iLifa leMveli leNtshona Koloni
Erfenis Wes-Kaap
Heritage Western Cape

NOTIFICATION OF INTENT TO DEVELOP

Completion of this form is required by Heritage Western Cape for the initiation of all impact assessment processes under Section 38(1) & (8) of the National Heritage Resources Act (NHRA).

Whilst it is not a requirement, it may expedite processes and in particular avoid calls for additional information if certain of the information required in this form is provided by a heritage specialist/s with the necessary qualifications, skills and experience.

A. APPLICABILITY OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA)

HWC Case Number:	DEADP Reference Number: n/a National DEA project
NOTE 1: An HWC case number must be obtained and application fee paid in advance of submission of this form.	
NOTE 2: A DEADP (W Cape Dept. Environment Affairs & Development Planning) reference number must be included in all NHRA Section 38(8) processes where DEADP is the decision making authority under NEMA. The effect of this requirement is that the NEMA process must be initiated with DEADP prior to the NHRA process with HWC.	
If a DEADP reference number is not entered above please check one of the following boxes:	
☒ This application is made in terms of Section 38(8) of the NHRA and an application under NEMA has been made to the following authority: DEA National	
☐ This development will not require a NEMA application.	
NOTE 3: Making an incorrect statement or providing incorrect information in this part of the form may result in all or part of the application having to be reconsidered by HWC in the future, or submission of a new application.	

B. BASIC DETAILS

PROPERTY DETAILS:

Name of property: Koeberg Power Station (new insulator pollution testing facility)	
Street address or location (eg: off R44): off R27	
Erf or farm number/s: Farm 1552 (SG Code: C01600000000155200000)	Coordinates: 33°40'35.81"S 18°25'54.19"E (A logical centre point. Format based on WGS84.)
Town or District: Cape Town	Responsible Municipality: City of Cape Town
Extent of property: 1283.01Ha (only a small area to be used)	Current use: Nuclear Power station
Predominant land use/s of surrounding properties: Power station infrastructure, nature reserve	

REGISTERED OWNER OF PROPERTY:

Name see attached signature and contact details

Address		
Telephone	Cell	E-mail
By the submission of this form and all material submitted in support of this notification (ie: 'the material'), all applicant parties acknowledge that they are aware that the material and/or parts thereof will be put to the following uses and consent to such use being made: filing as a public record; presentations to committees, etc; inclusion in databases; inclusion on and downloading from websites; distribution to committee members and other stakeholders and any other use required in terms of powers, functions, duties and responsibilities allocated to Heritage Western Cape under the terms of the National Heritage Resources Act. Should restrictions on such use apply or if it is not possible to copy or lift information from any part of the digital version of the material, the material will be returned unprocessed.		
I confirm that I enclose with this form four hardcopies of all material submitted together with a CD ROM containing digital versions of all of the same.		

Signature of owner or authorised agent Date / / 20
(Agents must attach copy of power of attorney to this form.)

DEVELOPMENT DETAILS:

Please indicate below which of the following Sections of the National Heritage Resources Act, or other legislation has triggered the need for notification of intent to develop.

☒ S38(1)(a) Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length.	S38(1)(c) Any development or activity that will change the character of a site -
☐ S38(1)(b) Construction of a bridge or similar structure exceeding 50m in length.	☒ (i) exceeding 5 000m^2 in extent;
☐ S38(1)(d) Rezoning of a site exceeding 10 000m^2 in extent.	☐ (ii) involving three or more existing erven or subdivisions thereof;
☒ Other triggers, eg: in terms of other legislation, (ie: National Environment Management Act, etc.) Please set out details: NEMA	☐ (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years.
	If you have checked any of the three boxes above, describe how the proposed development will change the character of the site: Disturb area that is currently not developed but previously heavily disturbed during construction of the Nuclear plant. The activity is not substantially out of character in terms of the use of the site as a power station.

If an impact assessment process has also been / will be initiated in terms of other legislation please provide the following information:

Authority / government department (ie: consenting authority) to which information has been /will be submitted for final decision: DEA National

Present phase at which the process with that authority stands: Basic Assessment

Provide a full description of the nature and extent of the proposed development or activity including its potential impacts (eg: changes in land use, envisaged timeframes, provision of additional bulk services, excavations, landscaping, total floor area, height of development, etc. etc.): Landscape Dynamics has been appointed as the external independent Environmental Assessment Practitioners (EAP) to carry out a Basic Assessment process to be presented to the Department of Environmental Affairs in order to obtain Environmental Authorisation.

