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SAHRA Contact Person: **Mr. Phillip Hine**
DME Ref No:

**REVIEW COMMENT ON
ARCHAEOLOGICAL/PALAEONTOLOGICAL IMPACT ASSESSMENT
BY ARCHAEOLOGY/ PALAEONTOLOGY & METEORITE UNIT OF THE HERITAGE RESOURCES AGENCY**

South Africa has a unique and non-renewable archaeological and palaeontological heritage. Archaeological and palaeontological sites are protected in terms of the National Heritage Resources Act (Act No 25 of 1999) and may not be disturbed without a permit. Archaeological Impact Assessments (AIAs) and Palaeontological Impact Assessments (PIAs) identify and assess the significance of the sites, assess the potential impact of developments upon such sites, and make recommendations concerning mitigation and management of these sites. On the basis of satisfactory specialist reports SAHRA or the relevant heritage resources agency can assess whether or not it has objection to a development and indicate the conditions upon which such development might proceed and assess whether or not to issue permission to destroy such sites.

AIAs and PIAs often form part of the heritage component of an Environmental Impact Assessment or Environmental Management Plan. They may also form part of a Heritage Impact Assessment called for in terms of section 38 of the National Heritage Resources Act, Act No. 25, 1999. They may have other origins. In any event they should comply with basic minimum standards of reporting as indicated in SAHRA Regulations and Guidelines. This form provides review comment from the Archaeologist of the relevant heritage resources authority for use by Heritage Managers, for example, when informing authorities that have applied to SAHRA for comment and for inclusion in documentation sent to environmental authorities. It may be used in conjunction with Form B, which provides relevant peer review comment.

- A. PROVINCIAL HERITAGE RESOURCES AUTHORITY: **Eastern Cape**
- B. EIA TITLE: **Draft Environmental Impact Assessment Report: Eskom Proposed Nuclear-1 Power Station and Associated Infrastructure**.....
- C. AUTHOR(S) OF AIA: **Hart, T.**
- D. DATE OF REPORT: **January 2010**
- E. TITLE OF REPORT: **Heritage Impact Assessment: Archaeological Component**
- F. AUTHOR OF PIA: **Almond, J**
- G. DATE OF REPORT: **July 2008**
- H. TITLE OF REPORT: **Palaeontological Desktop Study for Bantamsklip (W. Cape) and Thyspunt (E. Cape) Reactor Sites**
- I. Please circle as relevant: Heritage component of **EIA** / and EMP / HIA / CMP Other (Specify)
- J. REPORT COMMISSIONED BY (CONSULTANT OR DEVELOPER): **Arcus GIBB, Mr. Reuben Heydenrych**
- K. CONTACT DETAILS **P.O. Box 2700, Rivonia 2128.**

1. Introduction

Eskom proposes the development of a single Nuclear Power Station (Nuclear-1) at three alternative sites, Duynefontein (Western Cape), Bantamsklip (Western Cape) and Thyspunt (Eastern Cape). This review comment applies only to the proposed Thyspunt site. The Duynefontein and Bantamsklip sites fall within the jurisdiction of Heritage Western Cape, the commenting authority for developments in the Western Cape.

Archaeological research and surveys around the Thyspunt and Cape St. Francis area indicate it to be, one of the richest in the density of well preserved archaeological sites in South Africa.

The South African Heritage Resources Agency (SAHRA) understands that initially five sites were identified during the Scoping Phase. These included two sites along the Northern Cape coastline, namely Brazil and Schulpfontein. These two sites have since been 'scoped out' and are no longer considered for the development of the current Nuclear Power Station (NPS). However, the South African Heritage Resources Agency was not consulted during the scoping phase and received the Scoping Report after the deadline for commenting expired. Furthermore, heritage was not considered during the decision to exclude the Northern Cape sites from the Environmental Impact Assessment process. The reasons for scoping out the two Northern Cape sites are not clear but it is broadly understood that "financial implications" were a factor.

The current Environmental Impact Assessment examines the NPS while other related infrastructure, such as the transmission lines, will form part of a different EIA process. SAHRA is concerned that the lack of an integrated EIA (and its related Heritage Impact Assessment) process, examining all related infrastructure and how these may impact on the heritage quality of the area, has resulted in a lack of understanding of the cumulative impact that the NPS will have on the broader cultural landscape. SAHRA is concerned about the investigation of related developments on a "piece-meal" basis, in particular where cumulative impacts will likely be on a regional scale.

The heritage specialist report submitted to the SAHRA Archaeology, Palaeontology and Meteorite (APM) Unit, included an Archaeological Impact Assessment and Palaeontological Desktop Study (for Bantamsklip and Thyspunt only). The different specialist studies will be discussed separately.

