AN ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED AMENDMENTS TO TURBINE SPECIFICATIONS, THE UPDATE OF TURBINE LOCATIONS AND ACCESS ROADS, AND THE ADDITION OF A BATTERY STORAGE FACILITY FOR THE AUTHORISED HAGA HAGA WIND ENERGY FACILITY WITHIN THE GREAT KEI LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE.

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Date: August 2020

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EXECUTIVE SUMMARY

CES - Environmental and social advisory services on behalf of Haga Haga Wind Farm (RF) (Pty) Ltd. appointed Eastern Cape Heritage Consultants cc to provide an archaeological assessment of the impacts of the proposed amendments of turbine specifications, the update of the turbine locations and access roads, and the addition of a Battery Storage facility for the authorised Haga Haga Wind Energy Facility (DEA Ref.: 14/12/16/3/3/2/1087).

A Heritage/Archaeological Impact Assessment for the Haga Haga Wind Energy Facility (WEF) as well as for the 132 kv powerline between the WEF and the Chaba substation near Komga was conducted by ACO Associates cc (Halkett 2017). The previous archaeological assessment for the WEF concluded that: "there were no significant constraints on the site" and no "red flag" issues were identified (Halkett 2017, revised in 2018).

The proposed amendments of the turbine specifications include an increase in the hub height, rotor diameter, tip height as well as changes to the layout of turbine locations and access roads. The number of turbines is proposed to decrease from 42 turbines to 36 turbines. A Battery Storage facility will be a new addition on the remainder of the storage area footprint. The total generation capacity of the wind energy facility will remain at the approved 150 MW.

In general, the proposed amendments to the specifications and the updated turbine locations, access roads and Battery Storage facility will not increase the archaeological significance of the impacts originally identified. The proposed amendments and updates are therefore considered as having **low archaeological significance.**

Some of the previous recommendations made in the Heritage/Archaeological Impact Assessment report for the Haga Haga Wind Energy Facility (Halkett 2017, revised in 2018) remain applicable and are specified below (the palaeontological impact of the proposed amendments must be addressed by the relevant specialist and does not form part of this assessment):

- No mitigation of archaeological resources outside of no-go areas is proposed as far as the current layout is concerned.
- No mitigation of build environment resources outside of no-go areas is proposed as far as the current layout is concerned.
- If any unmarked graves or human remains are located outside of no-go areas, work at the specific site must cease and the finds protected. The archaeological specialist must be contacted to determine the context and age of the remains, and to recommend a way forward depending on the outcome of the forensic investigation.

The Department of Environmental Affairs (DEA) included the following conditions related to heritage in the Environmental Authorisation (EA) that was granted for the project on 5 July 2019:

- Par. 16.10 - A conservation plan must be drafted and submitted to SAHRA for review and comment. The management plan, as recommended by SAHRA, must be included in the final EMPr (Please note that it is recommended that this condition should be removed if the Part 2 Amended EA application is approved by the Department - see motivation below).
- Par. 39 - The final placement of the turbines should follow a micro siting procedure involving a walk-through and identification of any sensitive areas by ecological, avifaunal, bat, surface water, and heritage specialists.
- A 30 m no-go buffer must be applied around identified burial grounds. Should it not be possible to retain the burial grounds *in situ* a consultation process in terms of Section 36 of the NHRA and Chapter 11 of the NHRA Regulations must be undertaken. If concentrations of archaeological heritage materials, fossils, and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that a systematic and professional investigation / excavation can be undertaken.
- The final layout must be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.

Please note that the above conditions remain applicable and that this assessment does not change the requirement for a walkthrough by a heritage specialist to determine the final placement of the turbines. It is however recommended that the condition for a conservation management plan (Par. 16.10) be removed if the Part 2 Amendment application is approved (See motivation below).

The following additional recommendations are made as part of this assessment:

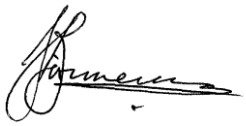
- An archaeological walkthrough of the proposed turbine locations must be conducted to determine their final placement as required by the original EA.
- The requirement for a CMP (Par 16.10) should be removed as a condition of the EA.
- Should any archaeological material be exposed during construction, all work must cease in the immediate area and reported to the archaeologist at the Albany Museum in Grahamstown (Tel: 046 622 2312) or to the Eastern Cape Provincial Resources Authority (Tel: 043 745 0888), so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to investigate and to remove/collect such material (See Appendix B for a list of possible archaeological sites that may be found in the area).

