

HERITAGE IMPACT ASSESSMENT

THE PROPOSED KALAHARI-EAST BULK WATER SUPPLY SCHEME PHASE 1A ASKHAM TO PHILANDERSBRON, NORTHERN CAPE

Assessment conducted under Section 38 (8) of the
National Heritage Resources Act 25 of 1999

Prepared for:

ENVIROAFRICA

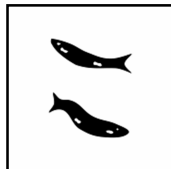
Att: Mr Clinton Geyser
PO Box 5367
Helderberg
7135

E-mail: Clinton@enviroafrica.co.za

Applicant:

MIER MUNICIPALITY

By



Jonathan Kaplan
Agency for Cultural Resource Management
5 Stuart Road
Rondebosch, 7700
Ph/Fax: 021 685 7589
Mobile: 082 321 0172
E-mail: acrm@wcaccess.co.za

**OCTOBER
2014**

Executive summary

ACRM was appointed to conduct a Heritage Impact Assessment (HIA) for the proposed Kalahari-East Bulk Water Supply Scheme Phase 1A Askham to Philandersbron, in the Northern Cape.

The HIA forms part of a Basic Assessment process that is being conducted by independent environmental consultants, EnviroAfrica cc.

The proposed Kalahari-East Bulk Water Supply Scheme was finalised in 1994 and currently supplies 76 litres of water p/s to communities and farms in the region through more than 1200 kms of connecting pipelines.

It is proposed that the scheme be extended to the north eastern portion of the region, which will entail the construction of a 150 km long pipeline between the existing Kalahari East Bulk Water Supply pipeline (A-line), through Remainder Farm Vischgat 201 and Portion 0 of Farm Cramond 202, via the R31 to Askham, along the R360 to Rietfontein, and along the Namibia Road (NR) to Philandersbron.

The majority of the pipeline will be located within the road reserve of the R31, R360 and NR. The R360 and NR are both tarred roads, while the R31 is a gravel road.

In addition, a short, ± 3.8 km long pipeline will take off from the R360, and connect with the existing pressure tower at the small rural settlement of Loubos near Rietfontein. The proposed pipeline will be constructed alongside existing farm fences, will cross the dry Swartbas River, and follow an Eskom servitude till it reaches the town.

The proposed project also includes the construction of an earth reservoir/dam alongside the R360 near Hakskeenpan on Portion 130 of Farm Mier 585. The footprint area required for dam is about 3.3 ha.

The aim of the study is to locate and map archaeological remains that may be impacted by the proposed project, to assess the significance of the potential impacts and to propose measures to mitigate the impacts.

The receiving environment between Philandersbron and Crammond comprises endless sections of road reserve that are covered in tall winter grass (R31 & R360), and thick scrub, grass and trees (NR), resulting in low archaeological visibility. Long sections of the road reserve have also been graded.

Calcrete was used (as a sub-base material) to prepare the road during construction of the R31 and R360, and much of the road reserve is covered in a thin layer of this imported gravel. For most of its 150 km length, the affected terrain (i. e. the road reserve) constitutes a fairly severely degraded environment.

The receiving environment through Remainder of Farm Vischgat 201 and Farm Cramond 202/0 comprises red, windblown sands and undulating dunes. The proposed pipeline will follow an existing 4 x 4 game track.

The development site for the proposed earth reservoir is a fairly level piece of ground located behind a dune cordon alongside the R360 near Hakskeenpan. The receiving

environment comprises sporadic grasses and trees on a substrate of soft, red sands. There is hardly any surface stone in the ± 3.3 ha footprint area, although some calcrete occurs in places.

A vehicle and foot survey of the proposed pipeline between Philandersbron and Crammond was undertaken by ACRM in June, 2014.

A walk down survey of the proposed ± 3.8 km long Loubos pipeline and an assessment of the proposed earth reservoir was done in October.

The following observations were made:

- A handful of Middle Stone Age (MSA) tools (mainly flakes & chunks) were found in a severely disturbed area between the existing concrete reservoir at Philandersbron and the Namibia Road, at the southern entrance to the town.
- A small number of MSA implements were encountered in the road reserve (NR) between Philandersbron and Rietfontein.
- Several MSA flakes were recorded on eroded gravels outside the road reserve (NR) near the entrance to the town of Rietfontein.
- A few MSA flakes and chunks were found near the intersection of the NR and the R360.
- A few MSA tools were recorded on an artificially raised gravel ridge in the road reserve (R360) between Rietfontein and Askham.
- A Christian grave/burial was documented in the road reserve (R360) near Andriesvale/Askham. Burials have a high local significance and are protected under Section 36 of the National Heritage Resources Act (Act No. 25 of 1999).
- A flaked chunk/minimal core was found in the road reserve (R31) between Askham and Crammond.
- No rock engravings were found alongside the road where several outcroppings of dolerite in the road reserve (R360) near Klein Mier were noted.
- No archaeological remains were encountered in the footprint area for the proposed earth dam/reservoir near Haksteenpan.
- Relatively large numbers of *in-situ* Early (ESA) and Middle Stone Age tools were recorded on extensive gravel deposits alongside the proposed Loubos pipeline. A few Later Stone Age flakes were also counted. No organic remains such as pottery or ostrich eggshell was found.

Significance of the archaeological finds

The very small numbers, isolated and disturbed context in which they were found means that the archaeological remains recorded (in the road reserve) between Philandersbron and Crammond are rated as having low (3C) local significance.

In-situ scatters of ESA and MSA tools on gravels alongside the proposed Loubos pipeline have been rated as having moderate to high (3B) local significance.

Conclusions

The results of the study indicate that the proposed Kalahari-East Bulk Water Supply Pipeline Phase 1A Askham to Philandersbron will not impact on significant archaeological heritage.

In-situ scatters of ESA and MSA tools on gravels alongside the proposed Loubos pipeline are threatened by construction activities. Measures must be implemented to avoid, and not damage or disturb these potentially significant (Grade 3B) archaeological remains.

The grave alongside the road (R360) near Andriesvale is protected under Section 36 of the National Heritage Resources Act (NHRA), and has been rated as having high local significance.

The following recommendations are made

1. With regard to the proposed pipeline from Philandersbron to Crammond (i.e. the NR, R360 & R31), no archaeological mitigation is required, as the samples are small and occur in a disturbed context.
2. With regard to the proposed Loubos pipeline, construction of the pipeline must not extend beyond 3 m from the fence line, as this will impact negatively on potentially significant (Grade 3B) archaeological heritage.
3. The Environmental Control Officer (ECO) must ensure that no plant equipment, water pipes, or any infrastructure associated with the project (for example portable toilets, diesel, cement, & tools), are stored, mixed or located on the gravels between the fence and the access road. A single, suitable, already disturbed, area should be identified by the ECO prior to the project commencing, where infrastructure can be safely stored.
4. Any sand or material required for backfilling and compaction must not be stockpiled on the gravels between the access road and the fence. A suitable area should be identified by the ECO prior to the project commencing.
5. No archaeological remains may be removed, damaged or disturbed as this constitutes an offence under the National Heritage Resources Act (Act 25 of 1999).
6. Should any unmarked human burials/remains or ostrich eggshell water flask caches for example, be uncovered during excavations for the pipelines, these

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron

must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or Ms Mariagrazia Galimberti at the South African Heritage Resources Agency (021 462 4502). Burials must not be removed or disturbed until inspected by the archaeologist.

7. The grave in the R360 road reserve near Andriesvale/Askham must be avoided during construction of the pipeline. The grave must be taped off and clearly demarcated prior to construction work commencing, and should not be disturbed in any way. The Environmental Control Officer must be responsible for ensuring the grave is protected during the entire construction phase of the project.
8. The above recommendations must be included in the Environmental Management Plan (EMP) for the proposed project.

