PHASE I CULTURAL HERITAGE IMPACT ASSESSMENT OF THE PROPOSED MBIZANA BULKWATER PIPELINE, MBIZANA LOCAL MUNICIPALITY, EASTERN CAPE

Prepared by

Mamoluoane Seliane
MSc (Environmental and Geographical Science)
Hons (Archaeology)

Strategic Environmental Focus (Pty) Ltd
P O Box 227
Pavilion
Durban
3611
Tel: 031 2661277
E-mail: mamo@sefsa.co.za

Prepared for

Umgeni Water
P.O. Box 9
Pietermaritzburg
3200
Tel: 033 341 1335
E-mail: asha.ramjatan@umgeni.co.za

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ACRONYMS AND ABBREVIATIONS

NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
SAHRA	South African Heritage Resources Agency
SAHRA BGG	SAHRA Burial Grounds and Graves Unit
SAHRA APM	SAHRA Archaeology, Palaeontology and Meteorites Unit
SEF	Strategic Environmental Focus (Pty) Ltd
MLM	Mbizana Local Municipality
EIA	Environmental Impact Assessment
HIA	Heritage Impact Assessment
ESA	Early Stone Age
MSA	Middle Stone Age
LSA	Later Stone Age
IA	Iron Age
EIA Period	Early Iron Age
MIA	Middle Iron Age
LIA	Late Iron Age

EXECUTIVE SUMMARY

The aim of the cultural heritage survey was to locate, identify, document and assess sites of cultural heritage and archaeological significance that may occur along the proposed route of the Mbizana Water Pipeline. An assessment of the impact of the construction of the pipeline on such resources will be provided. Where the impact is negative, alternatives and or mitigation plans will be considered.

In accordance with the National Heritage Resources Act, 1999 (Act No. 25 of 1999), the Phase I Heritage Survey investigated all cultural heritage resources. There is a high prevalence of graves within the 20 m buffer from the proposed construction corridor of the planned Mbizana pipeline installation within the residential areas of the footprint. Logistical constraints hampered the identification and plotting of all the graves on site, however a representative sample was gathered and we are confident that this is adequate to determine the mitigation measures and appropriate way forward. The survey revealed no other types of heritage resources and the graves are the only resources which require consideration by the South African Heritage Resources Agency (SAHRA).

Although burial practices are an old tradition in human evolution, the burying of the deceased at the back yard may well be a phenomenon of the Iron Age as it is during this period that people began to have permanent settlements. This cultural practice is indicative of the strong traditional identity of the communities that practice it. The practice also reveals the high value and regard that these communities attach to their ancestral history. It is therefore crucial to appreciate the high level of sensitivity that the inspection of graves has to be approached with; especially in the context of a proposed development.

The author observed that some graves are of an undetermined age and could be older than 60 years while the majority of them are younger than 60 years. The NHRA, 1999 protects graves older than 60 years. However, the Human Tissue Act, 1983 (Act No. 65 of 1983 as amended) takes precedence whenever graves are younger than 60 years. General mitigation measures and recommendations for the two grave categories are as follows:

Graves over 60 years and those of undetermined age

- A permit will be required from SAHRA if the development intends to disturb any grave older than 60 years or if the grave is of an undetermined age; and
- A minimum of a 20 m buffer from the boundary of the development is recommended by SAHRA. The 20 m buffer can be applied in undeveloped areas however, given the space restrictions' on some sections of the site the author recommends that this buffer be reduced to 10 m in developed areas of the footprint.

Graves less than 60 years

- Although less than 60 years, the graves are important to amaPondo and thus regarded as cultural heritage resources;
- However, no permit from SAHRA would be required to relocate graves less than 60 years;
- For graves less than 60 years and in undeveloped areas, a 10 m buffer from a grave to the development boundary is recommended by the author;
- For graves less than 60 years and in developed areas, a 5 m buffer from a grave to the development boundary is recommended by the author; and
- Permitting procedures of the applicable legislation should be followed for graves less than 60 years.

In areas where it is impossible to meet the suggested buffers due to space restriction, it is recommended that the construction corridor i.e. the development boundary be reduced to maintain the buffers. However, in areas where the corridor is reduced hand excavation may need to be applied.

If rerouting the pipeline to avoid the graves is the preferred mitigation measure, an HIA should be undertaken in that regard.

Should any heritage and/or archaeological materials be unearthed during the earth-moving activities, work must cease immediately, and SAHRA Burial Grounds and Graves (BGG) Unit (for graves) and SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit (for archaeological artefacts) should be contacted on (012) 362 2535 and

(021) 462 4502 respectively. SAHRA will provide comments on how the development should proceed based on the proposed mitigation measures.

This report only covers the cultural heritage component of the proposed footprint. The vegetation biodiversity, which would be regarded as natural heritage is not covered.

It is recommended that the proposed installation of the Mbizana bulk water pipeline project proceed from a heritage point of view with the acceptance of the conditions contained in this report.

1 INTRODUCTION

The proposed construction of the Mbizana Water Pipeline is to provide potable and treated water to the communities within the Mbizana Local Municipality (MLM). The proposed water pipeline has a total length of approximately 25.3 km. Depending on the availability of space along the route the project proposes that the construction corridors will vary between 8 m, 12 m and 15 m during the construction phase.

The proposed Mbizana pipeline installation project will involve but not be limited to the following activities:

- Excavation of a trench 1.5 m deep and 750 mm wide;
- Installation of a water pipeline with a diameter ranging between 363 mm and 250 mm;
- Trench back filling and compaction;
- Construction of new reservoirs and or upgrade of existing ones;
- Establishment of construction camps;
- Establishment of quarry sites/spoil sites for construction purposes; and
- Construction of temporary access routes.

It is understood that the temporary access routes and other construction activities such as stock piling will be limited to the proposed construction corridor of 8 m, 12 m or 15 m along the proposed route.

Strategic Environmental Focus (Pty) Ltd (SEF) was commissioned by Umgeni Water to undertake a Heritage Impact Assessment (HIA) in this regard. The Heritage Impact Assessment HIA was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended, and it is based on the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).

According to Section 3 (2) of the NHRA, the heritage resources of South Africa include:

"*a. places, buildings, structures and equipment of cultural significance;*

b. places to which oral traditions are attached or which are associated with living heritage;

c. historical settlements and townscapes;

d. landscapes and natural features of cultural significance;

e. geological sites of scientific or cultural importance;

f. archaeological and palaeontological sites;

g. graves and burial grounds, including-

i. ancestral graves;

ii. royal graves and graves of traditional leaders;

iii. graves of victims of conflict;

iv. graves of individuals designated by the Minister by notice in the Gazette;

v. historical graves and cemeteries; and

vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);

h. sites of significance relating to the history of slavery in South Africa;

i. movable objects, including-

i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;

ii. objects to which oral traditions are attached or which are associated with living heritage;

iii. ethnographic art and objects;

iv. military objects;

v. objects of decorative or fine art;

vi. objects of scientific or technological interest; and

vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)."

In terms of Section 3 (3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

"*a. its importance in the community, or pattern of South Africa's history;*

b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;

g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;

h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

i. sites of significance relating to the history of slavery in South Africa."

The aim of the investigation was to identify, verify and analyze heritage issues and to recommend how to manage them within the context of the proposed installation of the pipeline.

The objectives of the investigation were:

- Identifying and analysing heritage places, objects, buildings, structures, graves etc.;
- Assessing broad cultural significance of identified sites, places, buildings, structures, graves and objects within the site;
- Surveying and mapping of significance/sensitivity issues and opportunities/constraints issues;
- Reviewing of the general compatibility of the proposed installation of the pipeline with heritage policy planning frameworks;

- Undertaking a preliminary assessment of the acceptability of the proposed installation of the pipeline from a heritage perspective;
- Identifying the need for alternatives, if necessary; and
- Recommending appropriate initial management measures to conserve significant heritage elements and reduce the impact on heritage resources.

The NHRA protects graves older than 60 years. However, the Human Tissue Act, 1983 (Act No. 65 of 1983 as amended) takes precedence whenever graves are younger than 60 years. A permit will be required from the South African Heritage Resources Agency (SAHRA) if the development intends to disturb any grave older than 60 years.

2 BACKGROUND INFORMATION TO THE PROJECT

Table 1 Background Information

Consultant:	Mamoluoane Seliane
Type of development:	Installation of a water pipeline, Mbizana Local Municipality, Bizana Town, Eastern Cape
Rezoning or subdivision:	Rezoning
Terms of reference	To carry out an HIA
Legislative requirements:	The HIA was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and following the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA)

2.1 Details of the study area

Footprint: See Figure 1

Current land-use: As this is a linear development, there are various landuses along the footprint of the proposed water pipeline installation including residential, pastural, forest/timber plantations (Figure 2), and open veld. Some sections of the proposed pipeline run parallel to the R61 and other secondary roads.

