

**HERITAGE ENVIRONMENTAL AUTHORISATION AMENDMENT REPORT:
ISHWATI EMOYENI WIND ENERGY FACILITY, NEAR MURRAYSBURG,
WESTERN CAPE PROVINCES**

Prepared for

Zutari

On behalf of

Special Energy Projects (Pty) Ltd

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CONSULTANT DECLARATION OF INDEPENDENCE

I, John Gribble, declare that – general declaration:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, 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 particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:



Name of company (if applicable): ACO Associates CC

Date: 10 May 2021

EXECUTIVE SUMMARY

ACO Associates CC was appointed by Zutari, on behalf of Special Energy Projects (Pty) Ltd to produce an Environmental Authorisation Amendment Report for heritage resources for the Ishwati Emoyeni Wind Energy Facility located near Murraysburg in the Western Cape.

This amendment report comprises a desk-based review of the findings of the 2014 Ishwati Emoyeni Heritage Impact Assessment (CSIR 2014), archaeological impact assessment (Halkett 2014) and palaeontological impact assessment (Rossouw 2014) in light of the proposed project amendments and an assessment of all impacts related to these changes. It considers the advantages and disadvantages for archaeological, historical and palaeontological heritage resources associated with the proposed changes and whether any additional measures to avoid, manage and mitigate impacts associated with the proposed changes are required for inclusion in the EMPr.

Findings: The impacts on heritage resources arising from the development of the Ishwati Emoyeni WEF are related principally to the areas of disturbance of the ground (for archaeological sites and materials) and views to and from heritage resources (for historical structures and cultural landscape / setting).

The authorised position and layout of the Ishwati Emoyeni WEF has taken account of the heritage sensitivities identified by the 2014 archaeological survey and excluding from the development footprint, for example, the historical farm complexes and making provision for pre-construction measures to mitigate any impacts of archaeological sites and rock engravings. Measures are also in place to ensure the mitigation of construction-related impacts on palaeontological resources.

The mitigation of the visual impacts of the WEF on the cultural landscape has been as least partially achieved by the siting of the WEF and the implementation of exclusion zones or buffers, such as the 500 m exclusion zone around ridgelines on the southern boundary of the development site, to mitigate visual impact from the sensitive visual receptors on the Badsfontein farm.

The changes to the authorised specifications of the WEF being proposed in this amendment application that are relevant to heritage resources and landscape and setting are the increased size of temporary and permanent hardstandings and turbine foundations, and the increase in wind turbine hub height and blade tip.

In respect of archaeological and palaeontological resources, these potentially negative changes are offset by the decrease in the number of turbines and the fact that the maximum authorised length of internal roads is reduced, and the area occupied by the substation and construction laydown areas remain the same.

The disadvantages for archaeological sites and materials, particularly for rock engravings, and palaeontological resources of an expanded physical footprint of development-related ground disturbance are not deemed to be significant in light of relatively low archaeological and palaeontological potential of the WEF area, and given the pre-construction mitigation measures recommended by the HIA that will be required to be implemented prior to development commencing.

The disadvantages for the cultural landscape and setting of the increased height of the WTGs are likely to remain significant and the visual impact of an increase in the size of the WTGs on sensitive visual receptors in the region is expected to remain high, due to the effect larger wind turbines will have on the regional sense of place.

In terms of additional measures to avoid, manage and mitigate impacts associated with the proposed changes for inclusion in the EMPr, it is our reasoned opinion that the mitigation measures set out in the HIA remain fit for purpose and that provided they are implemented, **the overall impact of the construction of the Ishwati Emoyeni WEF is tolerable and generally of low significance.**

From a heritage perspective, therefore, the proposed amendments are considered acceptable.

GLOSSARY

Archaeology: 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.

Cultural landscape: The combined works of people and natural processes as manifested in the form of a landscape

Heritage: That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999.

Heritage Western Cape: The competent provincial heritage authority in the Western Cape.

South African Heritage Resources Agency: The national compliance authority which protects national heritage.

Structure (historic): 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. Protected structures are those which are over 60 years old.

ACRONYMS

AIA	Archaeological Impact Assessment
GPS	Global Positioning System
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency
VIA	Visual Impact Assessment
WTG	Wind Turbine Generator

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1 INTRODUCTION

ACO Associates cc was appointed by Zutari, on behalf of Special Energy Projects (Pty) Ltd to produce an Environmental Authorisation Amendment Report for heritage resources for the Ishwati Emoyeni Wind Energy Facility (WEF) located near Murraysburg in the Western Cape (Figure 1).

Special Energy Projects (Pty) Ltd wishes to amend the Environmental Authorisation for the Ishwati Emoyeni WEF to take advantage of developments in wind power technology and this requires an amendment application. ACO Associates were therefore commissioned to:

- Review the previous heritage impact assessment (HIA) report in the light of the proposed project amendments and conduct a desktop-based assessment of all impacts related to these changes;
- Describe the advantages and disadvantages for heritage resources associated with the proposed changes; and
- Identify any additional measures to avoid, manage and mitigate impacts associated with the proposed changes for inclusion in the Environmental Management Programme (EMPr).

This report presents the results of this process and serves as the specialist heritage input into the amendment application.

Lastly, with regard to submitting to HWC. I was chatting to my colleague about the recently and telling him about the issue we encountered when we submitted the Umsinde amendment application to HWC. His reponse was to that there is no need to submit amendment applications to HWC, unless the changes being proposed are major and fundamentally change the scheme from that which they commented during the EIA / BA.

