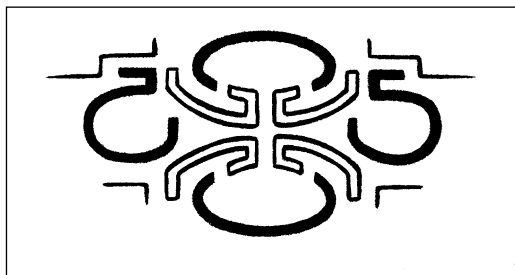


**Cultural Heritage Impact Assessment:
Phase 1 Investigation for the Proposed Expansion of the Runway in Lapalala
Wilderness Reserve, Lephalale Local Municipality, Waterberg District Municipality,
Limpopo Province**



For

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Executive Summary

This report contains a comprehensive heritage impact assessment investigation in accordance with the provisions of Section 38 of the *National Heritage Resources Act* (Act No. 25 of 1999) and focuses on the survey results from a cultural heritage survey as requested by Nuleaf Planning and Environmental (Pty) Ltd. The survey forms part of a Basic Assessment Report (BAR) as 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 the Environmental Authorisation National Environmental Management Act (NEMA) (Act No. 107 of 1998). The proposed development entails the construction of a stop way and clearway to the existing runway on the farm Game 1014 LR, within Lapalala Wilderness Reserve.

Stone Age sites

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

Rock art sites

Although several rock art sites are known in the general region and more specifically, with in the Lapalala Wilderness Reserve, none were recorded near the survey area.

Iron Age Settlements

Please note that several Late Iron Age settlements are known to occur in the Lapalala Wilderness such as Melora Hilltop and Saddle sites. These sites are associated with early Northern Ndebele and Tswana occupation of the Waterberg region. However no Iron Age sites or features were recorded in the survey footprint.

Historical Structures

Although the area is known for several historical structures and features, none were recorded near or within the survey area.

Recommendation

The proposed expansion of the existing runway and associated infrastructure may proceed as there is no objection from a heritage perspective.

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
DENC:	Department of Environment and Nature Conservation: Northern Cape
I&APs:	Interested and Affected Parties
RAL:	Road Agency Limpopo

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 has been appointed by Mapula Trust to conduct the Basic Assessment process for the proposed development of the staff village. 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. Mapula Trust intends to apply for Environmental Authorisation from the Limpopo Department of Economic Development, Environment and Tourism (LEDET) as the Competent Authority. The proposed expansion of the runway is located on the farm Game 1014 LR, which is situated approximately 60 km south east of Lephalale within the Lephalale Local Municipality, Waterberg District Municipality, Limpopo Province. The Basic Assessment process for Environmental Authorisation for the proposed upgrade is conducted in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA). A Cultural Heritage Impact Assessment (HIA) was requested by NuLeaf Planning and Environmental on behalf of the client to evaluate the potential impact of the proposed runway expansion project.

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 the footprint of the proposed runaway expansion located at the existing runway and workshops and offices of the Lapalala Wilderness Reserve. The site is located on the Waterberg Mountain Plateau and is situated roughly 50 km north of Vaalwater, 100 km west of Polokwane and 60 km south east of Lephalale in Limpopo.

Farm Name(s) and Portions	The following farm: <ul style="list-style-type: none"> • Game 1014 LR
Size of Survey Area	700 metres
Magisterial District	Lephalale Local Municipality Waterberg District Municipality
1:50 000 Map Sheet	2328CD
1:250 000 Map Sheet	2328
Central Coordinates of the Development	28.308071°E 23.878256°S

Table 1: Physical Environment

The survey area falls within the Savanna Biome, particularly the Central Bushveld Bioregion and specifically the Waterberg Mountain Bushveld (SVcb17) (poorly protected) (Mucina & Rutherford 2006). Limpopo Province: Waterberg Mountains, including the foothills, escarpment and tablelands south of the line between Lephalale and Marken and north of Bela-Bela and west of Mokopane and with outliers in the southwest such as the Boshofsberge and Vlieëpoortberge near Thabazimbi. Altitude about 1 000–1 600 m above sea level. In general the region is characterised by undulating hills with is dominated by the Waterberg Mountains and the Lephalala River to the east of the survey footprint (Mucina & Rutherford 2006).

The survey footprint falls adjacent to the existing runway (landing strip) and is situated near the main workshop and offices and the area is characterised by existing breeding camps (fences off), buildings and sheds. Infrastructure also includes gravel roads and extensive fencing.

Lephalale normally receives about 400 mm of rain per year, with most rainfall occurring mainly during mid-summer. It receives the lowest rainfall (0 mm) in June and the highest (81 mm) in January. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Lephalale range from 22.3°C in June to 31.9°C in January. The region is the coldest during July when the mercury drops to 3.7°C on average during the night (SAExplorer 2019).

Current Zoning	Nature Reserve Biosphere Conservancy
Economic activities	Farming & mining
Soil and basic geology	The simplified geology of the Waterberg District can be classified into five distinct geology types, namely the Transvaal Super Group, Karoo Super Group, Waterberg Group, Bushveld Igneous Complex, and the Archaean Granite/Gneiss and Swazian Complex. The Karoo Super Group contains coal deposits while Bushveld Igneous Complex contains important sources of platinum and chromium. The Waterberg Group contains no minerals of economic value. The Transvaal Super Group has iron ore deposits. The lithology of the area shows that there are 26 dominant rock types occurring in the Waterberg District. All of which are described. The landscape of the Waterberg District is a unique feature that distinguishes it from any other place in South Africa. There are four main landscape features in the Waterberg District, namely the Waterberg Plateau, the Transvaal Plateau Basin, the Pietersburg Plain and the Limpopo Depression. The soil of the area is diverse. Major soil associations have been identified. These include weakly developed soils on mountainous catchments, uplands and rocky areas, dystrophic, red and yellow, freely draining sandy soils, and plinthic upland duplex and paraduplex soils on undulating middleveld, rugged terrain. (Waterberg District Municipality Integrated Development Plan 2018/9).
Prior activities	Farming Game management
Socio Economic Environment	Tourism has been identified as a key job driver. Our tourist arrival numbers for the period January to November 2016 increased to nine million, an increase of just over a million arrivals from 2015. This represents a 13% growth in tourist arrivals. Government runs effective poverty alleviation programmes such as the Expanded Public Works Programme (EPWP). In addition, social grants now reach close to 17 million people, mainly older persons and children. Many families would not be able to put food on the table if it were not for social grants (Waterberg District Municipality Integrated Development Plan 2018/9).

