Cultural Heritage Impact Assessment:

Phase 1 Investigation for a Basic Assessment of the Proposed Development of a Sewage Treatment Facility near Ngwenya Lodge, Nkomazi local Municipality, in the Ehlanzeni District Municipality, Mpumalanga Province

For

Project Applicant	**Environmental Consultant**
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By

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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 NuLeaf Planning and Environmental. The survey forms part of a Basic Assessment application as part of the process provided for in Regulation 19 read with Appendix 1 of GN R326 of 4 December 2014 of the 2014 EIA Regulations, as amended published under NEMA will be followed for the application for Environmental Authorisation.

The proposed development entails the construction of a new Sewage Treatment Facility to serve both the existing Ngwenya Lodge, its proposed extension and eventually the Ngwenya Royale Development. The facility is located on Portion 109 Tenbosch 162 JU and will comprise a new Sewage Treatment Plant situated adjacent to the Kruger National Park located within the Nkomazi local Municipality, in the Ehlanzeni District Municipality, approximately 15 Km west of Komatipoort, Mpumalanga.

Site No	Site Type	Field Rating of Significance	Direct Impacts	Significance of Impact before Mitigation	Significance of Impact after Mitigation	Proposed Mitigation
1	Grave	Generally protected A: High significance	None	6 (Low)	6 (Low)	• Maintain a buffer zone of 50 metres during construction phase
2	Grave	Generally protected A: High significance	None	6 (Low)	6 (Low)	• Maintain a buffer zone of 50 metres during construction phase
3	Grave	Generally protected A: High significance	None	6 (Low)	6 (Low)	• Maintain a buffer zone of 50 metres during construction phase

Please note that no Stone Age, Iron Age or historical settlements, structures, features, assemblages or artefacts were recorded during the survey. However, three individual graves were recorded which should be fenced off to prevent accidental impact. No direct impact from the proposed development is envisaged.

It is therefore recommended, from a cultural heritage perspective that the proposed new sewage treatment facility near Ngwenya Lodge may proceed

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
DMR:	Department of Mineral Resources
I&APs:	Interested and Affected Parties
CoH WHS	Cradle of Humankind World Heritage Site

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

NuLeaf Planning and Environmental (Pty) Ltd an independent environmental consultant was contracted by Ngwenya Lodge to undertake a Basic Assessment (BA) process provided for in Regulation 19 read with Appendix 1 of GN R326 of 4 December 2014 of the 2014 EIA Regulations, as amended published under NEMA will be followed for the application for Environmental Authorisation. The 2014 EIA Regulations, as amended in April 2017 and its associated Listing Notices [Listing Notice 1 (GN R327) and Listing Notice 3 (GN R324)] specify the activities that require a Basic Assessment. The intension of the project applicant is to apply for Environmental Authorisation from the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) which is the competent authority for the proposed extension of Ngwenya Lodge near Kruger National Park, Mpumalanga Province.

The proposed development entails the construction of a new Sewage Treatment Facility to serve both the existing Ngwenya Lodge, its proposed extension and eventually the Ngwenya Royale Development. The facility is located on Portion 109 Tenbosch 162 JU and will comprise a new Sewage Treatment Plant situated adjacent to the Kruger National Park located within the Nkomazi local Municipality, in the Ehlanzeni District Municipality, approximately 15 Km west of Komatipoort, Mpumalanga.

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 heritage survey focussed on an area south west of the existing Ngwenya Lodge situated adjacent to the Crocodile River, approximately 15 km west of Komatipoort, Mpumalanga.

Farm Name(s) and Portions	The following portions and farms: • Tenbosch 162 JU o Portion 109
Size of Survey Area	40 hectares
Magisterial District	Nkomazi local Municipality Ehlanzeni District Municipality
1:50 000 Map Sheet	2531BD
1:250 0000 Map Sheet	2530

Central Coordinates of the Development	31.839525°E 25.379755°S

Table 1: Physical Environment

The survey area falls within the Savanna Biome, particularly the Lowveld Bioregion and more specifically the Delagoa Lowveld (SVl 4).

This veld type occurs in Mpumalanga Province, Swaziland and marginally into KwaZulu-Natal Province. A narrow strip on plains immediately east of the SVl 3 Granite Lowveld from the Nsemani River west of Satara in the Kruger National Park southwards to immediately west of Lower Sabie Camp to the Pomba Guard Post west of Crocodile Bridge Camp to the Strydom Block in the south. There is also a band of Delagoa Lowveld in Swaziland from Mhlume in the north to Onverwacht Border Post in the south, extending marginally into KwaZulu-Natal at Pongola.

This veld type is characterised by dense tree or tall shrub layer dominated by *Acacia welwitschii*, often forming thickets. Herb layer has in addition to grass species a wide variety of forbs. Areas are often heavily grazed which sometimes drastically reduces the grass cover. Small Trees: Acacia senegal var. rostrata (d), A. welwitschii subsp. delagoensis(d), Albizia petersiana(d), Schotia capitata(d), Spirostachys africana(d), Pappea capensis. Tall Shrubs: Euclea divinorum(d), Maerua parvifolia(d), Boscia mossambicensis, Dichrostachys cinerea, Ehretia rigida subsp. rigida, Flueggea virosa, Grewia bicolor, Rhus gueinzii. Low Shrubs: Abutilon austro-africanum, Justicia flava, Zanthoxylum humile. Woody Climbers: Cordia ovalis(d), Capparis tomentosa. Graminoids: Chloris virgata(d), Panicum coloratum(d), P. maximum(d), Sporobolus nitens(d), Aristida congesta, Chloris roxburghiana, Dactyloctenium aegyptium, Tragus berteronianus (Mucina & Rutherford 2006).

The survey area is located south of the Kruger National Park, south of the Crocodile River. Infrastructure consists of formal residential houses, tourism lodges, several dirt and tarred roads, power lines, fences, and extensive agricultural fields (both used and fallow) and grazing pastures (also game farms). The northern periphery is bordered by the Tenbosch road connecting to the R571 to the east.

The mountainous areas and the river systems form the backbone of the natural environmental system, providing the major water source needed for development and the scenic environment essential for tourism. Areas of pristine natural environment in the northern part of Nkomazi include the Kaalrug Mountain range to the west, the Lebombo Mountain range to the east and the whole length of the Crocodile River. These areas have excellent potential for eco-tourism uses. The southern part contains large areas of pristine natural environment with conservational value. Important to mention are the banks of the Mlumati River, naturally occurring cycads at Mbuzini, the Mananga Wetland, the areas surrounding Lake Matsamo and the Mananga Whaleback, this forms part of the Lebombo Mountain range on the far eastern side (Nkomazi Local Municipality IDP 2016/17).

Komatipoort normally receives about 427 mm of rain per year, with most rainfall occuring mainly during mid-summer. The region receives the lowest rainfall (1 mm) in July and the highest (83 mm) in January. The monthly distribution of average daily maximum temperatures calculates to an average midday temperatures for Komatipoort range from 25°C in June to 31.6°C in January. The region is the coldest during June when the mercury drops to 9°C on average during the night (SA Explorer 2017).

Current Zoning	Agricultural

	Tourism
Economic activities	Farming and tourism
Soil and basic geology	A large proportion of Nkomazi is underlain with quartz monzonite (30.7%) to the south and central region. Basalt is the second most dominant (16.5%) geology type, located to the east. The north-western part is predominantly underlain with arenite and lava. The least occurring geology types are ultramafic rocks, granophyre, gabbro and dolorite. The municipal area is regarded as high potential agricultural soils, 75.3% as medium potential agricultural soils and 15.3% as very low potential soils. Most of the agriculture activities (grazing and irrigation) take place on medium potential land (Nkomazi Local Municipality IDP 2016/17).
Prior activities	Livestock farming and agriculture
Socio Economic Environment	Nkomazi municipality is mostly a rural municipality as a result the municipality suffers from a high rate of unemployment as it is struggling to attract investments. Other factors contributing to the high employment rate is the shortage of skills and illiteracy rates. As it generally applicable throughout the country, unemployment is at the heart of poverty within the municipality and the fight against poverty should begin with addressing the unemployment challenges as well as the manner in which local citizens relate to the economy. The latest official statistical information suggests that unemployment rate has been on a downward trend. In 2007 the total unemployment rate of Nkomazi was approximately 34.2% which can be attributed to the 26% and 43% of males and females respectively. According to the 2011 STATS SA Census the total unemployment rate in the municipality is at 34% with 26.8% being males and 42.5% being females. This trend in unemployment can be attributed to the following: Growth of the informal sector in the trade sector, the possible outmigration as well as programmes favourable to females (women empowerment). It can thus be deduced that 34% of the 71% poverty rate can be attributed to unemployment. Thus by putting in place strategies that will fight unemployment Nkomazi would have halved the fight against poverty, thereby coinciding with the national targets of halving poverty by 2014. As such the unemployed population is an untapped resource in the fight against poverty, thus this should be the basis of Nkomazi's poverty strategy thereby promoting self-employment and small business development (Nkomazi Local Municipality IDP 2016/17).
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

