

# **McGregor Museum**

## **Department of Archaeology**



# **Heritage Impact Assessment for the proposed Kabi Kimberley Solar PV Plant and associated infrastructure near Kimberley, Northern Cape.**

David Morris, McGregor Museum  
July 2011

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### **Introduction**

The McGregor Museum was contacted by Gerhard Cronje of Savannah Environmental (Pty) Ltd (P.O. Box 148 Sunninghill 2157, tel 0842502494, 011-2346621, email [gerhard@savannahSA.com](mailto:gerhard@savannahSA.com)) to carry out a basic assessment of the possible impacts of the proposed Kabi Kimberley Solar PV Plant and associated infrastructure near Kimberley, Northern Cape.

The site was inspected on foot in July 2011 and relevant observations are indicated in this report.

Fieldnotes and photographs are lodged with the McGregor Museum, Kimberley.

### **The author of this report**

The author of this report is a professional archaeologist accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists. He has worked as a museum archaeologist and has carried out specialist research and surveys in the Northern Cape since 1985.

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 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

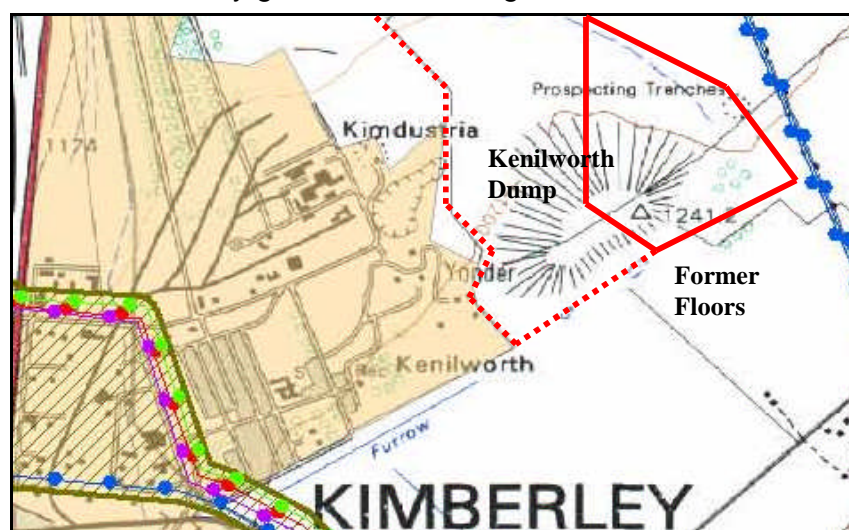
should be performed, resulting in a specialist report as required by the relevant heritage resources authority/ies to assess whether authorisation may be granted for the disturbance or alteration, or destruction of heritage resources.