DECLARATION OF INDEPENDENCE AND QUALIFICATIONS

I, Dr. J.N.F. Binneman, herewith confirm that I hold a D.Phil degree in Archaeology from the University of the Witwatersrand (1996). I am a professional Archaeologist and member of the Association of South African Professional Archaeologists (ASAPA). I was attached to the Department of Archaeology at the Albany Museum in Grahamstown for 32 years and I have 40 years of field experience of eastern and southern Cape archaeology.

I hereby declare that:

- I act as an independent specialist for this project.
- I will conduct the study in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I will under no circumstances compromise my objectivity in performing the study.
- I do not have any financial interest in the undertaking of the activity, other than Remuneration for the work performed in terms of National Environmental Management Act, No. 107 of 1998 (NEMA), and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.
- I have the expertise to conduct the specialist study and report, including knowledge of the National Heritage Resources Act, No. 25 of 1999 and the Regulations, as well as the SAHRA APM Guidelines: Minimum Standards for the archaeological components of Heritage Impact Assessment (HIA) reports.
- I will comply with the relevant Acts, Regulations, and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity.
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority.
- All the information contained in this report is true and correct.
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations, 2014 published in the Government Gazette Notice No. 326, as amended.



Signature of specialist
Name of company: Eastern Cape Heritage Consultants cc
Date: 13 August 2020

BACKGROUND INFORMATION

ACO Associates cc conducted an extensive Heritage/Archaeological Impact Assessment (HIA) for the Haga Haga Wind Energy Facility (Halkett 2017, revised in 2018). The author of the original report created a case on the SAHRIS data base on 23 June 2017. The relevant documentation was send to the South African Heritage Resources Agency (SAHRA) and the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) but no review comments have been received from them to date. ACO Associates also conducted a HIA for the 132 kv powerline between the WEF and the Chaba substation near Komga (Halkett 2017).

At the time of previous archaeological assessment, the WEF comprised of up to 47 turbines and associated infrastructure with a proposed generating capacity of 150 MW. The layout was revised in 2018 and the DEA approved the construction of 42 turbines in 2019.

Specific recommendations were made by ACO Associates to limit the impact of the development on heritage resources that included the following:

- No mitigation of archaeological resources outside of no-go areas is proposed as far as the current layout is concerned although initial construction at WTG046 must be monitored if this site is used when the Wind Farm is built

WTG046 will no longer be constructed due to the reduction in turbine positions that preceded DEA's approval for the project and as a result no further monitoring will be required. Recommendation 1 is therefore no longer applicable, but it should be noted that if this location is considered again as part of the development at any point in the future that the original recommendations should be followed. The remaining recommendations are still applicable to this project and must be read together with the EA issued by the DEA.

PROPOSED AMENDMENT

Haga Haga Wind Farm (Pty) Ltd is proposing to amend the turbine specifications, the layout of turbine locations and access roads for the Haga Haga WEF. The intended amendments include (see table 1):

- Increase in the rotor diameter from 150m to up to 200m.
- Increase in hub height from 134m to up to 180m.
- Increase in the tip height from 200m to 280m.
- Change to the turbine locations.
- Change to the roads from 6m wide roads to 8 m wide roads.
- The addition of a Battery Storage facility.

It should be noted that the number of turbines will decrease from 42 turbines to 36 turbines. It should further be noted that the individual WTG rating will not increase and

the total generation capacity for the wind energy facility will not exceed the approved 150 MW.

