

# **McGregor Museum**

## **Department of Archaeology**



### **Phase 1 Heritage Impact Assessment for the proposed Upgrade of the Vaal Gamagara Regional Water Supply Scheme Phase 2**

Abenicia Henderson assisted by Jani Louw  
May 2019

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## **1. INTRODUCTION**

The McGregor Museum archaeology department was subcontracted by Nemai Consulting (contact: Samantha Gerber 147 Bram Fischer Drive Ferndale, email: [samathahag@nemai.co.za](mailto:samathahag@nemai.co.za); Donovan Henning 147 Bram Fischer Drive Ferndale, email: [donavanh@nemai.co.za](mailto:donavanh@nemai.co.za)) to conduct a Phase 1 Heritage Impact Assessment with focus on archaeology around the proposed Vaal Gamagara Regional Water Supply Scheme Phase 2 that runs from Delportshoop to Olifantshoek, Northern Cape Province. Njabulo Mkhosana of NM Environmental (tel: 065 921 9371. email: [nmkhosana@nmenvironmental.co.za](mailto:nmkhosana@nmenvironmental.co.za)) provided details of the extent of the proposed Vaal-Gamagara Water Supply Upgrade Scheme which starts at Delportshoop WTW runs past the towns Ulco, Lime Acres and Postmasburg and ends at Olifantshoek. Contact details of relevant people to gain access to the landscape for assessment purposes was also provided.

During site visits by Abenicia Henderson and Jani Louw the week 15-17 May 2019 successive portions of the landscape in question were visited and archaeological observations made. Some parts of the properties could not be accessed and the individuals/organizations concerned could not be approached.

This report gives provisional insight into the archaeological heritage resources to be found and expected to occur in the proposed footprint.

Field notes and photographs are lodged with the McGregor Museum, Kimberley.

## **1.1. Focus and Content of Specialist Report: Heritage**

This archaeology and heritage specialist study is focused on the site of the proposed development.

This study outlines:

- Introduction, explaining the focus of the report (1.1) and introducing the author in terms of qualifications, accreditation and experience to undertake the study (1.2)
- Description of the affected environment (2) providing background to the development and its infrastructural components (2.1); background to the heritage features of the area (2.2); and defining environmental issues and potential impacts (2.3)
- Methodology (3) including an assessment of limitations (3.1).
- Observations and assessment of impacts (4); Specific observations (4.1); characterizing archaeological significance (4.2); and Summary of significance of impacts (4.3).
- Measures for inclusion in a draft Environmental Management Plan for the development are set out in tabular form (5).
- Conclusions (6).

## **1.2. Author of this Report**

The author is independent of the organization commissioning this specialist input, and provides this heritage assessment (archaeology and colonial history but not palaeontology) within the framework of the National Heritage Resources Act (No 25 of 1999).

The author (Abenicia Henderson) is a qualified archaeologist (Honours) and has worked as a field assistant previously in the Eastern Cape and now Northern Cape (under the guidance of Dr. David Morris) jointly for just under 6 years.

Jani Louw is a qualified archaeologist (Mphil) who has worked as an intern at the McGregor Museum through 2017-19.

Dr David Morris as supervisor who is a professional archaeologist (PhD) accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists.

The National Heritage Resources Act no. 25 of 1999 (NHRA) protects heritage resources which include archaeological and palaeontological objects/sites older than 100 years, graves older than 60 years, structures older than 60 years, as well as intangible values attached to places. The Act requires that anyone intending to disturb, destroy or damage such sites/places, objects and/or structures may not do so without a permit from the relevant heritage resources authority. This means that a Heritage Impact Assessment should be performed, resulting in a specialist report as required by the relevant heritage resources authority/ies to assess whether authorisation may be granted for the disturbance or alteration, or destruction of heritage resources.

Where archaeological sites and palaeontological remains are concerned, the South African Heritage Resources Agency (SAHRA) at national level acts on an agency basis for the Provincial Heritage Resources Agency (PHRA) in the Northern Cape. The Northern Cape Heritage Resources Authority (formerly called Ngwao Bošwa ya Kapa Bokone) is responsible for the built environment and other colonial era heritage and contemporary cultural values.

## **2. DESCRIPTION OF THE AFFECTED ENVIRONMENT**

The proposed pipeline route extends between the Vaal River near Delportshoop to the vicinity of Olifantshoek. The study area is underlain by Ventersdorp rocks of the Vaal basin, the Precambrian dolomites of the Ghaap plateau and the combination of dolomite, banded ironstone, manganese and quartzite of the Kuruman Hills.

Superficial sediments of late Cenozoic age include aeolian sands of the Gordonia Formation (Kalahari Group), calcrete hardpans, colluvial banded ironstone surface rubble and scree, river alluvium and pan deposits. The Gordonia Formation aeolian sands are considered to range in age from the Late Pliocene / Early Pleistocene to Recent, dated in

part from enclosed Middle to Later Stone Age stone tools (Dingle et al., 1983, p. 291, cited by Almond 2013:14). (The recent extension of the Pliocene - Pleistocene boundary from 1.8 Ma back to 2.588 Ma would place the Gordonia Formation almost entirely within the Pleistocene Epoch - Almond 2013).

West from Lime Acres towards Postmasburg and Olifantshoek the general terrain is characterized by a number of low rising dolerite outcrops, with the geological substrate, a combined dolerite and banded iron stone surfacing at intervals.