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

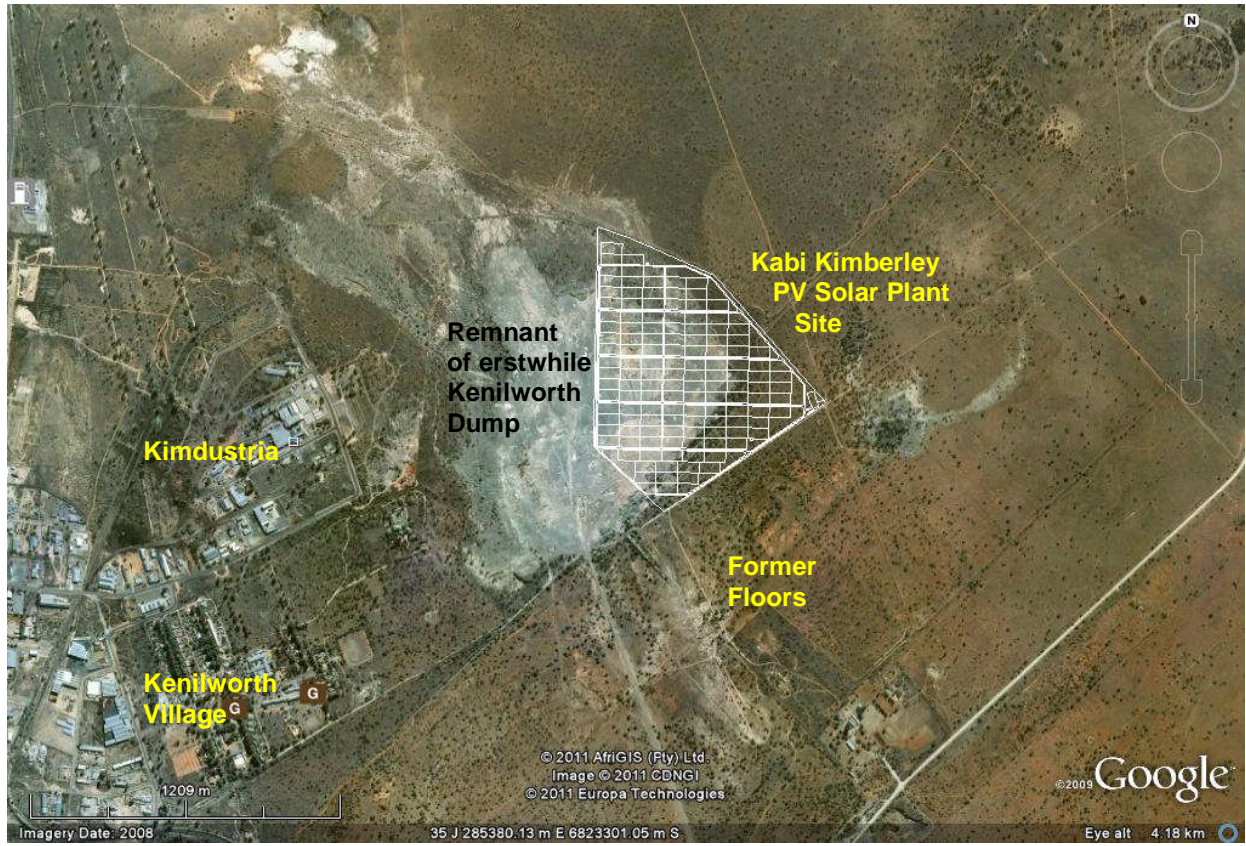
## DESCRIPTION OF THE AFFECTED ENVIRONMENT

The environment to be developed for the Kabi Kimberley PV Solar Plant lies on the north eastern outskirts of Kimberley and is already substantially disturbed. The bulk of the area comprises cleared or soon to be cleared mine debris dump (Kenilworth Dump) while the remainder (the north eastern-most fraction of the area in question) is a historically disturbed piece of land which was once part of the adjacent De Beers Floors (used for the spreading out of blue ground (kimberlite) to be weathered before being gathered up for processing and diamond extraction).

At the time of the site visit the remains of the dump were cleared in some places to bedrock (calcrete underlying a thin veneer of red Hutton sands) and were otherwise a relatively thin remainder of un-vegetated mine debris. The adjacent earthworks, trenches and floors consisted of a thickly grassed undulating surface.



Locality map indicating the erstwhile Kenilworth dump. Kabi Kimberley PV Solar Plant site indicated in solid red, dashed line showing possible large site.



Google Earth image map indicating the final preferred site for the Kabi Kimberley PV Solar Plant and associated infrastructure, relative to the now almost entirely cleared Kenilworth Dump and other features of the north eastern outskirts of Kimberley.

### Description of heritage features of the region

The Northern Cape has a wealth of precolonial archaeological sites (Beaumont & Morris 1990; Morris & Beaumont 2004), these often being focused along rivers such as the nearby Vaal (e.g. Gibbon *et al.* 2009), or around koppies, for example Wildebeest Kuil (e.g. Morris 1988, 2006) just west of Kimberley, as well as at the verges of pans such as Alexandersfontein east of Kimberley (e.g. Morris 2002). Important Fauresmith age sites occur in the palaeodunes that flank the Samaria Road just north east of the proposed development (Beaumont 1990; Morris 1992, 1999).

