 000 years ago) flakes were identified and recorded in a quarry (Huffman, 2008).

Stone Age sites may therefore occur all over the area however an unknown number may have been obliterated by mining activities, urbanization, industrialization, agriculture and other development activities during the past decade.

6.2.4 Iron Age

The Iron Age as a whole represents the spread of Bantu-speaking people and includes both the pre-historic and historic periods. Similar to the Stone Age, it can be divided into three periods:

- The Early Iron Age: Most of the 1st millennium Common Era (CE);
- The Middle Iron Age: 10th century to 13th century CE; and
- The Late Iron Age: 14th century CE to colonial period.

In the northern regions of South Africa, at least three settlement phases have been distinguished for early pre-historic agropastoralists settlements during the Early Iron Age. Diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. The first phase of the Early Iron Age, known as *Happy Rest* is representative of the Western Stream of migrations and dates from 400 CE to 600 CE. The second phase is known as *Diamant* and dates from 600 CE to 900 CE. The third phase is characterised by herringbone-decorated pottery of the *Eiland* facies and dates from 900 CE to 1 200 CE. This phase is regarded as the final expression of the Early Iron Age and occurs over large parts of the North West Province, the Northern Province, Gauteng and Mpumalanga.

Late Iron Age settlements are characterised by stonewalled enclosures situated on defensive hilltops. This occupation phase has been linked to the arrival of the ancestral

Northern Sotho, Tswana and Southern Ndebele (Nguni-speakers) in the northern and Waterberg regions and dates from 1640 to 1830. The end of the Late Iron Age is represented by the 18th and 19th century settlements with multichrome *Moloko* pottery commonly attributed to the Sotho-Tswana. The Late Iron Age settlements can, in many instances, be correlated with oral traditions on population movements in southern Africa resulting from the Difaqane (also known as the Mfecane).

In the study area, only one Iron Age settlement was previously identified and recorded. This Late Iron Age stonewalled settlement, recorded by Huffman (Huffman, 2008), is located approximately 9 km north-west of the project area. The settlement has Klipriviersberg stonewalling and consists of four homesteads with each unit equipped with its own central kraal areas surrounded by a residential zone (Huffman, 2008). Pottery belonging to the *Uitkomst facies* was found indicating that the site dates to the 1800s.

6.2.5 Historical Period

The historical period is associated with the first European and Voortrekker settlers moving into the area. These included travellers, missionaries and farmers. This is the time when the first historical documents were produced and oral histories recorded.

Today, common historical structures associated with the arrival of the European and Voortrekker travellers include historical homesteads and buildings. Many of these structures can be found across the landscape. For example, in the Klipriviersberg Nature and Archaeological Reserve which is situated approximately 26 km north of the project area, there is a historical homestead that was built in about 1850 by Sarel Marais who was one of the early Voortrekkers. Marais and his family settled just above the Bloubosspruit in the southern part of the Reserve. He built five structures characterizing a typical 1850s farmstead: a farmhouse, a waenhuis or wagonhouse, an orchard, an irrigation furrow and a cemetery (Pelser & van Vollenhoven, 2009).

Other homesteads in the area that date to the 19th century belonged to the 'bywoners' or poor whites, and then to black people in the 1930s and 1940s (Huffman, et al., 1991). These bywoner settlements typically consist of stonewalling, foundations and middens.

When gold was discovered in the Witwatersrand, hostilities between the Boers and British emerged, with the latter seeking control. In 1899, the First Anglo-Boer War (also known as the South African War) broke out. In an attempt to fortify their strongholds, the British built a number of forts, blockhouses and trenches at strategic points across the landscape. Today, numerous blockhouses can still be seen such as the remains of the British 'Witkop Blockhouse' next to the railroad link between Kliprivier and Daleside approximately 4 km north of the project area (Huffman, 2008) (See Figure 6-1). The British also burnt down many Boer homesteads in this area in about 1902 (Huffman, et al., 1991). Remnants of this aspect of the historical landscape may include graves, battlefields, historical homestead complexes and the remains thereof, as well as subsurface evidence such as middens (Huffman, 2007a; Huffman, 2007b; Huffman, 2008; Huffman & Schoeman, 2004; Huffman, et al., 1991; Van Schalkwyk, 2007).



