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# LETTER OF RECOMMENDATION FOR THE EXEMPTION FROM A FIRST PHASE ARCHAEOLOGICAL & HERITAGE INVESTIGATION OF THE PROPOSED FLY-ASH PLANT ON ERVEN 24954 & 24955, NALEDI INDUSTRIAL AREA, SASOLBURG, FREE STATE

## EXECUTIVE SUMMARY

Mixocom Holdings, Sasolburg, is planning the installation of a fly ash plant at erven 24954 and 24955 in the Naledi Industrial area at Sasolburg, Free State.

The land consists of sterile sandy soil and represents old plough lands. The top soil has been levelled and graded with a total damage to the soil surface.

No archaeological, cultural or any historical remains were found.

The new developments will have no impact on the cultural heritage and historical environment of the area.

I recommend that the proposed new developments be exempted from a full Phase I heritage report.

Further planning of the proposed project may continue, and no mitigation measures will be needed.

## INTRODUCTION & DESCRIPTION

MvW Environmental Consultants, Bloemfontein, on behalf of the applicant, Mr Pieter van der Waldt from Mixocom Holdings, Sasolburg, commissioned the archaeological and heritage assessment of the installation of a fly ash plant at erven 24954 and 24955 in the Naledi Industrial area, Sasolburg.

Fly ash refers to ash produced during the combustion of coal or the burning of solid waste to generate electricity. In the past, fly ash was released into the atmosphere, but in recent years, pollution control requires that the ash be captured and recycled. Fly ash can also be stored at coal power plants or discarded in landfills. In the present case, a substantial quantity of the substance will be recycled to supplement the manufacture of cement.

In prehistoric Roman structures such as aqueducts or the Pantheon in Rome, volcanic ash, which possesses similar properties to fly ash, had been used to improve the strength and durability of concrete. In South Africa, the use of fly ash dates from around 1914, but the earliest noteworthy investigation into its use was in 1937. (Dr J.C. Loock, Personal Communication).

## Scope and Limitations

The investigation provided the opportunity to examine the piece of land proposed for the installation of a fly ash plant at erven 24954 and 24955 in the Naledi Industrial area at Sasolburg. The land consists of sterile sandy soil and represents old plough lands. The top soil has been levelled and graded, resulting in a total damage of the surface.

No limitations were experienced during site visit.

## Methodology

1. Standard archaeological survey and recording methods were applied.
2. A survey of the literature was done to obtain information about the history, archaeology and heritage of the area.
3. The site was inspected on foot.
4. The layout of the area was plotted by GPS and transferred to Google Earth.
5. Surroundings and features were recorded on camera.

## INVESTIGATION

The installation of a fly ash plant is planned at erven 24954 and 24955 in the Naledi Industrial area at Sasolburg (Map 1). The layout of the stand is indicated on Map 2.

The site was examined on 27 August 2013. Manie van Wyk from MvW Environmental Consultants, Bloemfontein, took me to the site.

The study aims to locate and evaluate the significance of heritage sites, archaeological material, manmade structures older than 60 years, and sites associated with oral histories and graves that might be affected by the proposed

developments. In many cases, planted and self-sown trees and other types of vegetation determine a major part of the historical landscape of human settlements in villages and towns, on farmyards or even deserted places in the open veld. These features should be recognised and taken into consideration during any cultural investigation.

The site was examined for possible archaeological and historical remains and to establish the potential impact on any cultural material that might be found. The Heritage Impact Assessment (HIA) is done in terms of the National Heritage Resources Act (NHRA), (25 of 1999) and under the National Environmental Management Act, 1998 (Act. 108 of 1998).

It is clear that extensive farming activities occurred around Sasolburg before the land was earmarked for industrial purposes.

## ARCHAEOLOGICAL BACKGROUND

The archaeological environment of the Free State Province is rich and diverse, representing a long time span during the human past. Certain Later Iron Age sites have produced important archaeological information (Maggs 1976, Dreyer 1996). These Iron Age sites date between 1660 AD and 1810 AD. The Later Iron Age phase brought people who cultivated crops, kept livestock, produced an abundance of pottery in a variety of shapes and sizes and smelted metals. Extensive stone walled enclosures characterise their permanent settlements. These living places are known from the prominent Sotho/Tswana settlements at in the Vredefort Dome, Doringberg (Maphororong) near Ventersburg, Viervoet (Tihela) near Clocolan, Biddulpsberg (Kurutlele) near Senekal and Marabeng near Ficksburg. A number of Taaibos Korana and Griqua groups, remnants of the Later Stone Age peoples, managed to survive the assimilation by Sotho/Tswana tribes in the region.

Dramatic climate changes resulted in a rapid population growth along the east coast of South Africa. Increased pressure on natural resources and the control of trade during the early 19$^{th}$ century brought the emergence of powerful leaders to the area. The subsequent power struggles resulted in a period of instability in the central parts of Southern Africa. This period of strife or wars of devastation, known as “difaqane” (Sotho/Tswana) or “Mfecane” (Nguni), affected many of the Black tribes in the interior. Attacks from east of the escarpment initiated by the AmaZulu impis of Chaka in about 1822, were continued by the AmaNdebele of Mzilikazi and the AmaNgwane of Matiwane into the Free State, thus uprooting among others, the Batlokwa of Sekonyela and Mantatise and various smaller Sotho/Tswana tribes. On their turn, the Batlokwa drove off the Bafokeng of Sebetoane from Kurutlele near Senekal, who, in their effort to escape the pursuit by the AmaNdebele forces, eventually landed up in the Caprivi (Dreyer & Kilby 2003). This period of unrest directly affected the peoples of the Free State,

Northern Cape, Northwest Province and the southern parts of the land across the Vaal River, resulting in the displacement of scores of tribesmen, women and children. The stronger tribal groups, such as the AmaNdebele of Mzilikazi, assimilated many of these refugees.