Colonial era traces are preponderantly associated with the development of the diamond mines and the evolution of the City of Kimberley and include industrial archaeology/heritage and material traces of the city's cultural history. As far as the proposed development is concerned the most significant features relate to the mining floors (Morris 1999) and the disposal of mine debris which resulted in this instance in the

Kenilworth Dump. The unique late nineteenth century Kenilworth village development, originally for white mine workers (Roberts 1976), is situated about a kilometre to the west of the proposed Solar Plant: it is not expected to be impacted by the development.

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

Heritage resources including archaeological sites and colonial era features are in each instance unique and non-renewable resources. Area developments such as that envisaged can have a permanent destructive impact on such resources. The objective of this assessment is to evaluate the sensitivity of such resources where present, to assess the significance of potential impacts on these resources and, if and where appropriate, to recommend no-go areas and measures to mitigate or manage said impacts.

The destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during the initial Plant development/construction period.

### **METHODOLOGY**

The area of the proposed development was inspected on foot (some parts of the adjacent landscapes had been investigated previously in relation to mining projects). Observations of heritage traces where noted are characterised below and evaluated.

### **Assumptions and limitations**

It was assumed that, by and large in this particular disturbed landscape, few if any in situ precolonial traces would be found. Moreover, the rehabilitation of mining property had meant that much of the industrial landscape had also since been disturbed by clearance of the dumps (now nearing completion) and prior systematic removal of metal objects. It was not expected that much beyond certain earthworks or trenches would actually remain of either the precolonial or the colonial history of this particular locale. The assessment was aimed in part to verify this and to record what little might remain.

A proviso is routinely given, however, that should sites or features of significance be encountered during construction (this could include an unmarked burial or a high density of stone tools or of colonial era ashheap material, for instance), specified steps are necessary (cease work, report immediately to relevant heritage authority).

## Potentially significant impacts to be assessed

Any area or linear, primary and secondary, disturbance of surfaces within the proposed development site could have a destructive impact on heritage resources, where present. In the event that such resources are found, they are likely to be of a nature that potential impacts could be mitigated by documentation and/or salvage following approval and permitting by the South African Heritage Resources Agency and, in the case of any built environment features, by Ngwao Bošwa ya Kapa Bokone (the Northern Cape Heritage Authority). Although highly unlikely in this instance, there may be some that could require preservation *in situ* and hence modification of intended placement of development features.

Disturbance of surfaces includes any clearance or construction, also including roads, erection of pylons, or any other *clearance* of, or *excavation* into, a land surface. In the event of archaeological materials being present such activity would alter or destroy their context (even if the artefacts themselves are not destroyed, which is also obviously possible). Without context, archaeological traces are of much reduced significance. It is the contexts as much as the individual items that are protected by the heritage legislation.

A number of broad expectations/concerns were expressed for assessment along the alternative alignments. Hence it was predicted that:

- Based on previous experience in the area, the terrain on the north eastern outskirts of Kimberley is likely to include a generally low density and widespread occurrence of mainly Pleistocene Stone Age material, including what has been defined as Fauresmith, mainly based on hornfels as raw material. It would tend to occur on calcrete where exposed, or in the lower margins of Hutton sands that veneer the landscape here.
- There appear to be none of the features such as hills or rocky outcrops or even palaeodunes in the area which in other parts of this landscape provide shelter or relatively resource-rich micro-habitats that attracted people particularly of the Later Stone Age (an example being the hill at Wildebeest Kuil Rock Art Centre, or the Fauresmith site amongst the palaeodunes at Rosebery Plains on the Samaria Road). 'Off-site' distributions of artefacts would tend to be of low density and relatively lower significance.
- Considerable historical and recent surface disturbance has already occurred over the entire terrain in question, the implications of which are that few and probably no *in situ* Stone Age occurrences would have survived past impacts, while industrial

archaeological traces, as also noted above, have subsequently also been obliterated to a large extent by mine rehabilitation. Included in this process has been the disappearance of high points that served as redoubts (forts) in the Defence of Kimberley during the Siege, 1899-1900.

- Significant intangible heritage values are not expected to be attached to former, now much modified, mining area in question. Illegal small-scale subsistence digging for diamonds was noted at one spot during the site visit indicating one informal contemporary use of the area, accessed from the outside.
- Visual impacts should be considered, particularly alongside heritage landscapes, in this case especially the Kenilworth Village.

