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FIRST PHASE ARCHAEOLOGICAL & HERITAGE ASSESSMENT OF THE VAAL-GAMAGARA WATER PIPELINE PROJECT, NORTHERN CAPE

REVISIT TO THE KATHU PAN ARCHAEOLOGICAL SITE

EXECUTIVE SUMMARY

Sedibeng Water is planning to upgrade the Vaal – Gamagara water scheme line. The line will run from the pump station at Vaal Gamagara Village near Delportshoop on the Vaal River, to the water reservoir at Black Rock. The pipeline will link up with the reservoir at Kathu and will pass the Kathu Pan archaeological site.

Kathu Pan has a rich archaeological and faunal deposit. Previous investigations produced artefacts of extraordinary technological skills in the form of hand axes and pointed flakes dating from all phases Stone Age. An unusual conjunction of geological circumstances led to the stratified preservation of an exceptional human record representing three phases of the Early Stone Age, two phases of the Middle Stone Age and about the entire Later Stone Age sequence. The Acheulean evidence from the site is of particular significance and the information provides a basic typological framework for a large part of the Middle Pleistocene.

It is likely that the proposed pipeline installation might have an impact on the cultural heritage remains at the Pan and the work must be approached with caution.

After repeated inspections and a careful investigation of the site and the available literature, two potential ways for the installation of the proposed new water pipeline, came forward. One possibility is to by-pass the site by following the R380 road to beyond the Sishen Air Port and then to turn northwards for a link-up with the existing pipeline. This option will require the installation of an additional 7km of water pipe, which does not appear to be a viable plan. The second alternative will imply the installation of the new pipe above ground level across the pan along the existing pipeline route.

If this is a practical proposition, I recommend that the proposed developments and planning of the line may proceed. Caution is important during the installation of the pipeline and the erection of the support columns. All efforts should be taken to avoid damage to any stone artefact or human skeletal remains. In the case of an important discovery, the work must stop and the finds reported to the archaeologist or to officials at the McGregor Museum in Kimberley.

It is important that the proposal should be clarified with the local branch of the SAHRA Northern Cape at the Department of Sport, Arts & Culture, in Kimberley. The developments should also be reported to the officials at the McGregor Museum in Kimberley.

INTRODUCTION & DESCRIPTION

Scope and Limitations

The investigation provided another opportunity to examine the present situation concerning the archaeological site at Kathu Pan.

No limitations were experienced during the present 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 remains of the site.
3. The area along the pipeline route was inspected by vehicle, with stops along the existing line and features were inspected on foot.
4. The layout of the route was plotted by GPS and transferred on to Google Earth.
5. Surroundings and features were recorded on camera.

INVESTIGATION

Sedibeng Water is planning to upgrade the Vaal – Gamagara water scheme line. The line will run from the pump station at Vaal Gamagara Village near Delpoortshoop on the Vaal River, to the water reservoir at Black Rock. The pipeline will connect with the reservoir at Kathu near Kathu Pan archaeological site.

MDA Environmental and Development Consultants, 9 Barnes Street, Bloemfontein, 9301, Tel. 051-447 1583, administer the Environmental Impact Assessment.

A previous site visit took place on 26 January 2012 (Dreyer 2012) and the present investigation on 5 December 2013. Dr Johan du Preez (082 376 4404) from Eco Care Consultancy, P.O. Box 11945, Universitas 9321, Bloemfontein, accompanied me to the site.

The water pipeline route at Kathu Pan 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).

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. Different types of plants and trees and in this case the natural vegetation, determine a major part of the historical environment.

From earlier archaeological investigations at Kathu, researchers are aware that stone hand axes and pointed flakes of exceptional technological skills dating from the later phase of the Early Stone Age occur in the red sand deposits of the area. The distribution of these artefacts could be fairly general and widespread in the surroundings of Kathu (Beaumont 1990, 2007; Dreyer 2006, 2008, 2010). While exhilarating finds were made in the red sand deposits with significant stands of *Erioloba* trees around Kathu, it appears that the geology has changed rapidly in places where the deep red sand deposits transform into hills, which produce rich iron ore accumulations (Dreyer 2010).

After several seasons of excavations at Kathu Pan, Beaumont (1990) established the importance of the Stone Age lithic material at the site. Excavations produced artefacts of special technological skills in the form of hand axes and pointed flakes dating from all phases Stone Age.

LOCALITY

Kathu Pan archaeological site is located about 5km west of the town of Kathu, along the R380 road to Deben and Hotazel (Map 2). Several developments such as the Khai-Appel Recreation Resort, the Sishen Air Port, the Kumba Village and the Mitton Transport Yard surround the Kathu Pan archaeological site.

The proposed new water pipeline will run from the pump station at Vaal Gamagara Village near Delpportshoop over a distance of about 350km, to the Sedibeng reservoir at Black Rock. The pipeline route will follow the existing line via Koopmansfontein, Lime Acres, Postmasburg, Lohatla, Olifantshoek, Sishen, Kathu, Hotazel to Black Rock, in the Northern Cape.

