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Phase 1 Archaeological Impact Assessment -

**UPGRADING OF THE WASTE WATER TREATMENTS WORKS,
WEPENER, FREE STATE, SOUTH AFRICA**

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UPGRADING OF THE WASTE WATER TREATMENTS WORKS, WEPENER, FREE STATE, SOUTH AFRICA

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1) PROJECT BRIEF

ArchaeoMaps was contracted to conduct a Phase 1 Archaeological Impact Assessment (AIA) for the proposed *Upgrading of the Waste Water Treatment Works* development, Wepener, Free State. The assessment was requested in compliance with environmental requirements as prescribed in the National Environmental Management Act, No 107 of 1998 and Regulations, No 385 of 2006, represented by the Department of Environmental Affairs and Tourism (DEAT) and the National Heritage Resources Act, No 25 of 1999, represented by the South African Heritage Resources Agency (SAHRA).

This document reports on the findings of the Phase 1 AIA.

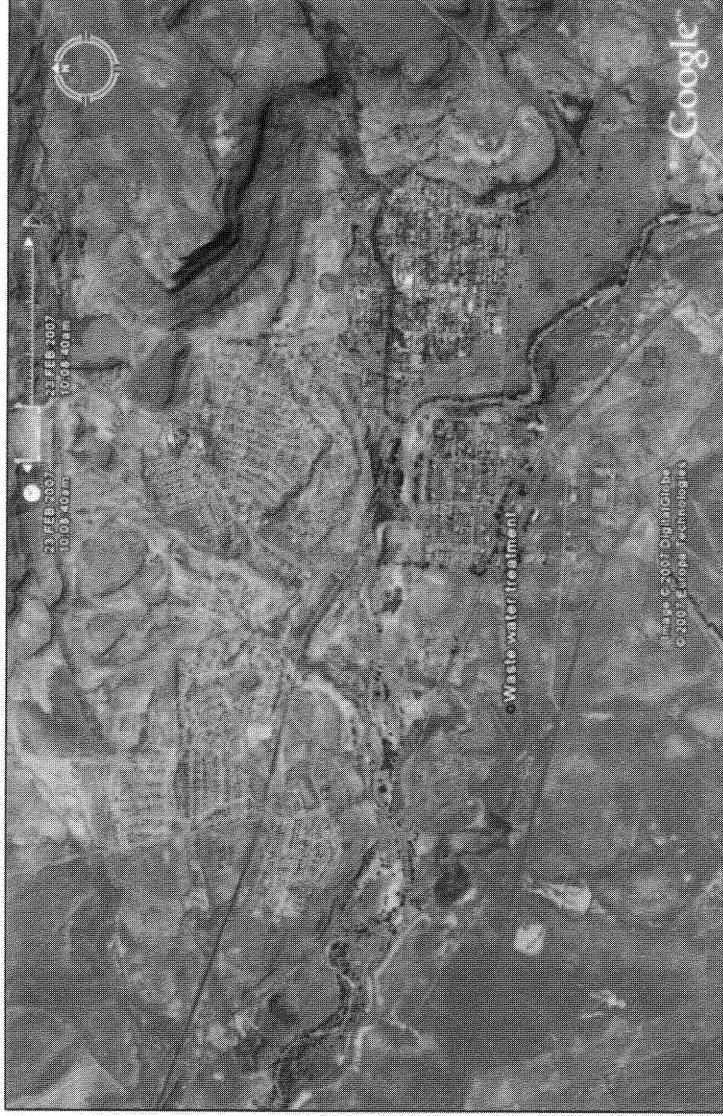
1.1) PROPERTY DESCRIPTION

The proposed approximate 2.5ha *Upgrading of the Waste Water Treatment Works* development, Wepener, will be situated south-west of Wepener on municipal owned land. The proposed development area is situated south of the Molsokane / Sandspruit River and directly north of the R26 Ladybrand / Aliwal North (1:50,000 map reference 2927CA).