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

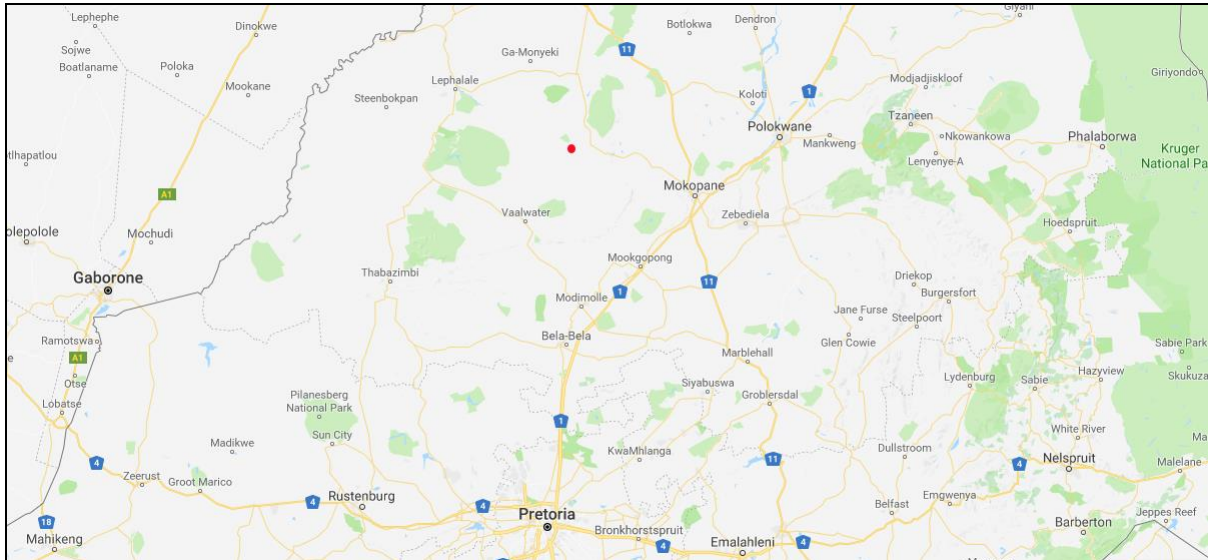


Figure 1: Regional context of the survey footprint located northwest of Mokopane (indicated by the red area)

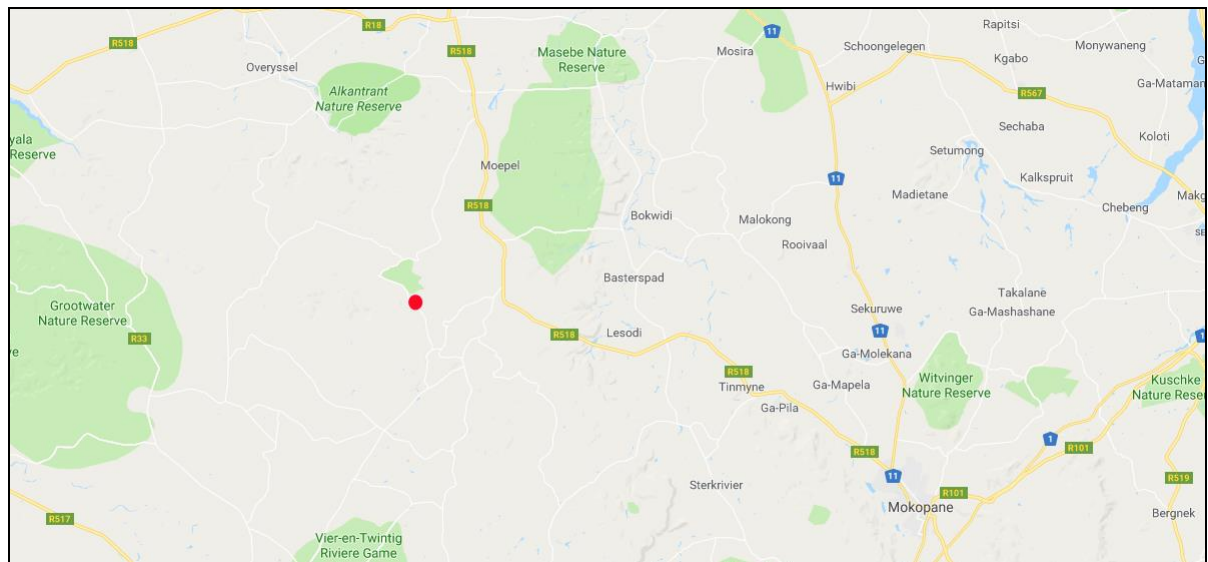


Figure 2: Local context of the survey footprint located northwest of Mokopane (indicated by the red area)



Figure 3: Local context of the survey footprint (1:250 000 Topographical Map 2328)