The following GPS coordinates (Cape scale) were taken (2723CA) (Map 3&5):

A	27°40'02"S. 023°00'28"E	Altitude 1188m (Fig.1).
B	27°39'49"S. 023°00'29"E	Altitude 1185m (Figs.2-4).
G1	27°39'43"S. 023°00'23"E	Altitude 1180m (Figs.5-7).
KP CENTRE (BEAUMONT)	27°39'50"S 023°00'30"E	(Maps 5&6).
KP CENTRE (DREYER)	27°39'47"S. 023°00'25"E	Altitude 1179m (Fig.8-11).
KP2	27°39'50"S 023°00'19"E	Altitude 1185m (Map 5).
10m Ø STONE CIRCLE	27°39'46"S. 023°00'27"E	Altitude 1188m (Figs.12-13).
500mm Ø OLD PIPE	27°39'37"S. 023°00'27"E	Altitude 1185m (Figs.15&16).
C	27°39'31"S. 023°00'29"E	Altitude 1177m (Fig.17&18).
D	27°37'02"S. 023°00'46"E	Altitude 1168m (Fig.19).
FC (Farmer's Coop)	27°39'57"S. 023°00'35"E	Altitude 1184m (Fig.20).
E (Detour past airport)	27°38'35"S. 022°59'23"E	Altitude 1169m (Fig.21).

RESULTS

KATHU PAN ARCHAEOLOGICAL SITE

The scientific value of the Kathu Pan area, cannot be under estimated and the finds also made a significant impact on the popular understanding of the Early Stone Age (Walker, Chazan & Morris 2013). The declaration of Kathu Archaeological Complex as a National Heritage Site, consisting of Kathu Pan, Kathu Cemetery Sites, Kathu Town lands and the Bestwood Site, is pending.

Kathu Pan archaeological site is about 5km outside the town of Kathu, along the R380 road to Deben (Map 5). Boundaries of the farms Marsh 467, Sacha 468, Kathu 465 and Sims 462 come together here. According to Beaumont (1990), the pan covers about 30ha. There is an ancient drainage channel made by the floodwater overflow. Test boreholes reveal a 40m combination of calcrete, sand, clays and gravel layers, below the unstable peaty top sediments.

Concerning the new developments, major obstacles occur at Kathu Archaeological Complex with specific reference to the extended Stone Age site at Kathu Pan. Excavations have shown that an unusual conjunction of geological circumstances led to the stratified preservation of an exceptional human cultural record, representing three phases of the Early Stone Age, two phases of the Middle Stone Age and about the entire Later Stone Age sequence. The Acheulean evidence from the site is of particular significance. In total, the information provides a basic typological framework for a large part of the Middle Pleistocene (Beaumont 1990).

Several seasons of excavations by Peter Beaumont, assisted by other specialists have been performed at Kathu Pan (Plan 1&2). These excavations produced amongst other finds, portions of clay vessels, ostrich eggshell fragments, Middle Stone Age artefacts, prepared cores, long lithic blades, retouched points and material classified as Fauresmith artefacts. Further finds include coarse Acheulean hand axes and a variety of scrapers. The flakes represent the banded ironstone material found in the area. Grass pollen, indicating prehistoric vegetation, had been recovered. The investigations at Kathu Pan also produced the remains of large mammals, such as elephant, zebra, rhino, hippo, buffalo and giraffe, together with a variety of antelope and buck (Beaumont 1990).

The Kathu Pan archaeological site is surrounded by several major developments, which are located within a parameter of about 2km from the pan. Contact with a number of land managers at Kathu including the Head Town planner, revealed that these officials are unaware of the locality and existence of the Kathu Pan archaeological site.

To be able to compare the distances of developments from the Pan and to emphasize the need for protection and preservation, I have measured the distances of the different features surrounding the Kathu Pan on Google. The calculations are based on the coordinates given by Beaumont (1990) for the centre of the Kathu Pan archaeological site. My measurements could be distorted and may not be accurate, but the relative distances represent the amount of potential impact risk on the Kathu Pan archaeological site created by the present developments.

Distances from Kathu Pan Centre (Beaumont 1990) to features nearby (Map 5):

Khai-Appel Resort	1,43km
Sishen Air Port	1,87km
Kumba Village	1,31km
Mitton Transport	3,44km

FINDS

The existing Vaal-Gamagara Pipeline approaches the Kathu water reservoir from the south west, after crossing the R380 road to Deben (Map 7). From the reservoir, an existing 500mm direct pipeline takes the water further on its way north (Map 3). A short (180m) sub-soil pipe runs from the Water Reservoir to the starting point (A) of the above-soil water pipeline (Fig.1) near the farmhouse (Map 4). From here, the pipeline runs on top of the ground surface (Fig.2) over a total distance of about 1023m to Point C (Maps 2&3), where it goes underground (Figs.17&18). Across the Pan, the pipe is supported on concrete columns of differing heights (Fig.14).

At one specific position about 2m from the existing pipeline (Map 5), there is an abandoned open manhole inspection block (Fig.15), with evidence of an old underground water pipeline, about 3m below soil surface (Fig.16). This pipe is clearly not in use anymore. The presence of this old pipe indicates that the deposit along the route followed by the existing above soil pipeline had already been seriously disturbed by excavations for the installation of a sub-soil pipeline in the past.

Another feature is a 10m diameter circle of upright stones near the existing pipeline (Fig.12). There is a vacant area of about 2m in the row of stones, which could indicate an entrance (Fig.13). The origin and purpose of this stone feature could not be ascertained.

DISCUSSION

Beaumont (1990) indicates the centre of Kathu Pan at 27°39'50"S 023°00'30"E, placing this point about 87m east of the existing pipeline (Maps 1&5). From the records, it seems that all the archaeological excavations were likewise located in the area to the east of the existing pipeline (Plans 1&2). Excavations 1-5 are indicated near the farmhouse, Excavations 6, 8-11 are situated in the depression south of Kumba Village, with Excavation 7 further towards the north east. According to Beaumont (1990), Kathu Pan covers about 30ha. There are no borders indicated for the pan and the actual distribution of the archaeological deposit is not given.