### **Determining archaeological significance**

In addition to guidelines provided by the National Heritage Resources Act (Act No. 25 of 1999), a set of criteria based on Deacon (nd) and Whitelaw (1997) for assessing archaeological significance has been developed for Northern Cape settings (Morris 2000a). These criteria include estimation of landform potential (in terms of its capacity to contain archaeological traces) and assessing the value of any archaeological traces (in terms of their attributes or their capacity to be construed as evidence, given that evidence is not given but constructed by the investigator). These significance assessment criteria are appended in table form at the end of this report.

### **OBSERVATIONS**

The proposed Kabi Kimberley PV Plant area was visited in July 2011. In summary, observations can be reported in relation to predictions made prior to fieldwork (see above).



***A generally low density and widespread occurrence of mainly Pleistocene Stone Age material*** may have occurred here as predicted with indications of this being very rare stone tools noted on exposed calcrete at the base of what had been the Kenilworth Dump. They are not likely to be in situ or complete and cannot be construed as being significant occurrences.



Artefacts occurring on calcrete exposed in the belly of the dump are typically on hornfels.

***A lack of features such as hills or rocky outcrops*** precluded the possibility of rock engravings and no convincing Later Stone Age material was found.

**Considerable historical and recent surface disturbance has already occurred over the entire terrain.** This rules out the possibility of *in situ* Stone Age occurrences (see above).

**Industrial archaeological traces** were in turn obliterated by rehabilitation and recycling of mine debris dumps (in this case the Kenilworth Dump, almost completely removed) as well as prior systematic recovery of metal and other infrastructure. Limited traces of rail haulage lines associated with the Bultfontein Depositing Floors were observed in a previous report (Morris 1999): one haulage line features in an 1893 map as a steam haulage system.

Several of Kimberley's old mine dumps have been reduced and cleared away in the last decade or so for re-treatment at the Combined Treatment Plant in order to retrieve diamonds not found by old methods a century ago. Within the dumps, in places, refuse and industrial waste disposal areas had been found (e.g. in the Kenilworth dump and near to the Gladstone Cemetery). Informal diggers working alongside Collville located several cocopans buried in the base of the dump there. Most of these traces have been lost. In the event that any such material is found during development of the Kabi PV Solar Plant, relevant authorities should be alerted.



**Visual impacts** are not expected to be a major aspect of this development. The historic village lies upslope and more than a kilometre away with Kalahari bushveld vegetation likely to mask the PV Solar Plant from that vantage point.

### **Summing up – recommendations**

The extent of disturbance a) by mining and b) by rehabilitation/recycling of historic mining features and infrastructure mean that from a heritage perspective almost nothing of significance remains and a highly unusual virtual 'clean slate' exists for the envisaged development. Only in the north eastern most corner of the proposed site are there features of any age, and these are merely disturbed earthworks and trenches, the remnants of infrastructure relating to the Floors and the recovery of material to the washing plant and from there to the mine dump.

There is a remote chance, as noted above, that some material may still occur subsurface which, if encountered, should be brought to the attention of heritage authorities. In such an event in the course of PV Solar Pant development, work should halt and SAHRA and/or Ngwao Bošwa ya Kapa Bokone be contacted so that, inter alia, an archaeologist and/or heritage specialist is consulted to recommend any necessary mitigation measures.

In conclusion, no significant heritage traces were found that are considered to require further mitigation.

## **DETERMINING SIGNIFICANCE**

### ***Assessment Criteria***

The criteria for the description and assessment of environmental impacts were drawn from the EIA Regulations, published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998) and summarized in the Terms of Reference document, Appendix A, quoted here in full (with comments):

The level of detail was somewhat fine-tuned by assigning specific values to each impact. In order to establish a coherent framework within which all impacts could be objectively assessed it is necessary to establish a rating system, which is consistent throughout all criteria. For such purposes each aspect was assigned a value (refer to Figure below), ranging from 1-5, depending on its definition.

### **Potential Impact**

This is an appraisal of the type of effect the proposed activity would have on the affected environmental component. Its description should include what is being affected and how it is being affected. (See relevant section above).