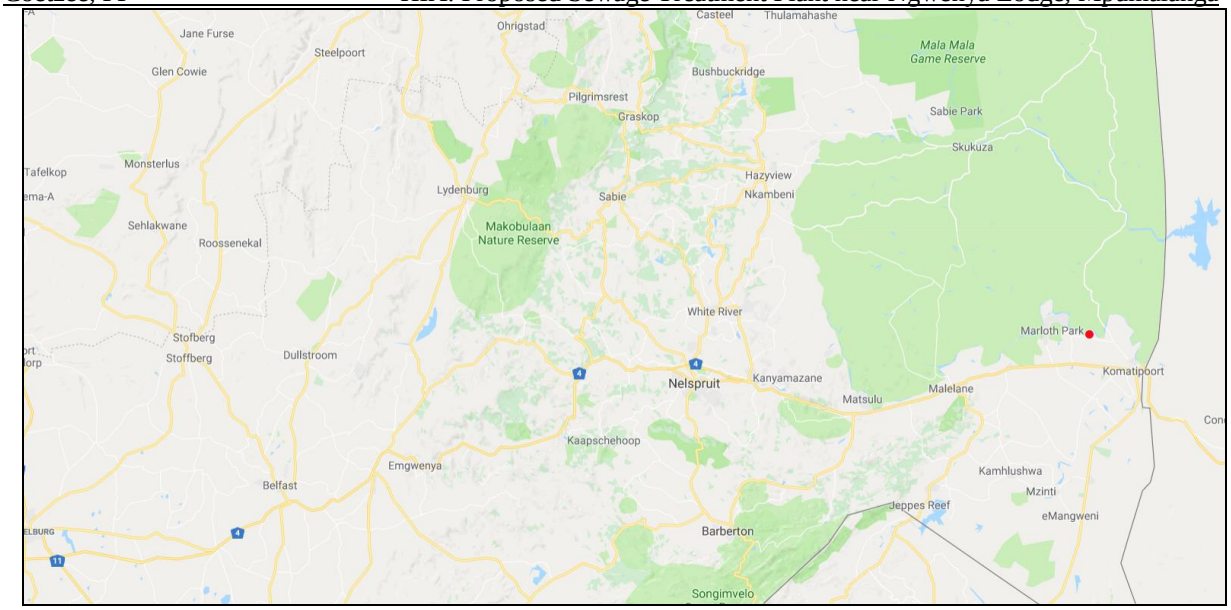

Figure 1: Regional context of the survey footprint located north west of Komatipoort (indicated by the red area)

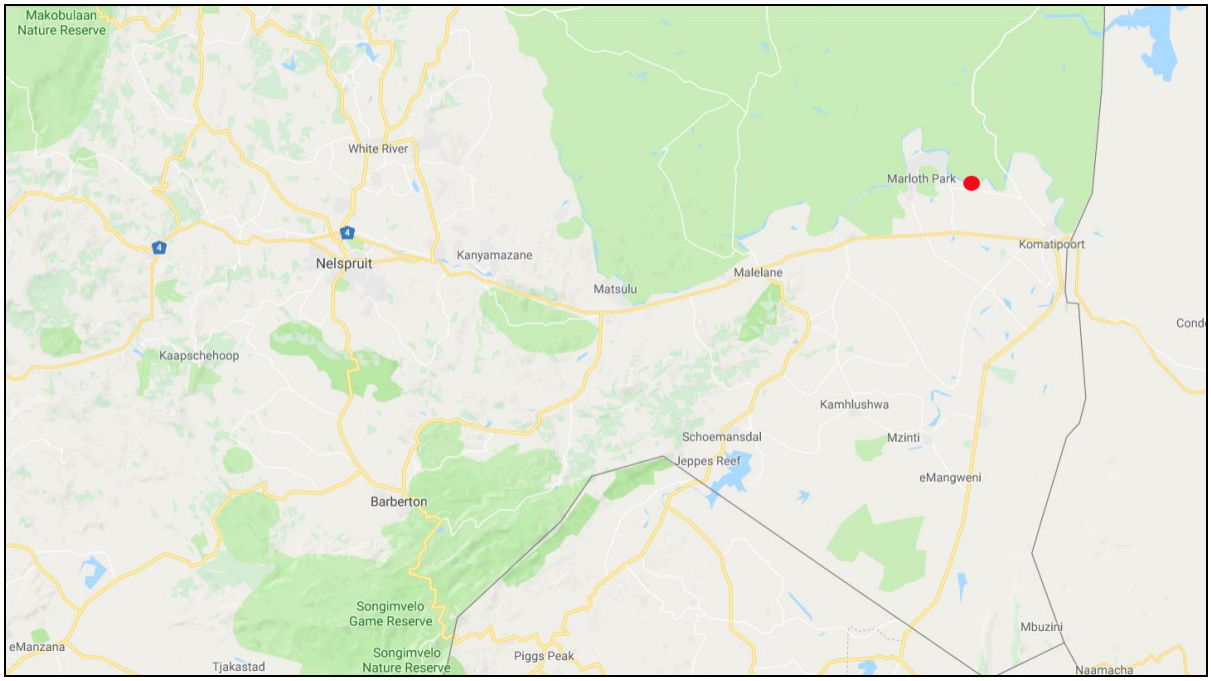

Figure 2: Local context of the survey area located east of Marloth Park (indicated by red area)

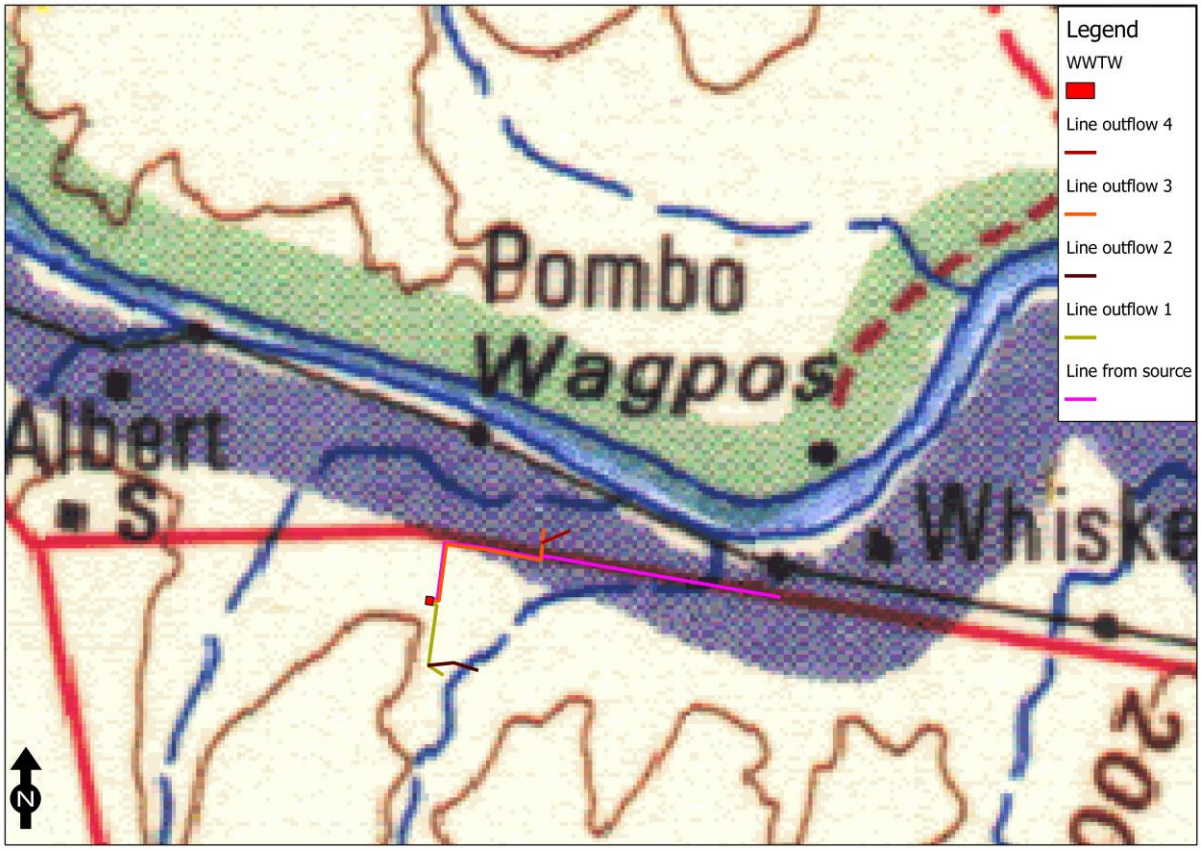

Figure 3: Regional context of the survey footprint with the extent of the farm Tenbosch 182 JU as indicated on the 1:250 000 map (2530)