Based on observations on the position of vegetation around the pan and the anticipated visibility and outline of the sinkhole at the site, we are of the opinion that the centre of the pan could be moved to the west of the existing pipeline (Point KP), or even as far as 300m distant (Point KP2) (Map 6). This possibility suggests that the pipeline route only touches on the eastern edge of the actual pan.

MEASUREMENTS

A to C	1023m
KP to G1	137m

A to B	405m	
KP (Beaumont) to KP	166m	
KP (Beaumont) to KP2	300m	
KP (Beaumont) to B	89,5m	
KP (Beaumont) to Water Tanks	628m	
KP (Beaumont) to Farmer's Coop	260m	
KP (Beaumont) to Farmhouse	453m	
KP (Beaumont) to Southern end of runway	817m	
Water Reservoir to E	3,3km	} 6,96km
E to D	3,66km	
Water Reservoir to D	5,79km	

After repeated site visits and careful investigations of the available literature, two potential propositions for the placing of the water pipeline are formulated (Map 3):

1. To bypass the Kathu Pan site by following the R380 road to a point beyond the Sishen Air Port terminal (E), continuing northwards to link with the existing pipeline (D). This route will require an additional 7km to the pipeline system (Map 3 green line).
2. The other alternative for the new pipeline would be to follow the existing route above ground level across the pan (Map 3 red line).

If the second option could be implemented, I recommend that the proposed developments and planning of the pipeline may proceed. Caution should be taken during the erection of the columns not to disturb the soil deposit and to avoid damage to any archaeological remains.

IMPACT ASSESSMENT

The Kathu Pan Archaeological site is of very high significance.

From previous research and other heritage impact assessments, we are aware of several important archaeological deposits in the area around Kathu. Heritage authorities and the relevant officials at McGregor Museum, Kimberley, in particular, who did the research over a decade, are concerned about the preservation of the archaeological sites at Kathu.

The archaeological site at Kathu Pan is almost encroached by general developments in the area. Officials in decision-making positions at Kathu and at the Kumba Mine seem to be ignorant about the existence of this unique site. These officials include the local Town Planner at Kathu Municipality.

I have requested SAHRA in a previous report (28 August 2013) to notify the relevant officials at Kathu Town Offices and Kumba Mine of the importance of the archaeological sites at Kathu Pan and about the National Heritage site application (Dreyer 2013). There was no response from SAHRA yet.

The names and particulars of the officials at Kathu are repeated below:

Johann Burger
Town Planner Gamagara Municipality Kathu
053-723 2261
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Liana Blaau
Sishen Airport Manager
053-739 3267 / 083 410 2703
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Hansie Esterhuizen (Manager SHEQ).
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Jimmy Walker (Accommodation Manager).
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Mashilo Mokotong (Manager Sustainable Development).
Sishen Mine's liaison with the local municipality.
mashilo.mokotong@angloamerican.com

RECOMMENDATIONS

I recommend that the proposed developments and planning of the line may proceed.

If it should be decided to follow the by-pass around Kathu Pan Site, an archaeological investigation will have to be done from the R380 road to the connecting point on the new water pipeline.

I recommend that the new water pipeline should be placed next to and east of the existing above surface line.

It is important that the matter should be clarified with SAHRA in Cape Town and with the local branch of the Northern Cape Provincial Heritage Resources Agency in Kimberley (Department of Sport, Arts & Culture, Kimberley) and with officials at the McGregor Museum in Kimberley.

MITIGATION

Concerning the area for the proposed pipeline developments, mitigation measures will only be required in case of the discovery of archaeological or lithic remains or human skeletal material.

Caution should be taken during the installation to avoid damage to the soil surface. The trampling by heavy vehicles should be limited to the minimum and driving should be restricted to the tracks along the pipeline route.

In the case of an important discovery, the work must stop and the finds reported to the archaeologist or to officials at the McGregor Museum in Kimberley.

Care should be taken not to disturb the 10m diameter upright stone circle near the existing pipeline.

Every archaeological and historical site is unique and should be treated as a non-renewable commodity. All efforts should be made to avoid the accidental disturbance or destruction of any cultural remains. I stress, therefore, that in case of the discovery of any human skeletal material, stone tools, pottery or other archaeological or historical material during the course of the work, all activities should temporarily be stopped and stabilised in the specific area. The archaeologist should be notified for an in situ inspection by officials and specialists from the McGregor Museum, Kimberley.

ACKNOWLEDGEMENTS

I thank Dr Johan du Preez from Eco Care Consultancy, Bloemfontein, who also accompanied me on previous visits, for discussions on the vegetation at Kathu Pan.

SELECT BIBLIOGRAPHY:

BEAUMONT, P.B. & VOGEL, J.C. 1989. Patterns in the age and context of rock art in the Northern Cape. *South African Archaeological Bulletin* 44(150):73-81.

BEAUMONT, P.B. 1990. Kathu Pan. pp. 75-100 In: Beaumont, P.B. & Morris, D. *Guide to archaeological sites in the Northern Cape*. Kimberley: McGregor Museum.

BEAUMONT, P.B., SMITH, A.B. & VOGEL, J.C. 1995. Before the Einiqua: the archaeology of the frontier zone. In Smith, A.B. (Ed.). *Einiqualand: Studies of the Orange River Frontier*. Cape Town: University of Cape Town Press.

