
PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT

**UPGRADE OF THE SEWER PURIFICATION PLANT,
REDDERSBURG, FREE STATE, SOUTH AFRICA**

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1) TERMS OF REFERENCE

The proposed Upgrade of the Sewer Purification Plant, Reddersburg, Free State, will comprise a total development area of 13,299m². The development will include the construction of 2 new anaerobic ponds (800m²), 2 new oxidation ponds (12,500m²), 2 new pump stations (19m²), the construction of a chlorine tank and building (70m²), the upgrade of the existing inlet structure and the cleaning of existing ponds.

1.1) DEVELOPMENT LOCATION AND IMPACT

The proposed Upgrade of the Sewer Purification Plant development will be restricted to the proposed 13,299m² development area and associated approximate 500m gravel access road. The development will be situated immediately adjacent to the existing sewer purification plant, approximately 2kms WNW (west-north-west) of the centre of Reddersburg (1:50,000 map ref. – 2926CA).

The development will impact on the total of the surface of the proposed development area to a sub-surface level not exceeding approximately 2m in depth. Development impact on the affected area will be total; resulting in the loss of all surface and sub-surface heritage sites / features that may be present within the proposed development area.



Figure 1: Reddersburg, Free State, SouthAfrica

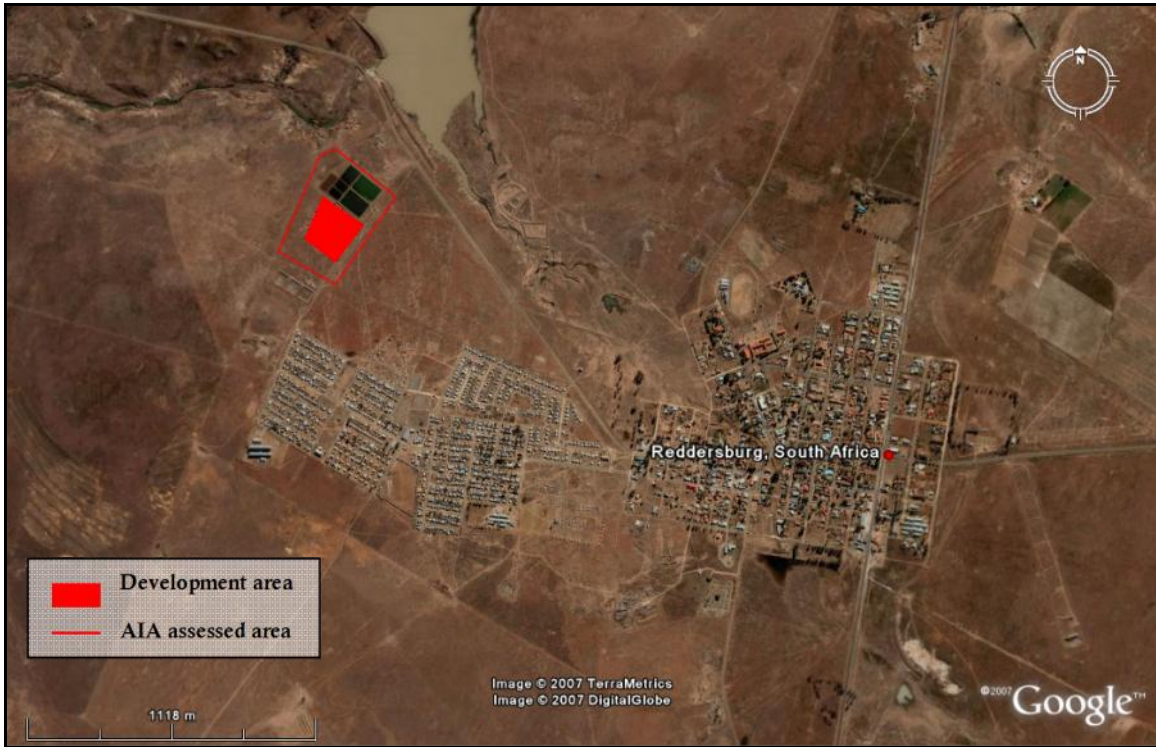


Figure 2: Upgrade of the Sewer Purification Plant development area, Reddersburg



Figure 3: Close-up of the Upgrade of the Sewer Purification Plant development area, Reddersburg

2) THE PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT



Figure 4: Phase 1AIA assessment findings

2.1) *ARCHAEOLOGICAL LEGISLATIVE COMPLIANCE*

The Phase 1 Archaeological Impact Assessment (AIA) was requested by the South African Heritage Resources Agency (SAHRA) mandatory responsible for the National Heritage Resources Act, Act No 25 of 1999 (NHRA 1999).

