

**HERITAGE SURVEY OF THE PROPOSED SENEKAL
SOLID WASTE DISPOSAL SITE, FREE STATE**

FOR METSI METSENG GEOLOGICAL SERVICES

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By Gavin Anderson

**Umlando: Archaeological Tourism and Resource
Management**

PO Box 102532, Meerensee, 3901

Phone/fax: 035-7531785 Fax: 0865445631

Cell: 0836585362



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INTRODUCTION

“Solid waste from the town of Senekal and surrounding communities is currently disposed of at a permitted disposal site of which the capacity is becoming very low. With the expansion of the SWDS, the waste will be collected from the town and disposed of at a legally licensed site that will be constructed according to relevant legislation and guidelines.

The proposed project entails the expansion of the Solid Waste Disposal Site where general waste from Senekal and Matwabeng will be disposed of. Taking into account the maximum rate of deposition calculated, the size of the expanded disposal site will allow for a 10 year lifespan. The existing part of the disposal site will be closed and rehabilitated as part of the development.

The expanded part of the Solid Waste Disposal site will have a footprint area of 145m x 165m (23 924m² / 2.4 ha) and is situated at general GPS coordinates 28°19'20.0" S and 27°38'35.0" E on available municipal land next to the John du Plessiss tar road, linking the Senekal industrial area with the N5.

The expanded Solid Waste Disposal site is classified as a Small site due to the maximum rate of deposition which is calculated at 44tons / day, towards the end of its lifespan. The expanded part of the disposal site will consist of 3 waste cells (2 cells have already been excavated) of 160m long, 30m wide and 2m deep. The cell floors and walls will be lined with a 150mm clay layer to prevent seepage of leachate. Once the cells have been filled, it will be covered with soil and land building will start. The eventual height of the landfill will be 18m high.

Further infrastructure that will be constructed includes:

- New access road, 5m wide with storm water drainage

- 2m High security fence and gate

- Surface water drainage to divert polluted water to evaporation pond

- Surface water drains to divert fresh water around site

- 30mx30mx2m evaporation pond

- Leachate drainage pipes at bottom of cells to collect any potential leachate “(Metsi Metseng GS BID)

Umlando was contracted by Metsi Meteseng Geological Services to undertake the desktop heritage survey of the new solid waste disposal site near Marquard, Free State. Fig.'s 1 – 3 illustrate the location of the site.