BEAUMONT, P.B. 2007. Supplementary archaeological impact assessment report on sites near or on the farm Hartnolls 458, Kgalagadi District Municipality, Northern Cape Province. Kimberley: McGregor Museum, Archaeology Department, Report 17 January 2007.

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

DE JONG, R.C. 2008. Heritage scoping report: proposed residential development and associated infrastructure on a 200ha Portion of the farm Bestwood 429 RD at Kathu, Northern Cape Province. Report for Rock-Rowan Environmental Consulting, Pretoria.

DREYER, J. 2005. Archaeological and historical investigation of the proposed new pipeline to existing sewer plant at Bodulong-Bankhara, Kuruman, Northern Cape. EIA Report for Cebo Environmental Consultants, Bloemfontein.

DREYER, J. 2006. First phase archaeological and cultural heritage assessment of the proposed residential developments at the farm Hartsnoll 458, Kathu, Northern Cape. Report for MDA Environmental Consultants, Bloemfontein.

DREYER, J. 2007. First phase archaeological and cultural heritage assessment of the proposed Garona – Mercury transmission power line, Northern Cape, North-West Province & Free State. MDA Environmental Consultants, Bloemfontein.

DREYER, J. 2008. First phase archaeological and cultural heritage assessment of the proposed residential developments at a portion of the Remainder of the farm Bestwood 459RD, Kathu, Northern Cape. Report for Cultmatrix cc Heritage Consultants, Pretoria.

DREYER, J. 2008. First phase archaeological and cultural heritage assessment of the proposed sewage pipeline installation at Kathu, Northern Cape. Report for MDA Environmental Consultants, Bloemfontein.

DREYER, J. 2008. First phase archaeological and cultural heritage assessment of the proposed Bourke project, ballast site and crushing plant at Bruce Mine, Dingleton, near Kathu, Northern Cape. EIA Report for Milnex-SA Environmental Consultants, Schweizer-Reneke.

DREYER, J. 2009. First phase archaeological and cultural heritage assessment of the proposed upgrading of the waste water treatment works at Dibeng, Northern Cape. EIA Report for MDA Environmental Consultants, Bloemfontein.

DREYER, J. 2009. First phase archaeological and cultural heritage assessment of the proposed upgrading of the Waste Water Treatment Works at Kathu, Northern Cape. EIA Report for MDA Environmental Consultants, Bloemfontein.

DREYER, J. 2010. First phase archaeological and cultural heritage assessment of the proposed sand borrow pit & solar farm at a Portion of the farm Bestwood 459RD, Kathu, Northern Cape. Report for Culmatrix Environmental Consultants, Schweizer Reneke.

DREYER, J. 2010. First phase archaeological & heritage assessment of the proposed iron ore mining developments on Portion 2 of the farm Demaneng 546, Kuruman, Northern Cape. EIA Report Karien van der Merwe, Environmental consultant, Kimberley.

DREYER, J. 2012. First phase archaeological and heritage assessment of the proposed Vaal-Gamagara water pipeline project, Northern Cape. EIA Report for MDA Environmental Consultants, Bloemfontein.

DREYER, J. 2013. First phase archaeological & heritage assessment of the proposed Garona – Ferrum transmission line, Northern Cape. EIA for Envirolution Consultants, 223 Columbine Avenue, Mondeor, Johannesburg, Tel: 0861 44 44 99.

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

MORRIS, D. 1988. Engraved in place and time: a review of variability in the rock art of the Northern Cape and Karoo. South African Archaeological Bulletin 43(148):109-121.

MORRIS, D. 1990a. 'Etchings' and 'Intaglios' in the Upper Karoo: Part 1: The engravings at Springbok Oog. In Beaumont, P.B. & Morris, D. Guide to archaeological sites in the Northern Cape. Kimberley: McGregor Museum.

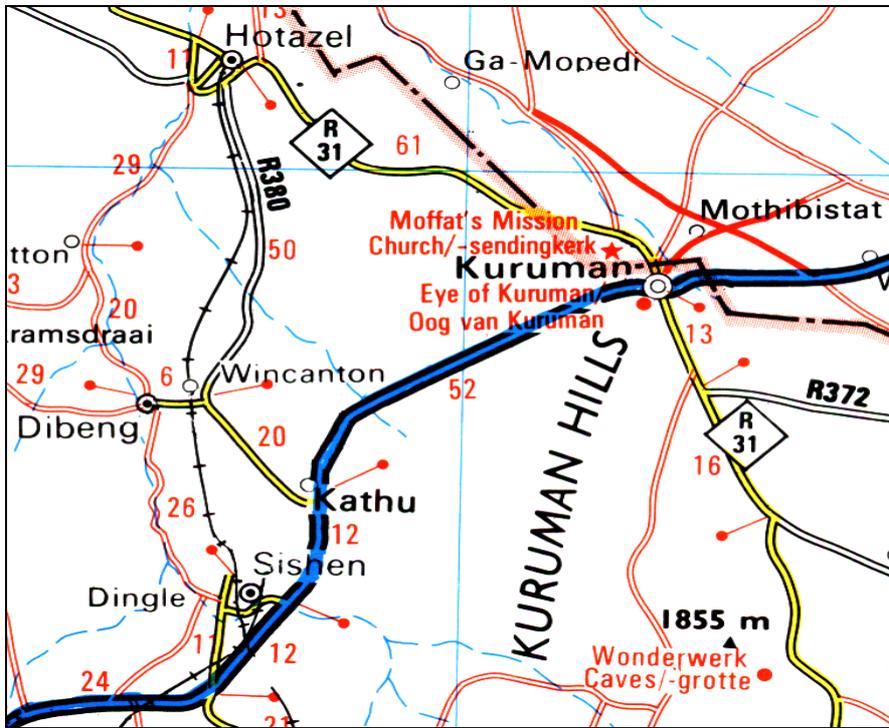
MORRIS, D. 1990b. 'Etchings' and 'Intaglios' in the Upper Karoo: Part 2: Engravings on Jagtpan and adjacent farms. In Beaumont, P.B. & Morris, D. Guide to archaeological sites in the Northern Cape. Kimberley: McGregor Museum.