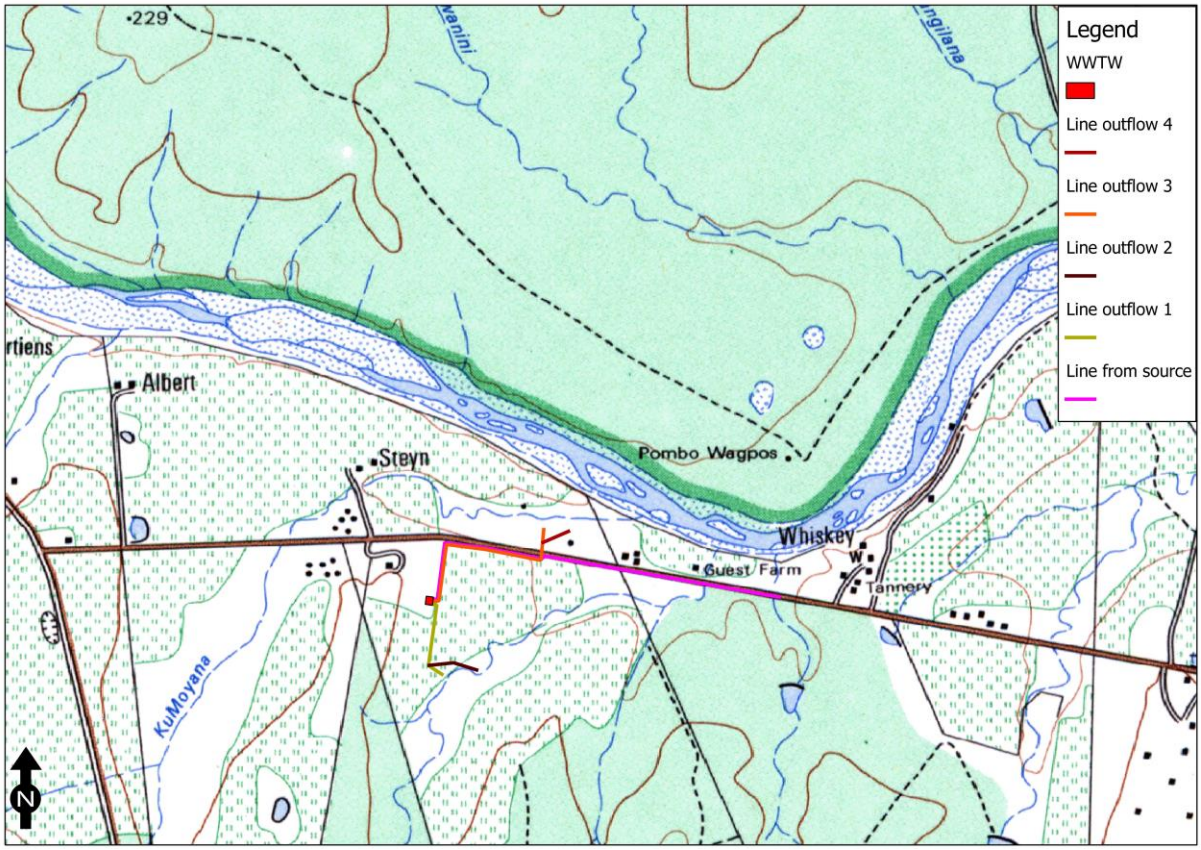

Figure 4: Local context of the survey footprint as indicated on the 1:50 000 topographic map (2531BD/2532AC)

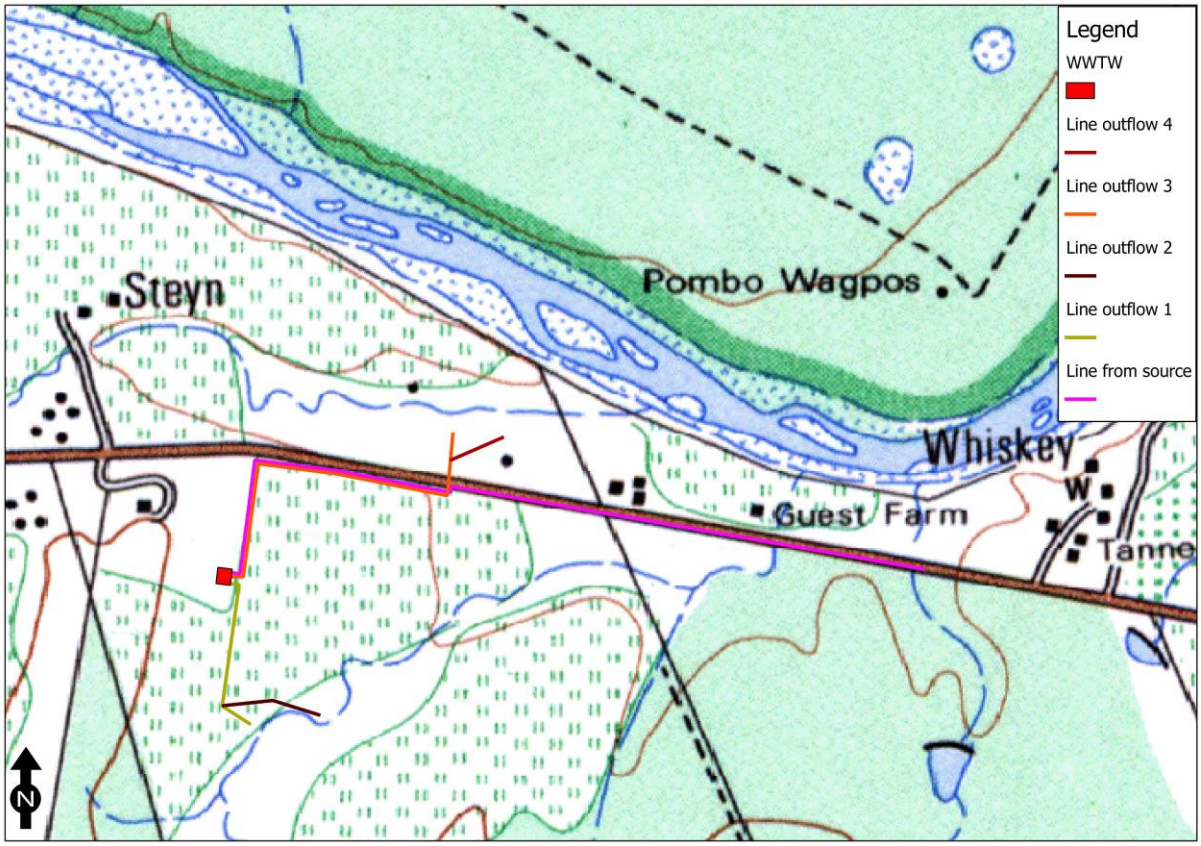

Figure 5: The survey area as indicated on the 1:50 000 topographic map 2531BD/2532AC

Figure 6: Survey area as indicated on Google Earth Pro (2017)

Figure 7: Detail of survey area relative to Ngwenya Lodge as indicated on Google Earth Pro (2017)

Figure 8: General view of the central area of the survey footprint

Figure 9: General view of the existing agricultural fields in the survey footprint

Figure 10: General view of the section north of the tarred road

Figure 11: General view of the central section of the survey footprint (fallow lands)

Figure 12: General view of the central section along the fence (along which the pipeline will be located)

4. Proposed Project Description

The proposed development entails the construction of a new Sewage Treatment Facility to serve both the existing Ngwenya Lodge, its proposed extension and eventually the Ngwenya Royale Development. The facility, located on Portion 109 Tenbosch 162, will comprise of a new Sewage Treatment Plant (Violeo System, Two Phases 400 m^3 & 300 m^3, 30 x 15 m each), associated pipelines to discharge treated wastewater to an existing dam on site and connections to the existing Ngwenya Lodge, as well as, a new sump. The current sewage treatment facility will also be decommissioned.

