archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

9 CONCLUSIONS AND RECOMMENDATIONS

The Phase I HIA study for the options for the proposed Mokopane Substation and for the various corridors for the Mokopane Integration Project identified the following types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in or near the Eskom Project Area namely, (Tables 1-11):

- Scatters of stone tools occur along the Vaalsloot, Klein Sandsloot and Mohlosane Rivers in the Langa Ndebele sphere of influence. LSA sites are more common along the central parts of both Corridor 01 and Corridor 08 in the mountainous Waterberg areas and include open sites as well as sites which are located in rock shelters. These sites mainly date from the last two millennia.
- Rock painting sites occur in the northern mountainous part of the Eskom Project Area, particularly along the central stretches of Corridor 01 and Corridor 08. A cluster with five rock art sites occurs near the start of both these corridors in the west. Here, the mountains of Ga Mabula and Tafelkoppe also hold high heritage significance as rock art sites (not documented as yet) occur in these mountain ranges. These rock art sites date from the last two millennia.
- EIA Eiland sites (AD1100 to AD1300) have been recorded near the central stretch of Corridor 08 and possibly also occur in or near the central stretch of Corridor 01. These sites are inconspicuous as they mostly cover small surface areas and are not associated with any stone walls. Their most characteristic feature, if visible on the surface of the land, is the presence of decorated potsherds.
- LIA Moloko sites (AD1600 to AD1880), some with stone walls and characterised by Moloko styled pottery as well as with Nguni types of pots, occur in and near the central stretches of both Corridor 01 and Corridor 08. These sites are also common in the Masebe Nature Reserve (e.g. Magagamatala) and in the Villa Nora area (e.g. Bobididi) between Corridors 01 and 08. These sites are also common in the Lange Ndebele sphere of influence in the south-east. The eastern stretch of Corridor 01 runs across this area. LIA Moloko stone walled sites in a poort in Thaba Tšweu falls inside Corridor 06 and are associated with the Langa Ndebele.
- Historical remains, mostly consisting of homesteads, occur along the eastern stretch of Corridor 01 along the Fonthane mountains in the Langa Ndebele sphere of

influence. Widely dispersed colonial farm residences (historical houses) occur in low numbers along the western and central stretches of Corridors 01, 02 and 08.

- Graveyards occur along all stretches of all the power line corridors. Some of these graveyards are associated with villages which are scattered across the Project Area whilst others are associated with historical remains from the Langa Ndebele sphere of influence. Inconspicuous, undiscovered graves occur along the eastern stretch of Corridor 01. Graveyards in association with colonial farmsteads are generally low in numbers. Those that are associated with villages are higher in numbers considering the population numbers in these areas.
- A commemorative beacon has been erected in the Kloof Pass.
- Other heritage phenomena such as an open-air church occur near the village of Ga-Mathekgwa.

It is highly likely that more of the following types and ranges of heritage resources may occur in or near some of the power line corridors as they may have been missed by this study, due to various reasons. The following types and ranges of heritage resources therefore may be underrepresented in this study and their presence may be revealed by the walk-through study, namely:

- Stone Age sites with scatters of stone tools may occur along any of the major rivers, streams or tributaries in the Eskom Project Area, particularly where these rivers and streams may be crossed by the power lines. Stone tools may also occur in eroded areas and dongas, such as south of Mašašane, or near outcrops that are suitable for the manufacturing of stone tools.
- More historical farmsteads may occur towards the central and western parts of the Eskom Project Area where colonial settlement was more prominent during the late nineteenth century and the early twentieth century. However, farmsteads are generally widely dispersed and therefore low in numbers so that the eventual figure will not rise significantly.
- Undetected graveyards may occur in or near the power line corridors. However, these graveyards will be limited in number as colonial graveyards are usually associated with historical houses. More common are graveyards for farm labourers which tend to be inconspicuous as they are mostly undecorated. Most of the graveyards associated with rural villages are located in these villages whilst those situated on the outskirts of villages, where the power lines may run, have been geo-referenced and mapped. The Lange Ndebele sphere of influence has proven to be an area which is marked with exceptionally high numbers of unmarked graves.

Heritage potential of the options for the Mokopane Substation

Three options are proposed for the Mokopane Substation. All three options for the proposed Mokopane Substation weigh equal with regard to a preference to be used as a site for the proposed Mokopane Substation. No heritage resources with outstanding significance were observed near any of these options.

Heritage potential of the various power line corridors

Four options have been identified for the proposed 400kV power lines between the Medupi power station and the Witkop Substation, namely a northern corridor (Corridor 02), a southern corridor (Corridor 01), and two central corridors running along Eskom's existing power line (Corridor 08 and Corridor 08 Deviation). The heritage potential of each of these corridors is briefly discussed:

Corridor 01

This southern corridor can be divided into three main stretches characterised by the following heritage resources, namely (Table 8):

- A western stretch running along the Waterberg flats which mainly holds graveyards and historical houses in low numbers. A cluster of five rock art sites occur on Grootfontein 501LQ.
- A central stretch with a sharp bend which runs through the northern edge of the Waterberg. This stretch holds LSA sites in the open and in rock shelters and rock art sites in shelters, overhangs and on isolated boulders. It is marked by EIA Eiland and LIA Moloko settlements as well as historical houses and graveyards in low numbers. A beacon is located in the Kloof Paas.
- An eastern stretch which runs across the Fonthane mountains and the historical sphere of influence of the Langa Ndebele. This area is characterised by remains dating from the Late Iron Age and Historical Period in moderate numbers. Graveyards are scattered throughout this area and many undiscovered graves still occur where settlements dating from the more recent past were located.

Corridor 02

This northern corridor can be divided into the following stretches with different heritage significance, namely (Table 9):

- A western stretch that runs across the Waterberg flats to the farm Pieterman 445LR which holds graveyards and historical houses in low numbers and a few graveyards in the Shongwane area. A rock art site is located on Grootfontein 501LQ.
- An eastern stretch that runs near and along several graveyards located in or near the fringes of villages. This stretch skirts the northern boundary of the Masebe Nature Reserve and the farm Haakdoringdraai 711LR where several rock art sites and LIA settlements occur. It can be expected that LSA sites (open and in shelters) will also occur in the reserve.

Corridor 08

This central corridor can be divided into the following stretches which are characterised by the following types and ranges of heritage resources, namely (Table 10):

- A western stretch that runs across the Waterberg flats to the mountains Tafelkoppe and Ga Mabula on Smithfield 536LQ and surrounding farms. These

mountains hold high heritage significance. This stretch also holds graveyards and historical houses in low numbers.

- A central stretch that runs across the northern tip of the Waterberg mountains. This stretch holds historical houses and graveyards in low numbers. Several rock art sites and LSA sites occur along this stretch as well as a highly significant EIA Eiland site and LIA Moloko sites. This stretch skirts the southern boundary of the Masbebe Nature Reserve and the farm Haakdoringdraai 711LR where several rock art sites and LIA settlements occur. It can be expected that LSA sites (open and in shelters) will also occur in the reserve.
- An eastern stretch that is marked by a limited number of graveyards.

Corridor 08 Deviation

This corridor is identical to Corridor 08, a short stretch in the eastern part of Corridor 02 and incorporates two deviations between Corridor 02 and Corridor 08. Corridor 08 Deviation is characterised by the following types and ranges of heritage resources (Table 11):

- A western stretch that runs across the Waterberg flats to the mountains Tafelkoppe and Ga Mabula on Smithfield 536LQ and surrounding farms. These mountains hold high heritage significance. This stretch also holds graveyards and historical houses in low numbers.
- A central stretch that follows the two deviations and a short stretch of the eastern part of Corridor 02. This stretch holds rock art sites in low numbers, a Late Iron Age site and a limited number of historical structures with outstanding significance. It may be associated with graveyards in low numbers.
- An eastern stretch that is marked by a limited number of graveyards.

Corridors 04-06

Three possible corridors have been identified between the new Mokopane Substation and the Witkop Substation, namely Corridor 04, 05 and 06.

Corridor 06 holds the highest number and most significant heritage resources. A cluster of stone walled sites which are already impacted by the presence of 132kV power lines is located along this corridor which runs through a poort in Thaba Tsweu.

Corridor 07

Corridor 07, which runs from the Delta Substation to the Medupi Power Station, is characterised by the presence of low numbers of historical houses and graveyards.

Ranking the substation sites and the power line corridors

Considering the presence of the various types and ranges of heritage resources in and near the three options for the Mokopane Substation and for the various power line

corridors, the options for the substations and for the various power line corridors can be ranked. This ranking is based on the considering of pre-mitigation as well as post-mitigtation measures for any of the types and ranges of heritage resources that may be affected by the proposed substation or the various power line corridors.

The scale that was used to rank the substation sites and the power line corridors was graded in three levels, namely: one (1) (least preferred); two (2) medium preferred and three (3) (most preferred).

The options for the substation

Options 01, 03 and 04 are equally preferred as possible sites for the Mokopane Substation.

The power line corridors

The four longest power line corridors are ranked as follow:

Corridors 01, 02, 08 and 08 Deviation

- Corridor 02 and Corridor 08 Deviation are the most preferred as it seems as if these corridors will affect the lowest number of heritage resources; the least types and ranges of heritage resources as well as no outstanding significant heritage resources. However, Corridor 08 Deviation has to be constructed to the north of Tafelkoppe and Ga Mabula (along the R518) (Figure 7, Tables 9).
- Corridor 08 is medium preferred as it seems as if this corridor will affect the second lowest number of heritage resources; the second lowest number of types and ranges of heritage resources as well as no outstanding significant heritage resources (Figure 7, Table 10). This ranking applies to Corridor 08 if it is constructed to the north of Tafelkoppe and Ga Mabula (along the R518).
- Corridor 01 is the least preferred as it seems as if this corridors will affect the highest number of heritage resources; the highest number of types and ranges of heritage resources as well as heritage resources with possible high significance (Figure 7, Table 8).

Corridors 04, 05 and 06

When considering Corridors 04, 05 and 06 it is clear that Corridor 06 can be identified as the least preferred corridor amongst these three corridors as it holds the following:

- A cluster of stone walled sites which are already impacted by Eskom's existing 132kV power lines as they run through a poort in Thaba Tsweu in which the power lines are located.
- This corridor is also associated with a possible graves located in a sisal bush.

No specific preference, from a heritage point of view, can be made between Corridor 04 and Corridor 05.

