

Jagersfontein Mine Pipeline

Heritage Impact Assessment of the Proposed Pipeline on
subdivision 16 & Remain Extent of the farm Jagersfontein no. 14 in
the Magisterial District of Xhariep, Free State Province

Prepared for:

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Executive Summary

The Department of Archaeology of the National Museum, Bloemfontein, was contracted by Jagersfontein Development (Pty) Ltd to undertake an Heritage Impact Assessment for the extension of a pipeline from an existing dam in the mining area to the municipal sewerage plant 1.4 km directly east of it on the remainder extent of the farm Jagersfontein no. 14.

This study suggests that the banks and riverbed of the two streams might contain important lithic material not previously identified in this immediate area. Indications of the presence of ESA (possibly Fauresmith), MSA and LSA were all found within 15 meters of the banks of the streams or within exposed areas of the riverbed itself. There is, however, no indication of the extent of the presence as all finds were either individual or part of very small scatters of five or less artefacts. In addition to this all but one lithic artefact was found in situ in the walls of the stream, with a possible second found in what might be a manufacturing site within a slightly elevated section of the riverbed itself.

In view of these finds, the applicant proposed to reroute the course of the proposed pipeline to an area above the floodplain of the streams. In the section where it will cross the floodplain and north-south running stream it will rest on the surface instead of being buried to avoid subsurface disturbance. In addition to this the applicant will allow a team of archaeologists from the National Museum a period of one week to investigate the profiles of the exposed ditch prior to laying the pipe.

The importance of the pipeline to the well-being of the inhabitants of the nearby town of Jagersfontein has to be weighed up against the possibility of the site being more extensive than is visible to the naked eye as the proposed pipeline would provide an alternative water source for the mining activities and would thus relieve the periodic water shortages the town is experiencing. In addition to this the opportunity to investigate subsurface strata can prove valuable in deciding whether this area merits further archaeological investigation. It is therefore recommended that the applicant be granted a permit to extend the current pipeline as per submitted plan [Annex A] with the proviso that the client adheres to the mitigation measures outlined in this report.

Stakeholders: Jagersfontein Developments (Pty) Ltd – owner of subdivision 16 of Jagersfontein No 14 (applicant); Kopanong Local Municipality – owner of remain. extent Jagersfontein No 14 [Permission attached – Annex A]; SAHRA – Custodian of inter alia archaeological heritage in the Free State – responsible agency to issue a permit i.t.o. the National Heritage Resources Act, No 25 of 1999.

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Appendix A – Kopanong Local Municipality approval of pipeline

Appendix B – Map: 2925CD Jagersfontein – 1:50 000

1. Background to the application

This report is done at the request of Jagersfontein Developments (Pty) Ltd, current owners of the Jagersfontein mining effects, in accordance with Section 38 of the National Heritage Resources Act, no 25 of 1999.

The application is for the extension of a pipeline [revised length = 1743 m] from a dam on the mining grounds (Subdivision 16 of the farm Jagersfontein No 14) to the Jagersfontein municipal sewerage plant on the remainder extent of the farm Jagersfontein No 14. Permission has already been obtained from the Local Municipality of Kopanong for the extension of the pipeline.

Jagersfontein Developments (Pty) Ltd obtained the rights in 2010 from De Beers Consolidated Mines (DBCM) to re-process the Jagersfontein diamond dumps. The process of recovering diamonds from the old dumps is, however, quite water dependent and water for current operations is obtained

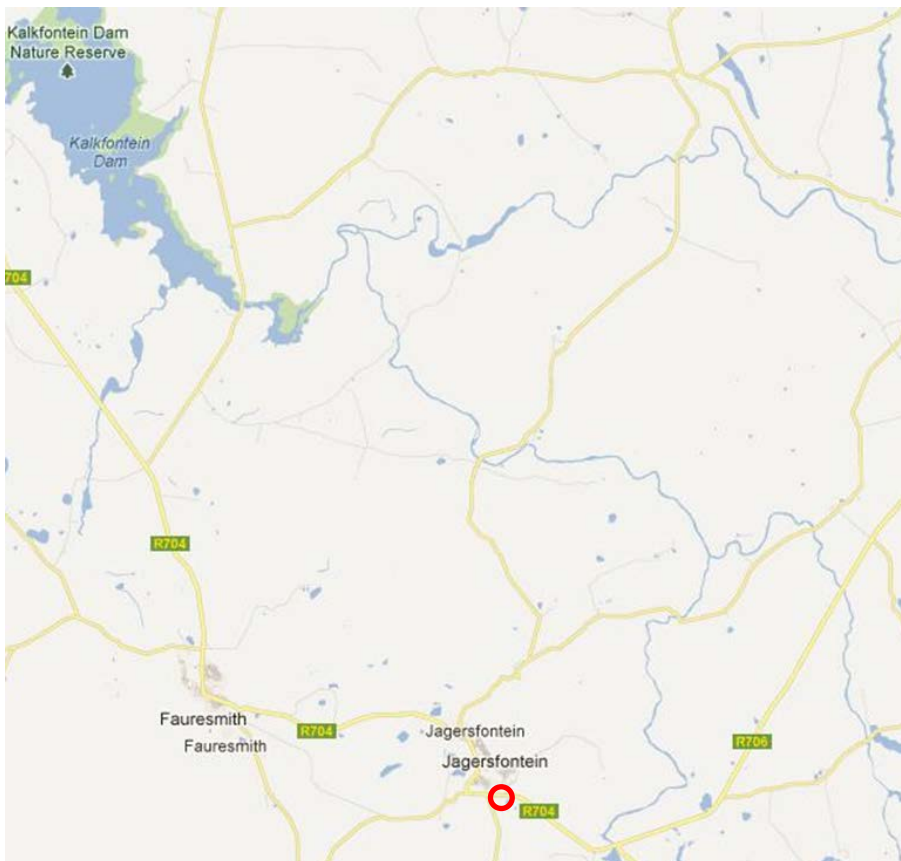


Figure 1: Kalkfontein dam – subject area encircled in red

from the old unused mine shaft. The applicant is concerned that making use of this resource would negatively affect the township as inadequate water levels of the Kalkfontein dam and the unreliability of the water supply that is supposed to meet the community's needs has now forced the municipality from time to time to rely on the

old mine shaft for their water supply. As an alternative Jagersfontein Developments (Pty) Ltd has decided to extend the existing pipeline on the mining grounds to the Jagersfontein sewerage system where treated water is currently fed via an open rivulet back into the Riet River water scheme that

feeds the Kalkfontein dam. A large percentage of this water, however, is lost due to evaporation and seepage. Their proposal is to directly feed into this water supply with a pipeline without any resultant loss and thereby leaving the existing (and historical) alternative water resource from the mine shaft available for Jagersfontein as backup for the water supply from the Kalkfontein dam.

Section 38 of the National Heritage Resources Act, no 25 of 1999 (hereinafter referred to as NHRA), states inter alia that:

“38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as—

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

.....

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. ...”

The applicant has accordingly notified the South African Heritage Resources Agency (SAHRA) and this report is in compliance with their request for an archaeological impact assessment from a qualified archaeologist to aid them in deciding the case.

As the project does not involve re-zoning or subdivision of land, nor involve visual or any other impact on the built environment, no other sections of the NHRA are applicable.

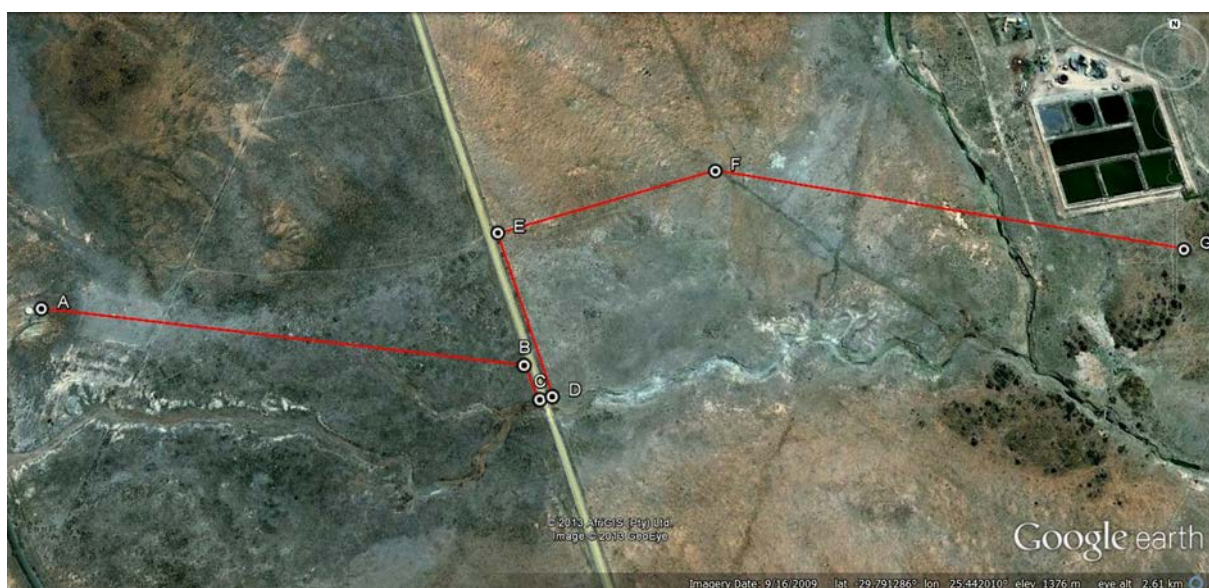


Figure 2: Proposed pipeline (revised course)

2. Background to the archaeological history

2.1 Introduction

The South African archaeological period is divided into the Early Stone Age (ESA), Middle Stone Age (MSA), Late Stone Age (LSA) and Historical periods. The range of period for each varies inevitably as new dates become available with newer dating techniques but it can be roughly divided into the following date ranges (Deacon & Deacon, 1999, p. 6):

ESA = 2.5 million years to 250 000 years BP

MSA = 250 000 years to 22 000 years BP

LSA = 22 000 years to 2 000 years BP

Iron Age = 2 000 years to historical times

Historical period = arrival of first European Settlers in Sub-Sahara Africa

2.2 Stone Age

The most extensive research on the Stone Age in this area comes from Goodwin, Van Riet Lowe and Humphreys. Humphreys compiled a map of Fauresmith manufacture sites from earlier (1928, 1929 & 1937) published research of Goodwin and Van Riet Lowe [Refer to figure 3]. This map, however, only illustrates Fauresmith (circle) and “Stellenbosch” (black dot) manufacturing sites although most of these sites also contain both Smithfield A and B material but in particular Smithfield A with Fauresmith-related sites. It also does not indicate the surface finds of the Fauresmith tradition that are not manufacturing sites. The most important fact to take from this is that the subject area falls within a known area of the Fauresmith-tradition.