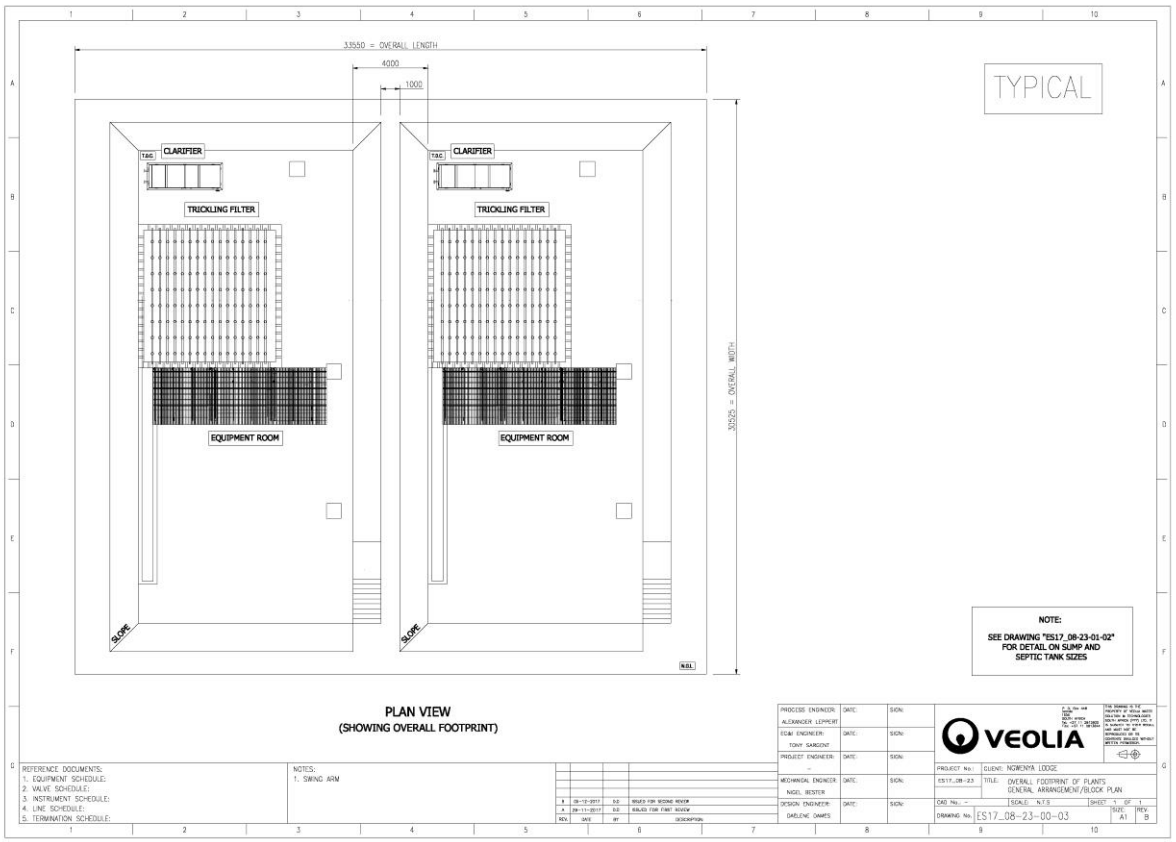

Figure 13: Detailed layout of the proposed sewage treatment facility

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 Section 28
The National Water Act (Act No. 36 of 1998)	Section 21 (a)(b)
Regulation 2, Appendix 2 of Governmental Notice Regulation (GNR) 982	Appendix 2 (a-l)
Air Quality Act (Act No. 39 of 2004)	Section 21
National Forests Act, Act of 84 of 1998	Chap 3 (Part 1), Section 12(1), Section 15(1)
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)	Section 21(c) and (i)
Mine Health and Safety Act (Act No. 29 of 1996) (MHSA)	
Biodiversity Act (Act 10 of 2004)	
World Heritage Convention Act (Act No. 49 of 1999)	
National Environmental Management: Protected Areas Act (Act No. 57 of	

2003)	
National Infrastructure Plan	
Nkomazi Local Municipality Integrated Management Plan 2016/2017	

Table 3: Legal framework

Number and date of the relevant Listing Notice:	Activity Number (s) (in terms of the relevant Listing Notice):	Description of each listed activity as per the detailed project description
	9 (i) (ii)	The development of infrastructure exceeding 1000 m in length for the bulk transportation of water or storm water with (i) internal diameter of 0,36 m or more or (ii) peak throughput of 120 litres per second or more. Potable water and storm water infrastructure may exceed 1000m in length and may have an internal diameter of 0,36m, depending on the final storm water design.
	10 (i) (ii)	The development and related operation of infrastructure exceeding 1000 m in length for the bulk transportation of sewage, effluent, process water, return water, industrial discharge or slimes with (i) internal diameter of 0,36 m or more
GN R. 327 (Listing Notice 1)		or (ii) peak throughput of 120 liters per second or more. Sewage reticulation infrastructure may exceed 1000m in length and may have an internal diameter of 0,36m, depending on the final storm water design.
	12 (x) (xii) (c)	The development of (x) buildings exceeding 100 square meters in size, (xii) infrastructure or structures with a physical footprint of 100 square meters in size or more where such development occurs within 32 meters of a watercourse. Depending on the storm water design, outlets may be developed within 32m of the drainage line or dam located within the site.
	25	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2000 cubic meters but less than 15 000 cubic meters.
	27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation. The total cleared footprint of indigenous vegetation is not expected to exceed 20 Ha.
	31	The decommissioning of existing facilities, structures or infrastructure
GN R. 324 (Listing Notice 3)	12 (f) (ii) (iii)	The clearance of an area of 300 square meters or more of indigenous vegetation in (f) Mpumalanga (ii) critical biodiversity area (iii) on land zoned open space or had an equivalent zoning. The total footprint will exceed 300 square meters.
	14 (x) (xii) (c); (f) (i) (hh)	The development of (x) buildings exceeding 10 square meters in size, (xii) infrastructure or structures with a physical footprint of 10 square meters or more, where such development occurs within (c) 32 meters or a watercourse; in (f) Mpumalanga (i) outside urban areas in (hh) areas within 10 Km of a national park as identified in terms of NEMPAA. Buildings and/or infrastructure may be within 32 m of the drainage line or other watercourse. The Kruger National Park is located less than 5 Km from the proposed site.

Table 4: Lister activities according to NEMA (Act No. 107 of 1998)

Section 38 of the NHRA (Act No. 25 of 1999) stipulates that the following activities trigger 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	Yes
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 5: 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
Provincial Significance	Grade II	High significance	Conservation by provincial heritage authority, provincial site nomination. No alteration whatsoever without permit
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
Local Significance	Grade III-B	High significance	Conservation by local authority, no external alteration without permit from provincial heritage authority. Could
Generally Protected A	Grade IV-A	High/medium significance	Conservation by local authority. Site should be mitigated before destruction. Destruction permit required from
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

Table 6: 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).

- World Heritage Convention Act (Act No. 49 of 1999), the National Environmental Management: Protected Areas Act (Act No. 57 of 2003) and the associated regulations for the proper administration of special Nature Reserves, National Parks and World Heritage Sites.

6. Study Approach/Methodology

Geographical information (ESRI shapefiles) on the proposed prospecting areas was supplied by NuLeaf Planning and Environmental. The most up-to-date Google Earth images and topographic maps were used to indicate the survey area. Topographic maps were sources 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 survey most of the survey footprint. The local farmer was consulted regarding intangible heritage and the location of known graves and graveyards. Most areas were surveyed by conducting intuitive pedestrian (foot) surveys. The survey area is mostly characterised by agricultural fields (both active and fallow).

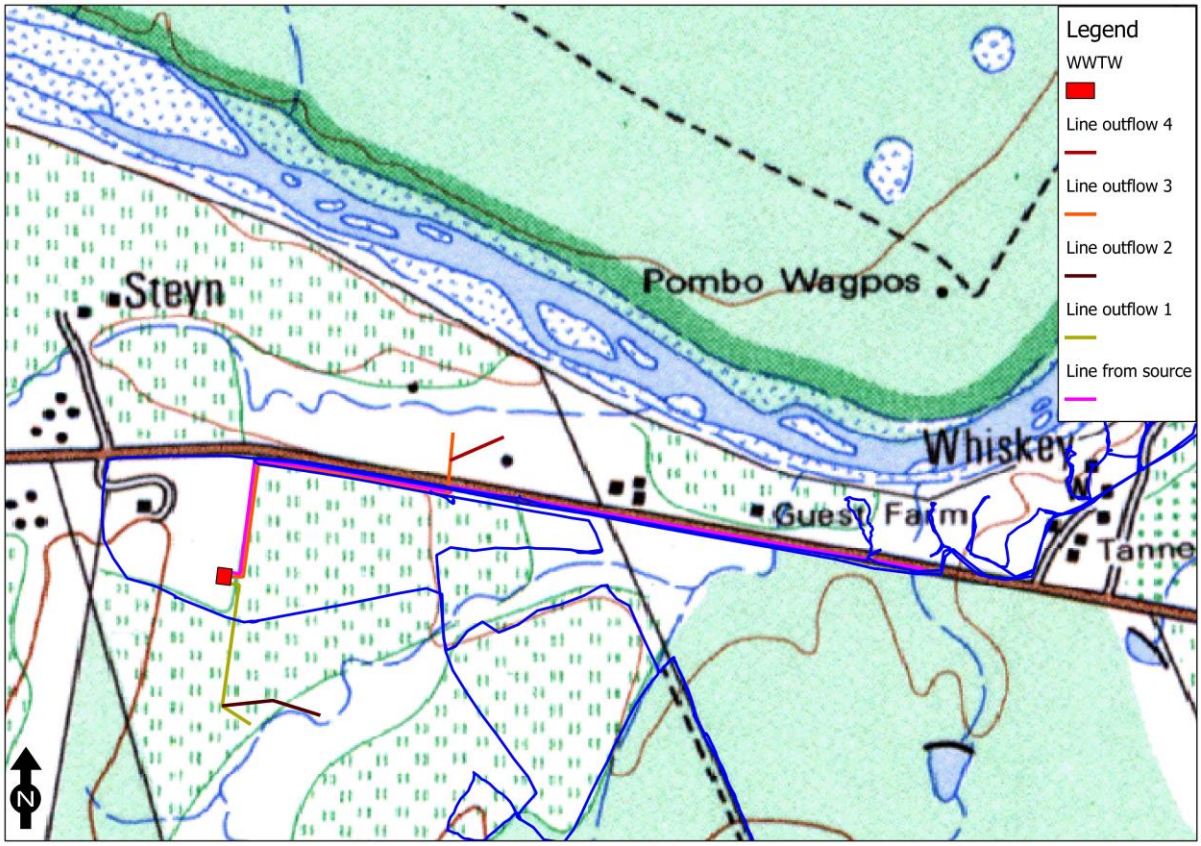

Figure 14: Recorded survey tracks for the project

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
- Published and unpublished material on the area (Coetzee 2016; Meyer 1986)

According to the Surveyor General's database the farm Tenbosch 162 JU was first surveyed in July 1927 and has since been subdivided into various portions. Please take note of the railway line (Pretoria and Komatipoort) located further to the south of the survey area with a Tenbosch Siding, there were also a Tenbosch Store and a Mission Station located on the larger extent of the farm (also see Addendum 3).