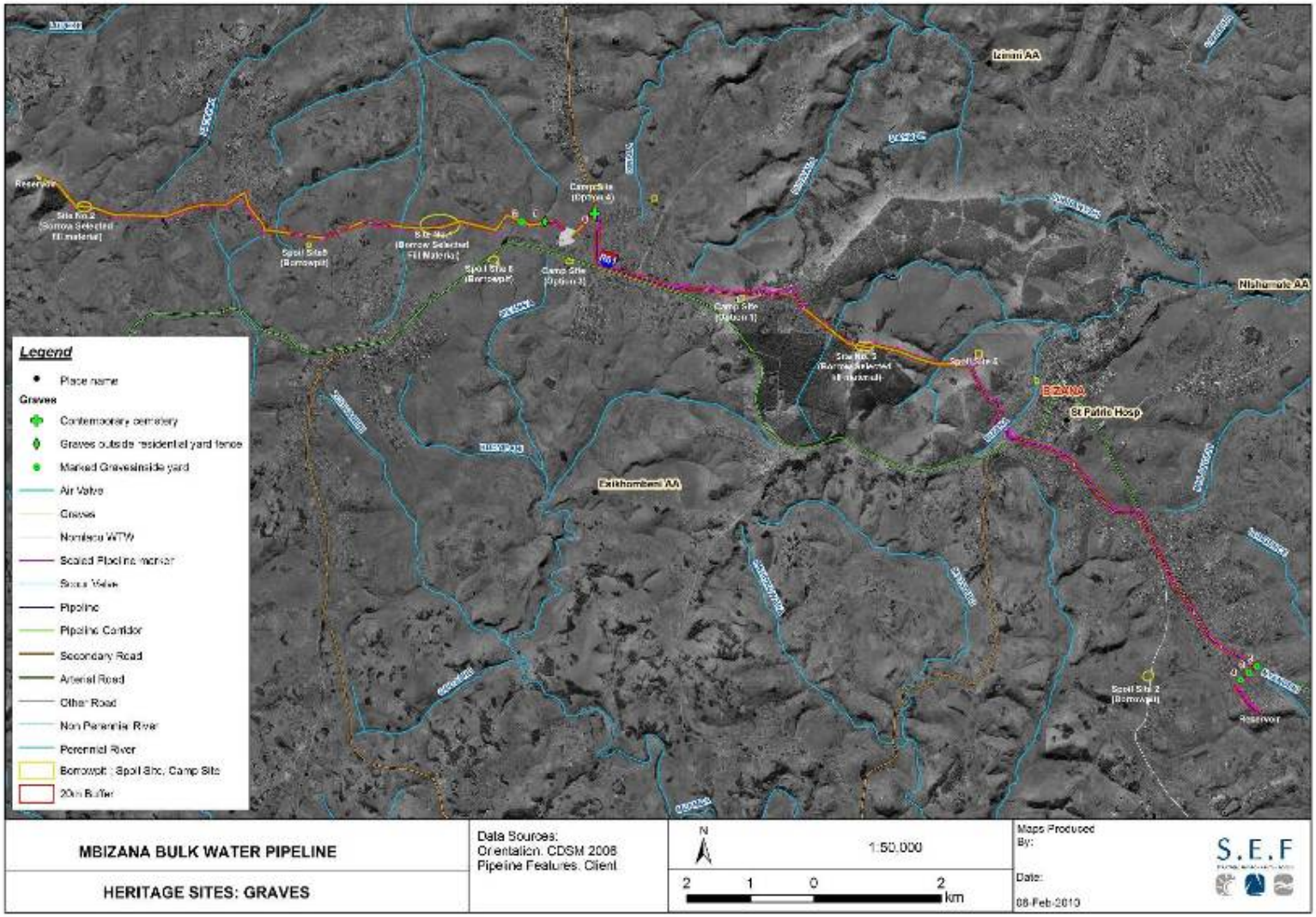

Figure 1 Location of study area indicating 20 m buffer, associated activities and a representative sample of identified graves

Figure 2 Various land uses along the proposed pipeline route

3 BACKGROUND INFORMATION TO THE SURVEY

3.1 Methodology

3.1.1 Details of the site visit

Two site visits for the proposed Mbizana Bulkwater Pipeline were conducted on the 7 and 8 December 2010 and on the 19 January 2011. The surveys were undertaken by means of walking and driving throughout the study area to:

- search for, locate and identify objects and structures of heritage and/or archaeological significance and graves in accordance with accepted archaeological practices; and
- document heritage/archaeological sites, objects, structures and graves according to minimum standards accepted by the archaeological profession.

The investigation was restricted to a servitude of 30 m on either site of the proposed pipeline construction corridor.

3.1.2 Literature Review

A brief literature review pertaining to the prehistory of the Eastern Cape and history of the study area was undertaken. See Appendix A.

3.2 Restrictions to the survey

3.2.1 Visibility

Visibility varied along the proposed pipeline route – some sections had perfect visibility while at other sections visibility was not good due to vegetation and forest plantations.

3.2.2 Disturbance

No disturbance of any potential archaeological stratigraphy was noted.

3.3 Details of the equipment used during the survey

- GPS: Garmin Etrex; and
- Digital camera: Canon Powershot A460.

All readings were taken using the GPS. Accuracy was to an average margin of error of 5 m. *Note that a level of inaccuracy is inherent to all standard GPS units. For this reason, those graves close to the boundaries of the buffer are considered here. Tape measures were not considered an accurate estimation of the distance of a grave from the pipeline route or corridor as this were also plotted using a GPS and therefore the inaccuracy may be compounded.*

4 DESCRIPTION OF THE STUDY AREA

4.1 Locational Data

Footprint: See Figure 1
Province: Eastern Cape
District Municipality: O. R. Tambo
Local Municipality: Mbizana

General coordinates:

29° 41' 12.00" E	30° 49' 49.88" S
29° 47' 28.96" E	30° 50' 42.35" S
29° 53' 12.67" E	30° 54' 17.41" S

4.2 Description of the materials observed

The Phase 1 heritage survey of the proposed installation of Mbizana Water Pipeline revealed the prevalence of graves along the proposed corridor as well as within the 20 m buffer from the edge of the corridor of the proposed pipeline route. A schematic representation of the pipeline route, construction corridor and buffers is provided in Appendix F to illustrate the relationship between these. An observation made during the investigation of a representative sample of graves was that although some are not marked, the majority of the graves are marked and have inscribed headstones. It was also observed that although some graves are possibly older than 60 years, the majority of them are younger than 60 years. Another observation was that some of the graves occur within 20 m from the edge of the proposed construction corridor and some graves occur within the proposed corridor itself. It should be noted that there are far more grave sites on the footprint which could potentially be impacted on by the proposed development. Only a random sample is reported here. The grave sites have been allocated an arbitrary number for the purposes of reporting and this number does not represent any order of occurrence on site. Table 2 below shows the identified cultural heritage resources. A description of the grave sites follows the table.

Table 2 Table showing identified heritage resources

Identified heritage resources	
Category, according to NHRA	*Identification/Description*
Formal protections (NHRA)	
National heritage site (Section 27)	None
Provincial heritage site (Section 27)	None
Provisional protection (Section 29)	None
Place listed in heritage register (Section 30)	None
General protections (NHRA)	
Structures older than 60 years (Section 34)	None
Archaeological site or material (Section 35)	None
Palaeontological site or material (Section 35)	None
Graves or burial grounds (Section 36)	Six grave sites were identified. The majority of the identified graves are less than 60 years but some could be over 60 years. Most of the grave sites occur within the 20 m buffer from the developmental boundary.
Public monuments or memorials (Section 37)	None
Other	
Any other heritage resources (describe)	None

4.2.1 Grave Site 1

This is an isolated grave marked with a headstone and occurs at about 13 m from the proposed pipeline construction corridor (Figure 3) and is located at 30˚50'09"S; 29˚46'08.1"E. The grave is facing in a westerly direction. The age of the grave could not be determined at the time of the investigation.

Figure 3: Grave Site 1

4.2.2 Grave Site 2

A minimum of thirteen (13) graves were identified at this site. The site is not fenced off but occurs within a residential area. The site is located at 30˚50'09.6"S; 29˚45'54.3"E and about 3 m from the proposed pipeline route (Figure 4). This follows that this set of graves occurs within the proposed pipeline construction corridor. Although the graves had no inscriptions, head stones were present and most of the graves were facing in an easterly direction. The age of the graves is not known but it is possible that some of the graves could be over sixty (60) years old. An informant named Pakama Gwija, a local female resident owning a plot neighbouring the grave site indicated that these graves belong to the Mqhaka Family who have relocated elsewhere from Mbizana. She provided a contact number (078 290 1424) of the Mqhaka family member that could be contacted to provide full details concerning the site.

Figure 4: Grave Site 2

4.2.3 Grave Site 3

This site comprises one (1) inscribed grave located inside a yard at 30˚53'56.9"S; 29˚53'06.0E (Figure 5) and is about 12 m from the proposed corridor. The grave is younger than sixty (60) years.

Figure 5: Grave Site 3

4.2.4 Grave Site 4

This grave site is found inside a yard of the Jali family and comprises eight (8) graves (Figure 6). The site is located at 30˚54'00.7"S; 29˚53'01.2"E and is about 13.5 m from the proposed construction corridor. A family member confirmed that these graves are younger than sixty (60) years.