1. KIPTS BACKGROUND

Koeberg Insulator Pollution Test Station (KIPTS) is a naturally polluted outdoor insulator test station with 11, 22, 33, 66 and 132 kV insulator test bays. KIPTS was established in the early 1990's to determine the suitability of composite insulator products for use on the Eskom system. It is necessary as the laboratory tests do not adequately predict the performance of composite products over years of service in the field. The design of the insulator product as well as the material is continuously changing and this necessitates the continuing testing of these products. The use of KIPTS over the past 30 years has led to a more reliable insulator product being purchased resulting in a more reliable network. The station is well established and is integral to the acceptance philosophy employed within Eskom for the selection, purchasing and use of all insulator products within the power network.

2. THE PROJECT

This proposed work is to establish a new natural polluted insulator test facility in a similar environment to that of the current test station, KIPTS. The CRA deliverable was to identify a suitable new site which is representative of the current insulator test station pollution and environmental conditions. For that reason, pollution measurements were performed at the proposed sites (Figure 1) using Directional Dust Deposit Gauges to determine which site closely correlates to the pollution levels found at KIPTS.

It was found that the pollution levels at Site No.1 were in the same order class as that of the existing test station. After a successful request to Koeberg Nuclear Power Station, a suitable piece of land for possible future expansion was made available for the new test station (Figure 2).

The project components to be assessed include:

• The decommissioning of the existing Test Station (see Figures 1,4, Plate 1);

• Construction of a new Test Station (not more than 5 hectares will be affected). Two alternative sites have been proposed (see Figures 1,3);

• Construction of new, mostly upgrades of existing access roads (see figure 3):
  • Alternative access roads
(a) Alternative 1 (green): This is the road through the nature reserve. This is NOT the preferred access road;
(b) Alternative 2 (blue): The preferred road during construction;
(c) Alternative 3 (red): The preferred road during the operational phase;

Note that both Alt ernative 2 & 3 roads will be upgrades of existing gravel access roads (widening to

approximately 10m and wider at the turning circles, resurfacing current gravel surface to tar).

• Provision of a new 11kV powerline (See Figure 3):

(a) Alternative 1 (preferred): A very short section of underground 11kV line, to be connected to an existing network in very close proximity to the KIPTS site (in the vicinity of the watermain and sewer line). This is for very obvious reasons the preferred route but there is no confirmation from Koeberg yet that it can be used.
(b) Alternative 2 (~1.6 km): To connect in the area of the nature reserve officesand to run the new powerline along the existing roads to the KIPTS site. Options include both underground and overhead lines. The Koeberg environmental manager recommended underground cables due to two fires in the reserve that was caused by the 11kV lines. Trenches for the underground line: depth usually around 1m and trench width approximately 450mm.

• Watermain and Sewer line:

These services will connect to existing services in close proximity to the new site (Figure 3).

3. PURPOSE AND BACKGROUND OF THE PROJECT

Local environmental condition changes and the promulgation of new environmental legislation has meant that the existing KIPTS cannot continue to be operated safely or expanded cost effectively within the requirements of SANAS 17025 in its current location. Thus the KIPTS needs to be relocated to a similar natural environment close to its existing location. The environment needs to be as close as possible to the existing site to ensure a 12 month evaluation of products will adequately represent performance over the life of the product. A less severe environment will result in longer test durations being required.

Due to environmental changes the KIPTS is now located in the middle of a mobile dune field (Figure 3), inside Koeberg's cadastral boundary and therefore is regularly covered in sand. In order to prevent the facility from being buried, sand has been cleared adjacent to and inside the testing station since it was built until the practice was stopped in 2011 due to the concern that it contravened EIA Regulations.