Corridor 07

Corridor 07 has no alternatives. However it appears as if this Corridor holds no outstanding significant heritage resources other than one or more historical houses and a few graveyards. These heritage resources can either be avoided by Corridor 07, can be incorporated in the power line corridors.

The significance of the heritage resources

The significance of heritage resources is usually determined according to criteria such as the following: the scientific, research, esthetical, educational, ideological, tourism, etc value heritage resources may hold. Other criteria which may apply are the repeatability (scarcity); condition (dilapidated, restored, altered, disturbed) and inherent cultural, historical, industrial, economic and contextual value that each and every heritage resource possesses.

The level of significance of each heritage resource will determine what mitigation measures have to be applied before this heritage resource may be affected by the Eskom Project. The nature and extent of the mitigation measures will again determine the permitting process that has to be followed with the South African Heritage Resources Authority (SAHRA).

The protective status of the various types and ranges of heritage resources that may be affected by the Eskom Project is indicated by means of various sections of the National Heritage Resources Act (No 25 of 1999).

Stone Age sites (including rock paintings)

A limited number of Stone Age sites have been identified in and near the Eskom Project Area. This is primarily the result of the fact that the survey was not done with the same meticulousness and thoroughness that are characteristic of scientific archaeological surveys. Stone Age sites also are difficult to detect as they may be (partly) buried under the ground and that they mostly consist of stone tools that are scattered across the surface of the land.

Stone Age sites are underrepresented in this study and it is clear that some of these sites will be found during the walk-through study or even at a later stage, e.g. when the power line corridors are constructed. Stone tools may be excavated when towers are erected.

Rock paintings sites also occur in moderate numbers along the central stretches of both Corridor 01 and Corridor 08. A cluster of five rock art sites are also located near the western end of these two corridors while unrecorded rock art sites exist in association with the mountains of Ga Mabula and Tafelkoppe. Any impact on these rock painting sites may either be physically or visually, or both.

Stone Age sites, including rock art sites, qualify as archaeological remains and are protected by Section 38 of the National Heritage Resources Act (No 25 of 1999).

Iron Age sites

Most of the Iron Age sites recorded in the Project Area occur towards the central parts of both Corridors 01 and 08. These sites include EIA Eiland and LIA Moloko settlements, the latter with and without stone walls. LIA Moloko settlements also occur near the eastern end of Corridor 01 in the Langa Ndebele sphere of influence. A cluster of stone walled sites occur in a poort in Thaba Tsweu along Corridor 06 which is part of the sphere of influence of the Langa Ndebele.

Iron Age settlements qualify as archaeological and historical remains and are protected by Section 38 of the National Heritage Resources Act (No 25 of 1999).

Historical structures

A low number of widely distributed colonial farmsteads have been recorded in the western and central parts of the Eskom Project Area where colonial settlement took place during the late nineteenth century and the early twentieth century. Many of these farmsteads do not necessarily qualify as historical significant structures as they either have been altered (renovated) in the past whilst others have been abandoned and have fallen into disrepair.

Most of these residences are single structures and are not associated with outbuildings such as wagon sheds or rondavels which then may constitute cultural landscapes of smaller proportions. Criteria such as chronological age (sixty years or older), condition (altered, renovated, dilapidated), etc. determine the level of significance of these structures.

Homesteads with rectangular stone walls in the Langa Ndebele sphere of influence along the eastern end of Corridor 01 have historical significance as many are sixty years old. Several of these homesteads are associated with graves as the occupants of some of these homesteads were interred within the confines of the homesteads after they have been abandoned.

Historical structures such as individual farmsteads (sometimes with outbuildings) and in some instances constituting cultural landscapes of smaller proportions which are older than sixty years are protected by Section 34 and Section 38 of the National Heritage Resources Act (No 25 of 1999).

Memorabilia

At least one commemorative beacon was distinguished in the Project Area, namely the beacon commemorating the opening of the Kloof Pass.

Memorabilia which include monuments, commemorative beacons or Gardens of Remembrance qualify as heritage memorials which are protected by Section 37 of the National Heritage Resources Act (No 25 of 1999).

Graveyards

A significant number of graveyards were recorded which are associated with rural villages in the Eskom Project Area; historical homesteads in the Langa Ndebele sphere of influence; near the village of Phetole in the Luxemburg area, and with colonial farmsteads. These graveyards and graves occur throughout the Eskom Project Area and were found along all three major power line corridors. However, the number of graveyards which were recorded is probably not a true reflection of the real number of graveyards which may exist in the Eskom Project Area. Undetected graves or graveyards may occur anywhere as informal and abandoned graveyards are difficult to detect.

It is therefore likely that more graveyards than those which have been recorded will be discovered during the walk-through study.

All graveyards and graves can be considered to be of high significance and are protected by various laws. Legislation with regard to graves includes Section 36 of the National Heritage Resources Act (No 25 of 1999) whenever graves are older than sixty years. The act also distinguishes various categories of graves and burial grounds.
Other legislation with regard to graves includes those which apply when graves are exhumed and relocated, namely the Ordinance on Exhumations (No 12 of 1980) and the Human Tissues Act (No 65 of 1983 as amended).

Possible impacts on the heritage resources

Some of the types and ranges of heritage resources in or near the proposed sites for the Mokopane Substation and in or near the proposed power line corridors, including those that hitherto have been undetected, may be impacted (affected, altered, damaged) by the Eskom Project whilst the walk-through study on the other hand may result in the lowering of the impact on the heritage resources.

The number of heritage resources which may be affected by the Eskom Project can be decreased if the power lines are realigned after the walk-through study has been completed.

The significance of possible impacts on the various types and ranges of heritage resources is indicated in Tables 13-17.

Stone Age sites

Stone Age sites are underepresented in this study and more sites will be found when the walk-through study is done or when the power line corridors are surveyed and constructed. Stone Age sites may be impacted when towers are constructed on top of concentrations of stone tools. This manily applies to Stone Age sites which are located in the open. Several LSA sites in the Project Area occur in rock shelters and overhangs where they will not be affected by the Eskom Project.

Stone tools are not destroyed by this action but are usually scattered from a an archaeological context which already have been disturbed as a result of natural environmental occurrences in the past. However, the impact that may be caused by the Eskom Project will be due to human intervention and will not be caused by natural environmental processes.

Iron Age sites

The surface of land that is covered by single or clusters of Iron Age sites dating from the EIA Eiland phase and from the LIA Moloko phase (with or without stone walls) vary considerably. The cluster of LIA Moloko stone walled sites in Corridor 06 in a poort in Thaba Tšweu cover a considerable surface area. These stone walled sites have been impacted in the past when Eskom erected towers for 132kV power lines within the perimeters of these sites.

Some of these Iron Age sites may be impacted by the Eskom Project if the towers for the power lines are erected within the perimeters of these sites or when the power lines cuts across these sites which, together, may constitute small cultural landscapes.

Historical structures

The relatively low number of widely distributed colonial homesteads in the Eskom Project Area needs not to be affected by the Eskom Project, also when considering that most of these houses are single structures (without outbuildings) and therfore not constituting cultural landscapes. The homesteads in the Langa Ndebele sphere of influence (some with graves) are mainly concentrated in the Fonthane mountains.

These remains will be affceted if the towers are erected on top of these remains. This impact may be more significant if the homestead also holds graves.

Memorabilia

It is highly unlikely that the commemorative beacon in the Kloof Pass will be affected by the Eskom Project as Corridor 01 will not be constructed along this kloof due to technical reasons and aesthetics.

Graveyards

Any of the recorded graveyards or graves or those detected during the walk-through study of the Eskom Project Area may be impacted when towers are erected on top of these structures.

Mitigating the heritage resources

Different mitigation measures have to be followed for different types and ranges of heritage resources that may be affected by the Eskom Project. Mitigation measures for various types and ranges of heritage resources are usually conducted by specialists qualified in various disciplines and accredited with the Association for Southern African Professional Archaeologists (ASAPA) or with other professional orginisations.

An important aspect relating to the mitigation (conservation) of heritage resources in power line corridors is the undertaking of walk-through studies which are done before transmission lines are constructed and have the following benefits, namely:

- Transmission lines can be rerouted or realigned in order to avoid (conserve) heritage sites.
- Heritage resources can be conserved unaffected (*in situ*) underneath power lines and can subsequently be managed as long as power lines are operational.

Stone Age sites

Stone Age sites can in some instances be avoided by means of placing towers on opposite ends (outer perimeters) of these sites. Stone Age sites therefore can be kept underneath (*in situ*) any number of power lines.

It is also possible that stone tools which may be affected by the Eskom Project can be collected from the surface before the power lines are constructed. These stone tools can be donated to museums (preferably closest to the project area) or to an accredited institution such as a national museum or a university. Here, it can be safe-kept and be used in displays or in educational programmes.

Rock art sites mostly occur in mountainous areas (overhangs and shelters) where power lines cannot be constructed due to technical reasons. However, some rock art are located on single boulders in more open areas where power lines may be constructed.

When power lines are constructed above or near rock art sites they may cause a physical and/or visual impact on the rock art. However, it may also be possible that rock art on boulders may be conserved below power lines.

Phase II investigations for Stone Age sites can only be conducted by archaeologists accredited with the Association for Southern African Professional Archaeologists (ASAPA). Rock art sites that are impacted by power lines must be investiagted by specialists from

the Rock Art Research Institute (RARI) at the University of the Witwatersrand. These archaeologists have to obtain permits from the South African Heritage Resources Authority (SAHRA) which will authorise the collection of the stone artefacts and the investiagtion of the rock art sites *prior* to the construction of the power lines and any subsequent affect on these heritage resources.

Iron Age sites

Iron Age sites can in some instances be avoided by means of placing towers on opposite ends (outer perimeters) of single or small clusters of sites. Incorporation of a small cluster of sites underneath any number of power lines may impact on these sites if they constitute cultural landscapes. However, the impact will be visual and not necessarly physical. No fixed prescriptions exist for 'safe distances' that has to be maintained between power lines and Iron Age sites.

If Iron Age sites have to make way for towers for power lines these sites must be subjected to Phase II investigations. These investigations require that the sites be documented by means of mapping the sites and possibly by means of small test excavations of sites. Phase II investigations are done by archaeologists accredited with ASAPA. The archaeologist has to obtain a permit from SAHRA which will authorise the Phase II investigation and the subsequent destruction of the stone walled sites before the construction of the power lines commences.