The reason these applications do not need to be submitted to the heritage authority again for comment lies in Section 38 (10) of the National Heritage Resources Act. This clause, exempts applicants who have already met the relevant heritage authority's requirements in terms of a project - such as the production of an HIA and the putting in place of mitigation measures, etc. - from (re)compliance with any portion of Section 38. Apparently, if DEFF / DEA&DP has a heritage concern with the amendment application, they will approach HWC for a comment. It is not up to the applicant to do so.

2 PROPOSED PROJECT AMENDMENTS

The proposed amendments to the authorised specifications of the Ishwati Emoyeni WEF are set out in Table 1 below:

Table 1: Comparison of authorised and proposed Ishwati Emoyeni WEF project components

Component/ Specification	Authorised	Proposed change
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Facility area	Hardstanding area: Up to 45 m x 25 m Turbine foundations: 20 m x 20 m and up to 3 m deep	Hardstanding area: Up to 75 m x 50 m Turbine foundations: 30 m x 30 m and up to 5 m deep
Site access	Existing farm access tracks and watercourse crossing will be upgraded. Internal roads: 6 - 9 m width during construction. Reduced to 4 - 6 m during operations. Internal road length: 45.38km	Internal road length: 32 km
Generation capacity	140 MW generation 147 installed	140 MW generation
Number of turbines	Up to a maximum of 65	Up to a maximum of 33
Turbine generation capacity	1.8 and 3.3 MW	No restriction
Hub height from ground level	Up to 120 m	Up to 160 m
Rotor diameter	Up to 130 m	Up to 190m
Blade length	65 m	Up to 95m
Blade tip height	180 m	Up to 255m
Area occupied by substations	200 x 250 m single storey substation compound	No amendment required.
Capacity of substation	33/132 kV	No amendment required.
Temporary construction hardstand area per turbine	45 x 25 m (1,125 m ²)	75 x 50 m (3,750 m ²)
Area occupied by construction laydown areas	Temporary laydown area: Up to three laydown areas of 9 000 m ² each (150 m x 60 m)	No amendment required.
Location of construction camps/ laydown areas	As per layout map included in the Final EIA Report.	No amendment required.
Area occupied by buildings	200 x 250 m	No amendment required.
Internal powerline/cables	All power lines linking wind turbines to each other and to the internal substation must be buried (Condition 38 of the EA).	Condition remains applicable. No amendment required.
Height of fencing	2 – 2.5 m	No amendment required.
Type of fencing	Steel palisade fencing around construction camp. Concrete palisade around substation.	No amendment required.

Transformer	5 x 5m per hard standing area per turbine	No amendment required.
Validity extension	A validity extension was granted in 2017 to the 02 July 2023	Validity extension request for 2 years from 02 July 2023 02 July 2025

Differences from what is currently authorised relevant to an assessment of the potential impacts of the proposed amendments on heritage resources are:

- Increased turbine foundation size to 30 m x 30 m and up to 5 m deep;
- An increase in temporary construction hardstand area per turbine from a maximum 45 x 25 m (1,125 m²) to 75 x 50 m (3,750 m²);
- A modified internal road layout and a decrease in the authorised road length from a total of approximately 45.38 km to 32 km (see Figure 2);
- A reduction in number of wind turbines from a maximum of 65 to a maximum of 33 (see Figure 2);
- An increase in wind turbine hub height from a maximum of 120 m to a maximum of 160 m; and
- An increase in blade tip height from 180 m to a maximum of 255 m.

The areas occupied by the substations, the construction laydown areas and buildings remain unchanged from what is currently authorised, as do the locations of construction camps / laydown areas. The requirement that all power lines linking wind turbines to each other and to the internal substation must be buried also remains the same.

3 METHODOLOGY

This amendment report is entirely desk-based and comprises an assessment of the findings of the 2014 Heritage Impact Assessment (CSIR 2014), archaeological impact assessment (Halkett 2014) and palaeontological impact assessment (Rossouw 2014) against the proposed changes to the authorised project specification of the Ishwati Emoyeni WEF.

The project area remains the same and the field survey for the HIA that was completed in 2014 remains applicable because the baseline observations for archaeology, built environment and the cultural landscape obtained are relevant to the entire project area and do not expire, unless massive physical and environmental change has taken place, which is not the case.

No additional fieldwork has been undertaken for this amendment report.

The assessment of potential impacts of proposed amendments on the palaeontological resources of the area has been subject to separate review by Professor Marion Bamford of the University of the Witwatersrand and the results are included in this report.

This report fulfils the conditions of Section 13, Government Notice (GN) R982 of the National Environmental Management Act (No. 107 of 1998) (NEMA) and Appendix 6 of GN R982 in respect of the general requirements for Environmental Assessment Practitioners (EAPs) and specialists and specialist report content, respectively. There is currently no protocol for

heritage assessments gazetted in terms of GN 320 of 20 March 2020. The report meets the current requirements of Heritage Western Cape (HWC) and the South African Heritage Resources Agency (SAHRA) in respect of assessment and reporting in terms of the National Heritage Resources Act (No. 25 of 1999) (NHRA).

Please note that since HWC commented on this project, as subsequently authorised, during the 2014 EIA process, in terms of Section 38(10) of the NHRA, which states that “any person who has complied with the decision of a provincial heritage resources authority in subsection (4) or of the MEC in terms of subsection (6) or other requirements referred to in subsection (8), must be exempted from compliance with all other protections in terms of this Part”, there is no requirement to submit this amendment application to HWC for comment, unless there have been substantial changes to the authorised project.