Figure 6-1: Witkop Blockhouse (Photograph by N Higgitt, 2013)

6.2.5.1 Historical Layering

The Jeppe's Map of the Transvaal (1899), depicted in Figure 6-2 showed that farms were demarcated. The map also indicates that there is a railway line to the west of the project area. The Station Kliprivier lies to the north of the project area. The town of Meyerton is also indicated on the map. These features reflect human settlement and industrial activity in the area.

The first edition of the Heidelberg Imperial Map (1900), depicted in Figure 6-3, illustrates a significant expansion of road networks when compared to the 1899 Jeppe's map.

The 1910 edition of the Heidelberg Transvaal and Orange Free State Map, depicted in Figure 6-4, illustrates a significant expansion of commercial areas when compared to the 1899 Jeppe's map. By 1911, Highbury, Henley on Klip and Meyerton were all relatively important nodes. The importance of these townships is notable based on several features on the map such as the school, railway station, bridges and stores.

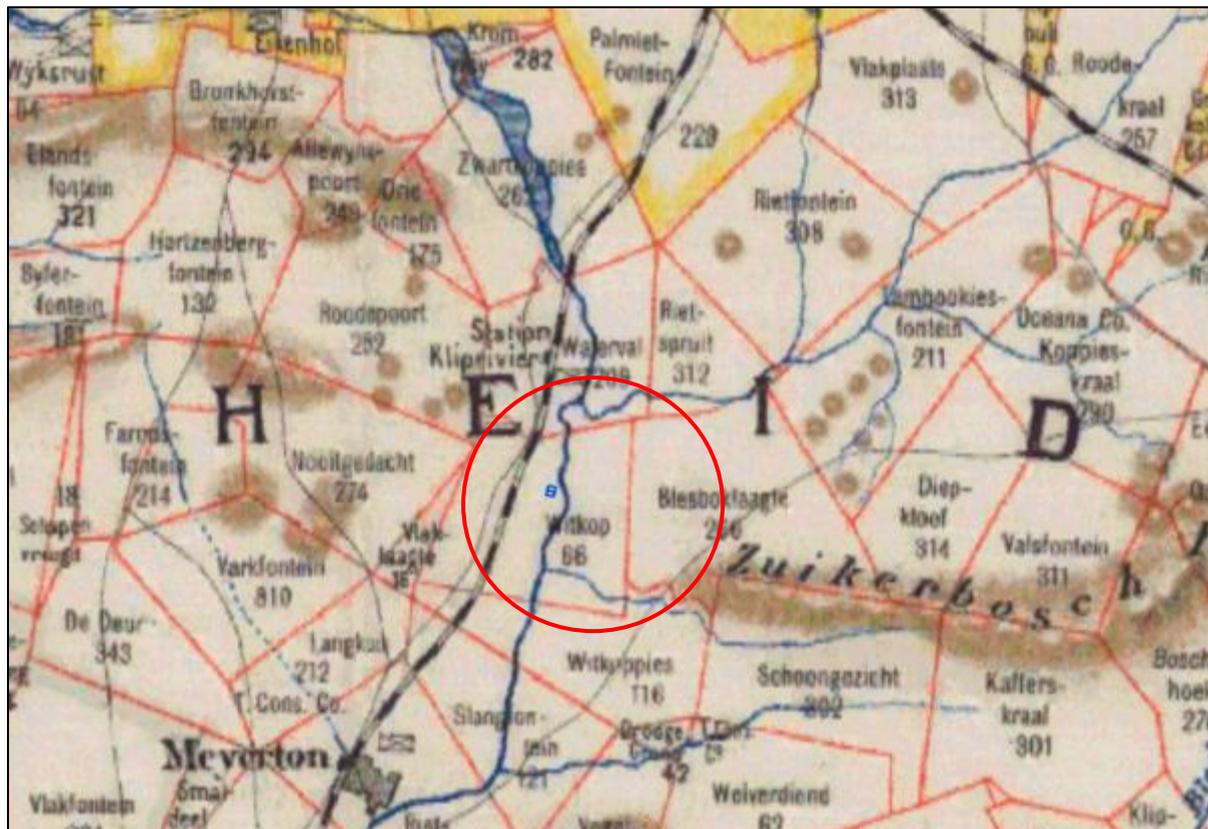


Figure 6-2: An 1899 Jeppe Map of the Transvaal. Note the railway to the west of the project area.

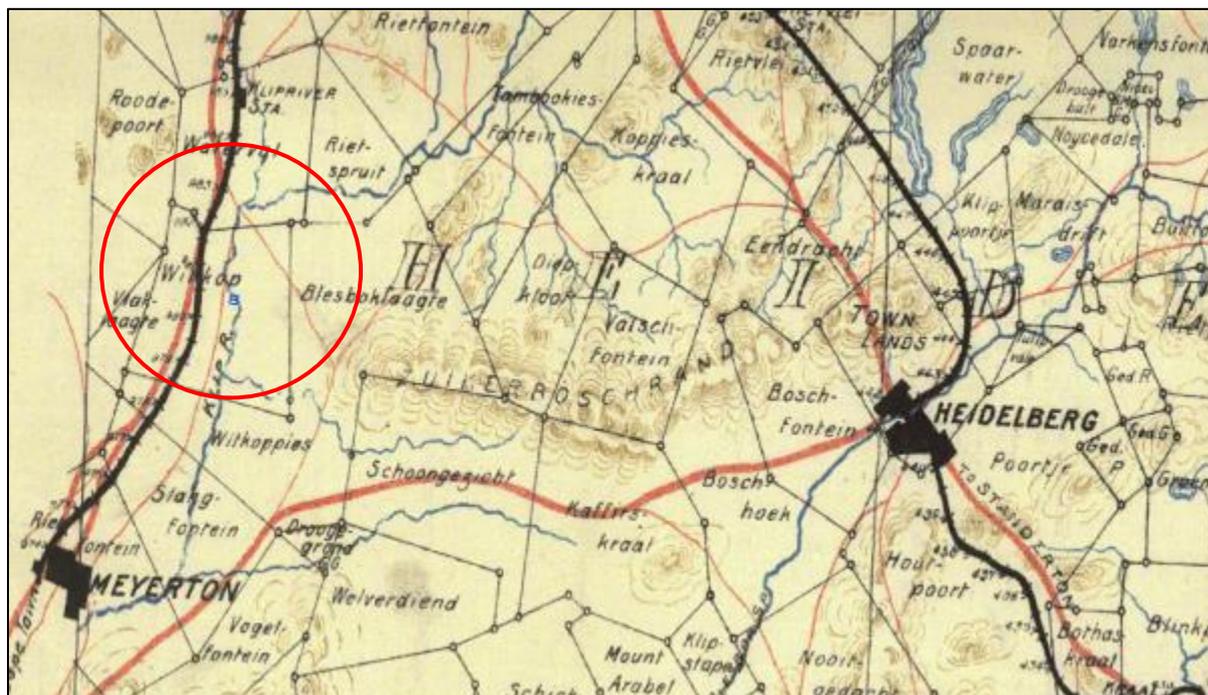


Figure 6-3: First Edition Heidelberg (1900) Imperial Map. Note the expanded road networks.



Figure 6-4: A 1910 to 1911 map of Heidelberg Extension. Note the townships of Highbury, Henley on Klip and Meyerton as well as features such as schools, railway stations, bridges and stores.