NOTE: The term “Stellenbosch” was subsequently replaced by the internationally used term “Acheulian” (Deacon & Deacon, 1999, p. 79). Smithfield A and C similarly fell away and falls within broader Oakhurst complex (Deacon & Deacon, 1999, p. 114). The latest date for the Fauresmith-industry which was originally considered a transitional phase between the Early and Middle Stone Ages has been obtained via radio-metric dating from the Kathu Pan I site in the Northern Cape as a minimum OSL age of 464 ± 47 kyr and a combined U-series–ESR age of 542 ± 107 kyr for an in situ Fauresmith assemblage, which firmly places it inside the ESA period. (Porat et al., 2010, p. 269).

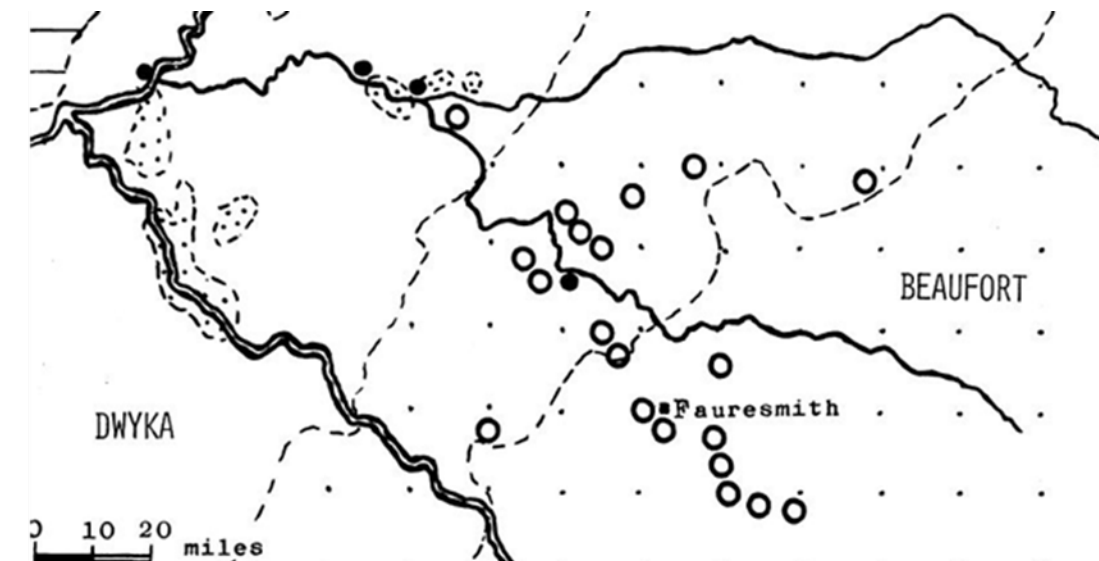


Figure 3: Portion of Humphreys map (1970, p. 140) - only the section below the Riet River copied here

These Fauresmith-tradition manufacturing sites are on the following farms in the old Fauresmith District (now incorporated into the Xhariep District):

- Blaauwheuwel (indicated on the map in Appendix B – site along the Van Zyl Spruit, a tributary of the Proses Spruit similar to the unnamed tributary of the current research area)
- Brakfontein (Fauresmith-tradition type site situated 19 km outside Koffiefontein on the road between Koffiefontein and Fauresmith)
- Dwarsvlei
- Erfdeel
- Fauresmith Townlands (indicated on the map in Appendix B)
- Koffiefontein
- Leeuwarden
- Petrusberg
- Rorich's Hoop
- Roodraai
- Spitzkop I and Spitzkop II
- Valschfontein
- Zuurfontein (indicated on the map in Appendix B – also along the Van Zyl Spruit)

Some material from these sites are in the British Museum (Braunholtz Collection; Van Riet Lowe Collection); the Cambridge University Museum of Archaeology and Anthropology (Burkitt Collection); the South African Museum, Cape Town (Lowe Collection); and the McGregor Museum, Kimberley. Material catalogued as Fauresmith-tradition at the National Museum, Bloemfontein, mainly relates to the Orange River area, collected by Sampson during the rescue operation for the new Orange River Scheme (construction of the Gariep Dam).

Most relevant to this research are the finds closest to the subject area and for that we turn to the Braunholtz Collection (British Museum) which contains the following Fauresmith-tradition material¹:

Fauresmith	Factory Site	Fauresmith Town Spruit Site
Cleavers	17	14
Handaxes	9	6
Irregular cores	8	6
Core trimming flakes	3	4
Flakes	1	3
Proximal sections (flake-blades)	-	2
Utilised flakes	-	3
Scrapers (clearly reused later than the original production of the blank)	-	1
Retouched points	-	2
Total	63	71

Goodwin and Van Riet Lowe (1929, pp. 91-92) describe the finding place of the Fauresmith-tradition material at the Fauresmith Town Spruit as “...in the immediate vicinity of the village, exposed in a bed of water-borne gravel that contains vast quantities of Fauresmith Industry remains.” The characteristic artefact of the Fauresmith-tradition are handaxes, described as “a neat almond, sometimes ovate.....generally small [size], and the implements are of a length and weight which make them eminently suitable for use in the hand” and are noted as in general being found in association with “discs, scrapers, slightly trimmed flake points, and occasionally biseaux” (p.72).

¹ Gazetteer of the Southern African Stone Age Collections in the British Museum, p118

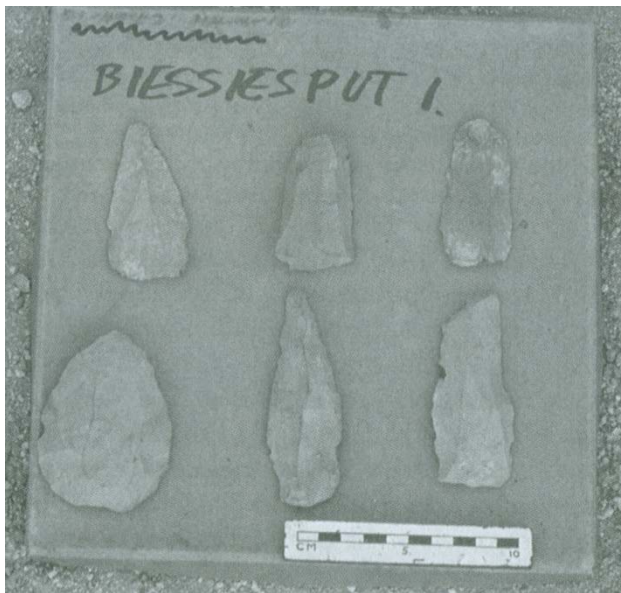


Figure 4: Fauresmith artefacts from Biessiesput 1, Northern Cape (Mitchell, 2002, p. 62 (Fig 63.14))

Mitchell (2002, p. 62) gives an abbreviated description of Fauresmith-material as: *“In the South African interior, assemblages incorporating these prepared core techniques with flake tools that include long, narrow flake-blades and convergent points are known as Fauresmith; associated handaxes are small and broad.”*

At Lockshoek (27 km north of Jagersfontein) where the banks of the Krommelenboog Spruit is much higher than at Fauresmith, Fauresmith-material is found beneath a thick layer of sterile alluvium soil but similarly in a layer of water borne gravels [Refer to Figure below] (Goodwin & Van Riet Lowe, 1929, p. 191).

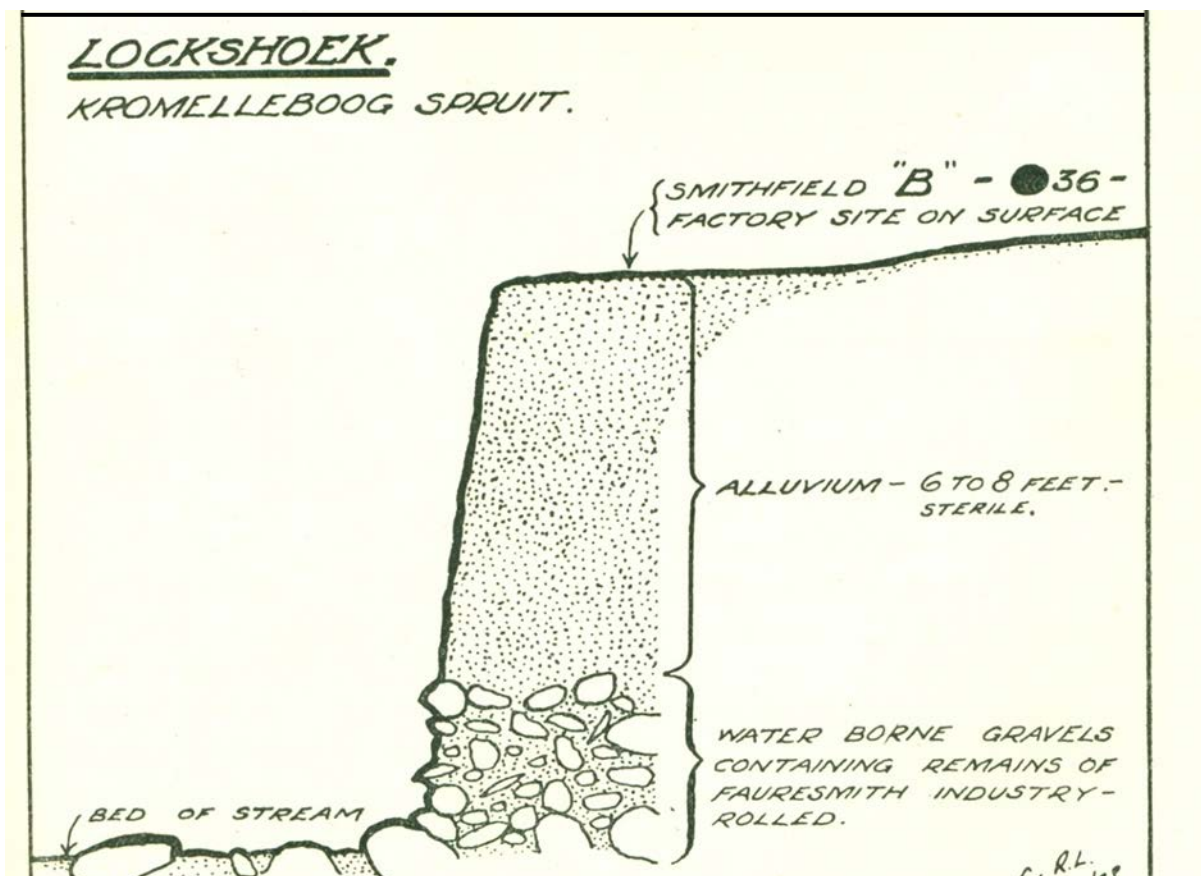


Figure 5: Illustration of Smithfield B and Fauresmith-industry sites at Lockshoek, Free State