Early European missionaries and travelers ventured into the interior of the country during the 19th century (Dreyer 2001). The Rev James Archbell established the missionary at Thaba Nchu by 1834. Several of the marauding hordes affected the lives of the Batswana people living at Dithakong near the mission station of Robert and Mary Moffat near Kuruman.

Ancient Batswana tribes take their roots back to the Vredefort Dome (Pelser 2002, Maggs 1976, Taylor 1979, Loubser 1985) and the region to the east along the Vaal River during the 18th century and 19th century (Maggs 1976). The area along the Vaal River produced strong evidence of the presence of stone walled Later Iron Age archaeological living sites (Maggs 1976). Despite the locality of Sasolburg within this potentially rich cultural region, archaeological research in the Free State (Maggs 1976) and Heritage Impact Assessments (HIA) in the Sasolburg area (Dreyer 2005), produced very little material of cultural or historical significance. In the immediate surroundings of Sasolburg, the research shows a lack of Later Iron Age sites (Maps 4&5).

## HISTORICAL BACKGROUND

During the early 19th century, this area along the Vaal River became known for the rich deposits of burning coal. George William Stow, a prospector of fame discovered the deposits at a site in the Heilbron district, near what later became the town of Vereeniging (Muller 2001).

**George William Stow, born 2 February 1822 at Nuneaton, Warwickshire, died 17 March 1882 at Maccauvlei on the Vaal River.**

Stow was born on 2 February 1822 at Nuneaton, Warwickshire. He received his school education on the Isle of Dogs. At age 21, he immigrated to South Africa, landing at Port Elizabeth in December 1843. He taught at a mission near Cuylerville, was a clerk in the commissariat, tried his hand at farming, became a bookkeeper in Port Elizabeth, a trader in Queenstown and a wine-merchant, diamond dealer and auctioneer in Kimberley. Stow was married three times. After his death, his third wife lived in poverty at Smithfield in the Free State.

While prospecting in the Renosterberg near Middelburg, Cape Colony, he found an Early Triassic amphibian fossil skull. Stow continued to spend a great deal of his time exploring the Cretaceous deposits within the Sundays and Zwartkops River basins near Port Elizabeth and the Karroo System near Dordrecht. Stow was persuaded by Dr. Richard Nathaniel Rubidge to report his discoveries to Thomas Rupert Jones of *The Geological Society*. At a meeting of *The Geological Society* on 17 November 1858, a paper by Stow "*On Some Fossils from South Africa*" was read. The species was later named *Micropholis stowi* by Huxley, a species currently placed in the family Amphibamidae. The paper was the first of many contributions by Stow to geological journals, the most important probably being "*Geological Notes on Griqualand West*" published in the *Quarterly Journal* of 1874, shortly after he was elected a Fellow of the Geological Society of London in 1872.

In 1872, the Government of the Cape Colony needed a geological report on Griqualand West. Stow's application was accepted and a fee of £50 was agreed on. After completion in 1877, Sir Henry Barkly, Governor of the Cape Colony, took Stow's maps and manuscripts to England, where they were highly commended. This landmark work was unfortunately never published. In the same year, the Orange Free State Government commissioned Stow to do a geological survey of the Province.

On his many field trips, Stow became familiar with rock art in the caves and shelters of South Africa. From the 1860s, he recorded the rock art he encountered. He wrote: *"During the last three years I have been making pilgrimages to the various old Bushman caves among the mountains in this part of the Colony and Kaffraria; and, as their paintings are becoming obliterated very fast, it struck me that it would be well to make copies of them before these interesting relics of an almost extinct race are entirely destroyed."*

Through his involvement with rock art Stow became acquainted with the noted anthropologist Dorothea F. Bleek, her farther German linguist Dr Wilhelm Heinrich Immanuel Bleek and her aunt, Lucy Lloyd, people who would have a strong influence on his life and works. To them he confided his plan to continue documenting rock art with the help of his young Bushman assistant and despite a lack of funding, Stow persisted in recording rock art for posterity.

On his wanderings across the interior, Stow recorded information on the indigenous tribes with which he came into contact. This leading him to believe that the Bushmen were the ancient inhabitants of the region and the Bantu peoples relative newcomers. His book "*The Native Races of South Africa*" published in 1905 was edited by George McCall Theal. Manuscripts on individual tribes were later discovered at Smithfield by his biographer, Prof. Robert Burns Young, a colleague of Raymond Dart, at the Witwatersrand University in Johannesburg (Young 1908).

George William Stow died on 17 March 1882 at Maccauvlei where the Sasolburg Golf Course is today. The place of his grave remains a mystery (A.R.W. no date, Kennedy 1974, Young 1908).

## LOCALITY

Sasolburg is an industrial town in the north eastern Free State, established in 1954 to provide housing and facilities for SASOL employees. The coal reserves of the region were extensive at the time and the initial installation (SASOL 1) was a pilot plant to refine oil from coal. Plans were made for further production plants, and the town of Secunda was established to house the construction and operations of SASOL 2 and SASOL 3 (Map 1).

Sasolburg lies at a high altitude with a dry climate and large seasonal temperature variation. It is situated near the Vaal River a short distance from the Vaal Dam.

The site for the present development is located on Erven 24954 and 24955, Pluto Street, in Naledi Industrial area of Sasolburg. The layout of the proposed development is very basic (Map 2). The land consists of sterile sandy soil and represents old plough lands (Fig.2). Levelling and grading caused serious damage to the soil surface (Fig.1). The area contains no grass or vegetation cover (Figs.1&2, 5&6).

The following GPS co-ordinates were taken (Cape scale) (2627) (Surveyor-General 1973): (Map 3).