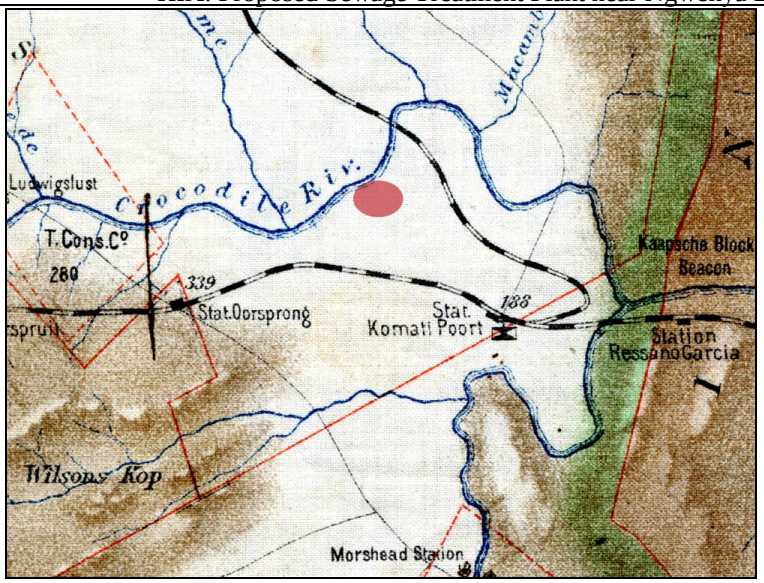

Figure 15: Jeppe's Map dating to 1899 indicates an approximate location for the farm Tenbosch as the area was only surveyed in 1927

6.2 Palaeontological sensitivity

The SAHRIS rating for the site is Very High with a recommendation for a palaeontological field assessment, in addition a protocol for finds will be required.

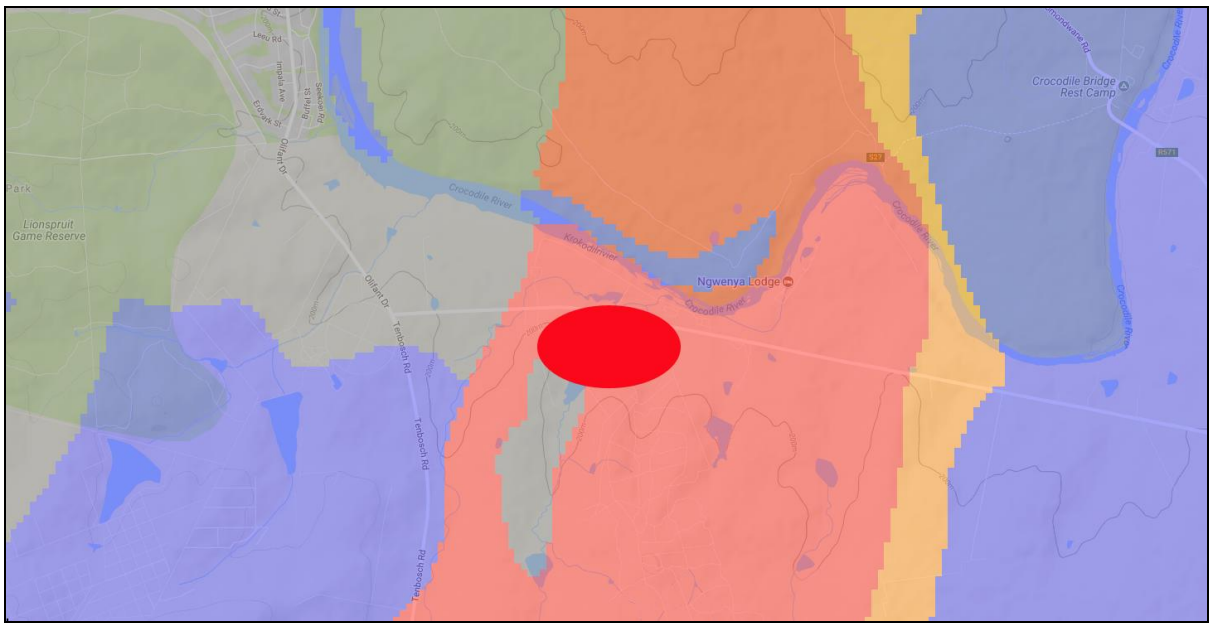

Figure 16: Rating: Very High (field assessment and protocol for finds are required)

6.3 Site visits

The field survey was conducted on 8 November 2017.

6.4 Social interaction and current inhabitants

The local farmer was consulted regarding intangible heritage and the location of known graves and graveyards.

6.5 Public Consultation and Stakeholder Engagement

The public participation process is currently in process and the registration of Interested and Affected Parties is awaited no later than 8 December 2017.

6.6 Assumptions, restrictions, gaps and limitations

No severe physical restrictions were encountered as the survey area was fairly accessible. The survey area is however severely disturbed due to farming (ploughing) activities. As a result not all areas were investigated in detail, as it was relatively easy to determine which areas will probably not yield archaeological and historical remains.

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 exten**t, 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) x 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.

7.2 Heritage sites

Please note that no Stone Age, Iron Age or historical settlements, structures, features, assemblages or artefacts were recorded during the survey. However, three individual graves (Sites 1, 2, and 3) were recorded within existing and fallow agricultural fields. Two of the graves (Sites 1 and 2) have been covered with large piles of rocks and soil to prevent any future impact due to farming activities on the farm.

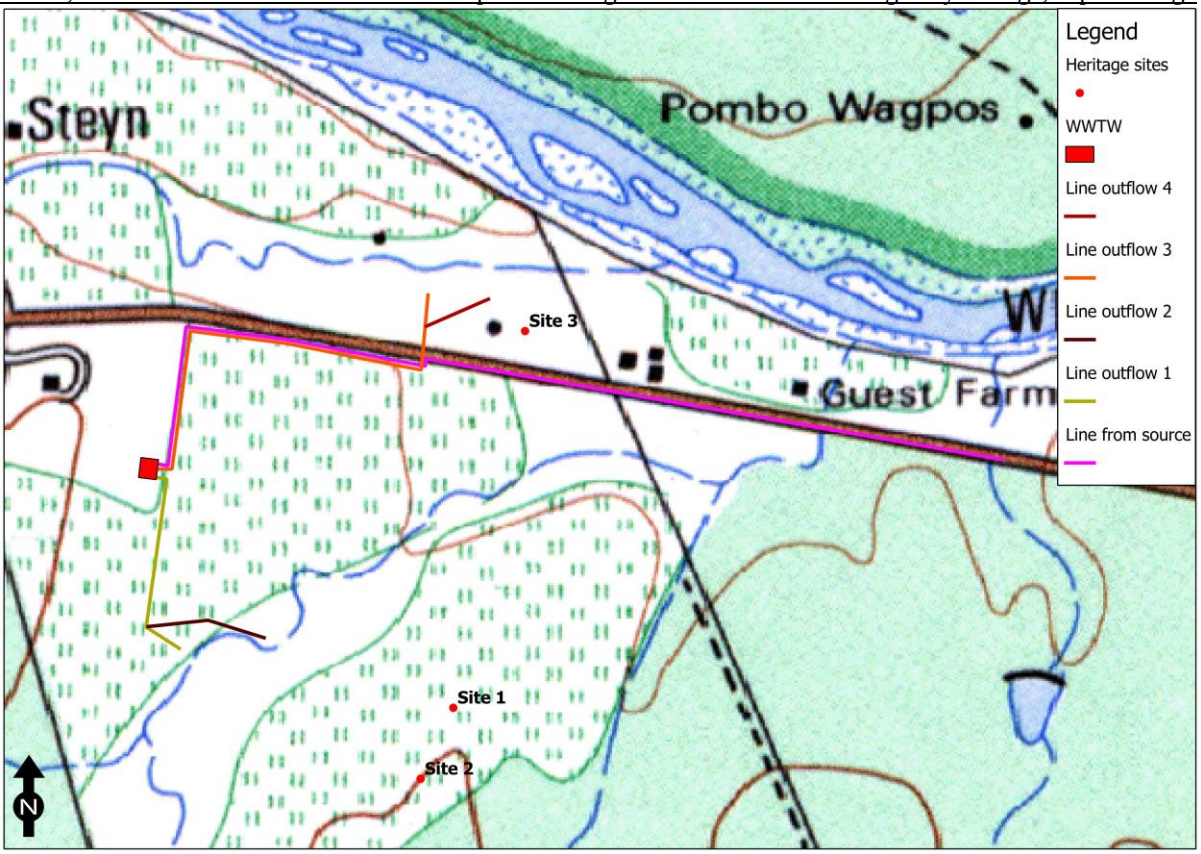

Figure 17: Location of heritage sites within the survey footprint

8. Locations and Evaluation of Sites

Site No	Coordinates	Site Type	Field Rating of Significance	Impact	Proposed Mitigation
1	25.386484°S 31.841499°E	Grave	Generally protected A: High significance	None	• Maintain a buffer zone of 50 metres during construction phase
2	25.387836°S 31.840876°E	Grave	Generally protected A: High significance	None	• Maintain a buffer zone of 50 metres during construction phase
3	25.379311°S 31.842866°E	Grave	Generally protected A: High significance	None	• Maintain a buffer zone of 50 metres during construction phase

Table 7: 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

Please note that no Stone Age, Iron Age or historical settlements, structures, features, assemblages or artefacts were recorded during the survey.