### **Extent**

The physical and spatial scale of the impact is classified as:

- Local: The impacted area extends only as far as the activity, e.g. a footprint. (1)
- Site: The impact could affect the whole, or a measurable portion of the site. (2)
- Regional: The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns. (3)
- National & International: (4 & 5)

(In all instances the impact would be Local)

### **Duration**

The lifetime of the impact, which is measured in relation to the lifetime of the proposed base.

- Short term: The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than any of the phases. (1/2)
- Medium term: The impact will last up to the end of the phases, where after it will be entirely negated. (3)

- Long term: The impact will continue or last for the entire operational lifetime of the Development, but will be mitigated by direct human action or by natural processes thereafter. (4)
- Permanent: This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient. (5)

(Impacts on heritage and archaeological resources may be mitigated and hence classed as 'Short term' but the original in situ context is usually altered in a 'Permanent' way. If the archaeological or heritage significance of the resources in question is considered to be low then the significance of the permanent loss is low).

### **Intensity/Magnitude**

The intensity of the impact is considered here by examining whether the impact is destructive or benign, whether it destroys the impacted environment, alters its functioning, or slightly alters the environment itself. These are rated as:

- Low: The impact alters the affected environment in such a way that the natural processes or functions are not affected. (1-4)
- Medium: The affected environment is altered, but functions and processes continue, albeit in a modified way. (5-7)
- High: Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases. (8-10)

This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

(Archaeological and heritage resources being non-renewable, the intensity of any direct impact would be high but this evaluation would again be ameliorated by the significance attached to the particular resources in question – see comment under Duration above).

### **Probability**

This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:

- Improbable: The possibility of the impact occurring is none or extremely low, due either to the circumstances, design or experience. (1-2)
- Possible: The possibility of the impact occurring is low, due either to the circumstances, design or experience. (3)

- Likely: There is a likelihood that the impact will occur and plans must be drawn up before carrying out the activity. (4)
- Definite: The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. (5)

(With regard to this project the probability of impacts on heritage including archaeological resources is 'Improbable')

### **Determination of Significance – Without Mitigation**

Significance is determined through a synthesis of impact characteristics, and is an indication of the importance of the impact in terms of both physical extent and time scale. The significance of the impact “without mitigation” is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as “positive”. Significance is rated on the following scale:

- No significance: The impact is not substantial and does not require any mitigation action.
- Low: The impact is of little importance, but may require limited mitigation.
- Medium: The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
- High: The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

### **Determination of Significance – With Mitigation**

Significance is determined through a synthesis of impact characteristics. It is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. In this case the prediction refers to the foreseeable significance of the impact after the successful implementation of the suggested mitigation measures. Significance with mitigation is rated on the following scale:

- No significance: The impact will be mitigated to the point where it is regarded to be insubstantial.
- Low: The impact will be mitigated to the point where it is of limited importance.

|                 |                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low to medium:  | The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels.                                                                                                                                                                                                 |
| Medium:         | Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw.                                                               |
| Medium to high: | The impact is of great importance. Through implementing the correct mitigation measures the negative impacts will be reduced to acceptable levels.                                                                                                                                                                                                              |
| High:           | The impact is of great importance. Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and, taken within the overall context of the project, is considered to be a fatal flaw in the project proposal. This could render the entire development option or entire project proposal unacceptable. |

### **Quantifying significance**

Significance may be determined in a quantified manner by combining the criteria in the following formula:

**S = (E+D+M) P**; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude/Intensity

P = Probability

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).