**A** 26°47’25”S. 027°51’08”E. Altitude 1454m (Figs.1-4).

**B** 26°47’26”S. 027°51’09”E. Altitude 1454m (Fig.5).

**C** 26°47’22”S. 027°51’11”E. Altitude 1435m (Figs.6&7).

**D** 26°47’24”S. 027°51’07”E. Altitude 1439m (Fig.8).

**E** 26°47’22”S. 027°51’07”E. Altitude 1431m (Fig.9).

## RESULTS

### FINDS

No indication of archaeological or any historical material was found at the site.

## IMPACT ASSESSMENT

The potential impact by the new industrial developments on the heritage resources of the site is of minor significance and no mitigation measures will be needed.

## RECOMMENDATIONS

There are no obvious reasons to delay further planning of the developments at the specific site.

I recommend that the proposed new extensions should be exempted from a full Phase I report and that the planning of the proposed developments may proceed.

## MITIGATION

No mitigation measures will be required.

## ACKNOWLEDGEMENTS

I thank Manie van Wyk from MvW Environmental Consultants, Bloemfontein, for taking me to the site. Dr J.C. Loock (HC), geologist and Anglo-Boer War expert from Bloemfontein, commented on the substance of fly ash.

**SELECT BIBLIOGRAPHY:**

ANON. 1979. The puzzle of the old mine. Sasol News, June 1979:10.

A.R.W. (no date). George William Stow. SA Biographical Dictionary (737-40).

BREYTENBACH, J.H. 1978. Die Geskiedenis van die Tweede Vryheidsoorlog in Suid-Afrika, 1899-1902. Vols: I-VI. Pretoria: Government Printer.

DEACON, J. 1992. Archaeology for Planners, Developers and Local Authorities. Cape Town: National Monuments Council.

DREYER, J.J.B. 1992. The Iron Age Archaeology of Doornpoort, Winburg, Orange Free State. Navorsinge van die Nasionale Museum, Bloemfontein, Vol.8(7):262-390.

DREYER, J. 1996. Introduction to Free State Iron Age Archaeology. In: Guide to archaeological sites in the Free State and Lesotho. Southern African Association of Archaeologists (SA3), 14th Biennial Conference, Bloemfontein, Post-conference tour 5-8 July 1996. National Museum, Bloemfontein.

DREYER, J. 2000. Mountains and Rivers of the Free State - Manual for field research / Berge en Riviere van die Vrystaat – Handleiding vir veldnavorsing. Bloemfontein: University of the Free State, Department of Anthropology, Occasional Paper No. 2.

DREYER, J. 2003. A brief account of the life and war experiences of Commandant T.F.J. Dreyer (1860-1943). South African Journal of Cultural History 17(1):16-32.

DREYER, J. 2004. Archaeological and historical assessment of the proposed tourist accommodation facilities on the farm Buffelskloof 511 IQ in the Vredefort Dome Conservancy. EIA Report for Enviroworks Environmental Consultants, Bloemfontein.

DREYER, J. 2005. First phase archaeological and heritage impact assessment for the proposed development of the Heron Banks Golf and River Estate, Sasolburg, Free State. EIA Report for Heron Banks Developers, Cape Town.

DREYER, J. 2005. First phase archaeological and cultural heritage assessment of the proposed residential developments at Amelia 518, Sasolburg. EIA Report for Cebo Environmental Consultants, Bloemfontein.

DREYER, J. 2005. First phase archaeological and cultural heritage investigation of the proposed residential developments on the farm Sligo 214, Vredefort, Free State. EIA Report Enviroworks Environmental Consultants, Bloemfontein.

DREYER, J. 2005. First phase archaeological and cultural heritage investigation of the proposed residential developments on the farm Vaalkop 1024, Vredefort, Free State. EIA Report Enviroworks Environmental Consultants, Bloemfontein.

DREYER, J. 2006. First phase archaeological and cultural heritage investigation of the proposed residential developments on the farms Denoon 808, Maara 618, Aasvogelrand 249, Bergplaats 240 & Union 440, Vredefort, Free State. EIA Report MDA Environmental Consultants, Bloemfontein.

DREYER, J. 2008. First phase archaeological and cultural heritage assessment of the proposed residential developments at the farm Buffelskloof 511 IQ, Vredefort Dome, Potchefstroom, North-West Province. EIA Report for Ecoscope Environmental Consultants, Parys.

DREYER, J. 2010. First phase archaeological and heritage assessment of the site proposed for the Vodacom mast at the farm Buffelskloof 511 IQ, Vredefort Dome, North West Province. EIA Report for Incline Environmental Consultants, Bloemfontein.

DU PREEZ, P.J. 1987. Ekologie van die boomgemeenskappe van Vredefort. M.A. University of the Free State, Bloemfontein.

EVERS, T.M. 1988. The recognition of groups in the Iron Age of Southern Africa. D. Phil. University of the Witwatersrand, Johannesburg.

HALL, A.L. & MOLENGRAAF, G.A.F. 1925. The Vredefort mountain land in the Southern Transvaal and Northern Orange Free State. Amsterdam: Koninklijke Akademie van Wetenschappen.

HALL, A.L. 1929. The Vredefort granite dome in the Northern Orange Free State and the Southern Transvaal. Pretoria: Wallachs'.

HALL, S. 1995. Archaeology of stress in the Western Transvaal Region between the Seventeenth and Nineteenth Centuries. (p. 307-321) In: HAMILTON, C. (Ed.) 1995. The Mfecane Aftermath. Johannesburg: Wits University Press.

HAMILTON, C. (Ed.) 1995. The Mfecane Aftermath. Johannesburg: Wits U.P.

HART, R.J. & NICOLAYSEN, L.O. (Eds.). 1981. Excursion guide book for the geology of the Vredefort structure. Johannesburg: Geological Society of South Africa.

HAUGHTON, E.J. & WELLS, L.H. 1942. Underground structures in caves of the Southern Transvaal. South African Journal of Science 38 (319-333).