Equally of importance is the description of the base material, condition and patina of the artefacts: *“All the implements are somewhat water-worn, and the surfaces have weathered to a blue-grey colour, but wherever a fresh chip has been removed the original very dark grey to black of the unweathered lydianite can be seen.”* (Goodwin & Van Riet Lowe, 1929, p. 191) [Referring to Fauresmith Town Spruit site.]

Goodwin and Van Riet Lowe (1929) can also be credited for the extensive studies done on LSA sites in this area and more particularly on the Smithfield tradition which they divided into three distinct different phases namely A, B and C [now obsolete] with A being the oldest.

The subject area falls well within the boundary of the Smithfield A distribution area as delineated by Goodwin and Van Riet Lowe (1929) in a map of the Orange Free State Smithfield Industry sites [Plate XXXVIII] – refer to relevant section of map below. A typical factory-site assemblage is described from the Lockshoek site – the same location of Fauresmith finds earlier mentioned (Goodwin & Van Riet Lowe, 1929, p. 172) and include:

- Concavo-convex scrapers (restricted to Smithfield A)
- Large circular scrapers (restricted to Smithfield A)
- Duckbill end-scrapers
- Side-scrapers
- Trimmed points
- Stone borers
- Bored Stones
- Grooved Stones
- Grindstones
- Pounders and grinders
- Fabricators: cores; detaching-hammers; trimming-stones; anvils

According to them no notched scrapers are associated with the Smithfield A industry, while re-used Fauresmith handaxes and re-trimmed flakes are found in association with Smithfield industries (Goodwin & Van Riet Lowe, 1929, p. 153).

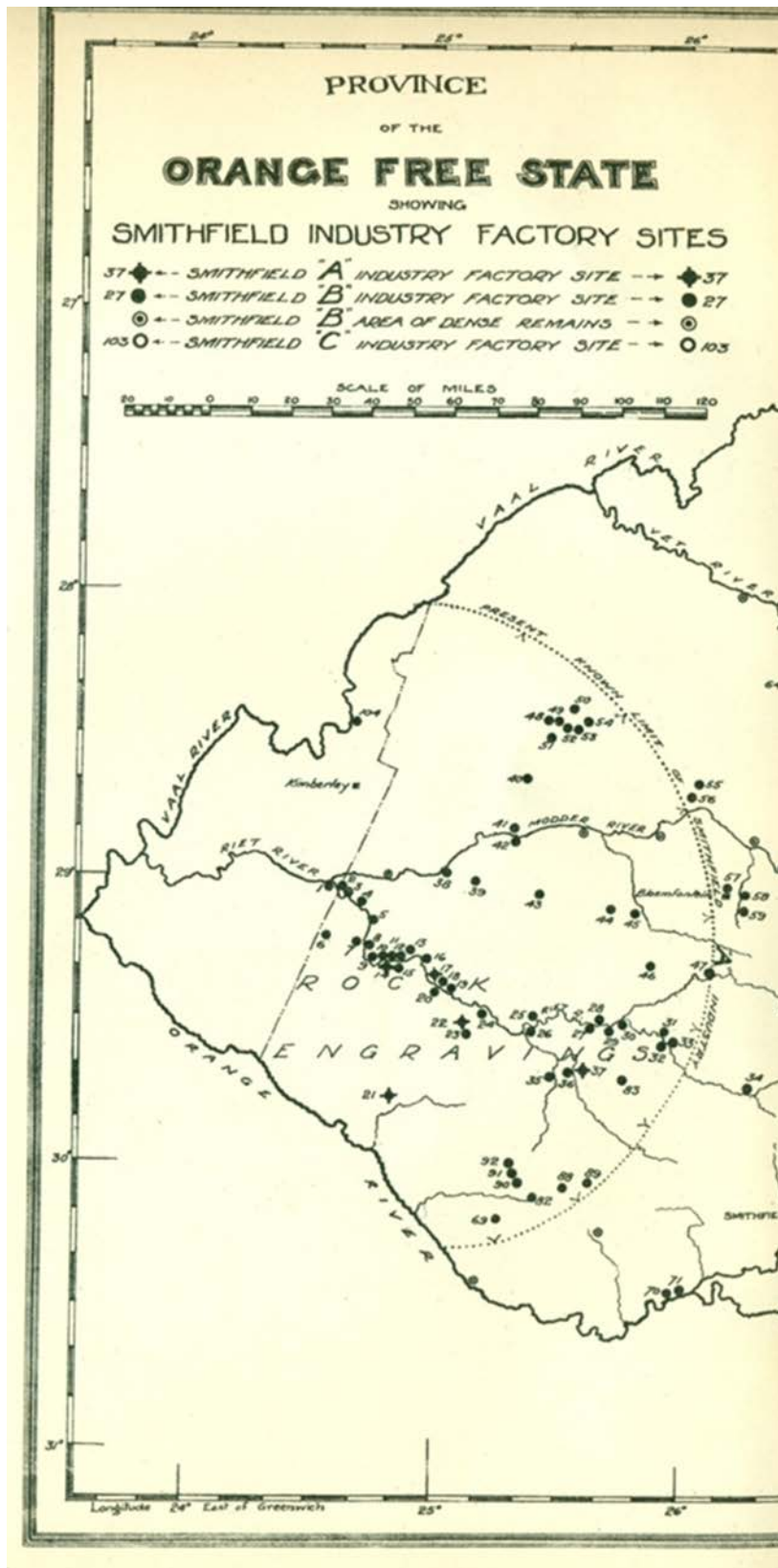


Figure 6: Section of Goodwin & Van Riet Lowe map indicating boundary for Smithfield A industry in the Free State

List of Smithfield sites in vicinity of subject area:

Smithfield A:

Blaauwheuwel 425 (also a Fauresmith industry site)

Brakfontein No 231 (typesite for Fauresmith industry – 15 km from Fauresmith on road to Koffiefontein)

Lockshoek 191 (also a Fauresmith site) – 27 km north of Jagersfontein

Smithfield B:

Blaauwheuwel (same site as above)

Lockshoek mentioned above)

Smithfield C:

None recorded in close proximity of the subject area

Smithfield B assemblages include the following (Goodwin & Van Riet Lowe, 1929, p. 179):

- Duckbill end-scrapers
- Thumbnail scrapers
- Side-scrapers
- Notched scrapers (absent from Smithfield A)
- Trimmed points
- Stone borers
- Bored Stones
- Stone rings
- Grooved stones
- Grindstones
- Pounders and grinders
- Stone palettes
- Ostrich egg-shell borers
- Ostrich egg-shell beads and pendants
- Incised ostrich egg-shells
- Bone points
- Pottery
- Glass implements
- Implements with ground edges
- Fabricators: cores, detaching-hammers, trimming-stones, anvils

Raw material for these industries from the farms Lockshoek (typesite for A-phase) and Blaauwheuvel are mostly lydianite (hornfels). Both these sites also have rock engravings in the vicinity.

2.3 Iron Age sites:

No recorded Iron Age sites are in the immediate vicinity of the subject area.

2.4 Historical sites:

The town of Jagersfontein did not escape the effects of the Anglo-Boer War (1899-1902) but the only recorded skirmish was in the town itself on 16 October 1900.²

The farm Jagersfontein is, however, also the place of discovery of the first non-alluvial diamond deposit in the world and the mine itself dates to 1869. This was extensively reported in an HIA done

² <http://www.angloboerwar.com/unit-information/imperial-units/661-seaforth-highlanders>

by the National Museum in 2008 and none of the mine-related heritage factors were found within the survey area. The section of the spruit in the survey area that falls within the mining area was severely disturbed by earlier mining activities as part of the earlier mining floors.