2. Archaeological Impact Assessment

The Archaeological Impact Assessment for the Thyspunt area was conducted by the *Archaeology Contracts Office (ACO)*, based in the Archaeology Department at the University of Cape Town. The specialist indicated that ground vegetation cover was extremely dense limiting visibility and allowing less than 20% of the study area to be effectively surveyed. Despite this, approximately 145 archaeological sites were identified. According to the specialist report, archaeological resources are prolific in the Thyspunt area and the NPS will likely result in a "*very high heritage casualty rate*". The range of the identified heritage resources is summarized as follows by the specialist:

- *Middle Stone Age scatters on almost all exposed palaeosols (sic) within the active dune system.*

- *Later Stone Age shell middens are numerous within 300-400 metres of the coastline and in the active dunes, with the highest concentrations being situated on the shoreline close to shallow bays in rocky shores and spring eyes. The majority of the middens are noted to be well preserved.*
- *A well preserved complex of fish traps.*
- *Three shipwrecks (sic) are known to have occurred in Thysbaai during the 19th century.*
- *The St. Andrews Shack, which is still being used by the school, has “living heritage” value.*
- *The natural wilderness qualities (of the area) will very likely be severely impacted by the proposed Nuclear Power Station and also by the associated infrastructure which has not formed part of this Environmental Impact Assessment process.*

In addition, the specialist indicated the significance of the area as follows:

- *The area is highly significant in terms of its Later Stone Age pre-colonial archaeology, with special reference to the large volume and diversity of well preserved shell middens that is relatively uncommon elsewhere in South Africa.*
- *The Middle and Early Stone Age material identified on the fossil dunes is potentially important in scientific terms, especially if it is preserved in an in-situ context on paleosoles deep under shifting dunes in association with fossil bone.*
- *The cultural landscape significance of the place relates mainly to its superb natural heritage, pre-colonial heritage, setting and contribution to the wilderness qualities of the region.*

2.1. Author’s Site-specific recommendations

The specialist indicated that, of the three proposed sites, successful mitigation of heritage resources at Thyspunt will be the most difficult due to access problems. Moreover, “*avoidance and conservation offsets may be an option worth exploring*”. The following site specific recommendations were suggested by the author of the specialist report:

- *Archaeologically sensitive areas must be avoided: a setback of 300 m from the shoreline will result in the conservation of a substantial amount of archaeological sites.*
- *The active dune system must be avoided.*
- *Given that much of the footprint of the Nuclear-1 will lie in vegetated areas, archaeological and palaeontological (sic) heritage identification and sampling will not be possible until bush clearing has taken place. Up to one year must be allowed for archaeological trial excavations and mitigation.*
- *It is recommended that 30 Later Stone Age archaeological sites, representing a full range of site context, character and cultural affinity within or close to areas of impact, be identified and comprehensively sampled, analyzed and radiocarbon dated (estimated duration: six months to one year fieldwork pre-construction, one year follow up analysis).*
- *Work with the applicant to ensure that a suitable facility for the safe indefinite storage of any finds is made available, be it at a museum or a specially designed facility in the Eastern Cape Province.*
- *During the construction period (especially land clearing and bulk excavation) an archaeologist and/or representative must initially be on site at all times that bulk excavation is taking place. If there is good reason to believe that the site is not sensitive, the frequency of monitoring can be decreased.*
- *In the event of a find of fossil bone (which in the case of Thyspunt is a very strong possibility) or artefactual material, the archaeologist will need to identify the horizon that the find is associated with and, if necessary, be given the opportunity and budget to bring a “rescue” team onto site to excavate the find, expose the material and sample it accurately and adequately.*
- *The fact that old land surfaces and fossil faunas that inhabited them are preserved in the study area means that there is a possibility that fossil human remains may exist on or close to the site. Fossil human remains may exist on or close to the site. Fossil human remains from the late Pleistocene (and earlier) are very rare and of exceptional scientific importance on a global scale. Any find of this kind*

must be removed by an archaeologist with appropriate care. In the unlikely event of a find such as this occurring, it is requested that the applicant facilitate the necessary work in such a way that it is done to the highest standards, and as quickly as is reasonable.

3. Palaeontological Desktop Study

The Palaeontological Desktop Study was conducted by Dr. John Almond of *Natura Viva cc*. The Desktop Study focuses on the Bantamsklip and Thyspunt NPS sites, since detailed strategies for Dynefontein have already been established elsewhere. The specialist indicated that the palaeontological sensitivity for the Thyspunt NPS is only moderate to low compared to Koeberg, and “there are no serious palaeontological grounds for choosing between (Bantamsklip and Thyspunt) them”. Thyspunt lies on the Table Mountain Group (TMG) sediments of Early Palaeozoic age which, being moderately to highly deformed “well preserved fossil material”, are not expected to be present at the site. However, younger horizons such as the Salnova Formation are “characterized by rich fossil fauna of shelly invertebrates (“Swartkops Fauna”) that are of considerable palaeontological and palaeoenvironmental interest”. It should also be noted that only the immediate footprint of the reactor site was investigated by the specialist, and that the broader palaeontological heritage must be investigated once the entire footprint has been established.

According to the Desktop Study the Thyspunt NPS overlies the striking contact between the Goudini Formation and Skurweberg Formation of the Nardouw Subgroup (upper TMG). However, the overall palaeontological significance of these Palaeozoic TMG quartzites is relatively low. Nevertheless, the highly sensitive Ordovician Cedarberg Formation of the Table Mountain Group underlies the coastal plain within 2km of the NPS site location and this is regarded as a highly sensitive palaeontological unit.