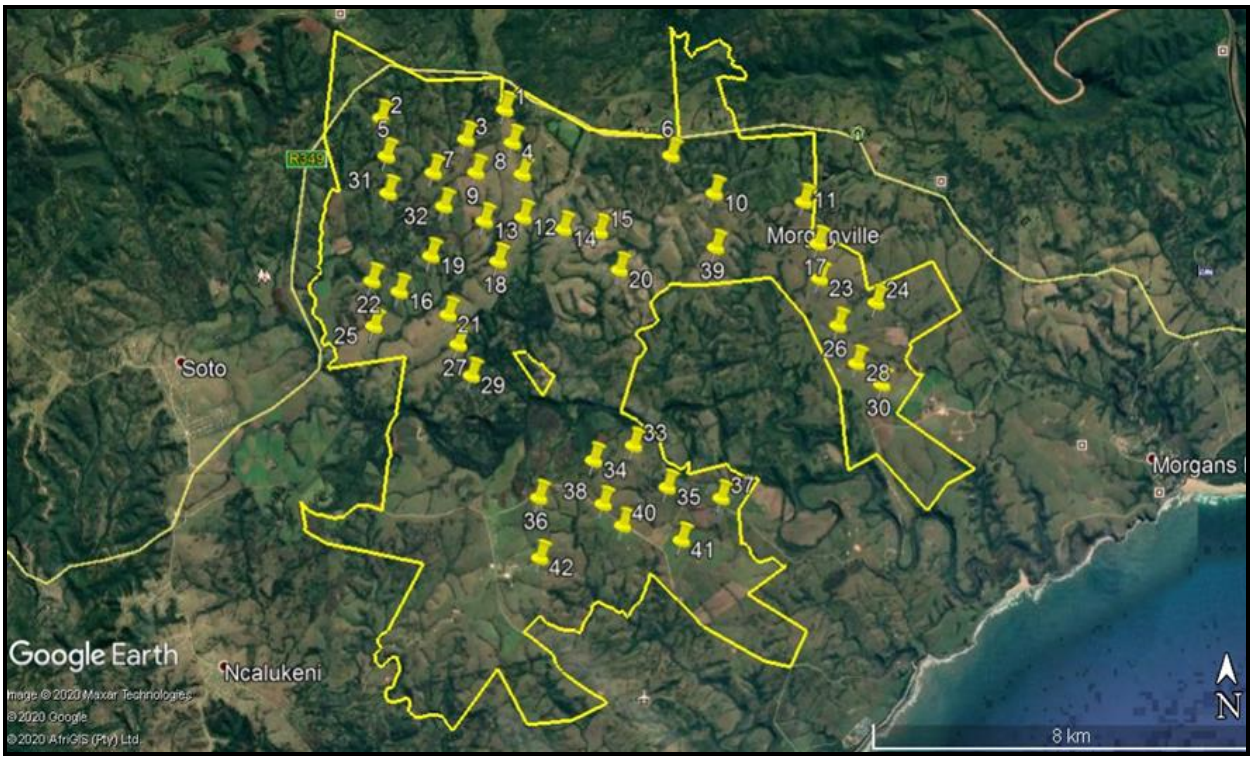
COMPONENT	CURRENTLY AUTHORISED	PROPOSED AMENDMENT
Facility Output	*150 MW*	No change requested
Number of Turbines	*42*	36 turbines
Hub Height	*134 m*	180 m
Rotor Diameter	*150 m*	200 m
Tip Height	*200 m*	280 m
Turbine Base Footprint (per turbine)	*996 m2*	No change requested
Hard Stand Area (per turbine)	*3 700 m2*	No change requested
Storage Area	*140 000 m2*	No change requested
Roads	*410 000 m2 (6 m wide roads)*	425 000m2 (8 m wide roads)
Substation	*11 000 m2*	No change requested
Laydown Area	*10 000 m2*	No change requested
Permanent Office Space and Workshop Space	*5 000 m2*	No change requested
Temporary Construction Areas	*10 000 m2*	No change requested
Remainder of Storage Area	*104 000 m2*	No change requested
Total Footprint	*74.7232 ha*	73.4056HA
Battery Storage	*None*	**New Addition on "Remainder of Storage Area" Footprint

Table 1: The currently authorised components of the Haga Haga WEF and the proposed amendments (courtesy of CES - Environmental and social advisory services)