However, three individual graves (Sites 1, 2, and 3) were recorded which should be fenced off to prevent accidental impact. No direct impact from the proposed development is envisaged.

It is therefore recommended, from a cultural heritage perspective that the proposed new sewage treatment facility near Ngwenya Lodge may proceed

Nature: Proposed new sewage treatment facility near Ngwenya Lodge		
	Without mitigation	**With mitigation**
Construction Phase		
Probability	Very Improbable (1)	Very Improbable (1)
Duration	Very short term (1)	Very short term (1)
Extent	Limited to the site (1)	Limited to the site (1)
Magnitude	Small (0)	Small (0)
Significance of Impact	**2 (Low)**	**2 (Low)**

Status (positive or negative)	Neutral	Neutral
Operational Phase		
Probability	Very Improbable (1)	Very Improbable (1)
Duration	Permanent (5)	Permanent (5)
Extent	Limited to the site (1)	Limited to the site (1)
Magnitude	Small (0)	Small (0)
Significance of Impact	**6 (Low)**	**6 (Low)**
Status (positive or negative)	Neutral	Neutral
Reversibility	Low	Low
Irreplaceable loss of resources?	None	None
Cumulative impacts and indirect impacts	Construction and operational phase activities will result in vibrations and dust which will also indirectly affect the heritage remains.	
Can impacts be mitigated?	Yes, buffer zones are recommended (50 metres)	

Table 8: Significance of the impact

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)).

11. References

Bergh, J.S. (ed.) 1998. *Geskiedenis Atlas van Suid-Afrika: Die Vier Noordelike Provinsies*. Pretoria: Van \Schaik Publishers

Coetzee, F.P. 2016. Cultural Heritage Assessment of the Proposed Timeshare Resort Development on Portion 101 of the Farm Tenbosch 162 JU, near Komatipoort, Nkomazi Local Municipality in the Ehlanzeni District Municipality, Mpumalanga Province. Unpublished report.

De Vaal JB. 1990. Transportpaaie, transportryers en die tsetsevlieg in Neem uit die Verlede. Pretoria: Nasionale Parkeraad

Eloff, JH. 1990. ‘n Nuwe orde in Pienaar, U de V. Neem uit die Verlede. Pretoria: Nasionale Parkeraad

Huffman, T. N. 2007. *Handbook to the Iron Age: the Archaeology of Pre-Colonial Farming Societies in Southern Africa*. University of KZN Press: Pietermaritzburg.

Jeppe, F. 1899. Jeppe’s Map of the Transvaal. London: Edward Stanford.

Lombard, M., Wadley, L., Deacon, J., Wurz, S., Parsons, I., Mohapi, M. Swart, J. & Mitchell, P. 2012. South African and Lesotho Stone Age sequence updated. *South African Archaeological Bulletin* 67: 123-44.

Nkomazi Local Municipality Integrated Management Plan 2016/2017

Mason, R.J. 1962. *Prehistory of the Transvaal*. Johannesburg. Witwatersrand University Press.

Mason, R.J. 1986. *The origins of black people of Johannesburg and the southern western central Transvaal, AD350 – 1880*. Johannesburg. University of the Witwatersrand Archaeological Research Unit, Occasional Paper 16.

Meyer, A. 1986. Kultuurhistoriese interpretasie van die Ystertydperk in die Nasionale Kruger Wildtuin. Unpublished PhD thesis. Pretoria. University of Pretoria

Mucina, L. & Rutherford, M.C. 2010. The Vegetation of South Africa, Lesotho and Swaziland. *Strelitzia 19*. Pretoria: South African National Biodiversity Institute.

National Heritage Resources Act. Act No. 25 of 1999. Government Printer: Pretoria.

Office of the President. 27 November 1998. National Environmental Management Act (Act No. 107 of 1998). Government Gazette Vol 401 (19519). Pretoria: Government Printer.

Pienaar, U de V. 1990. Neem uit die Verlede. Pretoria: National Parks Board.

SAHRA, 2005. Minimum Standards for the Archaeological and the Palaeontological Components of Impact Assessment Reports, Draft version 1.4.

Sandeman EF. 1880. Eight months in an ox-waggon. London: Griffith & Farran.

South African Heritage Resources Agency (SAHRA). Report Mapping Project. Version 1.0, 2009.

Other Sources

Google Earth Pro 2017 (Images: December 2017)

http://samilitaryhistory.org (Accessed: December 2017)

National Archives (NAAIRS) (Accessed December 2017)

SA Explorer http://www.saexplorer.co.za/south-africa/climate/brits_climate.asp (Accessed December 2017)

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 fill 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 orna ments, 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 occurance of outils ecailles 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 com pared 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 orshaping 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 classifiedas 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

Iron Age Sequence

In the northern regions of South Africa at least three settlement phases have been distinguished for early prehistoric agropastoralist settlements during the **Early Iron Age** (EIA). Diagnostic pottery assemblages can be used to infer group identities and to trace movements across the landscape. The first phase of the Early Iron Age, known as **Happy Rest** (named after the site where the ceramics were first identified), is representative of the Western Stream of migrations, and dates to AD 400 - AD 600. The second phase of **Diamant**

is dated to AD 600 - AD 900 and was first recognized at the eponymous site of Diamant in the western Waterberg. The third phase, characterised by herringbone-decorated pottery of the **Eiland** tradition, is regarded as the final expression of the Early Iron Age (EIA) and occurs over large parts of the North West Province, Northern Province, Gauteng and Mpumalanga. This phase has been dated to about AD 900 - AD 1200. These sites are usually located on low-lying spurs close to water.

The **Late Iron Age** (LIA) settlements are characterised by sites without stone walls (Early Moloko settlements such as Icon (AD 1350 – 1500) and stone-walled sites such as Madikwe (AD 1500 – 1700) and Buispoort (AD 1700 – 1800) situated on defensive hilltops. This occupation phase has been linked to the arrival of ancestral Tswana speakers and in the northern regions of South Africa with associated sites dating between the sixteenth and seventeenth centuries AD. The terminal LIA is represented by late 18th/early 19th century settlements with multichrome Moloko pottery commonly attributed to the Sotho-Tswana. These settlements can in many instances be correlated with oral traditions on population movements during which African farming communities sought refuge in mountainous regions during the processes of disruption in the northern interior of South Africa, resulting from the so-called *difaqane* (or m*fecane*).

Figure 18: General location of Iron Age settlements in the regions along the Crocodile River (after Bergh 1998)

Most of the archaeological sites occurring in the region are dated to the later (stone walled) phase of the Late Iron Age (c. AD 1640 - AD 1830s) also known as the Late Moloko. These sites all conform to a general settlement layout that forms part of a certain worldview. As such, the livestock enclosures are situated in the central area of a settlement. The court (kgotla) is also located in this central area and is associated with men (men are usually also buried here). The surrounding scalloped walling is where the houses are situated and is

associated with women. This type of settlement layout is generally known as the Central Cattle Pattern (CCP).

By nature of the topography of the region, the archaeological sites are mostly situated on high laying plateau and foothills. All the stone walls are built with the dry-walling technique as no evidence was found that the surfaces were plastered with an agent (i.e. dagha (cattle dung mixed with mud)).

Ethno-archaeological sequence in the Kruger National Park

Both Early and Later Iron Age settlements have been recorded in the Park by various archaeological researchers. Radiocarbon dates indicate occupation from approximately the beginning of the 5th Century until historic times. Contact situations between the hunter-gatherers and the migratory agropastoralists seem to have been initially symbiotic. The earliest dates for Iron Age occupation are found near Letaba, followed by settlement of the Sabie and Crocodile river areas. The agropastoralists migrating into the Park brought with them a variety of domestic plants as well as domestic animals but still gathered veld foods and hunted actively. They lived in settled villages where they practised mining, smelting and working of iron, copper and gold and manufactured pottery. Decorations on the pottery are culturally diagnostic elements which are used by archaeologists to identify periods and traditions

The southern region of the Park is associated with the Early Iron Age through the following complexes or industries (Meyer 1986):
- Mutlumuvi Complex
- Sites associated with Eiland pottery
- Sites associated with Lydenburg pottery
- Sites associated with the Sabie site
- Mahlambamadube Industry
- Shirimantanga Industry

The southern region of the Park is associated with the Late Iron Age through the following complexes or industries (Meyer 1986):
- Ngwenya Industry
- Nsikazi Industry

During the 18th century, after defeating the Nhlanganu and BaPai, the Ngomane, a Shangaan-Tsonga group, settled and dominated the southern regions of the present-day Kruger National Park (Meyer 1986:212-213). During this time the area was also influenced by the military presence of Swazi, Eastern Sotho and Tsonga groups (Meyer 1986:242).