4 PREVIOUS STUDIES

The 2014 HIA produced by the CSIR was based on an archaeological field assessment and desk-based archaeological impact assessment (AIA) by Halkett (2014) and a desk-based palaeontological impact assessment (PIA) by Rossouw (2014). The findings of the visual impact assessment (Holland 2014) were incorporated into the HIA as relevant. The findings of the HIA are described below.

4.1 *Archaeological Field Assessment*

A six-day archaeological field assessment, that followed on from the October 2012 site visit by Lita Webley and Liesbet Schietecatte for the scoping study, was undertaken by David Halkett, Natalie Kendrick and Ross Lyall of ACO Associates from the 16-21 September 2013.

Drawing on knowledge of human settlement patterns often observed in archaeological contexts, particular types of places within the Ishwati Emoyeni project area that the field team believed displayed a range of favourable heritage indicators were targeted for survey. During the course of the fieldwork the team was able to get a sense of what places and environments were favoured for previous human use and occupation. The fieldwork identified and mapped aspects of the built environment, archaeological sites of various types, and places associated with the South African War.

Close attention was paid to landform which, because of previous intensive survey in the Karoo (see Sampson 1985, 1992; Sampson et al 2015), is known to work as a predictive indicator for the presence of archaeological sites and material.

The vastness of the proposed development site (24420 ha) was such that despite the amount of time spent in the field, survey coverage was quite thin. Since a final layout for the project had not been selected at the time of the survey, although notional WTG positions indicated a possible preference for the higher altitudes of the area, the survey was viewed as a heritage overview that provided input into the project planning rather than as a detailed, saturation archaeological survey.

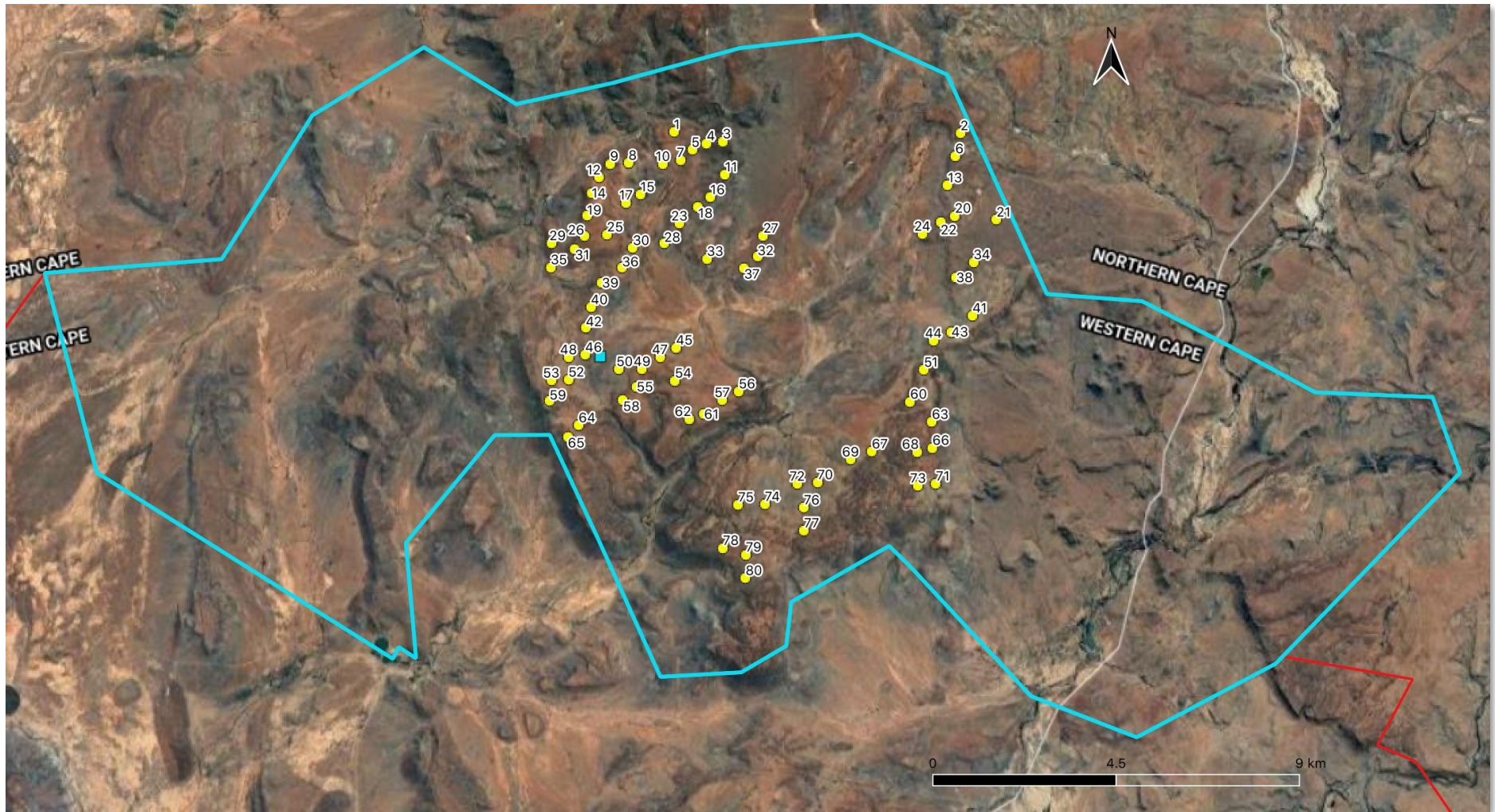


Figure 1: The boundary (blue polygon) and authorised WTG layout (yellow dots) of the Ishwati Emoyeni WEF (Source: Google Earth).