|                                                                                                                                                                                                                                                                                                                      |                           |                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------|
| <b>Nature:</b><br>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 material or object (what affected). |                           |                        |
|                                                                                                                                                                                                                                                                                                                      | <b>Without mitigation</b> | <b>With mitigation</b> |
| <b>Extent</b>                                                                                                                                                                                                                                                                                                        | Low (1)                   | -                      |
| <b>Duration</b>                                                                                                                                                                                                                                                                                                      | Permanent (5)             | -                      |
| <b>Magnitude</b>                                                                                                                                                                                                                                                                                                     | Low (3)                   | -                      |
| <b>Probability</b>                                                                                                                                                                                                                                                                                                   | Improbable (1)            | -                      |
| <b>Significance</b>                                                                                                                                                                                                                                                                                                  | <b>Low (9)</b>            | -                      |
| <b>Status (positive or negative)</b>                                                                                                                                                                                                                                                                                 | Negative                  |                        |
| <b>Reversibility</b>                                                                                                                                                                                                                                                                                                 | No                        |                        |
| <b>Irreplaceable loss of resources?</b>                                                                                                                                                                                                                                                                              | No                        | N/A                    |
| <b>Can impacts be mitigated?</b>                                                                                                                                                                                                                                                                                     | Not necessary             | N/A                    |
| <b>Mitigation:</b> Mitigation Measures are not considered necessary since the entire landscape in question lacks integrity through repeated disturbance of both its precolonial and colonial heritage resources.                                                                                                     |                           |                        |
| <b>Cumulative impacts:</b><br>Increased loss of heritage resources. Past mining activities may have aggravated this impact.                                                                                                                                                                                          |                           |                        |
| <b>Residual Impacts:</b> -                                                                                                                                                                                                                                                                                           |                           |                        |

## MEASURES FOR INCLUSION IN THE DRAFT ENVIRONMENTAL MANAGEMENT PLAN

OBJECTIVE: Archaeological or other heritage materials occurring in the path of any surface or sub-surface disturbances associated with any aspect of the development are highly likely to be subject to destruction, damage, excavation, alteration, or removal. The objective should be to limit such impacts to the primary activities associated with the development and hence to limit secondary impacts during the medium and longer term working life of the facility.

|                                     |                                                                                                                                                                                                                                                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project component/s</b>          | Establishment of solar array, access roads, substation, overhead powerline and associated buildings                                                                                                                                                                                              |
| <b>Potential Impact</b>             | The potential impact if this objective is not met is that wider areas or extended linear developments may result in destruction, damage, excavation, alteration, removal or collection of heritage objects from their current context on the site/in areas where any development is extended.    |
| <b>Activity/risk source</b>         | Activities which could impact on achieving this objective include deviation from the planned lay-out of road/s and infrastructure 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 roads or other infrastructure.<br><br>The assessment carried out in this report does not recommend any mitigation measures on account of the absence or degraded nature of |

heritage resources in the area examined.

| Mitigation: Action/control                                                                                                                                                                                                         | Responsibility                                                                           | Timeframe                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| On-going heritage monitoring in a facility 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 or operation.   | Environmental management provider with on-going monitoring role set up by the developer. | Environmental management plan to be in place before commencement of development. |
| If a heritage object is found, work in that area must be stopped immediately, and appropriate specialists brought in to assess to site, notify the administering authority of the item/site, and undertake due/required processes. | Environmental management provider with on-going monitoring role set up by the developer. | Construction phase                                                               |

|                              |                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Performance Indicator</b> | <ul style="list-style-type: none"> <li>» Zero disturbance outside of designated work areas.</li> <li>» All heritage items located are dealt with as per the legislative guidelines.</li> <li>» A record is kept of all instances of accidental disturbance of heritage material, as well as post construction review of impacts on landscape context.</li> </ul> |
| <b>Monitoring</b>            | Officials from relevant heritage authorities (National and Provincial) to be permitted to inspect the operation at any time in relation to the heritage component of the management plan.                                                                                                                                                                        |

## Acknowledgements

I thank Mr Gerhard Cronje who provided background information. Mr Ben Khonkhobe drove me and Mr Koot Msawula to the site which we then inspected on foot.

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## **APPENDIX 1: Tables for determining archaeological significance**

In addition to guidelines provided by the National Heritage Resources Act (Act No. 25 of 1999), a set of criteria based on Deacon (nd) and Whitelaw (1997) for assessing archaeological significance has been developed for Northern Cape settings (Morris 2000a). These criteria include estimation of landform potential (in terms of its capacity to contain archaeological traces) and assessing the value of any archaeological traces (in terms of their attributes or their capacity to be construed as evidence, given that evidence is not given but constructed by the investigator).