Historical structures

Historical houses (sometimes with outbuildings) which may constitute cultural landscapes can in some instances be avoided by means of routing power lines around these structures. Historical infrastructure, however, can not be preserved underneath power lines.

Power lines that avoid historical structures may still impact visually on these remains. No fixed prescriptions exist that outline 'safe distances' between power lines and historical structures.

Historical structures may not be affected (demolished, renovated, altered) by the Eskom Project *prior* to their investigation by a historical architect in good standing with SAHRA. The historical architect has to acquire a permit from SAHRA before any historical structures may be impacted as a result of the Eskom Project.

Memorabilia

The commemorative beacon in the Kloof Pass will probably not be affected by the Eskom Project. If the monument, which can also be conserved beneath the power line, has to be moved it must be shifted to a location where it is accessible to the public, tourists and other interested individuals or groups as its holds educational and other values.

Graveyards

Graves and graveyards in the Eskom Project Area can be mitigated by following one of the following strategies, namely:

- Graveyards and graves can be conserved *in situ* beneath power lines. Towers should be erected on opposite ends of graves or graveyards. Consequently, power lines can be strung across and above graves and graveyards. Conserving graves and graveyards in power line corridors create the risk that they may be damaged, accidentally, and that Eskom may be held responsible for such damages. Controlled access must exist for any relatives or friends who wish to visit graves or graveyards in power line corridors.
- Graveyards can also be exhumed and relocated. The exhumation of human remains and the relocation of graveyards are regulated by various laws, regulations and administrative procedures. This task is undertaken by forensic archaeologists or by reputed undertakers who are acquainted with all the administrative procedures and relevant legislation that have to be adhered to whenever human remains are exhumed and relocated. This process also includes social consultation with a 60 days statutory notice period for graves older than sixty years. Permission for the exhumation and relocation of human remains have to be obtained from the descendants of the deceased (if known), the National Department of Health, the Provincial Department of Health, the Premier of the Province and the local police.

General comments with regard to mitigation

Two main types of impacts can be distinguished with regard to heritage resources and power lines, namely:

- Physical impacts which occur when towers are constructed on top of heritage resources which occur on the surface of the earth..
- Visual impacts occur when power line infrastructure affect the aesthetic and visual appearance, sense of place, context, or other aspects relating to heritage resources in a negative way.

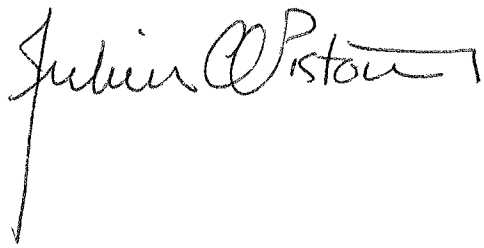
However, it is generally assumed that impacts caused by linear developments such as power lines on heritage sites may be less severe than impacts which occur as a result of more drastic kinds of development. This assumption can be explained by the fact that long, narrow power lines (and their corridors) which extend across short, medium or long distances offer opportunities with regard to the protection of heritage sites by means of the following:

- Power lines are strung on top of towers which cause the only footprints on the landscape after the power line have been constructed.

- Power lines hang above the surface of the land in which heritage sites were deposited many years ago and primarily may cause a visual impact on these sites if the heritage sites are retained beneath the power lines.
- Towers (and power lines) can be planned and constructed in such a way that they can avoid heritage sites and cultural landscapes.
- Heritage sites can be conserved under power lines if towers are spaced in such a way that they do not affect (remove, damage, alter) heritage sites which then are left *in situ*, (unaffected) underneath power lines.
- Although mitigation measure do exist for all types and ranges of heritage resources, mitigation measures do not have to be applied when heritage sites can be left unaffected in power line corridors.

Walk-through studies and the mitigation of heritage resources

The protection and conservation of heritage resources in power lines corridors are advanced by means of walk-through studies which are conducted before the final alignments for power lines are fixed and before the construction of power lines commence. During the walk-through study, the real (factual) impact on recorded heritage resources as well as on earlier undetected heritage resources may be determined. By rerouting the power lines or changing the placement of towers possible impacts on heritage sites can either be minimised or can be avoided.



DR JULIUS CC PISTORIUS
Archaeologist & Heritage Consultant
Member ASAPA

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11 SPOKESPERSONS CONSULTED

Kriel, H.R. Tenant on Rondeboschje 429LQ.
Beyers and Susan van der Westhuizen. Rondeboschje 429LQ
Kobus Nel (snr). Farm owner. Annexatie 544LQ.
Kobus Nel (jnr). Farm owner. Annexatie 544LQ.
Katrien van Staden. Farm owner. Beaumont 550LR.
Robert Kruger. Foreman. Caledon 547 and Spreeuwal.
Joseph Fonthane. Farm laborer. Daggakraal 591LR.
Johan Kloppers. Farm owner. Daggakraal 591LR.
Joseph Sephokole. Resident in the Monareng village.
Johannes Mabodja. Farm laborer. Pieterman 445LR.
Dinah Madira. Farm laborer. Melckboschkraal 431LQ.
Johannes Tlou. Farm laborer. Wellington 432LQ.
Louis Bester. Farm owner. Daggakraal 591LR.
Karel Botha. Farm owner Daggakraal 591LR.
Etiene Rossouw. Representative for a portion of the farm Zwellendam 548.
Jan Tefu. Former resident of Ga Puka village.
Darius Masebe. Farm labourer. Weltevreden 508LR.
Engela Nel. Farm owner. Kleindenteren 485LR .
Jan Lewies. Farm owner. Kirstenbosch 497
Charl Rudolph. Farm owner. De Kuil 532LR.
Japie Maphuting. Farm labourer. Grootdenteren 533LR
Daniel Sebeta. Farm worker. Georgetown 532LR.
Jan van Rensburg. Farm owner. Hannover 555LR.
Herbert Mosimo of the Mosimo community. The Mosimo community is awaiting the outcome of a land claim near Tafelkoppe.
Jaco Swanepoel. Resident on Swebeswebe 870LR and Hannover 555LR

Potential environmental impact	Project Activity or issue	Environmental significance before mitigation							Environmental significance after mitigation as per EMP						
		M	E	D		P	TOTAL	SI	M	E	D		P	TOTAL	SI
Alter, damage, destroy Stone Age sites in/near the power line corridors	as a result of pre-construction, construction, or operational activities	5	1	5		3	33	M	1	1	5		1	7	L

Table 13: Impact significance assessment for Stone Age sites (and rock art sites) in/near power line corridors

Potential environmental impact	Project Activity or issue	Environmental significance before mitigation							Environmental significance after mitigation as per EMP						
		M	E	D		P	TOTAL	SI	M	E	D		P	TOTAL	SI
Alter, damage, destroy Iron Age sites in/near the power line corridors	as a result of pre-construction, construction, or operational activities	5	1	5		3	33	M	3	1	5		1	9	L

Table 14: Impact significance assessment for Iron Age sites in/near power line corridors

Potential environmental impact	Project Activity or issue	Environmental significance before mitigation							Environmental significance after mitigation as per EMP						
		M	E	D		P	TOTAL	SI	M	E	D		P	TOTAL	SI
Alter, damage, destroy Historical Houses in/near the power line corridors	as a result of pre-construction, construction, or operational activities	5	1	5		3	33	M	3	1	5		1	9	L

Table 15: Impact significance assessment for historical remains (such as houses) in/near power line corridors

Potential environmental impact	Project Activity or issue	Environmental significance before mitigation							Environmental significance after mitigation as per EMP						
		M	E	D		P	TOTAL	SI	M	E	D		P	TOTAL	SI
Alter, damage, destroy battlefields/memorabilia in/near the power line corridors	as a result of pre-construction, construction, or operational activities	5	1	5		3	33	M	3	1	5		1	9	L

Table 16: Impact significance assessment for memorabilia in/near power line corridors

Potential environmental impact	Project Activity or issue	Environmental significance before mitigation							Environmental significance after mitigation as per EMP						
		M	E	D		P	TOTAL	SP	M	E	D		P	TOTAL	SP
Alter, damage, destroy graves and graveyards in/near the power line corridors	as a result of pre-construction, construction, or operational activities	5	1	5		3	33	M	3	1	5		1	9	L

Table 17: Impact significance assessment for graves and graveyards in/near power line corridors

activities. Currently, farmers from Mašašane are exploiting large parts of Doornfontein721LS elsewhere for crop planting.

Option 01 for the proposed new Mokopane Substation has also been partly affected when Eskom's existing 2X400kV transmission lines were constructed across Doornfontein 721LS

Figure 6- Option 01 for the proposed Mokopane Substation on the farm Doornfontein 721LS

7.2.2 Option 03 for the proposed Mokopane Substation

Option 03 for the proposed Mokopane Substation is located on the farm Zuid Holland 7731LR near the southern shoulder of the dirt road running to Luxemburg further to the north.

The proposed site for Option 03 for the substation slightly slopes south-westwards along the transmission line corridor. Patches of agricultural land occurs towards the eastern perimeter of the proposed site for the substation.