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

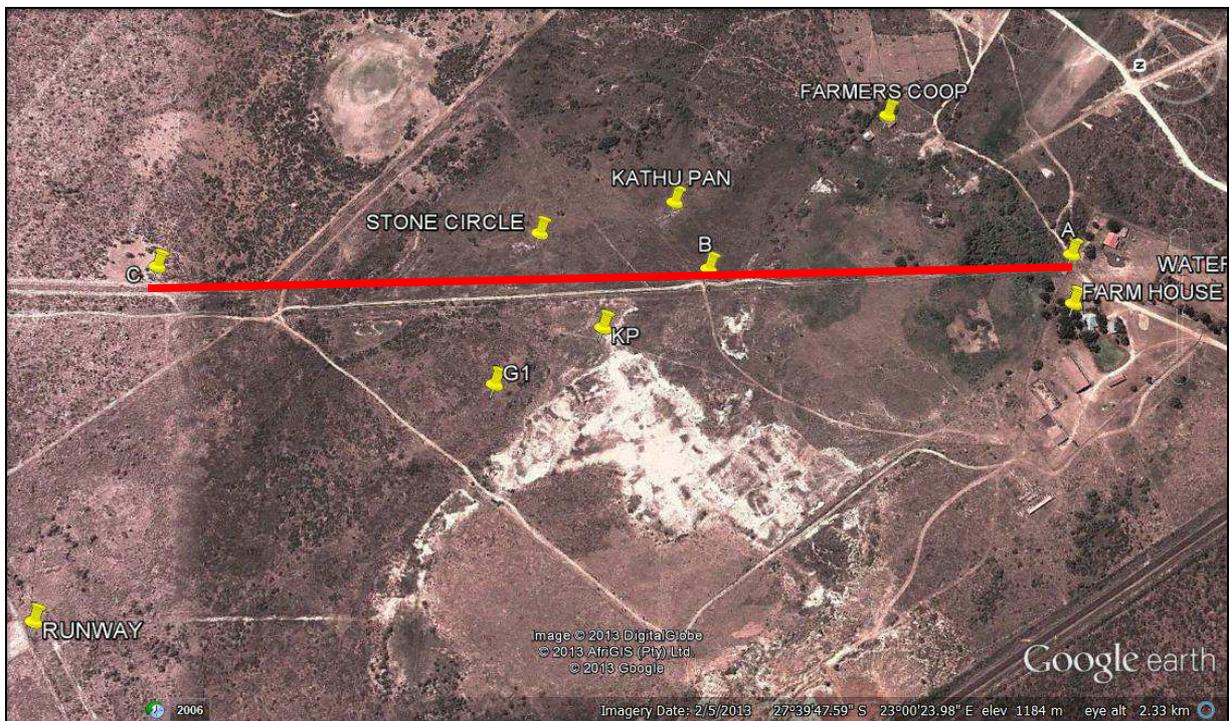
SMITH, A.B. (Ed.). 1995. Einiqualand: Studies of the Orange River Frontier. Cape Town: UCT Press.

WALKER, S.J.H., CHAZAN, M. & MORRIS, D. 2013. Kathu Pan: Location and Significance. A report requested by SAHRA for the purpose of nomination.