IMAGE 1: Wepener, Free State, South Africa

IMAGE 2: Location of the proposed *Upgrading of the Waste Water Treatment Works* development, Wepener



1.2) DEVELOPMENT IMPACT

Existing sewerage treatment oxidation ponds, constructed in 1991, consists of two primary dams, one secondary dam, three tertiary dams and one storage dam. The dams are currently in fair condition but leakages and reads are persistent problems. The proposed upgrading process will address both these problems (Phethogo Consulting 2006). Impact during upgrading will be limited to the direct areas of the existing dams; development will thus not impact on any archaeological or cultural heritage resources.

In addition an anaerobic-aerobic pond system with a biofilter is proposed. The pond system will be situated upstream from the existing aerobic ponds on the proposed 2.5ha *Upgrading of the Waste Water Treatment Works* development area (Phethogo Consulting 2006). Impact of the construction of the anaerobic pond system will be total; thus negatively impacting on any archaeological and cultural heritage resources, if present.

The management and maintenance of existing and proposed new dams will remain the responsibility of the Naledi local municipality (Phethogo Consulting 2006).

IMAGE 1: General view of the proposed *Upgrading of the Waste Water Treatment Works* development area, Wepener (view towards the existing treatment pans)



IMAGE 2: General view of the proposed development area (view towards Wepener)

2) THE PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

2.1) METHODOLOGY

The half day assessment (2007-02-19) was conducted by one archaeologist. The assessment was done by foot and limited to a Phase 1 surface survey; no excavation or sub-surface testing was done since a permit from SAHRA is required to do so. GPS co-ordinates were taken with a Garmin e-Trex Vista GPS (3-8m error margin). Photographic documentation was done with a Casio X-S2 Exilim camera. A combination of Garmin and Google Earth software was used in the display of spatial information.

Archaeological and cultural heritage site significance assessment and associated mitigation recommendations were done according to the system prescribed by SAHRA (2005).

FIELD RATING	GRADE	SITE SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance	Grade 1	High Significance	Site conservation / Site development
Provincial Significance	Grade 2	High Significance	Site conservation / Site development
Local significance	Grade 3A	High Significance	Site preservation or extensive mitigation before development destruction
Local significance	Grade 3B	High Significance	Site preservation or extensive mitigation before development destruction
Generally Protected A	-	High / Medium Significance	Site preservation or mitigation before development destruction
Generally Protected B	-	Medium Significance	Site preservation or mitigation / test excavation / systematic sampling before development destruction
Generally Protected C	-	Low Significance	No archaeological mitigation required – Site destruction

TABLE 1: Archaeological and cultural heritage site significance and mitigation recommendations.

2.2) COVERAGE AND GAP ANALYSIS

The Phase 1 AIA covered:

- i. The approximate 2.5ha area on which the proposed construction of the anaerobic dams, part of the *Upgrading of the Waste Water Treatments Works*, Wepener, will be situated; and
- ii. The immediate surrounds.

Access to the area is via the existing tarmac and gravel road network.

2.3) PHASE 1 AIA FINDINGS

No archaeological or cultural heritage resources as defined and protected by the NHRA (1999) were discovered during assessment of the proposed 2.5ha portion of the *Upgrading of the Waste Water Treatment Works* development area, Wepener.

Historical and Stone Age Period artefacts were however present at the proposed development area. These can briefly be described as:



MAP 3: Close-up of the location of the proposed Upgrading of the Waste Water Treatments Works development area

2.3.1) HISTORICAL PERIOD ARTEFACTS

A low density of recent Historical artefacts are scattered across the total of the proposed development area. Artefact densities are too low to ascribe an artefact ratio (artefacts: m²). The finds primarily comprised of rusted metal objects associated with construction activities, inferred to date as late as, and directly associated with the 1991 construction of the existing waste treatment dams.

The low density occurrence post-date 60 years of age and does not represent a historical 'site' as defined and protected by the NHRA (1999). Assignment of a *Site Significance* or *Field Rating* value is thus irrelevant.