Table of Contents

	Page
Executive summary	1
1. INTRODUCTION	6
2. HERITAGE LEGISLATION	7
3. TERMS OF REFERENCE	8
4. DESCRIPTION OF THE RECEIVING ENVIRONMENT	8
4.1 Proposed pipeline – Namibia Road, R360 & R31	8
4.2 Proposed Loubos pipeline	9
4.3 Proposed earth reservoir	9
5. STUDY APPROACH	12
5.1 Method of survey	12
5.2 Constraints and limitations	12
5.3 Identification of potential risks	13
5.4 Results of the desk top study	13
6. FINDINGS	14
6.1 Archaeology	14
6.1.1 Namibia Road	14
6.1.2 R360	14
6.1.3 R31	14
6.1.4 Pipeline from the R360 to Loubos	19
6.1.5 Proposed earth reservoir	23
6.2 Significance of the archaeological remains	23
6.3 Graves	23
6.4 Rock engravings	24
6.5 Structures	24
7. CONCLUSIONS	24
8. RECOMMENDATIONS	25
9. REFERENCES	26
Appendix I: Photographs illustrating the proposed pipeline route and the receiving environment.	
Appendix II. Photographs of the proposed route for the Loubos pipeline	

1. INTRODUCTION

ACRM was appointed by EnviroAfrica to conduct a Heritage Impact Assessment (HIA) for the proposed Kalahari-East Bulk Water Supply Scheme Phase 1A Askham to Philandersbron, in the Northern Cape (Figure 1).

The HIA forms part of a Basic Assessment process that is being conducted by independent environmental consultants, EnviroAfrica cc.

The proposed Kalahari-East Bulk Water Supply Scheme was finalised in 1994 and currently supplies 76 litres of water p/s to communities and farms in the region through more than 1200 kms of connecting pipelines. It is proposed that the scheme be extended to the north eastern portion of the region. This will entail the construction of a 150 km long pipeline between the existing Kalahari East Bulk Water Supply pipeline (A-line), through Remainder Farm Vischgat 201 and Portion 0 of Farm Crammond 202, via the R31 to Askham, along the R360 to Rietfontein, and along the Namibia Road (NR) to Philandersbron (Figure 2). The majority of the pipeline will be located within the road reserve of the R31, R360 and NR (Rietfontein to Philandersbron).

In addition, a short, ± 3.8 km long pipeline will take off from the R360, and connect with the existing pressure tower at the small settlement of Loubos near Rietfontein. The proposed pipeline will be constructed directly alongside farm fences cross the dry Swartbas River and follow an existing Eskom servitude till it reaches the town (Figure 3).

The proposed project also includes the construction of an earth reservoir/dam alongside the R360 near Hakskeenpan on Portion 130 of Farm Mier 585. The footprint area required for construction of the dam is about 3.3 ha.



Figure 1. Locality map indicating towns along the main pipeline route

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 2. Google Aerial photograph indicating the towns along the proposed pipeline route. The location site for the proposed reservoir (red star) is also indicated. Note the settlement of Loubos north of Rietfontein.

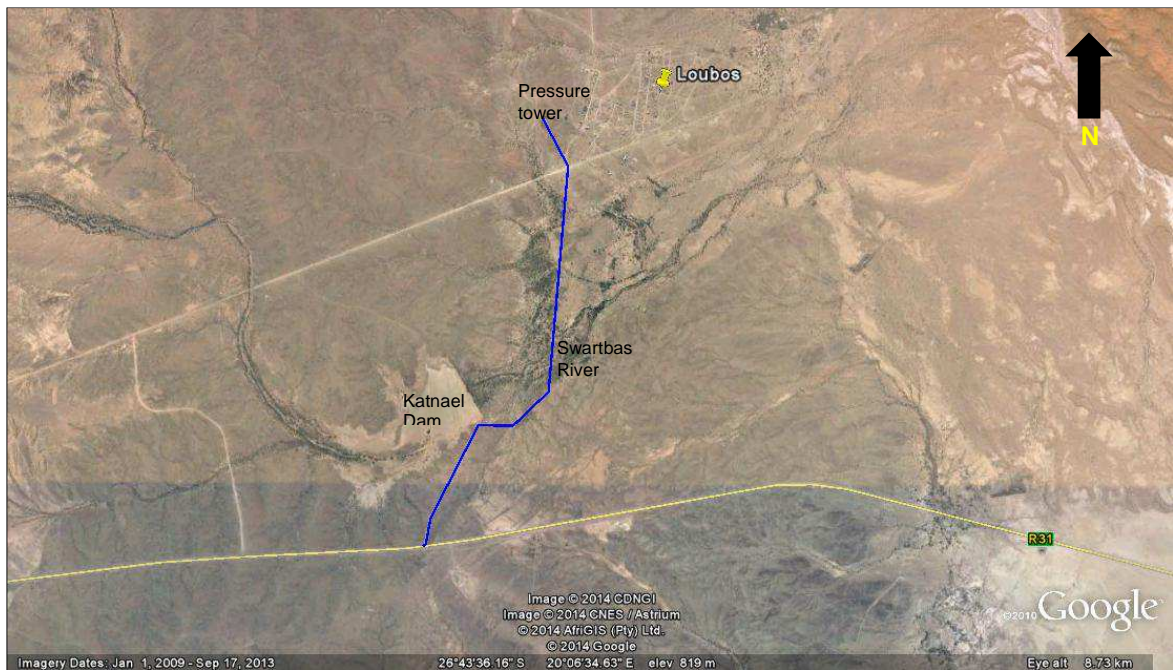


Figure 3. Google Aerial photograph illustrating the short pipeline (blue line) from the R360 to Loubos.

2. HERITAGE LEGISLATION

The National Heritage Resources Act (Act No. 25 of 1999) makes provision for a compulsory Heritage Impact Assessment (HIA) when an area exceeding 5000 m² is being developed. This is to determine if the area contains heritage sites and to take the necessary steps to ensure that they are not damaged or destroyed during development

Section 38 (1) (a) of the National Heritage Resources Act (No. 25 of 1999) also indicates that any person constructing a powerline, pipeline or road, or similar linear development or barrier exceeding 300m in length is required to notify the responsible heritage resources authority, who will in turn advise whether an impact assessment report is needed before development can take place.

The NHRA provides protection for the following categories of heritage resources:

- Landscapes, cultural or natural (Section 3 (3))
- Buildings or structures older than 60 years (Section 34);
- Archaeological sites, palaeontological material and meteorites (Section 35);
- Burial grounds and graves (Section 36);
- Public monuments and memorials (Section 37);
- Living heritage (defined in the Act as including cultural tradition, oral history, performance, ritual, popular memory, skills and techniques, indigenous knowledge systems and the holistic approach to nature, society and social relationships) (Section 2 (d) (xxi)).

3. TERMS OF REFERENCE

The terms of reference for the study were to:

- Determine whether there are likely to be any important archaeological remains that may be impacted by the proposed activities;
- Recommend any further mitigation action.

4. DESCRIPTION OF THE RECEIVING ENVIRONMENT

4.1 Proposed pipeline – Namibia Road, R360 & R31

A series of photographs showing the route for proposed pipeline is illustrated in Figures 33-71 (refer to Appendix I). The receiving environment is the existing road reserve, which includes the NR (Philandersbron to Rietfontein), the R360 (Rietfontein to Askham) and the R31 (Askham till Crammond). The R31 is a gravel surface road, while the R360 and NR are both tarred roads.