### ***Estimating site potential***

Table 1 (below) is a classification of landforms and visible archaeological traces used for estimating the potential of archaeological sites (after J. Deacon nd, National Monuments Council). Type 3 sites tend to be those with higher archaeological potential, but there are notable exceptions to this rule, for example the renowned rock engravings site Driekopseiland near Kimberley which is on landform L1 Type 1 – normally a setting of lowest expected potential. It should also be noted that, generally, the older a site the poorer the preservation, so that sometimes *any* trace, even of only Type 1 quality, can be of exceptional significance. In light of this, estimation of potential will always be a matter for archaeological observation and interpretation.

### ***Assessing site value by attribute***

Table 2 is adapted from Whitelaw (1997), who developed an approach for selecting sites meriting heritage recognition status in KwaZulu-Natal. It is a means of judging a site's archaeological value by ranking the relative strengths of a range of attributes (given in the second column of the table). While aspects of this matrix remain qualitative, attribute assessment is a good indicator of the general archaeological significance of a site, with Type 3 attributes being those of highest significance.

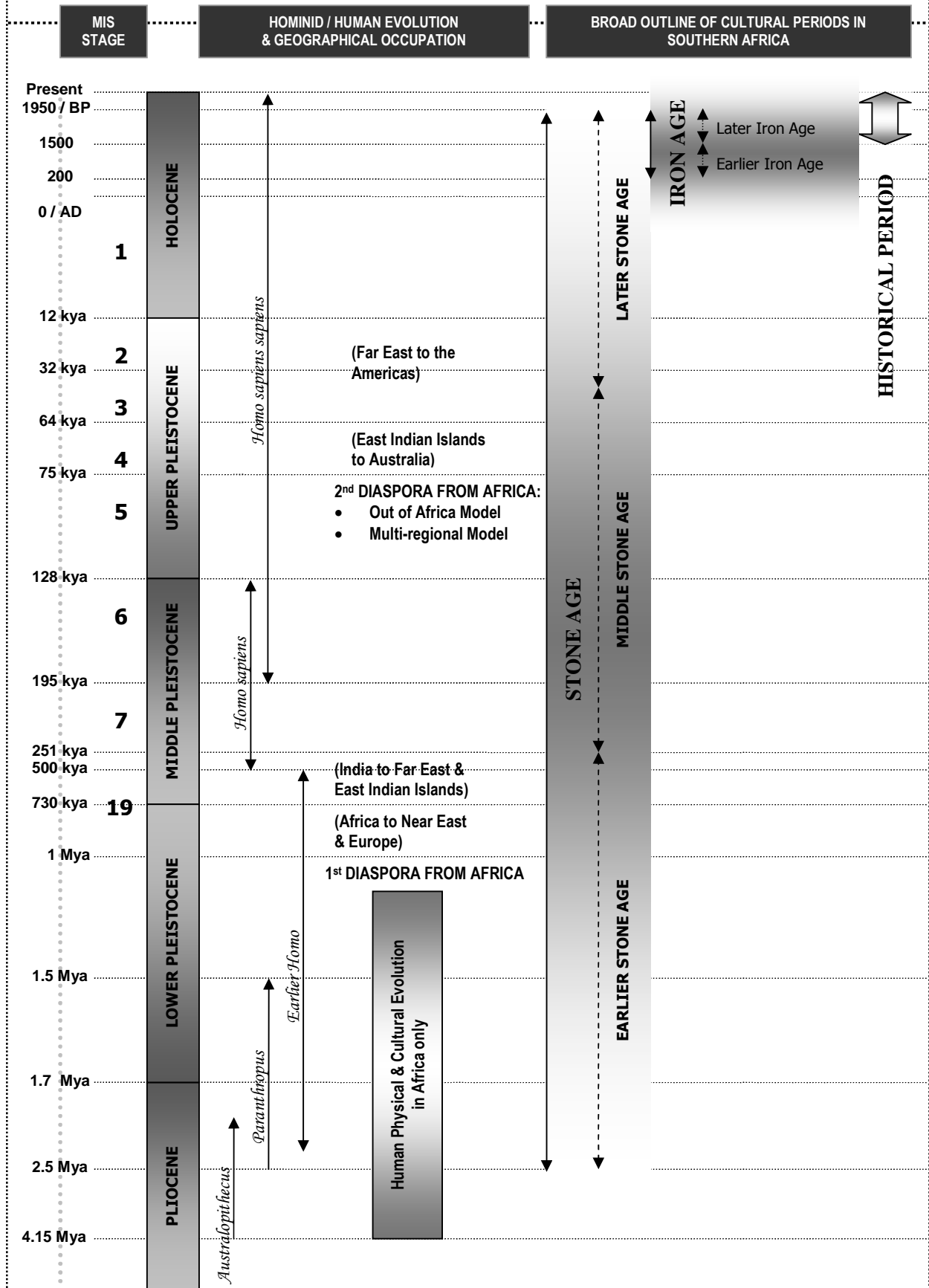
Table 1. Classification of landforms and visible archaeological traces for estimating the potential for archaeological sites (after J. Deacon, National Monuments Council).