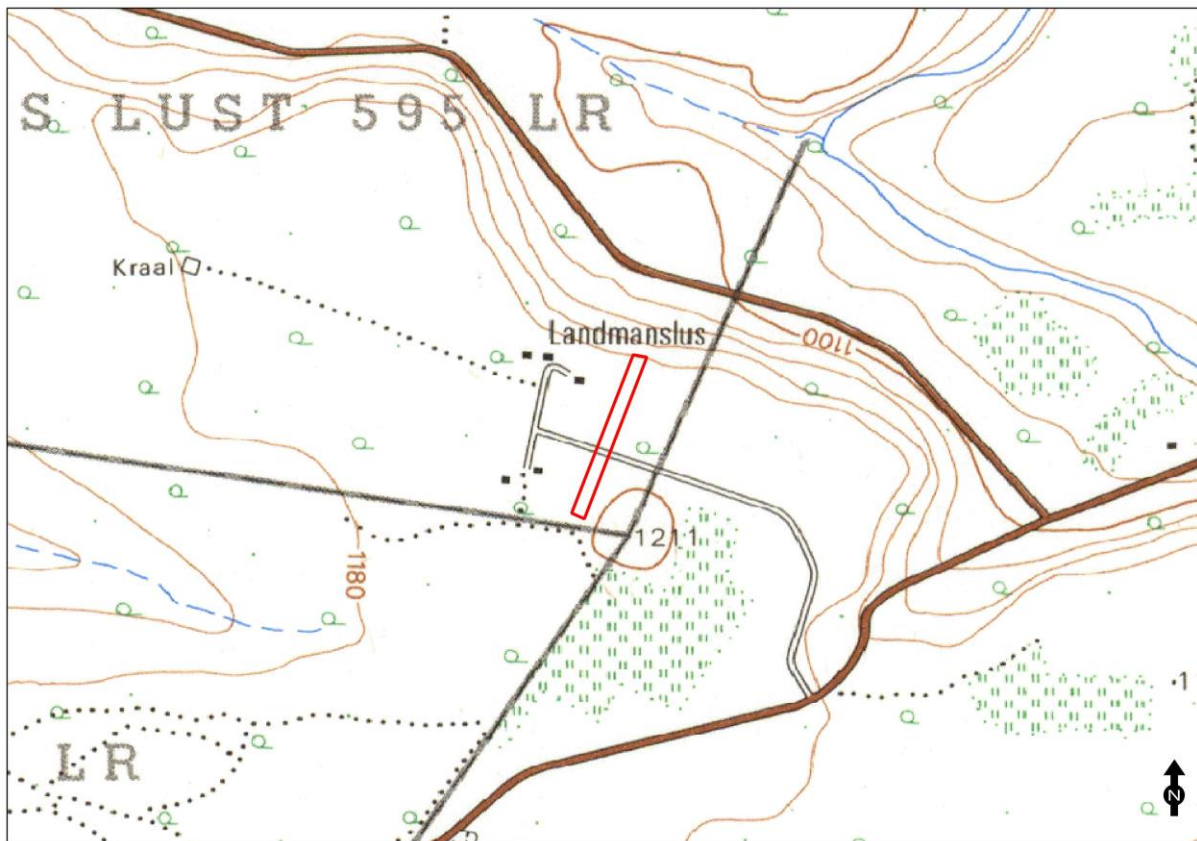


Figure 4: The survey area as indicated on the 1:50 000 topographic maps 2328CD (1983)



Figure 5: Survey area within general context (Google Earth Pro 2019)



Figure 6: Survey area within detailed context indicating the existing runway (Google Earth Pro 2019)



Figure 7: General view of the northern section of the survey footprint



Figure 8: General view of existing infrastructure at the central section of the survey footprint



Figure 9: General view of the central section of the survey footprint



Figure 10: General view of the survey footprint (existing infrastructure)



Figure 11: General view of the survey footprint (existing fencing for breeding camps)

4. Proposed Project Description

The proposed expansion will entail the addition of a 100 metres stop way and a 600 metres clearway to the existing runway within Lapalala Wilderness Reserve. The stop way is an extension to the runway and will need to be completely cleared and levelled in order for it to support the landing of aircraft without causing any structural damage. The clearway is an extension to the runway that acts as a safety net in the event that a planes climb rate is reduced due to an unforeseen problem. The clearway will only need to be cleared of vegetation/obstacles of a significant height (i.e. anything with a height greater than 1 m).

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)	
Regulation 2, Appendix 2 of Governmental Notice Regulation	GN 324
Air Quality Act (Act No. 39 of 2004)	
National Forests Act, Act of 84 of 1998	
The National Heritage Resources Act (Act No. 25 of 1999)	Section 38, 34, 35, 36
Conservation of Agricultural Resources Act (Act No. 85 of 1983)	
Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)	
The National Water Act (Act No. 36 of 1998);	
Mine Health and Safety Act (Act No. 29 of 1996) (MHSA)	
Biodiversity Act (Act 10 of 2004)	
Lephalale Municipality Process Plan 2018/9	
Waterberg District Municipality IDP 2018/9	

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
GN R. 324 (Listing Notice 3)	12 (e) (ii) (iii)	The clearance of an area of 300 square meters or more of indigenous vegetation in (e) Limpopo (ii) critical biodiversity areas (iii) on land zoned open space, conservation or had an equivalent zoning. The total cleared footprint will be approximately 28 368 square meters. The site is located in a critical biodiversity area as identified in the Limpopo Conservation Plan and the Waterberg Bioregional Plan
	19 (e) (i) (ee)	The expansion of runways or aircraft landing strips where the expanded runways or aircraft landing strips will be longer than 1.4 kilometres in length in (e) Limpopo (i) outside urban areas in (ee) critical biodiversity areas. The proposed expansion is located in a critical biodiversity area as identified in the Limpopo Conservation Plan and the Waterberg Bioregional Plan. The proposed expansion of the runway will result in it being approximately 1.84km in length once completed

Table 4: Listed activities

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

Development criteria in terms of Section 38(1a-e) of the NHRA (Act No. 25 of 1999)	Yes/No
Construction of road, wall, powerline, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 m ² in extent	No
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	Yes

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 whatsoever without permit from SAHRA
Provincial Significance	Grade II	High significance	Conservation by provincial heritage authority, provincial site nomination. No alteration whatsoever without permit from provincial heritage authority.

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

Table 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).

6. Study Approach/Methodology

Geographical information (KML shapefiles) on the proposed central pivots 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 footprint that forms part of the application. However, the whole survey footprint was surveyed by detailed pedestrian (foot) survey.