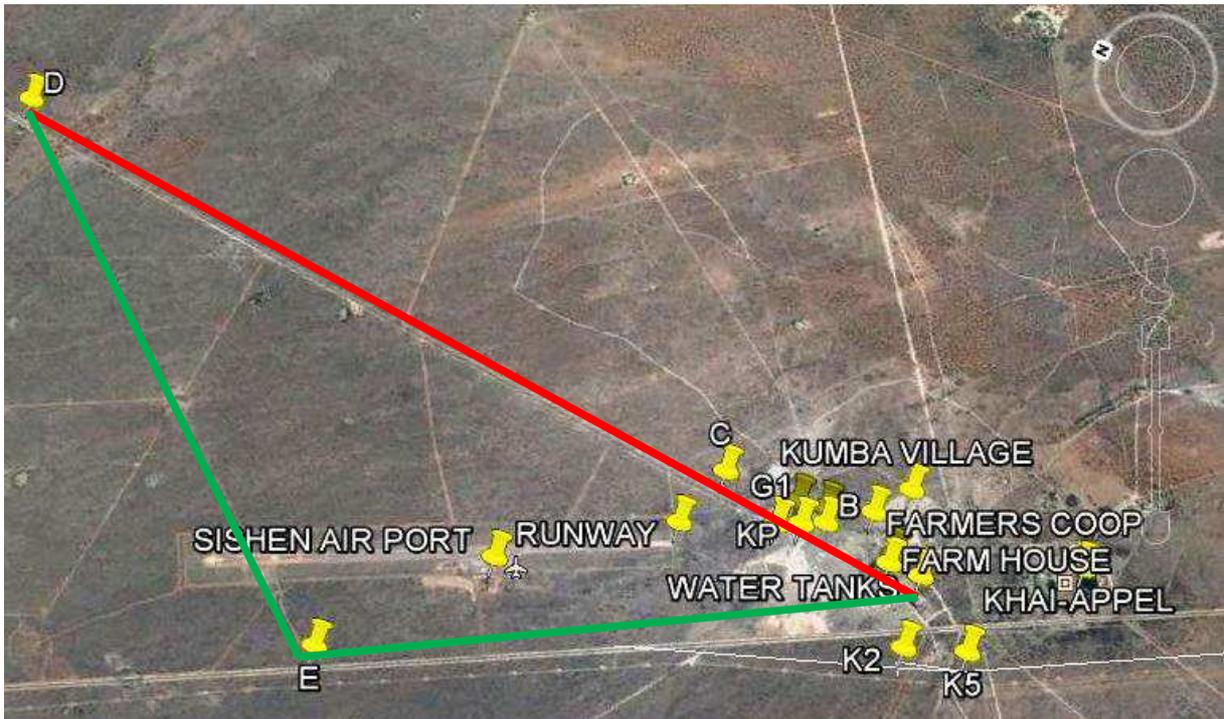
LIST OF ILLUSTRATIONS



Map 1 Locality of Kathu along the N14. .R380 to Deben indicated.



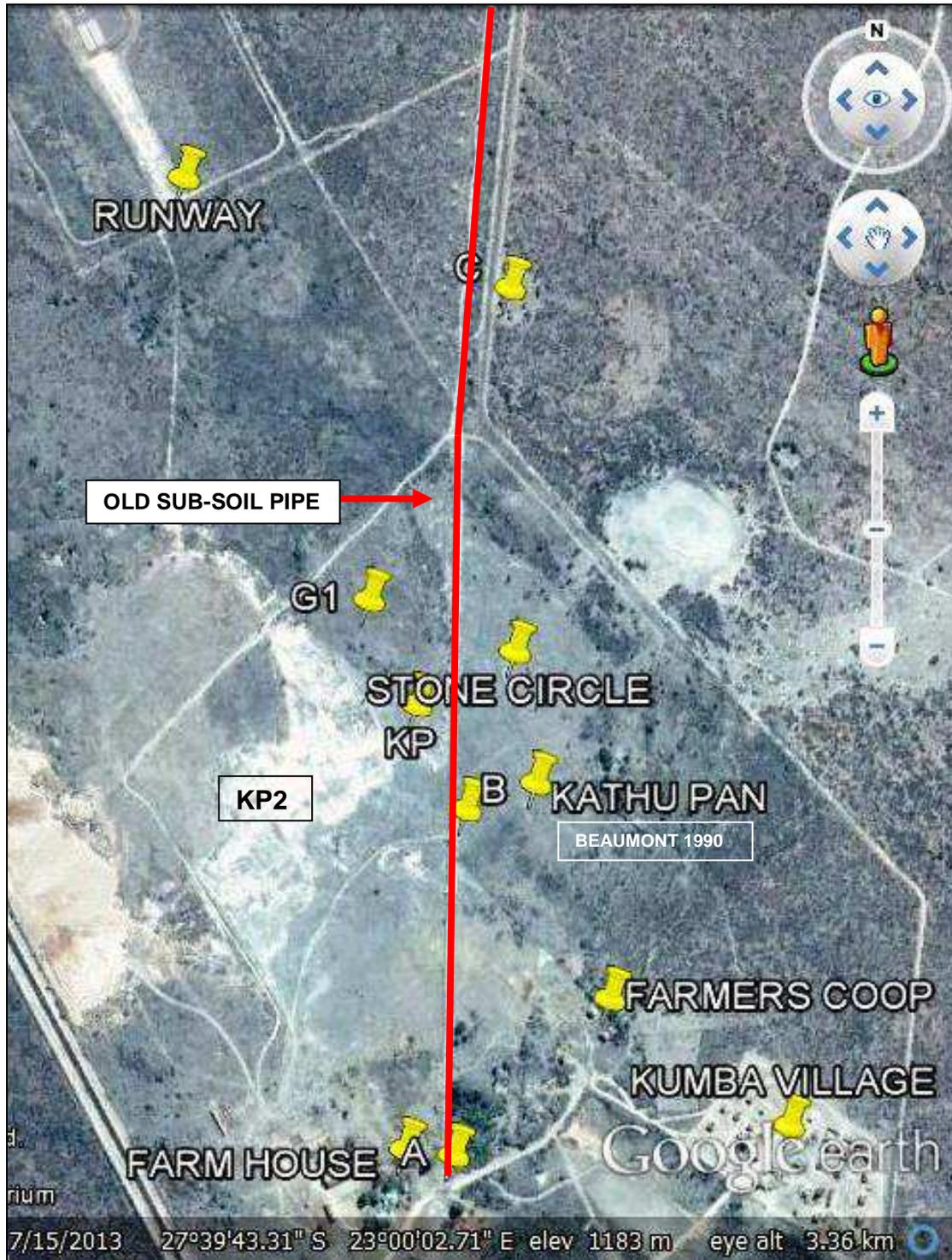
Map 2 Placing of the existing surface water pipeline (A-C).



Map 3 Locality of the existing water pipeline from the farmhouse (A,B,C,D in red).
Alternative route from the reservoir tanks along the R380 via Point E to Point D (green).