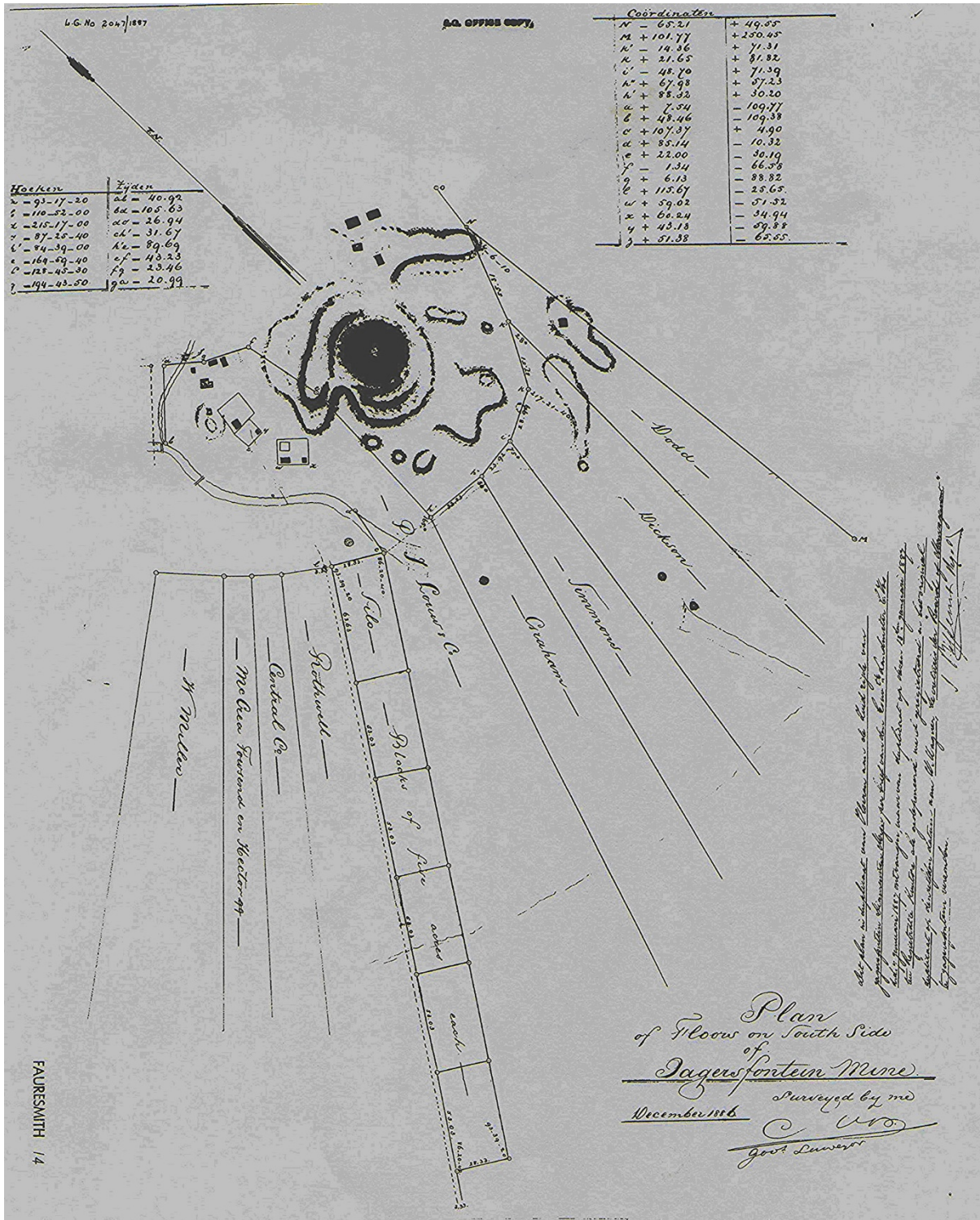


Figure 7: Map indicating 1880 floors for laying out the kimberlite to weather were over the current course of the spruit through the mining area
 Map: De Beers Archives, Kimberley

3. Description of subject area and environment

3.1 Locational Data

Location: 134 km south-west of Bloemfontein, 11 km south-east of Fauresmith (Refer to Figure 7)

Map reference: 2925CD-Jagersfontein 1:50 000 (Annex B)

Province: Free State

Magisterial District: Xhariep District (Kopanong Local Municipality)

Nearest town: Jagersfontein (subject area lies within the municipal area)

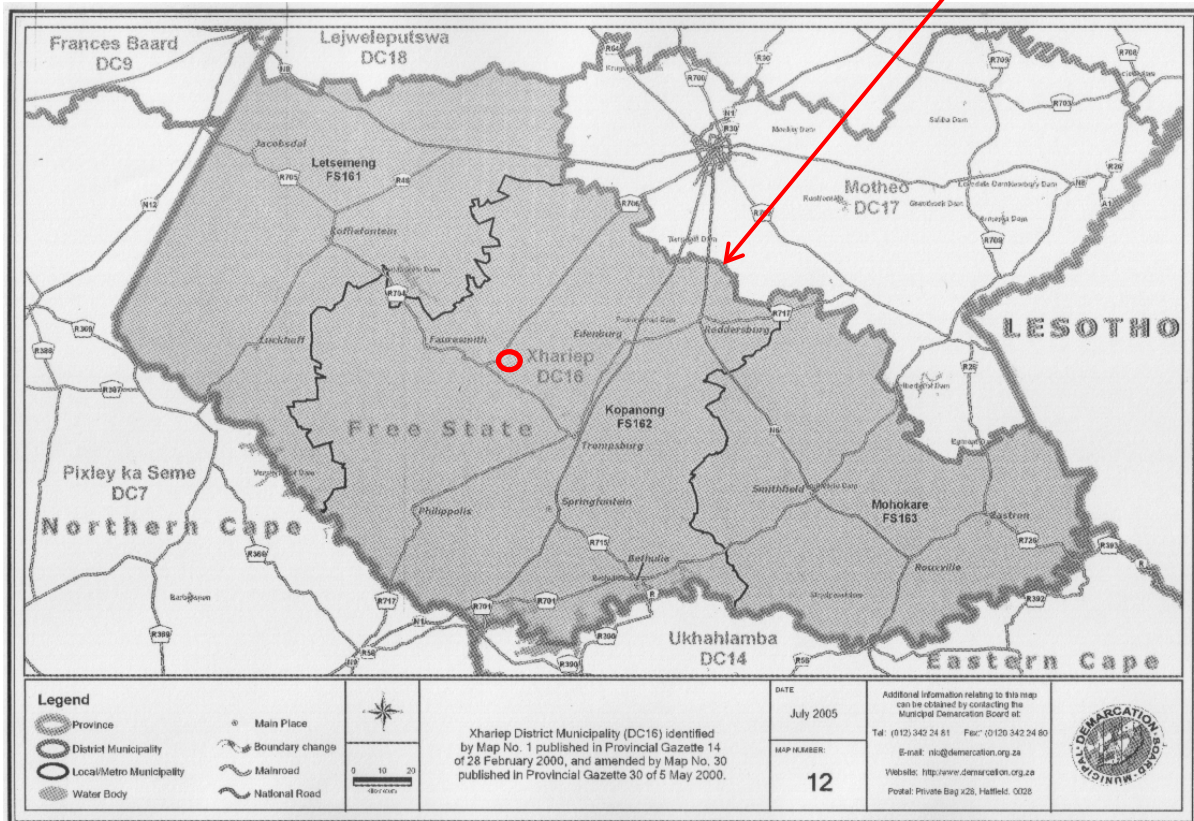


Figure 8: Xhariep District - subject area encircled in red

Footprint size of pipeline area: 34860 m² (includes allowance of a 20 m wide corridor within which the 1743 m long pipeline will be laid down, as excavated material will be put along the sides of the 600 mm wide trench that will be dug).

Owners: Jagersfontein Developments (Subdivision 16 of the farm Jagersfontein No 14); Kopanong Local Municipality (Subdivision 15 of the farm Jagersfontein No 14)

Current use: Section belonging to the Kopanong Local Municipality is used for cattle grazing. It is also the section where the sewerage plant is situated. Section belonging to Jagersfontein Developments (Pty) Ltd is part of the mining area and not currently utilised.

3.2 Environmental Data

Morphology: Low land with hills

Geology: Mudstone, sandstone and shale with dolerite intrusions and kimberlite pipes (volcanic intrusion) at Jagersfontein

Soils: General Description:

1. Rock with limited soils
2. Soils with a marked clay accumulation – strongly structured and non-reddish colour. In addition one or more vertic-melanic and plintithic soils will be present

Soil depth: < 450 mm

Clay class of top soil: $\geq 15\%$ and $< 35\%$

Leaching status: calcareous soils

Catchment: Vaal River Primary Catchment (the subject area lies close to the Vaal-Orange divide – refer to Figure 3 below)

Rainfall: Mean annual precipitation = 290 - 455 mm per quaternary catchment

Mean annual runoff: 106 m³ per primary catchment is 3990.96 – 4567.41

Veld types: False upper Karoo

Conservation areas: None officially recorded

Sensitivity factor: 0 – 5 sensitive features mapped [refers to official records]