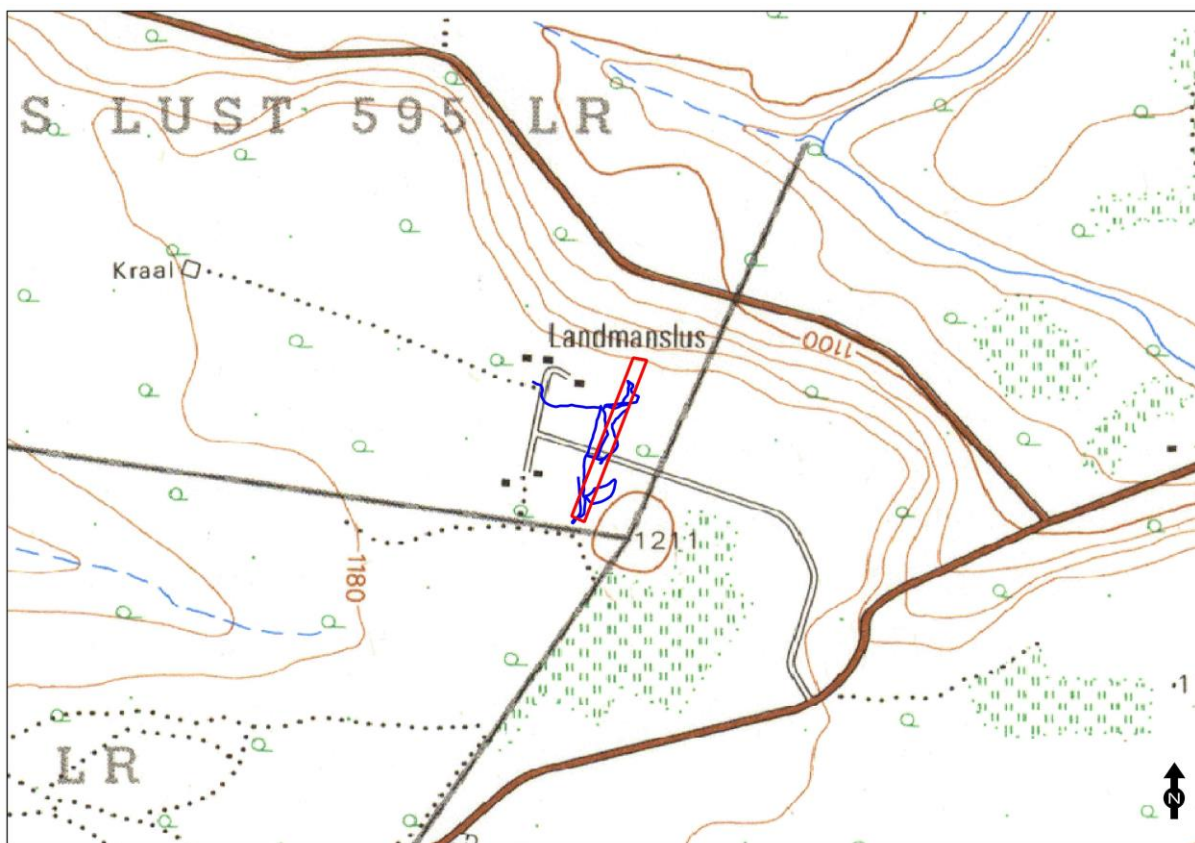


Figure 12: Recorded survey tracks for the project

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

- Several heritage surveys have been conducted in the vicinity of the survey area (published and unpublished material on the area) (Aukema 1989, Boeyens et al 2009, Boeyens et al 2016, Huffman 1990, Mason 1962, Van der Ryst 1998, 2007, Walker 2016)

Formal archaeological investigation in the Waterberg region probably started with surveys and excavations conducted by Revil Mason in the 1960s (Mason 1962). This was followed by a detailed archaeological survey that was initiated by Jan Aukema in the early 1980s. His initial focus was along the Motlhabatse River and was later expanded to include the drainage basin of the Lephalala River which yielded a rich database of Early and Late Iron Age sites (Huffman 1990:117 & Aukema 1989). The well-known Late Iron Age Melora Hill and Melora Saddle Sites were identified during Aukema's research project (also see Addendum 1 for more detail).

Detailed Stone Age research was conducted by Maria van der Ryst at Afguns and Olieboomsport (Van der Ryst 1998, 2007). In the last few years extensive research has also been conducted by UNISA at Melora Hilltop and Saddle sites as well as at Kirstenbos, a 13th century rainmaking site near Marken (Boeyens et al 2009; Coetzee et al 2005; Mouton 2014). The settlement pattern at Melora Hill has been recognised as a class type and other early Nguni sites have been classified according to its stone-walled layout (e.g. Buffelsfontein) (Huffman 2004).

It seems therefore that Early, Middle and Later Stone Age sites abound in the Waterberg with several sites associated with shelters. A number of rock art sites have also been identified which are usually associated with Later Stone Age shelters (Rudner & Rudner 1985; Van der Ryst 1998 and 2007).

Over 100 archaeological sites have been recorded in the Waterberg region ranging from Stone Age sites, rock art shelters and Iron Age early farming settlements.

We know that the earliest cattle farmers moved into the area under the auspices of the Transvaal Land and Exploration Company in the 1880s. This is substantiated by the Surveyor General's database as the farm Game 1014 LR (formerly known as Landman's Lust 959 LT) was first surveyed in 1911; however the first Title Deed was granted in 1868 (see Addendum 3).

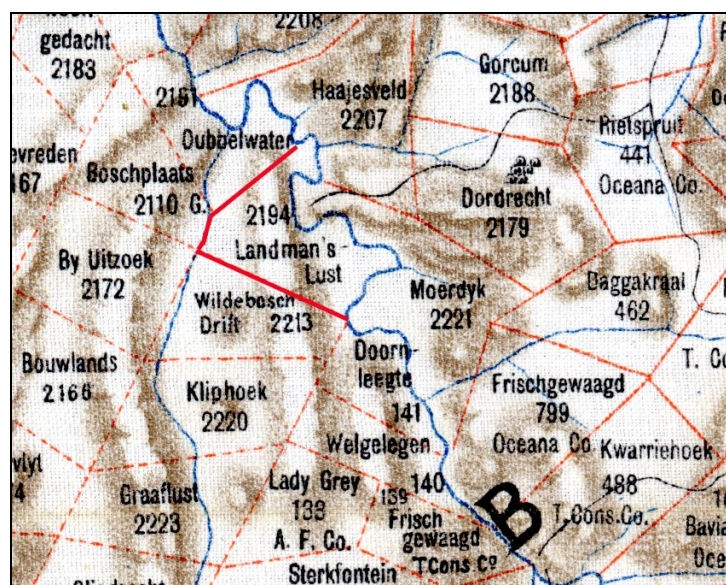


Figure 13: Jeppe's Map dating to 1899 indicates the location of the farms

During the early 1980s Clive Walker and Dale Parker purchased the first farm in the area from renowned hunter Eric Rundgren. After 20 years during which time they added another 17 farms, totalling 36 000 ha, Lapalala Wilderness became a reality in 2001 (www.lapalala.com; Walker 2016) (for further details see Addendum 1).

6.2 Palaeontological sensitivity

The simplified geology of the Waterberg District can be classified into five distinct geology types, namely the Transvaal Super Group, Karoo Super Group, Waterberg Group, Bushveld Igneous Complex, and the Archaean Granite/Gneiss and Swazian Complex.