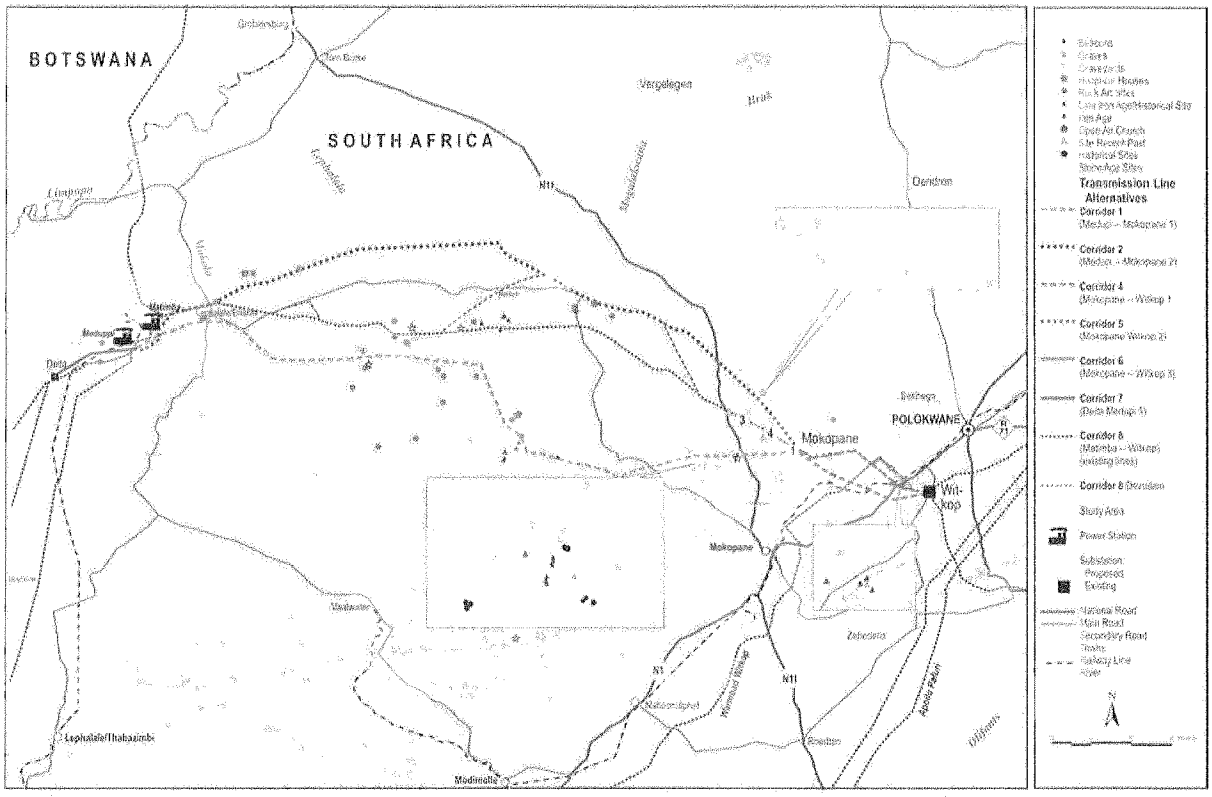


Figure 7- The Eskom Mokopane Integration Project between Lephalale and Mokopane. Note the presence of heritage resources in and near the proposed sites for the Mokopane Substation and for the various power line corridors (above).

Figure 7- The Eskom Mokopane Integration Project between Lephalale and Mokopane.

Note the presence of heritage resources in and near the proposed sites for the Mokopane Substation and for the various power line corridors (above).

7.2.2.1 Known heritage resources

The following known heritage resources occur near Option 03 for the proposed Mokopane Substation, namely:

7.2.2.1.1 Historical remains

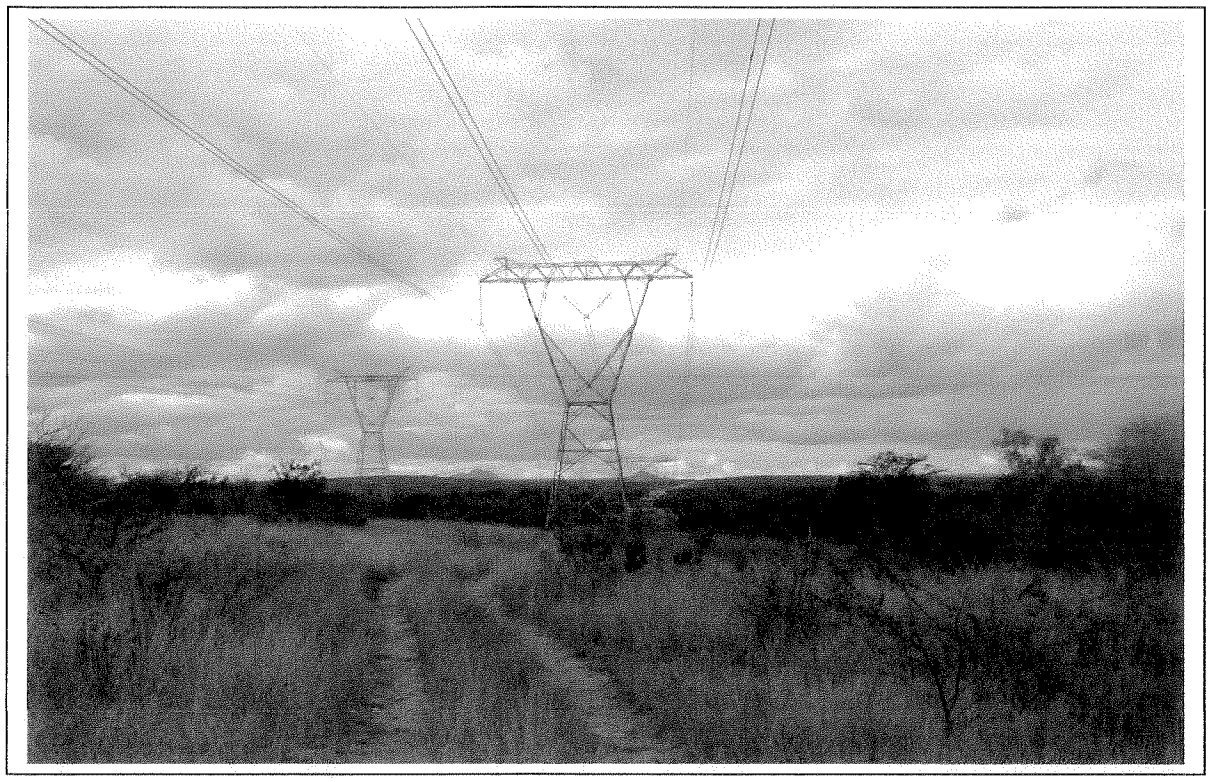
A historical farmstead complex composed of historical houses, associated outbuildings and a graveyard is located on the eastern shoulder of the sharp bend in the Luxemburg road, to the north-east of the proposed site for the substation.

This farmstead complex incorporates a magnificent main farm residence dating from the Victoria/Edwardian period, a second farmhouse, several outbuildings and a graveyard which holds the remains of the De Jager, Van der Merwe, Schoeman and De Jong families. The graves date from the middle of the 20th century.

This historical farmstead complex constitutes a cultural historical landscape of smaller proportions.

7.2.2.1.2 Remains from the recent past

Stone walls, probably the remains of a village dating from the more recent past, occur to the south-east of the proposed site for the substation. These remains have low significance.



Figures 8 & 9- Option 03 for the proposed Mokopane Substation on Zuid Holland 773LR (above) and a Victorian/Edwardian farm house in a small cultural landscape to the north of Option 3 (above and overleaf).

7.2.3 Option 04 for the proposed Mokopane Substation

Option 04 for the proposed Mokopane Substation is located on the farm Noord Braband 774LR. This is a relatively undisturbed piece of veld except for the fact that part of the site has been affected due to the presence (and former construction) of Eskom's existing 2X400kV transmission lines across this farm.

The dilapidated remains of a farmstead, which probably dates from the more recent past judging by the concrete rubble, occur to the south-east of Option 04 on the border of Noord Braband 774LR and Suid Braband 719LS.

Figure 10- Option 04 for the proposed Mokopane Substation on the farm Noord Braband 774LR (above).

Farm/owner/village	Heritage Resource	Code	Coordinates
Option 03 Zuid Holland 721LS	Remains from the recent past (stone walls)	RP	35º 51" 53' E; 28º 54" 47'
	Two historical houses Graveyard	HH	23º 52" 060' 28º 57" 716'
Option 04 Noord Braband 774LR	Remains from the recent past	RP	23 º 54' 90" 28º 59' 17"

Table 1- Heritage resources in and near Options 01, 03 and 04 for the proposed Mokopane Substation (above).

7.3 The proposed transmission line corridors

The following transmission line corridors were assessed for the Mokopane Integration Project, namely:

- Corridor 01 is a 400kV transmission line corridor which runs from the Medupi Power Station eastwards to the new Mokopane Substation.

- Corridor 02 is a 400kV transmission line corridor which runs from the Medupi Power Station eastwards to the Mokopane Substation.
- Corridors 04, 05 and 06 are three 400kV loop-in and loop-out transmission lines which run between the proposed new Mokopane Substation in the west and the Witkop Substation in the east.
- Corridor 07 is a 400kV transmission line corridor which runs between the Delta Substation in the west to the Medupi Power Station in the east.
- Corridor 08 is Eskom's existing 2X400kV transmission lines which run between the Matimba Power Station and the Witkop Substation.
- Corridor 08 Deviation is Eskom's existing 2X400kV transmission lines which run between the Matimba Power Station and the Witkop Substation but with two deviations along the eastern part of this corridor.

7.3.1 Corridor 01

Corridor 01 runs along the following main stretches and farms from the Medupi Power Station in the west to Option 01 for the Mokopane Substation in the east, namely:

7.3.1.1 From the farm Zwartwater 507LQ to the Tamboti River

This stretch runs north-eastwards crossing farms such as Zwartwater 507LQ, Altoos 506LQ, Groothoek 504LQ, Grootfontein 501LQ, crossing Road 510, Werk-en-Dam 474, Grietas Vlakte 500LQ, Windsor 499LQ/Othillia 530LQ, Leenie 531LQ/Sunnyside 532LQ, Bismarck 547LQ/Rendezvous 533LQ, Peveril 546LQ/Annexatie 544LQ and Grafton 585LQ/Poeskopdrift 545LQ before entering a mountainous stretch further to the east.

The first part of the Zwartwater/Tamboti stretch runs across flat sandveld in the west, close to the Medupi Power Station and the Grootegeluk Open Cast Mine.

After crossing Road 510 the Zwartwater/Tamboti stretch runs across small holdings with farming activities as well as along the northern banks of the Tamboti River.

7.3.1.1.1 Known heritage resources

Known heritage resources of significance along this stretch include Nelsonskop which, however, falls outside the Eskom Project Area. Other known heritage resources are the following:

7.3.1.1.1.1 Rock art sites

Five rock art sites which are clustered closely together occur on Grootfontein 501LQ.

7.3.1.1.1.2. Graveyards

Graveyards known to exist along the Zwartwater/Tamboti stretch include:

- A graveyard on Werkendam 474LQ with approximately fourteen graves.
- A graveyard on Annexatie 544LQ which is marked by three heaps of stone which are located next to a quarry.
- A second graveyard on Annexatie 544LQ which is located near the banks of the Tamboti River and holds two groups of graves. Two graves next to each other are fitted with cement headstones which respectively bear indecipherable inscriptions. The second group of graves are covered with small piles of stone. One is fitted with a rough cement slab. As many as four graves can be distinguished.
- A single grave on Annexatie 544LQ.
- A third graveyard on Annexatie 544LQ which holds the remains of a husband and wife.

