

Cultural Heritage Impact Assessment:

Phase 1 Investigation for the Proposed Development of a New Landfill Site (Class B) and Associated Infrastructure on the Remaining Extent of Portion 1 of the Farm Melk Spruit 12, Walter Sisulu Local Municipality, Joe Gqabi District Municipality, Eastern Cape Province



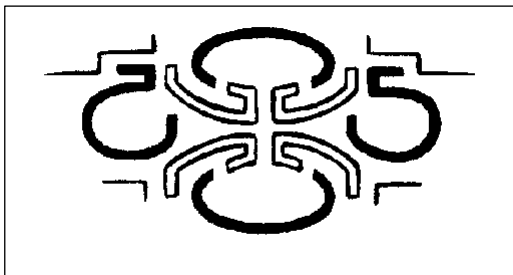
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Executive Summary

This report contains a comprehensive heritage impact assessment investigation in accordance with the provisions of Sections 38(1) and 38(3) of the *National Heritage Resources Act* (Act No. 25 of 1999) (NHRA) and focuses on the survey results from a cultural heritage survey as requested by Rambuda Consultants (Pty) Ltd. Rambuda Consultants (Pty) Ltd was contracted by Walter Sisulu Local Municipality as the independent environmental consultant to undertake the Scoping and EIA Process for the proposed development of a new Landfill Site (Class B) and associated infrastructure on the Remaining Extent of Portion 1 of the Farm Melk Spruit 12, Walter Sisulu Local Municipality, Joe Gqabi District Municipality, Eastern Cape Province. The proposed landfill site is situated approximately 4 km west of Maletswai (Aliwal North) and located adjacent to the R58. In terms of the EIA Regulations of December 2014 (as amended) published in terms of the NEMA (Act No. 107 of 1998) as amended, the construction and operation of the landfill site is a listed activity requiring Environmental Authorisation (EA) and a Waste Management Licence. The application for EA and WUL is required and will be included in the Environmental Impact Assessment (EIA) process based on the capacity of the proposed landfill site, which triggers Activity 27 and 28 of Listing Notice 1 (GNR 327) and Activity B8 & 10 and C1 of NEMWA Listed activities.

One historical dam retaining wall (Site 1) and one cemetery (Site 2) were recorded during the survey. The dam retaining wall probably dates to the early 20th century, which is connected with a system of furrows (canals). The dam is currently still in use and retains water for livestock in the region south of the Orange River. Site 2 is an active cemetery.

Three alternative sites (1-3) are proposed for the planned landfill site.

Site No	Site Type	Field Rating of Significance	Direct Impacts	Significance of Impact before Mitigation	Significance of Impact after Mitigation	Proposed Mitigation
1	Historical Structure	Generally protected C: Low significance	None	80	5	Maintain 30 m buffer zone during construction
2	Cemetery	Generally protected A: High significance	None	80	5	- Maintain 50 m buffer zone during construction - Should be fenced off

In this regard, please note the following proposed mitigation measures:

- Take note of the position of the existing heritage sites (Sites 1 & 2);
- Site 1 (historical dam wall) is in close proximity to the proposed Alternative Site 1;
- A buffer zone of 30 metres should be maintained from Site 1 (historical dam);
- Care should be taken to prevent any indirect impacts on the cemetery (Site 2) and historical structure (Site 1).

Due to the proximity of Site 1 (historical dam wall) to the proposed Alternative Site 1 for the landfill site, the preferred options from a heritage perspective are Alternative Site 2 and Alternative Site 3.

No archaeological (both Stone Age and Iron Age) artefacts, assemblages, features, structures or settlements were recorded during the survey of the project footprint. It is well known that Late Iron Age stone-walled settlements do not usually occur in open exposed low-lying grasslands and floodplains.

It is therefore recommended, from a cultural heritage perspective, that the proposed development may proceed, taking into account the proposed mitigation measures.

Also, please note:

Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (*cf.* NHRA (Act No. 25 of 1999), Section 36 (6)).

Definitions and abbreviations

Midden:	Refuse that accumulates in a concentrated heap.
Stone Age:	An archaeological term used to define a period of stone tool use and manufacture
Iron Age:	An archaeological term used to define a period associated with domesticated livestock and grains, metal working and ceramic manufacture
LIA:	Late Iron Age sites are usually demarcated by stone-walled enclosures
NHRA:	National Heritage Resources Act (Act No. 25 of 1999)
SAHRA:	South African Heritage Resources Agency
SAHRIS:	South African Heritage Resources Information System
PHRA-G:	Provincial Heritage Resources Authority - Gauteng
GDARD:	Gauteng Department of Agriculture and Rural Development
HIA:	Heritage Impact Assessment
BAR:	Basic Assessment Report
EMPr:	Environmental Management Programme report
DMR:	Department of Mineral Resources
DEDECT:	Department of Economic Development, Environment, Conservation and Tourism
I&APs:	Interested and Affected Parties

I, Francois Coetzee, hereby confirm my independence as a cultural heritage specialist and declare that I do not have any interest, be it business, financial, personal or other, in any proposed activity, application or appeal in respect of the listed environmental processes, other than fair remuneration for work performed on this project.



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1. Introduction and Terms of Reference

Rambuda Consultants (Pty) Ltd was contracted by Walter Sisulu Local Municipality as the independent environmental consultant to undertake the Scoping and EIA Process for the proposed development of a new Landfill Site (Class B) and associated infrastructure on the Remaining Extent of Portion 1 of the Farm Melk Spruit 12, Walter Sisulu Local Municipality, Joe Gqabi District Municipality, Eastern Cape Province. The proposed landfill site is situated approximately 4 km west of Maletswai (Aliwal North) and located adjacent to the R58. In terms of the EIA Regulations of December 2014 (as amended) published in terms of the NEMA (Act No. 107 of 1998) as amended, the construction and operation of the landfill site is a listed activity requiring Environmental Authorisation (EA) and a Waste Management Licence. The application for EA and WUL is required and will be included in the Environmental Impact Assessment (EIA) process based on the capacity of the proposed landfill site, which triggers Activity 27 and 28 of Listing Notice 2 (GNR 327) and Activity B8 & 10 and C1 of NEMWA Listed activities.

2. Objectives

The general objective of the cultural heritage survey is to record and document cultural heritage remains consisting of both tangible and intangible archaeological and historical artefacts, structures (including graves), settlements and oral traditions of cultural significance.

As such the terms of reference of this survey are as follows:

- Identify and provide a detailed description of all artefacts, assemblages, settlements and structures of an archaeological or historical nature (cultural heritage sites) located on the study area,
- Estimate the level of significance/importance of these remains in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value,
- Assess any impact on the archaeological and historical remains within the area emanating from the development activities, and
- Propose recommendations to mitigate heritage resources where complete or partial conservation may not be possible and thereby limit or prevent any further impact.

3. Description of Physical Environment of Study Area

The proposed landfill site is situated approximately 4 km west of Maletswai (Aliwal North) and located adjacent to the R58.

Farm Name(s) and Portions	Melk Spruit 12 • Remaining Extent of Portion 1
Size of Survey Areas	681.76 hectares
Magisterial District	Walter Sisulu Local Municipality Joe Gqabi District Municipality
1:50 000 Map Sheet	3026DA
1:250 000 Map Sheet	3026
Central Coordinates of the Development	Alternative Site 1 26.664040°E 30.690130°S Alternative Site 2 26.671910°E 30.706440°S Alternative Site 3

	26.657820°E 30.707530°S
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Table 1: Physical Environment

The proposed landfill sites fall within the Nama-Karoo Biome, particularly the Upper Karoo Bioregion and more specifically the Eastern Upper Karoo (NKu4). This vegetation type occurs in the Northern Cape, Eastern Cape and Western Cape Provinces, situated between Carnarvon and Loxton in the west, De Aar, Petrusville and Venterstad in the north, Burgersdorp, Hofmeyr and Cradock in the east and the Great Escarpment and the Sneeuberge-Coetzeesberge mountain chain in the south (Mucina & Rutherford 2006).

The survey footprints are all characterised by some form of previous disturbance including agricultural activities, access roads and power lines. Extensive surface erosion is taking place within the surrounding area of the survey footprint.

Maletswai (Aliwal North), falls within a semi-arid, subtropical highland climate. It is characterized by hot, wet summers and short, dry, and distinctly cold winters with frequent overnight frosts. Summers are warm to hot, with average daily highs ranging from 26°C to 30°C. Winters are very dry and can be bitterly cold. Midday temperatures drop to an average of around 15°C to 16°C.

Current Zoning	Farming Cattle grazing (pastoralism) and agriculture
Economic activities	Farming
Soil and basic geology	The proposed Maletswai landfill site is underlain by geological formations typical of the Karoo Supergroup, with the regional stratigraphy consisting of intercalated arenaceous and argillaceous strata belonging to the Beaufort Group. According to the Council for Geoscience's geological mapping, the site is predominantly classified as Quaternary deposits consisting of unconsolidated alluvial sediments, sands, and calcrete horizons, overlying weathered sedimentary rocks. Lithological descriptors include a combination of sand, silt, and calcareous material, with Beaufort mudstones forming the deeper parent material.
Prior activities	Livestock farming and agriculture
Socio Economic Environment	The population of Walter Sisulu Local Municipality is approximately 91,600. It is to grow to approximately 103,503 in 2023. The largest share of the population is within the young working age (25-44 years) age category, with a total number of 32,800 or 35.8% of the total population. The age category with the second largest number of people is the babies and kids (0-14 years) age category, with a total share of 30.7%, followed by the teenagers and youth (15-24 years) age category with 13,400 people. The number of people without any schooling in Walter Sisulu Local Municipality accounts for 22.00% of the number of people without schooling in the district municipality, 1.40% of the province and 0.19% of the national. Walter Sisulu Local Municipality employs a total of 25,300 people. In 2020, there was a total number of 10,900 people unemployed in Walter Sisulu, which is an increase of 6,120 from 4,750 in 2010
Evaluation of Impact	An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits NHRA (Act No. 25 of 1999, Section 38(3d)): Positive

Table 2: Socio-economic environment

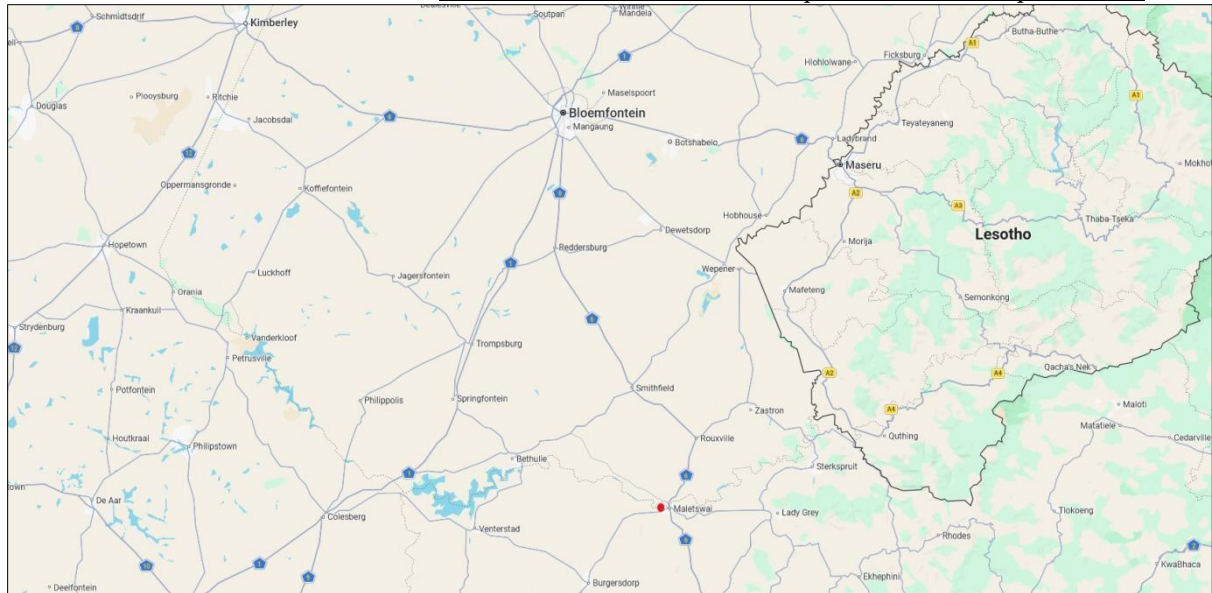


Figure 1: Regional context of the survey footprint located west of Maletswai (indicated by the red area)