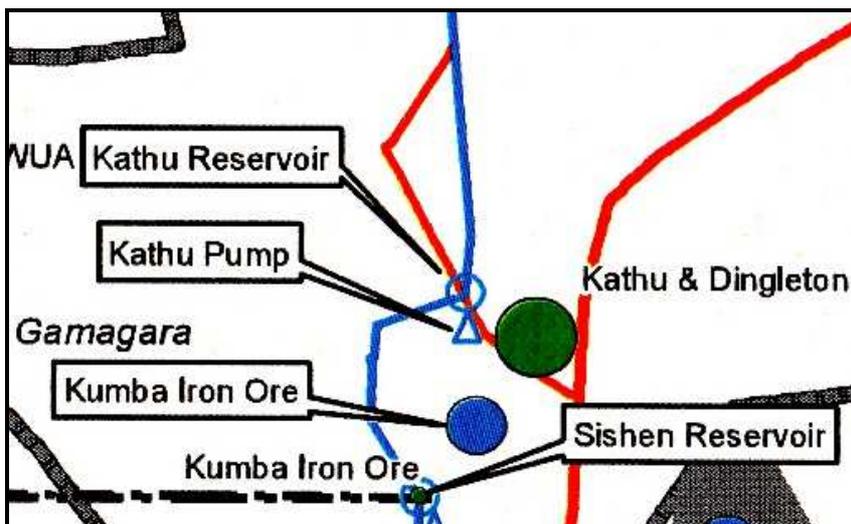
Map 4 Existing sub-soil water pipeline from reservoir (blue) and surface water pipeline from A (red).



Map 5 Locality of certain features in relation to the existing surface pipeline (red).



Map 6 Kathu Pan Centre (Beaumont), Dreyer's alternatives (KP) & KP2 with existing pipeline (red).



Map 7 Proposed pipeline route at Kathu.



Fig.1 Point A at Kathu Pan. Starting point of the pipeline near the farmhouse.



Fig.2 Point B on the existing water pipeline at Kathu Pan.



Fig.3 Point B at Kathu Pan.



Fig.4 Point B at Kathu Pan facing north.



Fig.5 Exposed calcrete at Point G1, Kathu Pan.



Fig.6 Exposed calcrete at Point G1, Kathu Pan.



Fig.7 Exposed calcrete at Point G1, Kathu Pan.



Fig.8 Point KP. Dreyer's alternative for Kathu Pan centre.



Fig.9 Point KP. Dreyer's alternative for Kathu Pan centre.



Fig.10 Point KP. Dreyer's alternative for Kathu Pan centre.



Fig.11 Point KP. Dreyer's alternative for Kathu Pan centre.



Fig.12 Planted stones forming a 10m Ø circle.



Fig.13 Entrance to 10m Ø planted stone circle.



Fig.14 Existing pipeline on columns running above ground level.



Fig.15 Existing pipeline (right) with manhole of old sub-soil pipeline at Kathu Pan (left).



Fig.16 Old sub-soil pipeline Kathu Pan. Inspection hole is about 3 meters deep.



Fig.17 Point C at the end of the existing pipeline above ground level.



Fig.18 Point C at the end of the existing pipeline above ground level facing south.



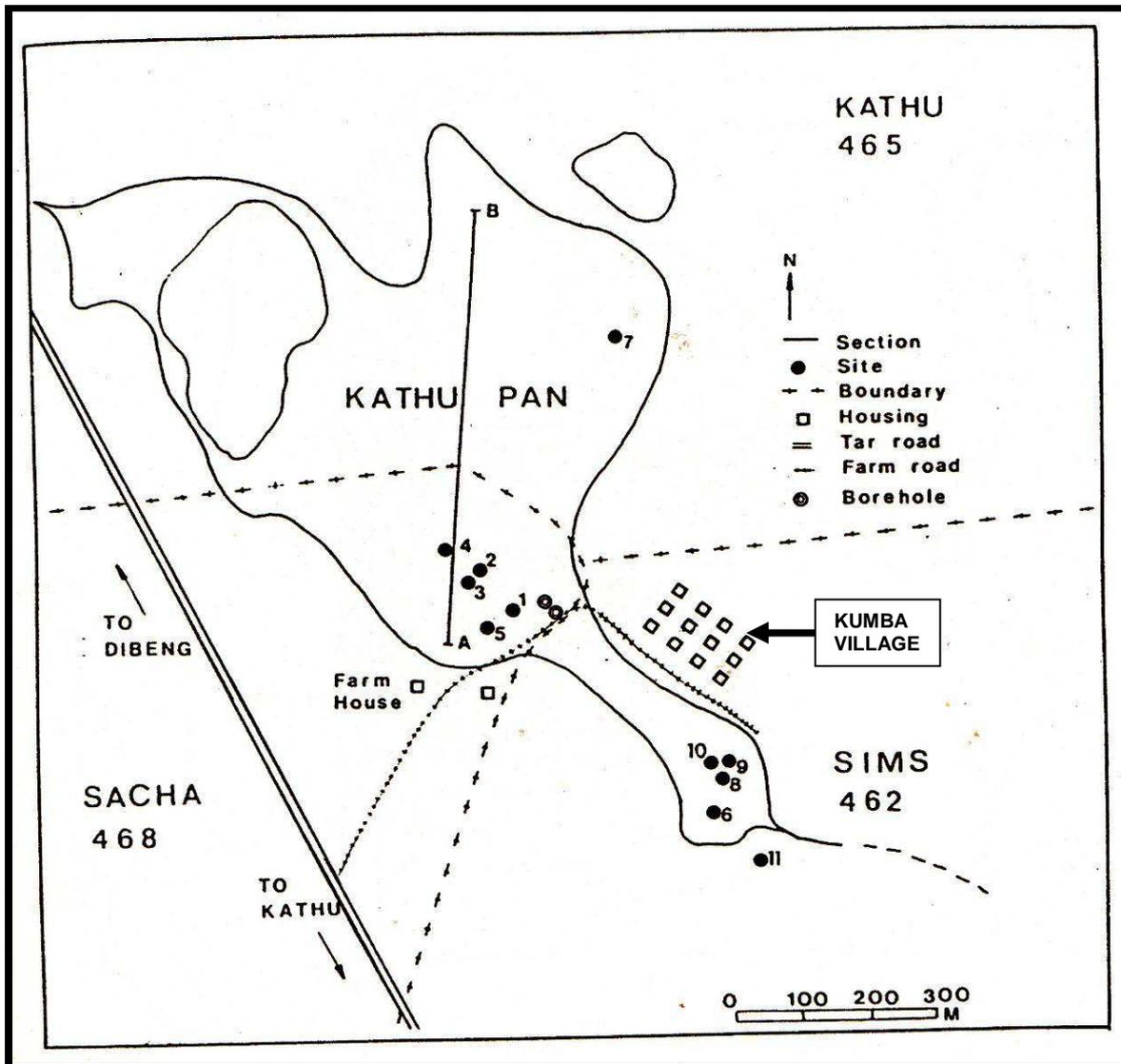
Fig.19 Point D along the existing water pipeline.