2.3.2) STONE AGE ARTEFACTS (W01)

A low density of Stone Age artefacts were discovered at an approximate 12 x 5m surface rock exposure (W01 – S29.73158°; E27.01786°), situated within the proposed development area. Artefact ratios of <1:30 were recorded. Artefacts were produced from mixed raw material sources. The artefacts, primarily of inferior technological quality are, based on general tool size, ascribed to a later phase of the Middle Stone Age (MSA).

The low density occurrence does not represent an archaeological 'site' as defined and protected by the NHRA (1999). Based on the small exposure area, low density of artefacts (totaling an approximate 6 artefacts), their inferior technological quality and surface restricted context the occurrence is ascribed a *Low Significance* and a *Generally Protected C* field rating. It is recommended that development proceed without the developer having to apply for a destruction permit from SAHRA.

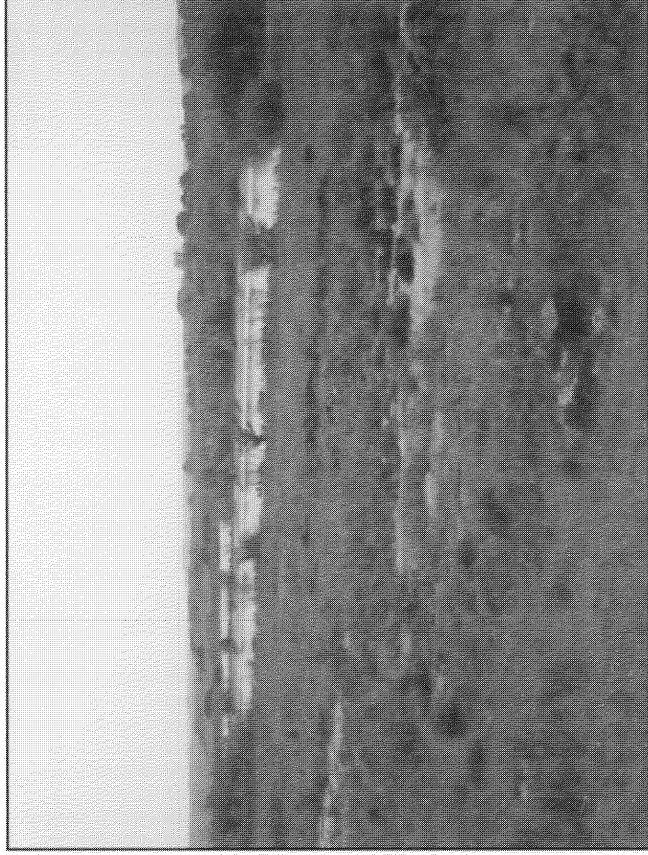


IMAGE 3: General view of the W01 rock exposure

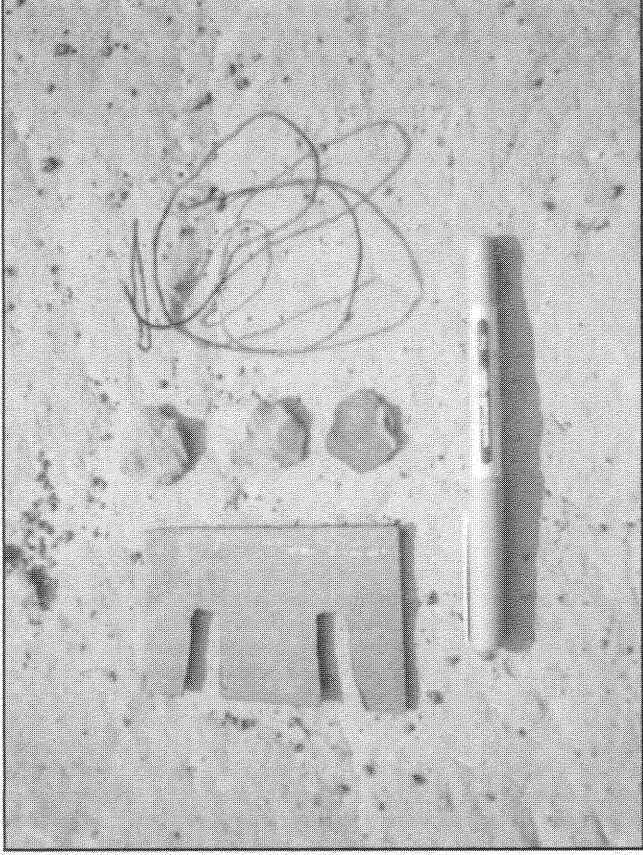


IMAGE 4: A collection of the low density recent Historical and Stone Age artefacts

DEVELOPMENT AREA	ARCHAEOLOGICAL SITES, FIND PLACES AND FEATURES	IMAGE NR	CO-ORDINATES
Upgrading of the Waste Water Treatment Works, Wepener			SOUTH EAST
A	-	Image 1 & 2	S29.73240° E27.01826°
B	-		S29.73067° E27.01824°
C	-		S29.73194° E27.01549°
D	-		S29.73236° E27.01547°
-	W01	Image 3 & 4	S29.73158° E27.01786°

TABLE 2: GPS co-ordinates of the proposed development area, identified and associated sites and features

3) CONCLUSION AND RECOMMENDATIONS

No cultural heritage resources, inclusive of palaeontological and archaeological deposits, built structures older than 60 years, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict and cultural landscapes or views, as defined and protected by the NHRA (1999) were identified during assessment of the approximate 2.5ha portion of the proposed *Upgrading of the Waste Water Treatment Works* development area, Wepener, Free State.

A low density late MSA occurrence (W01) is situated on the proposed development area. Based on the small exposure area, low density of artefacts (totaling an approximate 6 artefacts), their inferior technological quality and surface restricted context the occurrence is ascribed a *Low Significance* and a *Generally Protected C* field rating. It is recommended that development proceed without the developer having to apply for a destruction permit from SAHRA.

3.1) RECOMMENDATIONS

The proposed *Upgrading of the Waste Water Treatment Works*, including the upgrading of existing waste treatment dams (addressing leakages and reeds) and the construction of anaerobic dams on a proposed 2.5ha development area, Wepener, Free State, poses no threat to our cultural heritage as defined and protected by the NHRA (1999):