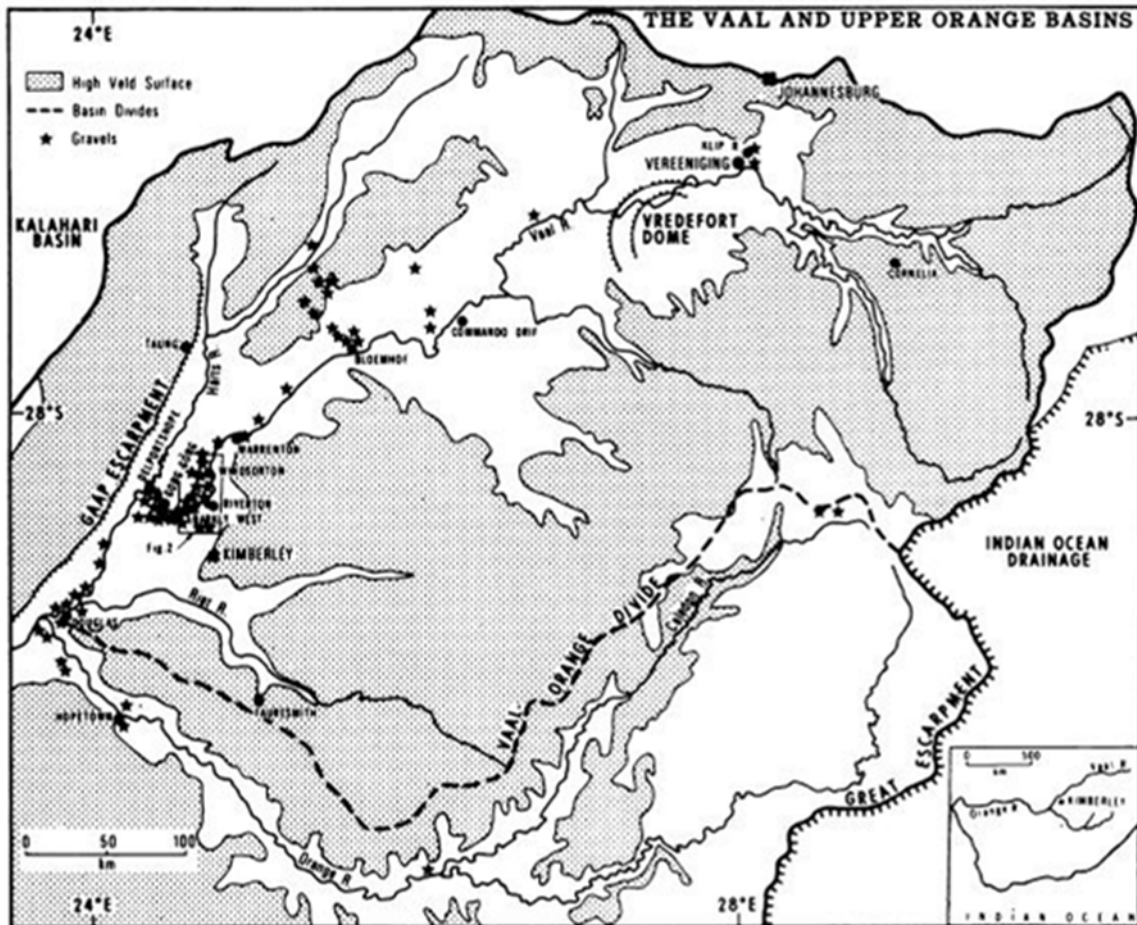


Figure 9: The Vaal and upper Orange Drainage, with High veld planation surface and gravel occurrences (Butzer, Helgren, Fock, & Stuckenrath, 1973, p. 343)

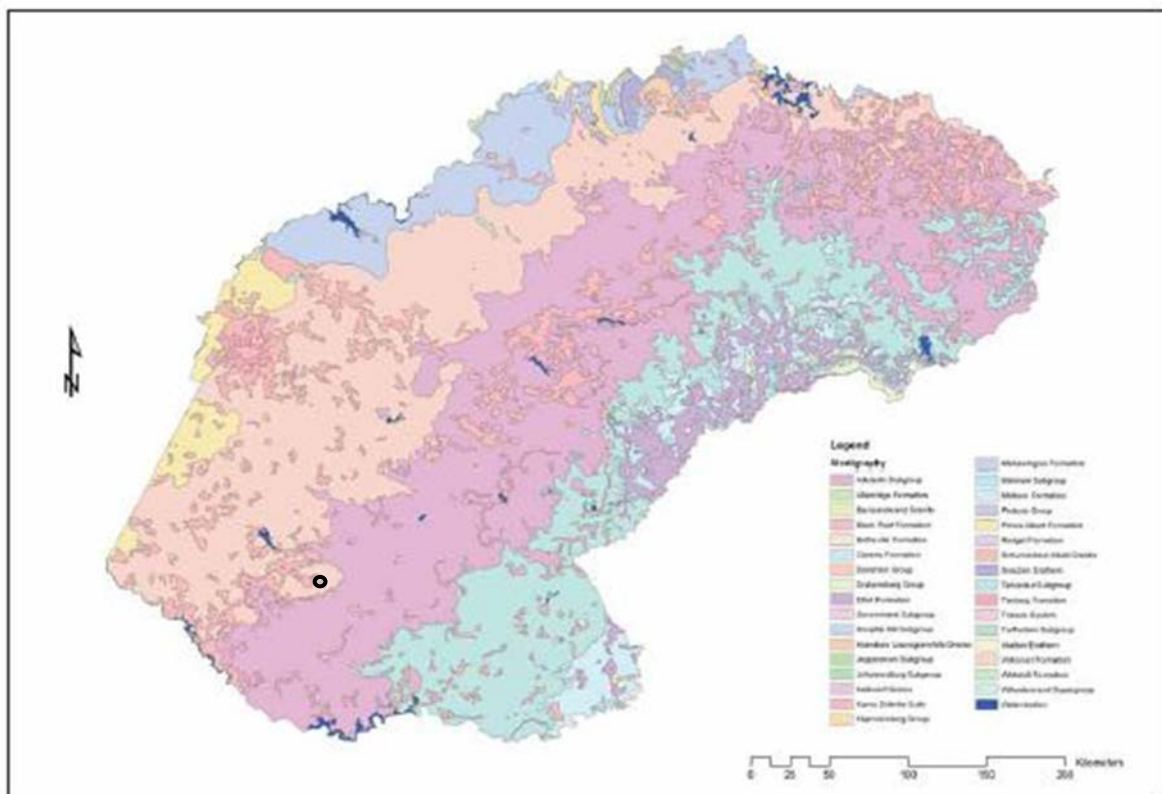


Figure 10: Geological map of the Free state (Vorster, 2001) – subject area encircled in black

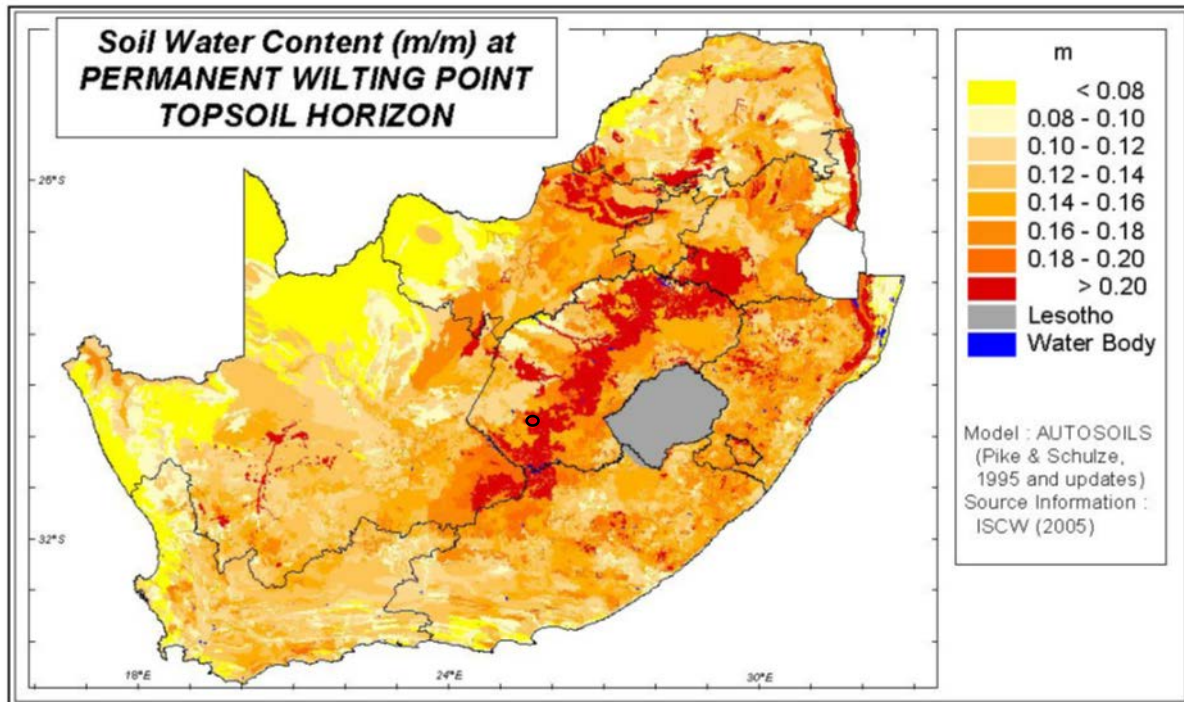


Figure 11: Soil water content (Schulze, 2012) – subject area encircled in black

3.3 Area surveyed



Figure 12: Original surveyed area blocked in yellow (blue line is the position of the original proposed pipeline). Extended survey area blocked in blue; red line is proposed alternative route for the new pipeline

Originally a corridor between the stream in the south and 300 m north of the intended route of the pipeline (indicated in blue) was surveyed as the actual footprint of the pipeline falls well within that area. After it became clear that there is evidence of lithic cultural material on the banks of the stream and within the riverbed, the survey area was enlarged to ensure that there are no significant finds further away from the banks. Although the lithic finds are not rich in terms of quantity or quality, their presence does indicate a long successive period of deposition which warrants further investigation.

3.4 Methodology

The area was inspected on foot by two people on the 12th and 13th of December 2012 for any visible heritage structures or objects on the surface. The profile of the banks of the nearby rivulets, both tributaries of the Proses Spruit which feeds into the Krommelenboog Spruit, was investigated for different strata of soils as well as indications of cultural material in these exposed layers.

3.5 Equipment used

GPS: Garmin Map60CSx

Camera: Sony Digital Model No. DSC-H50

Lighting condition:

1st day of survey: cloudy;

2nd day of survey: overcast with intermittent rain

3.6 Visibility and other restrictions

Visibility in the section on the western side of the dirt road [Fig. 17] was markedly poorer than on the eastern side. Small exposed patches in this area show a top layer of very fine grained soil (dried alluvial deposits) of an ashy grey colour with scatterings of gravel, mostly small pieces of shale [Fig. 18].

The area on the eastern side of the gravel road [Fig. 13] is utilised for cattle grazing and as a consequence has larger patches without ground cover which improved visibility to a degree. The top layer of soil is similar to the western side [Fig. 15]. Patches of coarser grained soil with a slightly reddish tint start appearing towards the R706 road in the north, but still quite compact. Weathered shale outcrops are common [Fig. 16].

The banks of the streams and portions of the beds, most particularly the leg running north to south, are covered in thick grass as well [Fig. 14]. At the time of the survey there was no running water but the riverbed was very muddy with pools of stagnant water. The banks of the spruit area are deeper at the confluence of the two streams south of the sewerage plant.



Figure 13: View of eastern section of surveyed area (photograph taken from the bridge on the dirt road that separates the eastern and western sections). Stream running west to east visible on the right.



Figure 14: North to south running stream in the eastern section - orientation towards confluence of the two streams.