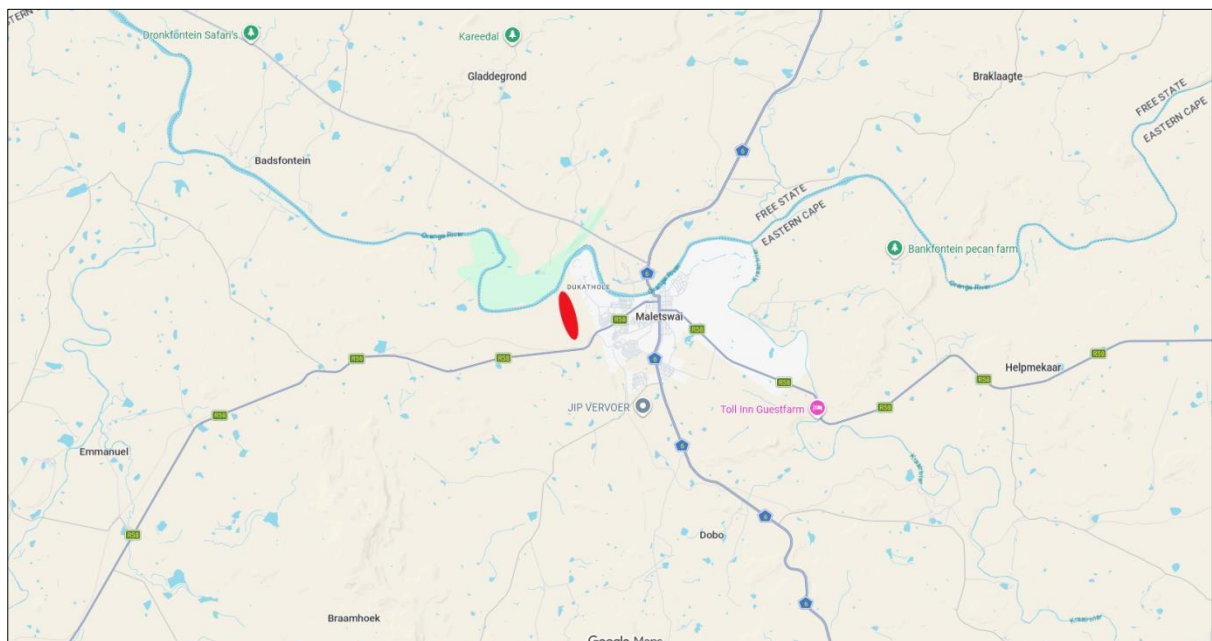


Figure 2: Local context of the survey footprint located west of Maletswai (indicated by the red area)

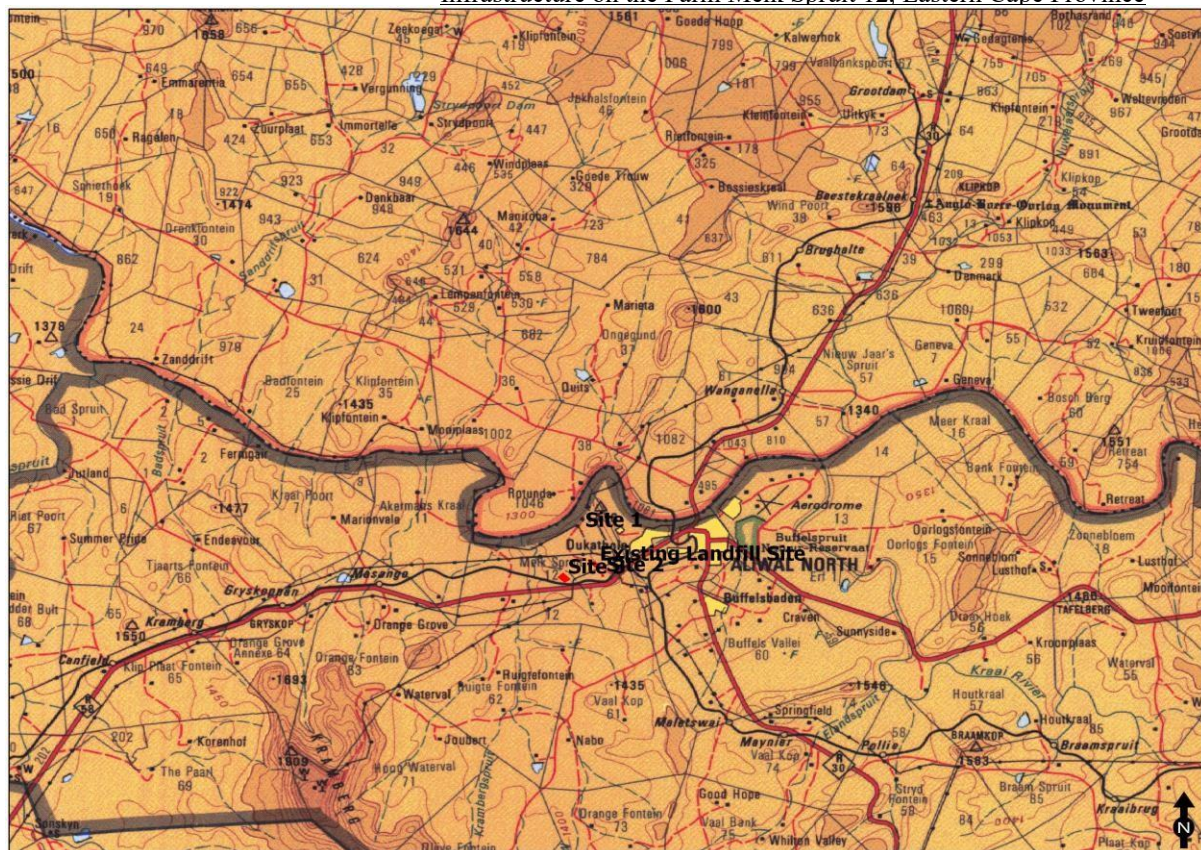


Figure 3: Local context of the survey footprint (1:250 000 Topographical Map 3026)

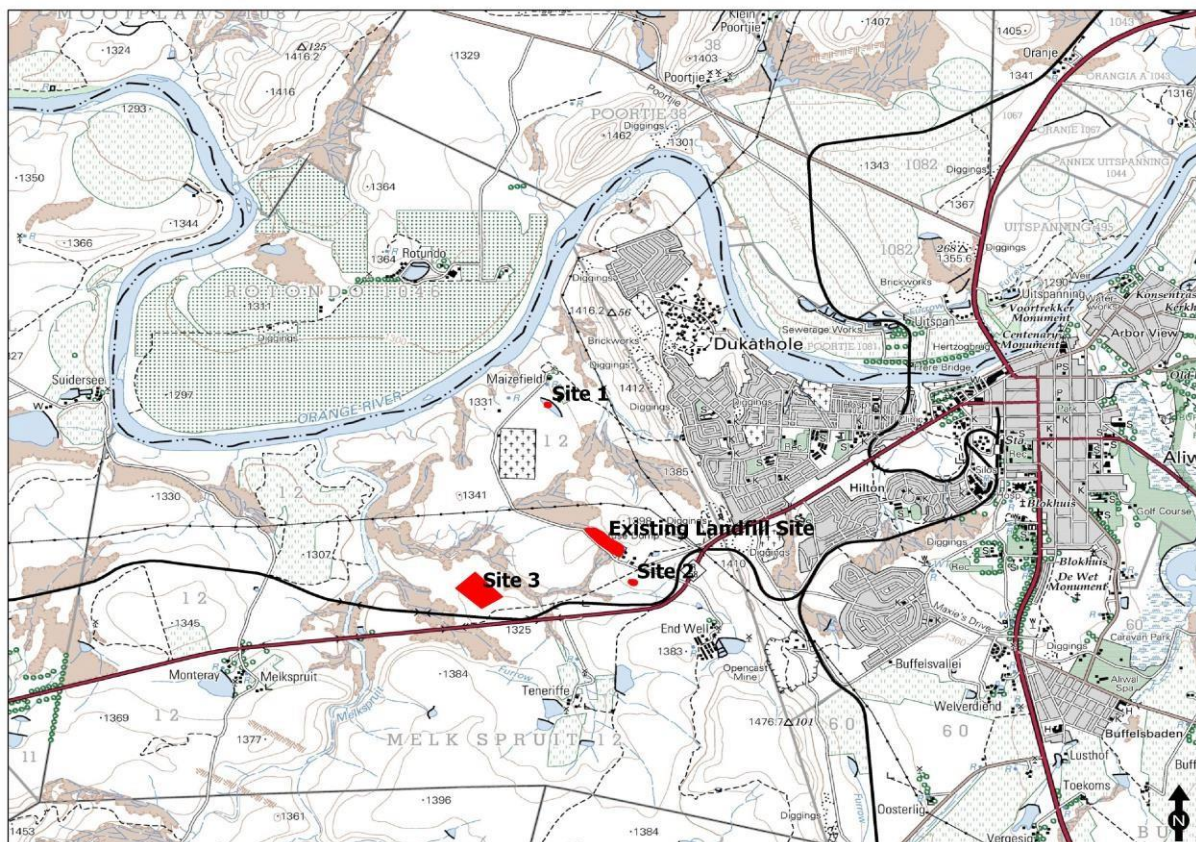


Figure 4: The survey footprints as indicated on the 1:50 000 topographic map 3026DA (2015)



Figure 5: General view of the survey footprint at Alternative Site 2



Figure 6: General view of the survey footprint at Alternative Site 2



Figure 7: General view of the survey footprint at Alternative Site 2



Figure 8: General view of the survey footprint at the existing landfill site



Figure 9: General view of the survey footprint at the existing landfill site



Figure 10: General view of the survey footprint at the existing landfill site



Figure 11: General view of the survey footprint at Alternative Site 1



Figure 12: General view of the survey footprint at Alternative Site 1 (existing dam)



Figure 13: General view of the survey footprint at Alternative Site 1



Figure 14: General view of the survey footprint at Alternative Site 1



Figure 15: General view of the survey footprint at Alternative Site 3

4. Proposed Project Description

The proposed development entails the development of a landfill site, with a total gross landfill airspace of approximately 460,881 m³, which includes a 15% allowance for daily and intermediate cover, final capping, and operational inefficiencies. The required landfill site is designed with a 20-year design horizon. The associated infrastructures will include the following, as shown in Figure 1 below:

- Landfill cells (4 x cells with approximately 115 220 m³ airspace)
- Leachate & Evaporation dams
- Leachate monitoring and collection system (Leachate collector pipes will consist of HDPE perforated pipe, minimum 110 mm diameter, laid to required slopes and all drainage pipes shall be installed on a 150 mm minimum layer of graded bedding material)

- Stormwater Management System (to manage the dirty water channels and cut off drain)
- Material Recovery and Sorting Facility
- Access roads
- Office buildings
- Electric Connection
- Workshop
- Weighbridge
- Security Perimeter Fence
- Access control/Security House