HUMPHREYS, A.J.B. 1986. Searching for the past. Cape Town: David Philip.

KENNEDY, R.F. 1974. George William Stow. SESA Vol 10:315-316.

LOUBSER, J.H.N. 1985. Buffelshoek: An Ethnoarchaeological consideration of a Late Iron Age settlement in the southern Transvaal. South African Archaeological Bulletin 40(142):81-87.

MAGGS, T.M. 1976. Iron Age Communities of the Southern Highveld. Pietermaritzburg: Natal Museum.

MASON, R.J. 1962. The Prehistory of the Transvaal. Witwatersrand University Press, Johannesburg.

MASON, R.J. 1975. Archaeology of the 1880-1881 Fort, Potchefstroom. The South African Military History Journal Vol 3 No 4 - December 1975.

MASON, R.J. 1986. Origins of the Black People of Johannesburg and the Southern Western Central Transvaal AD 350-1880. (Occasional Paper 16). University of the Witwatersrand, Archaeological Research Unit, Johannesburg.

MEINTJES, J. 1975. SASOL 1950-1975. Tafelberg, Kaapstad.

MULLER, O.B. 2001. Die Geskiedenis van Maccauvlei. Heilbron Herald, 30 Maart 2001.

NAUDE, M. 2005. Beyond the frontier history of the Vredfort Dome Area. pp. 175-196 In: REIMOLD, W.U. & GIBSON, R.L. 2005. Meteorite Impact! The Danger from Space and South Africa's Mega-Impact. The Vredefort Structure. Johannesburg: Chris van Rensburg Publications.

PELSER, A. 2000. A report on the first phase of a cultural resource survey on the Vredefort Dome. Pretoria: National Cultural History Museum, Archaeology Department.

PELSER, A. J. 2003. Askoppies: Late Iron Age Sotho-Tswana settlement on the Vredefort Dome. MA Dissertation, University of the Witwatersrand, Johannesburg.

PELSER, A. 2004. Human skeletal remains from Askoppies: A late Iron Age Tswana settlement on the Vredefort Dome. Pretoria: Research by the National Cultural History Museum Vol 13:1-15.

PELSER, A. 2005, Travelling through time: Archaeology and the Vredefort Dome. pp. 160-174 In: REIMOLD, W.U. & GIBSON, R.L. 2005. Meteorite Impact! The Danger from Space and South Africa's Mega-Impact. The Vredefort Structure. Chris van Rensburg Publications, Johannesburg.

PISTORIUS, J.C.C. 1994. Eskom Archaeological Site Identification Guide. Johannesburg: Eskom.

REIMOLD, W.U. & GIBSON, R.L. 2005. Meteorite Impact! The Danger from Space and South Africa's Mega-Impact. The Vredefort Structure. Chris van Rensburg Publications, Johannesburg.

TAYLOR, M.O.V. 1979. Late Iron Age Settlements on the Northern Edge of the Vredefort Dome. M.A. University of the Witwatersrand, Johannesburg.

VAN DEN BERG, G. 1996. 24 Battles and battle fields of the North-West Province. North West Tourism Association. Potchefstroom.

VAN EEDEN, E.S. 1988. Die geskiedenis van die Gatsrand vanaf die vestiging van die trekgemeenskap omstreeks 1839 tot die proklamering van Carletonville in 1948. MA, University of North West, Potchefstroom.

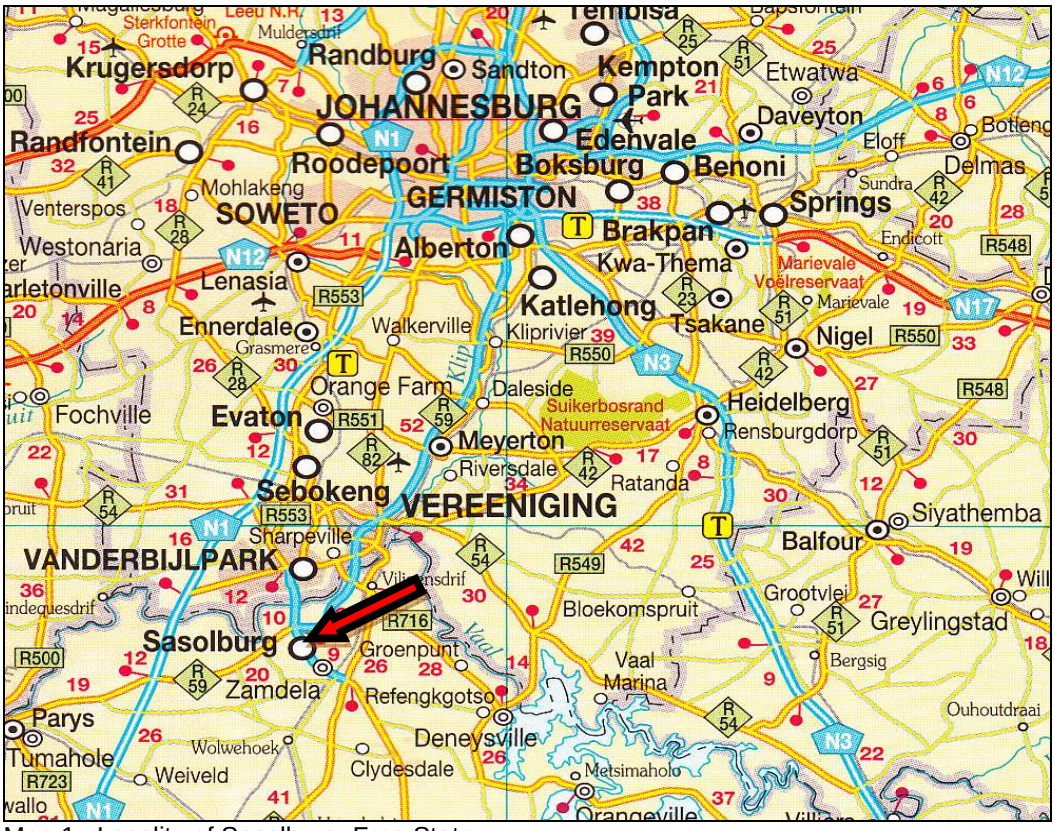
PISTORIUS, J.C.C. 1994. Eskom Archaeological Site Identification Guide. Johannesburg: Eskom.