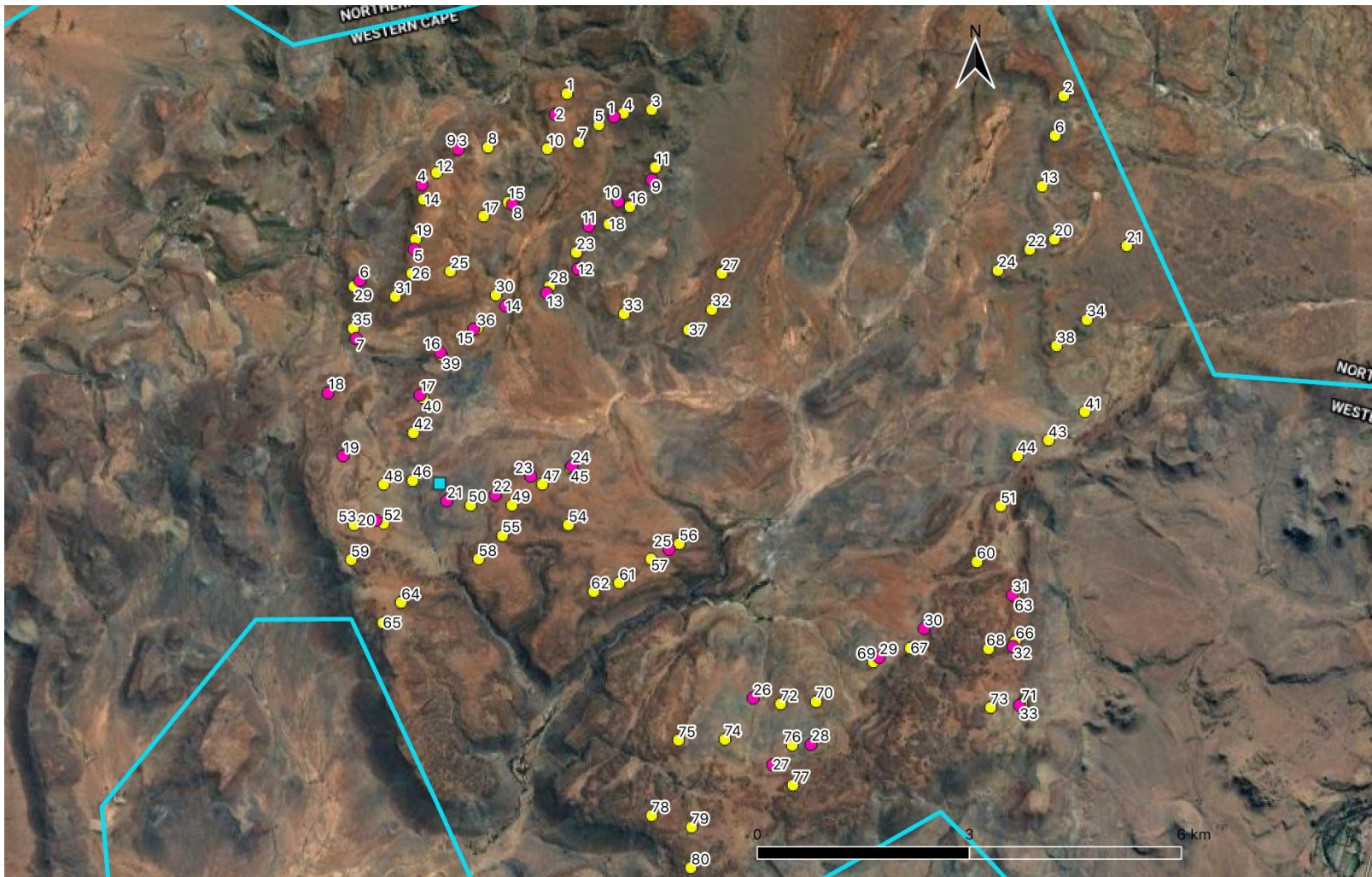


Figure 2: Comparison of the authorised Ishwati WEF WTG layout (yellow points) and the proposed project amendments (pink points). The position of the substation is shown as a blue square (Source: Google Maps).

In order to inform final positioning, specialist/s, including the archaeologists, were asked to identify areas within the project boundary as a whole to determine where development was permissible or not, providing reasons for each.

To this end, the information gathered during the field assessment about the spatial patterning of identified heritage sites was sent to the EAP and project proponent so that the planning of the WEF infrastructure could be carried out as sensitively as possible, with early heritage-related input.

These data included GIS files with buffers around historic farm complexes, the locations of identified archaeological sites, structures like historical kraals and rock engravings (

Figure 3).

The result was that physical impacts to identified heritage sites arising from the proposed WEF layout and infrastructure were kept very low as the sensitivities were identified before the site design phase.

4.2 Archaeological Impact Assessment Findings

The findings of the AIA (Halkett 2014) in respect of historical and archaeological heritage resources and landscape and setting can be summarised as follows:

4.2.1 Pre-colonial Heritage

The archaeology or pre-colonial heritage of the Murraysburg area has not been comprehensively studied and very little is therefore known about it. This is not an indication that there is no pre-colonial heritage in the area, but rather that no active research has taken place.