Figure 15: Open patches of soil in the eastern section exposes a very fine grained soil (essentially a thin muddy layer) speckled with fine pieces of gravel, mostly shale



Figure 16: A shale outcrop in an advanced state of disintegration



Figure 17: View of western section surveyed. Photograph taken from the bridge on the dirt road, orientation north-west. A large area around the stream in this section is a vlei and not accessible.



Figure 18: Example of small size of exposed patches of soil in the western side [GPS Marker 38]

4. Record of finds

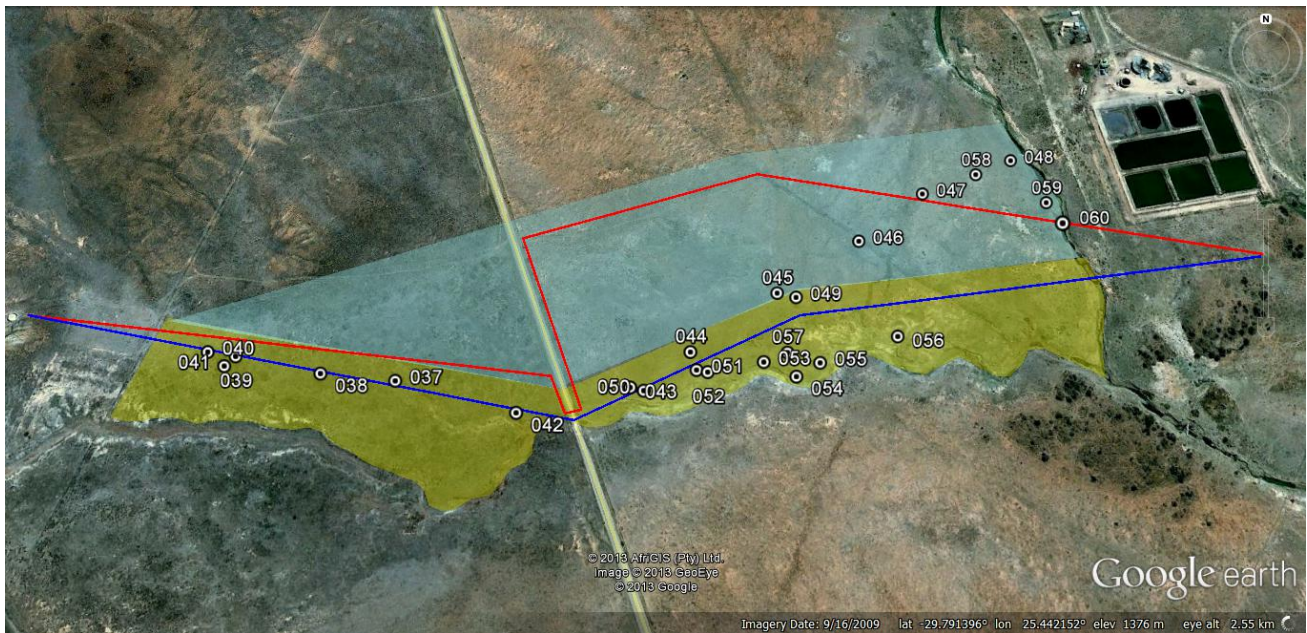


Figure 19: Mapped coordinates

GPS No.	Latitude	Longitude	Description
37	-29.792093°	25.439202°	Open patch of soil
38	-29.792018°	25.438346°	Fig 18 Page 19
39	-29.791842°	25.437359°	Open patch of soil
40	-29.791798°	25.437035°	Grass shrub groundcover
41	-29.791944°	25.437246°	Gravel scatter (shale)
42	-29.792414°	25.440586°	Dry, cracked alluvial soil
43	-29.792153°	25.441865°	Grassy groundcover
44	-29.791782°	25.442552°	Fig 24, Page 24 (Large Flake-blade)
45	-29.791145°	25.443576°	Grassy groundcover
46	-29.790553°	25.444581°	Fig 39, Page 38 (Packed Stones)
47	-29.790000°	25.445397°	Concentration of gravel - few sherds
48	-29.789593°	25.446527°	Large sherd (15 cm long, triangular)
49	-29.791191°	25.443795°	Dried up vlei area
50	-29.792186°	25.442018°	Fig 28, Page 29 (Knife)
51	-29.791971°	25.442619°	Fig 27, Page 28 (Levallois? Core)
52	-29.791993°	25.442746°	Fig 30, Page 30 (Convergent flake-blade)
53	-29.791887°	25.443389°	Fig 33, Page 32 (Discoid Flake)
54	-29.792039°	25.443755°	Fig 32, Page 31 (Flake-blade)
55	-29.791894°	25.444034°	Fig 34, Page 33 (Utilised flake)
56	-29.791607°	25.444952°	Fig 38, Page 37 (Glass sherd)
57	-29.791786°	25.443666°	Figs 35-37, Pages 34-36 (Flake-blades)
58	-29.789764°	25.446077°	Fig 16, Page 18 (Shale outcrop)
59	25.446077°	25.446893°	Fig 25, Page 25 (Blade core)
60	-29.790349°	25.447055°	Fig 20, Page 21 & Fig 23, Page 23 (Handaxe)

Visibility along the banks was low due to the long grass. However, flakes/artefacts were observed in all exposed patches, indicating a possibly fairly consistent spread of artefacts along the banks of the streams but with low densities.

Artefacts recorded included undiagnostic flakes, flake-blades, scrapers and a handaxe. A selection is described in more detail in this section. This range of artefact types indicates that the area was occupied, though not continuously, by humans during the Early Stone Age (referred to as the Fauresmith), the MSA and into the LSA.

The artefacts are mostly not in situ, and do not seem to occur in discrete scatters.

Acheulian Hand Axe – possibly Fauresmith



Figure 20: Handaxe

Location coordinates:

-29.790349°; 25.447055°

GPS point on map: 060

Description of finding place: At a slightly elevated section of the bottom of the riverbed of a tributary of the Proses Spruit – mostly dry but with pools of stagnant water. This tributary feeds from the higher mining area north.

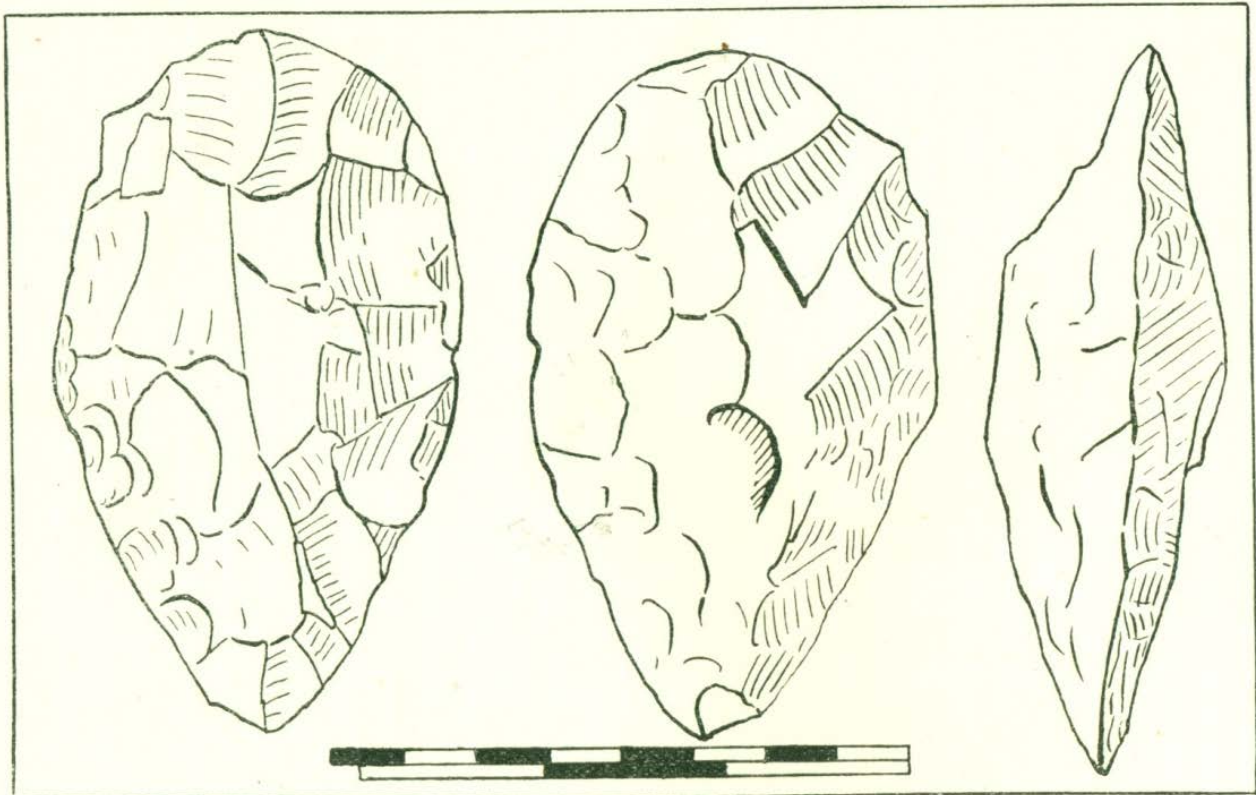
Raw material: hornfels

Patina: Dark grey with a light veneer of rusty brown. Section at broken edge has a much darker black-grey patina.

Condition: Section of tip has been broken off post-depositionally. All edges are smooth, including the broken section of the tip – most

likely water-worn over a long period. Colour of patina suggests it was not exposed to open air for long – most likely water-lodged for the greater period of its existence.

This handaxe is a typical example of a Fauresmith handaxe, e.g. Figures 22 & 23



TEXT-FIG. 5.—Three views of Fauresmith *coup-de-poing*. M.M.K. 495, Kimberley.