SURVEYOR-GENERAL O.F.S. 1973. Index of Orange Free State Farms. Bloemfontein.

YOUNG, R.B. 1908. The life and works of George William Stow, South African Geologist and Ethnologist. Cape Town: Darter Bros, and Co.

WESSELS, P. 1990. Cescendo tot sukses – SASOL 1975-1987. Human & Rousseau, Kaapstad.

## LIST OF ILLUSTRATIONS




Map 1 Locality of Sasolburg, Free State.


Map 2 Erven 24955 & 24954, Pluto Street, Naledi Industrial area, Sasolburg.


Map 3 Erven 24955 & 24954, Naledi Industrial area, Sasolburg. Coordinate points indicated.

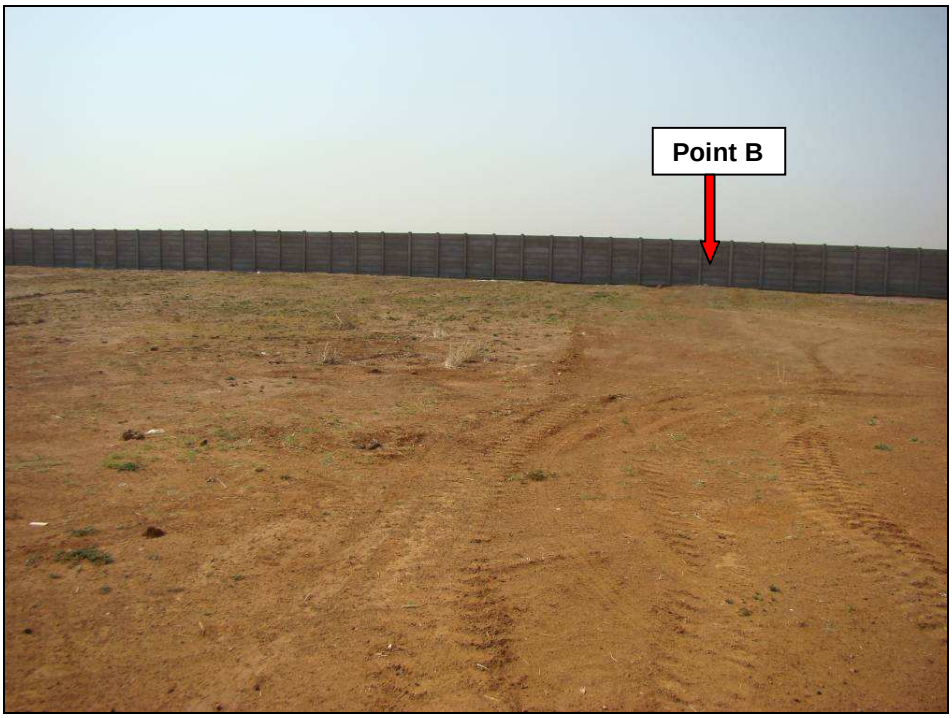



Fig.1 Point A facing B at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.

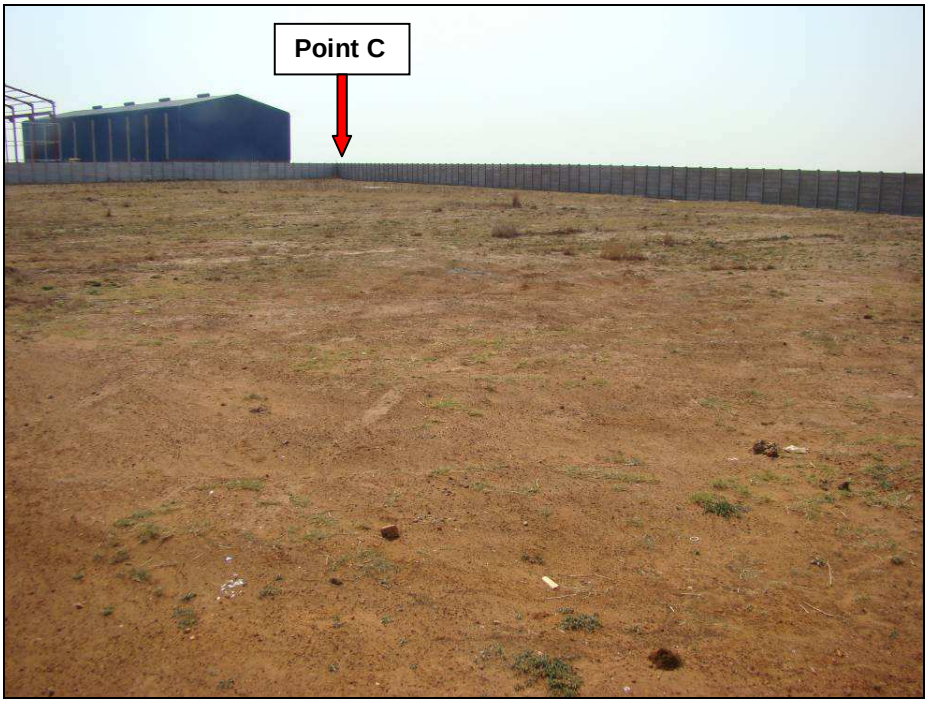



Fig.2 Point A facing C at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.