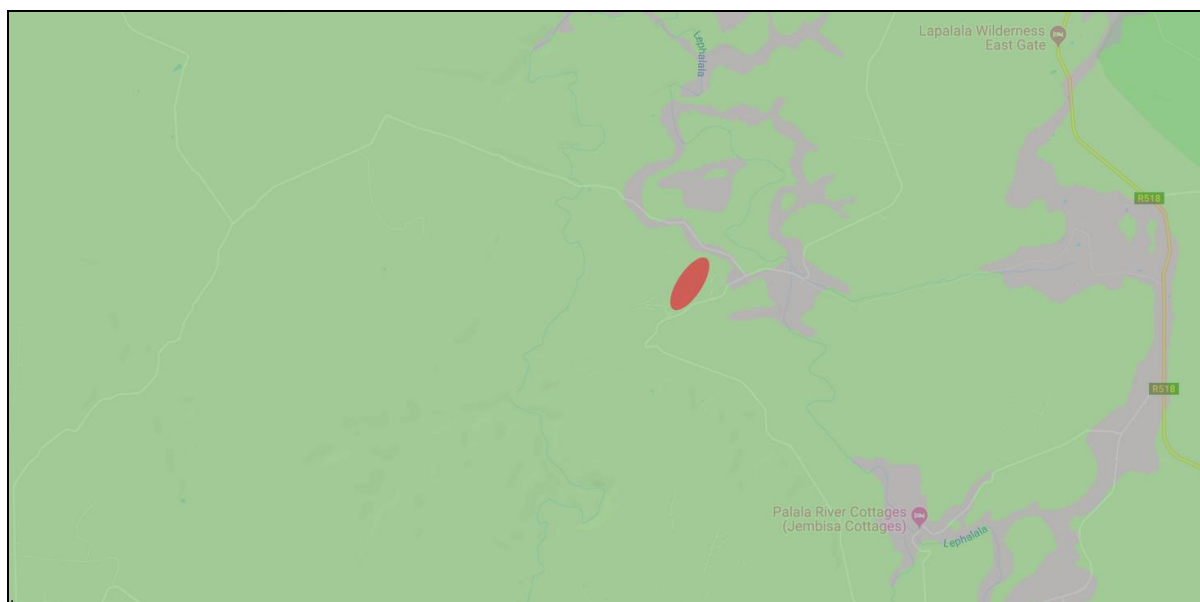


Figure 14: Palaeontological sensitivity zones as indicated for the survey footprint (SAHRIS 2019)

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

The palaeontological sensitivity map was extracted from the SAHRIS database and clearly shows green (Moderate) sensitivity. As a result a desktop palaeontological study will be required for the survey footprint.

6.3 Site visits

The field survey was conducted on 18 September 2019.

6.4 Social interaction and current inhabitants

The manager of Lapalala Wilderness Reserve was consulted.

6.5 Public Consultation and Stakeholder Engagement

Measures have been taken to include all potential I&APs as required.

6.6 Assumptions, restrictions, gaps and limitations

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

6.7 Methodology for assessment of potential impacts

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

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

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

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

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

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

7. The Cultural Heritage Sites

7.1. Isolated occurrences

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

Throughout the survey footprint no isolated finds were recorded.

7.2 Heritage sites

None

8. Locations and Evaluation of Sites

None

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

Arguably the most important archaeological sites in the Lapalala Wilderness are Melora Hilltop site and the Melora Saddle site). Archaeological excavations at Melora Saddle site has yielded over 50 house bases in association with Moloko ceramics which are decorated with comb-stamped bands interspersed with graphite and ochre burnishing (Boeyens et al 2009:216). The ceramics are provisionally classified as part of the Waterberg facies, which is derived from the Rooiberg facies, which in turn is an outcome of a merger between Ntsuanatsatsi/Uitkomst and Madikwe pottery. The Waterberg facies is associated with various Northern Ndebele and North Sotho people (Huffman 2007:174). The site probably dates to the early 19th century AD. On the other hand the Melora Hilltop site pre-dates the Saddle site and is a stone-walled settlement which is probably associated with Northern Ndebele speakers (Boeyens et al 2009). Also note that several Stone Age rock art sites are known in the Lapalala Reserve.

Stone Age sites

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

Rock art sites

Although several rock art sites are known in the general region and more specifically, within the Lapalala Wilderness Reserve, none were recorded near the survey area.

Iron Age Settlements

Please note that several Late Iron Age settlements are known to occur in the Lapalala Wilderness such as Melora Hilltop and Saddle sites. These sites are associated with early Northern Ndebele and Tswana occupation of the Waterberg region. However no Iron Age sites or features were recorded in the survey footprint.

Historical Structures

Although the area is known for several historical structures and features, none were recorded near or within the survey area.

Recommendation

The proposed expansion of the existing runway and associated infrastructure may proceed as there is no objection from a heritage perspective.

Also, please note:

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

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Addendum 1: Archaeological and Historical Sequence

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

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

< = less than; > = greater than

Archaeological Context

Stone Age sequence

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

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

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

Fifty kilometres east of the eastern escarpment of the Waterberg Plateau, near Mokopane, is one of the world's most important archaeological sites: Makapansgat. There, in a deep and large limestone cave, have been found the remains of some of the earliest hominids yet identified, the species *Australopithecus africanus*, who lived more than three million years ago; and also *Homo erectus*, who lived a million years ago.

In their book on The Waterberg, Taylor, Hinde and Holt-Biddle (2003) comment that “the australopithecines probably lived in small bands that wandered through the region following the seasonal abundance of foodstuffs such as insects, termites ... as well as the leaves, fruits and flowers of bushes and trees. They may well have found their way into the lower valleys of the Waterberg. Later tool users such as *Homo erectus* may well have moved purposely into the Waterberg in summer to follow the prey animals they hunted”.

Although no skeletal evidence of the presence of these Early Stone Age (ESA) ancestors has yet been discovered on the Waterberg plateau, it is likely that they at least visited the region.

The first substantial evidence of hominid habitation relates to people of the Middle Stone Age (MSA). There are extensive remains of MSA occupations in the Waterberg; until specific research is conducted in the Waterberg it will not be possible to know precisely when the Waterberg MSA occupations occurred and at present we can only say that the occupations would have been somewhere between 200 000 and 25 000 years ago. People living in the MSA lived in rock shelters or open camps, sometimes near pans, lakes or rivers, though they were not as dependent on close sources of water as their ancestral ESA counterparts. This independence from water suggests that they had water containers that could have been made of skin or ostrich eggshell.