Endless sections of the R31 and R360 road reserve are covered in tall winter grass, while long sections of the NR between Philandersbron and Rietfontein is infested with thick scrub, grass and trees. The first 2-3 kms of the road reserve outside Philandersbron have been graded and scraped.

Calcrete was used (as a sub-base material) to prepare the road during construction of the R31 and R360, and much of the road reserve is covered in a thin layer of this imported gravel (eight borrow pits were counted alongside the R31 between Askham and Crammond. Long sections of the road reserve have also been graded. For most of its 150 km length, the affected terrain (i. e. the road reserve) constitutes a fairly severely degraded environment.

The proposed pipeline (A-line) through Remainder of Farm Vischgat 201 and Farm Cramond 202/0 will be located mostly alongside a deep sandy farm road. A short section of the pipeline will cross some red sand dunes and a flat open sandy plain before connecting with the R31 near the entrance to Crammond Game Farm (refer to Figures 72-90 in Appendix I).

4.2 Proposed Loubos pipeline

A series of photographs showing the proposed route for the 3.8 km long (take off) pipeline from the R360 till Loubos is illustrated in Figures 93-110 (refer to Appendix II). The receiving environment comprises extensive sheets of gravels alongside a farm road overlooking the Katnael Dam. The pipeline crosses the floodplain of the Swartbas River, following a densely vegetated Eskom servitude till it reaches the small rural settlement of Loubos. The final short stretch of the pipeline crosses severely degraded lands (commonage) before it connects with the existing pressure tower on the north eastern edge of the town.

4.3 Proposed earth reservoir

The footprint area for the proposed earth reservoir is a shallow sandy basin located behind a barrier of red sand dunes alongside the R360 near Hakskeenpan.

The receiving environment comprises mainly grasses and sporadic trees on a substrate of red windblown (aeolian) Kalahari sands (Figures 4-9). There is almost no surface stone in the proposed footprint area, although some loose calcrete and some shallow outcropping of calcrete occurs in places (refer to Figure 7). There are no natural sources of water such as streams, springs or drainage channels in the 3.3 ha footprint area.

According to the Environmental Assessment Practitioner (Clinton Geyser pers. comm.), the footprint area required for the proposed reservoir is 1.7 ha, while a further 1.6 ha will be used as source material (mainly sand) for construction of the earth dam wall. Figures 91 and 92 (in Appendix I) illustrate examples of an earth dam in the region.

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 4. Footprint area of the proposed earth reservoir, view facing north east



Figure 5. Footprint area of the proposed earth reservoir, view facing north



Figure 6. Footprint area of the proposed earth reservoir, view facing south east.
Arrow indicates powerlines alongside R360

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 7. Footprint area of the proposed earth reservoir, view facing east. Note the calcrete outcropping in the foreground.



Figure 8. Footprint area of the proposed earth reservoir, view facing south



Figure 9. Footprint area of the proposed earth reservoir, view facing south east

5. STUDY APPROACH

5.1 Method of survey

The entire length of the proposed pipeline, from the existing reservoir at Philandersbron (NR), till km 150 alongside the R31 at Crammond Game Farm, was surveyed on foot and by vehicle. The study took place between the 12th and the 14th June, 2014.

In line with the biophysical study, the approach followed was to stop every 5 kms along the route, and survey the road reserve for an average of 15 minutes. Cuttings and stream crossings along the route were also inspected for archaeological heritage while a cluster of dolerite boulders in the road reserve (R360) near Klein Mier were searched for rock engravings.

The proposed route for the pipeline on Crammond Game Farm was driven by 4 x 4, vehicle. The route will be located directly alongside the small game track, which comprises fine, deep, windblown, red Kalahari sands (refer to Figures 72-90 in Appendix II). It is clear that no archaeological heritage will be impacted by proposed construction activities.

A walk down survey of the proposed \pm 3.8 km long Loubos pipeline, and an assessment of the proposed earth reservoir was done on 7th October, 2014.

Archaeological remains recorded were mapped using a hand held GPS device set on the map datum WGS 84.

Track paths of the main survey was captured (Figures 10-12).

A track path of the survey for the proposed Loubos pipeline is illustrated in Figure 21.

A desk top study was also done.

5.2 Constraints and limitations

Endless sections of the road reserve between Rietfontein and Askham (R360) and between Askham and Crammond (R31) are covered in tall winter grass, resulting in low archaeological visibility.

Long stretches along the nearly 10 km section of the NR, between Philandersbron and Rietfontein are covered in thick bush, grass and trees which limited access and visibility.

Archaeological visibility was very good along the proposed Loubos pipeline, from the R360/take off road, till the Katnael Dam wall. The floodplain of the Swartbas River and the Eskom servitude is very densely vegetated with acacias and kweek grass, resulting in low archaeological visibility (refer to Figures 105 & 106 in Appendix II). Large pieces of rocks from construction of the dam wall are also lying alongside the fence (refer to Figure 100).

Archaeological visibility in the footprint area of the proposed earth dam/reservoir near Haksteenpan was very good.

5.3 Identification of potential risks

Based on the results of the study, there are no archaeological risks associated with the proposed pipeline from Philandersbron till Crammond. The water supply pipeline will be located in the road reserve and impacts are therefore expected to be limited.

Relatively large numbers of *in-situ* ESA and MSA implements were recorded on extensive gravels alongside the proposed Loubos pipeline. This is a sensitive and vulnerable archaeological landscape. Potential archaeological risks occur, which must be managed during the construction phase of the project.

The grave alongside the R360 near Andriesvale/Askham is protected under Section 36 of the National Heritage Resources Act (Act No. 25 of 1999).

5.4 Results of the desk top study

Until recently, very little archaeological work had been done in Askham and the small towns in the study area, but in the last few years several HIA's have been done, as part of the EIA process. Studies have shown that archaeological remains comprise mostly thin surface scatters of tools of LSA, MSA and ESA origin, although there have been exceptions where larger scatters of tools do occur.

Beaumont (2006) found only two stone flakes during a HIA for the construction of several chalets on a game farm a few kilometres north east of Askham (near the R31), while in Askham no archaeological heritage was encountered by van Pletzen-Vos and Rust (2013a) during a HIA for a proposed low cost housing project, although several informal graves were encountered.

At Rietfontein, ephemeral surface scatters of Later Stone Age (LSA) implements and pottery have been encountered on deflated dune surfaces, and around small dry pans in the surrounding area (Smith 1995). Low density scatters of ESA, MSA and LSA tools were also recorded by Engelbrecht (2013) during a HIA for a low cost housing development in the town, while Engelbrecht (2013) also notes the presence of LSA sites with pottery and stone tools on several farms in the surrounding area. Van Pletzen-Vos and Rust (2013b) documented diffuse scatters of LSA tools and ostrich eggshell near Rooipan and Witpan north east of Rietfontein.

Van Pletzen-Vos and Rust (2013b) recorded low density scatters of both ESA, MSA and LSA implements during an HIA for a proposed low cost housing development at Groot Mier north of the R31 between Rietfontein and Askham.

At Loubos, however, north east of Rietfontein, several large clusters of MSA flakes and cores were recorded by Van Pletzen-Vos & Rust (2013c) during a HIA for another low cost housing project, while at Noenieput, about 50kms south of Askham, large numbers of MSA tools including flakes and cores were counted during a HIA for an affordable housing project (Van Pletzen-Vos & Rust 2013d). The presence of a small spring on the proposed housing development site at Loubos may have been the primary attraction to the area by Stone Age hunter-gatherers.

Thin, surface scatters of LSA flake tools, pottery and ostrich eggshell have also been recorded among the red sand dunes in the Twee Rivieren area, on the Malopo Road to the Kgalagadi National Park (Smith 1995).

6. FINDINGS

6.1 Archaeology

A spreadsheet of waypoints and a description of the archaeological finds are presented in Table 1.