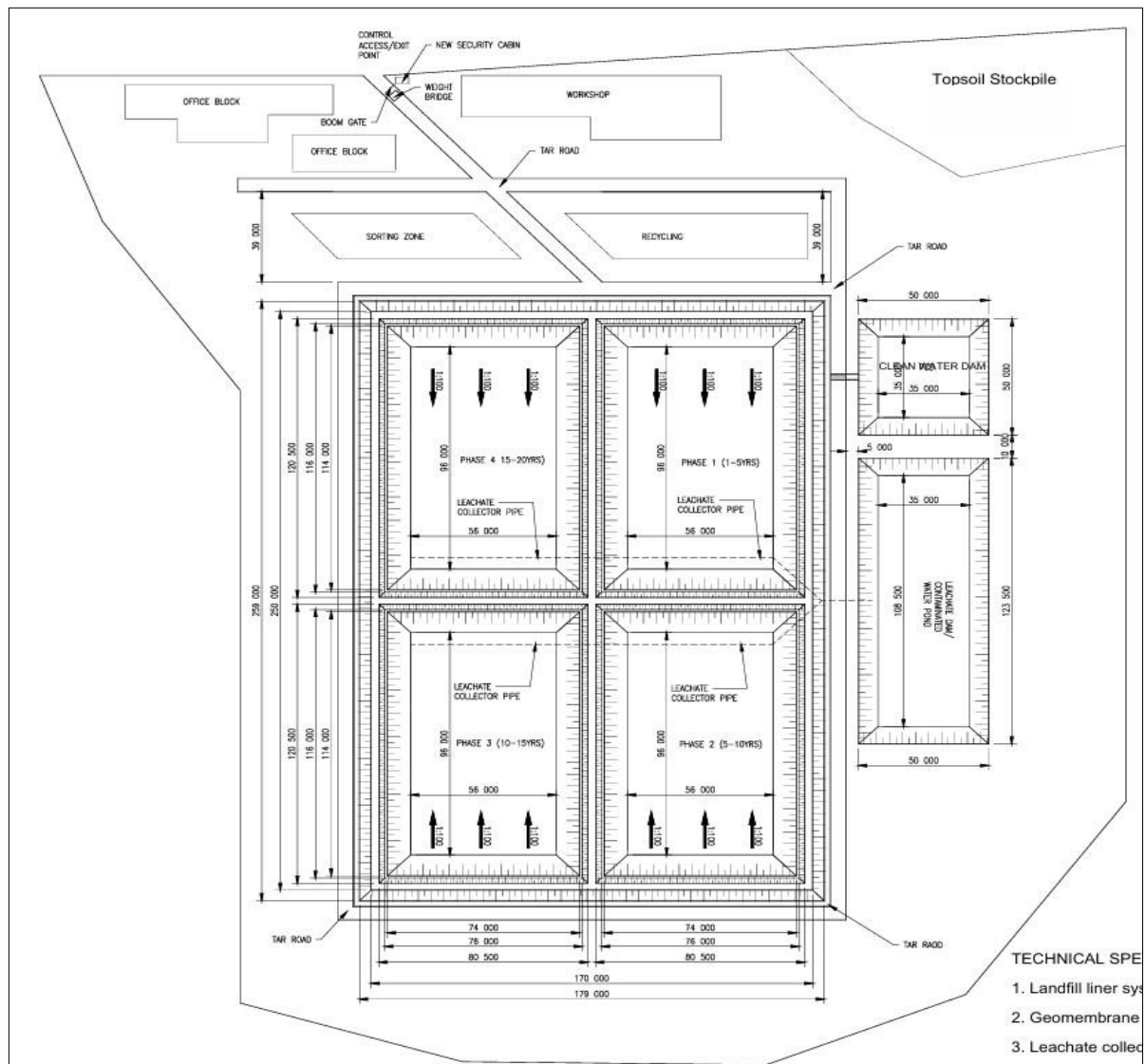


Figure 16: Proposed concept layout for the Maletswai landfill site.

5. Legal Framework

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT	REFERENCE APPLIED
The Constitution of the Republic of South Africa (Act No. 108 of 1996)	
The National Environmental Management Act (Act No. 107 of 1998)	Section 24(1) Section 28(1)
The National Water Act (Act No. 36 of 1998)	Section 21 c-i
Air Quality Act (Act No. 39 of 2004)	

National Forests Act, Act of 84 of 1998	-
The National Heritage Resources Act (Act No. 25 of 1999)	Section 38, 34, 35, 36
Conservation of Agricultural Resources Act (Act No. 85 of 1983)	
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	
The National Water Act (Act No. 36 of 1998);	
Mine Health and Safety Act (Act No. 29 of 1996) (MHSA)	
Biodiversity Act (Act 10 of 2004)	

Table 3: Legal framework

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per the detailed project description (and not as per the wording of the relevant Government Notice):
Government Notice (GN) No. 983 of the 04 th of December 2014 (as amended by GN No. 327 of the 07 th of April 2017).	27	The proposed development entails the clearance of approximately 6 hectares of indigenous vegetation for the development of a landfill site with associated infrastructures. The proposed site has not been disturbed in more than 10 years; thus, the vegetation complies with the indigenous vegetation definitions.
	28	The proposed development involved the development of a landfill site covering approximately six (6) hectares outside the urban areas. The proposed site is used for agricultural purposes, mostly for grazing activities; however, it was previously used for other agricultural activities such as maize farming.

Table 4: Listing Notices: 2014 Regulations as amended

INDICATE THE NO. & DATE OF THE RELEVANT NOTICE:	ACTIVITY NUMBERS (AS LISTED IN THE WASTE MANAGEMENT ACTIVITY LIST) :	DESCRIBE EACH LISTED ACTIVITY (and not as per the wording of the relevant Government Notice):
Government Notice No. 921 in Government Gazette No. 37083 of 29 November 2013, as amended	Category C (Activity 1)	The proposed landfill site will have a Material Recovery Area with a capacity to store approximately 800 m ³ of the diverted waste materials.
	Category B (Activity 8)	The proposed development entails the development of a landfill site with four (4) cells covering approximately four (4) hectares with a combined designed airspace of approximately 460 881 m ³ .
	Category B (activity 10)	The proposed development entails the construction of a Class B landfill site.

Table 5: Listed activities in terms of Waste Management License regulations of 2013 (as amended)

- Section 38 of the NHRA (Act No. 25 of 1999) stipulates that the following activities trigger a heritage survey:

Development criteria in terms of Section 38(1a-e) of the NHRA (Act No. 25 of 1999)	Yes/No
Construction of road, wall, powerline, pipeline, canal or other linear form of development or barrier exceeding 300m in length	No
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 m ² in extent	Yes
Development involving three or more existing erven or subdivisions	No
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 m ²	No
Any other development category, public open space, squares, parks, recreation grounds	No

Table 6: Activities that trigger Section 38 of the NHRA

- Field rating system as recommended by SAHRA:

Field Rating	Grade	Significance	Recommended Mitigation
National Significance	Grade I	High significance	Conservation by SAHRA, national site nomination, mention any relevant international ranking. No alteration whatsoever without permit from SAHRA.
Provincial Significance	Grade II	High significance	Conservation by provincial heritage authority, provincial site nomination. No alteration whatsoever without permit from provincial heritage authority.
Local Significance	Grade III-A	High significance	Conservation by local authority, no alteration whatsoever without permit from provincial heritage authority. Mitigation as part of development process not advised.
Local Significance	Grade III-B	High significance	Conservation by local authority, no external alteration without permit from provincial heritage authority. Could be mitigated and (part) retained as heritage register site.
Generally Protected A	Grade IV-A	High/medium significance	Conservation by local authority. Site should be mitigated before destruction. Destruction permit required from provincial heritage authority.
Generally Protected B	Grade IV-B	Medium significance	Conservation by local authority. Site should be recorded before destruction. Destruction permit required from provincial heritage authority.
Generally Protected C	Grade IV-C	Low significance	Conservation by local authority. Site has been sufficiently recorded in the Phase 1 HIA. It requires no further recording before destruction. Destruction permit required from provincial heritage authority.

Table 7: Field rating system to determine site significance

- Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and they are valuable, finite, non-renewable and irreplaceable.
- All archaeological remains, features, structures and artefacts older than 100 years and historic structures older than 60 years are protected by the relevant legislation, in this case the National Heritage Resources Act (NHRA) (Act No. 25 of 1999, Section 34 & 35). The Act makes an archaeological impact assessment as part of an EIA and EMPR mandatory (see Section 38). No archaeological artefact, assemblage or settlement (site) may be moved or destroyed without the necessary approval from the South African Heritage Resources Agency (SAHRA). Full cognisance is taken of this Act in making recommendations in this report.
- Cognisance will also be taken of the Mineral and Petroleum Resources Development Act (Act No 28 of 2002) and the National Environmental Management Act (Act No 107 of 1998) when making any recommendations.
- Human remains older than 60 years are protected by the NHRA, with reference to Section 36. Human remains that are less than 60 years old are protected by the Regulations Relating to the Management of Human Remains (GNR 363 of 22 May 2013) made in terms of the National Health Act No. 61 of 2003 as well as local Ordinances and regulations.
- With reference to the evaluation of sites, the certainty of prediction is definite, unless stated otherwise.
- The guidelines as provided by the NHRA (Act No. 25 of 1999) in Section 3, with special reference to subsection 3, and the Australian ICOMOS (International Council

on Monuments and Sites) Charter (also known as the Burra Charter) are used when determining the cultural significance or other special value of archaeological or historical sites.

- A copy of this report will be submitted on SAHRIS as stipulated by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999), Section 38 (especially subsection 4) and the relevant Provincial Heritage Resources Authority (PHRA).
- Note that the final decision for the approval of permits, or the removal or destruction of sites, structures and artefacts identified in this report, rests with the SAHRA (or relevant PHRA).

6. Study Approach/Methodology

Geographical information (KML shapefiles) on the proposed mining activities was supplied by the client. The most up-to-date Google Earth images and topographic maps were used to indicate the survey area. Topographic maps were sourced from the Surveyor General. Please note that all maps are orientated with north facing upwards (unless stated otherwise).

The strategy during this survey was to conduct a thorough investigation of the various alternative sites that form part of the application. The aim was therefore to conduct a detailed pedestrian (foot) and predictive survey of the survey footprint, augmented by existing knowledge and aerial information of the region. Existing infrastructure was used to gain access to the area followed by detailed pedestrian investigations.

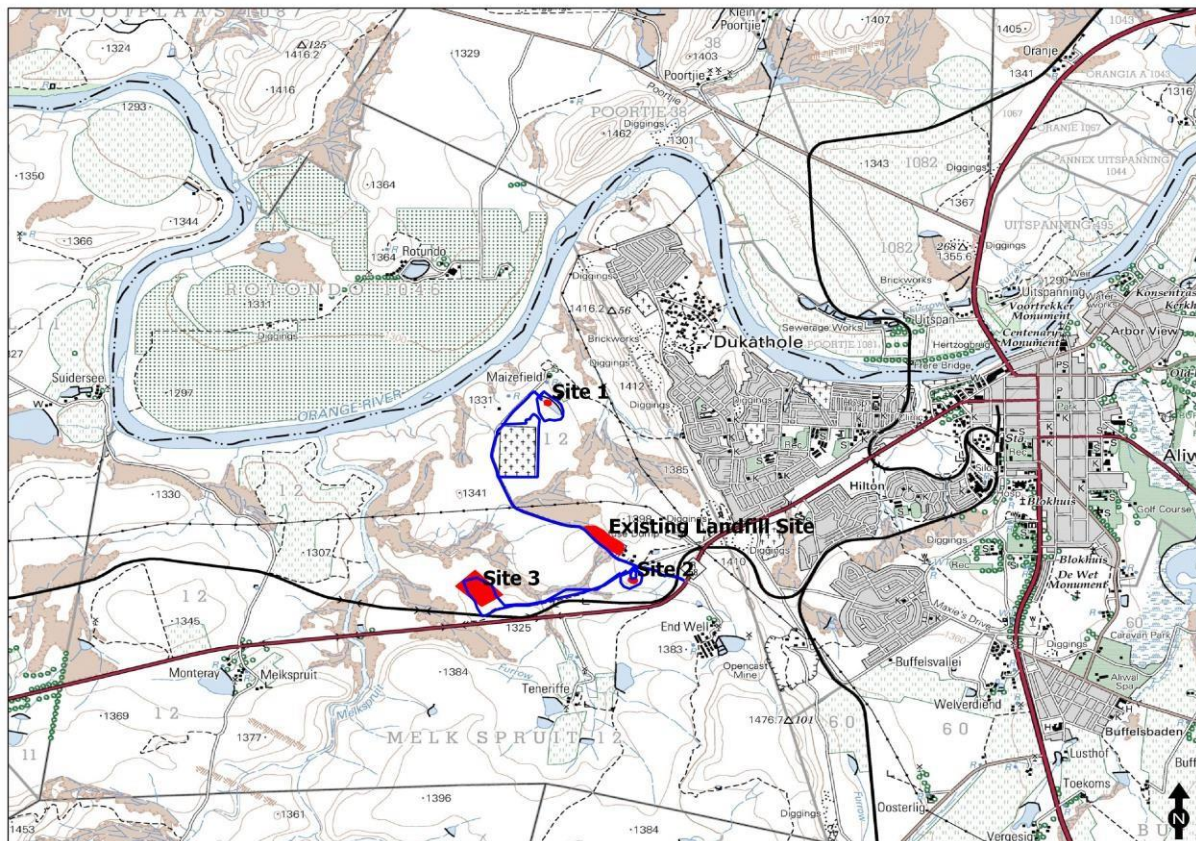


Figure 17: Recorded survey tracks on various sections of the survey footprints

6.1 Review of existing information/data

Additional information on the cultural heritage of the area was sourced from the following records:

- National Mapping Project by SAHRA (which lists heritage impact assessment reports submitted for South Africa);
- Environmental Potential Atlas (ENPAT);
- Online SAHRIS database;
- National Automated Archival Information retrieval System (NAAIRS);
- Maps and information documents supplied by the client; and
- Several heritage surveys have been conducted in the vicinity of the survey area (published and unpublished material on the area (Anderson 2013; Dreyer 2007a, 2007b; Fourie 2020, Henderson et al 2008; Rossouw 2017; Van Schalkwyk & Wahl 2011))

Although several heritage impact assessments have been completed in the general vicinity of the survey area, no heritage sites were recorded inside the current survey footprints. Note that a heritage survey was conducted for the current cemetery (Site 2) located near Alternative Site 1. No heritage remains were recorded (Dreyer 2007a). A survey was conducted on the Farm Junction 14 located east of Maletswai. A few Stone Age lithic surface scatters were recorded (Dreyer 2007b). A survey was conducted for a powerline running north of Maletswai towards the N6. A number of historical and Stone Age sites were recorded (Fourie 2020). A heritage survey of the farm Akermans Kraal 11 was completed for the proposed prospecting of diamonds. A number of Early, Middle and Later Stone Age sites as well as historical farming and Anglo-Boer War structures were recorded. Possible Khoekhoen kraals were also noted (Henderson et al 2008). An extensive survey for a 132kV powerline was conducted towards the south of the current survey footprint. The results of the survey concluded that there will be no impact on any heritage sites or the cemetery located in the region (Van Schalkwyk & Wahl 2011). Another survey was also conducted for the 132 kV powerline near the farm Melkspruit. A total of 10 heritage sites were recorded along the trajectory of the powerline. These sites include Stone Age and historical sites, of which a rock art shelter is the most significant (Anderson 2013). A further survey was also completed for the 132 kV powerline and although several historical structures and a graveyard were noted, they will not be impact on by the powerline (Rossouw 2017).

It should also be noted that the first full-scale archaeological study in the region was conducted by Garth Sampson in the late 1960s (Sampson 1967). This work was undertaken during the construction of the Gariep (then Hendrik Verwoerd) Dam between Bethulie and Norvalspont. The survey also included the area of the Vanderkloof Dam, further down the Orange River, near Petrusville. The results of this two-year survey yielded 942 Stone Age sites, most of which were open-air sites (Sampson 1972). These sites dated from the Early Stone Age through to historic times. Sixteen of the sites yielded sealed samples which were further investigated. The only other archaeological work in the vicinity is a brief discussion of Acheulian artefacts in the Orange River gravels at Aliwal North (Macfarlane 1945). Macfarlane was more interested in the occurrence and development of the river gravels. He observed Acheulian artefacts in these river gravels and tied these in with the development of the Orange and two streams leading into it near Aliwal North. Macfarlane identified what he called Pre-Stellenbosch, Stellenbosch and Fauresmith artefacts and suggested that the last phase of river aggradation in the area took place during the Fauresmith period. He also observed MSA artefacts in the surface soils, which is consistent with a later phase of occupation.

Note that several heritage sites have been recorded in the general vicinity of Maletswai, however none are located within the survey footprints (see Figure 17). However, the following provincial declared heritage sites were noted in the area (SAHRIS Database 2026) also see Figure 18):

- Anglo-Boer war blockhouse 2, Barkley Street, Maletswai (Site Id: 29481; Site ref: 9/2/006/0011);
- Anglo-Boer war blockhouse 1, Valk Street, Maletswai (Site Id: 29482; Site ref: 9/2/006/0012); and
- JW Sauer Bridge, Kraai River (Site Id: 29480; Site Ref: 9/2/006/0010).

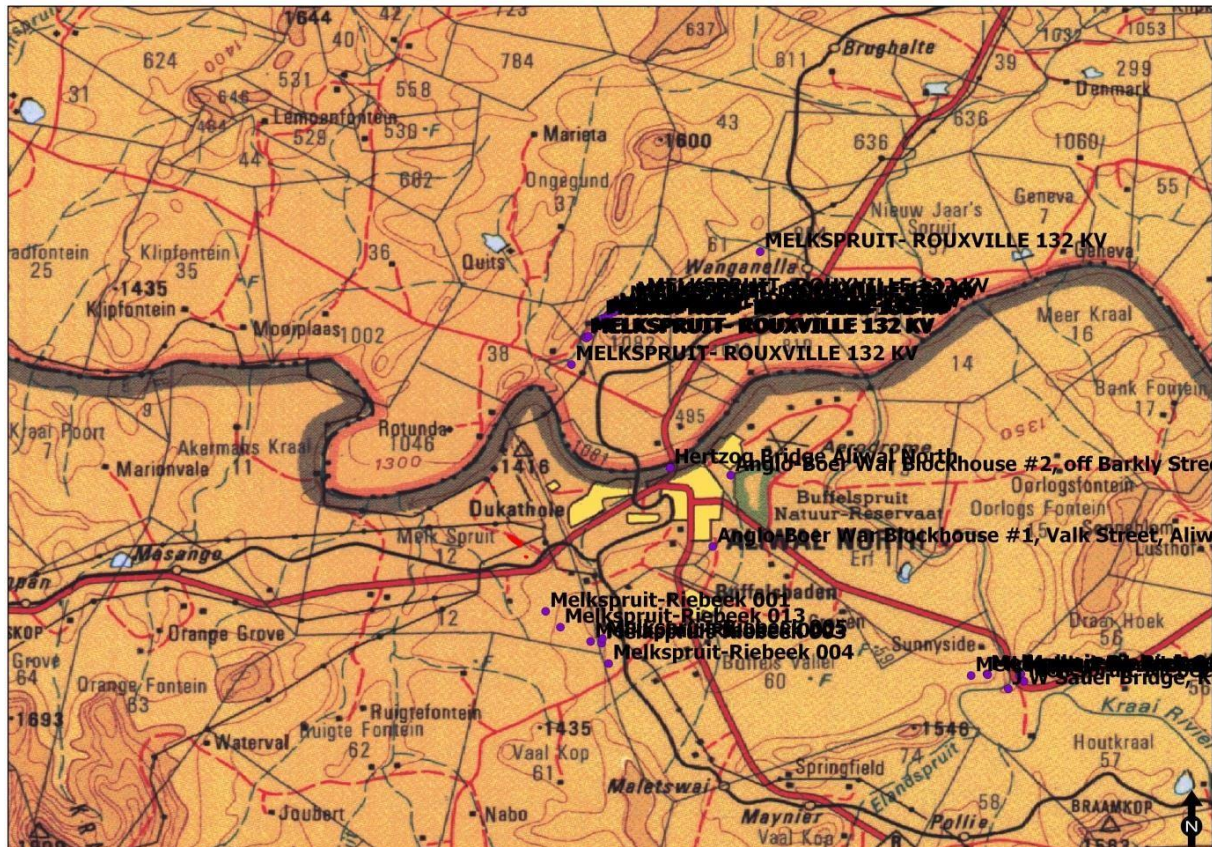


Figure 18: Recorded heritage sites near the survey footprint (SAHRIS as at May 2026)



Figure 19: Recorded declared provincial heritage sites near the survey footprint (SAHRIS as at April 2026)

According to the Surveyor General's database the Farm Melk Spruit 12 was originally surveyed in 1850 (see Addendum 3).

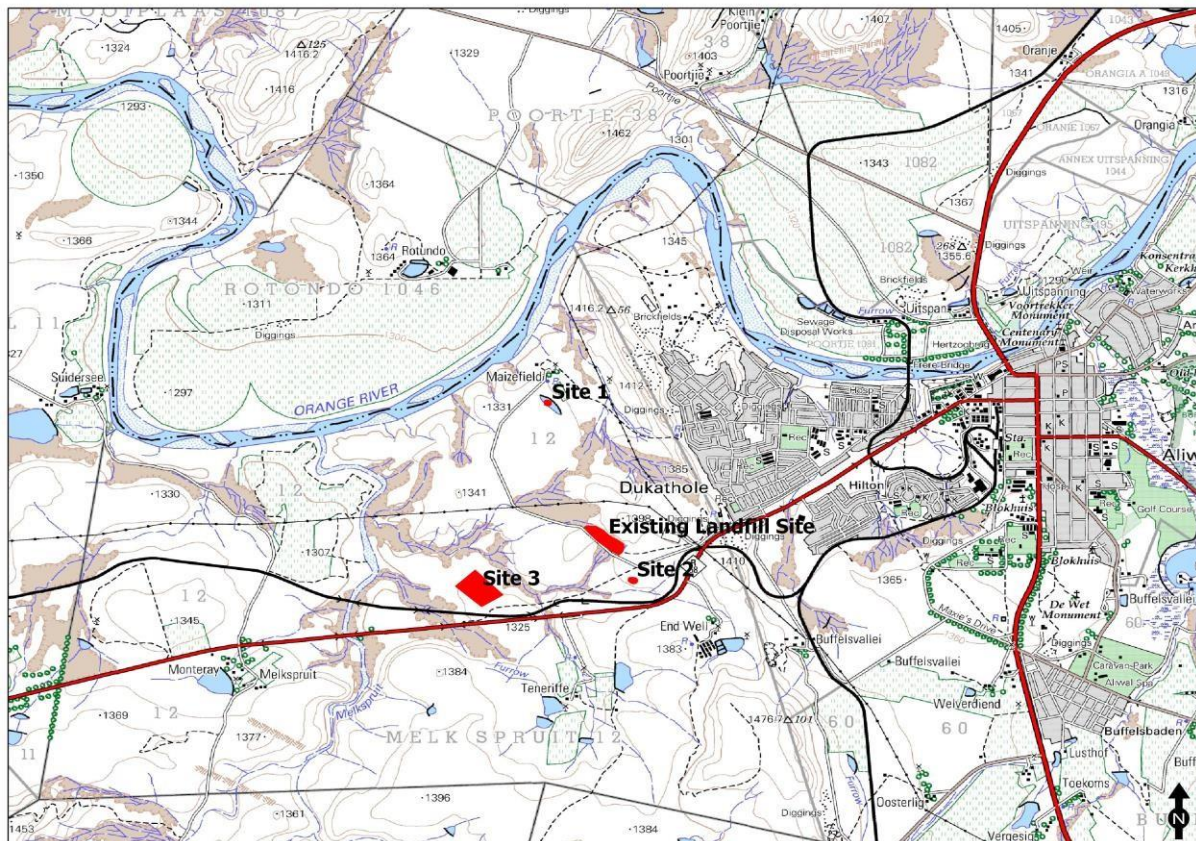


Figure 20: The survey area as indicated on the 1:50 000 topographic map 3026DA (2001)