Figure 21: An example of a Fauresmith Hand Axe (Goodwin & Van Riet Lowe, 1929)p.91



Figure 22: Fauresmith handaxe [measurements 17.8 x 9.5 cm] found at the Van der Elst site along the Suikerbosrand River close to Badfontein. (Van der Elst, 1950, p. 47)



Figure 23: Finding place of handaxe - raw material of both hornfels and shale - includes some cores

Large Flake Blade



Figure 24: Large flake blade

Location co-ordinates: -29.791782°; 25.442552°

GPS point on map: 44

Description of location: Surface find on the banks of the west-east running stream

Measurements: 25.5 x 8 cm (at widest point)

Raw Material: Hornfels

Patina: Heavily patinated with signs of calcification

Condition: Does not appear water-worn. Edges still relatively sharp. Demonstrates both utilisation and later post-depositional damage along edges

Blade Core – Found in situ in gravel layer of banks of stream



Figure 15: Blade core found in situ in gravelly layer of the western wall of the stream running north to south. Colour of soil quite dark on account of rain.



Figure 26: Four views of the blade-core

Location co-ordinates: 25.446077°; 25.446893°

GPS point on map: 59

Description of location: Found in situ 34 cm below the surface in the exposed side of the western bank of the stream running north to south.

Measurements: 5cm wide x 4.5 cm long

Raw Material: hornfels

Patina: Ashy grey patina

Condition: Edges relatively sharp – does not seem water-worn

Core (possibly Levallois core)



Figure 27: Core

Location co-ordinates:

-29.791971°; 25.442619°

GPS point on map: 51

Description of finding place: Surface find
in a very gravelly patch

Measurements: 6,5 cm wide x 6 cm high

Raw Material: hornfels

Patina: Light brown patina – edges dark grey

Condition: Edges still relatively sharp

Knife



Figure 28: Knife

Location co-ordinates: -29.792186°; 25.442018°

GPS point on map: 50

Description of finding place: Surface find in non-gravelly patch

Measurements: 14 x 7 cm (widest point)

Raw Material: Hornfels

Patina: Light brown with dark grey exposed areas where damaged

Condition: Edges fairly sharp – does not appear water-worn

Knife made on a flake blade. Similar to Oakhurst knife in figure 29 below.

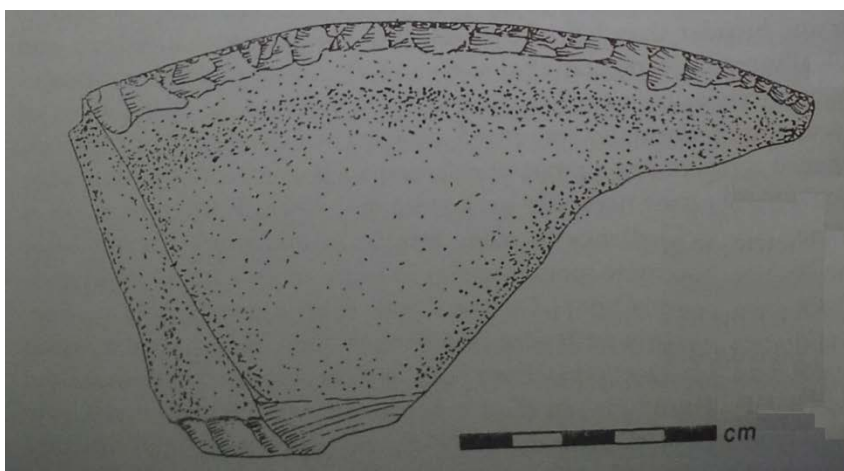


Figure 29: Oakhurst knife (Mitchell, 2002, p. 142)

Convergent flake-blade:



Figure 30: Convergent flake-blade

Location coordinates: -29.791993°; 25.442746°

GPS point on map: 52

Description of finding place: Upper slopes of the northern banks of the stream running west to east

Description: Convergent flake-blade, no retouch.

Raw Material: Hornfels

Condition: Very weathered – no sharp edges (most likely water-worn/rolled)

Associated period: MSA

Patina: Mottled light grey-brown – edges dark

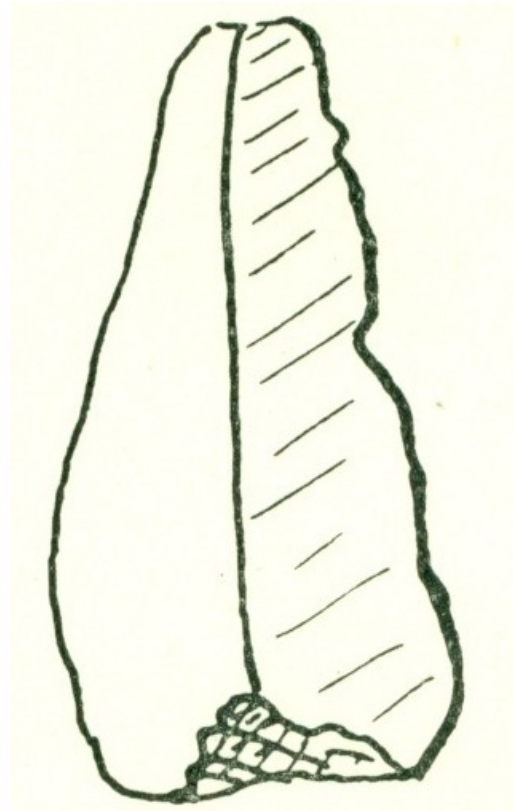


Figure 31: Unretouched point from Mossel Bay....no size indicated but presumably falls within the Mossel Bay range of 50 - 75 mm) (Goodwin & Van Riet Lowe, 1929, p. 137)

Flake-blade



Figure 32: Flake-blade with retouch/utilisation

Location co-ordinates: -29.792039°; 25.443755°

GPS point on map: 54

Description of finding place: Surface find on the inner side of the northern slopes of the stream running west to north

Measurements: 8.5 x 2.75 cm

Raw Material: Hornfels

Patina: Thick calcification on side that was touching the surface

Condition: Very weathered – most likely water-worn/rolled

Discoid Flake



Figure 33: Discoid flake

Location co-ordinates: -29.791887°; 25.443389°

GPS point on map: 53

Description of finding place: Surface find close to northern edge of the stream running west to north

Measurements: 8cm diameter

Raw Material: Hornfels

Patina: Very light brown with darker edges

Condition: Edges still relatively sharp – does not appear to be water-worn or rolled

Utilised flake:



Finding place co-ordinates:

-29.791894°; 25.444034°

GPS point on map: 55

Description of finding place: Surface find – in a non-gravelly patch of soil

Measurements: 7 x 5 cm (widest point)

Raw Material: Hornfels

Patina: Medium-dark grey patina

Condition: Edges still fairly sharp – does not show signs of being water-worn or rolled

Figure 34: Utilised flake

Weathered incomplete or broken flake-blade



Figure 35: Flake-blade - distal end broken or removed

Location co-ordinates: -29.791786°; 25.443666°

GPS point on map: 57

Description of finding place: One of a cluster of four found on surface where the soil of medium coarseness and has a slight reddish tint to it

Measurements: 5.5 x 2.5 cm (distal end broken or reoved)

Raw Material: Hornfels

Patina: Orange-red colour

Condition: flaking edges very rounded....possibly water-worn

Weathered flake

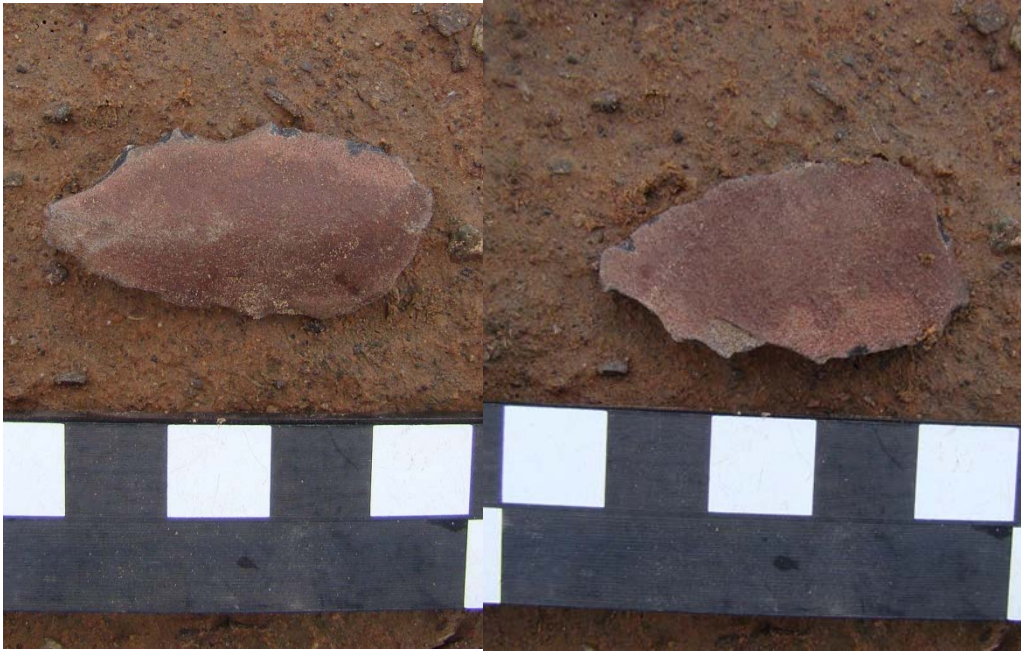


Figure 36: weathered flake with recent edge damage

Location co-ordinates: -29.791786°; 25.443666°

GPS point on map: 57

Description of finding place: One of a cluster of four found on surface where the soil is of medium coarseness and has a slight reddish tint to it