- **It is recommended that development proceed as applied for.**

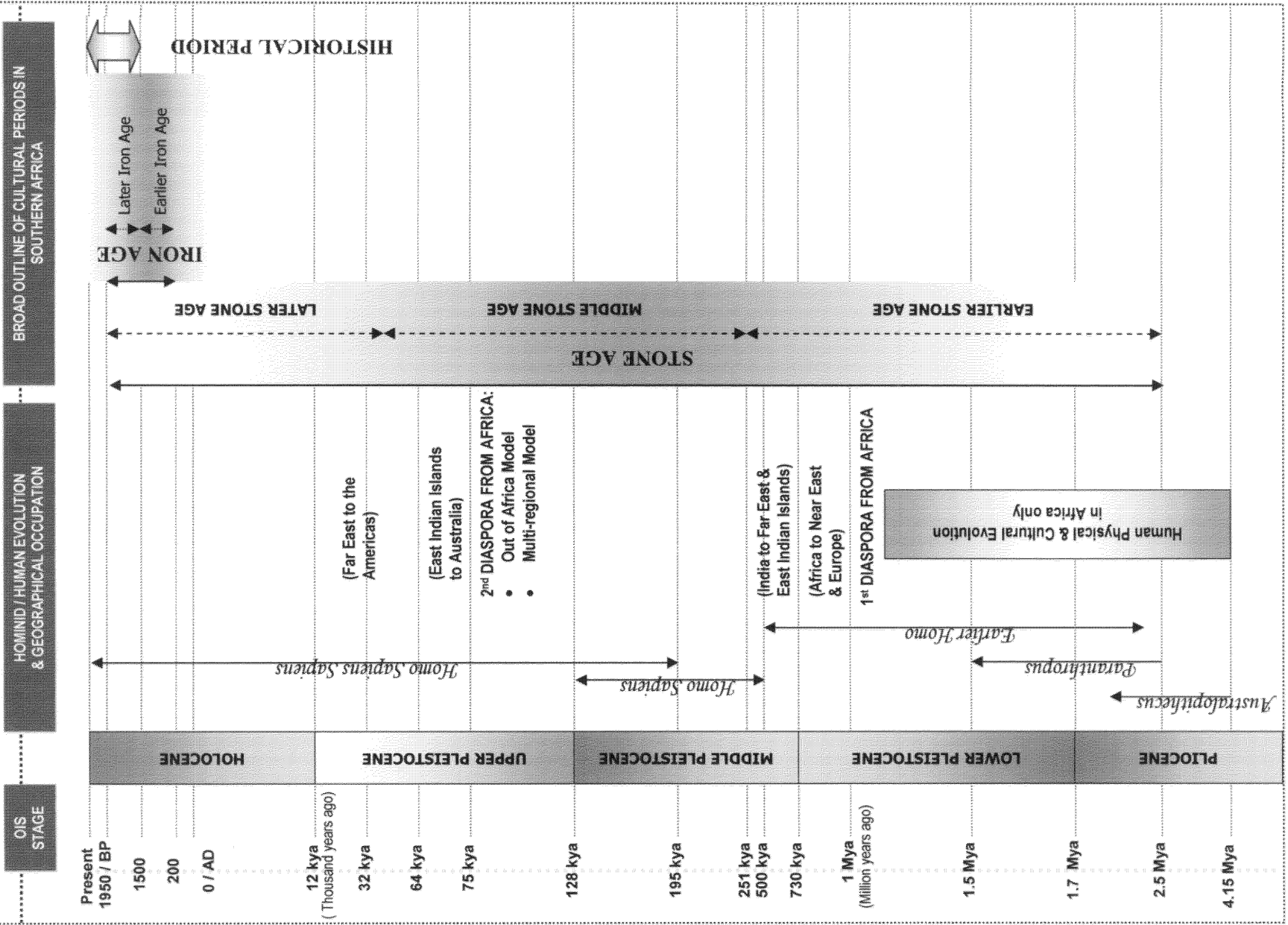
4) ACKNOWLEDGEMENTS

I would like to thank Christiaan Vermaak (Bokamoso Environmental Consultants) for accompanying me to the site and providing on site and development information.

5) REFERENCES CITED

- i. Phethogo Consulting. 2006. Naledi Local Municipality – Wepener: Upgrading of Waste Water Treatment Works. Unpublished report
- ii. South African Government. (No 107) of 1998. National Environmental Management Act.
- iii. South African Government. (No 25) of 1999. National Heritage Resources Act.
- iv. South African Heritage Resources Agency. 2005. Minimum standards for the archaeological and heritage components of impact assessments. Unpublished guidelines.

Schematic Outline of the Pre-historic and Historic Periods



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 traces;
- 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 –
- destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite; object or any meteorite;
 - destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
 - 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
 - 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 –
- 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;
 - 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;
 - 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
 - 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 –
- 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;
 - 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
 - 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 –
- made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
 - 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 –
- 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
 - 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 – the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
 - a) any development or other activity which will change the character of a site – exceeding 5 000 m² in extent; or
 - i. involving three or more existing erven or subdivisions thereof; or
 - ii. involving three or more erven or subdivisions thereof which have been consolidated within the past five years; or
 - iii. the costs which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
 - iv. the rezoning of a site exceeding 10 000 m² in extent; or
 - d) 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;
 - c) take such action as is reasonably necessary to prevent the commission of an offence in terms of this Act.
- 10) 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