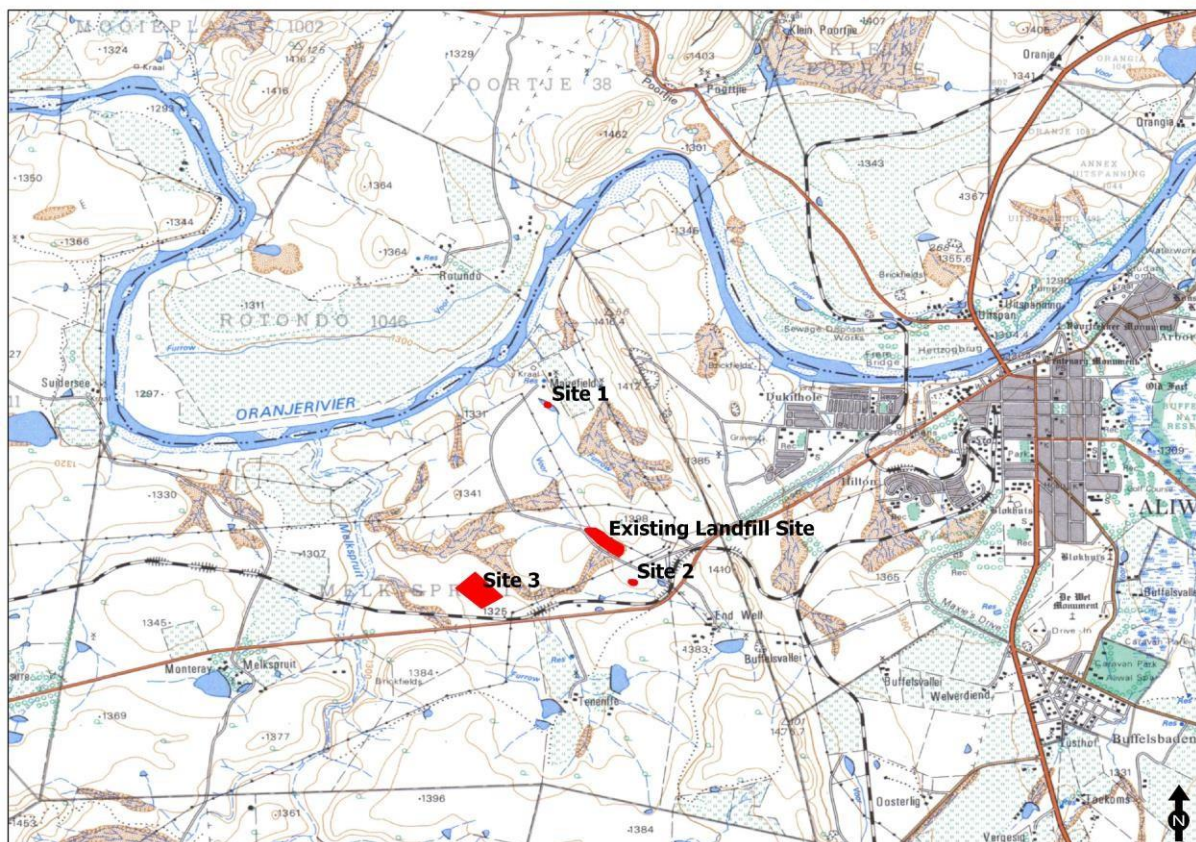


Figure 21: T The survey area as indicated on the 1:50 000 topographic map 3026DA (1980)

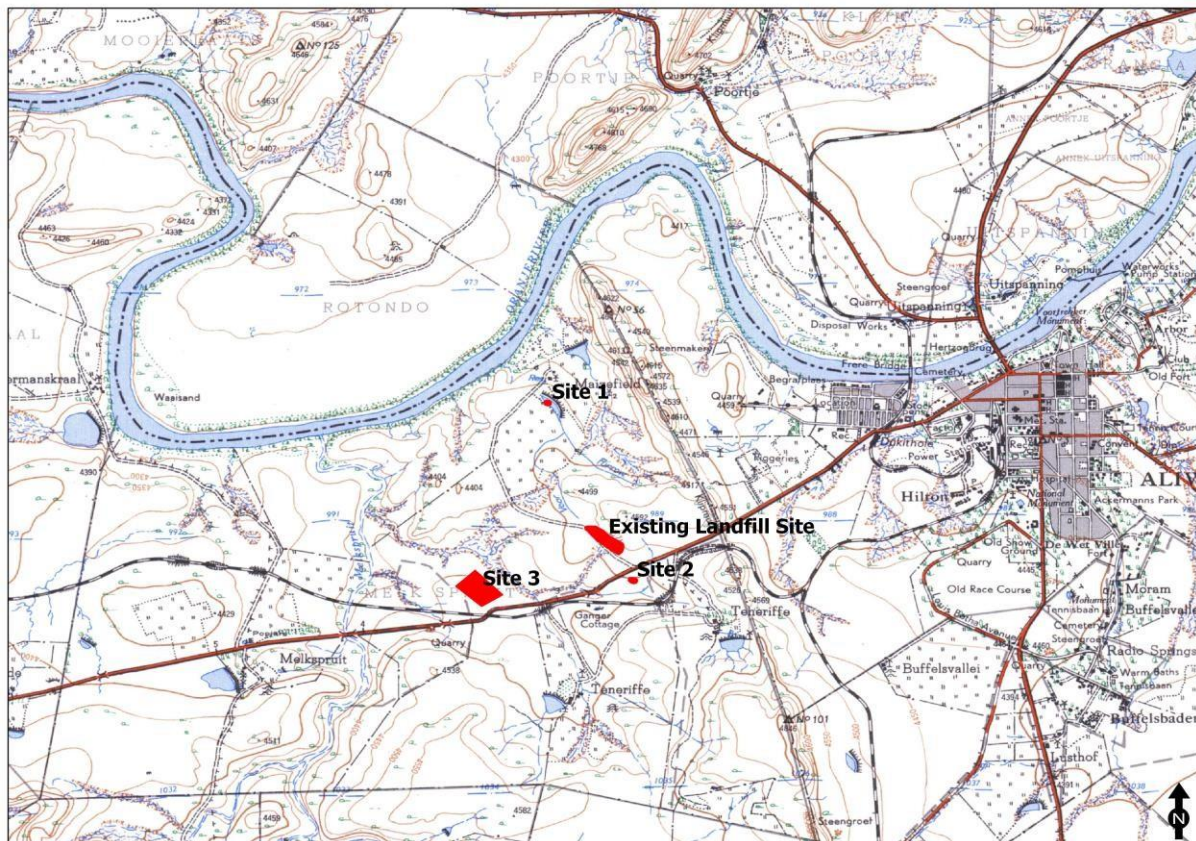


Figure 22: The survey area as indicated on the 1:50 000 topographic map 3026DA (1947)

Topographic maps of the mid 20th century 1970s clearly indicate that the survey footprints have been heavily impacted on by sheet and surface erosion.

6.2 Palaeontological sensitivity

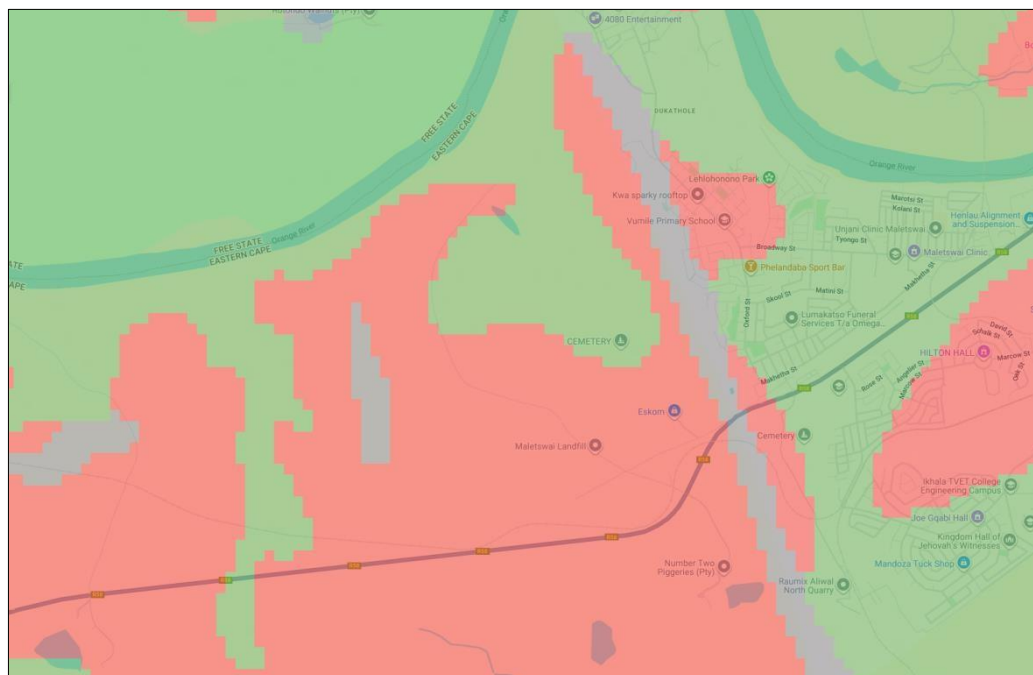


Figure 23: Palaeontological sensitivity zones as indicated for the survey footprints (SAHRIS 2026)

Colour	Sensitivity	Required Action
RED	VERY HIGH	Field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	Desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	Desktop study is required
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	No palaeontological studies are required
WHITE/CLEAR	UNKNOWN	Will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

The palaeontological sensitivity map was extracted from the SAHRIS database and indicates mostly red (very high) sensitivity for the survey footprints. As a result a palaeontological field study will be required for the area, as well as a protocol of finds.

6.3 Site visits

The field survey was conducted on 27 April 2026.

6.4 Social interaction and current inhabitants

Local residents were consulted during the survey to locate known heritage sites in the region.

6.5 Public Consultation and Stakeholder Engagement

A Public Participation Process (PPP) is being conducted in terms of Chapter 6 of GN No. 982 of 04 December 2014, of the NEMA, 1998 (Act No. 107 of 1998). The Public Participation Guideline in the Integrated Environmental Management Guideline Series (Guideline 7) is also used, as published in Government Gazette No. 35769 on 10 October 2012. The Public Participation Process will entail the following:

- Distribution of notification letters to adjacent households, business owners, councillors, and other relevant Organs of state
- Fixing of site notices
- Distribution of Flyers and BIDs
- Placement of a Newspaper Advert in a local newspaper
- Stakeholding Meetings.

The Draft Basic Assessment Report will be circulated to all registered stakeholders for comments and input. As such, the I&APs are encouraged to participate in the EIA process for their concerns to be addressed and included in the final EIA report.

6.6 Assumptions, restrictions, gaps and limitations

No severe physical restrictions were encountered as the survey area was totally accessible.

6.7 Methodology for assessment of potential impacts

All impacts identified during the EIA stage of the study will be classified in terms of their significance. Issues were assessed in terms of the following criteria:

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected;
- The **physical extent**, wherein it is indicated whether:
 - 1 - the impact will be limited to the site;
 - 2 - the impact will be limited to the local area;
 - 3 - the impact will be limited to the region;
 - 4 - the impact will be national; or
 - 5 - the impact will be international.
- The **duration**, wherein it is indicated whether the lifetime of the impact will be:
 - 1 - of a very short duration (0–1 years);
 - 2 - of a short duration (2-5 years);
 - 3 - of a medium-term (5–15 years);
 - 4 - of a long term (> 15 years); or
 - 5 - permanent.
- The **magnitude** of impact, quantified on a scale from 0-10, where a score is assigned:
 - 0 - small and will have no effect;
 - 2 - minor and will not result in an impact;
 - 4 - low and will cause a slight impact;
 - 6 - moderate and will result in processes continuing but in a modified way;
 - 8 - high, (processes are altered to the extent that they temporarily cease); or
 - 10 - very high and results in complete destruction of patterns and permanent cessation of processes;
- The **probability** of occurrence, which describes the likelihood of the impact actually occurring and is estimated on a scale where:
 - 1 - very improbable (probably will not happen);
 - 2 - improbable (some possibility, but low likelihood);
 - 3 - probable (distinct possibility);
 - 4 - highly probable (most likely); or
 - 5 - definite (impact will occur regardless of any prevention measures);
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;
- The **status**, which is described as either positive, negative or neutral;
 - The degree to which the impact can be reversed;
 - The degree to which the impact may cause irreplaceable loss of resources; and
 - The degree to which the impact can be mitigated.