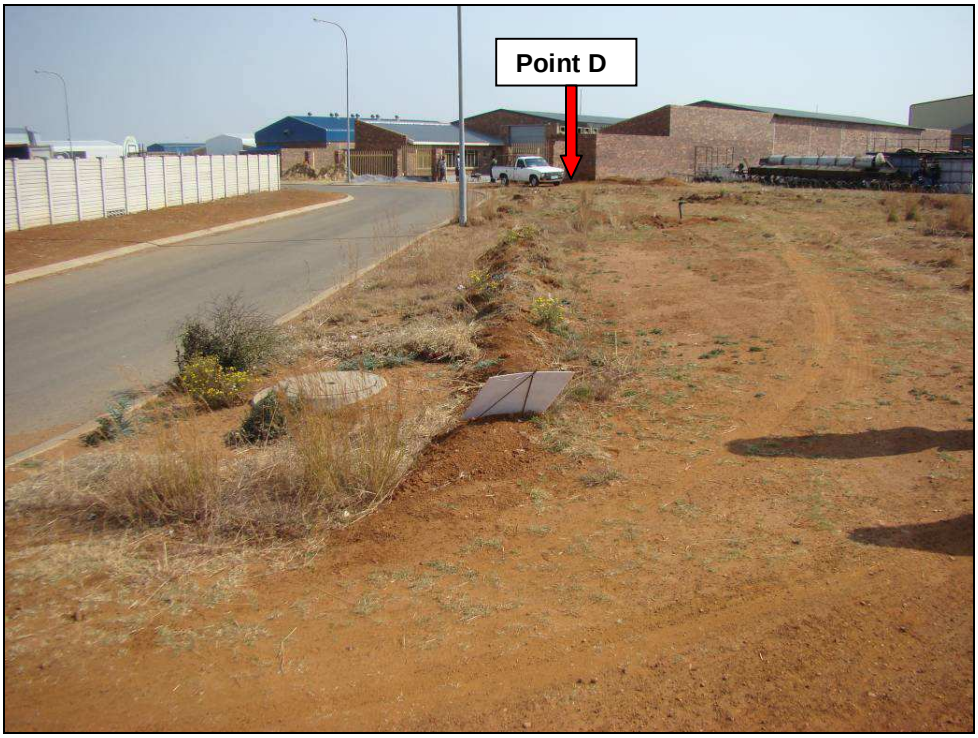



Fig.3 Point A facing D at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.

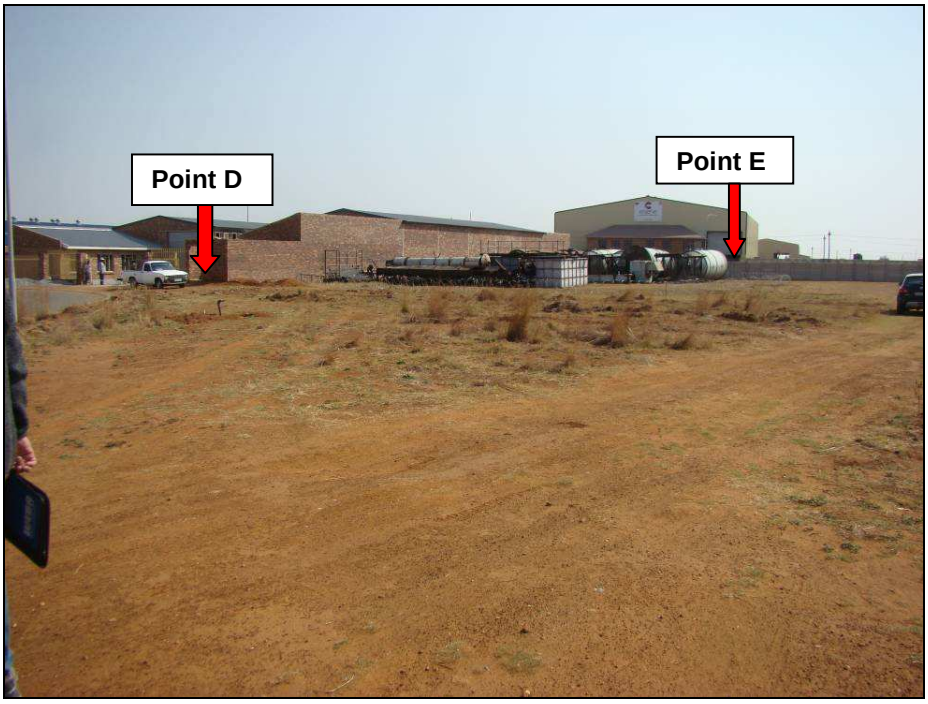



Fig.4 Point A facing D & E at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.