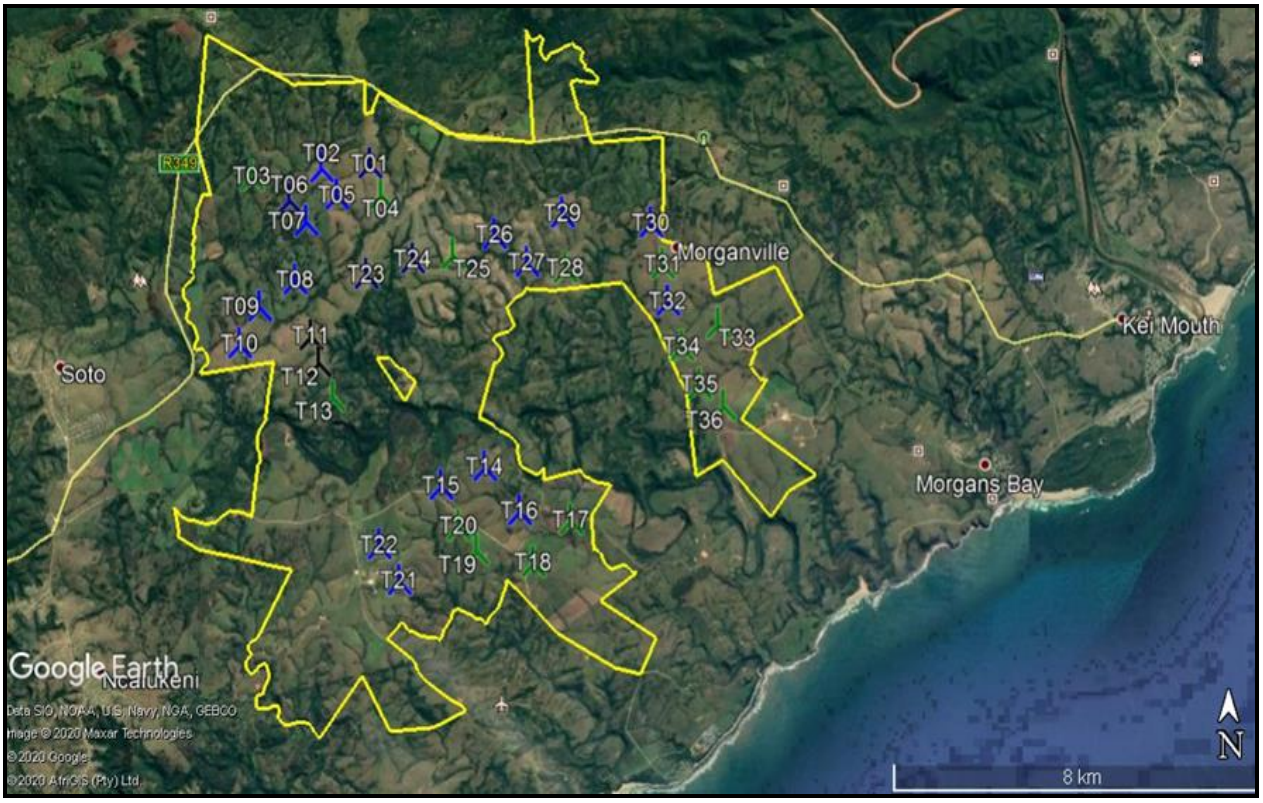
DESCRIPTION OF THE PROPERTY

A comprehensive description of the site and location as well as a map was included in the Heritage/Archaeological Impact Assessment report for the turbine footprint and associated infrastructure for the Haga Haga WEF (Halkett 2017, revised in 2018) and will not be repeated here. The original project footprint will now be smaller namely 73.4056 ha instead of the approved 74.7232 ha, as a result of the above amendments.