Prior to 2011, less than 5 m3 of sand was being removed by a shovel and wheelbarrow once a month. In 2014 the access road (Figure 4) and the southern part of KIPTS was engulfed with sand within 2 weeks due to high winds and large sand storms during the period. Emergency sand clearance measures was carried out and cleared an estimated 1600 m3 of sand from the site. The emergency cleanup was a once-off allowance by the Department of Environmental Affairs (DEA) but it cannot be repeated.

Regular cleaning of the site has been done since the emergency cleanup was completed, but during December 2014 high winds once again caused the site and access road to be engulfed by the moving dune system. This moving dune system has also effected the safe overhead clearance of the 11 kV powerline which supplies power to the facility.

From an environmental and financial perspective it cannot be justified to do emergency cleanup often, and thus it is proposed to relocate the existing Koeberg Insulator Polution Test Station and rebuild it to be SANAS 17025 compliant.

Failure to move the site will jeopardize the answers to the following reasearch questions posed by the Distribution Insulator Research program:
1. How can the in-service performance of polymeric insulators be predicted in the long term?
2. What is the life expectancy of polymeric insulators in naturally polluted environments?
3. What is the expected insulator product lifetime?

4. Should a maximum electric field stress level be specified for insulator designs? If so, how could it be confirmed for a product design?
5. What is the life expectancy of cyclo-aliphatic insulators when compared to equivalent porcelain insulators with particular reference to coastal environments, industrial environments and "clean" (rural) environments?
6. How can failures from the field be correlated to failures obtained at the test stations?
7. What manifestation constitutes the failure of a test insulator (are there new types of failures)?
8. What statistical techniques and other data (as example climate, effect of height and distance from coast) can be applied to extrapolate and predict pollution severity index levels?
9. How can we predict instantaneous pollution events?
10. Does the new hydrophobic cyclo-aliphatic material work and if so what will be the benefits to the Distribution business?
11. Find a coating that can be applied to field-aged cycloaliphatic in a workshop environment.
12. Find the criteria, which will enable an insulators remaining life and flashover performance to be predicted.
13. What is the effect on pollution performance as a result of orientation of the insulator (22 kV line post)?

Preliminary and final design of KIPTS office building will include:
• Access road
• Parking area
• Fencing gates
• Preliminary and final design of 11, 22, 33, 66, 132, 400kV station including control room, earth mat, 120 bay logger system including leakage current sensors, storage area and 11 kV cable feeder (1.6km).
• Procure long lead items i.e. data logger system and server, leakage current sensors, specialized high voltage transformers.

C. HERITAGE RESOURCES AND IMPACTS THEREUPON

Section 3 of the National Heritage Resources Act sets out the following categories of heritage resource as forming part of the national estate. Please indicate the known presence of any of these by checking the box alongside and then providing a description of each occurrence, including nature, location, size, type

Failure to provide sufficient detail or to anticipate the likely presence of heritage resources on the site may lead to a request for more detailed specialist information.

(The assistance of relevant heritage professionals is particularly relevant in completing this section.)

Provide a short history of the site and its environs (Include sources where available): Construction of the Nuclear power station began in 1976, and Unit 1 was synchronized to the grid on 4 April 1984. Unit 2 followed on 25 July 1985. While originally sited 30 km north of Cape Town to be outside the metropolitan area, rapid urban expansion means that urban areas are now found relatively close to the plant.

Prior to construction, the site was covered by shifting and partially vegetated dunes (Figure 5).

A number of other research and CRM projects have been undertaken in the Koeberg NPS site and some of the more directly relevant are summariesed below:

Of particular relevance to the the KIPTS alternative 1 site is the report by Orton and Avery 2015 who undertook a study of the proposed parking area immediately to the east of the power station. As part of the assessment, they excavated a number of test holes to check the thickness of the dumped

construction debris and soil resulting from construction of the plant in the 1970's. They noted the following: "Because the natural ground surface was completely obscured by dumped material and the potentially highly significant Langebaan Formation underlies the site at unknown depth, a program of test excavations was carried out. Due to the great depth of the dumped material spread across the study area it has been determined that no significant impacts to heritage resources will occur. A key observation is that in none of the test holes was the highly sensitive Langebaan Formation reached. Also, the apparent very low density of fossil material within the dumped sand substantially reduces the perceived academic value of this material. Although monitoring and recovery of any isolated bones would be desirable in spite of the fact that they are no longer in primary context, this can be done by project staff and the ECO. It is likely that very few bones would be seen in these deposits when bulk earthworks are underway, no matter how experienced the eye".