The significance is determined by combining the criteria in the following formula:

$S = (E+D+M) \times P$; where:

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

Points	Significance Weighting	Discussion
< 30 points	Low	Where this impact would not have a direct influence on the decision to develop in the area.
31-60 point	Medium	Where the impact could influence the decision to develop in the area unless it is effectively mitigated.
> 60 points	High	Where the impact must have an influence on the decision process to develop in the area.

7. The Cultural Heritage Sites

7.1. Isolated occurrences

Isolated occurrences are artefacts or small features recorded on the surface with no contextual information. No other associated material culture (in the form of structures or deposits) was noted that might provide any further context. This can be the result of various impacts and environmental factors such as erosion and modern developments. By contrast archaeological sites are often complex sites with evidence of archaeological deposit and various interrelated features such as complex deposits, stone walls and middens. However, these isolated occurrences are seen as remains of erstwhile complex or larger sites and they therefore provide a broad indication of possible types of sites or structures that might be expected to occur or have occurred in the survey footprint.

No isolated finds were recorded during the survey.

7.2 Heritage sites

One historical structure (Site 1) and one cemetery (Site 2) were recorded during the survey. The dam retaining wall probably dates to the early 20th century which was connected with a system of furrows (canals). The dam is currently still in use and retains water for livestock in the region south of the Orange River. Site 2 is an active cemetery.

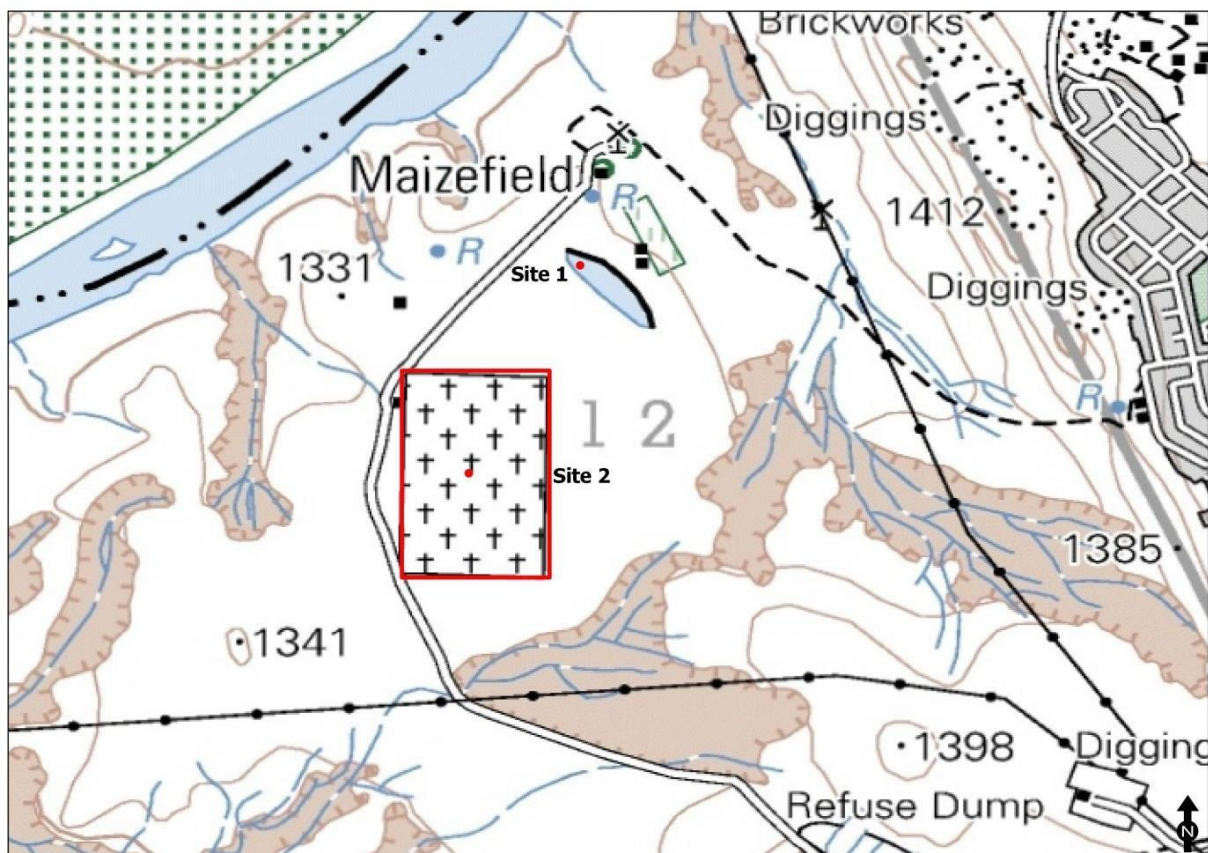


Figure 24: Location of the heritage sites recorded during the survey

8. Locations and Evaluation of Sites

Site No	Coordinates	Site Type	Field Rating of Significance	Impact	Proposed Mitigation
1	26.663930°E 30.690060°S	Historical Structure	Generally Protected C Low significance	None	• Buffer Zone of 30 metres
2	26.661480°E 30.694700°S	Cemetery	Generally Protected A High significance	None	• Buffer Zone of 50 metres • Should be fenced off

Table 8: Location and evaluation of sites

9. Management Measures

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

9.1 Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the project boundary against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities

The following shall apply:

- Known sites should be clearly marked in order that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA (Act No. 25 of 1999), Section 51. (1).

9.2 Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage.

- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

10. Recommendations and Conclusions

One historical dam retaining wall (Site 1) and one cemetery (Site 2) were recorded during the survey. The dam retaining wall probably dates to the early 20th century which is connected with a system of furrows (canals). The dam is currently still in use and retains water for livestock in the region south of the Orange River. Site 2 is an active cemetery.

Three alternative sites (1-3) are proposed for the planned landfill site.

No archaeological (both Stone Age and Iron Age) artefacts, assemblages, features, structures or settlements were recorded during the survey of the project footprint. It is well known that Late Iron Age stone-walled settlements do not usually occur in open exposed low-lying grasslands and floodplains.

Nature: Historical dam wall structure (Site 1) and a cemetery (Site 2)		
	Without mitigation	With mitigation
Operational (prospecting) Phase		
<i>Probability</i>	Definite (5)	Very Improbable (1)
<i>Duration</i>	Permanent (5)	Short term (2)
<i>Extent</i>	Limited to the site (1)	Limited to the site (1)
<i>Magnitude</i>	Very High (10)	Minor (2)
Significance of Impact	80 (High)	5 (Low)
<i>Status (positive or negative)</i>	Negative	Positive
Reversibility	Low	Low
<i>Irreplaceable loss of resources?</i>	Yes	None
<i>Cumulative impacts and indirect impacts</i>	Construction activities result in extensive heavy vehicle traffic, extraction of deposits, movements of heavy machinery which culminate in vibrations and dust.	
<i>Can impacts be mitigated?</i>	Yes, a 50 metres buffer zone for Site 2 (cemetery) and 30 m buffers zone for Site 1 (historical structure).	

Table 9: Significance of the impact

In this regard please note the following proposed mitigation measures:

- Take note of the position of the existing heritage sites (Sites 1 & 2);
- Site 1 (historical dam wall) is in close proximity to the proposed Alternative Site 1;
- A buffer zone of 30 metres should be maintained from Site 1 (historical dam);
- Care should be taken to prevent any indirect impacts on the cemetery (Site 2) and historical structure (Site 1).

Due to the proximity of Site 1 (historical dam wall) to the proposed Alternative Site 1 for the landfill site, the preferred options from a heritage perspective, are Alternative Site 2 and Alternative Site 3.

It is therefore recommended, from a cultural heritage perspective, that the proposed development may proceed, taking into account the proposed mitigation measures.

Also, please note: Archaeological deposits usually occur below ground level. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and a university or museum notified in order for an investigation and evaluation of the find(s) to take place (*cf.* NHRA (Act No. 25 of 1999), Section 36 (6)).

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Addendum 1: Archaeological and Historical Sequence

The table provides a general overview of the chronological sequence of the archaeological periods in South Africa.

PERIOD	APPROXIMATE DATES
Earlier Stone Age	more than 2 million years ago to >200 000 years ago
Middle Stone Age	<300 000 years ago to >20 000 years ago
Later Stone Age (Includes hunter-gatherer rock art)	<40 000 years ago up to historical times in certain areas
Early Iron Age	c. AD 200 - c. AD 900
Middle Iron Age	c. AD 900 – c. AD 1300
Late Iron Age (Stonewalled sites)	c. AD 1300 - c. AD 1840 (c. AD 1640 - c. AD 1840)

< = less than; > = greater than

Archaeological Context**Stone Age Sequence**

Concentrations of Early Stone Age (ESA) sites are usually present on the flood-plains of perennial rivers and may date to over 2 million years ago. These ESA open sites may contain scatters of stone tools and manufacturing debris and secondly, large concentrated deposits ranging from pebble tool choppers to core tools such as handaxes and cleavers. The earliest hominins who made these stone tools, probably not always actively hunted, instead relying on the opportunistic scavenging of meat from carnivore kill sites.

Middle Stone Age (MSA) sites also occur on flood plains, but are also associated with caves and rock shelters (overhangs). Sites usually consist of large concentrations of knapped stone flakes such as scrapers, points and blades and associated manufacturing debris. Tools may have been hafted but organic materials, such as those used in hafting, seldom preserve. Limited drive-hunting activities are also associated with this period.

Sites dating to the Later Stone Age (LSA) are better preserved in rock shelters, although open sites with scatters of mainly stone tools can occur. Well-protected deposits in shelters allow for stable conditions that result in the preservation of organic materials such as wood, bone, hearths, ostrich eggshell beads and even bedding material. By using San (Bushman) ethnographic data a better understanding of this period is possible. South African rock art is also associated with the LSA.

The following chronological sequence was recently established by prominent Stone Age archaeologists (Lombard et al 2012):

Later Stone Age

- Age Range: recent to 20-40 thousand years ago

- General characteristics: expect variability between assemblages, a wide range of formal tools, particularly scrapers (microlithic and macrolithic), backed artefacts, evidence of hafted stone and bone tools, borers, bored stones, upper and lower grindstones, grooved stones, ostrich eggshell (OES) beads and other ornaments, undecorated/decorated OES fragments, flasks/flask fragments, bone tools (sometimes with decoration), fishing equipment, rock art, and ceramics in the final phase.
 - **Ceramic or Final Later Stone Age**
 - Generally < 2 thousand years ago
 - MIS 1
 - Contemporaneous with, and broadly similar to, final Later Stone Age, but includes ceramics
 - Economy may be associated with hunter-gatherers or herders

Technological characteristics

- Stone tool assemblages are often microlithic
- In some areas they are dominated by long end scrapers and few backed microliths; in others formal tools are absent or rare
- Grindstones are common, ground stone artefacts, stone bowls and boat-shaped grinding grooves may occur
- Includes grit- or grass-tempered pottery
- Ceramics can be coarse, or well-fired and thin-walled; some times with lugs, spouts and conical bases; sometimes with decoration; sometimes shaped as bowls
- Ochre is common
- Ostrich eggshell (OES) is common
- Metal objects, glass beads and glass artefacts also occur
- **Final Later Stone Age**
 - 100 – 4000 years ago
 - MIS 1
 - Hunter-gatherer economy

Technological characteristics

- Much variability can be expected
- Variants include macrolithic (similar to Smithfield [Sampson 1974]) and/or microlithic (similar to Wilton) assemblages
- Assemblages are mostly informal (Smithfield)
- Often characterised by large untrimmed flakes (Smithfield)
- Sometimes microlithic with scrapers, blades and bladelets, backed tools and adzes (Wilton-like)
- Worked bone is common
- OES is common
- Ochre is common
- Iron objects are rare
- Ceramics are absent
- **Wilton**
 - 4000 – 8000 years ago
 - MIS 1

- At some sites continues into the final Later Stone Age as regional variants (e.g. Wilton Large Rock Shelter and Cave James)