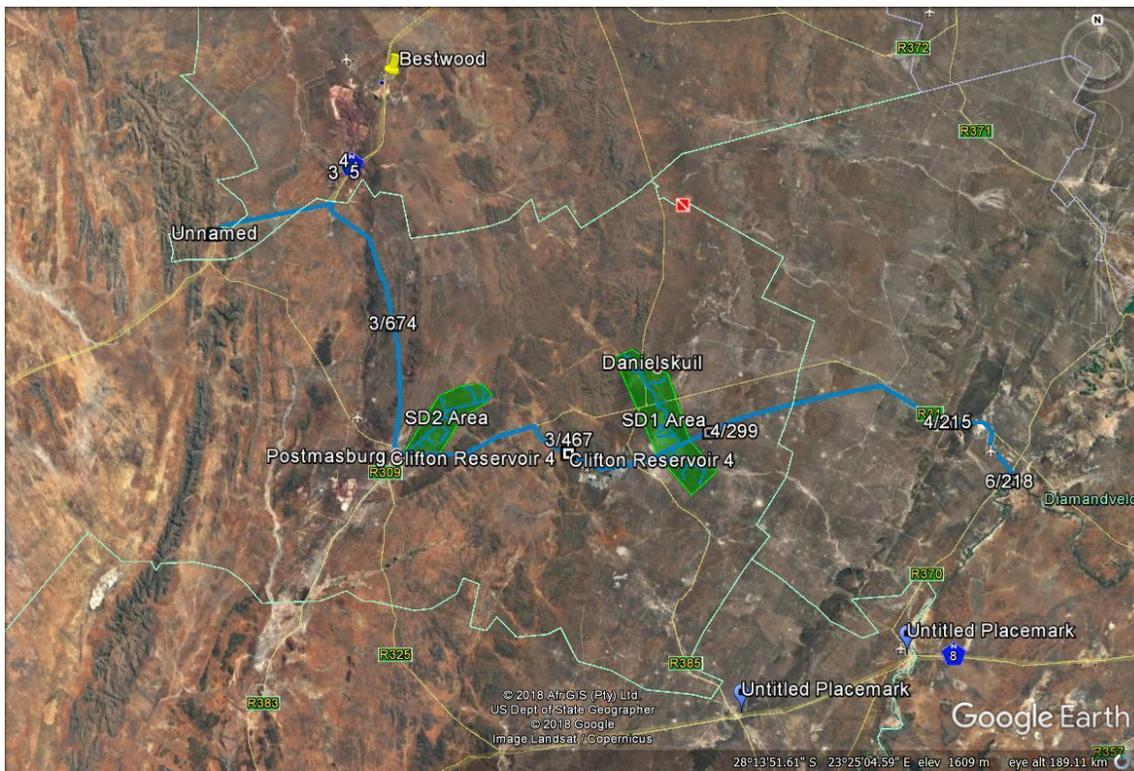


Figure1: Proposed pipeline route for the Vaal Gamagara Water Supply Upgrade (VGWSU)

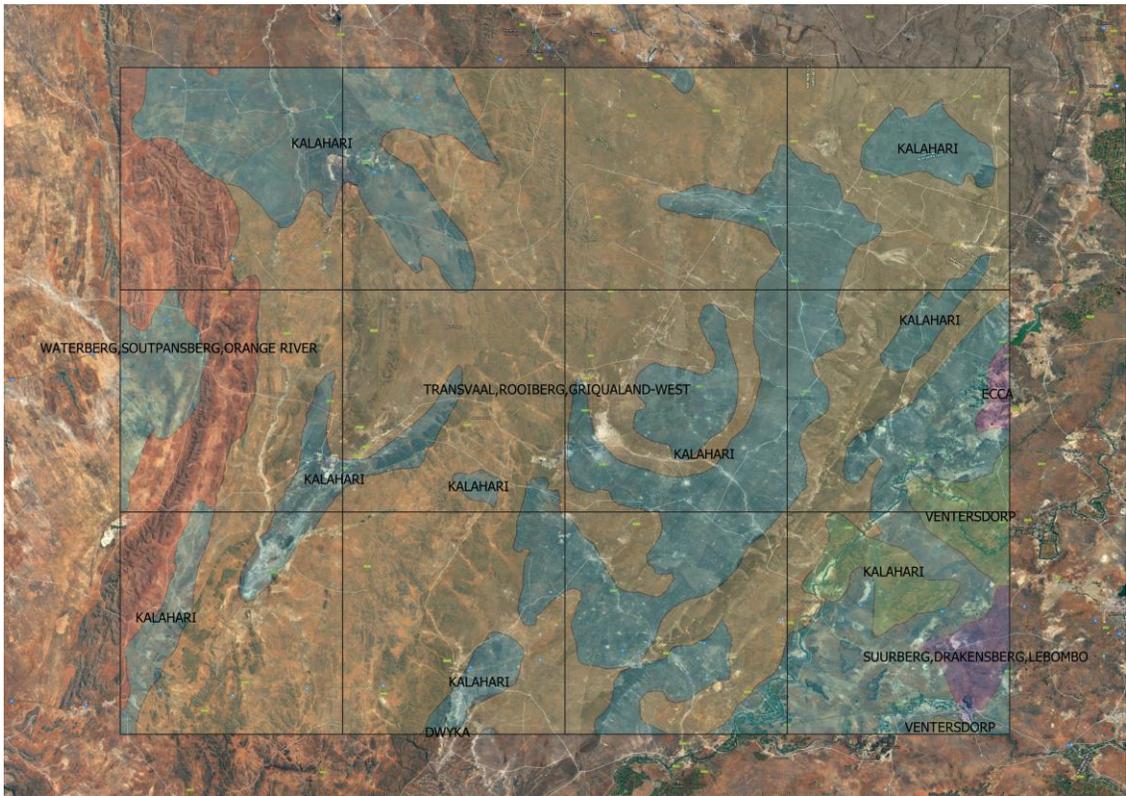


Figure 1b: Geological sequence of VGWSU

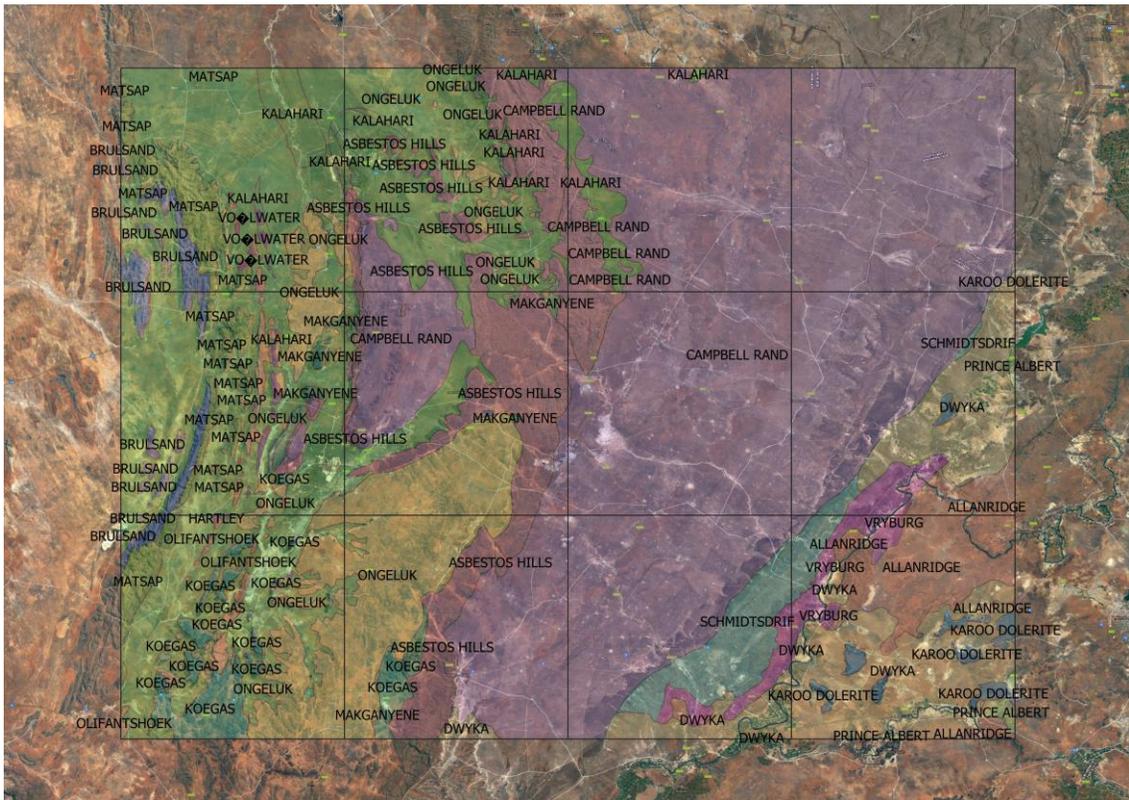


Figure 1c: Lithographic view of VGWSU



Figure 2: Plant where water is drawn from the Vaal River



Figure 3: Area within the proposed footprint opposite Sedibeng water



Figure 4: Old Delportshoop and Ulco road from 1930s (adjacent to area proposed for the second pipeline)