In 1725, De Cuiper and his companions, the first known Europeans to travel through this area, encountered dense concentrations of people with large cattle herds. A hostile group north of the Crocodile River, probably the Ngomane, would not allow the party to continue into their territory (Eloff 1990:31).

After the 10th century trade became an important element of the economy. Items such as game products (including ivory and animal furs), iron, copper and gold, were exported and salt, grain, cattle, sea shells as well as glass beads and textiles from the East imported. Although ivory was a major trade item, documents on trade with the East Coast also refer to leopard skins, tortoise shells and slaves. Gold is specifically mentioned in documents relating to the twelfth century. Although the Arab traders controlled the trade until the 16th century, they used local people as porters and agents. Various trade routes went through the Park. One

of these continued from Lydenburg through Pretoriuskop and the Matalhapoort to Delagoabaai. A footpath from Delagoabaai northwards went through Compos Corvo, Progresso de Guedes and Castilhopolis (subsequently used as overnight stops by Nellmapius), through the later Furley's drift at the Nkomati, Tengamanzi on the Crocodile and continued through Pretoriuskop to the area which later became known as Pilgrims Rest.

Accounts by travellers from 1725 to 1838 describe, as mentioned above, a significant presence of agropastoralists in the area which would subsequently became the Kruger National Park. When the Kruger National Park was proclaimed in 1902 the black settlers were removed and resettled in neighbouring areas.

Although ancient mine activities occur in the Kaap Valley, there is no documentary evidence that the Portuguese were actively involved in the mining and trade before the 18th century. The expedition of 1725 led by De Cuiper aimed to establish a connection with the Monomotapa gold fields.

A transport road to Delagoa Bay is indicated on old maps as 'De oude Wagenweg' or the 'oudste weg naar Delagoabaai (De Vaal 1990:240). This road was used by the Trichard commission in 1835 in order to find a route to Delagoa Bay, (also previously investigated by Potgieter in 1834. It passed Pretoriuskop, south of Shitlhavekop, crossed the upper reaches of the Mbyamiti (a tributary of the Crocodile River), passing Kwaggaspan and south of Renoster- and Siyalukop and then through the Lebombo mountains to Delagoa. However, the route was for various reasons not favoured, and in particular because it lacked sufficient watering points for cattle during winter and the route was ultimately discontinued (De Vaal 1990:249).

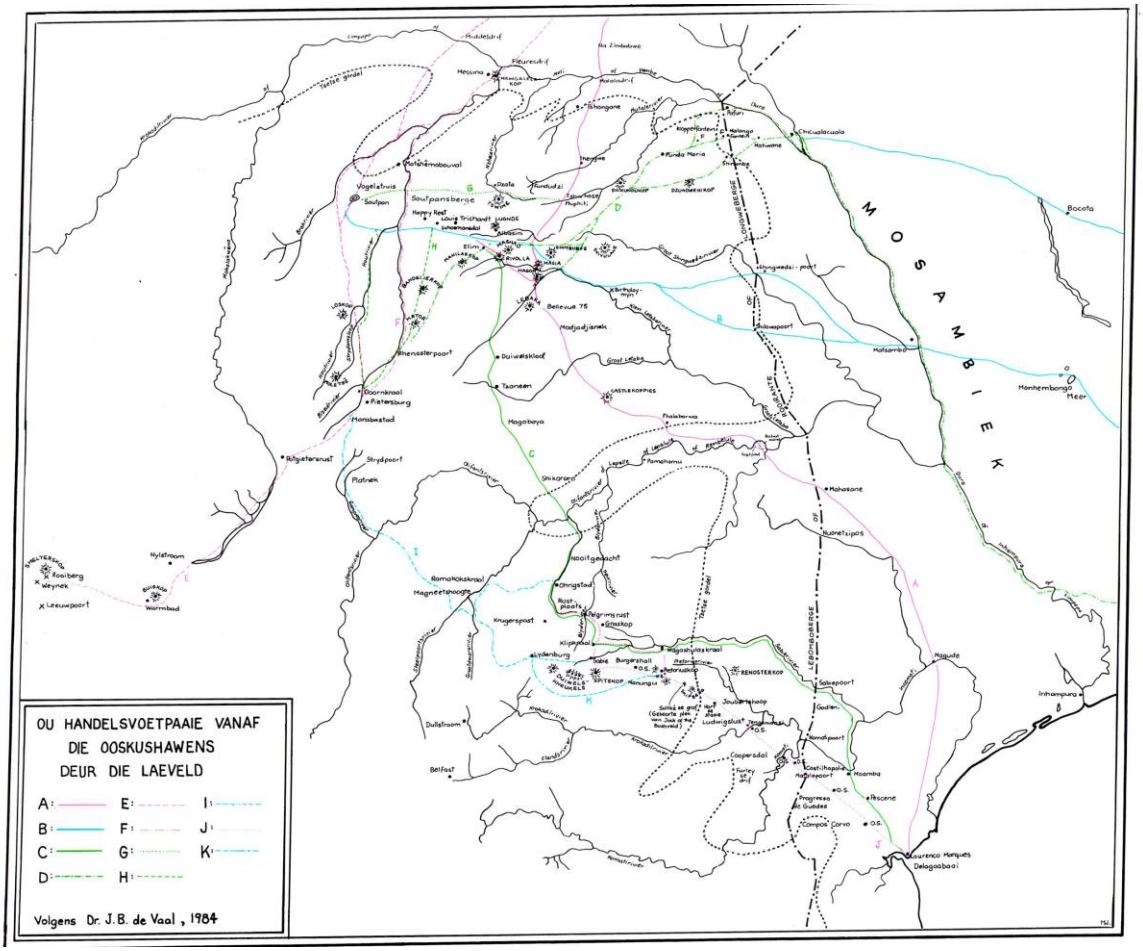

Figure 19: Trade route J passes to the south of the farm Tenbosch (U de V Pienaar 1990)

Joâo Albasini was a well-known trader and elephant hunter who established a trading post at Magashulas Kraal north of Pretoriuskop, where he also built a house. By 1846 he was one of only a few white people living within this area. Albasini played a major role in the trade between the Voortrekkers and the Portuguese. He also established cattle outposts with assistants, and built small shops at some of these, namely at the posts of his assistants Manungu and that of Josekhulu southeast of Skipberg (also known as Langkop by the transport drivers). The Delagoa transport route went passed Skipberg and through the Lebombo mountain range. Manungu administered the trading post and looked after Albisini's cattle between 1845 - 1853.Archaeological investigations have shown that Manungu's outpost on the eastern side of the present Manungukop was used as an overnight stop on the ox-waggon transport route.

Accounts by hunters and other travellers report the presence of immense herds of game in the area, 'particularly between the Lebombos and Ship Mountain' (Scully 1907 quoted by U de V Pienaar 1990). Thomas Hart, who supervised an outpost station for Nellmapius on the trading route from Pilgrims Rest to Delagoa Bay, had a small house and enclosures for his numerous pet animals near the Josekhulu Spruit. Hart was murdered by a robber-band during the Sekhukhune war in 1876 and his buildings destroyed. The mutilated remains of Hart were ultimately buried there. Another well-known trader/hunter in this area was Sandeman who hunted in the Pretoriuskop-Skipberg area on his way to Delagoa Bay. He visited Thomas Hart's station and described the scene of destruction left after the murder of the latter.

Nellmapius was appointed by President Burgers to establish a route from the gold fields to Delagoa Bay. A concession was awarded in 1875 to build a road with overnight stations from the Lydenburg gold fields to Lourenço Marques. Pretoriuskop was the second station. Joubertshoop, the station of Thomas Hart, was 25.6 km southeast of Pretoriuskop. The next station 27.2 km on, was on the righthand bank of the Crocodile River. The crossing on the Crocodile became subsequently known as Nellmapius Drift.

The adventures of the transport driver Percy FitzPatrick and his dog, Jock, are well-known. Commemorative plaques have been constructed on their transport route from Lydenburg through Pretoriuskop to Delagoa Bay, which also falls within the proposed Concession area (See Map 2). A clue to the long-lost site where Jock was born was found in the following reference of FitzPatrick in Jock of the Bushveld: 'We had rested through the heat of the day under a big tree on the bank of a little stream; it was the tree (near Ship Mountain) under which Soltké praid and died' (FitzPatrick quoted by U de V Pienaar (1990:263).