In the initial assessment for the proposed Weskusfleur Substation, Avery 2014 noted: "During construction of the Koeberg Nuclear Power Station, which reached Malmesbury Group bedrock at -10 m below sea level (Rogers 1979; Rogers 1982; Rogers 2006), The 5 Ma Early Pliocene Varswater Formation sediments yielded marine mammals, mainly whales, but also a range of marine fish, seabirds and, possibly, an unknown species of fur seal (Simpson 1975; Olson 1985; Avery and Klein 2011). Material from the excavations for the reactors was dumped between the fore dunes and access track just north of the security fence (Jan se Gat). Fragments of fossilized bone and bones of seabirds can be found when the surface is eroded. This area coincides with (Weskusfleur) Substation Alternative 1 and overlies the original surface on which Middle Pleistocene fossils were, and may still be, encountered during any construction. (See Figure 9 for location of the Weskusfleur sub-station alt1 site).

Kaplan (2015), also assessed the more recent heritage resources of the Weskusfleur Substation Alternative 1 and noted: "(the site) located directly north of the permiter fence surrounding the Koeberg Nuclear Power Station….. The proposed development site was levelled in the 1980s prior to construction of the power station, and the proposed footprint area (a powerline servitude) north of the reactor buildings is sparsely vegetated, and covered in kweek grass, weeds, and succulent ground cover. In the past, the surface of the site included low dunes of the Witzand Formation, and deflated exposures of calcrete and yellow sand deposits of the Springfontyn Formation. During the course of the preparation of the reactor site, excavated material was dumped over this area. Notwithstanding this latter observation, Kaplan (2015) notes that: "Archaeological heritage was encountered on the surface of the proposed development site, but none were deemed to be of high significance. These, included a few isolated quartz chunks and flakes, a limestone flake, a bored stone with a grooved edge, and several Later Stone Age (LSA) and Middle Stone Age (MSA) silcrete flakes. A small scatter of silcrete flakes and chips, was recorded north of perimeter fence/gravel road surrounding the power station. Some blackened Miocene fossil bone (possibly whale) was encountered as well. Thin scatters of edge rounded and water worn shellfish (limpet, black mussel, Lutraria & white sand mussel) were also mapped. A dump, containing road metal, building rubble, glass, beach gravels and water rounded shell was recorded near the main parking area, alongside the powerline servitude. A fragment of bleached fossil bone was recorded in the proposed powerline servitude."

Hart (2008) undertook an assessment of a Pebble Bed Modular Reactor site on the south eastern side of the existing KNPS. He observed that: "Although Holocene archaeological sites are known to be fairly prolific on the west coast, the ground surface of the proposed PBMR site is highly disturbed and of low heritage potential". There was concern that the deep excavations for the modular reactor would intersect fossil bearing deposits such as thosementoned by Orton and Avery.

Hart (2015) aslo undertook an assessment of two alternate sites for the Transient Interim Storage Facility also located on the periphery of the existing NPS. Hart's study has revealed that: "the general area is potentially rich in buried archaeological and palaeontological resources, which range from Pleistocene archaeology and palaeontology to ancient Pliocene and Miocene palaeontology of the deeper sediments. Both site alternatives and haul road for the proposed activity, are situated in areas which were heavily transformed when the KNPS was built in the 1970's. This means that the

relatively shallow excavations for this facility are unlikely to result in any negative impacts to either in situ archaeological or palaeontological material. None of the other activities associated with the proposed activity (such as formalisation of the haul road) are likely to result in negative impacts to heritage, either due to the shallow depth of impact or the fact that much of the land involved has been subject to prior disturbance."

References

Avery, G. 2014. Palaeontological Assessment Weskusfleur Substation, Alternatives 1 and 4. 1:50 000 3318CB Melkbosstrand. Report prepared for Lidwala Consulting Engineers (SA) (Pty) Ltd.

Avery, G. 2016. Report on Sub-surface Investigation of Palaeontological and Archaeological Potential, Weskusfleur Substation Alternative 4 (1:50 000 3318CB Melkbosstrand). Unpublished report prepared for Agency for Cultural Resource Management (ACRM) and Lidwala Consulting Engineers (SA) (Pty) Ltd) on behalf of Eskom Holdings (SOC) Limited.