Figure 6: Grave Site 4

4.2.5 Grave Site 5

This grave site is located inside a yard of the Ndzeku Family and comprises 4 graves (Figure 7). The site is located at 30˚53'53.6"S; 29˚53'10.8"E and is about 22 m from the proposed construction corridor. A family member confirmed that the graves are younger than sixty (60) years. These graves are located outside the 20 m buffer from the edge of the proposed corridor. However, the investigation included these graves as they occur quite close to the 20 m buffer and thus could be affected should the proposed construction corridor be shifted.

Figure 7: Grave Site 5

4.2.6 Grave Site 6

This is a contemporary cemetery located at 30˚50'05.3"S; 29˚46'37.3"E (Figure 8) and is about 8 m from the proposed pipeline route. Hence the edge of the cemetery occurs within the bounds of the proposed construction corridor. It is not known if there are graves within the cemetery that are over sixty years.

Figure 8: Grave Site 6

4.3 Summary of the findings

A representative sample of six (6) grave sites consisting of at least 27 graves from Grave Sites 1 to 5 and an undetermined number from the Grave Site 6 (cemetery) along the 20 m buffer (including grave less than 10 m from buffer) from the proposed pipeline construction corridor were investigated. Of these sites, two (i.e. Grave Sites 2 and 6) occur within the bounds of the proposed construction corridor, three (i.e. Grave Sites 1, 3 and 4) occur less than 20 m from the edge of the proposed construction corridor and one (i.e. Grave Site 5) occurs outside but very close to the 20 m buffer from the edge of the corridor. It is known that 13 graves from Grave Sites 3, 4 and 5 are younger than 60 years and 14 from Grave Sites 1 and 2 are of an undetermined age and could be over 60 years. The majority of the graves at Grave Site 8 are younger than 60 years and it is not known if there are any graves older 60 years at this site.

Below is a summary of the construction constraints and mitigation measures associated with the identified graves in view of the proposed pipeline installation (Table 3).

Table 3 Summary of the construction constraints and mitigation measures for the proposed construction of the Mbizana Bulkwater Pipeline

Grave site	Location	Description	Potential Impacts	Permit from SAHRA required for relocation?	Risk level before mitigation	Proposed mitigation measures	Risk level after mitigation
1	13 m from proposed construction corridor 30˚50'09"S; 29˚46'08.1"E	1 grave, headstone present, age unknown	Grave located >10m from developmental activities, hence there will be low negative impact upon site	If grave is less than 60 years no permit required. If age is unknown or if over 60 years a permit is required	Medium Low due to risk associated with construction	Demarcate the grave at 2 m radius; Construction crew should be denied access	Low
2	3 m from proposed pipeline route 30˚50'09.6"S; 29˚45'54.3"E Located in residential area	At least 13 graves, headstones present; age unknown	Grave located within the proposed construction corridor hence will be negatively impacted upon and site integrity threatened.	If grave(s) is/are less than 60 years no permit required. If age is unknown or if over 60 years a permit is required	Very high due the fact that proposed developmental activities will happen on this site	Re-route pipeline Relocate the graves	Low No impact in terms of the grave per se. Impact on families will be high (see Section 7.1)

Grave site	Location	Description	Potential Impacts	Permit from SAHRA required for relocation?	Risk level before mitigation	Proposed mitigation measures	Risk level after mitigation
3	12 m from proposed construction corridor 30˚53'56.9"S; 29˚53'06.0E Located in residential area	1 inscribed grave, inside yard, younger than 60 years	Grave located >5m from developmental activities, hence there will be low negative impact *Note that a 5 m buffer from developmental boundary is recommended by specialist for graves that occur within residential areas and are <60 years to maintain integrity of the site*	No	Medium Low due to risk associated with construction.	Demarcate site at 2 m diameter with red danger tape. Access to site by construction crew denied	Low

Grave site	Location	Description	Potential Impacts	Permit from SAHRA required for relocation?	Risk level before mitigation	Proposed mitigation measures	Risk level after mitigation
4	13.5 m from proposed construction corridor 30˚54'00.7"S; 29˚53'01.2"E Located in residential areas	8 graves and are all younger than 60 years	Grave located >5 m from developmental activities, hence there will be low negative impact *Note that a 5 m buffer from developmental boundary is recommended by specialist for graves that occur within residential areas and are <60 years to maintain integrity of the site*	No	Medium Low due to risk associated with construction.	Demarcate site at 2 m diameter with red danger tape. Access to site by construction crew denied	Low

Grave site	Location	Description	Potential Impacts	Permit from SAHRA required for relocation?	Risk level before mitigation	Proposed mitigation measures	Risk level after mitigation
5	22 m from proposed construction corridor 30˚53'53.6"S; 29˚53'10.8"E	4 and are all younger than 60 years	Potential impact low as grave is <60 yrs and located >20 m from developmental boundary	No	Low as site is located >5 m from proposed construction corridor	No mitigation required if SAHRA agree to the recommended 5 m buffer from proposed construction corridor	Low
6	8 m from proposed pipeline route 30˚50'05.3"S; 29˚46'37.3"E	Contemporary cemetery. The majority of graves are < 60 years. Not known if any are > 60 years	Some graves are located on the bounds of the proposed construction corridor and could be negatively impacted upon – regardless of their age	If grave(s) is less than 60 years no permit required. If age is unknown or if over 60 years a permit is required	High as a minimum of 5 m buffer is required from grave <60 years to developmental boundary.	Re-route pipeline	Low
						Relocate the affected graves	No impact in terms of the grave. Impact on families will be high (see Section 6.1)
						Reduce the proposed construction corridor to maintain a buffer of 5m for graves <60 years old and 10m for graves >60 years old	Low

5 STATEMENT OF SIGNIFICANCE

The statement of significance outlines the principal values that a site or object holds to a community or sections of a community. In terms of Section 3 (3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of: "*its importance in the community…"* The study revealed a prevalence of graves occurring inside the residents' yards. Although the majority of the graves are younger than 60 years and as such are not protected in terms of the NAHRA under the 60 year rule, these graves would be protected under the same Act due to the significance attached to them by amaPondo. This significance, in addition to being revealed through the fact that the graves are inside private yards, was expressed by some of the informants by indicating that the grave sites are important to them. Furthermore, one resident would not even allow the author to investigate the graves in her yard.

The graves are rated as of high significance to the Bizana community. Hence the integrity of the grave sites should be respected as such. In line with the significance of the grave sites and the potential impact of the development, as well as the proposed construction method statement supplied by Camdekon Engineers (see Appendix E), the author recommends a 10 m buffer between the grave and developmental activities for graves younger than 60 years and a 20 m buffer from any graves that could be older than 60 years or of undetermined age in the rural areas of the construction site where there is no space restrictions. In the residential areas however, these buffers can be relaxed to 5 m from graves less than 60 years to developmental boundary; and 10 m from graves over 60 years or of undetermined age to developmental boundary.

The recommended buffers are based on the following potential risks from construction:

- The use of heavy construction vehicles and excavators which produce vibration waves which could result in disturbance and breakage of the grave contents including coffins. Hand excavation is therefore recommended within the residential area where the buffers have been relaxed.
- The traversing of construction vehicles outside of the construction corridor, either accidentally or intentionally.

- The alteration of the stability of the underground soil on which the coffins or bodies are lying which could ultimately cause problems such as the subsidence of grave topsoil and creation of depressions in which rain water collects.

Graves that are older than 60 years are protected in terms of the NHRA and are significant heritage resources owned by the state. The 20 m (undeveloped areas) and 10 m (developed areas) buffers are recommended to protect such graves from risks associated with construction as mentioned above as well as to maintain their integrity as heritage resources.

The relocation of those graves younger than 60 years this would be undertaken following the requirements of the Human Tissue Act, 1983 (Act No. 65 of 1983 as amended).

5.1 Field rating

Field rating of the graves is undertaken using SAHRA's (2005) field rating and recommended grading of sites (Table 4).

Table 4 Field rating and recommended grading of sites (SAHRA, 2005)

Level	Details	Action
National (Grade I)	The site is considered to be of National Significance	Nominated to be declared by SAHRA
Provincial (Grade II)	This site is considered to be of Provincial significance	Nominated to be declared by Provincial Heritage Authority
Local Grade IIIA	This site is considered to be of HIGH significance locally	The site should be retained as a heritage site
Local Grade IIIB	This site is considered to be of HIGH significance locally	Mitigation necessary, and part retained as a heritage site
Generally Protected A	High to medium significance	Mitigation necessary before destruction
Generally Protected B	Medium significance	The site needs to be recorded before destruction
Generally Protected C	Low significance	No further recording is required before destruction

All the grave sites are considered to be of Local Grade IIIB significance level, which follows that the graves are of HIGH significance locally. Hence mitigation would be required and re-routing the pipeline and/or relocation of the graves are suggested as options.

6 MITIGATION MEASURES

Three options are suggested as mitigation measures:

- To deviate the route of the proposed pipeline;
- To relocate all the graves which occur inside the proposed construction corridor as well as
    - those older than 60 years occurring within 20 m from the outer edge of the proposed corridor in undeveloped areas of the footprint;
    - those older than 60 years occurring within 10 m from the outer edge of the proposed corridor in the residential areas;
    - those younger than 60 years occurring within 10 m from the outer edge of the proposed corridor in undeveloped areas; and
    - those younger than 60 years occurring within 5 m from the outer edge of the proposed corridor in the residential areas.
- To reduce the construction corridor and employ hand excavation in areas where space does not allow the maintenance of the suggested buffers.