Figure 11- Informal graves next to a quarry on the farm Annexatie 544LQ (above).

7.3.1.2 A mountainous stretch to a sharp bend in the east

This stretch crosses the following farms which are covered with an outstretched range of mountains occurring to the south of Corridor 01, namely: Bouwlust 566LQ, Duikersrivier 568, Sterkwater 560LQ, crossing the Beauty/Vaalwater road, Norfolk 559LR (Mama Tau),

Colesberg 556LR, Hannover 555lR, Victoria 552, Zwellendam 548LR, New Belgium 608LR, Grootdenteren 533LR, crossing the Lephalale River, Alem 544LR and Lith 541LR where the power line corridor bends sharply to the south-east.

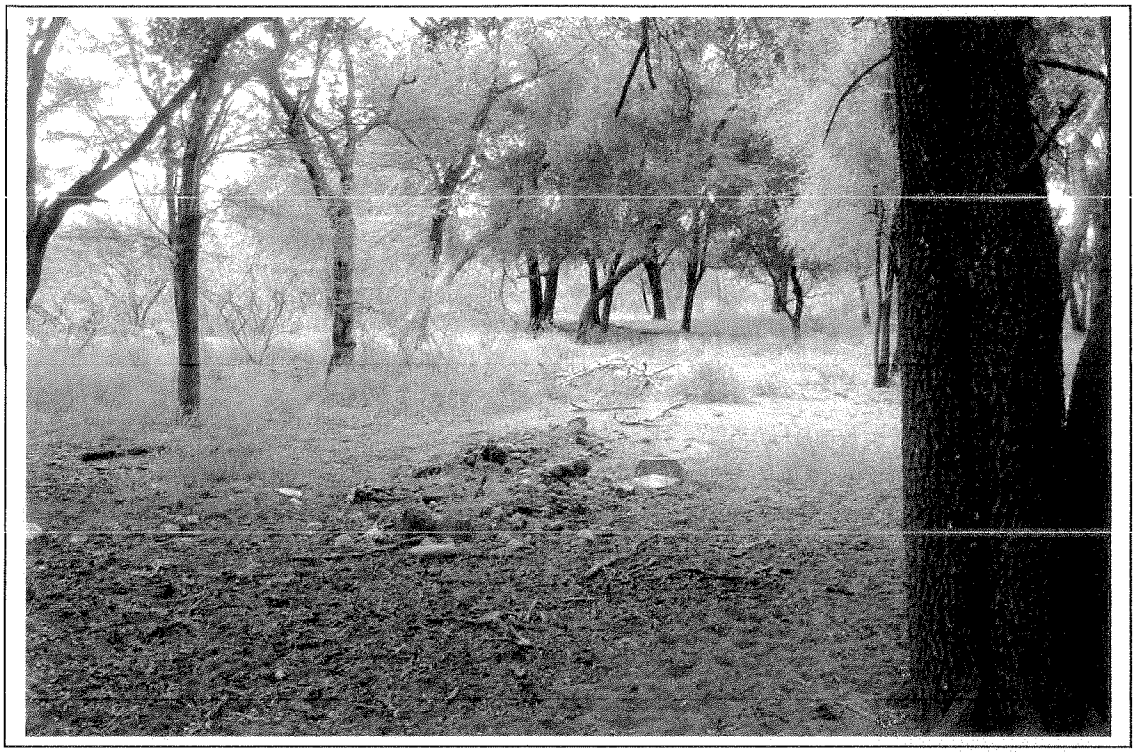


Figure 12- Informal graves on the banks of the Tamboti River near Corridor 01 on the farm Annexatie 544LQ (above).

7.3.1.2.1 Known heritage resources

Known heritage resources along the mountainous stretch to the sharp bend include remains from the Stone Age (including rock art sites), Iron Age remains as well as historical structures and graves and graveyards, namely:

7.3.1.2.1.1 Remains from the Stone Age (including rock art)

Known remains from the Stone Age on New Belgium 608LR include the following:

- A small rock shelter, one of many considering the mountainous nature of the terrain, with extensive rock art panels of humans (many in trance position), animals and geometrics. (Two coordinates are available). One of these shelters was also used for rain making ceremonies during the historical period.
- A number of small shelters with paintings underneath some of the isolated boulders have been reported but have not yet been investigated.
- Some of the shelters are associated with MSA and LSA assemblages while stone tools also occur as scatters across New Belgium 608LR.
- A rock art site has also been reported from Haasjesveld 576LR.
- Rock art which includes San, Khoi Khoi herder and African farmer paintings occur on Swebeswebe 870LR.

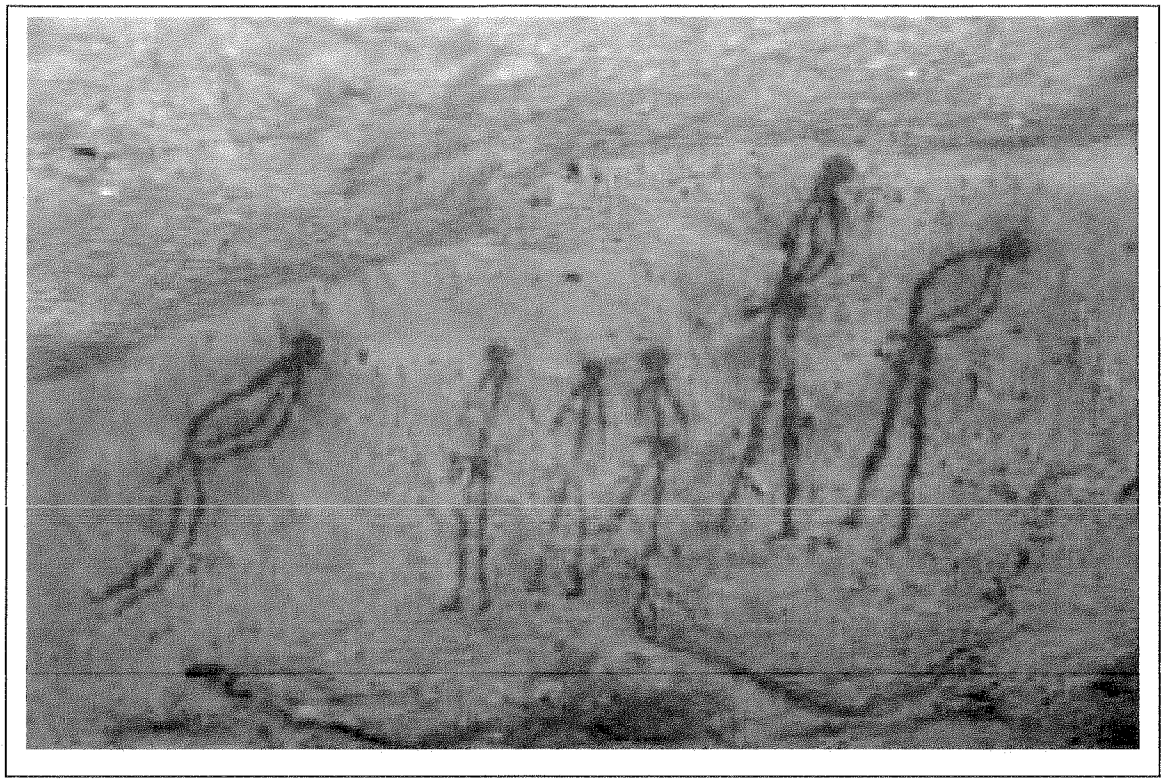


Figure 14- San paintings of human figures on a rock face on Grootdenteren 533LR (above).

Figure 15- Animal and human figures on a rock face on New Belgium 608LR. Note that the animal in the foreground is a red hartebeest, one of the most common depicted animal figures in the Waterberg (above).

7.3.1.2.1.2 Remains from the Iron Age

Eiland as well as scatters of Moloko potsherds have been reported from New Belgium 608LR.

7.3.1.2.1.3 Historical remains

The following historical remains were recorded along this stretch, namely:

- A historical house and an adjacent structure (second possible historical dwelling) occur on Caledon 547KR. Both dwellings date from the 1930/40's but have been altered significantly. Both were square structures that were constructed with clay bricks and with cement and both were covered with pitched roofs that are covered with corrugated iron plates.
- A similar house, but which was modernised, occur on Hannover 555LR and are occupied by Mr. A.J.A. van Rensburg and family. This house was constructed in 1936 but has been altered significantly.
- The remains of at least two colonial dwellings constructed with clay occur on Swebeswebe 870LR.
- A historical farmstead occurs on Hannover 555LR

7.3.1.2.1.4 Graveyards

A number of graveyards and single graves occur along the second stretch of Corridor 01, namely:

- At least two formal and one informal graveyard occur on Caledon 547KR. The first formal graveyard holds the remains of the Duvenage family as well as a third unmarked grave (probably for a child). The second graveyards holds four graves, two graves are for adults and are fitted with granite headstones. Two graves fitted with cement headstones are those of children. The third informal graveyards comprises three heaps of stone (one grave is edged with stones).
- The graveyard of Mr. Johan van Rensburg's wife and three daughters occur on Victoria 552KR.
- The grave of an elderly woman is located on Victoria 552KR on the property of Mr. M.C. Pretorius.
- A graveyard on the property of Mr. Ken Mord on Duna 554KR holds the remains of the Prinsloo and Opperman families.
- Mr. A.J.A. van Rensburg's property holds a graveyard with three graves of the Van Rensburg family.
- A graveyard on Swebeswebe 870LR which holds the remains of the individuals Van Niekerk and Van Staden.
- Two graveyards occur on Hannover 555LR.

7.3.1.3 From the sharp bend along a curve to a second sharp bend

This stretch runs south-eastwards from the farm Gorcum 577LR across the following farms, Dordrecht 578LR, Daggakraal 591LR, Rhenosterfontein 538LR, Kwarriehoek 588LR, Baviaansdraai 587LR, Slangfontein 655LR and Lola Montez 796LR.

This stretch of Corridor 01 runs across an area which harbours low, isolated mountains with flat outstretched sandveld between these mountains. Some of the flat areas, e.g. on Daggakraal 591LR, have been utilised for agricultural activities in the past.