Figure 5: Piles from previously constructed pipeline built in 1968



Figure 6: Area within SD1 footprint



Figure 7: Kneukel Pump Station



Figure 8: Clifton Reservoir area



Figure 9: Groenwater



Figure 10: Area within footprint 3km from Groenwater where old cemetery is



Figure 11: Area within footprint near Metsimatala



Figure 12: Area within footprint 2.57km Southwest of Metsimatala



Figure 13: Dolomite exposures on Farm next to New Gloucester Reservoir (Glossam)



Figure 14: Old pipeline just near Boskop Farm and mine (en route to Olifantshoek)



Figure 15: Identified New reservoir in Olifantshoek

## 2.1. Project components

A detailed proposal for and background to the Vaal Gamagara Water Supply Upgrade Scheme project has been provided by Nemaï Consulting. The new scheme will be used in conjunction with the existing scheme that transfers water from Delportshoop on the Vaal River (60km NW of Kimberley) via Postmasburg to the mines north of there. The route and affected areas of impact for the new proposed scheme is outlined Figure 1.

## **2.2 Background to the heritage features of the area**

The archaeology of the Northern Cape is rich and varied, covering long spans of human history. Stone Age material found in this area spans the Earlier, Middle and Later Stone Ages through Pleistocene and Holocene times. Late Iron Age inhabitation is not as yet well documented (see Beaumont and Morris 1990 for the Kathu area; Morris & Seliane 2008 for the Taung area ). Of note in the area near Limeacres are rock engraving sites on dolomite exposures outside the town and at Danielskuil. Known rock engraving sites are recorded on the properties Ouplaas, Boplaas, Klipvlei and Carter Block (Wilman 1933; Morris 2009; Morris 2014; McGregor Museum records; Morris & Beaumont 2014). Rock paintings occur in the shelters along the Ghaap escarpment, as well as in the Kuruman Hills, Asbestos Mountains and the Langeberg (Fock and Fock 1989).

The Ghaap Escarpment traversed by the pipeline at Ulco contains shelters rich in archaeological traces (Humphreys & Thackeray 1984) but is perhaps most notable for its fossil sites such as that at which the Taung Skull was found, at Buxton (Beaumont & Morris 1990).

Groot Kloof about 3km south of Ulco. The site bears significant archaeological and paleontological deposits, a result of the karstic deposits that in turn create tufa fan deposits and eroded tufas rich in archeological and fossil-bearing sediments (Curnoe et al 2006).

Further west near Postmasburg is the renowned specularite sited Tsantsabane and Blinkklipkop (Humphreys and Thackery 1983), just north of the pipeline route. Further afield are the major sites Wonderwerk Cave, and Kathu a suite of sites around sink-hole depressions and raw material sources (Wilman 1933; Humphreys & Thackeray 1983; Beaumont & Morris 1990; Morris & Beaumont 2004; Wilkins & Chazan 2012; McGregor Museum records).

Historical events relating to the conquest of the Southern Tswana unfolded mainly to the north, e.g. at Phokwane, Koning, Dithakong, and in conflicts in the Langeberg in 1878 and 1897 (Shillington 1985). Colonial settlement followed conquest, while mining has burgeoned since the mid-twentieth century.

Some areas are richer in archaeological traces than others, and not all sites are equally significant. Heritage impact assessments are a means to facilitate development while ensuring that what should be conserved is saved from destruction, or adequately mitigated and/or managed.

### **2.3 Environmental issues and potential impacts**

Heritage resources including archaeological sites are in each instance unique and non-renewable resources. Area and linear developments can have a permanent destructive impact on these resources in cases where they are impacted. The objective of this study is to assess the significance of such resources, where present, and to recommend no-go or mitigation measures (where necessary) to facilitate or constrain the development. Area impacts would occur where the pipeline will be drilled in the locale under consideration.

The route proposed to construct the pipeline includes sections parallel with the existing pipeline. The linear development is expected to have relatively minimal impact on the heritage/archaeological resources of the area. Number of broad expectations/concerns might be expressed for this vicinity:

- 2.3.1. Based on previous experience in the area, the terrain is likely to include a generally low density and widespread occurrence of mainly Pleistocene Stone Age material as "background scatter" . It would tend to occur on calcrete where exposed, or in the lower margins of aeolian sands that veneer the landscape.
- 2.3.2. The particularly dolomite area is known to be rich in fossils, Precambrian stromatolites and Pleistocene fauna and tufa deposits. So a Palaeo-exposure is noted at 28°19'35.60"S 23° 4'43.10"E. Features such as hills and rocky outcrops are minimal on the proposed footprint which in other parts of this landscape provide shelter or relatively resource-rich micro-habitats that attracted people particularly of the Later Stone Age.
- 2.3.3. Considerable historical and recent surface disturbance has already occurred within the servitude resulting from the construction of a gravel road in the 1930s and pipeline 1968. Rock piles were noted from the disturbance. The implications are that the chances of *in situ* Stone Age occurring in the servitude are minimal.

- 2.3.4. In the adjacent landscape in places mining has taken place or is currently active ( i.e. Koopmansfontein, Ulco, Lime acres, Postmasburg and the iron-ore, manganese belt north of Postmasburg
- 2.3.5. Significant intangible heritage values are not expected to be attached to the servitude itself which in most places is a much-modified area. Large and small scale mining, has sprouted in the area a social landscape and a transformed late capitalist, generating material traces as noted above.

### **3. METHODOLOGY**

The area proposed for servitude was partially inspected on foot on 15-17 May 2019. Access could not be gained to some of the properties due to gates being locked, overgrown vegetation, mines and no entry signs. Where possible an assessment was made of the significance of heritage traces present.

#### **3.1 Assumptions and Limitations**

The areas for proposed impact encompass the railway to farms, mines and various residentially zoned areas, which made some areas inaccessible due to stringent access policies.

It was assumed that, by and large in this landscape, with its shallow soil profiles, and erosional regime over much of the terrain that some sense of the archaeological traces to be found in the area would be readily apparent from surface observations (including assessment of places of erosion or past excavations that expose erstwhile below-surface features). It was not considered necessary to conduct excavations as part of the assessment to establish the potential of sub-surface archaeology.

A proviso is routinely given, that should sites or features of significance be encountered during construction (this could include an unmarked burial, an ostrich eggshell water flask cache, or a high density of stone tools, for instance), specified steps are necessary (cease work, report to heritage authority).

With regard to fossils, a preliminary assessment of the likelihood of their occurring here should be obtained from a palaeontologist; this report does not address palaeontology.

#### **4. OBSERVATIONS AND ASSESSMENT OF IMPACTS**

The manner in which archaeological and other heritage traces or values might be affected by proposed Upgrade of the Vaal-Gamagara Regional Water Supply Scheme phase 2 may be summed up in the following terms: it would be any act or activity that would result immediately or in the future in the destruction, damage, excavation, alteration, removal or collection from its original position, any archaeological material or object (as indicated in the National Heritage Resources Act (No 25 of 1999)). The expected impact in this instance would be area disturbances in already disturbed vicinity.