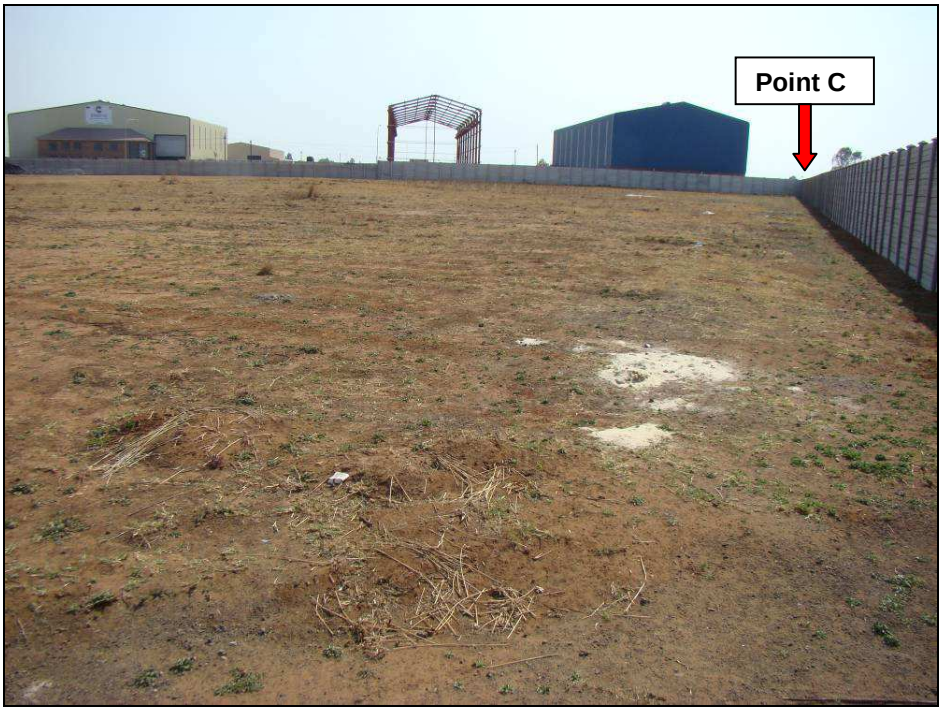



Fig.5 Point B facing C at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.

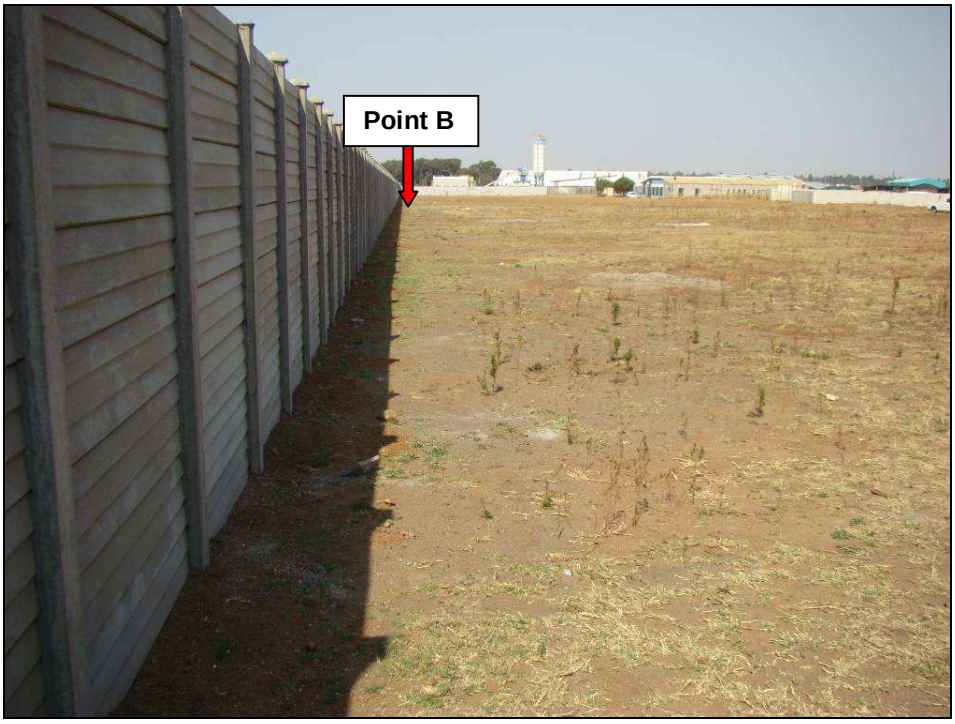



Fig.6 Point C facing B at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.

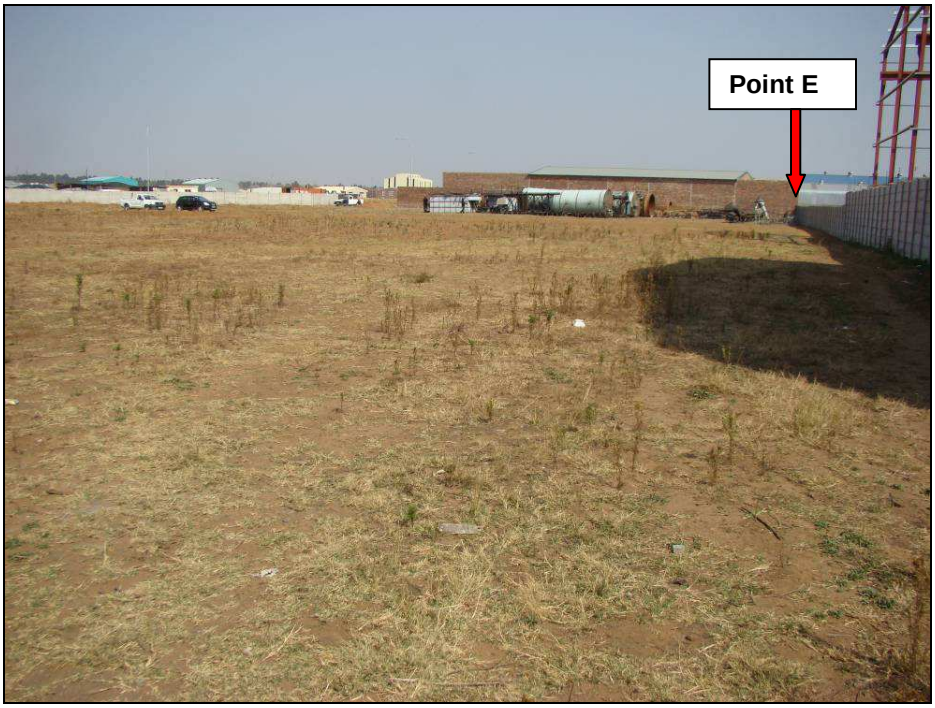



Fig.7 Point C facing E at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.