The archaeological impact assessment found that the pre-colonial heritage of the Ishwati WEF study area consisted of occasional open-air artefact scatters (with one exception all Middle Stone Age (MSA) and Later Stone Age (LSA)), a San rock painting site and rock engravings.

The spatial patterning of the heritage sites indicates that they were generally linked to sources of water such as streams or pans. The majority of LSA artefactual material was found in association with low hillsides and rocky ridges, particularly eroded rock strata where overhangs and shallow rock shelters were formed. According to Halkett (2014) it is likely that shelter from the wind was a primary requirement for occupation and the combination of shelter and proximity to water seem to be important heritage indicators in the area.

A single rock painting site was identified (on the farm Driefontein), although Halkett (2014:19) reports that “Mr D. Morris (*pers com* 2013) revealed that he had seen some ochre finger painting in a small shelter above the river where the Khoisan burial was recovered on Leeuwenfontein”. A number of rock engraving sites were found in the study area, including engravings that appear to be ancient and colonial graffiti. The engravings were all on dolerite “pavements” or on blocks of dolerite which are mostly patinated to a black–brown colour by wind and sun, with varying levels of polish. Most engravings were described as patches of ‘scratches’, often accompanied by geometric designs, incised lines and cross hatching that could only have been executed by human beings. Most dolerite pavements searched during

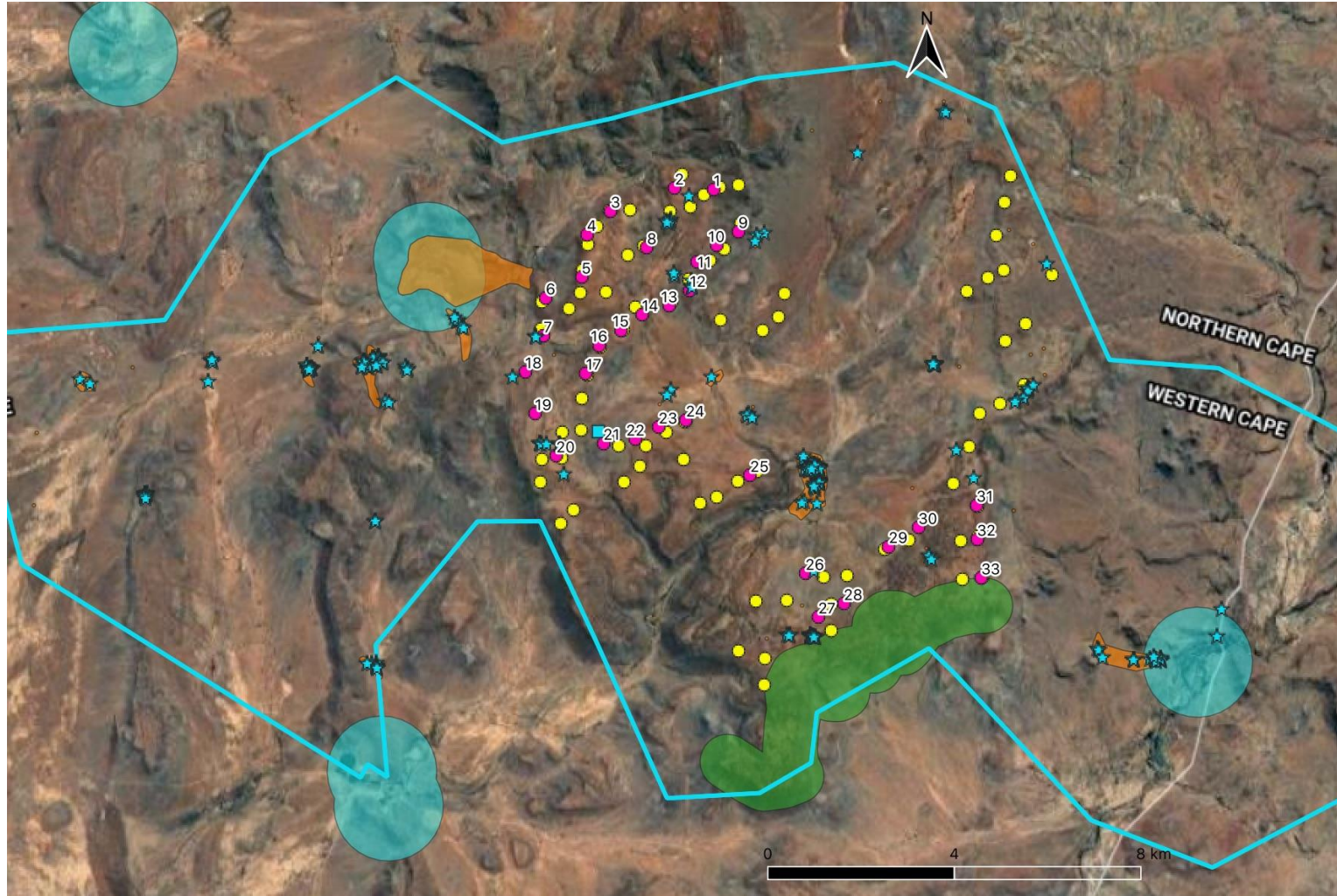


Figure 3: Historical and archaeological sites (blue stars) generated from the 2012 and 2014 field survey and buffers (blue = historical farm complexes and green = Badsfontein boundary) overlain on the authorised (yellow points) and proposed Ishwati Emoyeni WTG layout (numbered pink points) (Source: Google Earth).

the field assessment contained these kinds of engravings. Representations of animals, colonial writing and feather/leaf designs were noted.