Measurements: 3.5 X 2 cm

Raw Material: Hornfels

Patina: Orange-brown colour

Condition: Heavily weathered with recent edge damage

Broken flake-blade

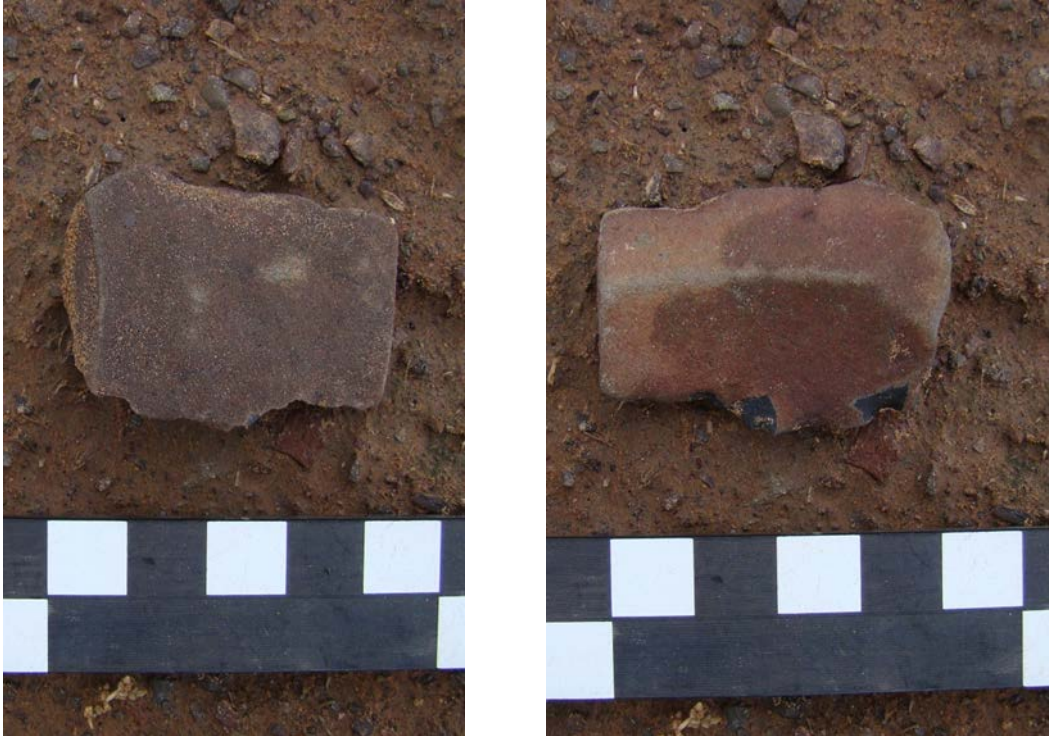


Figure 37: Weathered broken flake-blade

Location co-ordinates: -29.791786°; 25.443666°

GPS point on map: 57

Description of finding place: One of a cluster of four found on surface where the soil is of medium coarseness and has a slight reddish tint to it

Measurements: 4.5 x 3.25 cm

Raw Material: Hornfels

Patina: Orang-brown colour

Condition: Heavily weathered with damaged edges

Glass sherd



Figure 38: sherd of late 1880/early 1900's bottle

Location co-ordinates: -29.791607°; 25.444952°

GPS point on map: 56

Description of finding place: Surface find

Aerated mineral water was bottled in Jagersfontein during the following periods (directory dates):

Anderson, G.J. 1883-4

Holmes, J.F. 1907-10

Johnson, T.A. 1907

This bottle, however, seems to have had an octagonal shape and is therefore most likely to be a sherd from a food or (less likely) ink bottle.

Packed stones



Figure 39: Packed stones

Location co-ordinates: -29.790553°; 25.444581°

GPS point on map: 46

Measurements: 65 cm in diameter

Raw Material: Hornfels

Condition: Unidentified; rocks do not show signs of having been exposed to excessive heat over a long period (i.e. unlikely to be a hearth).

5. Conclusion

The material is from the ESA, MSA and LSA but the most diagnostic elements are the Fauresmith hand axe and the MSA flake blades. The significant element is the Fauresmith presence but the material is not present in the kind of densities to indicate discrete sites. However, as the Fauresmith tradition is under-researched, where possible, localities with Fauresmith material should not be disturbed.

6. Mitigation

Due to poor visibility it was not possible to assess the full potential and extent of the stream beds. However, in view of the fact that the majority of finds were situated either in or near the streams, a discussion was held with the applicant on potential alternative routes for the pipeline that would steer as far as possible clear of the banks of the stream. At a meeting on 24 January 2013, Mr Arno De Villiers, a representative of the applicant, Mr De Villiers suggested an alternative route for the pipeline as per Annex "A". In addition to this the applicant has agreed to:-

- a. Immediately stop any activities should any faunal material be unearthed and contact the National Museum (Bloemfontein) to inspect the material to assess the nature thereof and advise how to continue;
- b. In the event that no remains described in (a) above are encountered, provide a period of seven days for a team of the National Museum to inspect the profiles of the excavated ditch before continuing with laying the pipe and closing it up again. Included in this team would be Dr Lloyd Rossouw (ASAPA registered palaeontologist/archaeologist) and Ms Loudine Philip (ASAPA registered archaeologist).

7. Recommendation

It is recommended that provided that the applicant adheres to the mitigation measures as stipulated in point 6 the applicant be granted a permit for the pipeline as it would benefit the community both in the continuation of the renewed mining activities as well as the preservation of their alternative water resource. The excavation of the trench for the pipeline would provide an opportunity to investigate potential archaeological resources that would otherwise not have been visible to the naked eye and thus enhance our understanding of the nature of the environment in this specific area as well as serve as motivation for further research in this area.

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PTN 16

REM. EXTENT



150mm GALVANISED STEEL PIPE ON SURFACE

150mm DIA PVC PIPE IN 600mm X 600mm TRENCH

ORIGINAL PROPOSAL

A	S29.791408	E25.434878
B	S29.792024	E25.440949
C	S29.792398	E25.441152
D	S29.792365	E25.441304
E	S29.790516	E25.440574
F	S29.789763	E25.443399
G	S29.790698	E25.449400

JAGERSFONTEIN DEVELOPMENTS (Pty) Ltd

LINE A,B,C,D,E,F,G REPRESENTS A PIPELINE FROM A PUMPING STATION ON PTN 16 TO THE CHLORINATOR AT THE SEWAGE PLANT ON REMAINING EXTENT. FROM A-F THE PIPELINE WILL BE 600mm UNDERGROUND. FROM F-G THE PIPELINE WILL BE ON SURFACE. (ORIGINAL PROPOSAL IN RED DOTTED LINE)

A-B	592m
B-C	44m
C-D	16m
D-E	217m
E-F	285m
F-G	589m

Approved by Kopanong Cm: Technical Director
078849 4806

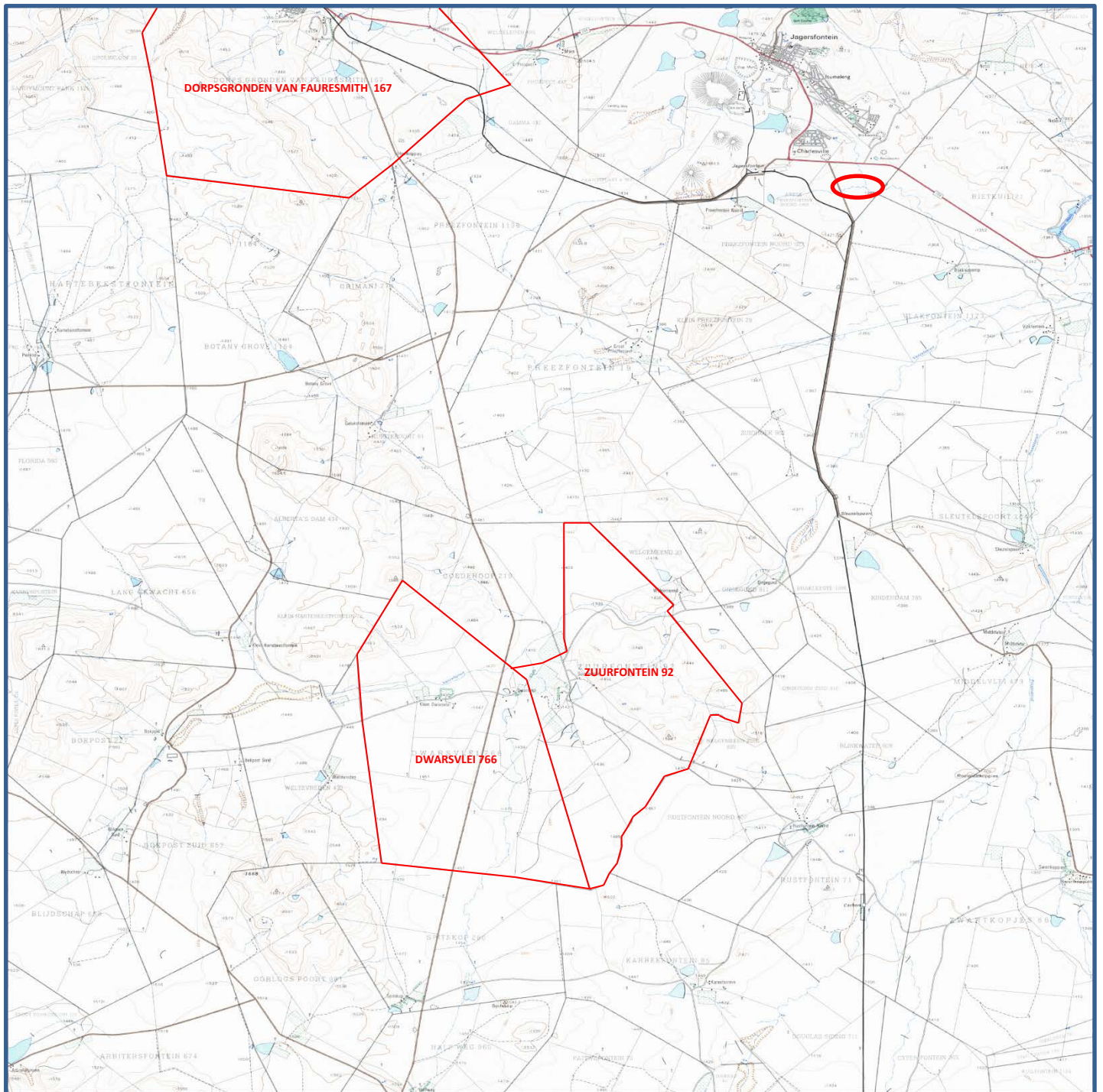


Figure 1: Map 2925CD 1:50 000 – Farms containing Fauresmith manufacturing sites – subject area encircled in red