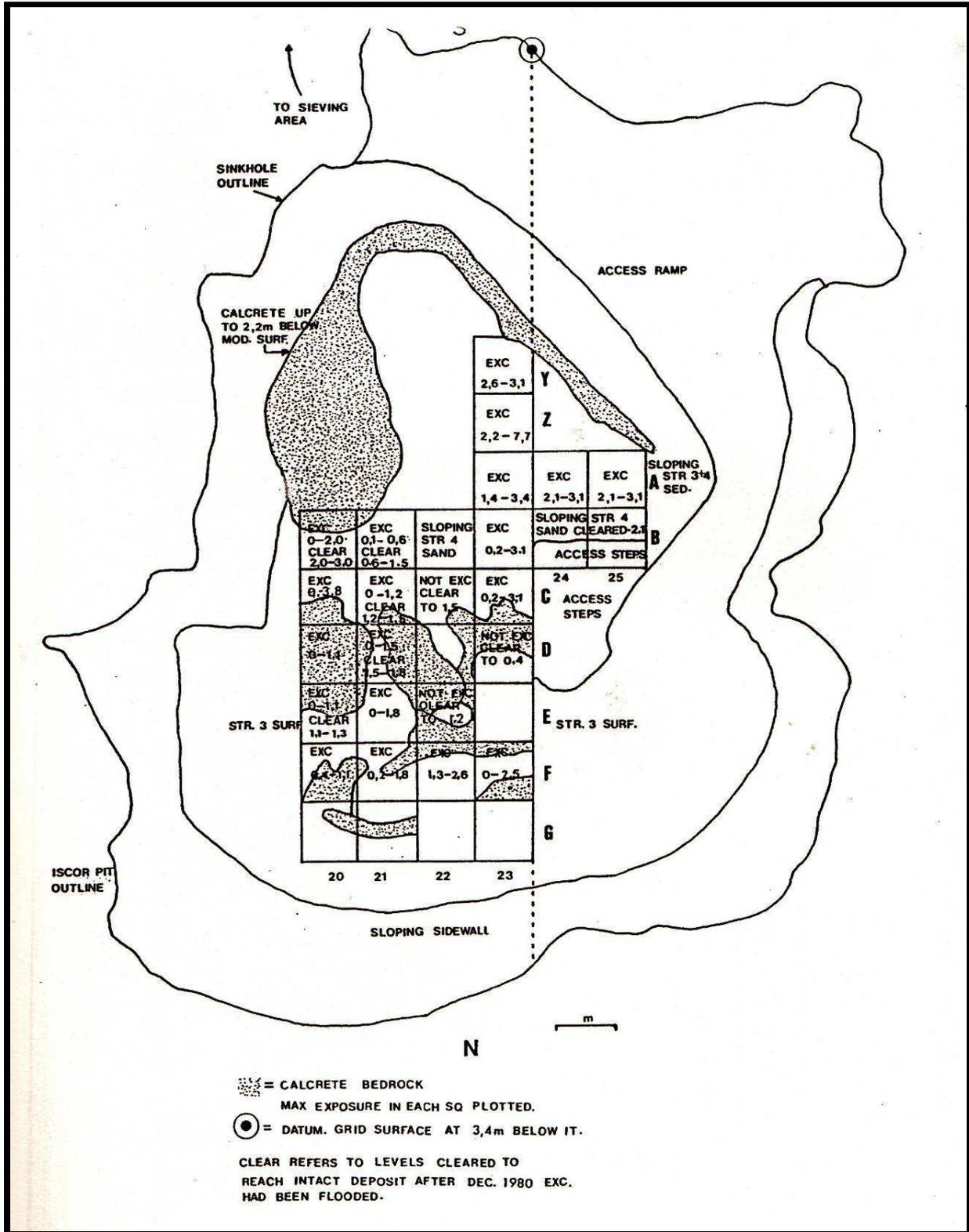
Fig.20 Point E along the R380 west of Sishen Airport facing north.



Fig.21 Farmers Coop near the Kumba village.



Plan 1 Placing of the archaeological excavations at Kathu Pan (Beaumont 1990).



Plan 2 Locality of the 1979-1980 excavations at Kathu Pan 1 (Beaumont 1990).