The affected families should be engaged with throughout the process.

6.1 Notes on construction constraints and mitigation

In the event of relocation the consequences are culturally and emotionally inclined. In the African setting and even in other cultures, graves are regarded as a home for the ancestors and hence a sacred place. The fact that the majority of the graves in question are found inside residential yards, means that the families can perform their rituals or visit their deceased close to home. In the event of relocation, this may cause inconvenience on the part of the relatives of the deceased who will be required to travel a distance to the new burial place to perform rituals. The passing of a family member is a very sad experience and interference with the graves may result in families becoming highly emotional again. Therefore, it is recommended that other alternatives (in this case

rerouting the pipeline) should be considered and investigated thoroughly first and grave relocation be the last resort.

If relocation remains an option, a thorough consultation process with the descendents of the deceased and the relevant authorities will be required. The public participation process has been initiated by G M & Associates, an independent Public Participation Facilitator on behalf of Umgeni Water. To this end, public consultation including public meetings with the relevant authorities and the communities have been conducted. This process so far has been successful and consent to implement the project has been granted by the authorities and land owners concerned (see Appendix D). The second phase of consultation will need to focus on specific families whose graves will be directly impacted upon by the proposed development to discuss relocation process, the preferences of the individual families and logistics.

For graves that are >60 years, SAHRA's permitting procedure (simplified) and policy on grave relocation are presented in Appendix B and C respectively.

The average time required for grave relocation permits application is six (6) months or more.

The permitting application should be facilitated by an accredited and independent heritage consultant.

A schematic representation of the suggested buffers relative to the proposed pipeline route and construction corridor is provided in Appendix F.

7 RISK PREVENTATIVE MEASURES ASSOCIATED WITH CONSTRUCTION

Should any graves not previously identified, heritage and/or archaeological materials be unearthed during the proposed installation of the pipeline, work must cease immediately, and SAHRA BGG Unit (for graves) and SAHRA APM Unit (for archaeological artefacts) should be contacted on (012) 362 2535 and (021) 462 4502 respectively.

8 CONCLUSIONS AND RECOMMENDATIONS

The Mbizana Bulkwater Pipeline Phase I HIA has revealed no other types of heritage resources but a prevalence of graves along the 20 m buffer of the proposed project boundary. Although some of the graves could be more than 60 years, the majority of them are younger than 60 years.

In order to minimize the potential impact of the pipeline installation on the graves, three options; which constitute rerouting of the pipeline, reduction of the proposed construction corridor or relocation of the graves should be considered. If rerouting is chosen, then a follow up HIA should be conducted on the new section. If a decision to relocate the graves is taken, a permit from SAHRA will be required to relocate graves older than 60 years or of an undetermined age. The provisions for the Human Tissue Act, 1983 (Act No. 65 of 1983 as amended) should be followed for relocation of graves younger than 60 years. If a decision to reduce the proposed construction corridor is taken, hand excavation may need to be employed and this should be supervised by an ECO or heritage specialist.

It is recommended that the proposed installation of the Mbizana bulk water pipeline project proceed from a heritage point of view with the acceptance of the following conditions:

- A heritage specialist should demarcate all graves occurring 5 – 15 m from the proposed construction corridor prior to the commencement of construction activities on site.
- A heritage specialist should be present at meetings held as part of the focused public consultation process to be undertaken with directly affected families, especially in cases where graves are older than 60 years or of undetermined age.
- The necessary reduction of the proposed construction corridor to maintain suggested buffers in some sections of the pipeline route and the associated hand excavation (where necessary) should be supervised by an Environmental Control Officer (ECO) or a heritage specialist if there is no ECO site. The ECO or heritage specialist must also ensure that the recommended buffers from graves to developmental boundary are maintained along the entire footprint.
- Construction activities should be limited to the demarcated construction corridors. If these working spaces are increased at a later stage, a heritage specialist

should be involved in order to assess how the increase in construction space will affect heritage resources and graves.

- Should the proposed route be changed as a result of other factors, the new route must be inspected by a heritage specialist before construction can begin.
- In residential areas, due to space restrictions a 10 m and a 5 m buffer from developmental boundary is recommended to graves that are older and younger than 60 years respectively. The buffers however cannot be reduced any further due to construction related risks, potential impacts on the graves as well as the significance attached to the graves.
- In undeveloped sections, a 20 m and a 10 m buffer is recommended to graves that are older and younger than 60 years respectively.
- Graves of an undetermined age should be treated as if they were older than 60 years.
- The 5 m buffer from pipeline route to grave as well as the demarcation that is proposed by Camdekon Engineers in their construction method statement (Appendix E), should be refined to align with SAHRA's standards i.e. there should be a point of reference provided. In this case, the 5 m buffer should be from grave to developmental boundary and not from grave to pipeline route.
- All graves (<60 years) occurring 5 - 15 m from developmental activities should be demarcated at 2 m radius with a red danger tape by a heritage specialist before construction starts and access to the graves by construction crew denied.

APPENDIX A

LITERATURE REVIEW

BRIEF PREHISTORY AND HISTORY OF THE EASTERN CAPE

Compared to some provinces in the country, the Eastern Cape is one of the relatively poorly studied provinces archaeologically. The archaeology of the region was researched and reported on by amateur archaeologists and travelers in the eighteenth and nineteenth century and possibly before – the Albany Museum in Grahamstown houses some of the collections from these early studies (Binneman 2001). Laidler (1947) in particular made very large Earlier and Middle Stone Age collections from coastal sites. Further research, excavations and studies were conducted in the early twentieth century (for example, FitzSimons 1921, 1923, 1926, Hewitt 1925). Both the inland and coastal areas of the Eastern Cape Province have yielded significant sites belonging to different time periods and cultural traditions.

Stone Age

The Stone Age of southern Africa has been divided into, the Early Stone Age (ESA) dating from about 2.5 million years ago to 250 000 years ago, the Middle Stone Age (MSA) dating from 250 000 and 25 000 years ago and the Later Stone Age (LSA) which dates from about 25 000 and 2 000 years ago (Mitchell, 2000).

The ESA is a period during which human ancestors began the usage of stone tools. The stone tools from this earlier period consist of simply modified tools such as hand axes, scraping tools as well as choppers. These tools were, among other things, used to chop and butcher meat, de-skin animals and probably to smash animal bones to obtain bone marrow. Most ESA sites are open air tool scatters. However, there were no ESA sites along the proposed route for the installation of the proposed Mbizana pipeline.

The MSA stone tools are, in general, smaller than those of the ESA. A variety of MSA tools include blades, flakes, scrapers and pointed tools that may have been hafted onto shafts or handles and used as spearheads. The Eastern Cape is renowned for its

coastal Klasies River MSA sites. Although fragmentary, the Klasies River cave sites have yielded human remains whose research and interpretation provided useful information about origins and evolution of morphologically modern humans as well as indicates one of the oldest evidence of marine food exploitation in the world (Deacon, 2001, Deacon and Schuurman, 1992). The proposed site for the Mbizana pipeline however did not yield any MSA tools/sites.

The LSA tools are even smaller than those of the MSA and display rapid stylist change, particularly in the last 10 000 years. LSA sites can be found inland as well as in coastal regions. These sites constitute a wide range of features and artefacts including shell middens, stone tools, bone tools as well as other non lithic cultural artefacts (Binneman, 2001). The LSA sites/features can occur in caves, shelters or in open air contexts (Binneman, 2001, 1998, 1994, Opperman, 1999, Binneman and Hall, 1993,). No LSA artefacts have been discovered in the vicinity of the proposed route for the installation of the Mbizana pipeline however.

Along with the marked social transformation and technological innovation of the LSA people is the associated Rock Art panels that occur on cave walls or rock faces. Rock Art can be in the form of rock paintings or rock engravings, depending on the geology of a region. However, no rock art paintings or engravings were discovered in the vicinity of the proposed pipeline route.

Iron Age

A farming way of life was introduced to southern Africa about 2 000 years ago by Bantu-speaking people coming from the north. They brought with them crops such as sorghum, millet, ground beans and cow peas to be cultivated for the first time in this part of the world (Huffman, 2007, Mitchell, 2000). Domestic animals such as cattle, sheep and goats were also part of the newly introduced farming way of life. Unlike the hunter-gatherers and herders who lived in temporary camps and led a nomadic way of life, farming necessitated sedentary life styles (Huffman, 2007). Some features of the permanent settlements of these early mixed farming communities are houses, raised grain bins, underground storage pits and stock enclosures. While in earlier periods burials are observed in caves and shelters (see for example Binneman, 1999), in

permanent Iron Age settlements where there is spatial organization control, the majority burials are observed in the back yard (Huffman, 2007). An important feature of this time period was that they also made their own iron implements, hence the name Iron Age (Huffman, 2007). The Iron Age has been divided into three periods, namely the Early Iron Age (EIA Period) (AD 200 – 900), the Middle Iron Age (MIA) (AD 900 – 1300) and the Late Iron Age (LIA) (AD 1300 – 1820) (Huffman, 2007). However, the Phase I field survey as well as the aerial photograph investigation did not reveal any Iron Age sites in the vicinity of the proposed pipeline installation.