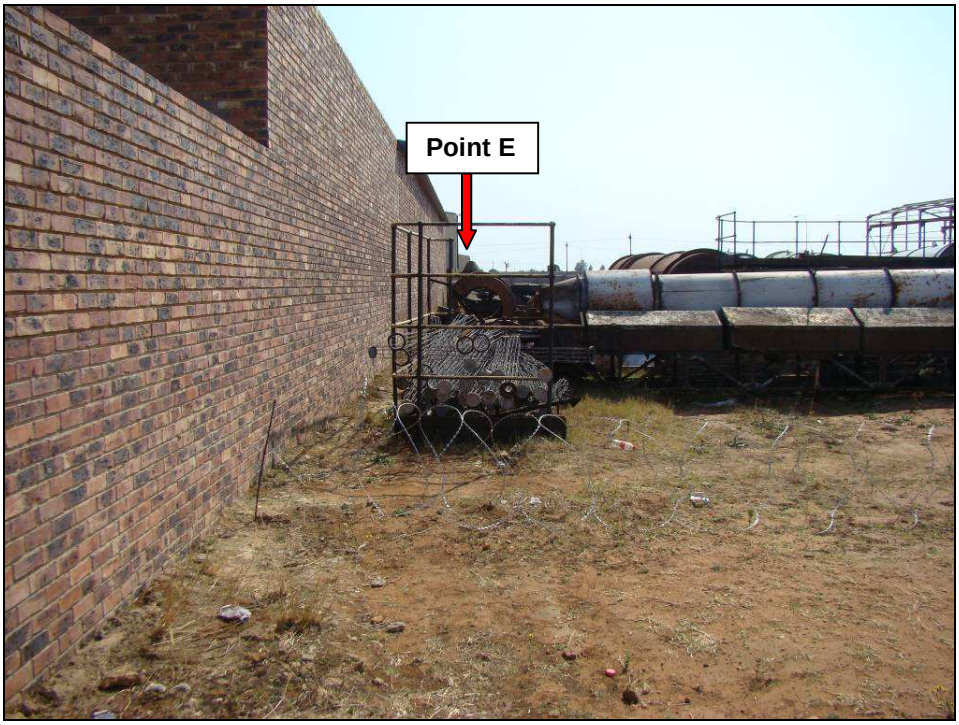
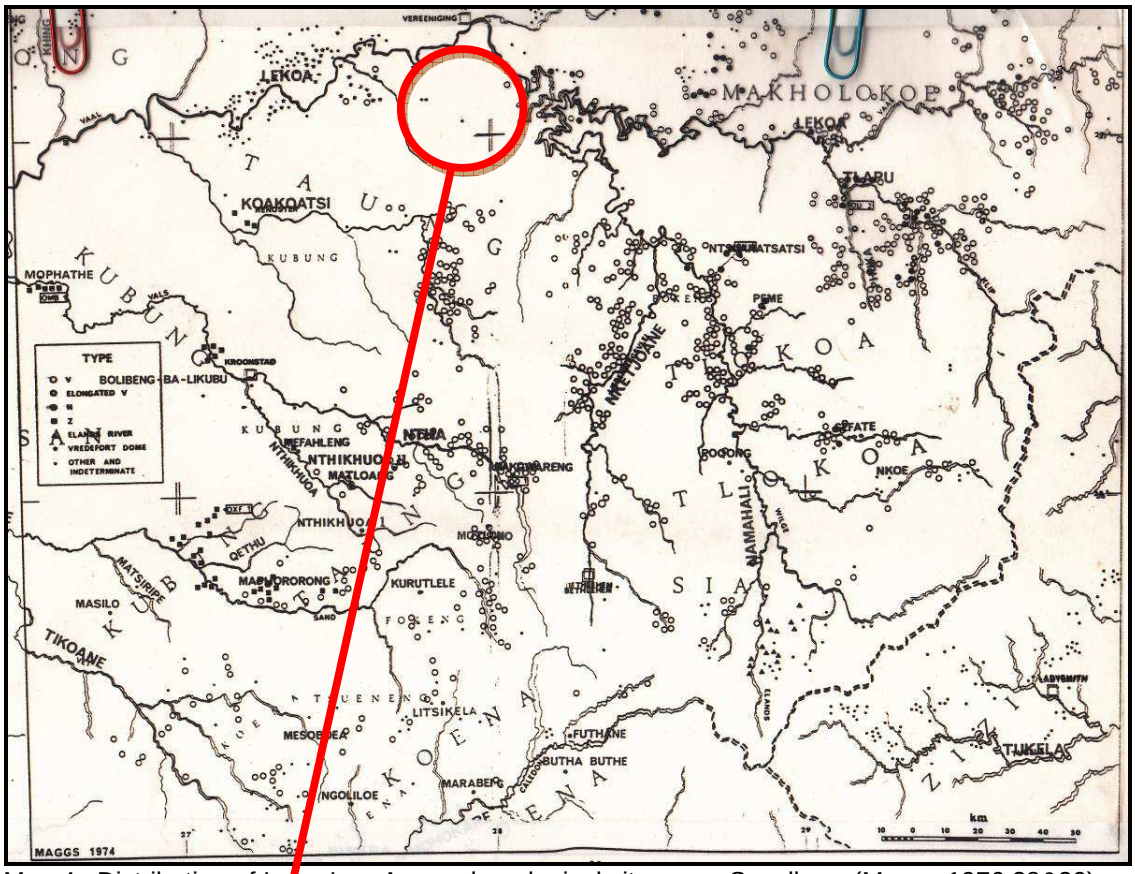



Fig.8 Point D facing E at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.


Fig.9 Point E facing C at Erven 24955 & 24954, Naledi Industrial area, Sasolburg.




Map 4 Distribution of Later Iron Age archaeological sites near Sasolburg (Maggs 1976:38&39).


Map 5 Distribution of Later Iron Age archaeological sites near Sasolburg (Maggs 1976:38&39).