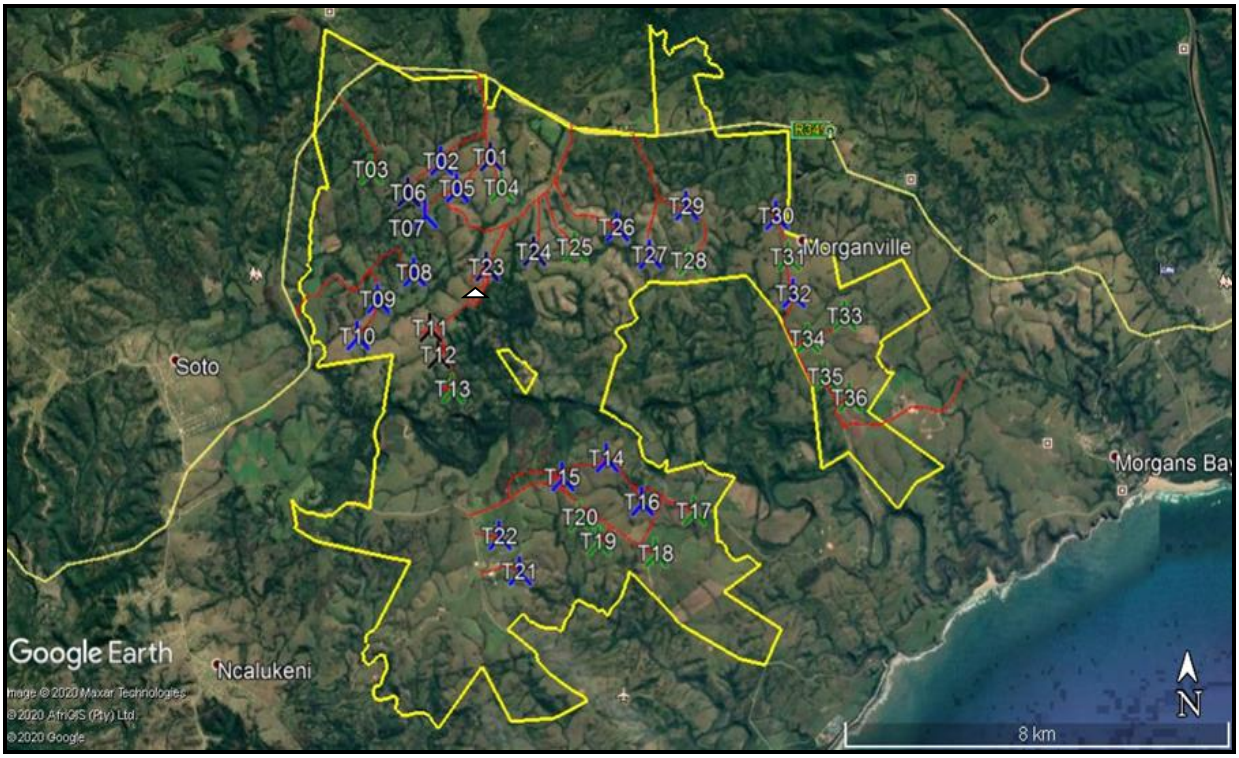
The maps included below provide an overview of the turbine locations previously assessed and the updated layout. Map 1 shows the locations of the 42 turbine locations surveyed as part of the above mentioned archaeological assessment, while Map 2 shows the layout of updated layout with 36 turbines that are now being proposed. Map 3 provides the updated layout of the proposed access routes and the location of a Battery Storage facility.



Map 1. An aerial view of the layout of the 42 turbine locations (yellow place marks) surveyed for the approved turbine footprint (Halkett 2017, revised in 2018).



Map 2. An aerial view of the updated layout of the proposed 36 turbine locations (Dark blue, blue, green, and black place marks). Site boundary indicated in yellow.



Map 3. An aerial view of the updated layout for the proposed access routes (indicated by the red lines). Battery Storage indicated by white triangle. Site boundary indicated in yellow.

ASSESSMENT OF THE PROPOSED AMENDMENTS

Methodology

The previous reports relevant to this amendment application were reviewed. This was necessary to conduct a comparative assessment between the impacts identified during the EIA process and the impacts associated with the proposed amendments. In addition to this, the Environmental Authorisation for the project was obtained in order to verify the project specific conditions and a search was done on SAHRIS for any review comments on the previous reports. Google earth images of the previous turbine locations and access routes were compared with the updated layout to determine if the changes to the layout affected the original recommendations.

Results

The previous studies done in the area provided information that assisted with making relatively accurate predictions about the potential impact of the proposed amendments. The original number of turbines has been decreased from 42 to 36 and as a result, the turbine footprint will be smaller. The increase in the rotor diameter, hub height and tip height, as well as the proposed access roads and Battery Storage facility will not result in any direct negative impact on heritage resources. The increase in size of the turbines and the construction activities will however have a visual impact on the landscape as mentioned in some of the earlier reports.

Since there are no change to impacts and their significance ratings as identified in the EIA process no impact tables are included in this report.

There are no advantages or disadvantages associated with the proposed changes from a heritage perspective. The impacts before the changes and after the changes also remain relatively the same. An increase in the visual impact of turbines that are bigger in size can be balanced with the fact that there is a significant reduction in the number of turbines.

Apart from the recommendations in this report and those made during previous assessments, there are no additional measures that are suggested to ensure avoidance, management and mitigation of impacts associated with the proposed changes.

No changes to the EMPr are suggested apart from the recommendations in this report but if any comments are received from ECPHRA regarding the proposed amendments it must be included.

CONCLUSIONS

There will be no increase in the significance of the impacts originally identified in the EIA and it is not foreseen that it will lead to any additional impacts or to a reduction of impacts.