Figure 3 shows the locations of all archaeological sites and occurrences recorded during the field assessment.

4.2.2 Colonial Period Heritage

The three farms visited during the field assessment are predominantly involved in sheep farming, the long history of which is strongly represented on the landscape by the presence of numerous stone kraals. Earlier kraals from pre-colonial colonial period, associated with Khoekhoen herders are crudely packed semi-circular/circular walls. These are often found up against natural rock ledges, and sometimes have smaller kraals tacked to one of the edges or to one side. Later colonial kraals are rectangular in shape and use flatter stones and are also often found with dwellings. Two circular kraals were identified during the survey, one of which is believed to be a pre-colonial kraal because of the presence of burnt bone and a couple of hornfels core in association.

Graves are commonly found near settlements and are usually located in softer soils of river terraces, or other alluvial or aeolian accumulations, a commonly repeated regional pattern. No formal burial grounds were observed during the survey although oral information suggests there are graveyards at Leeuwenfontein and Rietpoort. Graves are also in association with the old Driefontein settlement. Numerous arrangements of stones - sometimes single, but also in groups – were noted on various parts of the landscape during the field assessment and these may be grave markers or informal graves.

A number of historical farmhouses and structures of interest were noted within the Ishwati Emoyeni project area (see

Figure 3). These are 19th century farm houses and other farm buildings that are of heritage interest, many of which are no longer lived in and are deteriorating.

4.3 Palaeontological Impact Assessment Findings

The PIA (Rossouw 2014) was a desktop assessment based on a review of relevant palaeontological and geological literature, including geological maps, peer-reviewed articles and previous reports. The geology represented within the study area was determined from published literature and associated geological maps.

The assessment indicated that the Ishwati WEF is underlain by Late Permian Beaufort Group sediments of the upper Adelaide Subgroup of the Beaufort Group (Karoo Supergroup), which is represented on the site by the Teekloof and Balfour Formations.

During the Jurassic Period the Karoo sediments were intruded by volcanics in the form of dolerite dykes and sills. The resistant dykes and sills determine much of the relief in the area and compared to the sedimentary strata, are vertical to sub-vertical and horizontal or inclined, respectively.

The sedimentary Beaufort Group rocks form the base on which younger, superficial and generally unconsolidated sediment of Late Cenozoic age have been deposited. These occur as thin deposits in the area especially along small perennial and non-perennial watercourses. Sediments include pedocretes, colluvial slope deposits, sheet wash and alluvium.

4.4 Cultural Landscape and Setting

The HIA describes the heritage of the Karoo as a series of layers of events (or landscapes) that have become superimposed on the land surface. The earliest of these is the Karoo palaeontological landscape – formed out of the deposits of a vast inland sea. The shores and swamps of this landscape abounded with ancient species of fish, plants, invertebrates and early mammal-like reptiles. After the breakup of Gondwanaland, many geological processes transformed the ancient deposits resulting in the particular character of the Karoo as we know it today. Millions of years after its formation, it was home to successions of early human occupation. Stone Age occupations of the Earlier, Middle and Later Stone ages left a million years of human made debris on the land surface, with the final layer consisting of the remains of European colonisation and the wars that went with it.

The landscape to the north of the village of Murraysburg, which forms the backdrop for the proposed Ishwati Emoyeni WEF, is described in the Visual Impact Assessment Report (Holland 2014) as being a rural agricultural landscape with a strong sense of isolation and remoteness. Its location close to the mountains of the escarpment gives the area a particular grandeur. The farms that have been selected for the proposed wind energy facility are sited on an elevated plateau with views across the surrounding plains of the central Karoo.

Taking into consideration the comments above, the VIA recommended that the landscape on and around the windfarm be provisionally graded as Grade IIIA.

The VIA found that the significance of the introduction of WTGs into the landscape would be high, with a visual impact on sensitive visual receptors in the region that is expected to be high, regardless of mitigation measures because of the effect wind turbines will have on the regional sense of place.

4.5 Assessment of Impacts – HIA

The HIA made the following assessment of impacts on historical and archaeological heritage resources:

4.5.1 Impacts to Archaeological Sites

Nature of impacts: The AIA indicated that impacts to archaeology arising from the construction of the WEF are possible, the main cause being physical disturbance of the material itself and its context. The heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. There is the potential that the deep excavations for the tower bases, excavation of cable trenches and clearing and widening of access roads could impact rock engravings and buried archaeological material. Sites which contain San rock paintings or rock engravings are very sensitive to secondary impacts such as graffiti, wetting and touching, and the frequency of this kind of impact increases when more people are present in the area (i.e. construction teams).

Extent of impacts: It is expected that impacts will be limited and local. There is a chance that the deep excavations for WTG bases could potentially impact buried archaeological material. Similarly, the excavation of cable trenches and clearing of access roads could impact material that lies buried in the surface sand. Potential impacts caused by power line and proposed access roads are similarly likely to be limited and local. The physical survey of the study area has shown that archaeological material is dispersed, which means that the extent of impacts is likely to be highly localised (if at all), with no regional implications for heritage of this kind.

Significance of impacts: In terms of the information collected for the HIA, indications are that impacts to pre-colonial archaeological sites and material will be limited. In terms of buried archaeological material, it is never possible to be sure of what lies below the ground. However, indications are that this is extremely sparse in the development area and that impacts caused by the construction of footings and other ground disturbance are likely to be negligible.