FIG. 1 GENERAL LOCATION OF THE SENEKAL SOLID WASTE SITE

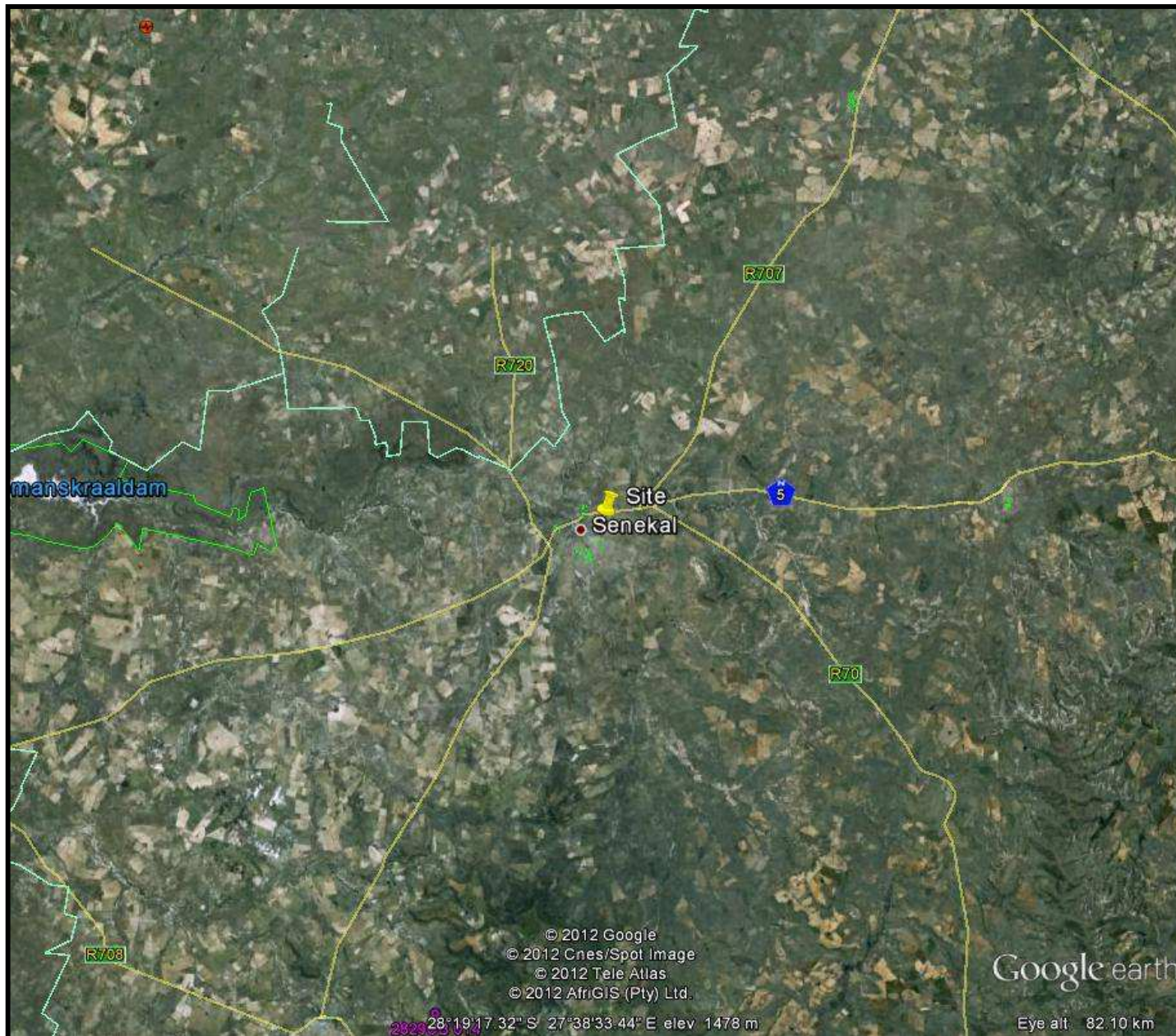
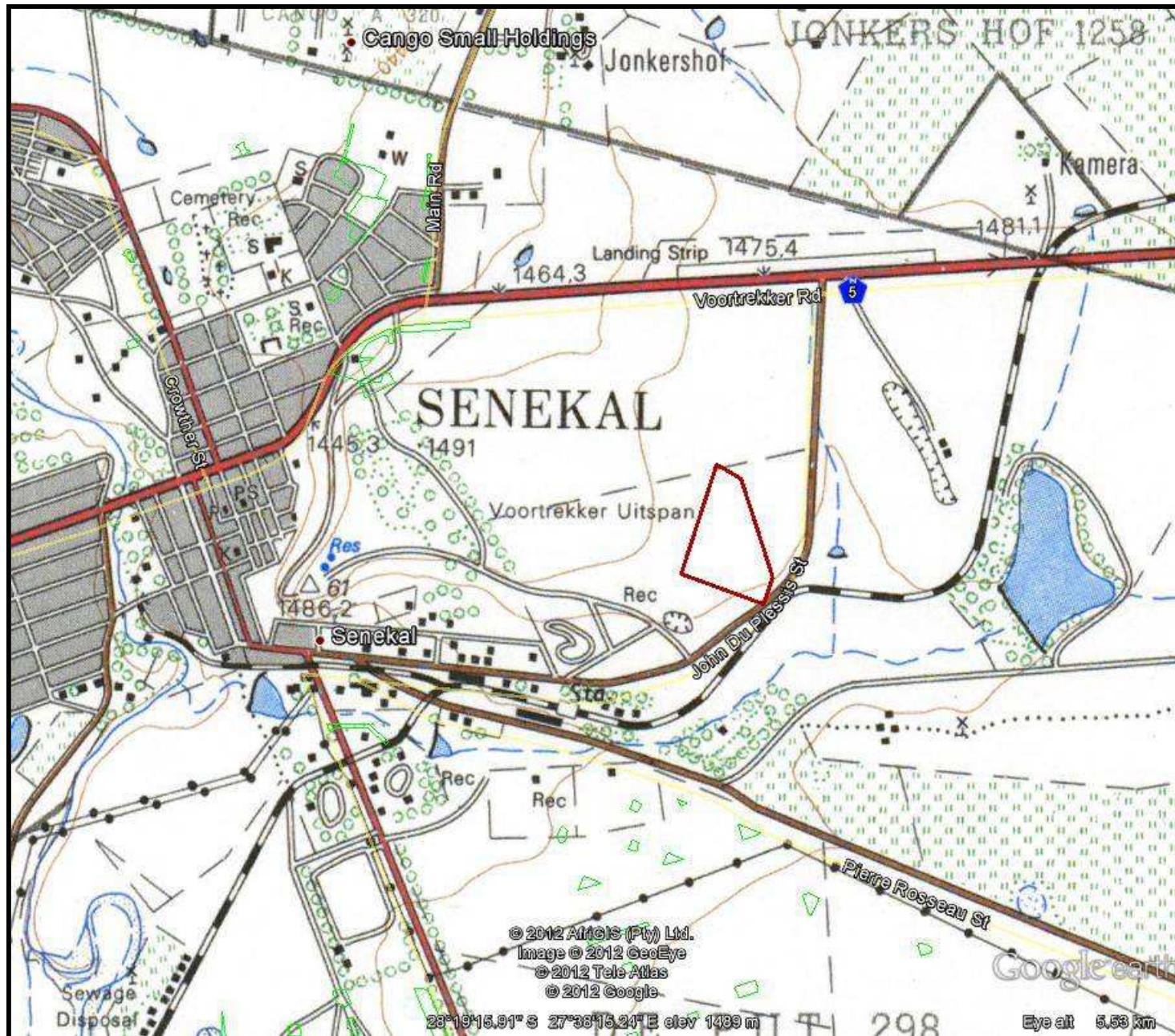