7.3.1.3.1 Known heritage resources

The following heritage resources were recorded along this stretch, namely:

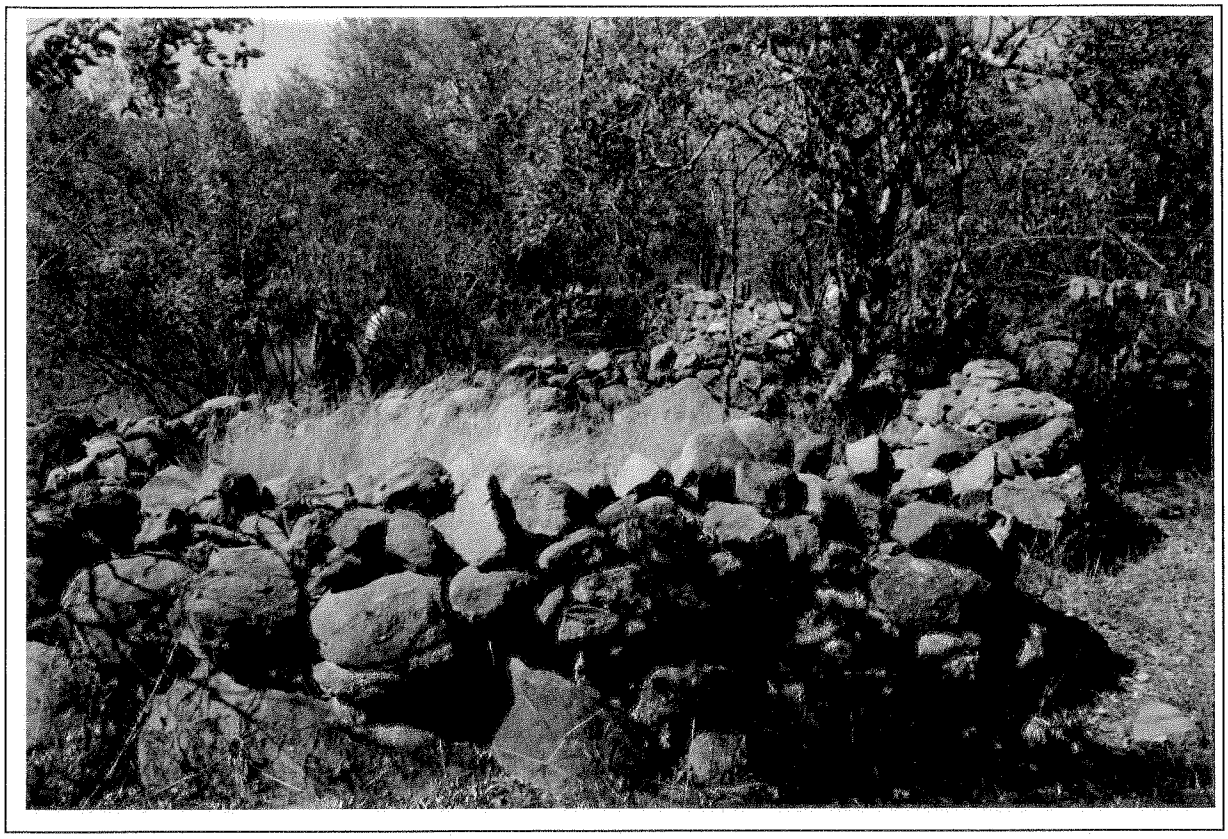
7.3.1.3.1.1 Iron Age remains (including mining heritage)

It seems as if extensive Iron Age remains, in places without stone walls and in other places with limited stone walls, occur across this stretch of Corridor 01, namely:

- Dr. K. Botha reported sites with what seems like limited stone walls occurring across a large area of Daggakraal 591LR.

The following remains dating from the Iron Age have been reported from Baviaansdraai 587LR, namely:

- An extensive Iron Age site occurs on a plateau approximately 5km to the east of the Lephalale River. This site has been partly ploughed under as a result of agricultural activities in the past.
- An Iron Age site without stone walls and undecorated pottery occur on red soil close to the Lephalale River.
- A second Iron Age site on red soil and without stone walls occurs on this farm.
- Mining activities, probably to obtain haematite, also occur on Baviaansdraai 587LR.



Figures 16 & 17- Stone walled site on Magagamatala, previous capital of the Langa Ndebele (above). Clay bins used for grain storing in a rock shelter on a flat-topped sandstone hill. These Late Iron Age sites are associated with Sotho and Ndebele communities and date from AD1500 to 1880 (below).

An Iron Age site without stone walls occurs on Slangfontein 655LR. It is likely that this site may be an extension of the large Iron Age site which is located on Baviaansdraai 587LR

7.3.1.3.1.2 Historical remains

At least two historical houses were recorded along this stretch, namely;

- A pioneer dwelling which was constructed with red clay bricks and which was fitted with a pitched corrugated iron roof occurs on Daggakraal 591LR. This structure has fallen into a state from which it cannot be restored.
- A historical house, which has been renovated extensively, occurs on Baviaansdraai 587LR.

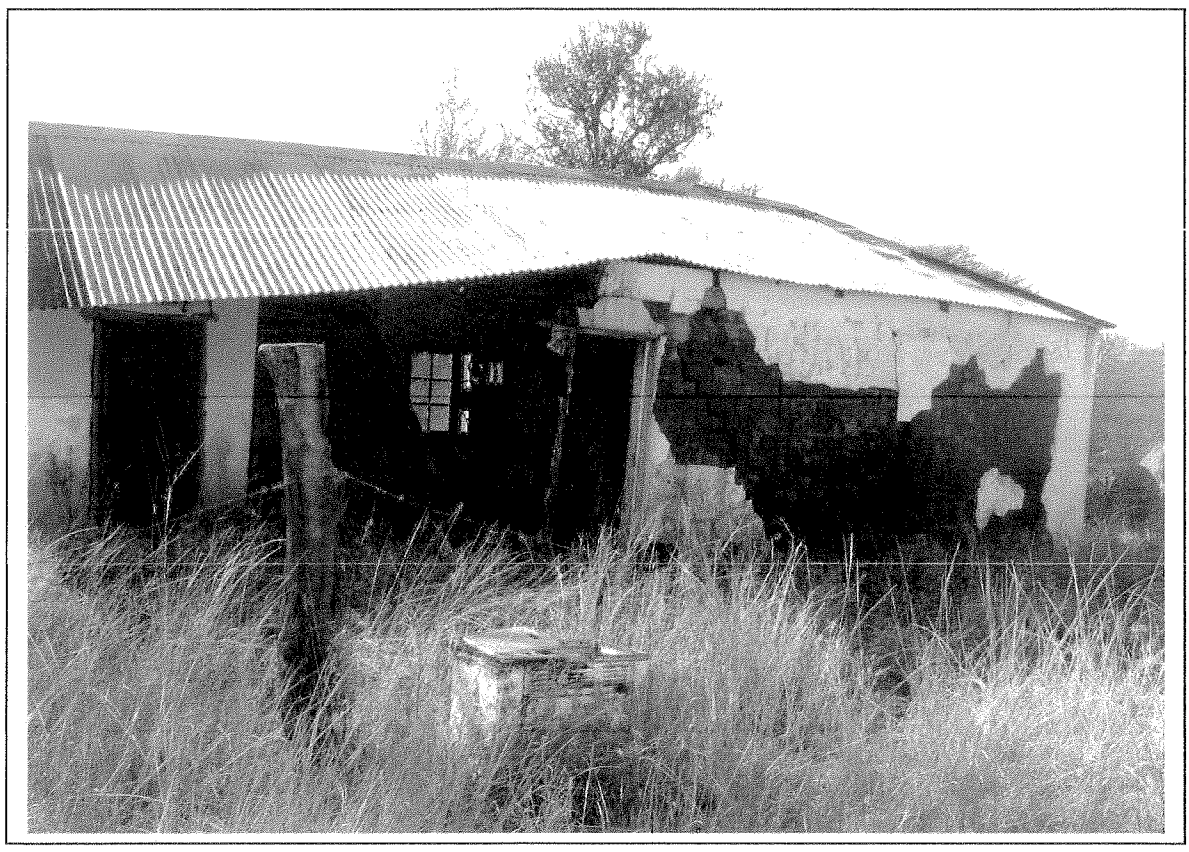


Figure 18- A severely dilapidated colonial dwelling which dates from 1917 (but which was renovated in the past) on Daggakraal 591LR (above).

7.3.1.3.1.3 Graveyards

A number of graveyards were recorded along this stretch, namely;

- At least eleven individuals were buried in a graveyard on the Kunneke's property on Daggakraal 591LR. The graveyard includes the graves of members of the Van Heerden, Loubser, Furstenburg and Groesbeek families.

- The grave of Mr. Jacobus Johannes Botha is situated next to his residence on Daggakraal 591.
- A graveyard holding the remains of at least twenty individuals is located on the property of Mr Johan Kloppers on Daggakraal 591
- A graveyard holding the remains of two or three individuals occur on Rhenosterfontein 538LR.