Status of impacts: The destruction of archaeological material is usually considered to be negative. However, opportunities for the advancement of science and knowledge about a place can result, provided that professional assessment and mitigation are carried out in the event of an unexpected find. In this case there is so little material on site that there will be no opportunity to benefit therefore the impact will be neutral. The impact rating is therefore of medium negative significance without mitigation and very low (neutral) with mitigation.

4.5.2 Impacts to Colonial Period Heritage

Nature of impacts: Historic structures are sensitive to physical damage such as demolition as well as neglect. They are also context sensitive in that changes to the surrounding landscape will affect their significance. The AIA found that it is not expected that the built environment will be directly impacted by the proposed WEF unless it becomes necessary to demolish structures that are greater than 60 years of age.

Graveyards, such as that identified at Groot Driefontein are also sensitive to physical damage such as that arising out of the construction of access roads, lay-down areas and excavation of the footings of the turbines.

Extent of Impacts: Direct impacts to the historical structures and any graveyards within the Ishwati Emoyeni project footprint are not expected as these will be buffered and excluded from the development area. Some visual impacts on the historical structures, in terms of Karoo context, are expected.

Significance of impacts: The HIA found that were structures or historical sites or graveyards or burials to be affected by the Ishwati Emoyeni WEF, the physical impacts will be medium.

Status of impacts: While it is generally possible to avoid historical farm graveyards, those belonging to farm workers are sometimes difficult to identify as they may lack obvious headstones and fences/walls. Exhumation of graves is generally not recommended due to the legal processes which are required, and it is preferable that they are avoided. If unmarked graves are uncovered during construction, there are certain procedures which need to be followed.

Within the boundaries of the proposed wind energy facility, impacts to historical built structures and graveyards and burials are considered to be medium significance without mitigation and low with mitigation.

4.5.3 Impacts to Palaeontology

Nature of Impacts: Excavations for infrastructure associated with the WEF will impact on bedrock: primarily on intrusive dolerite which has no palaeontological potential, but also potentially on fossil-bearing rock units of the Adelaide Subgroup (Teekloof and Balfour Formations). This may lead to the damage or destruction of fossils, the removal of fossil material from its context which would reduce or destroy its scientific significance, or the loss of access by scientists to conduct palaeontological studies after the proposed infrastructure is in place.

Extent of Impact: The extent of impacts will be restricted to potential damage or destruction of fossil material within the footprints of project activities.

Significance of impacts: While the PIA indicates that the significance of impacts of WEF-related activities on superficial Late Cenozoic age deposits will be low, the impact significance if activities affect potential fossil-bearing Adelaide Subgroup strata is assessed to be high.

Status of impacts: The Beaufort Group is world renowned for its fossil record of the evolution of Permian and Triassic mammal-like reptiles and the evolutionary transition to mammals. Consequently, the discovery of otherwise unobservable fossil material, as a result of the proposed WEF development, can be seen as beneficial to the scientific community.

4.5.4 Impacts to Cultural Landscape and Setting

Nature of impacts: Cultural landscapes are highly sensitive to accumulative impacts and large-scale development activities that change the character and public memory of a place.

In terms of the National Heritage Resources Act, a cultural landscape may also include a natural landscape of high rarity value, aesthetic and scientific significance. The construction of a large facility can result in profound changes to the overall sense of place of a locality, if not a region. The remoteness of areas selected for the Umsinde Emoyeni WEF has somewhat mitigated this impact.

Extent of impacts: Wind turbines are conspicuous structures which will affect the atmosphere of the “place”. While this impact may be considered local in terms of physical extent, there may be wider implications in terms of the change in “identity” of the area and the accumulative effect this could have on future tourism potential. The impact of the proposed activity will be local but with a likely contribution to accumulative impacts.

Significance of impacts: The impact of the proposed activity is medium.

Status of impacts: The status of the impact is negative. The impact rating is therefore of medium negative significance without mitigation and medium negative with mitigation.

4.5.5 Cumulative Impact

The HIA noted that there were then three other renewable energy projects within a 50 km radius of the proposed Ishwati Emoyeni WEF that had received Environmental Authorisation, namely:

- A renewable energy facility at Victoria West, Northern Cape;
- The Noblesfontein WEF near Victoria West, Northern Cape; and
- The Modderfontein WEF near Victoria West, Northern Cape.

If all these projects proceed, then the Ishwati Emoyeni WEF will be built in a landscape where wind turbines are a common feature.

The HIA found that there would be no significant cumulative impacts on the palaeontology and/or archaeology and the other heritage receptors of the area, provided the recommended mitigation is implemented and achieved.

The visual study noted that WTGs are highly visible structures and in the relatively empty Karoo landscape, will dominate other landscape features. The significance of the potential cumulative impact is medium due to its regional extent and long duration, and not high due to its low intensity.

4.6 Mitigation Measures – HIA

The recommendations were made in the HIA to mitigate potential impacts of the Ishwati WEF on heritage resources:

4.6.1 Archaeological and Colonial Period Heritage Mitigation

From a heritage perspective, the landscape has some predictable elements but there are a number that are unpredictable, making it difficult to easily define sensitive and non-sensitive zones (or no-go areas).