Technological characteristics

- Fully developed microlithic tradition with numerous formal tools
- Highly standardised backed microliths and small convex scrapers (for definition of standardisation see Eerkens & Bettinger 2001)
- OES is common
- Ochre is common
- Bone, shell and wooden artefacts occur
- **Oakhurst**
 - 7000 – 12 000 years ago
 - MIS 1
 - Includes Albany, Lockshoek and Kuruman as regional variants

Technological characteristics

- Flake based industry
- Characterised by round, end, and D-shaped scrapers and adzes
- Wide range of polished bone tools
- Few or no microliths
- **Robberg**
 - 12 000 to 18 000 years ago
 - MIS 2

Technological characteristics

- Characterised by systematic bladelet (<26mm) production and the occurrence of outils ecaillés or scaled pieces
- Significant numbers of unretouched bladelets and bladelet cores
- Few formal tools
- Some sites have significant macrolithic elements
- **Early Late Stone Age**
 - 18 000 – 40 000 years ago
 - MIS 2-3
 - Informal designation
 - Also known as transitional MSA-LSA
 - Overlapping in time with final Middle Stone Age

Technological Characteristics

- Characterised by unstandardised, often microlithic, pieces and includes the bipolar technique
- Described at some sites, but not always clear whether assemblages represent a real archaeological phase or a mixture of LSA/MSA artefacts

Middle Stone Age

- Age Range: 20 000 – 30 000 years ago

- General characteristics: Levallois or prepared core techniques (for definitions see Van Peer 1992; Boeda 1995; Pleurdeau 2005) occur in which triangular flakes with convergent dorsal scars, often with faceted striking platforms, are produced. Discoidal systems (for definition see Inizan et al. 1999) and intentional blade production from volumetric cores (for definition see Pleurdeau 2005) also occur; formal tools may include unifacially and bifacially retouched points, backed artefacts, scrapers, and denticulates (for definition see Bisson 2000); evidence of hafted tools; occasionally includes marine shell beads, bone points, engraved ochre nodules, engraved OES fragments, engraved bone fragments, and grindstones.
- In the sequence below we highlight differences or characteristics that may be used to refine interpretations depending on context.
- **Final Middle Stone Age**
 - 20 000 – 40 000 years ago
 - MIS 3
 - Informal designation partly based on the Sibudu sequence

Technological characteristics

- Characterised by high regional variability that may include, e.g. bifacial tools, bifacially retouched points, hollow-based points
- Triangular flake and blade industries (similar to Strathalan and Melikane)
- Small bifacial and unifacial points (similar to Sibudu and Rose Cottage Cave)
- Sibudu point characteristics: short, stout, lighter in mass compared to points from the Sibudu technocomplex, but heavier than those from the Still Bay
- Can be microlithic
- Can include bipolar technology
- Could include backed geometric shapes such as segments, as well as side scrapers

Sibudu

- 45 000 – 58 000 years ago
- MIS 3
- Previously published as informal late Middle Stone Age and post-Howieson's Poort at Sibudu
- Formerly known post-Howieson's Poort, MSA 3 generally, and MSA III at Klasies River

Technological characteristics

- Most points are produced using Levallois technique
- Most formal retouch aimed at producing unifacial points
- Sibudu unifacial point (type fossil) characteristics: faceted platform; shape is somewhat elongated with a mean length of 43.9 mm), a mean breadth of 26.8 mm and mean thickness of 8.8 mm (L/B ratio 1.7); their mean mass is 11.8 g (Mohapi, 2012)
- Some plain butts
- Rare bifacially retouched points
- Some side scrapers are present
- Backed pieces are rare
- **Howieson's Poort**
 - 58 000 – 66 000 years ago
 - MIS 3-4

Technological characteristics

- Characterised by blade technology
- Includes small (<4 cm) backed tools, e.g. segments, scrapers, trapezes and backed blades
- Some denticulate blades
- Pointed forms are rare or absent

- **Still Bay**

- 70 000 – 77 000 years ago
- MIS 4-5a

Technological characteristics

- Characterised by thin (<10 mm), bifacially worked foliate or lanceolate points
- Semi-circular or wide-angled pointed butts
- Could include blades and finely serrated points (Lombard et al. 2010)

- **Pre-Still Bay**

- 72 000 – 96 000 years ago
- MIS 4-5

Technological characteristics

- Characteristics currently being determined / studied

- **Mossel Bay**

- 77 000 to —105 000 years ago
- MIS 5a-4
- Also known as MSA II at Klasies River or MSA 2b generally

Technological characteristics

- Characterised by recurrent unipolar Levallois point and blade reduction
- Products have straight profiles; percussion bulbs are prominent and often splintered or ring-cracked
- Formal retouch is infrequent and restricted to sharpening the tip or shaping the butt

- **Klasies River**

- 105 000 to —130 000 years ago
- MIS 5d-5e
- Also referred to as MSA I at Klasies River or MSA 2a generally

Technological characteristics

- Recurrent blade and convergent flake production
- End products are elongated and relatively thin, often with curved profiles
- Platforms are often small with diffused bulbs
- Low frequencies of retouch
- Denticulate pieces

- **Early Middle Stone Age**

- Suggested age MIS 6 to MIS 8 (130 000 to —300 000 years ago)
- Informal designation

Technological characteristics

- This phase needs future clarification regarding the designation of cultural material and sequencing
- Includes discoidal and Levallois flake technologies, blades from volumetric cores and a generalised toolkit
- **Earlier Stone Age**
 - Age range: >200 000 to 2 000 000 years ago
 - General characteristics: early stages include simple flakes struck from cobbles, core and pebble tools; later stages include intentionally shaped handaxes, cleavers and picks; final or transitional stages have tools that are smaller than the preceding stages and include large blades.
 - In the sequence below we highlight differences or characteristics that may be used to refine interpretations depending on context.
- **ESA-MSA transition**
- 200 to —600 thousand years ago
- MIS 7-15

Technological characteristics

- Described at some sites as Fauresmith or Sangoan
- Relationships, descriptions, issues of mixing and ages yet to be clarified
- Fauresmith assemblages have large blades, points, Levallois technology, and the remaining ESA components have small bifaces
- The Sangoan contains small bifaces (<100 mm), picks, heavy and light-duty denticulated and notched scrapers
- The Sangoan is less well described than the Fauresmith
- **Acheulean**
 - 300 thousand to —1.5 million years ago
 - MIS 8-50

Technological characteristics

- Bifacially worked handaxes and cleavers, large flakes > 10 cm
- Some flakes with deliberate retouch, sometimes classified as scrapers
- Gives impression of being deliberately shaped, but could indicate result of knapping strategy
- Sometimes shows core preparation
- Generally found in disturbed open-air locations
- **Oldowan**
 - 1.5 to >2 million years ago
 - MIS 50-75

Technological characteristics

- Cobble, core or flake tools with little retouch and no flaking to predetermined patterns
- Hammerstones, manuports, cores
- Polished bone fragments/tools

Archaeological Sequence

Based on the research by Sampson (1972) and Macfarlane (1945) it was anticipated that archaeological material on the farm would date from the ESA, MSA and LSA. We expected to possibly find Acheulian artefacts in the river gravels and along the banks of the river, with MSA and LSA artefacts scattered over the hillsides and ridges. It was also anticipated that traces of KhoeKhoe occupation in the area may still be visible. It is known that these herding groups often followed the larger rivers as part of their migration patterns. Extensive research has been undertaken in the Seacow Valley, south west of the survey area, documenting the movements of these herders on the landscape (Sampson 1996). Herders appeared in the area during the mid first millennium AD (Mitchell 2002). Habitation sites are poorly understood, but some of the stone kraals on the landscape probably relate to these groups. It is also known that KhoeKhoe burials are sometimes visible, especially if they are marked with a cairn of stones. Pottery linked to stone kraals of cave sites could also be an indication of a KhoeKhoe presence in the area.

Historical background of the area

The first Europeans in the area would have been the ‘trekboers’ looking for grazing for their cattle. It is known that these farmers were moving around in the area for 20 to 30 years before the first settlements were founded. Aliwal North was founded in 1849 to be the magisterial centre of the new Albert District, which was proclaimed in 1848 (Le Roux et al 2008). Aliwal North was located within the Buffelsvlei division of the Albert District (ibid). The farm Akermans Kraal no 11 was first surveyed in 1850, shortly after the establishment of the nearby town of Aliwal North. According to the present owner it was named after a ‘bywoner’ on the farm with the surname of Akerman (Snyman, pers comm. 3 July 2008). The farm was resurveyed in 1937. A railway line runs along the current southern boundary of the farm, which on the map of 1850 continued on below the line. This southern section was marked as Tervreden, the name given to that portion (as a separate farm) on the 1937 diagramme.

The Anglo-Boer War (1899-1902)

The Anglo-Boer War began with British territory being invaded by the Boers at four points: in the east into Natal, in the north-west of the Transvaal towards Mafikeng, in the south-west towards Kimberley and across the Orange river into the Eastern Cape. The invasion routes were directed at railway lines, which would be used to bring British troops into the Boer Republics. To the British the war was fought mainly to establish their supremacy in South Africa, while to the Boer republics it was a defensive war (http://www.melrosehouse.co.za/boer_war/war10.htm).

Commandant J.H. Olivier was commissioned by President Steyn of the Republic of the Free State as chief commandant to lead the Boer offensive in the Stormberg area of the Eastern Cape (Oosthuizen, 1994:46). Although the Orange River was the official border between the British ruled Cape Colony in the south and the Boer ruled Republic of the Free State in the north, the area between the Stormberg mountain range in the south and the Orange River in the north formed a buffer area between the two political entities. Up to the beginning of the war Brit and Boer lived here alongside each other in relative peace (Oosthuizen, 1994:15). Olivier’s siege of the town of Aliwal North on 13 November 1899 was without any bloodshed and was he received like a hero. Olivier immediately claimed Aliwal North to be Republican territory and renamed the town Oliviersfontein (Oosthuizen, 1994:48). After this the towns Burgersdorp, Jamestown, Lady Grey, Barkly-East, Dordrecht and for some

unknown reason the small town of Rhodes would follow in being declared Republican territory. It was only by the time Olivier reached Dordrecht that the British managed to mobilize a force under General Gatacre to counter the invasion (Oosthuizen, 1994:56-72). The two forces met in the Stormberge in what later became known as the Battle of Stormberg which ended in a resounding victory for the Boers (Oosthuizen, 1994:73-78). The Cape rebels in the Stormberg area who joined the Boer offensive soon realized that the intention was not to free the Cape Colony from British rule but rather to secure the southern border of the Republic of the Free State against British invasion (Oosthuizen, 1994:79). In spite of their initial victories over the British, the tide began to turn against the Boers in February 1900. On 1 March 1900 Olivier was recalled by President Steyn to help in the defense of the Republic of the Free State. By then the British had already re-claimed Colesberg and Kimberley and were well on their way to annex the Republic of the Free State (Oosthuizen, 1994:87). Bloemfontein, capital of the Free State, fell to the British on 13 March 1900 and on 28th May the province was annexed and renamed the Orange River Colony. On 31st May, British troops entered Johannesburg and, on 5th June, Pretoria was taken. The Transvaal was annexed on 1st September 1900. To many it seemed that the war was over (http://www.melrosehouse.co.za/boer_war/war1.htm).