People in the MSA were efficient hunters and gatherers. They hunted with spears tipped with stone. We know this because some South African sites like Klasies River Mouth (near Storms River) had stone spear-tips embedded in animal bones (Deacon & Deacon 1999; Mitchell 2002). In addition, researchers have found microscopic traces of blood and animal remains on stone points (Williamson 2000). Stone points were hafted onto handles because microscopic analysis has revealed resins on their bases, in addition to micro-chipping where twine would have been used to attach the stones to shafts (Wadley et al. 2004).

In the MSA, people were active hunters of large game, though they would also have scavenged opportunistically. At sites where the remains of bones from their hunts have been found, these bones include many eland, zebra, hartebeest, wildebeest, warthog and kudu (Deacon & Deacon 1999; Wadley 2001). The bones were invariably burnt and smashed to extract marrow.

Many MSA sites have good evidence for control of fire; fireplaces and ash lenses are present particularly in rock shelter sites where organic preservation is good. Prior to control of fire, rock shelters and caves would have been too dangerous for human habitation; they would have been predator lairs.

In the MSA, people made a wide range of stone tools from both coarse- and fine-grained rock types. Sometimes the rocks used for tools were transported considerable distances, presumably in bags or other containers. When this happened, the Stone Age people generally carried out part of the manufacturing process at the rock source. Thus tool assemblages from some MSA sites tend to lack some of the preliminary cores and contain predominantly finished products like flakes and retouched pieces. The most characteristic retouched tool type is the point, a triangular tool thought to have been a spearhead, but scrapers and blade-like cutting tools are also common.

There is a noticeable gap in the Waterberg between these early tool types of the MSA and younger ones of Later Stone Age (LSA) origin, leading to the conclusion that the Waterberg may have been without human life for tens of thousands of years. Numerous LSA sites have been discovered and excavated on the plateau, most of them in shelters overlooking, or at

least close to, the Lephalala River. Several sites lie on the eastern slopes of the prominent hill Tafelkop, and were excavated by Maria van der Ryst of UNISA in the 1990s. Her research concluded that, after a hiatus following Middle Stone Age habitation, LSA occupation in the north-western portion of the Waterberg commenced 'only during the late eleventh/beginning of the twelfth century AD. It would seem that the main period of semi-permanent settlement of the Waterberg plateau by hunter-gatherers corresponds to the movement of Iron Age agropastoralists into this area (Van der Ryst 1998).

Rock Art

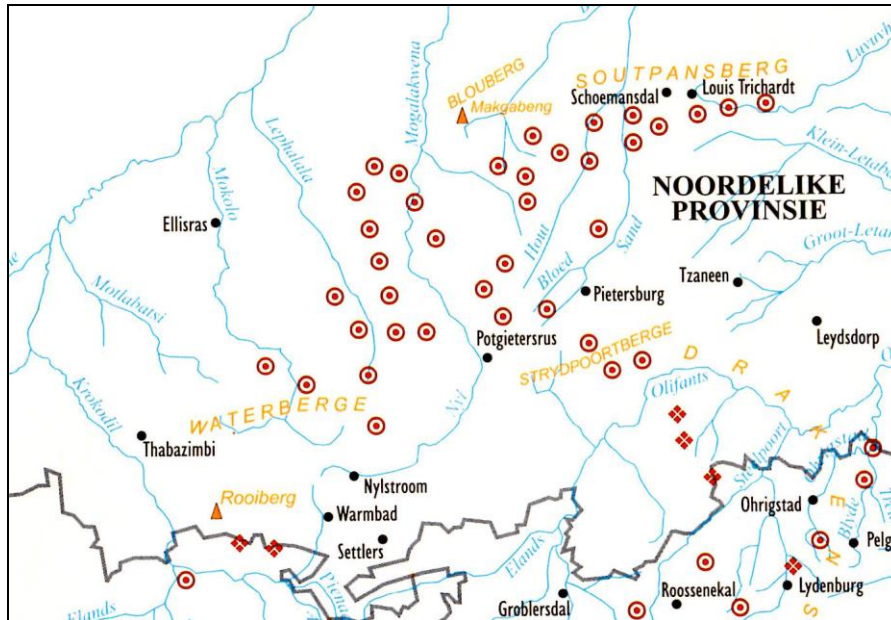


Figure 15: Known rock art sites in the Waterberg and surrounds (Bergh 1998)

As indicated on the map, various rock art sites are known in the Waterberg, most of which are linked to the San hunter-gatherers. Specific sites at Afguns and Spruitkloof are situated further to the east near the Mokolo River. The very important panel at Bokpoort is situated further east of the survey area (traced in 1959) (Rudner & Rudner 1970). Rock art panels were also recorded at Olieboomspoort (Van der Ryst 2007). It does however emphasize the importance of rock art in the area and there is a clear possibility that sites may still be found on the farm (also see Bergh 1998 and Küsel 2007).

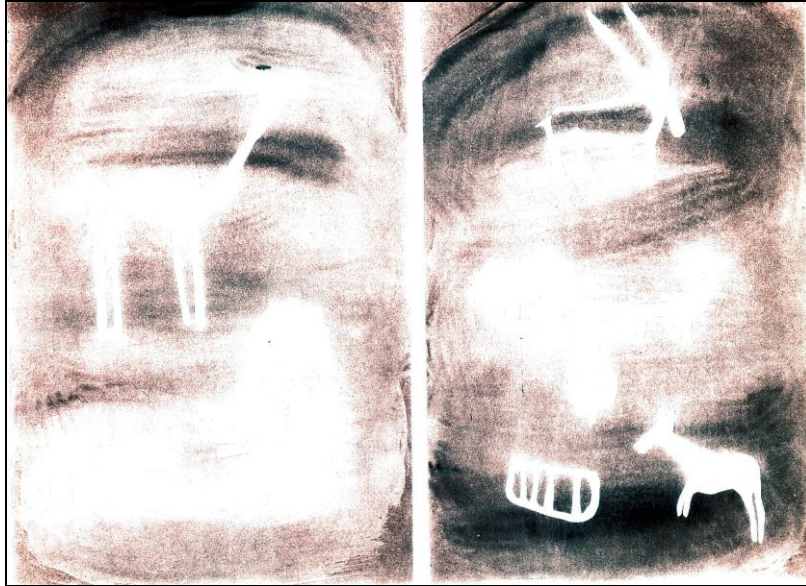


Figure 16: Rock paint tracing from Afguns (left) and Spruitkloof, Waterberg (right) (Rudner & Rudner 1970)



Figure 17: A rock art tracing of a panel at Bokpoort, Waterberg (Rudner & Rudner 1970)

Due to Clive and Anton Walker's efforts a total of 13 rock art sites (attributed to both San people and Bantu-speaking people) have been recorded in the Lapalala Reserve (Walker 2016).