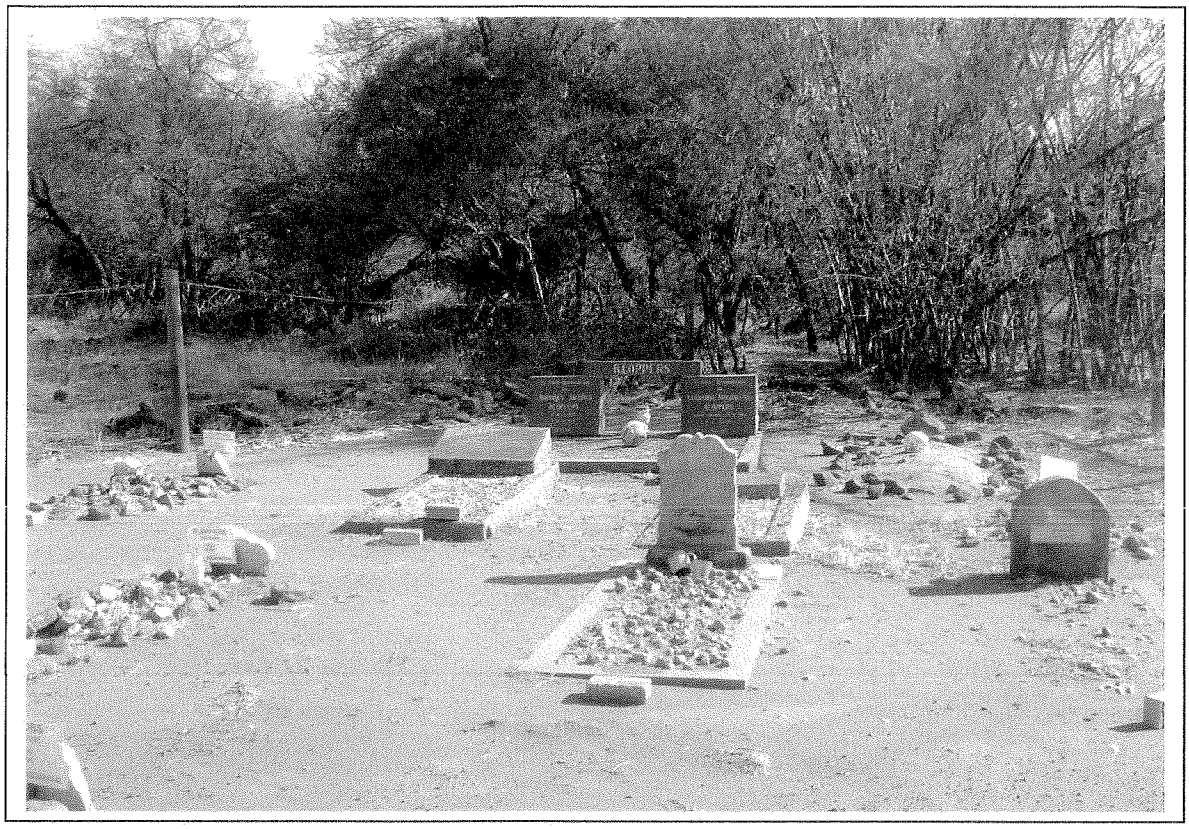


Figure 19- A historical graveyard on Daggakraal 591LR (above).

7.3.1.4 From the second sharp bend to Appingendam 805LR

This stretch runs from the sharp bend on Slangfontein 655LR south-eastwards across farms such as Lola Montez 796LR, St Etienne LR, Eldorado 208KR, Klipfontein 79LR and Wydehoek 216LR to Appingendam 805LR (the former joining point between Corridors 01 and the discarded Corridor 03).

This stretch of Corridor 01 runs close to the southern shoulder of the Road 561 and follows an extremely mountainous stretch which incorporates the Kloof Pass which is a scenic stretch along Road 561 which runs between Mokopane (south) and Marken (north).

7.3.1.4.1 Known heritage resources

The following heritage resources were recorded in the stretch between the second sharp bend and the farm Appingendam 805LR, namely:

7.3.1.4.1.1 Graveyards

A large informal cemetery occurs on the southern shoulder of Road 561, opposite the village of Mmamatlakala along the northern foot of a mountain with a similar name.

7.3.1.4.1.2 A commemorative beacon

A beacon is located on the northern shoulder of Road 561 which commemorates the opening of the Kloof Pass by S.E. Schoeman (M.E.C) on 1 July 1988.

7.3.1.5 From the farm Appingendam 805LR to Option 01 for the Mokopane Substation

This stretch runs north-eastwards across farms such as Groenvley 224KR, Mooihoek 226KR, Moordkoppie 813LR, Zwartfontein 818LR, Blinkwater 820LR, Armoede 823LR, Rietfontein 720LS and Doornfontein 721LS where Option 1 for the Mokopane Substation is located.

7.3.1.5.1 Known heritage resources

Heritage resources between Appingendam 805LR and Option 1 for the Mokopane Substation are numerous and include the following:

7.3.1.5.1.1 Stone tools

Stone tool occurrences that were recorded along this stretch include:

- MSA tools along the gravel banks of the Moholosane as well as the Sandsloot Rivers.
- Eroded areas to the east of the Matlotlo Mountains revealed MSA tools.
- An eroded patch to the east of the N11 contains MSA tools.

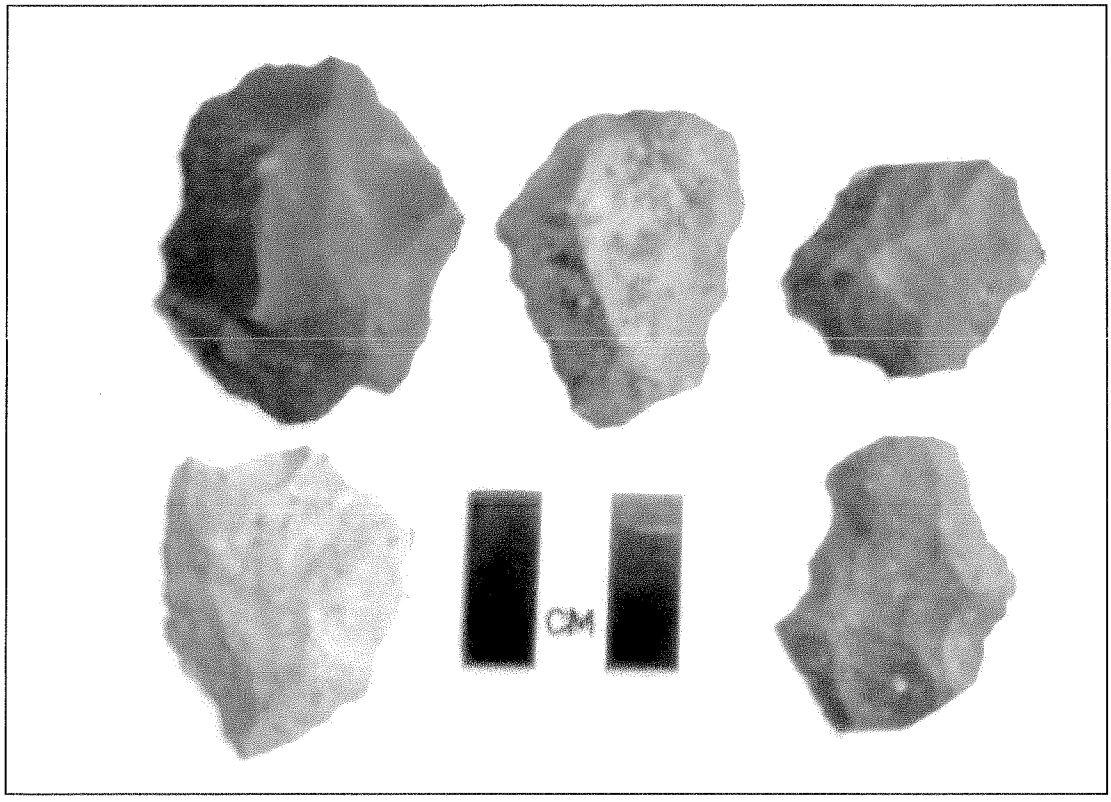


Figure 20- MSA tools manufactured from feltsite, dating between 200 000 to 22 000 years ago. These artefacts are common in the last stretch of Corridor 01.

7.3.1.5.1.2 Remains from the Late Iron Age and/or Historical Period

Remains dating to the Late Iron Age and/or Historical Period occur along and on plateaux in the Fonthane mountain range. It is highly likely that some of these remains date from the late 19th century and that they have been occupied, uninterrupted, during the first decades of the 20th century as well. These remains are well preserved along the lower foot and on higher altitudes of the Fonthane mountains where villages were also established in the more recent past.

The remains mainly consist of the outer walls of homesteads which are linked together in small villages. The walls demarcate the remains of dwellings, sometimes with the graves of the occupants of these homesteads. Pottery, middens and 'modern' rubbish such as tin plate and glass are associated with these settlements.

These remains can be divided into four groups, mainly as a result of their geographical location in association with the Fonthane mountain range.

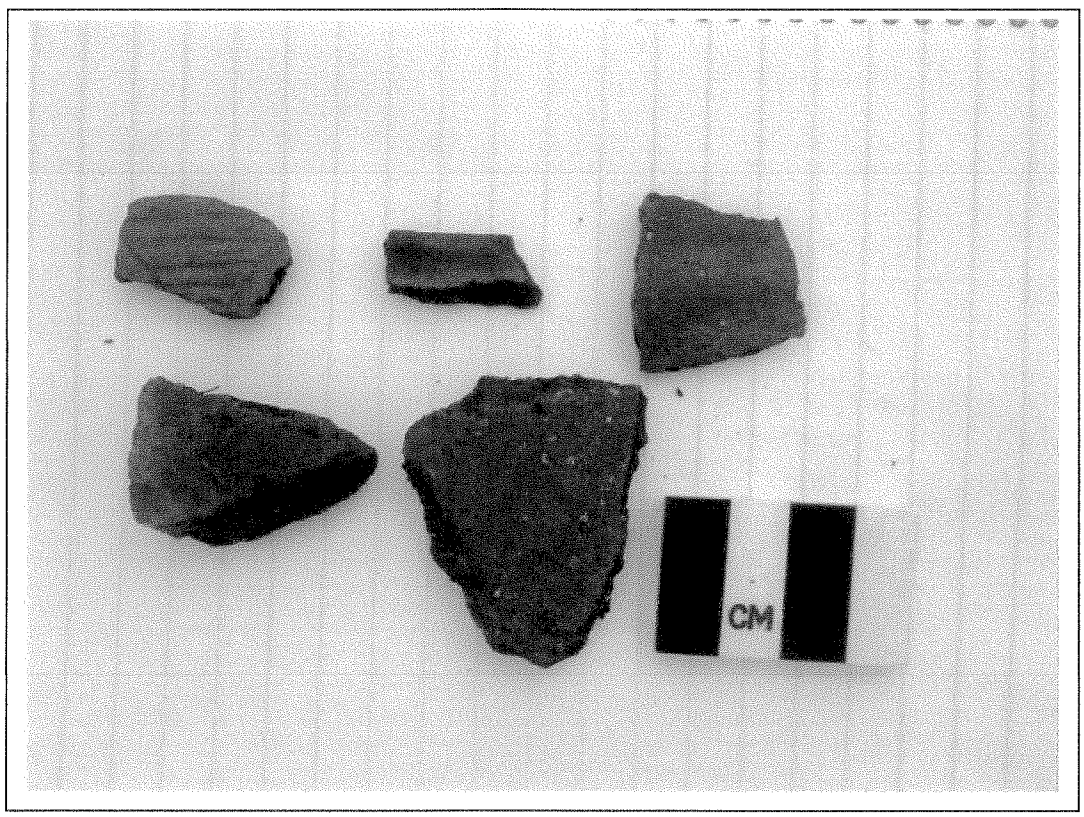
Remains west of the Fonthane mountain range

These remains comprise of a large settlement along the western foot of the mountain range. The site was partly destroyed when a dirt road was constructed through the site. This settlement is associated with low stone walls close to the base of the mountain. A conspicuous rectangular stone-walled structure as well as potsherds, tin plate and upright stones running in lines are associated with these remains.