The Phase 1 AIA's was requested as specialist sub-section to the Environmental Impact Assessment (EIA) in compliance with requirements of the National Environmental Management Act, No 107 of 1998 (NEMA 1998) and associated regulations (2006), and the NHRA 1999 and associated regulations (2000).

The Phase 1 AIA aimed to locate, identify and assess the significance of cultural heritage resources, inclusive of archaeological deposits / sites, 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, that may be affected by the proposed development. Palaeontological deposits / sites as defined and protected by the NHRA 1999 are not included as subject to this report.

2.2) *COVERAGE AND GAP ANALYSIS*

The Phase 1 AIA covered the proposed 13,299m² development area, the immediate surrounds of the existing sewerage treatment works and the approximate 500m access gravel road.

2.3) *METHODOLOGY*

The Phase 1 AIA was conducted over a 1 day period (2007-10-07) by one archaeologist and one archaeology assistant. The assessment was done by foot and vehicle (LVD) and limited to a Phase 1 surface survey; no excavation or sub-surface testing was done. Visibility was very good across the extent of the proposed development area. Sub-surface interpretations were based on section inspections of an existing pit (R1) with dimensions in excess of 3x3m to an approximate 2m depth. GPS co-ordinates were taken with a Garmin e-Trex Vista GPS (Datum: WGS84). Photographic documentation was done with a Casio X-S2 Exilim camera. A combination of Garmap 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 (2007).

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

Table 1: Cultural heritage site significance assessment and mitigation recommendations

2.4) *PHASE 1 AIA ASSESSMENT FINDINGS*

The area proposed for development is demarcated by virgin land. Surface inspection resulted in no archaeological or cultural heritage resources as defined and protected by the NHRA 1999. Sub-surface assessment, based on inspection of existing open sections of a pit (R1) with dimensions in excess of 3x3m to an approximate 2m depth yielded no anthropic stratigraphic members or deposits.

One identified structure (R2), situated in close proximity to the proposed development area, post-dates 60 years of age, by implication not protected by the NHRA 1999. The structure is in use by the treatment works.

One contemporary site (R3), located north-east of the proposed development area comprise of a structure, dam and cattle farming infrastructure. The site will not be impacted on by the development. The site together with further informal settlement to the south and south west of the development area

does not form the subject of this report and it is recommended that recommendations as per the Social Impact Assessment (SIA) / Public Liaison process be complied with.



Figure 5: General view of the proposed development area with existing informal residences to the south



Figure 6: The existing sewerage treatment works



Figure 7: An existing pit (R1) yielded anthropically sterile sections



Figure 8: Close-up of sub-surface section stratigraphy



Figure 9: The R2 structure, post-dating 60 years of age and currently in use by the treatment works



Figure 10: The existing inlet structure (IS), the upgrade of which will form part of the proposed development



Figure 11: The R3 contemporary site, situated adjacent to the development area

2.4.1) CONCLUSION

No cultural heritage resources as defined and protected by the NHRA 1999 were identified during assessment of the proposed development area inclusive of the approximate 500m gravel access road.

MAP CODE	SITE	TYPE	DESCRIPTION	CO-ORDINATES	RECOMMENDATIONS
UPGRADE OF THE SEWER PURIFICATION PLANT, REDDERSBURG, FREE STATE					
1	-	-	-	S29°38'41.0"; E26°09'22.9"	-
2	-	-	-	S29°38'37.3"; E26°09'17.0"	-
3	-	-	-	S29°38'42.8"; E26°09'14.3"	-
4	-	-	-	S29°38'45.8"; E26°09'18.9"	-
5	-	-	-	S29°38'32.2"; E26°09'16.6"	-
6	-	-	-	S29°38'44.4"; E26°09'10.7"	-
7	-	-	-	S29°38'48.5"; E26°09'18.9"	-
8	-	-	-	S29°38'37.4"; E26°09'27.5"	-
9	-	-	-	S29°38'31.4"; E26°09'18.8"	-
IS	-	-	Inlet Structure	S29°38'39.0"; E26°09'24.6"	-
R1	-	-	Existing pit	S29°38'40.9"; E26°09'22.2"	-
R2	-	-	Contemporary Structure	S29°38'35.3"; E26°09'16.8"	N/A
R3	-	-	Contemporary Site	S29°38'34.0"; E26°09'24.6"	-

*Proposed development area: 1-2-3-4-1

*Assessed area: 5-6-7-8-9-5

*No cultural heritage resources as defined and protected by the NHRA 1999 were located within the approximate 13,299m² development area

Table 2: Summary of the proposed development area, identified and associated cultural heritage resources and relevant recommendations