The proposed changes will therefore have a negligible effect on the significance of impacts identified in the EIA.

In view of the above the further survey work that is required in terms of the original Environmental Authorisation (EA) is that an archaeological walkthrough of the proposed turbine locations must be conducted to determine their final placement.

No recommendation was made in the previous assessment (Halkett 2017, revised in 2018) for a Conservation Management Plan (CMP). SAHRA or ECPHRA will regard a CMP as compulsory for all developments where the development will have a direct or indirect impact on a heritage site of National or Provincial significance, and in some cases they may even request a CMP where there will be an impact on a heritage resource that falls under the general protections provided for in the National Heritage Resources Act, No. 25 of 1999. Neither SAHRA nor ECPHRA provided any review comments on the previous assessment and as a result they did not request a CMP for this project. DEA however included a condition (Par. 16.10) in the EA that a conservation plan, **as recommended by SAHRA**, must be included in the EMPr. The inclusion of this condition in the absence of any heritage sites that were identified that will be affected by the development and without any request in this regard from the heritage authorities means that DEA needs to review the need to include this condition if this Part 2 amendment application receives authorisation.

RECOMMENDATIONS

In general, the proposed amendments to the specifications, the updated turbine locations and access routes and Battery Storage facility will not change the archaeological significance of the impacts originally identified during the EIA process. The updated layout is therefore considered as having **low archaeological significance.**

Some of the previous recommendations made in the Heritage / Archaeological Impact Assessment report for the Haga Haga Wind Energy Facility (Halkett 2017, revised in 2018) remain applicable and are specified below (the palaeontological impact of the proposed amendments must be addressed by the relevant specialist and does not form part of this assessment):

- No mitigation of archaeological resources outside of no-go areas is proposed as far as the current layout is concerned.
- No mitigation of build environment resources outside of no-go areas is proposed as far as the current layout is concerned.
- If any unmarked graves or human remains are located outside of no-go areas, work at the specific site must cease and the finds protected. The archaeological specialist must be contacted to determine the context and age of the remains, and to recommend a way forward depending on the outcome of the forensic investigation.

The Department of Environmental Affairs (DEA) included the following conditions related to heritage in the Environmental Authorisation (EA) that was granted for the project on 5 July 2019:

- Par. 16.10 - A conservation plan must be drafted and submitted to SAHRA for review and comment. The management plan, as recommended by SAHRA, must be included in the final EMPr.
- Par. 39 - The final placement of the turbines should follow a micro siting procedure involving a walk-through and identification of any sensitive areas by ecological, avifaunal, bat, surface water, and heritage specialists.
- A 30 m no-go buffer must be applied around identified burial grounds. Should it not be possible to retain the burial grounds *in situ* a consultation process in terms of Section 36 of the NHRA and Chapter 11 of the NHRA Regulations must be undertaken. If concentrations of archaeological heritage materials, fossils, and human remains are uncovered during construction, all work must cease immediately and be reported to the South African Heritage Resources Agency (SAHRA) so that a systematic and professional investigation / excavation can be undertaken.
- The final layout must be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.

The following additional recommendations are made as part of this assessment:

- An archaeological walkthrough of the proposed turbine locations must be conducted to determine their final placement as required by the original EA
- The requirement for a CMP should be removed as a condition of the EA
- Should any archaeological material be exposed during construction, all work must cease in the immediate area and reported to the archaeologist at the Albany Museum in Grahamstown (Tel: 046 622 2312) or to the Eastern Cape Provincial Resources Authority (Tel: 043 745 0888), so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to investigate and to remove/collect such material (See Appendix B for a list of possible archaeological sites that may be found in the area).

REFERENCES

The Department of Environmental Affairs. 2019. Environmental Authorisation for the construction of a 150 MW Haga - Haga Wind Energy Facility within the Greater Kei Local Municipality in the Eastern Cape Province.

Halkett, D. 2017. Revised in 2018. Heritage / Archaeological impact assessment of the Proposed Haga Haga Wind Farm south of Kei Mouth, Eastern Cape Province. Prepared for Terramanzi Environmental Consulting. ACO Associates cc.

Halkett, D. 2017. Basic assessment report - heritage. Proposed 132kv powerline between The Haga Haga WEF and the Chaba substation, Komga, Eastern Cape Province. Prepared for Terramanzi Group (Pty) Ltd on behalf of WKN-Windcurrent. ACO Associates cc.