Relative desktop predictions (2.3 above), it was found that the area had a generally low density of dispersed surface artefacts of limited significance. Some areas within the footprint were covered in vegetation at the time of the visit which limited visibility in areas where rock outcrops or soil erosion did not occur. There was a background scatter of lithics sometimes in dense concentrations especially where the jaspilite outcrops occur 7km NW from Lime Acres, North of the proposed pipeline. There were no archaeological traces found on the northern side of the main proposed pipeline here however, where secondary pipes are to be lain. The impact of the development seems to be of low significance here and no further mitigation is considered necessary.

##### **4.1 Fieldwork observations**

The area for the new proposed pipeline by Abenicia Henderson and Jani Louw was visited from the 15-17 May 2019. The assessment was done over a period of three days and various employees from Sedibeng water assisted us in areas that fall under their jurisdiction and in advising on access to properties along the route.

##### **4.1.1 Occurrence of Stone Age traces:**

Most of the area within the servitude during the survey, was found to have minimal traces of in-situ archaeological materials. The observations that are presented here indicate specific instances that provide a sense of the range of heritage resources along the servitude, with a limited number of medium and high significance occurrences.

By and large generally low density and poor integrity heritage traces were found in the development footprint areas, comprising usually jaspilite flakes and cores as isolated surface occurrences in densities less, and often significantly less, than 1/m<sup>2</sup>. The higher density end of the spectrum occurs in areas where banded ironstone rubble is exposed at the surface.

**Table1: Plotted artefact scatters and observations made.**

	<b>Latitude (S)</b>	<b>Longitude (E)</b>	<b>Comment</b>	<b>Significance</b>
2	28°23'35.8"	24°16'11.9"	Graves found near turn pipe	HIGH
3	28°23'34.8"	24°16'13.2"	Isolated flake found on low hill	LOW
5	28°23'33.2"	24°16'12.2"	Widely dispersed MSA flakes exposed on surface slope.	LOW
6	28°23'31.1"	24°16'08.6"	Isolated large MSA flake	LOW
7	28°23'28.4"	24°16'06.4"	Isolated flake near disturbed calcrete area	LOW
8	28°23'28.6"	24°16'04.5"	Quartzite flakes on exposed roadway	LOW
9	28°23'21.5"	24°16'04.6"	Isolated occurrences of Pleistocene flakes and cores	LOW
10	28°23'20.5"	24°16'03.4"	Chert, quartzite and jaspilite flakes. Flakes are found about a meter apart along a road exposure.	LOW
11	28°23'16.5"	24°16'01.2"	Pleistocene dispersed flakes	LOW
12	28°21'42.1"	24°14'35.1"	Quartzite flakes surface scatter	LOW
13	28°19'51.9"	24°13'56.9"	Surface scatter of artefacts in low density	LOW
14	28°19'26.6"	24°14'04.5"	Surface scatter of artefacts on open exposure	LOW
16	28°18'19.1"	24°09'11.5"	Artefacts observed in gravel that was brought in	LOW
20	28°20'26.1"	23°24'28.0"	Clifton Reservoir high concentration of banded iron stone cores and flakes in dense concentration.	MEDIUM
21	28°20'25.0"	23°24'27.0"	Dense Pleistocene surface scatter	MEDIUM
22			Jaspilite flake and cores in high density	MEDIUM
23	28°20'17.6"	23°24'22.5"	Pile of Banded Iron Stone found near old pipeline outlet with dispersed artifact scatter	LOW
24	28°22'28"	24°41'12.1"	Quartzite flakes surface scatter	LOW
25	28°22'28.9"	23°41'12.1"	Subsurface artefact exposure	LOW
26	28°22'26.4"	23°41'13.6"	LSA low density surface scatter exposed on open surfaces	LOW
27	28°22'26.0"	23°41'11.7"	Isolated occurrence of Pleistocene flakes in low density	LOW
28	28°20'29.7"	23°35'31.7"	Surface scatter of artefacts in	LOW

			low density	
38	28°17'30.6"	23°20'26.3"	Cemetery (just outside footprint area)	HIGH
39	28°17'33.5"	23°20'26.9"	Possible Fauresmith handaxe found near what looks like mine trench	LOW
40	28°17'14.5"	23°19'05.0"	LSA flakes in high concentration but isolated to this area	MEDIUM
41	28°17'59.0"	23°17'59.0"	Pleistocene flakes predominant in sandy area.	LOW
42	28°17'14.50"	23°19'5.00"	Low density of artefacts visible where rock exposure occurs	LOW
44	28°19'56.4"	23°08'14.7"	Surface scatter of artefacts in low density	LOW
45	28°18'17.30"	23°16'32.80"	Surface scatter of artefacts on farm 4 km from Metsimatala	LOW
47	28°19'35.60"	23°4'43.10"	Palaeo surface exposure	LOW

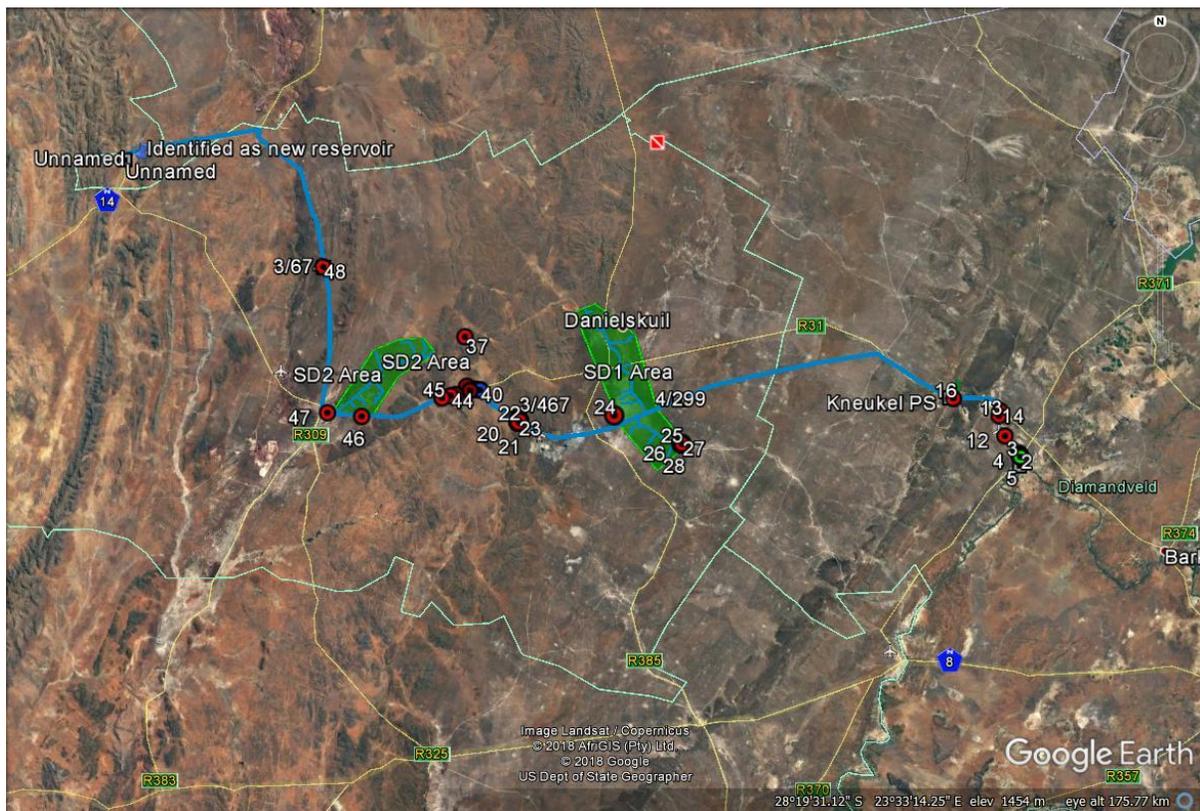


Figure 16: Plotting of archaeological observations as tabulated in Table 3.