FIG. 2: AERIAL OVERVIEW OF THE SENEKAL SOLID WASTE SITE



FIG. 3: TOPOGRAPHICAL MAP OF THE SENEKAL SOLID WASTE SITE



NATIONAL HERITAGE RESOURCES ACT OF 1999

The National Heritage Resources Act of 1999 (pp 12-14) protects a variety of heritage resources. These resources are defined as follows:

1. “For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
2. Without limiting the generality of subsection (1), the national estate may include—
 - 2.1. Places, buildings, structures and equipment of cultural significance;
 - 2.2. Places to which oral traditions are attached or which are associated with living heritage;
 - 2.3. Historical settlements and townscapes;
 - 2.4. Landscapes and natural features of cultural significance;
 - 2.5. Geological sites of scientific or cultural importance;
 - 2.6. Archaeological and palaeontological sites;
 - 2.7. Graves and burial grounds, including—
 - 2.7.1. Ancestral graves;
 - 2.7.2. Royal graves and graves of traditional leaders;
 - 2.7.3. Graves of victims of conflict;
 - 2.7.4. Graves of individuals designated by the Minister by notice in the Gazette;
 - 2.7.5. Historical graves and cemeteries; and
 - 2.7.6. Other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
3. Sites of significance relating to the history of slavery in South Africa;
 - 3.1. Movable objects, including—

4. Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - 4.1. Objects to which oral traditions are attached or which are associated with living heritage;
 - 4.2. Ethnographic art and objects;
 - 4.3. Military objects;
 - 4.4. objects of decorative or fine art;
 - 4.5. Objects of scientific or technological interest; and
 - 4.6. 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).
5. Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—
 - 5.1. Its importance in the community, or pattern of South Africa's history;
 - 5.2. Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
 - 5.3. Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
 - 5.4. Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
 - 5.5. Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
 - 5.6. Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
 - 5.7. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
 - 5.8. 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

5.9. sites of significance relating to the history of slavery in South Africa”

METHOD

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. This database contains archaeological site locations and basic information from several provinces (information from Umlando surveys and some colleagues), most of the national and provincial monuments and battlefields in Southern Africa (<http://www.vuvuzela.com/googleearth/monuments.html>) and cemeteries in southern Africa (information supplied by the Genealogical Society of Southern Africa). We use 1st and 2nd edition 1:50 000 topographical and 1937 aerial photographs where available, to assist in general location and dating of buildings and/or graves. The database is in Google Earth format and thus used as a quick reference when undertaking desktop studies. Where required we would consult with a local data recording centre, however these tend to be fragmented between different institutions and areas and thus difficult to access at times. We also consult with an historical architect, palaeontologist, and an historian where necessary.

The survey results will define the significance of each recorded site, as well as a management plan.

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts or features. Sites of medium significance have diagnostic artefacts or features and these sites tend to be sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling usually

occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features.