| <b>Class</b> | <b>Landform</b>                                           | <b>Type 1</b>                                             | <b>Type 2</b>                                        | <b>Type 3</b>                                                     |
|--------------|-----------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------|
| L1           | Rocky surface                                             | Bedrock exposed                                           | Some soil patches                                    | Sandy/grassy patches                                              |
| L2           | Ploughed land                                             | Far from water                                            | In floodplain                                        | On old river terrace                                              |
| L3           | Sandy ground, inland                                      | Far from water                                            | In floodplain or near feature such as hill           | On old river terrace                                              |
| L4           | Sandy ground, Coastal                                     | >1 km from sea                                            | Inland of dune cordon                                | Near rocky shore                                                  |
| L5           | Water-logged deposit                                      | Heavily vegetated                                         | Running water                                        | Sedimentary basin                                                 |
| L6           | Developed urban                                           | Heavily built-up with no known record of early settlement | Known early settlement, but buildings have basements | Buildings without extensive basements over known historical sites |
| L7           | Lime/dolomite                                             | >5 myrs                                                   | <5000 yrs                                            | Between 5000 yrs and 5 myrs                                       |
| L8           | Rock shelter                                              | Rocky floor                                               | Sloping floor or small area                          | Flat floor, high ceiling                                          |
| <b>Class</b> | <b>Archaeological traces</b>                              | <b>Type 1</b>                                             | <b>Type 2</b>                                        | <b>Type 3</b>                                                     |
| A1           | Area previously excavated                                 | Little deposit remaining                                  | More than half deposit remaining                     | High profile site                                                 |
| A2           | Shell or bones visible                                    | Dispersed scatter                                         | Deposit <0.5 m thick                                 | Deposit >0.5 m thick; shell and bone dense                        |
| A3           | Stone artefacts or stone walling or other feature visible | Dispersed scatter                                         | Deposit <0.5 m thick                                 | Deposit >0.5 m thick                                              |

Table 2. Site attributes and value assessment (adapted from Whitelaw 1997)

| <b>Class</b> | <b>Attribute</b>                                            | <b>Type 1</b>                                         | <b>Type 2</b>    | <b>Type 3</b>                                                        |
|--------------|-------------------------------------------------------------|-------------------------------------------------------|------------------|----------------------------------------------------------------------|
| 1            | Length of sequence/context                                  | No sequence<br>Poor context<br>Dispersed distribution | Limited sequence | Long sequence<br>Favourable context<br>High density of arte/ecofacts |
| 2            | Presence of exceptional items (incl regional rarity)        | Absent                                                | Present          | Major element                                                        |
| 3            | Organic preservation                                        | Absent                                                | Present          | Major element                                                        |
| 4            | Potential for future archaeological investigation           | Low                                                   | Medium           | High                                                                 |
| 5            | Potential for public display                                | Low                                                   | Medium           | High                                                                 |
| 6            | Aesthetic appeal                                            | Low                                                   | Medium           | High                                                                 |
| 7            | Potential for implementation of a long-term management plan | Low                                                   | Medium           | High                                                                 |

### 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.