GENERAL REMARKS AND CONDITIONS

Note: This is an archaeological assessment of the proposed amendments to the turbine specifications and updated turbine locations and access routes. The report is compiled for the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) to enable them to make informed decisions regarding the heritage resources assessed in this report and only they have the authority to revise the report. This report must be reviewed by the ECPHRA where after they will issue their Review Comments to the EAP/proponent. The final decision rests with the ECPHRA who must grant permits if there will be any impact on cultural sites/materials as a result of the development.

This report does not exempt the proponent from any other relevant heritage impact assessments as specified below:

In terms of the National Heritage Resources Act, No. 25 of 1999 (section 38) ECPHRA may require a full Heritage Impact Assessment (HIA) to assess all heritage resources, that includes *inter alia*, all places or objects of aesthetical, architectural, historic, scientific, social, spiritual, linguistic, or technological significance that may be present on a site earmarked for development. A full Heritage Impact Assessment (HIA) should assess all these heritage components, and the assessment may include archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects (refer to archaeological background on p.6 for a reference list of various HIA's undertaken in and around the study area).

It must be emphasized that this report is based on the information contained in previous assessments that were based on the visibility of archaeological sites/material and may not therefore reflect the true state of affairs. Sites and material may be covered by soil and vegetation and will only be located once this has been removed. In the event of such finds being uncovered during construction activities, ECPHRA or an archaeologist must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed (see attached list of possible archaeological sites and material). The developer must finance the costs should additional studies be required as outlined above. The *onus* is on the proponent to ensure that the provisions of the National Heritage Resources Act No. 25 of 1999 and any instructions from ECPHRA are followed. The EAP must forward this report to ECPHRA in order to obtain their Review Comments, unless alternative arrangements have been made with the heritage specialist to submit the report.

APPENDIX A: brief legislative requirements

Parts of sections 35(4), 36(3) and 38(1) (8) of the National Heritage Resources Act 25 of 1999 apply:

Archaeology, palaeontology and meteorites

35 (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;
(d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.

Burial grounds and graves

36. (3) (a) 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.

Heritage resources management

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of the site –
(i) exceeding 5000m^2 in extent, or
(ii) involving three or more erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been

consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;

(d) the re-zoning of a site exceeding 10 000m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as 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.

APPENDIX B: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM INLAND AND ADJACENT COASTAL AREAS: guidelines and procedures for developers

Human Skeletal material

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. In general, human remains are buried in a flexed position on their side but are also found buried in a sitting position with a flat stone capping. Proponents are requested to be on alert for the possibility of uncovering such remains.

Freshwater mussel middens

Freshwater mussels are found in the muddy banks of rivers and streams and were collected by people in the past as a food resource. Freshwater mussel shell middens are accumulations of mussel shell and are usually found close to rivers and streams. These shell middens frequently contain stone tools, pottery, bone, and occasionally human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m^2 in extent, should be reported to an archaeologist.

Shell middens

Shell middens can be defined as an accumulation of marine shell deposited by human agents rather than the result of marine activity. The shells are concentrated in a specific locality above the high-water mark and frequently contain stone tools, pottery, bone and occasionally also human remains. Shell middens may be of various sizes and depths, but an accumulation of which exceeds 1 m^2 in extent, should be reported to an archaeologist.

Stone features and platforms

These occur in different forms and sizes but are easily identifiable. The most common are an accumulation of roughly circular fire cracked stones tightly spaced and filled with charcoal and marine shells. They are usually 1-2 metres in diameter and may represent cooking platforms for shellfish. Others may resemble circular single row cobble stone markers. These occur in different sizes and may be the remains of wind breaks or cooking shelters.

Large stone cairns

They come in different forms and sizes but are easy to identify. The most common are roughly circular stone walls (mostly collapsed) and may represent stock enclosures, remains of wind breaks or cooking shelters. Others consist of large piles of stones of different sizes and heights and are known as *isisivane.* They are usually near river and mountain crossings. Their purpose and meaning is not fully understood, however, some are thought to represent burial cairns while others may have symbolic value.

Stone artefacts

These are difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately, and archaeologists notified.

Fossil bone

Fossil bones may be found embedded in geological deposits. Any concentrations of bones, whether fossilized or not, should be reported.

Historical artefacts or features

These are easy to identify and include foundations of buildings or other construction features and items from domestic and military activities**.**