Historic Period

Bizana is a home town to the renowned Winnie Madikizela Mandela and the late Oliver R. Tambo who were very active in South Africa's recent liberation struggle. The people of this region are descendants of Nguni clans that migrated west of the Mthamvuna River in the eighteenth century (Vinnicombe, 1976). The people speak Pondo, which is dialect of isiXhosa and are known as amaMpondo (as they are referred to in the report from this point on). Like other clans of this time, amaPondo were ruled by chiefs who usually came from royal families. In the history of amaPondo, Faku (1824 – 1867) was the most significant ruler of the amaPondo (Vinnicombe, 1976) as he successfully defended amaPondo against Shaka during the Mfecane Wars (1824 – 1828). He accommodated refugees such as amaBhaca, amaXesibe and amaCwera and by so doing he expanded his subjects and territory. The amaPondo are very culturally inclined and still practice most of their old customs and rituals religiously. One of these practices which is very visible in their villages today is the burial of the deceased in their back yard, a practice that dates back to the Iron Age (Huffman 2007). These private cemeteries are sacred and are therefore regarded with considerable respect and a lot of significance is attached to them.

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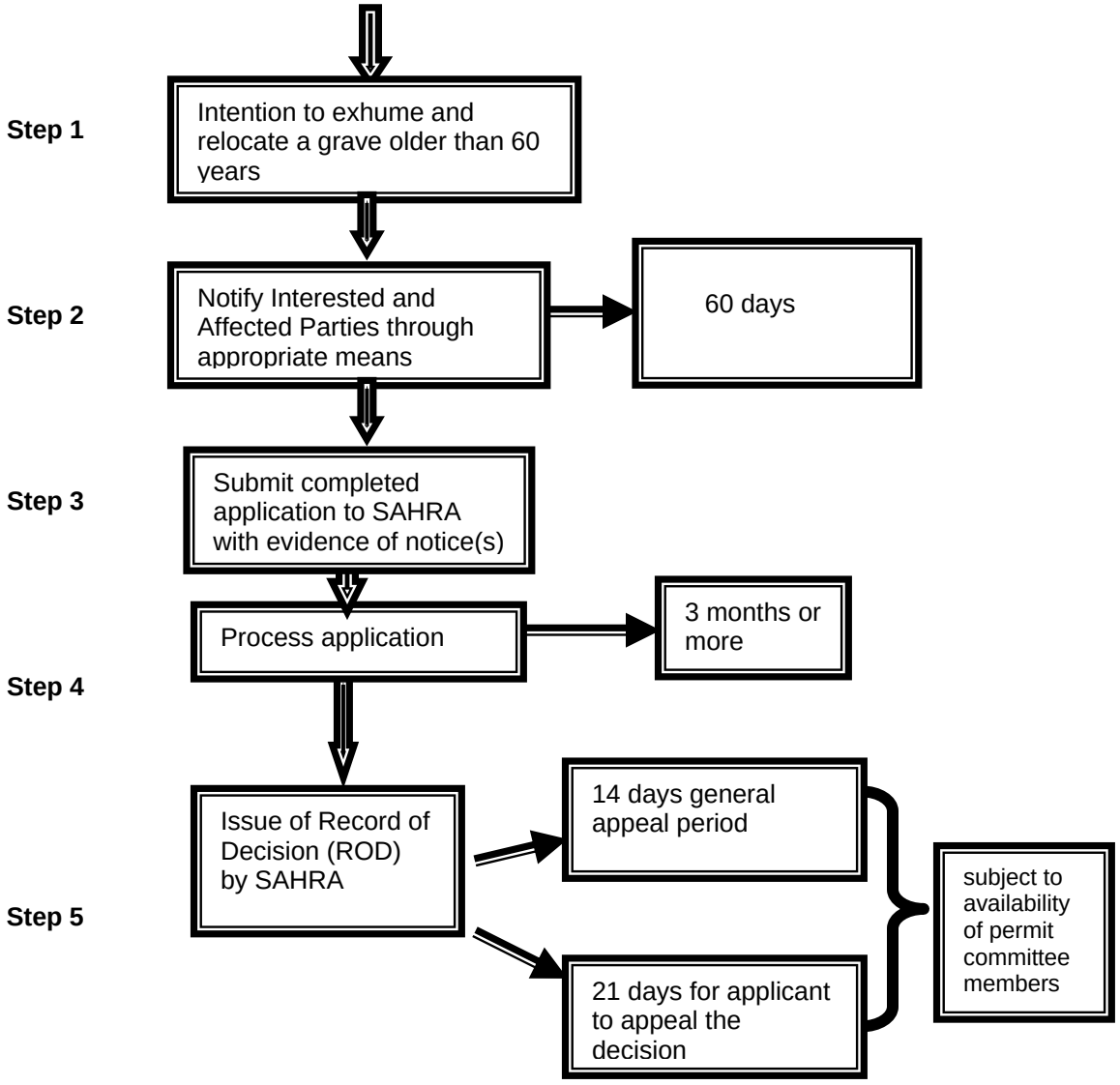
APPENDIX B

SAHRA PERMITING PROCEDURE FOR GRAVE RELOCATION



Note: all the dates are subject to availability of permit committee members, provision of adequate information as well as SAHRA's permit application back log.

APPENDIX C

RELOCATION OF GRAVES

Burial grounds and graves are dealt with in Article 36 of the NHR Act, no 25 of 1999. Below follows a broad summary of how to deal with grave in the event of proposed development.
If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.
If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.
Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.

- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.

- Local radio stations can also be used to try contact family members. This is not required by law, but is helpful in trying to contact family members.

- During this time (60 days) a suitable cemetery need to be identified close to the development area or otherwise one specified by the family of the deceased.

- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.

- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.

- Once the permit has been received, the graves may be exhumed and relocated.

- All headstones must be relocated with the graves as well as any items found in the grave

APPENDIX D

See attached Public Participation Report

131 Pietermaritz Street
Pietermaritzburg

P. O. Box 100798
Scottsville 3209

GM&A

Tel: (033) 342 8338
(033) 342 8789
Fax: (033) 342 8799

E-mail:
info@gmassociates.co.za

Geldart, Mokoatsi & Associates

COMMUNITY DEVELOPMENT, AGRICULTURAL PRODUCTION PLANNING & CONTRACT
PROJECT MANAGEMENT CONSULTANTS

GREATER MBIZANA REGIONAL BULK WATER SUPPLY SCHEME

RECORD OF INSTITUTIONAL & SOCIAL DEVELOPMENT ACTIVITIES

Date: 9th March 2011

Contents

Page No.

1. Introduction

The Greater Mbizana Regional Water Supply Scheme falls within the area of O.R.Tambo District Municipality. It must, however, be noted that the area within which the Greater Mbizana Regional Water Supply Scheme falls is currently implicated in a Municipal boundary restructuring process, which could see the area falling under Alfred Nzo District Municipality.

O.R Tambo District Municipality, in its capacity as Water Service Authority, has appointed Umgeni Water as the Implementing Agent for the Greater Mbizana Regional Bulk Water Supply Scheme, which is envisaged to supply the towns of Mbizana and surrounding rural villages with sustainable potable water. The appointment includes the Planning, Design and Construction of Phase One, but excludes the village reticulation component.

The scope of work encompasses the following components:

- Upgrade & Extension of the Nomlacu Water Treatment Plant (Civil)
- Upgrade & Extension of the Nomlacu Water Treatment Plant (Mechanical & Electrical)
- Raw Water Pump Station & Rising Main
- Ludeke Dam & Ancillary Works
- Bulk Treated Water Supply System (Phase One)

The proposed construction of the treated bulk water supply system will initially impact on wards 1, 2, 4, 5, 7, 13, 17, 18, 19, 20, 21 & 22 within the Mbizana Local Municipal Area. Wards 3, 6, 8, 9, 10, 11, 12, 14, 15, 16, 23, 24 & 25 will be implemented within phase two and three.

Geldart, Mokoatsi and Associates have been appointed as an independent institutional and social development consultant for the abovementioned project appointed by MBB consulting Engineers and Camdekon Engineers respectively. The ISD terms of reference includes the public participation process as required by the Department of Economic Development and Environment Affairs, "Exemption to undertake a Basic Assessment - Bulk Potable Water Supply line from Nomlacu Water Treatment Works, Mbizana Municipal Area".

2. Public Participation Activities

2.1 Public Meetings

The relevant ISD input with regards the Public Participation Process as required within Government Notice No R385 (22nd April 2006), which deals with the National Environmental Management Act No 107 of 1998, chapter 6, which deals with the public participation process has been adhered to. (Note: A copy of the notice is available on request).

Public participation of the Greater Mbizana Regional Bulk Water Supply Project commenced with an introductory meeting held at the Mbizana Municipality on the 28th August 2008. Since then structures have been implemented that further strengthen the public participation process. These structures include the formation of a project steering committee and sub-committees with community liaison officers appointed from within the local communities.

A Feasibility Phase Project Steering Committee was established and constituted in September 2008.This Feasibility Phase Project Steering Committee was amended on the 29th August 2009 to include all twenty five wards. The Steering Committee is now known as the "Greater Mbizana Bulk Water Supply Scheme Steering Committee" and meets bi-monthly (once in two months).
There are 3 sub steering committees and the constitution of the 4th is imminent. The sub-steering committees are represented on the project steering committee and meet monthly to discuss all project related issues.