6.1.1 Namibia Road

A handful of stone implements (Sites 001-003), including several MSA quartzite and indurated shale flakes, chunks, and a quartzite disc/prepared core were found in a severely degraded area between the existing reservoir at Philandersbron and the NR (Figures 13 & 14).

Isolated tools (Sites 004-012) were encountered in the road reserve between Philandersbron and Rietfontein. These included a jasperlite flake, MSA quartzite flakes, chunks, flaked cobbles and a single round core (Figure 15). Wide open gravels characterize the surrounding environment beyond the road reserve/fence.

Several MSA quartzite flakes were recorded on eroded and sheet washed gravels (Site 013) outside the road reserve near the entrance to the town of Rietfontein (Figures 16 & 17).

A chunk/minimal core (Site 014), a flaked cobble (015) and a broken indurated shale MSA flake (Site 016) were also found near the intersection with the R360.

6.1.2 R360

Two MSA quartzite flakes (Sites 017 & 019), several highly weathered and partially retouched indurated shale MSA flakes (Site 018), and a chunky weathered, retouched indurated shale 'knife' was recorded in the road reserve between Rietfontein and Askham (Figures 18 & 19). The tools were all found on an artificially raised terrace covered in loose weathered indurated shale gravels.

6.1.3 R31

One (possible) minimal chunk/core (Site 022) was found in the road reserve between Askham and Crammond (Figure 20).

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron

Site	Name of Farm	Lat/Long	Description of finds	Grade	Mitigation
	NR				
001		S26 48.987 E20 05.577	Quartzite flake cobble/minimal core	3C	None required
002		S26 48.949 E20 05.659	Two MSA quartzite flakes & a chunk	3C	None required
003		S26 48.912 E20 05.658	Quartzite and weathered indurated shale MSA flakes, quartzite MSA disc core in severely degraded area alongside road – earthworks related to construction of the reservoir at Philandersbron	3C	None required
004		S26 47.017 E20 04.128	Broken, utilized jasperlite flake – dry river/stream bed occurs over the fence line	3C	None required
005		S26 47.020 E20 04.133	Flaked indurated shale cobble/cortex	3C	None required
006		S26 46.966 E20 04.064	Quartzite chunk	3C	None required
007		S26 46.906 E20 03.989	Weathered MSA quartzite flake/cortex	3C	None required
008		S26 46.815 E20 03.877	Broken quartzite chunk	3C	None required
009		S26 46.804 E20 03.862	Broken quartzite MSA blade	3C	None required
010		S26 46.777 E20 03.829	Weathered quartzite MSA flake with retouch	3C	None required
011		S26 45.937 E20 02.779	Broken quartzite MSA flake	3C	None required
012		S26 45.913 E20 02.757	Snapped quartzite flake (tip)	3C	None required
013		S26 44.963 E20 01.802	Diffuse scatter of a few quartzite MSA flakes on sheet washed, highly eroded gravels/sand alongside road reserve just before town of Rietfontein	3C	None required
014		S26 44.959 E20 01.813	Weathered indurated shale chunk/minimal core	3C	None required
015		S26 44.959 E20 01.813	Split quartzite cobble	3C	None required
016		S26 44.959 E20 01.813	Weathered, chunky broken indurated shale MSA flake	3C	None required
	R360				
017		S26 44.306 E20 06.891	Quartzite MSA flake	3C	None required
018		S26 44.302 E20 06.915	Broken, weathered partially retouched MSA indurated shale flake	3C	None required
019		S26 44.298 E20 06.933	Broken MSA quartzite flake	3C	None required
020		S26 44.295 E20 06.956	Large, chunky weathered, indurated shale MSA retouched piece. The above occurs on a raised terrace covered in loose, weathered indurated shale gravels.	3C	None required
Grave		S26 53.049 E20 32.778	Grave alongside R360, about 12 kms from Andriesvale	High	Pipeline to avoid
	Reservoir	S26 46.749 E20 21.723	No archaeological remains encountered		
	R31				
022		S 26 59.608 E20 49.597	Flaked chalcedony chunk/minimal core	3C	None required

Table 1. Spreadsheet of waypoints and description of archaeological finds, proposed pipeline from Philandersbron (Namibia Road), till Crammond Farm (R31).

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 10. Location of archaeological occurrences recorded along the proposed pipeline route

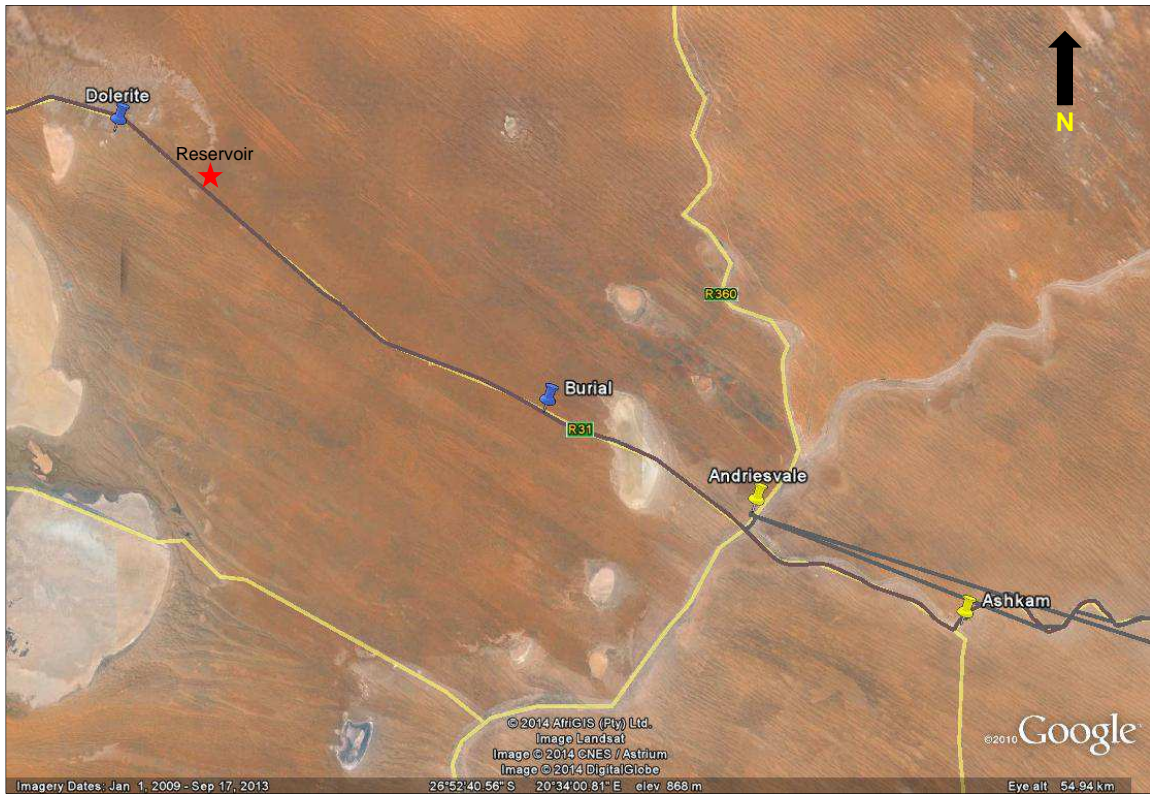


Figure 11. Location site of grave/burial recorded along the proposed pipeline route.