Figure 16b:

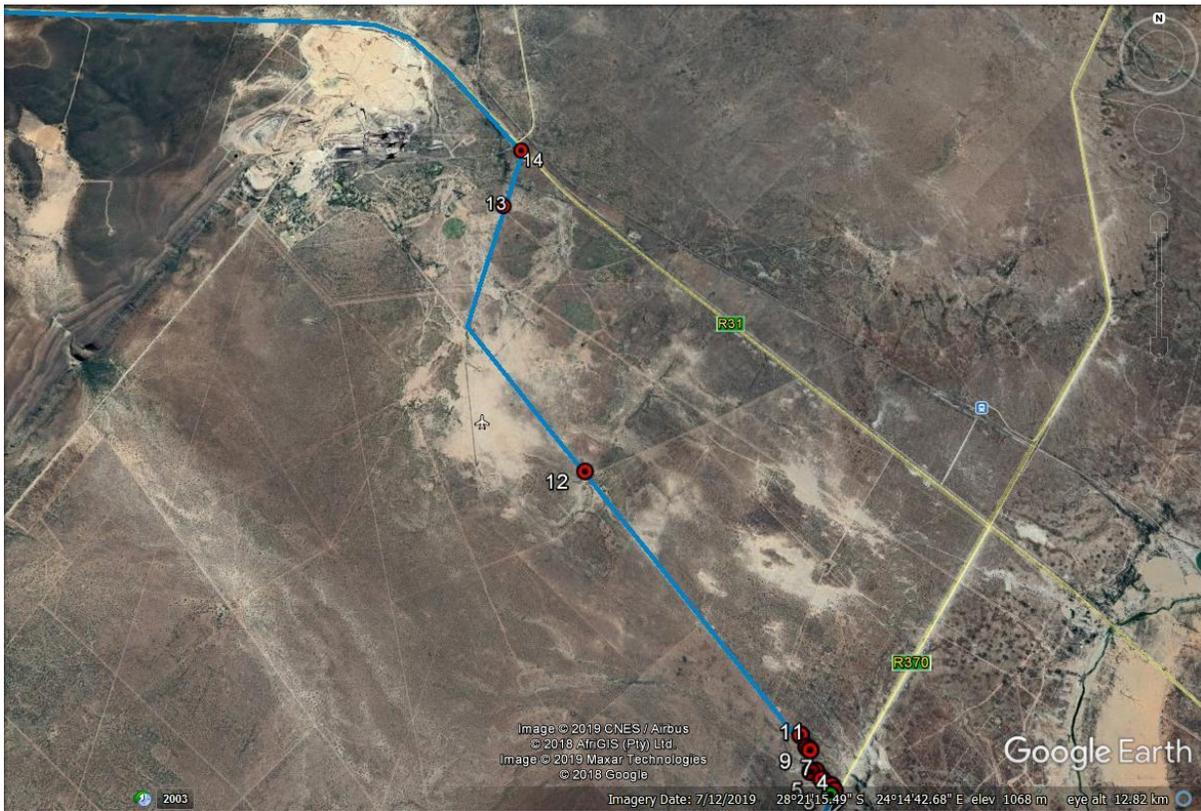


Figure 16c:

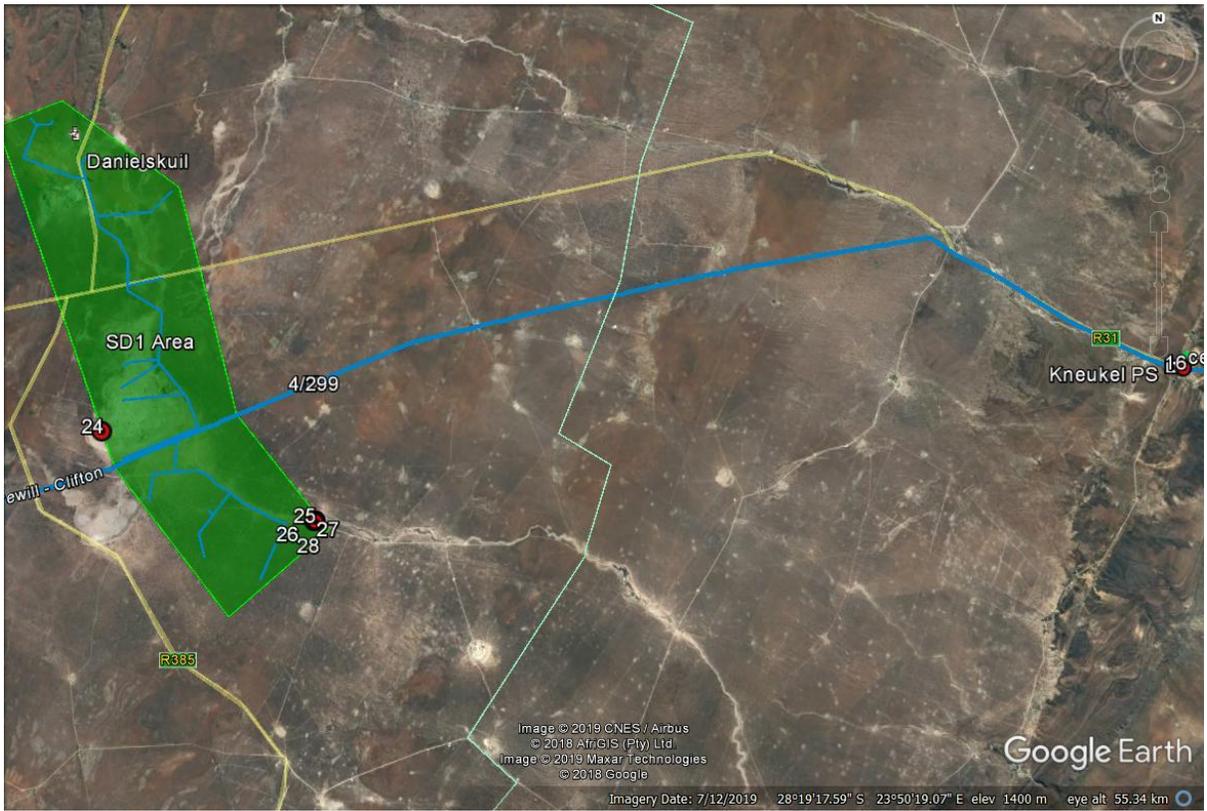


Figure 16d



Figure 16e



Figure 16f



Figure: 16g

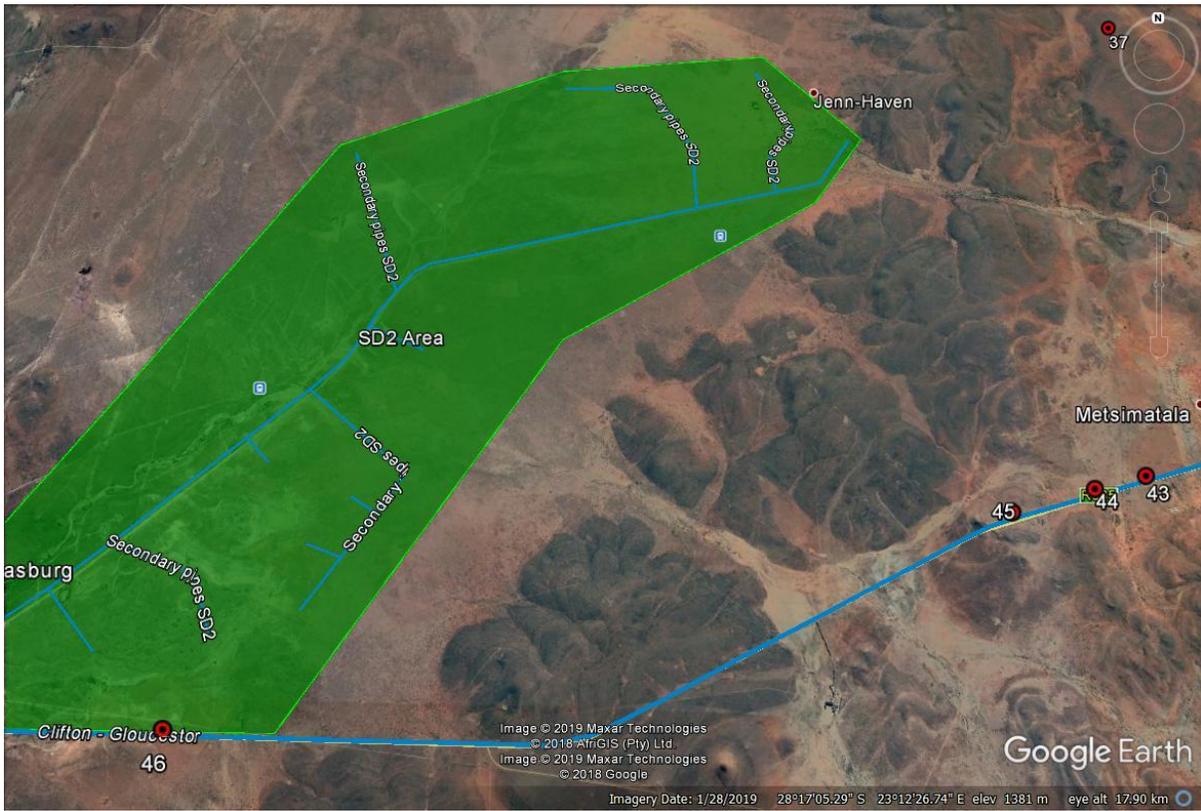


Figure: 16h



Figure: 16i

***A generally low density and widespread occurrence of mainly MSA and some LSA material was found to have occurred as predicted with indications of this being generally isolated stone tools or background scatters on exposed substrate and gravel layers, often in poor or secondary context. The artefacts noted are not likely to be in situ or complete and cannot be construed as being significant occurrences.***



Figure 17: Observation 5



Figure 18: Observation 10



Figure 19: Observation 12



Figure 20: Observation 20



Figure 21: Observation 26



Figure 22: Observation 40



Figure 23: Observation 45

***The absence of features such as hills or rocky outcrops*** within the servitude precluded the possibility of rock engravings.

***Considerable historical and recent surface disturbance had already occurred over the servitude*** Graves were found at two localities close to the proposed route, the first at  $28^{\circ} 23' 35.8''\text{S } 24^{\circ} 16' 13.2'' \text{ E}$  which is approximately 45 meters from the new proposed route, at a turn pipe near an open valve. The second was at  $28^{\circ} 17' 34.0'' \text{ S } 23^{\circ} 20' 26.3'' \text{ E}$ , an old cemetery, which lies beyond the proposed route, but noted here for precautionary measures to be put in place. Under NHRA 25 (1999) a permit is required to remove or destroy a grave or headstone marker outside a formal cemetery. a buffer of at least 30 m is recommended, with fencing to protect such graves.



Figure 24: Graves found  $28^{\circ} 23' 35.8''\text{S } 24^{\circ} 16' 13.2'' \text{ E}$





Figures 25 : Headstones found at  $28^{\circ} 17' 34.0''$  S  $23^{\circ} 20' 26.3''$  E

***Industrial archaeological traces*** are noted in the form of the old pipeline, structures and mining infrastructure adjacent to the footprint. There is an existing activerailway being used to service the mines.



Figure 26: Railway being used for transport for the mines



Figure 27 : "Laaiskal"

**Recent activity** a range of current landscape uses was observed from livestock and game farming, areas zoned for residential use, and mining.





Figures 28: A few images of recent activity in the area

## 4.2 Characterizing the overall significance of impacts

The criteria on which significance of impacts is based include **nature**, **extent**, **duration**, **magnitude** and **probability of occurrence**, with quantification of significance being grounded and calculated as follows:

- The **nature**, namely a description of what causes the effect, what will be affected, and how it will be affected.
- The **extent**, indicating the geographic distribution of the impact:
  - local extending only as far as the development site area – assigned a score of 1;
  - limited to the site and its immediate surroundings (up to 10 km) – assigned a score of 2;
  - impact is regional – assigned a score of 3;
  - impact is national – assigned a score of 4; or
  - impact across international borders – assigned a score of 5.
- The **duration**, measuring the lifetime of the impact:
  - very short duration (0–1 years) – assigned a score of 1;
  - short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4;

- or permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10:
  - 0 is small and will have no effect on the environment;
  - 2 is minor and will not result in an impact on environmental processes;
  - 4 is low and will cause a slight impact on environmental processes;
  - 6 is moderate and will result in environmental processes continuing but in a modified way;
  - 8 is high (environmental processes are altered to the extent that they temporarily cease); and
  - 10 is very high and results in complete destruction of patterns and permanent cessation of environmental processes.
- The **probability of occurrence**, indicating the likelihood of the impact actually occurring (scale of 1-5)
  - 1 is highly improbable (probably will not happen);
  - 2 is improbable (some possibility, but low likelihood);
  - 3 is probable (distinct possibility);
  - 4 is highly probable (most likely); and
  - 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, determined by a synthesis of the characteristics described above and expressed as low, medium or high. Significance is determined by the following formula:  
 $S = (E+D+M) P$ ; where S = Significance weighting; E = Extent; D = Duration; M = Magnitude; P = Probability.
- The **status**, either positive, negative or neutral, reflecting:
  - the degree to which the impact can be reversed.
  - the degree to which the impact may cause irreplaceable loss of resources.
  - the degree to which the impact can be mitigated.
- **The significance weightings for each potential impact are as follows:**
  - < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
  - 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
  - > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

#### 4.3 SUMMARY OF THE SIGNIFICANCE OF IMPACTS

**Significance of Impacts, with and without mitigation – based on the worst case scenario – for all areas investigated. *Note that some areas could not be accessed and hence this assessment is provisional.***