Pre-Pleistocene sediments are not expected to be encountered as these have been eroded by the Mid-to-Late marine transgressions. However, it is noted that rich fossiliferous beds may be found further inland as part of the broader Nuclear 1 footprint. The specialist indicated that the following potential palaeontological resources may be identified at Thyspunt:

- *Rich fossil fauna of shelly invertebrates of the Salnova Formation that is of considerable palaeontological and palaeoenvironmental importance and which will require extensive mitigation.*
- *Unique post-glacial biota of invertebrates and primitive jawless fish showing soft tissue preservation in the sensitive ‘red flag’ unit of the Late Ordovician Cedarberg Formation which will require extensive mitigation.*
- *A wide range of Miocene-Pliocene marine fossils—mainly mollusks, urchins, corals, bryozoans, brachiopods, sharks’ teeth, benthic foraminifera and trace fossils*
- *Peat horizons within the Nahoon Formation yielding data on contemporary vegetation and palaeoclimates.*

3.1. Author’s Site-Specific Recommendation

The following site specific recommendations have been recommended by the specialist:

- *Regular monitoring of all deeper excavations into Caenozoic sediments by a qualified palaeontologist, with ample opportunity to sample fossiliferous units and record relevant sedimentological data.*

- *Interesting Palaeozoic fossils uncovered during excavations must be sampled by the responsible palaeontologist.*
- *Impacts beyond the immediate reactor footprint on older palaeontologically sensitive horizons such as the Cederberg Formation (Late Ordovician invertebrates and fish) will have to be assessed in more detail when the site for the NPS is finally chosen.*

4. Discussion

The impact of the Nuclear Power Station and all its associated and related developments will be considerable and, in terms of the heritage, irreversible. Heritage is a non-renewable resource which cannot be rehabilitated. The Archaeological Impact Assessment report indicated that the current project could result in the biggest rescue operation of heritage resources, and in particular the archaeological resources, to date in South Africa. The SAHRA is particularly concerned about the cumulative impact that the development will have on the heritage significance of the area. Currently, it is difficult to calculate this cumulative impact since associated infrastructure will be examined during different Environmental Impact Assessments, but it is expected to be much greater than presently understood.

In combination all these developments would completely transform the landscape from its current pristine wilderness character to an industrial zone. This would in turn negatively impact on the sense of place of the area and likely diminish the heritage quality which the archaeological specialist had indicated to be one of the most unique in South Africa.

4.1 SAHRA's Comment

SAHRA does not approve this development for a wide range of reasons including the following:

- *From a heritage perspective, Thyspunt is the least preferred option due to the density of heritage sites, the technical difficulties in achieving successful mitigation and an unacceptably high heritage casualty rate.*
- *Considering the heritage significance of the area and the scope of the proposed project, a full combined Heritage Impact Assessment should have been undertaken. This full combined HIA should have examined all aspects of heritage including intangible and living heritage. Moreover, the impact all developments related to the NPS must be considered together in this combined HIA (section 38(2)(b) and 38(3 b & c) of the NHRA (Act 25 of 1999)).*
- *The cumulative impact of the proposed project will likely be far greater than what is currently understood since associated infrastructure, such as for instance transmission lines, will be examined in a separate Environmental Impact Assessment.*
- *Less than 20% of the Thyspunt NPS corridor could be properly surveyed and it is expected that the number of identified archaeological sites will increase significantly.*
- *The archaeological specialist indicated that the proposed activity has the potential to evoke the biggest heritage rescue operation in South Africa. Any mitigation will be extremely lengthy and costly. Extensive volumes of deposit would need to be excavated, analysed, curated which will place strain on the storage capacities of South Africa's Heritage Institutions.*
- *The NPS and other associated infrastructure will have adverse impacts on the 'sense of place' and its 'wilderness' qualities which are appropriate to the preservation of the pre-colonial cultural landscape characteristics.*
- *The change in landscape from its pristine wilderness area fitting for such a unique heritage landscape into an industrial zone.*
- *No suitable alternative in the Eastern Cape was examined with the 'No Go' option not being considered. Since the Thyspunt area has high heritage significance and the cost of mitigation will be*

considerable, a less sensitive site alternative would provide a more feasible option both in terms of heritage loss and rescue operations.

- According to the Heritage Scoping Report, Brazil and Schulpfontein were the two most preferred sites.

In conclusion, the South African Heritage Resources Agency, whose mandate is the conservation of heritage resources for present and future generations, **cannot approve** any developments that will have a major deleterious effect on the heritage of a highly significant cultural landscape such as Thyspunt. It is the belief of the SAHRA that the impact on the heritage resources will be too severe and that mitigation will not achieve the desired effect.

Please inform SAHRA of your decision and any other decisions in terms of the heritage resources for which SAHRA APM Unit must provide comment and requirements in terms of mitigation and conservation planning.

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