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron

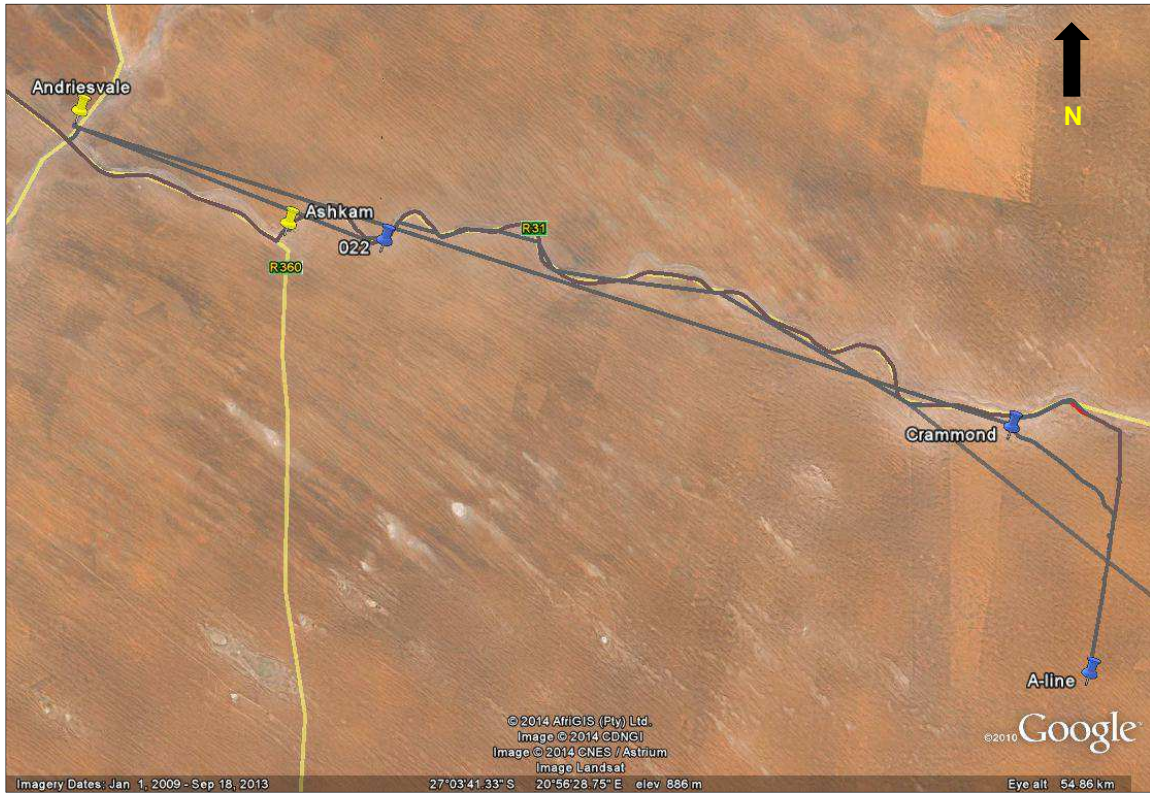


Figure 12. Location of archaeological occurrences recorded along the proposed pipeline route



Figure 13. Site 001. Scale in cm.



Figure 14. Sites 002 & 003. Scale in cm.

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 15. Sites 004-012. Scale in cm.



Figure 16. Site 013. Sheet-washed gravels near the entrance to Rietfontein. Note the bakkie alongside the road.



Figure 17. Site 013. Scale in cm.



Figure 18. Site 017-020. Scale in cm.



Figure 19. Site 020.



Figure 20. Site 022. Scale in cm.

6.1.4 Pipeline from the R360 to Loubos

A spreadsheet of waypoints and a description of the archaeological finds are presented in Table 2. A track path of the survey is illustrated in Figure 21.

Relatively large numbers of *in-situ*, Early and Middle Stone Age implements were recorded on a series of gravel deposits that occur directly alongside the fence line/the proposed pipeline route (Figures 23-26). These gravels extend for several hundred metres on either side of the take-off road from the R360, overlooking the Katnael Dam. The gravels west of the road overlooking the dam were not assessed by the heritage practitioner, but it is assumed that similar heritage remains extend into this area. A few outcroppings of weathered dolerite occur in places but no rock engravings were found.

ESA remains recorded include large unmodified and partially retouched angular flakes, several large round cores, large chunks, and two bifacial handaxes, all in highly weathered indurated shale.

MSA tools recorded include (smaller) triangular-shaped, blunted, retouched and unmodified flakes, chunks, cobbles and several prepared cores, mostly in quartzite but also in weathered indurated shale. No blade tools or formal tools such as scrapers or points were found.

Only a few Later Stone Age, retouched and utilized flakes in banded ironstone/jasperlite were recorded. No pottery, ostrich eggshell, or any other organic remains were found.

Implements were also found alongside the fence line, in the proposed pipeline route, but the route is fairly severely degraded. Erection of the fence has disturbed the surrounding veld, while a goat track, and a small 'twee spoor' pad/track has shifted and moved much of the gravel deposits around, so that sections of the route are almost clear of surface stone. The route alongside the Swartbas River is very severely degraded.

The tools encountered are comparable to implements illustrated and described by Van Pletzen-Vos and Rust (2013a, b, c, d), for the area.

Figure 22 illustrates the extent of the archaeologically sensitive deposits between the proposed route & the take-off road. The gravels thin out closer to the Swartbas River and the dam wall where the floodplain comprises, weathered (soft) shale and alluvial sands.

It is important to note that while a relatively large number of tools were recorded on the extensive gravels, they are spread quite thinly and unevenly over the surrounding landscape, indicating this is not a workshop/tool making, or quarry site. The context in which the remains were found rather suggests that ESA and MSA people may have taken advantage of the elevated terrain that overlooks the large pan/Katnael Dam, where water and (especially) game animals must have been plentiful in the past. Numerous drainage channels in the surrounding area feed into the pan (refer to Figure 3) which must have created an environment conducive to human settlement.

A collection of tools located during the study is illustrated in Figures 27-30. Most of the photographs are of lithics that were found alongside/close to the fence (in an isolated and disturbed context), while *in-situ* tools were mostly left in their primary context.

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron

Site	Name of Farm	Lat/Long	Description of finds	Grade	Mitigation
	Loubos pipeline				
306		S26 44.394 E20 05.805	Low density scatter of MSA tools on slightly elevated flat kopje alongside gravel road, close to the R360	3C	None required
307		S26 44.370 E20 05.811	MSA quartzite flake	3C	None required
308		S26 44.282 E20 05.860	Relatively large numbers of ESA and MSA tools on extensive gravels between the farm road and fence	3B	Gravels to be avoided during construction of pipeline. No plant equipment/ pipes to be stored. No portable toilets. (refer to recommendations)
309		S26 44.272 E20 05.865	Relatively large numbers of ESA and MSA tools on extensive gravels between the farm road and fence	3B	Gravels to be avoided during construction of pipeline. No plant equipment/pipes to be stored. No portable toilets
310		S26 44.129 E20 05.947	Relatively large numbers of ESA and MSA tools on extensive gravels between farm road and fence	3B	Gravels to be avoided during construction of pipeline. No plant equipment/pipes to be stored. No portable toilets
311		S26 44.044 E20 05.996	A few tools in animal track alongside fence	3C	None required
312		S26 43.965 E20 06.092	Weathered flake alongside fence, heavily disturbed, large rocks from dam wall	3C	None required
314		S26 43.866 E20 06.323	Weathered indurated shale MSA flake	3C	None required
317		S26 42.993 E20 06.456	Several weathered quartzite & indurated shale MSA flakes in powerline servitude near entrance to Loubos	3C	None required

Table 2. Spreadsheet of waypoints and description of archaeological finds, proposed Loubos pipeline