<b>Nature:</b> Acts or activities resulting in disturbance of surfaces and/or sub-surfaces containing artefacts (causes) resulting in the destruction, damage, excavation, alteration, removal or collection from its original position (consequences), of any archaeological or other heritage material or object (what affected). The following assessment refers to impact on physical archaeological/heritage traces.		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	1	Not needed
<b>Duration</b>	5	Not needed
<b>Magnitude</b>	6	Not needed
<b>Probability</b>	2	Not needed
<b>Significance</b>	22	
<b>Status (positive or negative)</b>	WEAKLY NEGATIVE	But locally low to very low significance
<b>Reversibility</b>	No	
<b>Irreplaceable loss of resources?</b>	Low density and significance	Loss of context but possible to mitigate.
<b>Can impacts be mitigated?</b>	Not needed	Not needed
<p><b>Mitigation:</b> the burial site or its associated features, which as far as possible should be left intact.</p> <p>The area in question is heavily disturbed so it is not needed at this stage however, note need for monitoring in management plan recommendations, there is a probability that although highly unlikely in this case; artefacts occur subsurface. Other possible occurrences are burials and ostrich eggshell on pottery caches.</p> <p>.</p>		
<p><b>Cumulative impacts:</b> Cumulative Impacts: where any archaeological contexts occur, direct impacts are once-off permanent destructive events. Secondary cumulative impacts may occur with the increase in development and operational activity associated with the life of the proposed development area.</p>		
<b>Residual Impacts: -</b>		

## 5. MEASURES FOR INCLUSION IN THE DRAFT ENVIRONMENTAL MANAGEMENT PLAN

### The objective

Archaeological or other heritage materials that may be encountered during any surface and sub-surface disturbance associated with any aspect of the proposed prospecting and

may be subject to destruction, damage, excavation, alteration, or removal. The objective is to limit such possible impacts.

<b>Project component/s</b>	Any road or other infrastructure construction over and above what is outlined in respect of the proposed Prospecting area.
<b>Potential Impact</b>	The potential impact if this objective is not met is that wider areas or extended linear developments may result in further destruction, damage, excavation, alteration, removal or collection of heritage objects (minimal as they are) from their current context along the route..
<b>Activity/risk source</b>	Activities which could impact on achieving this objective include deviation from any planned development without taking heritage impacts into consideration.
<b>Mitigation: Target/Objective</b>	An environmental management plan that takes cognizance of heritage resources in the event of any future extensions of infrastructure.  Mitigation (based on present observations and development proposal as communicated) is not considered to be necessary.

<b>Mitigation: Action/control</b>	<b>Responsibility</b>	<b>Timeframe</b>
Provision for on-going heritage monitoring in an environmental management plan which also provides guidelines on what to do in the event of any major heritage feature being encountered during any phase of development.	Environmental management provider with on-going monitoring role for the upgrade and for any instance of periodic or on-going land surface modification thereafter.	Environmental management plan to be in place before commencement of upgrade.
Should unexpected finds be made (e.g. precolonial burials; ostrich eggshell container cache; or localised Stone Age sites with stone tools, pottery, ash midden with bone/pottery; military remains), the relevant Heritage Authority should be contacted.	Environmental Control Officer should report to the Heritage Authority as needed (see next column).	In the event of finding any of the features mentioned in column 1, reporting by the developer to relevant heritage authority should be immediate. Contact: SAHRA Ms N. Higgins 021-4624502 or NC Heritage Resources Authority Mr Andrew Timothy 0790369294.

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<b>Performance Indicator</b>	Inclusion of further heritage impact consideration ahead of upgrade given that not all areas could be accessed; heritage impact consideration in all ensuing phases of activity.
<b>Monitoring</b>	Officials from relevant heritage authorities (National, Provincial or Local) to be permitted to inspect the site at any time in relation to the heritage component of the management plan.

## 6. CONCLUSIONS AND RECOMMENDATIONS

Significance of impact on archaeological and cultural heritage features was found to be low. It would remain possible that material of significance may occur, which is not identified and such chance finds, if encountered, should be brought to the attention of heritage authorities for further assessment and mitigation if necessary.

### Acknowledgements

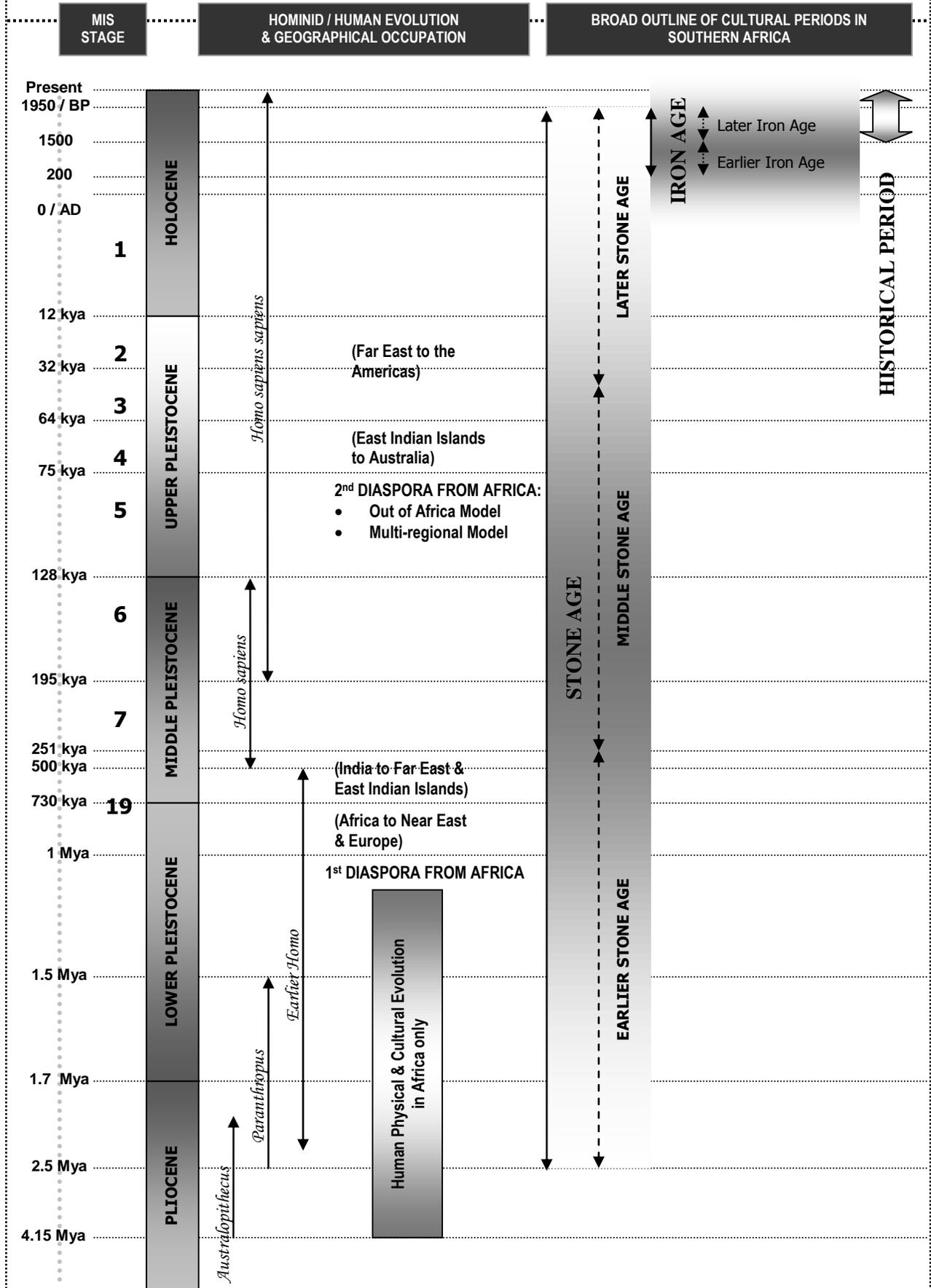
I thank Miss Jani Louw (McGregor Museum Archaeology Intern) who assisted with fieldwork together with Sedibeng Water personnel who accompanied and showed us the various areas the pipeline will be running through.