Iron Age settlements and associated ethnography

Although a large number of Early, Middle and Late Iron Age sites have been recorded in the region, it seems that the veld type played a major role in selecting an area in which to settle. Generally the lower valleys were dominated by sweet grasses, which were preferred. That might explain why higher laying areas, which were dominated by sour grasses, were usually not occupied (Huffman 1990). Early Iron Age sites contain ceramics attributed to Happy Rest and Klein Africa and also an early Diamant fasies. Middle Iron Age sites with Eiland ceramics have also been recorded in the Waterberg. During the Late Iron Age settlements tend to be located on higher areas such as hilltops. Ethnographic evidence suggests an extended Nguni occupation of the area linked to the Kekana and Langa Ndebele chiefdoms

Lapalala Wilderness. Here, dry stone walling encloses an area of some six hectares on a hilltop to form what is interpreted to have been a defensive position, although there are also remains of hut dwellings outside the enclosure. At its peak, the site may have accommodated up to a thousand people. The third phase of Iron Age settlement, dating to the 18th and early 19th century, contains multichrome (ochre and graphite) Moloko pottery, believed to have been made by Sotho-Tswana.

Aukema (1989) mentioned rain-making ceremonies in rock shelters in the Waterberg. The shelters themselves do not seem to have been occupied yet they contain clay pots, stone cairns, cupulas (small ground holes on rock floors) and grindstones. Rock paintings are also often associated with rainmaking sites. Iron Age People even began to paint depictions of animals for themselves. Rather Crude depictions in red or white paint (sometimes black), painted directly with fingers, are often found at the same Waterberg sites as the more refined San paintings (Van Der Ryst 1998), for example at Masebe and Telekishi, North of Kloof Pass.

Historical Sequence

Most of the Waterberg Mountains fell under the vast cattle empire of the Tansvaal Land and Exploration Company since the 1890s. One of the first pioneers was Arthur Peacock who came to South Africa and then the Waterberg region in 1886. He settled at Cremartardfontein where his wife Katherine Fawssett and her sister Edith joined him in 1892. They later moved to the farm Blaauwbank near Visgat due to multiple Malaria attacks (Hunter 2010:27).

Most of the early farmers in the Waterberg were employed by the Company and they early on also started operating trade stores and they were therefore instrumental in establishing an extensive trade network in the region. However, tragedy struck in 1895 with the outbreak of rinderpest which killed thousands of head of cattle in the region. Most of these cattle ranches were close down by the Company. Arthur lost his managership but could still lease his farm. Most of these early farmsteads were mud-wall and thatch structures (Hunter 2010:28).

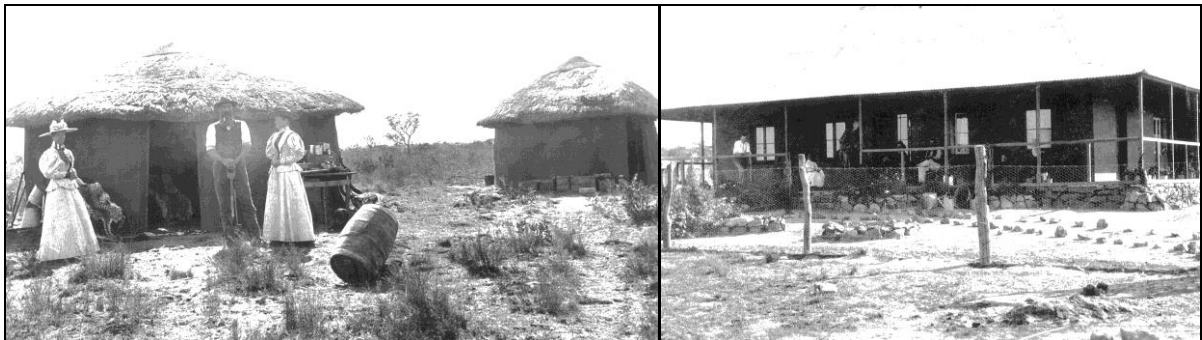


Figure 20: Early life on farms in the Waterberg region



Figure 21: Arthur Peacock and his wife Katherine and her sisters Edith and Molly and Ted Davidson



Figure 22: Trade routes and shops in the region

Lapalala Wilderness

Clive Walker, came to the fore as the Director of the Endangered Wildlife Trust (EWT) with several initiatives to protect wildlife. He finally came to the Waterberg region in 1981 not as a landowner but through his involvement with Educational Wildlife Expeditions. He was motivated to start environmental education programmes for children, specifically in the bushveld. Through Val Ford and Pippa Thomas, Clive eventually made contact with Eric Rundgren (a one-time Kenyan big-game hunter turned game farmer) at his reserve named Double R Game Ranch (Dubbelwater) in the northern Waterberg. After some sojourn Clive eventually met Dale Parker as the chairperson of the Botanical Society's Flora Conservation Committee. In 1981 Dale Parker purchased the first farm (5000 ha) that would become the heart of the Lapalala Reserve. Rundgren's old farmhouse, which was built in 1967, would become the Educational School at Lapalala. Later a Board of Governors of the Lapalala Wilderness School (LWS) was appointed to manage and guide activities. Clive and Conita Walker officially retired from Lapalala Wilderness in December 2004 and the school was registered under Section 21 in 2006 (Walker 2016).

Clive and Dale first shared Driemanslust and later Doornleegte with their families. In 1982 Byuitsoek and Ongegund were added to the stable as well as Landmanslust. Dale eventually bought up 17 farms that took years to get back to their prime after decades of cattle farming and hunting. Lapalala Wilderness includes approximately 25 km of the Lephala River. Kolobe (Tswana word for warthog) Lodge opened in May 1989 and along with a number of other camps were an instant success (Walker 2016).