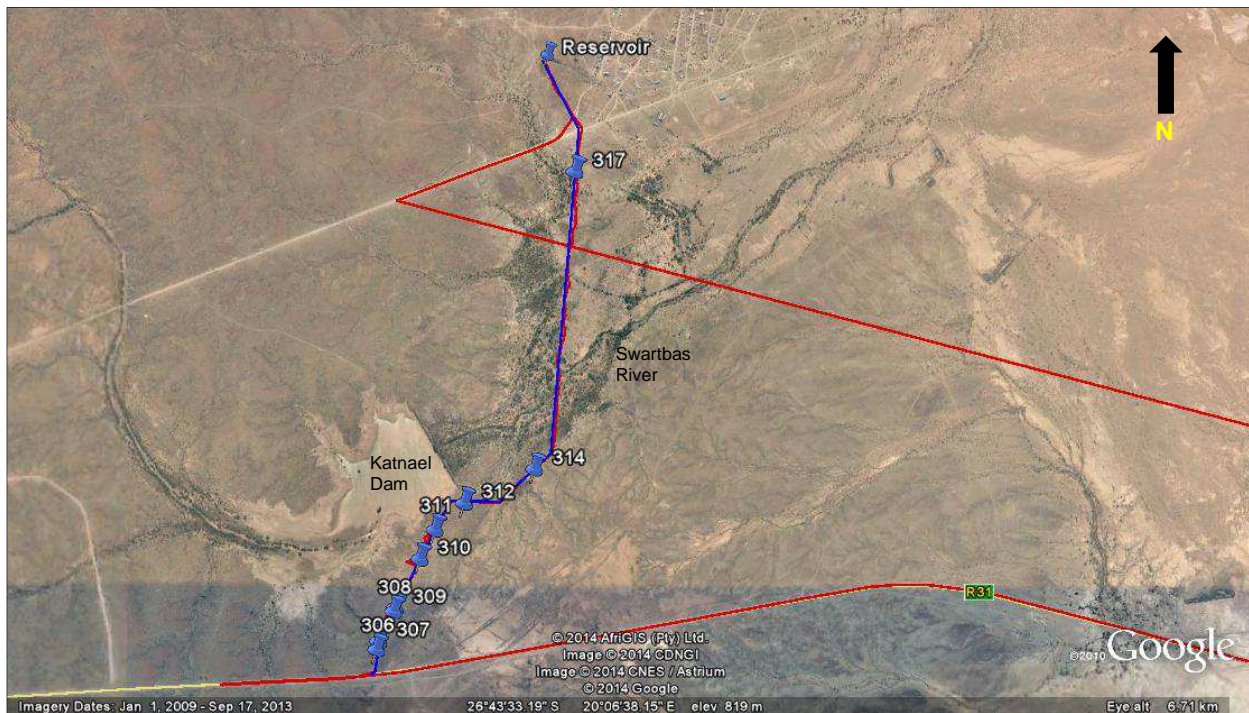


Figure 21. The proposed Loubos pipeline. Waypoints of archaeological finds and track paths (in red)

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron

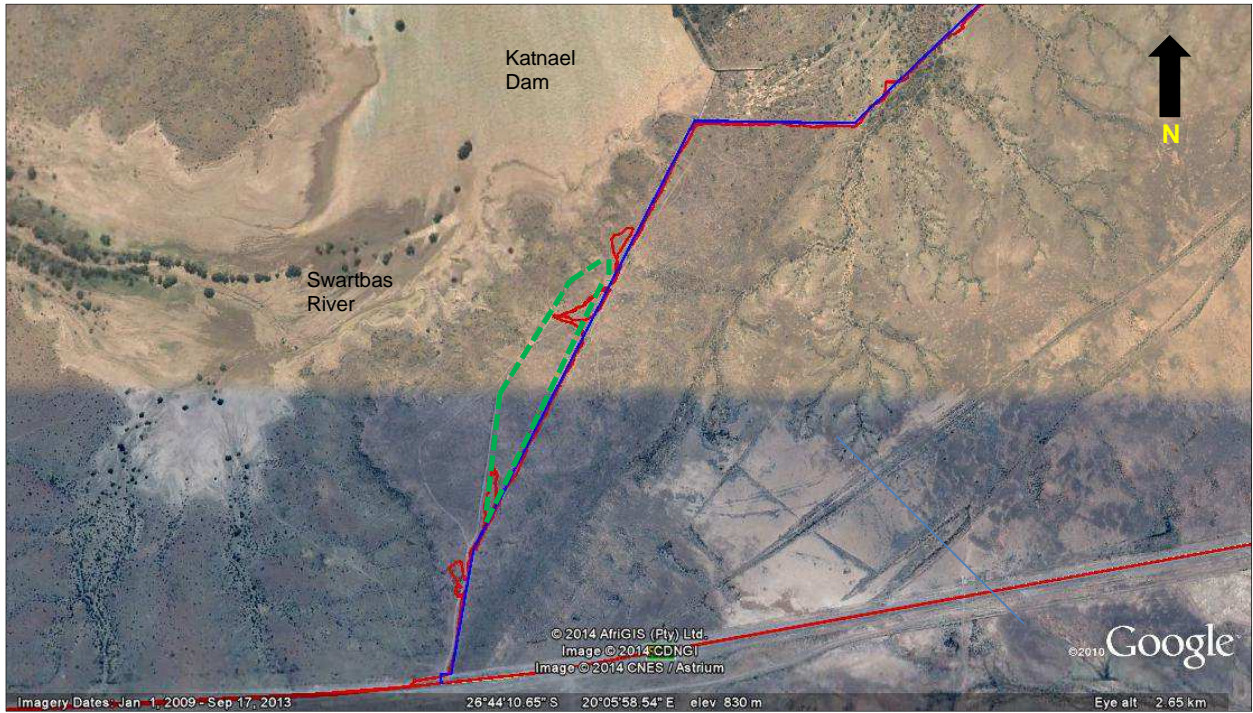


Figure 22. The proposed Loubos pipeline. Sensitive archaeological landscape (green polygon). It is assumed that the gravels extend beyond the farm road/green line, but this area was not assessed by the archaeologist.



Figure 23. Gravels between road and the fence. It is assumed that the gravels extend west of the road



Figure 24. Gravels between road and the fence

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 25. Gravels between road and fence. Note the two spoor track alongside the fence



Figure 27. ESA cores and handaxe



Figure 26. Gravels between the road and the fence



Figure 28. Collection of ESA, MSA and LSA implements. Scale is in cm



Figure 29. ESA and MSA tools. Scale is in cm



Figure 30. ESA & MSA tools. Scale is in cm

6.1.5 Proposed earth reservoir

No archaeological heritage was found within the footprint area of the proposed earth reservoir (Figure 31)