A comprehensive public participation programme for the **greater** Mbizana Regional Bulk Water Supply Project commenced in November 2008 and has continued for the various phases of the project to the present date. As part of the Public Participation process, community meetings that comprehensively cover the Treated Bulk Water Pipelines, were held as follows:

11th December 2008	-	Ward 4 (Kusiwisa pipeline route & reservoir site)
16th January 2009	-	Ward 7 (Kusiwisa pipeline route)
20th July 2010	-	Ward 4 (Kusiwisa pipeline route)
14th July 2010	-	Ward 7 (KuSiwisa pipeline route)
2nd February 2011	-	Ward 1 (KwaNikwe pipeline route)
15th February 2011	-	Ward 13 (KwaNikwe pipeline route).
16th February 2011	-	Ward 17 (KwaNikwe pipeline route and reservoir site).
17th February 2011	-	Wards 6 and 7 (Kusiwisa pipeline route).

The de-facto interim landowner for the tribal land is the Department of Rural Development and Land Reform (DRDLR). An independent Public Participation Process is currently being conducted by Mr. Morai of the Department of Rural Development and Land Reform (DRDLR) as part of this departments requirements as the interim landowners.
G,M&A staff are in attendance as observers of this process with the view of incorporating the outcomes of the process into the Public Participation process being conducted for the project.
(*note*:. A request has been submitted to Mr Morai for copies of the minutes of the meetings. These will be incorporated into the final Public Participation report).

2.2 Advertisements

Due to the rural nature of the area, it was decided that the placement of advertisements in the newspapers would not reach the rural communities, therefore, more direct approach was adopted. Public meetings were organised through the Ward Councillors and the Project Steering Committee members so that the community members could be addressed directly. They were given the opportunity to ask questions, lodge complaints and voice their concerns at these meetings.

Further to this, many notices were placed at the Mbizana Local Municipal offices, public places, schools, etc.
The content of the notice (dated 31st March 2010), was written on an Umgeni Water letterhead (in both English & Xhosa), and is indicated below:

GREATER MBIZANA RBWSS
CONTRACT NO. 2010/077 FOR RAW WATER SUPPLY SYSTEM

AFFECTED AND INTERESTED PARTIES

TO WHOM IT MAY CONCERN

This letter serves to inform all Affected and Interested Parties that in Terms of Regulation 10(2) of the Environment and Impact Assessment Regulations to inform ALL parties concerned that the Application for Environmental Authorization for the Construction of the Ludeke Dam (Application Reference Number: 15/2/1/1/NEMA/10/08-060) has been approved.

Your attention is drawn to Chapter 7 of the Regulation which regulates appeal procedures;

Should you wish to appeal any aspect of the approval decision, you must, *inter alia*, lodge a notice of appeal with the MEC, within 10 days of the date of this letter, by means of one of the following methods:

By facsimile - 040 609 4700

By Post - The Chief-Director Environmental Affairs
Department of Economic Development and Environmental Affairs
Private Bag X0054
Bhisho
5605

By Hand - Indwe House
Bhisho

3. Landowner Consultation / Consent

The Public Participation meetings and relevant issues are summarized as follows:

11th December 2008 - Community meeting held with Ward 4 (Kusiwisa pipeline route & reservoir site)

16th January 2009 - Community meeting held with Ward 7 (Kusiwisa pipeline route)

20th July 2010 - Community meeting held with Ward 4 (Kusiwisa pipeline route)

14th July 2010 - Community meeting held with Ward 7 (KuSiwisa pipeline route)

September 2010 - The Kusiwisa pipeline route was walked with the technical team, councilor representative and members of the ISD team.

19th November 2010 - Community meeting held with members from Ward 17 concerning properties that could be affected by the pipeline and the process that would be followed.

23rd November 2010 - A site inspection was conducted with Chief Mavuma Hlamandana of Isikelo Tribal Authority. Four sites were visited and discussed. The Chief recommended site No4.

24th November 2010 - The project was introduced to the Amanikhwe Tribal Authority with the assistance of Councillor Maquthu of Ward 17.

2nd December 2010 - Isikelo Tribal Authority letter of consent was obtained for the Kusiwisa and the KwaNikwe pipeline routes and reservoir sites.

10th December 2010 - The KwaNikwe pipieline route was walked with the consulting engineers, the surveyor and Councilllor Maquthu of Ward 17.

2nd February 2011 - Community meeting held with Ward 1 (KwaNikwe pipeline route)

15th February 2011 - Community Meeting: Ward 13 (KwaNikwe pipeline route).

16th February 2011 - Community Meeting: Ward 17 (KwaNikwe pipeline route and reservoir site).

17th February 2011 - Community meetings in Wards 6 and 7 (Kusiwisa pipeline route).

22nd February 2011 - The issue pertaining to the allocation of land to a community member that clashed with the Ludeke reservoir was resolved at a meeting that was held with the affected community members, leadership (Tribal & Local Municipality) and other relevant role players. A letter of consent was obtained.

24 February 2011 - Meeting with the traditional leadership & project stakeholders regarding the issue of a land claim.

04 March 2011 - Community meeting in Ward 7 (Nomlacu to KwaNikwe pipeline route)

Relevant community issues pertaining to the Greater Mbizana Bulk Water Supply Scheme are as follows:

- Graves
- Arable land use and crop loss
- Access to their properties
- Loss of grazing for livestock
- Loss of woodlots

The above issues were discussed in depth within the structures that have been formed and resolutions were agreed on the best way forward. These resolutions are summarized as follows:

Graves
Agreement was reached that although graves are a sensitive issue, they cannot dictate a negative outcome for the successful implementation of this project. All role-players (including the Traditional Authority) agreed to assist in successfully resolving any issues pertaining to problematic grave sites. The results of this process are clearly seen in the successful relocation of two graves within the dam basin and are discussed further in detail within this report under item No 7.

Arable land use and crop loss
Temporary crop loss due to construction methods will be fairly compensated for those seasons that the land user cannot plant his or her fields. Yield averages will be obtained from the Department of Agriculture for the region and the current maize price as indicated and published in the "Farmers Weekly" will be used to determine Rand value to be compensated per hectare.

Arable land that will be permanently lost due to the construction of the dam and any permanent infrastructure will be referred to Chief Hlamandana for reallocation in accordance with the methodology followed by the Traditional Authority when dealing with such matters. This was agreed in a special meeting with Chief Hlamandana.

Access to their properties
This item was easily resolved as the contractor undertook to provide an alternative access route to all community members when working in close proximity to their properties. If this should prove challenging, then all resources required would be utilized to expedite that particular section of construction.

Loss of grazing for livestock
Chief Hlamandana agreed that there would be no compensation for any livestock grazing land. This agreement is entrenched within the "letter of Support" signed by the Traditional Authority. It must be noted that if the Department of Rural Development and Land Reform (DRDLR) decide that compensation

must be paid, then the responsibility of implementation and funding will rest solely with the Department of Rural Development and Land Reform (DRDLR).

Loss of woodlots

The issue pertaining to loss of woodlots (dam basin area only at this stage) is currently being attended to with assistance from the Environmental consultant, Mr. Jake Alletson. In terms of the Conservation of Agricultural Resources Act, wattle is classified as a Category 2 invader and so it may only be legally held within a demarcated area. This means that the Ludeke Community may be "compensated" for their trees by obtaining legal status for trees at a designated site. This possibility is being investigated and the applicable application forms will be obtained from the department. It is within this context that this issue will be resolved.

Landowner Consent

Written consent forms have been obtained from the following stakeholders who are directly affected by the construction of the bulk treated water pipeline and reservoirs.

O.R. Tambo District Municipality		Letter of support for the project
Mbizana Municipality	Kyanda Maqutu	Letter of support for the project
Mavuma Hlamandana	300622 5109 085	Letter of support for the project
Mbizana Municipality	Kyanda Maqutu	Amanikwe Township (sports field)
Mavuma Hlamandana	300622 5109 085	Ward 7 Reservoir site & pipeline route
Lucky Mgilane	790616 6037 086	Ward 4(Ludeke)
Nosisa Gano	560904 0233 085	Ward 4 (Ludeke)
Doreen Pato	480610 0857 081	Ward 4 (Ludeke)
Lusanda Sneke	850504 5656 089	Ward 4 (Ludeke)
Malixole Majantshi	910618 6319 089	Amanikwe Township
Maphela Thembeni Sada	501002 0574 087	Amanikwe Township
Moses Theminkosi Shonga	631011 6072 080	Amanikwe Township
Nozuko Nyemeni	730318 0838 089	Amanikwe Township
Kumkani Madikizela	490325 5600 083	Amanikwe Township
Ellias Kholisile Sanawn	560215 5708 082	Amanikwe Township
Lucky Cenga	860920 5747 082	Amanikwe Township
Mantuli Mathumbu	600210 1081 081	Amanikwe Township
Mambongwe Mlindazwe	360101 4235 081	Amanikwe Township
Madlala Saziso	680423 5773 081	Nomlacu
Selinah Nomakhorinte Zulu	421007 0434 080	Nomlacu
Mphako Noziphiwo Majakwini	350223 0085 088	Nomlacu
Nobathembu Nkosiyane	740522 0717 080	Nomlacu
Khanyisa Mmbo	730303 3141 087	Nomlacu
Jojiya Ntombintombi Beauty	550312 0378 086	Nomlacu
Sipho Mphako	840607 6309 088	Nomlacu
Mehlo Viola Gelani	480131 0145 088	Nomlacu
Mehlo Viola Gelani	480131 0145 088	Nomlacu (signed on behalf of neighbour)
S.G Mfanekiso	580103 5904 081	Nomlacu
Elliot Sikhumbuso Mavana	450720 5494 081	Ward 13

4. Comments and Responses

No opposition to the project has been recorded.