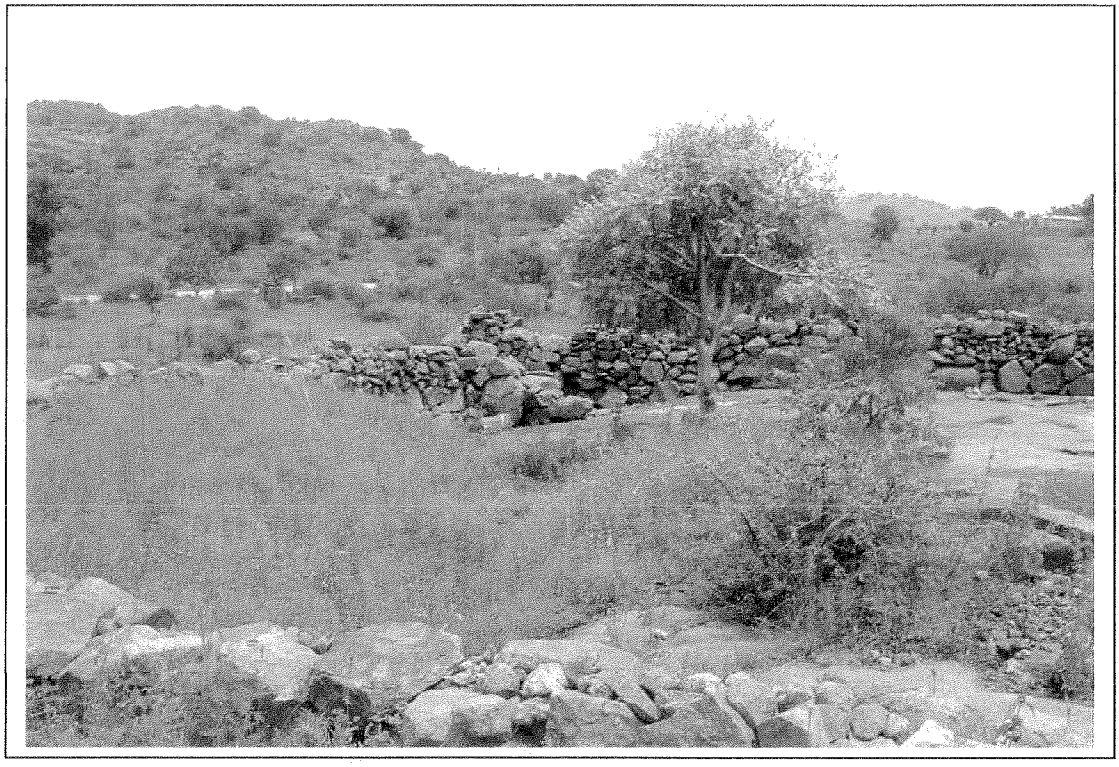
Remains on a plateau on the Fonthane mountain range 01

Extensive remains associated with the Late Iron Age and/or Historical Period occurs on a plateau near Mamaala village. These remains are associated with a graveyard and with a commemorative beacon dedicated to the Mapela clan although it also probably also holds the remains of chief Mapela himself.

The remains are associated with upright lines of stone, piles of stone, a semi-circular low stone wall and the remains of at least one relatively well preserved homestead.



Figures 21 & 22- Potsherds from a settlement along the western foot of the Fonthane mountain range and homesteads from the historical period on a plateau on this mountain range (above).



Remains on a plateau on Fonthane mountain range 02

These remains are also located near Mamaala village and consist of extensive remains of the outer boundary walls of homesteads which were located on a plateau along the lower base line of one of the mountains in the Fonthane series.

Several of these walls are well preserved and some are of considerable length. At least one heavy rectangular stone structure is associated with these homesteads.

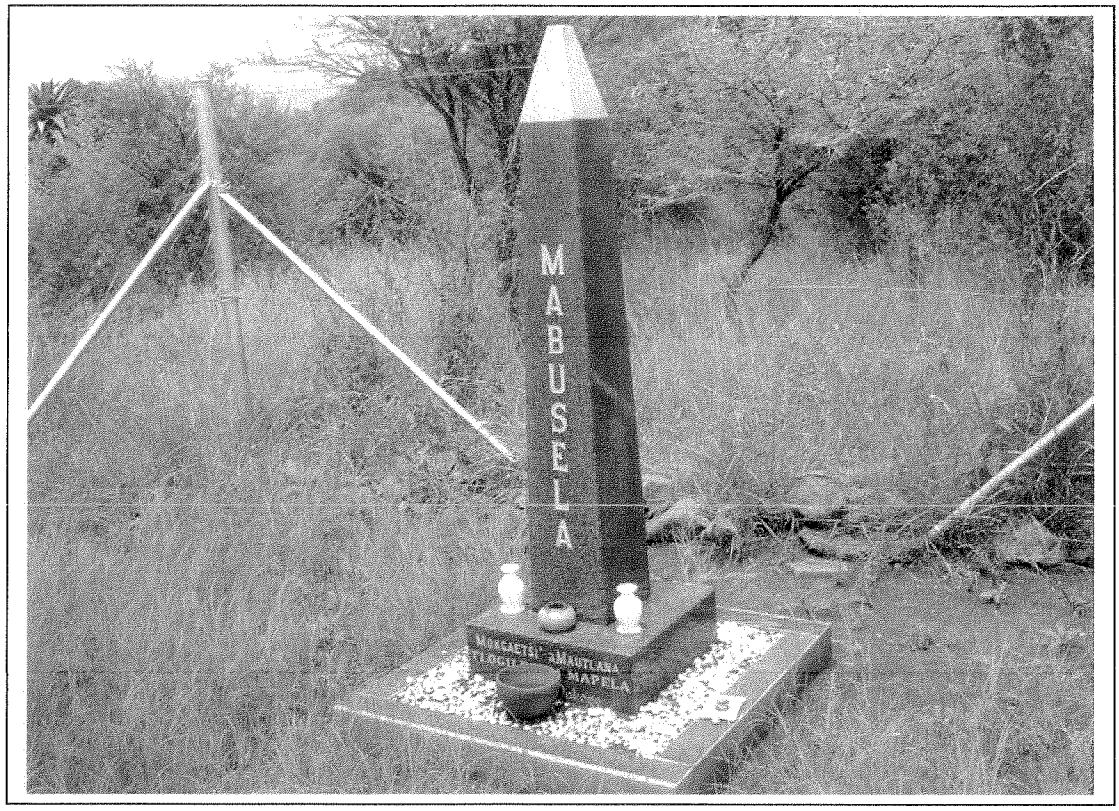
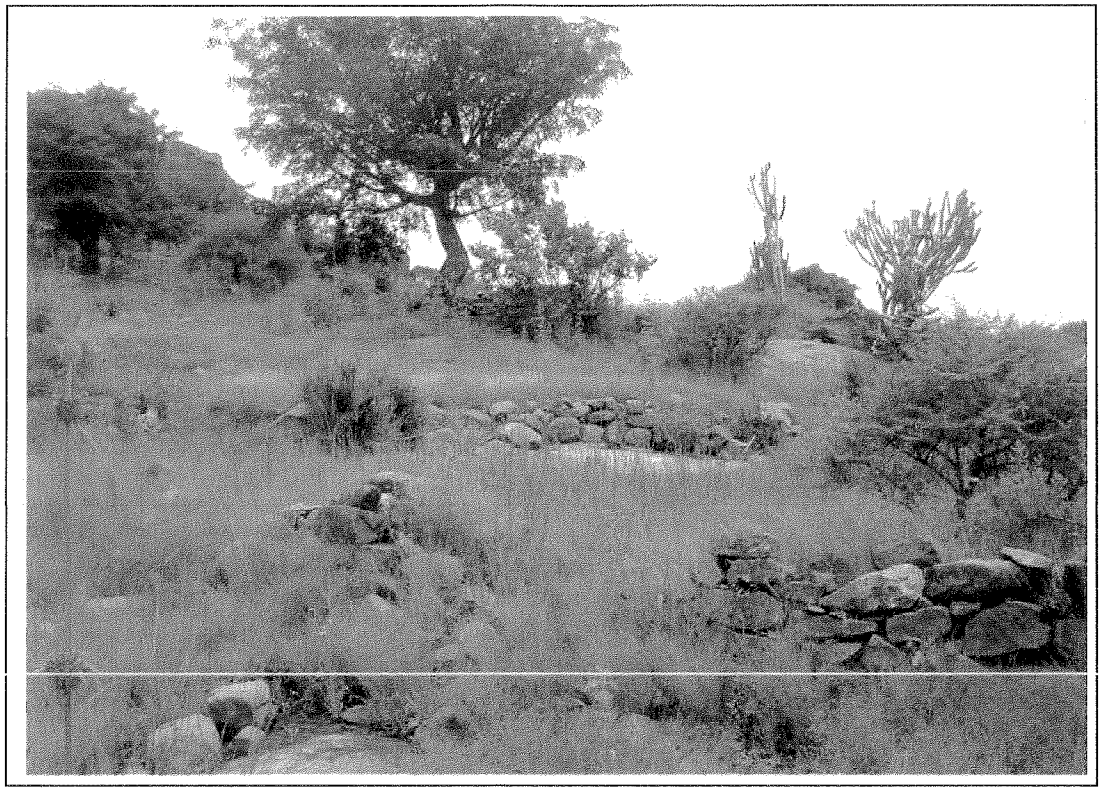


Figure 23- A commemorative beacon (on a grave) on a plateaux on the Fonthane mountain range (above).

Remains on a plateau on the Fonthane mountain range 03

These remains comprise of rectangular outer boundary walls which demarcate various homesteads which were linked together. These remains are well preserved and at least two homesteads are associated with graves. It is possible that more graves may be associated with these households.



Figures 24 & 25- Remains of homesteads of Langa Ndebele clans in the Fonthane mountain range and a grave within the confines of a homestead. Some of these remains date from turbulent first half of the 19th century (below).