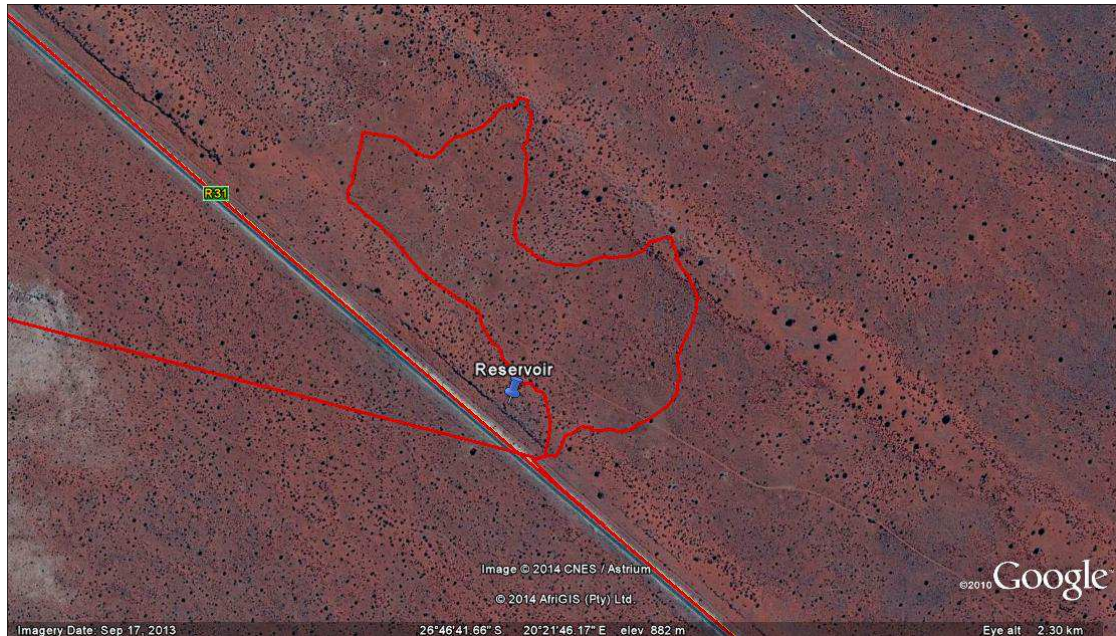


Figure 31. The proposed earth reservoir. Track paths in red

6.2 Significance of the archaeological remains

6.2.1 NR, R360 & R31

The very small numbers, isolated and disturbed context in which they were found means that the archaeological remains recorded during the study are rated as having low (Grade 3C) local significance.

6.2.2 Proposed Loubos pipeline

In-situ scatters of ESA and MSA tools on gravels alongside the proposed Loubos pipeline have been rated as having moderate to high (3B) local significance.

6.3 Grave

A Christian grave (S 26 56.291 E 20 39.345) was encountered in the road reserve (R360) near Andriesvale (Figure 32). The grave 'belongs' to Elizabeth Sarene Cloete, born 27-06-1972, died 07-10-2005. A single polished granite cross on a small painted plinth defines the area, but two separate wooden crosses (bearing the same name) are placed in the ground opposite each other, within a wider area of cemented and carefully placed stone cobbles. It does not look like the grave is a memorial to a road accident victim as these usually comprise a single cross alongside the road. It is therefore assumed that this is an informal burial/grave site

All graves (including unmarked graves and burials) have a high local significance and are protected under Section 36 of the NHRA.



Figure 32. Grave in the road reserve alongside the R360 near Andriesvale

6.4 Rock engravings

No rock engravings were found alongside the road (R360) where several outcroppings of dolerite occur in the road reserve near Klein Mier (refer to Figure 52).

6.5. Structures

No ruins, old buildings or structures occur within the proposed route alignment¹.

7. CONCLUSION

The results of the study indicate that the proposed Kalahari-East Bulk Water Supply Pipeline Phase 1A Askham till Philandersbron, will not impact on significant archaeological heritage. The entire pipeline route will be located within the road reserve, which constitutes a fairly severely degraded and transformed landscape.

Construction of the proposed Loubos pipeline will impact negatively on potentially significant (Grade 3B) archaeological heritage.

The informal burial/grave located in the R360 road reserve near Andriesvale is protected under Section 36 of the NHRA (Act 25 of 1999). All graves/burials have a high local significance.

The proposed site for the earth reservoir is not a sensitive, vulnerable or threatened archaeological landscape.

¹ The archaeologist would like to report that the Church in Rietfontein (a declared National Monument/Provincial Heritage Site), is in a serious state of disrepair. Photographs can be supplied on request.

8. RECOMMENDATIONS

With regard to the proposed Kalahari-East Bulk Water Supply Pipeline Phase 1A Askham till Philandersbron, the following recommendations are made

1. With regard to the NR, the R360 and the R31 pipeline (Philandersbron to Crammond), no archaeological mitigation is required, as the samples recorded are small and occur in a degraded context.
2. With regard to the proposed Loubos pipeline, construction of the pipeline must not extend beyond 3 m from the fence line, as this will impact negatively on potentially significant (Grade 3B) archaeological heritage.
3. The Environmental Control Officer (ECO) must ensure that no plant equipment, water pipes, or any infrastructure associated with the project (for example portable toilets, diesel, cement, & tools), are stored, mixed or located on the gravels between the fence and the access road. A single, suitable, already disturbed area should be identified by the ECO prior to the project commencing, where infrastructure can be safely stored.
4. Any sand or material required for backfilling and compaction must not be stockpiled on the gravels between the road and the fence. A suitable area should be identified by the ECO prior to the project commencing
5. No archaeological remains may be removed, damaged or disturbed as this constitutes an offence under the National Heritage Resources Act (Act 29 of 1999).
6. Should any unmarked human burials/remains or ostrich eggshell water flask caches for example, be uncovered during excavations for the pipeline, these must immediately be reported to the archaeologist (Jonathan Kaplan 082 321 0172), or Ms Mariagrazia Galimberti at the South African Heritage Resources Agency (021 462 4502). Burials must not be removed or disturbed until inspected by the archaeologist.
7. The grave in the R360 road reserve near Andriesvale/Askham must be avoided during construction of the pipeline. The grave must be taped off and clearly demarcated prior to construction work commencing, and should not be disturbed in any way. The Environmental Control Officer must be responsible for ensuring the grave is protected during the entire construction phase of the project.
8. The above recommendations must be included in the Environmental Management Plan (EMP) for the proposed project.

9. REFERENCES

Beaumont, P. b. 2006. Phase 1 Heritage Impact Assessment Report on a planned Kalahari Tourism Facility on the Farm Dreghorn 145, near Askam, Siyanda District Municipality, Northern Cape. Report prepared for MEG Environmental Impact Studies. Department of Archaeology, McGregor Museum, Kimberley.

Engelbrecht, J. 2013. Phase 1 Heritage Impact Assessment Report 2: Proposed development for Low Cost Housing Mier Local Municipality, Siyanda District Municipality, Northern Cape Province, South Africa. Report prepared for EnviroAfrica. Ubique Heritage Consultants (Pty) Ltd. Askham.

Smith, A. B. 1995. Archaeological observations along the Orange River and its Hinterlands. In: Smith, A.B. (Ed), Einiqualand: Studies of the Orange River Frontier pp 265-300. University of Cape Town Press. Rondebosch.

Van Pletzen-Vos, L. & Rust, R. 2013a. Heritage Impact Assessment Report, proposed residential development of 100 erven and associated infrastructure on Portion 1 of Farm No. 139, Gordonia Road, Mier Municipality, Northern Cape Province. Report prepared for EnviroAfrica cc. Pro-Active Archaeology. Somerset West, Cape Town

Van Pletzen-Vos, L. & Rust, R. 2013b. Heritage Impact Assessment Report, proposed low income housing project Rietfontein, Remainder Farm No. 585, Gordonia Road, Groot Mier Municipality, Northern Cape. Report prepared for EnviroAfrica cc. Pro-Active Archaeology. Somerset West, Cape Town

Van Pletzen-Vos, L. & Rust, R. 2013c. Preliminary Heritage Impact Assessment Report, proposed low income housing project on Remainder Farm 585 (Loubos), Groot Mier Municipality, Northern Cape Province. Report prepared for EnviroAfrica. Pro-Active Archaeology. Somerset West, Cape Town.

Van Pletzen-Vos, L. & Rust R. 2013d. Heritage Impact Assessment Report proposed Low Income Housing Project, Noenieput, Groot Mier Municipality, Northern Cape. Report prepared for EnviroAfrica. Pro-Active Archaeology. Somerset West, Cape Town

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron

Appendix I

Photographs of the pipeline route in the Namibia Road, R360 & R31 road reserve

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 33. Reservoir at Philandersbron



Figure 36. Philandersbron/Namibia Road



Figure 34. View from the Philandersbron Reservoir to the Namibia Road.