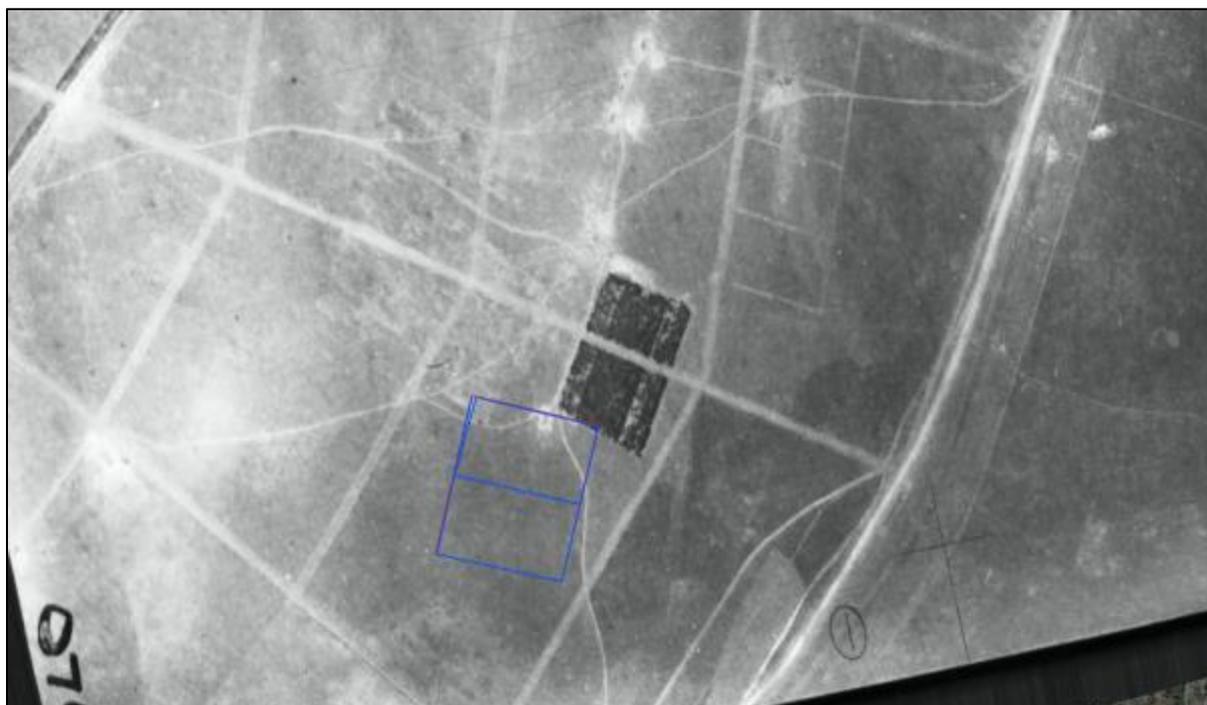


Figure 6-5: Historical 1938 aerial imagery of the project area. Note the main road to the east of the project area. The area lacks any major development. The only structures that can be seen are a few farmsteads to the north and north-east of the project area.



Figure 6-6: Historical 1980 aerial image showing the project area and the construction of the house on Stand 89. Note the main road and railway to the east as well as the open pit.



Figure 6-7: Google Earth aerial image from 6/12/2006 showing the construction of the house on Stand 88.

6.3 Heritage Screening Survey Results

A HSS was completed on the 28 November 2013 and the project area was visited and recorded by use of photographs and a GPS track log.

The structure on Stand 88, built between 2005 and 2006 is dilapidated and in ruin (Figure 6-8). The structure is constructed from modern bricks with electrical wiring and plumbing. Dumping of rubble and construction debris is evident on the plot (Figure 6-9).