After the last Boer commandos fled across the bridge over the Orange River at Aliwal North on 11 March 1900, the Stormberg area was placed under martial law by the British (Oosthuizen, 1994:120). Under the leadership of Louis Botha, Christiaan de Wet, Jan Smuts and de la Rey, the Boers abandoned the British style of warfare and increased their reliance on small and mobile military units. The mobility of these units enabled them to capture supplies, disrupt communications and undertake raids on the army of occupation. They were very successful in evading capture. In response, the British embarked on a scorched earth policy to deny supplies to the fighters. Approximately 30,000 farms were burnt. In March 1901 the need to restrict the movement of the Boers brought the development of 8,000 blockhouses and 3,700 miles of wire fencing guarded by 50,000 troops. This was followed by a number of 'drives' which had the intention of cornering the Boers, but the operations mainly produced large numbers of displaced Boer and African families. These refugees were sent to concentration camps around South Africa. These measures were largely responsible for bringing the Boers to the negotiation table to end the War (<http://www.angloboerwar.com>). In the Stormberg area these blockhouses were erected during the winter of 1901 in a line all along the southern banks of the Orange River (Oosthuizen, 1994:118). The distance between blockhouses was calculated to be able to extend the reach as far as possible but at the same time to prevent the Boers from passing unnoticed between them. The average distance apart was about 1,000 yards (910 m). Line of sight was vital and this required a greater density of blockhouses in some areas. The gap between blockhouses was filled by wire fences. These fences did not run along the shortest distance between the blockhouses but zig-zagged so that the troops from both blockhouses could fire at the enemy between themselves but without the chance of hitting the other blockhouse. In order to expedite the erection of blockhouses many were prefabricated of corrugated iron and poles and shipped in units for easy erection on site (<http://www.angloboerwar.com/Other/blockhouses.htm>). In the Stormberg area each of these blockhouses were usually manned by an officer and six black men (Oosthuizen, 1994:118).

Addendum 2: Description of the Recorded Sites

A system for grading the significance of heritage sites was established by the NHRA (Act No. 25 of 1999) and further developed by the South African Heritage Resources Agency (SAHRA 2007) and has been approved by ASAPA for use in southern Africa and was utilised during this assessment.

Site 1

A. GENERAL SITE DESCRIPTION			
Site type	Historical Structure		
Site Period	Late 19 th century		
Physical description	The site comprises a historical farm shed or outbuilding with at least two sections. The structure is constructed with backed bricks and cement and the walls are plastered. The fittings include a corrugated iron roof with wooden roof beams and main door. Iron framed windows were probably added later. The structure is still in use.		
Integrity of deposits or structures	Several sections of the walling and plaster are unstable and peeling off.		
Site extent	5 m X 10 m		
B. SITE EVALUATION			
B1. HERITAGE VALUE			
			Yes
			No
Historic Value			
It has importance to the community or pattern of South Africa's history or precolonial history.			X
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.			X
It has significance relating to the history of slavery in South Africa.			X
Aesthetic Value			
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
Scientific Value			
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has importance to the wider understanding of the temporal change of cultural landscapes, settlement patterns and human occupation.			X
Social Value			
It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).			X
Tourism Value			
It has significance through its contribution towards the promotion of a local sociocultural identity and can be developed as tourist destination.			X
Rarity Value			
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.			X
Representative Value			
It is importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.			X
B2. REGIONAL CONTEXT			
Other similar sites in the regional landscape.			X
C. SPHERE OF SIGNIFICANCE		High	Medium
International			X
National			X
Provincial			X
Local			X
Specific community			X
D. FIELD REGISTER RATING			

National/Grade 1 [should be registered, retained]	
Provincial/Grade 2 [should be registered, retained]	
Local/Grade 3A [should be registered, mitigation not advised]	
Local/Grade 3B [High significance; mitigation, partly retained]	
Generally Protected A [High/Medium significance, mitigation]	
Generally protected B [Medium significance, to be recorded]	
Generally Protected C [Low significance, no further action]	X
E. GENERAL STATEMENT OF SITE SIGNIFICANCE	
Low	X
Medium	
High	
F. RATING OF POTENTIAL IMPACT OF DEVELOPMENT	
None	X
Peripheral	
Destruction	
Uncertain	
G. RECOMMENDED MITIGATION	
A buffer zone of 30 metres should be maintained along the structure	
H. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS	
National Heritage Resources Act (Act No. 25 of 1999, Section 34)	
I. PHOTOGRAPHS	
	
Figure 25: General view of the foundation of the dam retaining wall	

Site 2

A. GENERAL SITE DESCRIPTION				
Site type	Cemetery			
Site Period	21 th century			
Physical description	The site comprises an active cemetery serving as a burial ground for the Maletswai community. The cemetery contains several hundred graves which are demarcated mostly with granite and cement bases and headstones.			
Integrity of deposits or structures	Stable, active			
Site extent	500 m x 300 m			
B. SITE EVALUATION				
B1. HERITAGE VALUE			Yes	No
Historic Value				
It has importance to the community or pattern of South Africa’s history or precolonial history.				X
It has strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.				X
It has significance relating to the history of slavery in South Africa.				X

Aesthetic Value			
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.			X
Scientific Value			
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.			X
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.			X
It has importance to the wider understanding of the temporal change of cultural landscapes, settlement patterns and human occupation.			X
Social Value			
It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).	X		
Tourism Value			
It has significance through its contribution towards the promotion of a local sociocultural identity and can be developed as tourist destination.			X
Rarity Value			
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.			X
Representative Value			
It is importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.			X
B2. REGIONAL CONTEXT			
Other similar sites in the regional landscape.		X	
C. SPHERE OF SIGNIFICANCE	High	Medium	Low
International			X
National		X	
Provincial		X	
Local	X		
Specific community	X		
D. FIELD REGISTER RATING			
National/Grade 1 [should be registered, retained]			
Provincial/Grade 2 [should be registered, retained]			
Local/Grade 3A [should be registered, mitigation not advised]			
Local/Grade 3B [High significance; mitigation, partly retained]			
Generally Protected A [High/Medium significance, mitigation]			X
Generally protected B [Medium significance, to be recorded]			
Generally Protected C [Low significance, no further action]			
E. GENERAL STATEMENT OF SITE SIGNIFICANCE			
Low			
Medium			
High			X
F. RATING OF POTENTIAL IMPACT OF DEVELOPMENT			
None			X
Peripheral			
Destruction			
Uncertain			
G. RECOMMENDED MITIGATION			
- Maintain a buffer zone of 50 metres during prospecting phase - The cemetery should be fenced off and a gate installed			
H. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS			
- National Heritage Resources Act (Act No. 25 of 1999, Section 36) - Regulations Relating to the Management of Human Remains, in terms of the National Health Act No. 61 of 2003 - Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925) - Ordinance on Exhumations (Ordinance No. 12 of 1980) - Local and regional provisions, laws and by-laws			

I. PHOTOGRAPHS



Figure 26: General view of the graveyard mount

Addendum 3: Surveyor General Farm Diagram

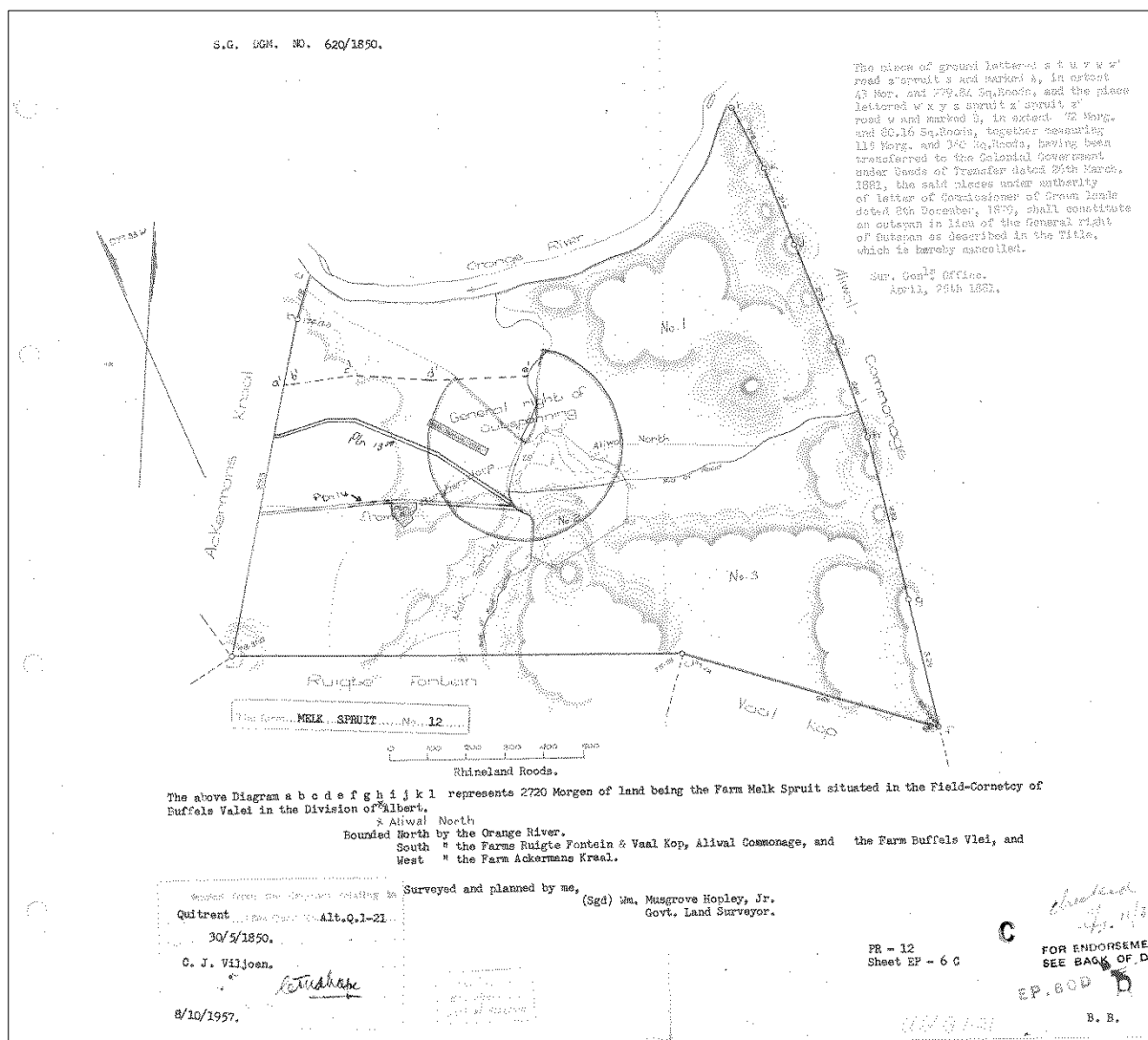


Figure 27: Surveyor General's sketch of the farm Melk Spruit 12 which was first surveyed in 1850

Addendum 4: Relocation of Graves

Marked graves younger than 60 years do not fall under the protection of the NHRA (Act No. 25 of 1999) with the result that exhumation, relocation and reburial can be conducted by an undertaker. This will include logistical aspects such as social consultation, purchasing of plots in cemeteries, procurement of coffins, etc. Other legislative measures which may be pertinent include the Removal of Graves and Dead Bodies Ordinance (Ordinance No. 7 of 1925), Regulations Relating to the Management of Human Remains (GNR 363 of 22 May 2013) made in terms of the National Health Act No. 61 of 2003, Ordinance on Exhumations (Ordinance No. 12 of 1980) as well as any local and regional provisions, laws and by-laws that may be in place.

Marked graves older than 60 years are protected by the NHRA (Act No. 25 of 1999) and as a result an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. Note that unmarked graves are by default regarded as older than 60 years and therefore also falls under the NHRA (Act No. 25 of 1999, Section 36).

The relocation of graves entails the following procedure:

- Notices of intent to relocate the graves must be put up at the burial site for a period of 60 days. This should contain contact information where communities and family members can register as interested and affected parties. All information pertaining to the identification of the graves must be documented for the application of a SAHRA permit. All notices must be in at least 3 languages, of which English is one. This is a requirement by law.
- These notices of intention must also be placed in at least two local newspapers and have the same information as above.
- Local radio stations can also be used to try contact family members. This is not required by law, but can be helpful.
- During this time (60 days) a suitable cemetery must be identified near to the development 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.
- Once the 60 days have 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 issued, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves as well as any remains and any additional objects found in the grave.

Information needed for the SAHRA permit application

- The permit application must be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.
- A letter of permission from the landowner granting permission to the developer to exhume and relocate the graves.

- A letter (or proof of purchase of the plots) from the new cemetery confirming that the graves will be reburied there.
- Details of the farm name and number, magisterial district and GPS coordinates of the gravesite.

Graves are generally be classified into four categories. These are:

- Graves younger than 60 years;
- Graves older than 60 years, but younger than 100 years;
- Graves older than 100 years; and
- Graves of victims of conflict or of individuals of royal descent.