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# Schematic Human Physical and Cultural Evolution in Africa



## Extracts from the

### National Heritage Resources Act (No 25 of 1999)

#### DEFINITIONS

##### Section 2

In this Act, unless the context requires otherwise:

- ii. "*Archaeological*" means –
  - a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
  - b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10 m of such representation;
  - c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, ... and any cargo, debris, or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation.
- viii. "*Development*" means any physical intervention, excavation or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including –
  - a) construction, alteration, demolition, removal or change of use of a place or structure at a place;
  - b) carrying out any works on or over or under a place;
  - c) subdivision or consolidation of land comprising, a place, including the structures or airspace of a place;
  - d) constructing or putting up for display signs or hoardings;
  - e) any change to the natural or existing condition or topography of land; and
  - f) any removal or destruction of trees, or removal of vegetation or topsoil;
- xiii. "*Grave*" means a place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place;
- xxi. "*Living heritage*" means the intangible aspects of inherited culture, and may include –
  - a) cultural tradition;
  - b) oral history;
  - c) performance;
  - d) ritual;
  - e) popular memory;
  - f) skills and techniques;
  - g) indigenous knowledge systems; and
  - h) the holistic approach to nature, society and social relationships.
- xxxi. "*Palaeontological*" means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trances;
- xli. "*Site*" means any area of land, including land covered by water, and including any structures or objects thereon;
- xliv. "*Structure*" means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith;

#### NATIONAL ESTATE

##### Section 3

- 1) For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
- 2) Without limiting the generality of subsection 1), the national estate may include –
  - a) places, buildings, structures and equipment of cultural significance;
  - b) places to which oral traditions are attached or which are associated with living heritage;
  - c) historical settlements and townscapes;
  - d) landscapes and natural features of cultural significance;
  - e) geological sites of scientific or cultural importance
  - f) archaeological and palaeontological sites;
  - g) graves and burial grounds, including –
    - i. ancestral graves;
    - ii. royal graves and graves of traditional leaders;
    - iii. graves of victims of conflict

- iv. graves of individuals designated by the Minister by notice in the Gazette;
  - v. historical graves and cemeteries; and
  - vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No 65 of 1983)
- h) sites of significance relating to the history of slavery in South Africa;
- i) movable objects, including –
- i. objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
  - ii. objects to which oral traditions are attached or which are associated with living heritage;
  - iii. ethnographic art and objects;
  - iv. military objects;
  - v. objects of decorative or fine art;
  - vi. objects of scientific or technological interest; and
  - vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 xiv) of the National Archives of South Africa Act, 1996 (Act No 43 of 1996).

## **STRUCTURES**

### **Section 34**

- 1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.

## **ARCHAEOLOGY, PALAEOLOGY AND METEORITES**

### **Section 35**

- 3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.
- 4) No person may, without a permit issued by the responsible heritage resources authority –
- a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
  - b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
  - c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
  - d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assists in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.
- 5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and no heritage resources management procedure in terms of section 38 has been followed, it may –
- a) serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;
  - b) carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;
  - c) if mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph a) to apply for a permit as required in subsection 4); and
  - d) recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.
- 6) The responsible heritage resources authority may, after consultation with the owner of the land on which an archaeological or palaeontological site or meteorite is situated, serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.

## **BURIAL GROUNDS AND GRAVES**

### **Section 36**

- 3) No person may, without a permit issued by SAHRA or a provincial heritage resources authority –
- a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

- b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
  - c) bring onto or use at a burial ground or grave referred to in paragraph a) or b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- 4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction of any burial ground or grave referred to in subsection 3a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.
- 5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection 3b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority –
  - a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
  - b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.
- 6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority –
  - a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
  - b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

## **HERITAGE RESOURCES MANAGEMENT**

### **Section 38**

- 1) Subject to the provisions of subsections 7), 8) and 9), any person who intends to undertake a development categorised as –
  - a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
  - b) the construction of a bridge or similar structure exceeding 50 m in length;
  - c) any development or other activity which will change the character of a site –
    - i. exceeding 5 000 m<sup>2</sup> in extent; or
    - ii. involving three or more existing erven or subdivisions thereof; or
    - iii. involving three or more erven or subdivisions thereof which have been consolidated within the past five years; or
    - iv. the costs which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
  - d) the rezoning of a site exceeding 10 000 m<sup>2</sup> in extent; or
  - e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,
 must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.
- 2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection 1) –
  - a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or
  - b) notify the person concerned that this section does not apply.
- 3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection 2a) ...
- 4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development decide –
  - a) whether or not the development may proceed;
  - b) any limitations or conditions to be applied to the development;
  - c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
  - d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of the development; and

- e) whether the appointment of specialists is required as a condition of approval of the proposal.

## **APPOINTMENT AND POWERS OF HERITAGE INSPECTORS**

### **Section 50**

- 7) Subject to the provision of any other law, a heritage inspector or any other person authorised by a heritage resources authority in writing, may at all reasonable times enter upon any land or premises for the purpose of inspecting any heritage resource protected in terms of the provisions of this Act, or any other property in respect of which the heritage resources authority is exercising its functions and powers in terms of this Act, and may take photographs, make measurements and sketches and use any other means of recording information necessary for the purposes of this Act.
- 8) A heritage inspector may at any time inspect work being done under a permit issued in terms of this Act and may for that purpose at all reasonable times enter any place protected in terms of this Act.
- 9) Where a heritage inspector has reasonable grounds to suspect that an offence in terms of this Act has been, is being, or is about to be committed, the heritage inspector may with such assistance as he or she thinks necessary –
  - a) enter and search any place, premises, vehicle, vessel or craft, and for that purpose stop and detain any vehicle, vessel or craft, in or on which the heritage inspector believes, on reasonable grounds, there is evidence related to that offence;
  - b) confiscate and detain any heritage resource or evidence concerned with the commission of the offence pending any further order from the responsible heritage resources authority; and
  - c) take such action as is reasonably necessary to prevent the commission of an offence in terms of this Act.

A heritage inspector may, if there is reason to believe that any work is being done or any action is being taken in contravention of this Act or the conditions of a permit issued in terms of this Act, order the immediate cessation of such work or action pending any further order from the responsible heritage resources authority.