Cruz-Uribe, K., Klein, R.G., Avery, G., Avery, M., Halkett, D., Hart, T., Milo, R.G., Sampson, C.G., Volman, T.P., 2003. Excavation of buried Late Acheulean (Mid-Quaternary) land surfaces at Duinefontein 2, Western Cape Province, South Africa, Journal of Archaeological Science 30, 559-575.

Halkett, D 2005. Trial excavations for a proposed training centre, Duinefontein 34. Unpublished report prepared for Eskom. Archaeology Contracts Office, UCT.

Hart, T. 2008. Heritage Impact Assessment a proposed pebble bed modular reactor Farm Duynefontein 34 (Koeberg) Western Cape Province. Unpublished report prepared for Arcus Gibb (Pty) Ltd. Archaeology Contracts Office, UCT.

Hart, T. 2015. Heritage impact assessment of a proposed Transient Interim Storage Facility at Cape Farm 1552 (Koeberg), Western Cape Province. Unpublished report prepared for SRK (Pty) Ltd on behalf of Eskom Holdings. ACO Associates cc.

Kaplan, J. 2015. Heritage Impact Assessment the proposed Weskusfleur Substation near Cape Town. Unpublished report prepared for Lidwala Consulting Engineers (SA) (Pty) Ltd. Rondebsoch: ACRM.

Klein, R.G. 1976. A preliminary report on the Duinefontein 2 'Middle Stone Age' open-air site (Melkbosstrand, South-Western Cape Province, South Africa), South African Archaeological Bulletin 31: 12–20.

Klein, R.G., Avery, G., Cruz-Uribe, K., Halkett, D., Hart, T., Milo, R.G. & Volman, T.P. 1999. Duinefontein 2: an Acheulean Site in the Western Cape Province of South Africa. Journal of Human Evolution 37: 153-190.

Orton, J. and Avery G. 2016. Heritage impact assessment for the proposed extension of a car park at the Koeberg Nuclear Power Station, Cape Farm Duynefontyn 1552, Cape Town magisterial district, Western Cape. Unpublished report prepared for Advisian on behalf of Eskom Holdings. ASHA Consulting (Pty) Ltd.

Please indicate which heritage resources exist on the site and in its environs, describe them and indicate the nature of any impact upon them:

☐	**Places, buildings, structures and equipment of cultural significance** Description of resource: Description of impact on heritage resource:

☐	**Places to which oral traditions are attached or which are associated with living heritage** Description of resource: Description of impact on heritage resource:
☐	**Historical settlements and townscapes** Description of resource: Description of impact on heritage resource:
☐	**Landscapes and natural features of cultural significance** Description of resource: Description of impact on heritage resource:
☐	**Geological resources of scientific or cultural importance** Description of resource: Description of impact on heritage resource:
☒	**Archaeological resources** (Including archaeological sites and material, rock art, battlefields & wrecks)**:** Description of resource: the surface of both alternative sites is considerably disturbed and anything found on surface and at some depth below is disturbed. Description of impact on heritage resource: No impact is anticipated on significant archaeological heritage resources
☒	**Palaeontological resources** (ie: fossils)**:** Description of resource: the surface of both alternative sites is considerably disturbed and anything found on surface and at some depth below is disturbed. The disturbed nature of the surface was demonstrated by test excavations undertaken by Orton and Avery to the east of the Nuclear plant. Dr Avery noted the following to me in an email on 16feb 2017: The sub-station geotech shows nothing worrying in the test holes……When Eskom (?) was investigating the Pebble Bed option, test holes were dug to about 2 m near (it must have been) the southern alternative. I've not been able to locate a report on that, or to remember the exact location, but there was nothing to note in them. It may be that the main Pleistocene occurrences become less prevalent to the south of the security perimeter (e.g. DFT4, which was isolated), and an isolated faunal occurrence in the Pleistocene sediments within the area then being excavated for the reactors. So, maybe Pleistocene occurrences are sparse/patchy.… Description of impact on heritage resource: No impact on significant palaeontological resources are anticipated
☐	**Graves and burial grounds** (eg: ancestral graves, graves of victims of conflict, historical graves & cemeteries)**:** Description of Resource: Description of Impact on Heritage Resource:
☐	**Other human remains:** Description of resource: Description of impact on heritage resource:
☐	**Sites of significance relating to the history of slavery in South Africa:** Description of resource: Description of impact on heritage resource:
☐	**Other heritage resources:** Description of resource: Description of impact on heritage resource:

Describe elements in the environs of the site that could be deemed to be heritage resources: Disturbed Archaeological and Palaeontological resources

Description of impacts on heritage resources in the environs of the site: No impacts on significant heritage resources are anticipated from any of the abovementioned activities

Summary of anticipated impacts on heritage resources: No significant impacts on heritage resources are anticipated

ILLUSTRATIVE MATERIAL (This form will not be processed unless the following are included):

Attach to this form a minimum A4 sized locality plan showing the boundaries of the area affected by the proposed development, its environs, property boundaries and a scale. The plan must be of a scale and size that is appropriate to creating a clear understanding of the development.

Attach also other relevant graphic material such as maps, site plans, satellite photographs and photographs of the site and the heritage resources on it and in its environs. These are essential to the processing of this notification.

Please provide all graphic material on paper of appropriate size and on CD ROM in JPEG format. It is essential that graphic material be annotated via titles on the photographs, map names and numbers, names of files and/or provision of a numbered list describing what is visible in each image.

D. RECOMMENDATION

In your opinion do you believe that a heritage impact assessment is required? ☐ Yes ☒ No

Recommendation made by:

Name D Halkett

Capacity Heritage Impact Asssessor, Principal Investigator at ACO Associates cc.

PLEASE NOTE: No Heritage Impact Assessment should be submitted with this form or conducted until Heritage Western Cape has expressed its opinion on the need for such and the nature thereof.

E. INFORMATION TO BE PROVIDED AND STUDIES TO BE CONDUCTED AS PART OF THE HERITAGE IMPACT ASSESSMENT (HIA)

If it is recommended that an HIA is required please complete this section of the form.

DETAILS OF HERITAGE PRACTITIONERS AND SPECIALISTS INTENDING TO CONDUCT THE HIA:

1.	Name of individual: Name of Practice: Area of specialisation: Qualifications: Experience: Standing in heritage resource management: E-mail Address: Telephone: Cell:

2.	Name of individual: Name of Practice: Area of specialisation: Qualifications: Experience: Standing in heritage resource management: E-mail Address: Telephone: Cell:
3.	Name of individual: Name of Practice: Area of specialisation: Qualifications: Experience: Standing in heritage resource management: E-mail Address: Telephone: Cell:
4.	Name of individual: Name of Practice: Area of specialisation: Qualifications: Experience: Standing in heritage resource management: E-mail Address: Telephone: Cell:
5.	Name of individual: Name of Practice: Area of specialisation: Qualifications: Experience: Standing in heritage resource management: E-mail Address: Telephone: Cell:

If this submission is made in terms of Section 38(8) of the National Heritage Resources Act indicate below the particulars of the principle environmental consultant on the project.

Name of individual: Susanna Nel Name of Practice: Landscape Dynamics Area of specialisation: Environmental Impact Assessment

E-mail Address: susanna@landscapedynamics.co.za Telephone: 021 855 0912 Cell: 082 888 4060

Postal Address: 3 Palomino Close, Die Wingerd, Somerset West, 7130

DETAILS OF STUDIES TO BE CONDUCTED IN THE INTENDED HIA

In addition to the requirements set out in Section 38(3) of the NHRA, indicate envisaged studies:	
☐	Heritage resource-related guidelines and policies.
☐	Local authority planning and other laws and policies.
☐	Details of parties, communities, etc. to be consulted.

☐	Specialist studies, eg: archaeology, palaeontology, architecture, townscape, visual impact, etc. Provide details:
☐	Other. Provide details:
PLEASE NOTE: Any further studies which Heritage Western Cape may resolve should be submitted must be in the form of a single, consolidated report with a single set of recommendations. Specialist studies must be incorporated in full, either as chapters of the report, or as annexures thereto.	