Figure 6-8: Dilapidated structure on Stand 88 built between 2005 and 2006 (Photograph by N Higgitt, 2013)



Figure 6-9: Rubble dumping and foundations adjacent the structure on Stand 88. (Photograph by N Higgitt, 2013)

The house on Stand 89, built in approximately 1980 is currently vacant, but is still structurally sound and maintained (See Figure 6-10). The main house is accompanied by two smaller outbuildings, a pool and lapa (See Figure 6-11 and Figure 6-12). The main house has been remodelled and refurbished numerous times, and has had additional rooms added to the structure.



Figure 6-10: Main house on Stand 89 built in approximately 1980. (Photograph by N Higgitt, 2013)



Figure 6-11: Adjacent outbuildings on Stand 89. (Photograph by N Higgitt, 2013)



Figure 6-12: Rear view of the house, lapa and pool identified on Stand 89. (Photograph by N Higgitt, 2013)

7 SOURCES OF RISK

No heritage resources, inclusive of burial sites, surface archaeological artefacts or historical remains were identified within the project area; therefore no sources of risks to heritage resources have been identified.

8 DISCUSSION OF FINDINGS

The current cultural landscape was agricultural but today it is primarily industrial and commercial with large parts having been altered by agriculture, industry and town development. Land use in the project area has changed from agriculture to dense suburban residential development and industrial development during the past 50 years. The likelihood of any significant in situ archaeological, historical and palaeontological resources occurring is thus minimal.

The PalaeoSensitivity Map indicates that the area has a very high sensitivity (based on the occurrence of sedimentary rocks). During the HSS, no Quaternary sinkhole and cave infill deposits were found. In addition, the rock outcrops were also surveyed however at most places these outcrops were covered by thick soil and scree deposits. No fossils were found

at the outcrops. It is therefore unlikely that construction activities will impact on fossils that may exist on the surface.

Fossils can occur underground, especially in coal fields, however it is not possible to predict the buried fossil content of an area other than in general terms. Furthermore, the fossil plants associated with the underground coal seams will be poorly preserved and the most important fossil bone material is generally sparsely scattered in most deposits.

Agricultural activities in the past would have destroyed most archaeological resources that may have been present. Industrial activities would further have destroyed any viable archaeological and palaeontology sites that may have existed pre-1999 and before the NHRA came into effect. The main house on Stand 89 was built in approximately 1980 according to aerial imagery. This house has been changed and added to over the years and is now standing vacant. The structure on Stand 88 was built between 2005 and 2006, and is currently in ruins. Both of identified structures and erfs are not older than 60 years and are not in good condition therefore their heritage value is of negligible significance.

As the affected area has been disturbed by previous agricultural, industrial and commercial activities, it is unlikely that the project will impact on any palaeontological heritage. There are no outcrops of fossil-bearing rocks of the Malmani Dolomite Subgroup in the project area and therefore the construction of the acetylene gas production facility will not affect any palaeontological heritage. In addition, it is unlikely that there will be any Quaternary sinkhole or cave deposits that may be affected in the area.

A review of heritage reports relevant to the study area further indicated that typical heritage resources occurring in the region are archaeological sites with relatively low significance and historical structures and burial grounds with medium to high significance.

9 RECOMMENDATIONS

The first-hand results of the HSS support the findings that no significant heritage resources exist. It is therefore recommended that the proposed project be wholly exempted from a HIA including components such as:

- Built Environment Assessment;
- Archaeological Impact Assessment;
- Phase 1 Palaeontological Assessment;
- Burial Grounds and Graves Assessment; and
- Visual Impact Assessment.

In the event that any heritage resources are identified, Chance Finds Procedures (See Appendix D) should be implemented and SAHRA should be alerted as soon as possible so that appropriate action can be taken by a professional archaeologist/palaeontologist.

Heritage Statement for a Proposed Acetylene Gas Production Facility,
located near Witkopdorp, Daleside, south of Johannesburg

ERM2556



Digby Wells thus proposes that a Letter for Exemption of further heritage studies/assessments with regards to the Proposed Acetylene Gas Production Facility be granted from SAHRA and the PHRA-G.

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