After several initiatives the Waterberg Conservancy was established in 1989, leading to the declaration of the Waterberg Biosphere by UNESCO in 2001.

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.

An example of data form:

A. GENERAL SITE DESCRIPTION				
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.				
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.				
It has significance relating to the history of slavery in South Africa.				
Aesthetic Value				
It has importance in exhibiting particular aesthetic characteristics valued by a particular community or cultural group.				
Scientific Value				
It has potential to yield information that will contribute to an understanding of South Africa's natural and cultural heritage.				
It has importance in demonstrating a high degree of creative or technical achievement at a particular period.				
It has importance to the wider understanding of the temporal change of cultural landscapes, settlement patterns and human occupation.				
Social Value				
It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons (sense of place).				
Tourism Value				
It has significance through its contribution towards the promotion of a local sociocultural identity and can be developed as tourist destination.				
Rarity Value				
It possesses unique, uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.				
Representative Value				
It is importance in demonstrating the principle characteristics of a particular class of South Africa's natural or cultural places or objects.				
B2. REGIONAL CONTEXT				
Other similar sites in the regional landscape.				
B3. CONDITION OF SITE				
Integrity of deposits/structures.				
C. SPHERE OF SIGNIFICANCE		High	Medium	Low
International				
National				
Provincial				
Local				
Specific community				
D. FIELD REGISTER RATING				
National/Grade 1 [should be registered, retained]				
Provincial/Grade 2 [should be registered, retained]				
Local/Grade 3A [should be registered, mitigation not advised]				
Local/Grade 3B [High significance; mitigation, partly retained]				
Generally Protected A [High/Medium significance, mitigation]				
Generally protected B [Medium significance, to be recorded]				
Generally Protected C [Low significance, no further action]				

E. GENERAL STATEMENT OF SITE SIGNIFICANCE	
Low	
Medium	
High	
F. RATING OF POTENTIAL IMPACT OF DEVELOPMENT	
None	
Peripheral	
Destruction	
Uncertain	
G. RECOMMENDED MITIGATION	
•	
H. APPLICABLE LEGISLATION AND LEGAL REQUIREMENTS	
•	
I. PHOTOGRAPHS	

Addendum 3: Surveyor General Farm Diagram

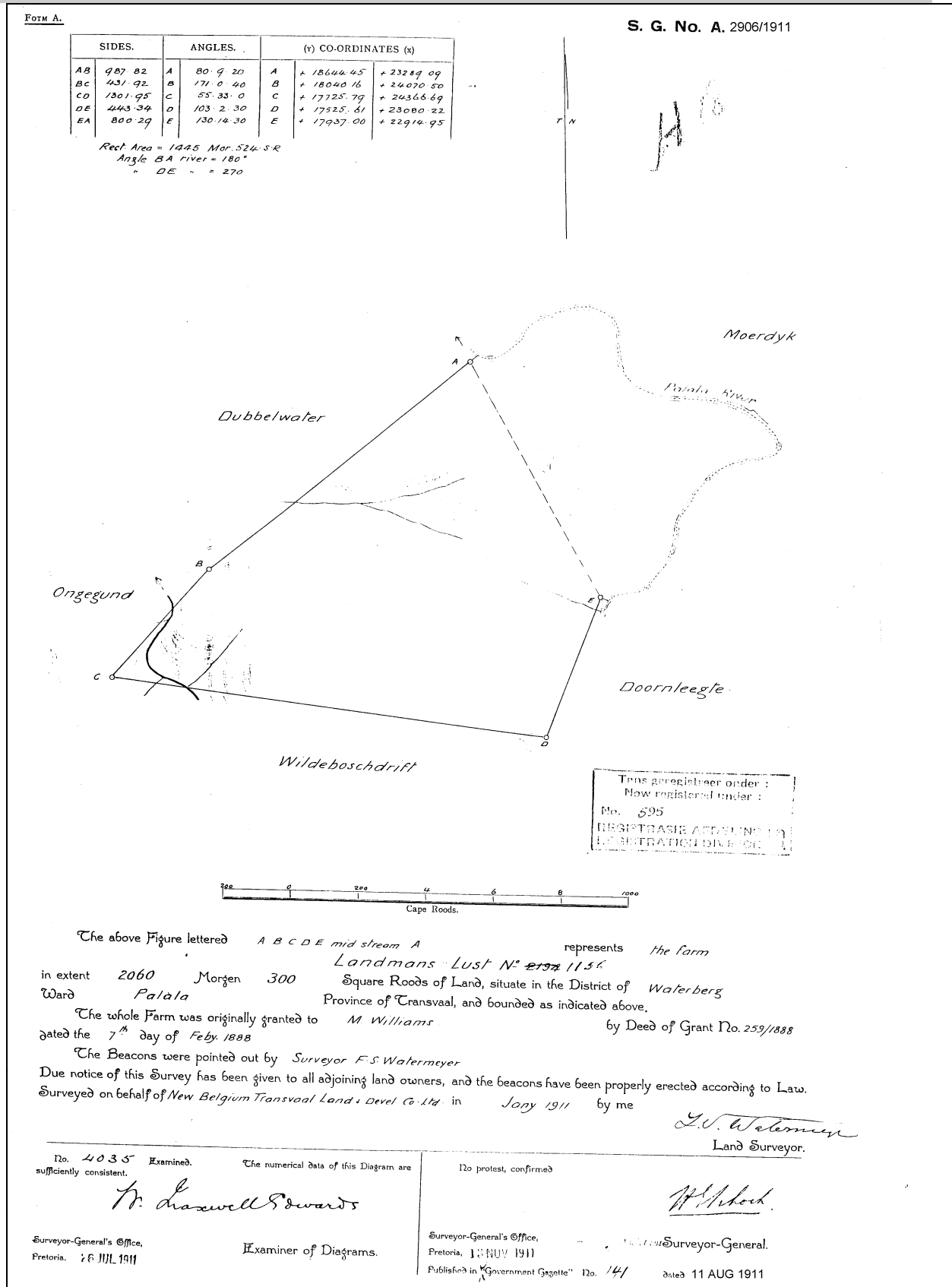


Figure 23: Surveyor General's sketch of Farm Landman's Lust 595 LR (Game 1014 LR) which was first surveyed in 1911

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) 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.