Figure 37. Philandersbron/Namibia Road



Figure 35. View from the Namibia Road to the Philandersbron reservoir (red arrow)



Figure 38. Namibia Road to Rietfontein

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 39. Namibia Road to Rietfontein



Figure 42. Approaching Rietfontein from Namibia Road



Figure 40. Namibia Road to Rietfontein



Figure 43. 360 Rietfontein to Askam



Figure 41. Namibia Road to Rietfontein



Figure 44. 360 Rietfontein to Askam

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 45. 360 Rietfontein to Askam.



Figure 48. 360 Rietfontein to Askam



Figure 46. 360 Rietfontein to Askam



Figure 49. 360 Rietfontein to Askam



Figure 47. 360 Rietfontein to Askam. Koopan is to the right of the plate

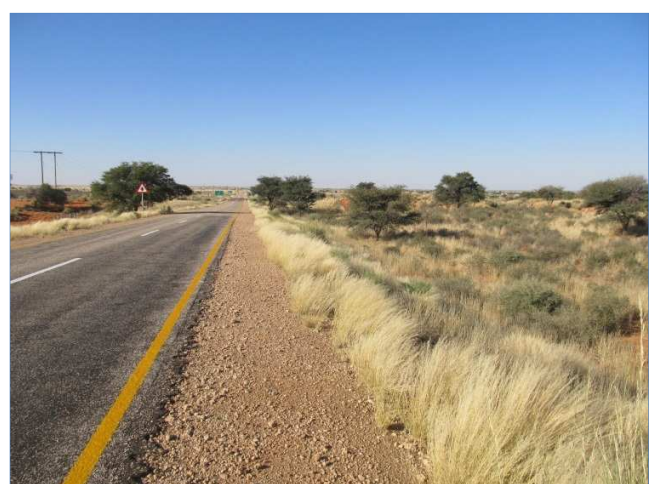


Figure 50. 360 Rietfontein to Askam

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 51. 360 North approaching Klein Meir. Note dolerite boulders alongside the fence line



Figure 54. 360 Rietfontein to Askham, approaching Haksteenpan



Figure 52. 360 North. Dolerite boulders in road reserve



Figure 55. 360 North, Haksteenpan

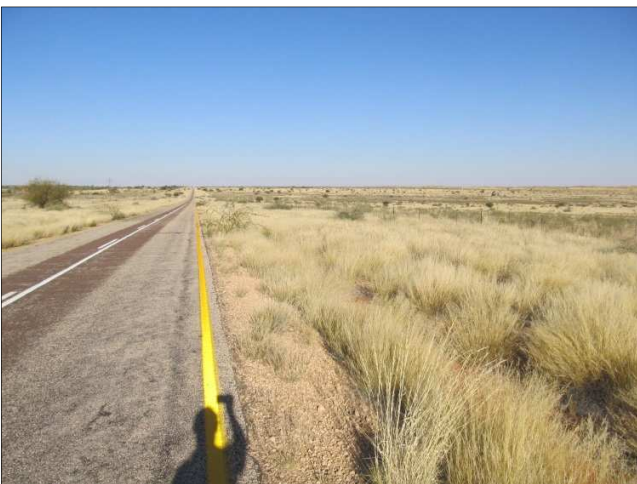


Figure 53. 360 Rietfontein to Askam



Figure 56. 360 Rietfontein to Askham

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 57. R360 Approaching turnoff to Andriesvale



Figure 60. R360, turnoff to Askham



Figure 58. R360 Andriesvale to Askham



Figure 61. R31 Askham to Crammond Farm



Figure 59. R360, Andriesvale to Askham

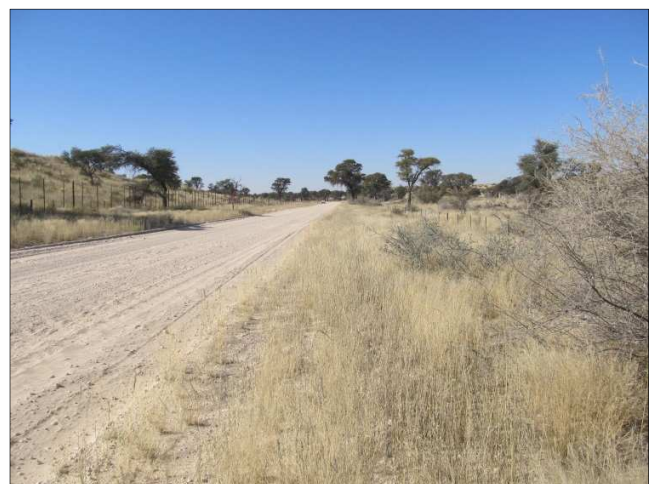


Figure 62. R31 Askham to Crammond Farm

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 63. R31 Askham to Crammond Farm



Figure 66. R31 Askham to Crammond Farm



Figure 64. R31 Askham to Crammond Farm



Figure 67. R31 Askham to Crammond Farm



Figure 65. R31 Askham to Crammond Farm



Figure 68. R31, entrance to Crammond Farm

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 69. R31 Askham to Crammond Farm



Figure 72. A- Line on the farm Farm Vischgat 201



Figure 70. R31 Askham to Crammond Farm.



Figure 73. Farm Crammond 202/0. View west from the A-line



Figure 71. R31 Askham to Crammond Farm



Figure 74. Proposed route, Crammond Farm View west

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 75. Proposed route, Crammond Farm. View west



Figure 78. Proposed route, Crammond Farm. View west



Figure 76. Proposed route, Crammond Farm. View west



Figure 79. Proposed route, Crammond Farm. View west



Figure 77. Proposed route, Crammond Farm. View west



Figure 80. Proposed route, Crammond Farm. View west

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 81. Proposed route, Crammond Farm. View west



Figure 84. Proposed route, Crammond Farm. View west



Figure 82. Proposed route, Crammond Farm. View west



Figure 85. Proposed route, Crammond Farm. View west



Figure 83. Proposed route, Crammond Farm. View west



Figure 86. Proposed route, Crammond Farm. View west

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 87. Proposed route, Crammond Farm. View west



Figure 89. Proposed route, Crammond Farm. View east



Figure 88. Proposed route, Crammond Farm. View north.



Figure 90. View from R31 north, Crammond Farm



Figure 91. Example of an earth dam in the Northern Cape



Figure 92. Example of an earth dam in the Northern Cape

Appendix II

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron

Photographs of the Loubos pipeline route

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 93. Proposed Loubos pipeline. R31 access road



Figure 96. Proposed Loubos pipeline. View north



Figure 94. Proposed Loubos pipeline. View north



Figure 97. Proposed Loubos pipeline. View north



Figure 95. Proposed Loubos pipeline. View north



Figure 98. Proposed Loubos pipeline. View north with the Swartbas river in the background

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 99. Proposed Loubos pipeline. View east



Figure 102. Proposed Loubos pipeline. View east



Figure 100. Proposed Loubos pipeline. View east



Figure 103. Proposed Loubos pipeline. View east



Figure 101. Proposed Loubos pipeline. View east



Figure 104. Proposed Loubos pipeline. View north with the powerline servitude in the background

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron



Figure 105. Proposed Loubos pipeline. View north in the powerline servitude



Figure 108. Proposed Loubos pipeline. View north in the powerline servitude



Figure 106. Proposed Loubos pipeline. View north



Figure 109. Proposed Loubos pipeline. View north



Figure 107. Proposed Loubos pipeline. View north in the powerline servitude



Figure 110. Proposed Loubos pipeline and existing pressure tower

Heritage Impact Assessment proposed Kalahari East Bulk Water Supply Scheme Phase 1A
Askham to Philandersbron