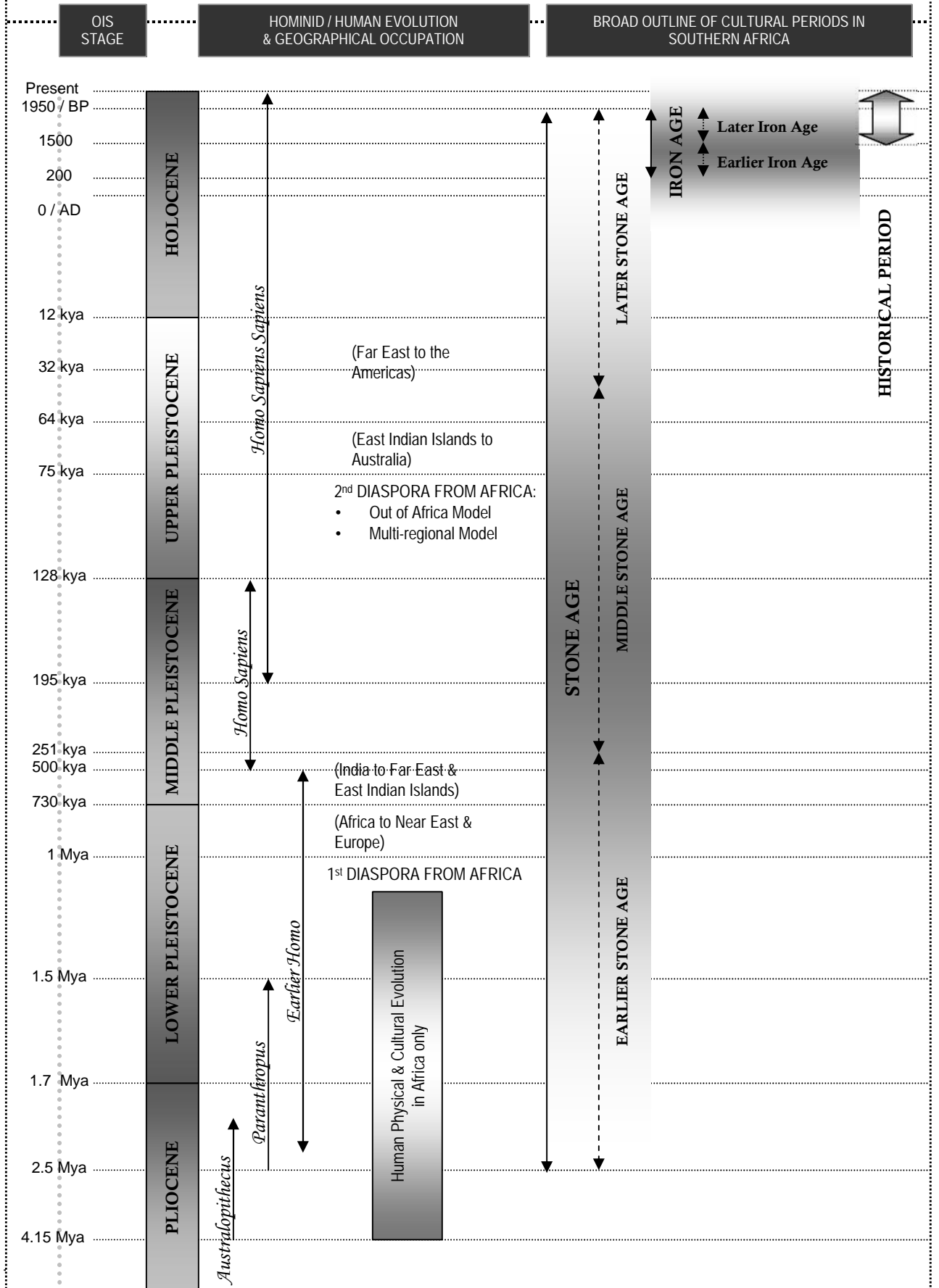
3) **RECOMMENDATIONS**

The proposed development, the Upgrade of the Sewer Purification Plant, Reddersburg, Free State, will not impact on any cultural heritage resources as defined and protected by the NHRA 1999. It is recommended that development proceed as applied for.

4) REFERENCES CITED

1. South African Government. (No. 107) of 1998. *National Environmental Management Act*.
2. South African Government. (No. 25) of 1999. *National Heritage Resource Act*.
3. South African Heritage Resources Agency. 2007. *Minimum standards for the archaeological and heritage components of impact assessments*. Unpublished guidelines.

Schematic Outline of the Pre-historic and Historic Periods (Southern 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.
- xxx. “*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 trace;
- 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 m² 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 m² 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.
- 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.