Defining significance

Heritage sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

1. State of preservation of:

- 1.1. Organic remains:
 - 1.1.1. Faunal
 - 1.1.2. Botanical
- 1.2. Rock art
- 1.3. Walling
- 1.4. Presence of a cultural deposit
- 1.5. Features:
 - 1.5.1. Ash Features
 - 1.5.2. Graves
 - 1.5.3. Middens
 - 1.5.4. Cattle byres
 - 1.5.5. Bedding and ash complexes

2. Spatial arrangements:

- 2.1. Internal housing arrangements
- 2.2. Intra-site settlement patterns
- 2.3. Inter-site settlement patterns

3. Features of the site:

- 3.1. Are there any unusual, unique or rare artefacts or images at the site?

3.2. Is it a type site?

3.3. Does the site have a very good example of a specific time period, feature, or artefact?

4. Research:

4.1. Providing information on current research projects

4.2. Salvaging information for potential future research projects

5. Inter- and intra-site variability

5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?

5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

6. Archaeological Experience:

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

7. Educational:

7.1. Does the site have the potential to be used as an educational instrument?

7.2. Does the site have the potential to become a tourist attraction?

7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

8. Other Heritage Significance:

8.1. Palaeontological sites

8.2. Historical buildings

8.3. Battlefields and general Anglo-Zulu and Anglo-Boer sites

8.4. Graves and/or community cemeteries

8.5. Living Heritage Sites

8.6. Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.

The more a site can fulfill the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. This occurs in Phase 2. These test-pit excavations may require further excavations if the site is of significance (Phase 3). Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts.

TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES

SITE SIGNIFICANCE	FIELD RATING	GRADE	RECOMMENDED MITIGATION
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	
High / Medium Significance	Generally Protected A		Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B		Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C		On-site sampling monitoring or no archaeological mitigation required prior to or during development / destruction

RESULTS

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys.

The desktop study shows that the area has not been ploughed, however small scale construction has occurred, such as water reservoirs and a solid waste disposal site. The earliest available map for this area is 1978 (fig. 3), and this shows that the hill was an original Voortrekker Campsite (c 1837). The site thus predates the official recognition of the town that occurred in 5 June 1877 (<http://www.senekal.biz/about/history.html>).

The aerial photographs indicate that the area is just above a watercourse, and thus would make it sensitive for Stone Age sites. The site is on a hill that appears to have rock shelters. Similar topography nearby has yielded Rock Art paintings, such as site 2829CB014. The rock formations below the study area are thus likely to yield paintings as well. If there are paintings then the development may have an indirect affect, such as drainage canals, overflow, and possible leakage.

The Google Earth imagery has suggestions of stone walled settlements along the western part of the hill, and these may occur near the study area.

There have been two archaeological survey undertaken near the edge of study area (Dreyer 2007). The results from this survey did not locate any archaeological or cultural material. I differ with this report and believe that mitigation would have found artefacts.

MANAGEMENT PLAN

The area has already been severely negatively affected by the existing waste disposal site. Additional development on this koppie has the potential to damage unrecorded heritage sites associated with Late Stone Age hunter-gatherers, Late Iron Age Basotho speaking people, and that of a Voortrekker encampment. All of these potential site will be affected by the drainage system, road works and evaporation plant.

I would recommend that a full heritage survey is undertaken for this area, and that the municipality places the entire koppie as a high-risk heritage area until a full survey has been undertaken. There has been enough development on this koppie without appropriate mitigation.

The existing solid waste site has already received a letter of reprimand from SAHRA regarding the fossils in this area; however, no mention was made of the lack of mitigation for the campsite (ref. 9/2/336/1) I would suggest that a Phase 1 and Phase 2 survey is combined. The Phase 2 would include a metal detector survey for possible Voortrekker artefacts. Voortrekker campsites, such as Doornkop in KwaZulu-Natal, have yielded numerous artefacts that have been exposed by rain and erosion.

CONCLUSION

A heritage desktop survey was undertaken for the proposed extension of a solid waste site. The desktop noted the potential for several types of heritage sites.

A full Phase 1 survey will be required before this project MAY continue. It will most likely require a Phase 2 survey for mitigation as well. I suggest the two are combined to save costs.

REFERENCES

Dreyer, C. 2005. Archaeological Assessment of the Proposed Upgrading of the Road (N5) Between Senekal & Paul Roux, Free State

Dreyer, C. 2006. *First Phase Archaeological and Cultural Heritage Assessment of the Proposed Extension to the Landfill Site at Senekal, Free State.*