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 Grave
Site Period	Mid to Late 20th century
Physical description	The site comprises a single grave which has been covered by a large heap of rock and soil to prevent any impact or disturbance. The orientation and shape of the grave is undeterminable. Unmarked graves are by default regarded as older than 60 years and are therefore protected by the NHRA (Act No 25 of 1999, Section 36).
Integrity of deposits or structures	Stable
Site extent	Approximately 20 x 20 metres

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

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 20: Grave covered by a large heap of rocks

Site 2

A. GENERAL SITE DESCRIPTION	
Site type	Historical Grave
Site Period	Mid to Late 20th century
Physical description	The site comprises a single grave which has been covered by a large heap of rock and soil to prevent any impact or disturbance. The orientation and shape of the grave is undeterminable. Unmarked graves are by default regarded as older than 60 years and are therefore protected by the NHRA (Act No 25 of 1999, Section 36).
Integrity of deposits or structures	Stable

Site extent	Approximately 20 x 20 metres		
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

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 21: Grave covered by a large heap of rocks

Site 3

A. GENERAL SITE DESCRIPTION			
Site type	Historical Grave		
Site Period	Mid to Late 20th century		
Physical description	The site comprises a single grave which has been covered by rocks and a fallen tree to prevent any impact or disturbance. The orientation and shape of the grave is undeterminable. Unmarked graves are by default regarded as older than 60 years and are therefore protected by the NHRA (Act No 25 of 1999, Section 36).		
Integrity of deposits or structures	Stable		
Site extent	Approximately 20 x 20 metres		
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

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 22: Grave covered by rocks and a fallen tree

Addendum 3: Surveyor General Farm Diagram

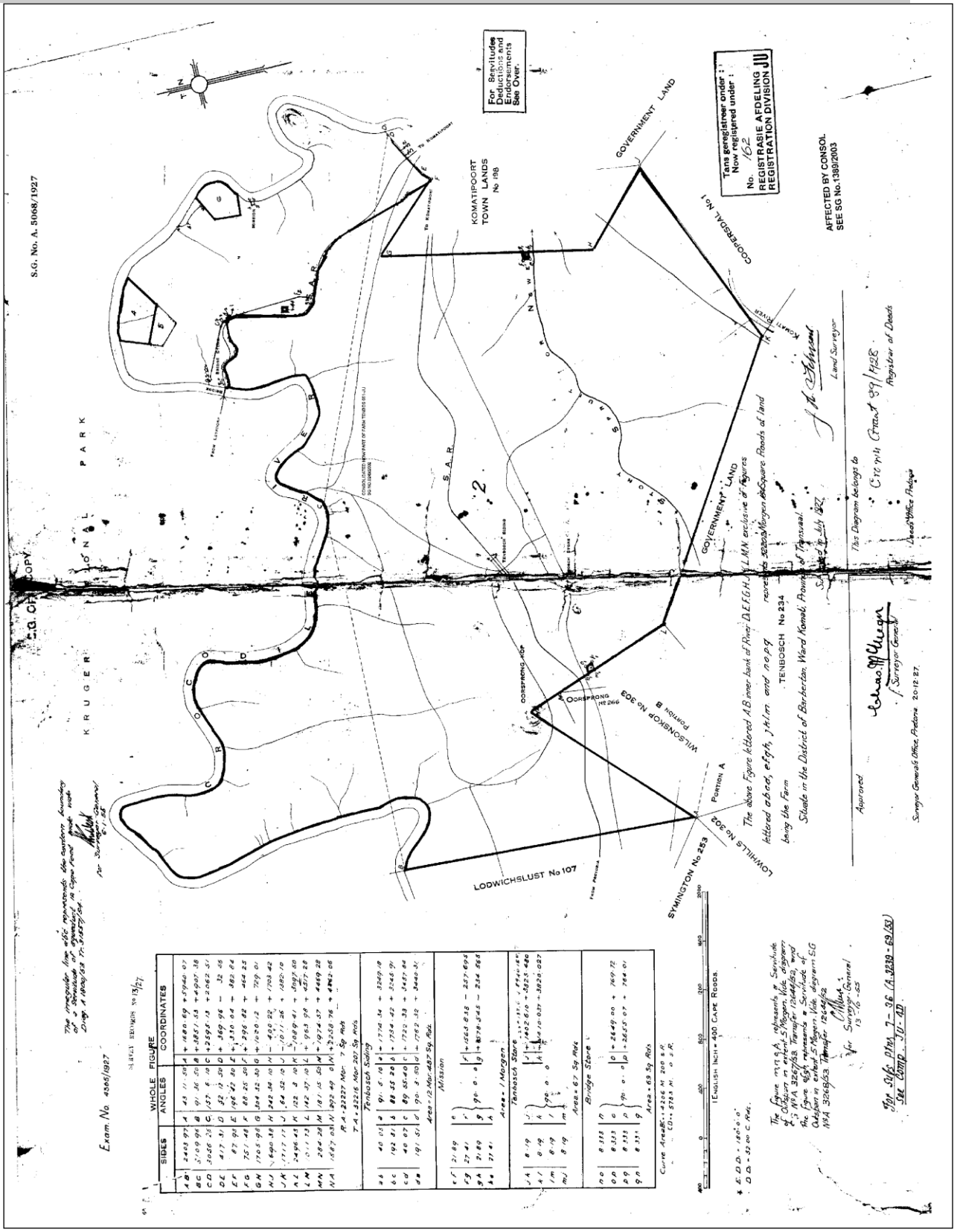

Figure 23: Surveyor General's sketch of the farm Tenbosch 162 JU as surveyed in 1927

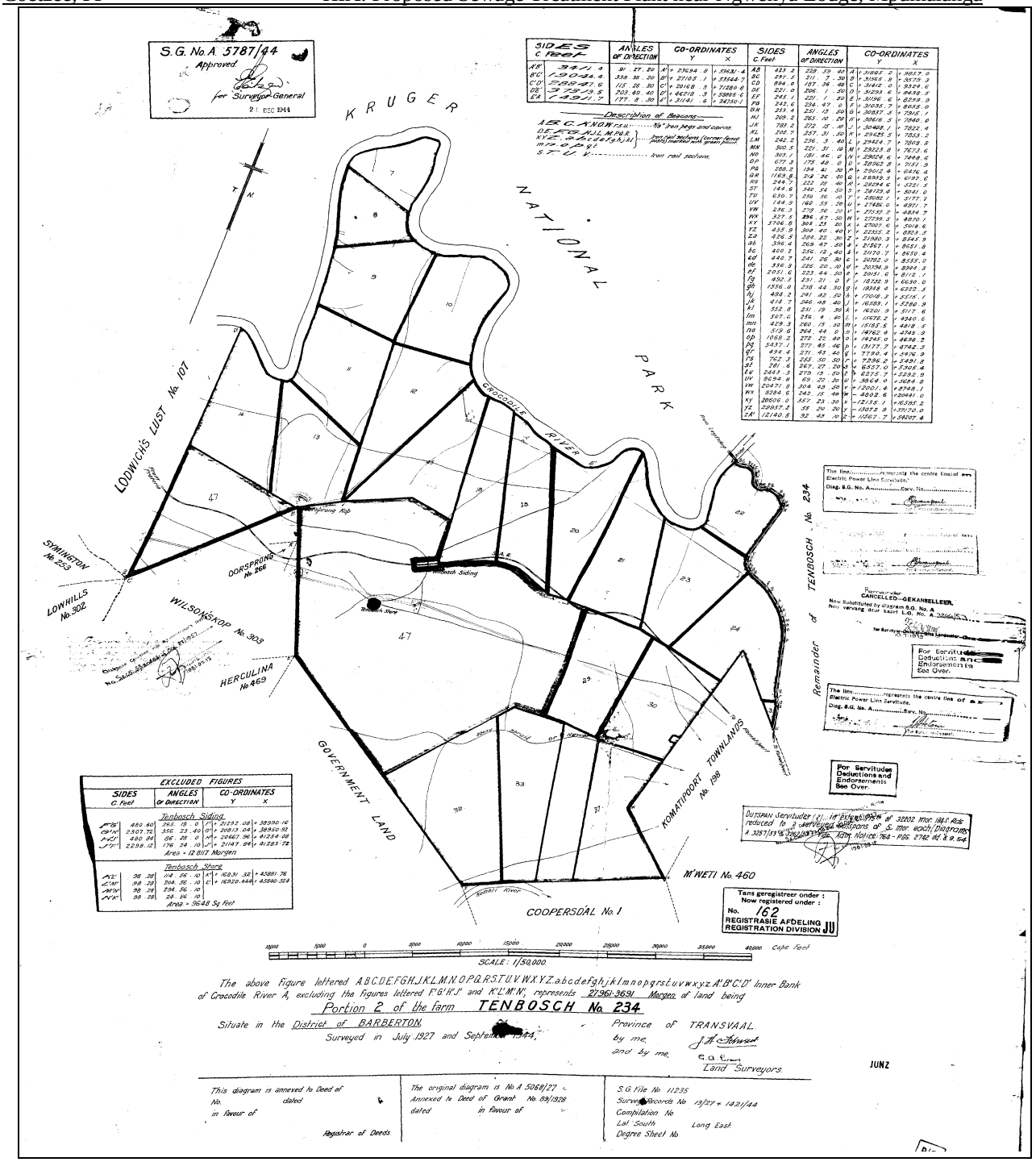

Figure 24: Surveyor General's sketch of the relevant portions of the farm Tenbosch 162 JU as surveyed in 1927

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) an 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.