Almost all social impacts arising from the project will be positive. They include the prospect of employment during the construction phase (including that of the subsequent water reticulation system), the convenience and health related issues of piped potable water, an upturn in the economy of the region.

The proposed dam will not result in the displacement of any people or in the loss of any public facilities or infrastructure.

The additional water resource available to the municipality will be of critical importance as the current raw water supply is inadequate to even supply a fraction of the population.

A minimum amount of arable land and pasture area which are currently in use will be affected. Once the pipeline has been completed, most of the affected land can be utilised for normal agricultural use. However no permanent buildings may be erected within the expropriation area on the pipeline route.

Numerous graves have been identified along the pipeline route. Two grave sites have been identified as possibly being affected by the proposed pipeline route. GPS co-ordinates of the grave sites were taken and are as follows:

Nomlacu grave:	Y – 073 197 X – 341 3038
Kusiwisa grave site:	Y – 066 984 X – 341 2984
	Y – 066 990 X – 341 2952
	Y – 066 989 X – 341 2947

Details regarding these graves have not been finalized. However, meetings are still to be held with Camdekon Engineers and the affected parties, to discuss alternative solutions. We are confident that these graves sites will not prove difficult to deal with as we received the full support of the Local Councilors, Traditional Authority as well as the local communities when dealing with the previous graves.

a. District, Local and Traditional Authority Participation

A letter of support for the project was obtained from Chief Hlamananda of the Isikelo Tribal Authority in November 2008. Chief Hlamananda undertook to keep all the neighbouring sub-chiefs informed on all matters pertaining to the project.
Further letters of support were obtained from O.R.Tambo District Municipality and Mbizana Local Municipality.

b. Consultation with Local Stakeholders

Interaction and liaison with Mbizana Local Municipality, Councilors and the Isikelo Traditional Authority is well established and utilized by the ISD team on a regular basis.

All project related liaison activities with the community members are channeled via the sub-committees that have been established for this purpose. The appointed Community Liaison Officers deal with all construction related day to day issues.

5. Community Issues

It must be noted that letters of support have been obtained from O.R. Tambo District Municipality, Mbizana Municipality and Chief Hlamandana of the Isikelo Traditional Authority pledging their full support to the successful implementation of the Greater Mbizana Regional Water Supply Scheme. This support is certainly not in writing only, as time and again persons representing the Authorities have assisted in resolving many community issues pertaining to this project. The community have generally responded positively and been prepared to reach a compromise in order to reach a conclusive conclusion to issues.

5.1 Graves

The issues surrounding community graves are sensitive therefore all endeavors are made to avoid grave sites by utilizing alternative routes. If for any reason alternative plans cannot be made in order to avoid grave sites, then it is proposed to follow the methodology which was discussed (and agreed) in detail with the Mbizana Municipality, Local Councilors and the Traditional Authority.

Two graves sites have been successfully dealt with within the Ludeke dam basin area and on the raw water rising main pipeline. We therefore envisage following the same procedures when dealing with grave sites that cannot be avoided on the treated water main pipeline route.

The procedures that were successfully implemented are as follows:

a. An initial meeting was convened with Chief Hlamandana of the Isikelo Traditional Authority, local Induna, Mbizana municipality representative and the ward Councilor. The graves that were identified were discussed, the methodology of dealing with the graves was agreed and permission to meet with the families concerned was obtained.

b. Meetings were then held with the individual families concerned, in attendance with the ward Councilor and Induna. An amicable decision is reached and an agreement document is drafted and signed by the family head. The decision for the two graves within the dam basin was to have then relocated to a suitable site.

c. Quotations are then obtained for the re-burial process. This is facilitated by our facilitator. The process and quotations are then submitted for approval to Umgeni Water. On approval the service providers are paid directly by Umgeni Water and no remuneration in the form of cash is received by the family.

d. Our facilitator documents the process, inspects the re-burial procedures (digging of the grave, etc.) and attends the service.

e. A final report is submitted to Umgeni Water.

(Note: Minutes of the meetings conducted are available on request.)

5.2 Heritage Sites

Except for graves the public participation process and site visits have not been able to identify any heritage sites that have any significant value. The proposed method (above) for the relocation of graves will be adopted when the relocation of the graves is deemed necessary.

6. Conclusion

The public participation process adopted to date has been adequate in identifying the issues of the I&APs as well as the relevant stakeholders and authorities. Appropriate mitigation measures have been adopted to deal with the issues raised in a mutually beneficial manner.

The public participation process has not yet reached its conclusion. Outstanding issues that are currently being attended to are listed as follows:

a. The public participation process being conducted by Mr Morai (DRDLR).
b. Two outstanding consent forms are currently being obtained

It must be further noted that the public participation process will be an ongoing process before and during the construction phase of the project and we envisage that it will continue under the ISD umbrella until the conclusion of the project.

7. Recommendations

It is recommended that the client honour all issues raised by the interested and affected parties according to the agreed way forward.

The project team will need to integrate the outcomes of the DRDLR public participation process with our process and together with all the role-players and stake-holders and formulate an amicable way forward on the land use issues.

It is recommended that the project team continue to follow the methodology developed within the dam basin with respect to relocation of grave sites along the pipeline project that may need to be relocated.

Document prepared by:

Tom Geldart
Geldart, Mokoatsi & Ass
Mobile No.: 082 920 9134
Tele No.: 033-3428789
Fax No.: 086-5855670
Email: Geldart@iafrica.com

APPENDIX E

See attached Camdekon Engineers environmental considerations and proposed method statement.

CAMDEKON
ENGINEERS
1987/025978/23
EAST LONDON
P.O. Box 11015
Southernwood
5213
Tel: (043) 722 2738 / 743 7660 / 4765
Fax: (043) 743 7698
e-mail: el@camdekon.co.za

Ref: 080114

HFC/nb

09 March 2011

UMGENI WATER
310 Burger Street
PIETERMARITZBURG
3201

Tel: (033) 341 1237

Att: Ms Asha Ramjatan (asha.ramjatan@umgeni.co.za)

Dear Madam,

GREATER MBIZANA REGIONAL BULK WATER SUPPLY SCHEME
BULK TREATED WATER DISTRIBUTION SYSTEM – PHASE 1

ENVIRONMENTAL CONSIDERATIONS: PROPOSED PIPELINES WITH REFERENCE TO GRAVES

We refer to our letter of 17 June 2010 and expand thereon in respect of known graves.

1. The Phase 1 of the Greater Mbizana Regional Bulk Water Supply Scheme is now in the pre-tender stage being undertaken by Consulting Engineers, Camdekon Engineers cc, who are being assisted in the specialist fields of environmental planning by Alletson Ecologicals and in community consultation by Geldard Mokoatsi & Associates. The purpose of the scheme infrastructure is to bring in potable water to standpipes within the communities of the Mbizana Local Municipality area, comprising some 250 000 people. The design standard allows for supply into a standpipe in the individual's erf. Initially, standpipes would be located within the streets, but in the long term these may be upgraded to individual household connections. The Phase 1 scheme will, inter alia, convey bulk water to the town of Bizana and beyond.

2. Nomlacu to Bizana

   The existing supply to Bizana town from the existing treatment works at Nomlacu comprises a 400 mm diameter pipeline which progressively reduces to 160 mm diameter pipeline feeding into the supply reservoirs above Bizana. In the initial planning of the upgrade of this infrastructure to cater for the future needs, it was envisaged to augment the supply by constructing a 355 mm diameter pipeline connecting to the existing pipe system approximately 4,6 km from the Nomlacu Water Treatment Works.

Detailed topographical surveys have shown that the topography is such that the use of an extension to the existing infrastructure would not give an adequate margin of safety in the hydraulics and that a separate and additional 400 mm diameter pipeline reducing to 355 mm diameter is required to meet the needs of the consumers.

The possible impact of the proposed 400 mm/355 mm diameter water supply gravity main from the Nomlacu Water Treatment Works to Bizana needs to be considered. This pipeline system from Nomlacu Water Treatment Works to Bizana is designed to supply a peak flow of 127 ℓ/sec to meet the demand in Bizana in 20 years time. The average daily flow will rise from 46 ℓ/sec to 109ℓ/sec in year 2039. The route of the proposed pipeline would follow the existing pipeline to Bizana comprising a gravity main to Bizana and a pump main from the dam to Nomlacu. The route is along the access road to Nomlacu Treatment Works to the existing district road and then along the district road up to the intersection of the R61. It then follows a local community street for a distance of 1.5 km at which point it follows a track to the watershed at distant 4.3 km from Nomlacu Water Treatment Works. The route then goes through a gumtree plantation firebreak for a distance of 1.5 km and then through grazing lands to the proposed reservoir above Bizana town. The 400 mm diameter pipeline changes to a 355 mm diameter pipeline at the watershed.

3. Bizana to Kwa Nikhwe

From the Bizana reservoir the pipeline route is along the Eastern limits of the planned areas for Bizana town, except for a distance of some 200 m where it goes along a built up street with gravel road. At this point, the R61 road is crossed (Crossing No. 1).

The route is along the edge of the rural villages to a point 1.7 km South of Bizana town where the route crosses the R61 road (Crossing No. 2) and then follows the R61 road for a distance of 3.2 km, before it crosses the R61 road again (Crossing No. 3), to the west. The reason for the double crossing of the R61 is that there are two water supply pipelines on the western side of the R61 road.

From here the route is along a rural village street for a short distance terminating at the proposed Kwa Nikhwe reservoir. There are some graves in erven bounding the rural village street.

Plans to upgrade the R61 are currently underway by Messrs Ndodana Consulting Engineers. A bypass is planned which will be in proximity of the pipeline route from Crossing No. 1 to No. 2. The pipeline will be routed outside the road reserve of the proposed bypass.

Permission has been obtained from the Department of Roads and Public Works, Eastern Cape to cross the R61.

The route passes through Wards 7, 1 and 17 and was approved by Ward Councilors Mr A.W. Hlangabezo (Ward 7), Mr S. Dyalvan (Ward 1) and Mr A. Maqutu (Ward 17) on an inspection held on 29th September 2009. Community approvals have been obtained.

4. Nomlacu to Kusiwisa

From Nomlacu a 9 km pumping main is routed in a north western direction. The route to the KuSiwisa is bounded by housing and the R61 road to the South and agricultural land to the North. Accordingly we routed the pipeline in the rural land, where the route is open and without complication, except for a small distance where the route is through the township. The route also avoids a small wetland, a few graves and natural bush. At the terminal end, the reservoir would be located adjacent to a trigonometrical beacon.

The route was approved on behalf of the local authority by Ward councilor, Mr A.W. Hlangabezo, representing both Ward 4 & 7 on 29th September 2009 and community approvals have been obtained.

5. Construction Method

The pipelines, would be buried in a trench 1.5 m deep and 750 mm wide. Concrete manholes housing air valves, line valves and scour valves would be located along the route and would be visible. The materials for construction will be obtained from the trench and topsoil would be removed 150 mm deep and replaced on the trench after completion. The road crossing the district road would comprise the new 400 mm diameter pipe located within a pipe sleeve.

The method of construction is to excavate the trench either by excavator or by local labour to the required invert level. The pipe is then placed therein together with a protective bedding, which is imported from commercial sources. The pipe is then tested for leakage and thereafter the trench is backfilled and compacted to at least the condition prevailing before excavation and the topsoil which was previously removed, is brought back to the top of the trench area. Along the route stormwater protection measures may be introduced to prevent any damage occurring to the trench after construction. Any excess material is removed and spoiled at designated sites. In this particular section, very little spoil material should be realized as there is little rock expected in the excavation. The working area for the above would be 13 to 15 m along the pipeline outside of the community street. In the community street it would vary from 8.6m to 13 m.

The pipeline route would in no instance be closer than 5 meters to visible existing graves which have been topographically recorded. The known grave sites are located in areas where excavation would be by hand labour. The compaction of backfill would either be by hand tamping on a light plate compactor.

The actual grave sites will be demarcated with tape or fence and no traffic will be allowed across the area. Construction material (pipes and bedding) will be brought in by labour from 20 meters away. There will be minimal impact on the existing graves.

In the event that a presently unidentified grave were to be intersected with the pipeline trench we would in the first instance re-route the pipeline to avoid the grave.

If space dictates that the grave must be moved then this will be done in terms of the Regulations.

6. The route determination was done considering hydraulics, economics, existing service infrastructure and routes, existing graves and established communities and townships.

   With specific reference to the graves we note that it is the practice to bury the dead on the erf and routing of pipelines for services must necessarily be in the street and the distance from the existing graves is accordingly dictated by field conditions.

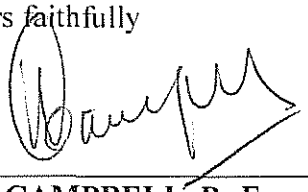
7. It is evident from the above that the pipeline would be located along a route which has already been impacted upon by the construction of pipelines, local routes and a rural community. The addition of the new pipeline will accordingly have little or no impact on the environment.

   The construction program is to commence in June 2011 and to complete the contract in 72 weeks.

8. The potential impacts of the project have been considered leading to an Exemption to undertake a Basic Assessment from the Department of Economic Development and Environmental Affairs dated 31 October 2010 (annexed).

   In our view there is no further authorization needed.

Yours faithfully

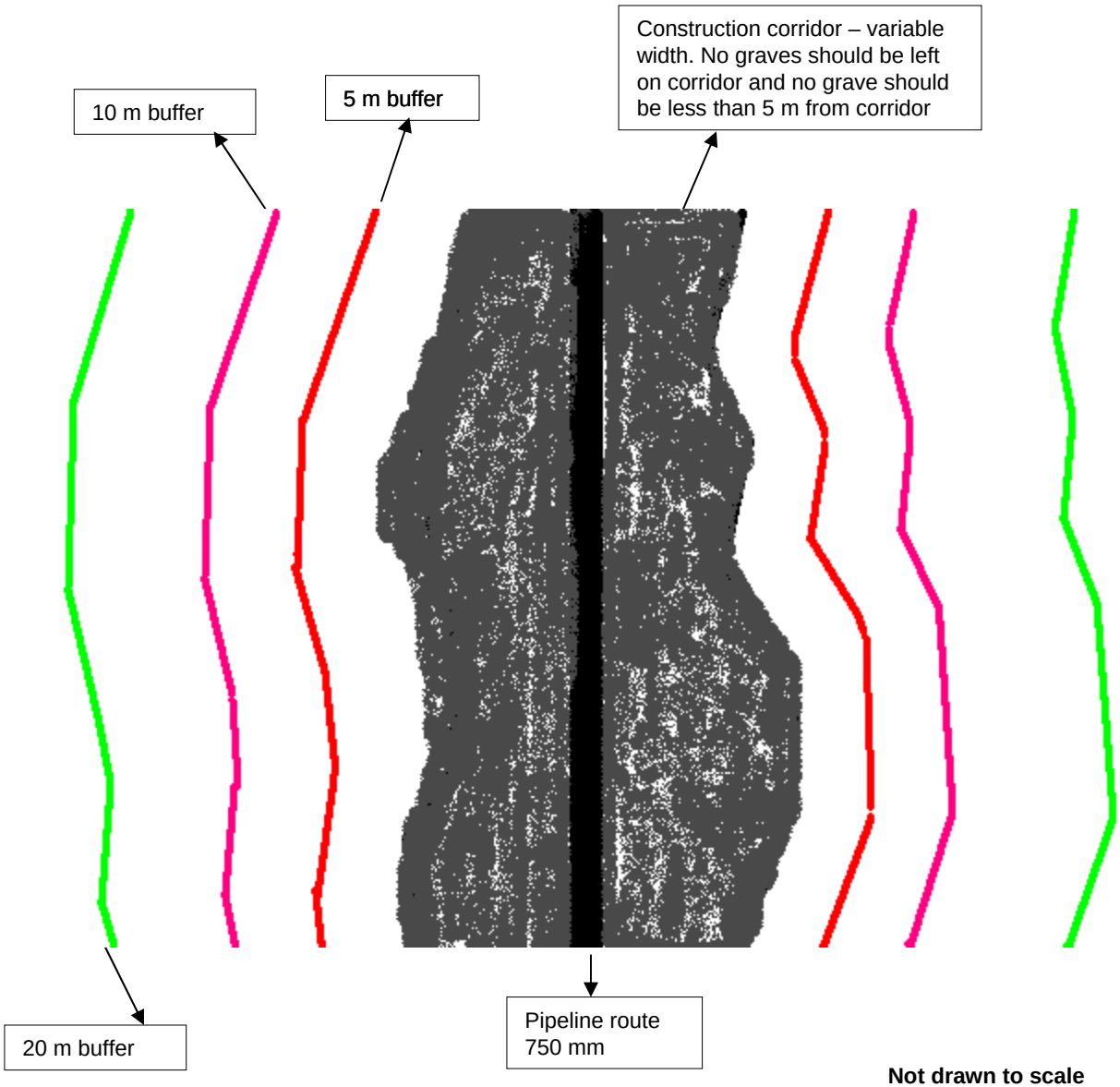


H.F. CAMPBELL, Pr Eng
For: Camdekon Engineers cc

Cc
1. **David Stephen** - david.stephen@umgeni.co.za
2. **Yovesh Danilala** - yovesh.danilala@umgeni.co.za
3. **Jake Alletson** - jallet@mweb.co.za
4. **Tom Geldart** - geldard@iafrica.com

APPENDIX F

See attached schematic representation of the suggested buffers relative to the proposed pipeline route and construction corridor.


Construction corridor – variable width. No graves should be left on corridor and no grave should be less than 5 m from corridor
5 m buffer
10 m buffer
20 m buffer
Pipeline route 750 mm
Not drawn to scale