- The micro siting of turbines and infrastructure in consultation with the heritage practitioner will, in all likelihood, adequately address physical impacts to archaeology;
- In cases where heritage resources cannot be avoided, mitigation such as sampling and/or excavation of archaeological deposits and artefact scatters can be achieved, and recording of engravings and paintings can mitigate those resources and will be required as part of an environmental management plan;
- If human remains or graves are found during construction, exhumation and reburial will in all likelihood be permitted by the authorities;
- All identifiable graves and graveyards should be avoided;
- Buildings and structures older than 60 years are generally protected by the NHRA and may not be altered or disturbed without prior assessment. Permits may be required for invasive mitigation interventions.

While no road layouts were assessed during the field survey, many of the existing site roads will be used. Many of the new roads will be located at higher elevations where fewer archaeological sites occur.

The final turbine access road layout should be assessed by a walk down at the EMPr.

4.6.2 Palaeontological Mitigation

Moderate to high palaeontologically sensitive rock units usually requires a field assessment by a professional palaeontologist, since most detrimental impacts on palaeontological heritage usually occur during the construction phase when fossils may be disturbed or destroyed by excavations and other construction activities.

Rossouw (2014) therefore recommended a site visit after turbine and associated infrastructure placements are finalised, but before or during the start of the construction phase while fresh, potentially fossiliferous bedrock is still exposed for study and recording;

4.6.3 Landscape and Setting Mitigation

The significance of the visual impact of large wind turbines on sensitive visual receptors in the region is expected to be high regardless of mitigation measures due to the effect wind turbines will have on the regional sense of place (which is valued for its isolation and remoteness).

Due to the size and visibility of the wind turbines mitigation measures are unlikely to affect the significance of the visual impact.

The significance of the impact of night lighting of the wind energy facility on the existing nightscape is medium due to the long duration of the impact and the high irreplaceability of visual resources that will be affected.

In general, the VIA recommends the following:

- A setback distance of 500m around ridgelines as suggested in guidelines for wind energy developments in the Western Cape can reduce visual exposure of viewpoints on sensitive visual receptors on the Badsfontein Farm to the south of the development;
- An exclusion zone of 500m around ridgelines on the southern boundary of the development site, to mitigate visual impact from the sensitive visual receptors on the Badsfontein farm was implemented as a mitigation measure and the layout for the DEIR and FEIR and all future layouts will adhere to this exclusion zone;
- With regard the visual impact, it is recommended that laydown areas and stockyards should be located in low visibility areas (e.g. valleys between ridges) and existing vegetation should be used to screen them from views where this is possible;
- From a visual point of view, no turbines should be placed closer than 500 m from residence;
- Advertising signs near wind turbines (such as billboards) should be avoided;
- Lighting should be designed to minimise light pollution without compromising safety;
- Lattice towers/pylons are preferred to solid towers since they create lower visual contrast with the natural features and since there are already similar features in the landscape; the feasibility of using lattice towers/pylons should be considered in light of other technical and environmental considerations;
- Towers and structures should have a non-reflective finish.

5 CONCLUSIONS OF 2014 HIA

The HIA concluded that if the mitigation measures proposed in the specialist palaeontological and archaeological reports are implemented, then there are no reasons why the construction of the proposed project cannot proceed.

However, regardless of the applied mitigation measure as proposed by the visual specialist the visual impacts of the proposed wind energy project will be high. No further mitigation can lower this impact.

6 AMENDMENT REVIEW AND CONCLUSION

As the 2014 HIA makes clear, the impacts on heritage resources arising from the development of the Ishwati Emoyeni WEF are related principally to the areas of disturbance of the ground (for archaeological sites and materials) and views to and from heritage resources (for historical structures and cultural landscape / setting).

It is also clear from the HIA that the authorised position and layout of the Ishwati Emoyeni WEF has taken into account the heritage sensitivities identified by the archaeological survey and excludes from the development footprint the historical farm complexes. The siting of the WEF also goes some way to addressing the issue of landscape and setting.

The review of the results of the 2014 palaeontological assessment by Professor Marion Bamford supports Rossouw's assessment of the palaeontology of the area and confirms that although not common and with a distribution that is sporadic and unpredictable, vertebrate fossils can be expected to be preserved in the Teekloof Formation (Hoedemaker Member) and in the Balfour Formation where these strata are present within the WEF.

Bamford agrees that impacts on fossil material will arise mainly from excavations that intersect with bedrock, and that either the environmental officer or a professional palaeontologist should survey or monitor excavations and look for bones. She recommends that if fossils are found they are removed by the palaeontologist in an appropriate manner.

The cumulative impact in terms of the landscape and setting will remain, albeit reduced in significance by the mitigation measures recommended in the VIA.

The changes to the authorised specifications of the WEF being proposed in the current amendment application that are relevant to heritage resources are the increased size of temporary and permanent hardstandings and the increased turbine foundation size, both of which will increase the potential for impacts to archaeological sites and materials, including rock engravings, and palaeontological resources during construction.

With respect to cultural landscape and setting the increase in wind turbine hub height / blade tip height are relevant as they will increase the visibility and thus visual impact of the WEF on the surrounding cultural landscape.

These potentially negative changes are partially offset by the decrease in the number of turbines and the fact that the maximum authorised length of internal roads will reduce, given the reduced number of WTGs.

There is no change to the extent of the areas to be occupied by the substation and the permanent and construction laydown areas, or to the requirement that all power lines linking wind turbines to each other and to the internal substation must be buried.

The disadvantages for archaeological sites and materials, particularly for rock engravings, and palaeontological resources of an expanded physical footprint of development-related ground disturbance are not deemed to be significant in light of relatively low archaeological and palaeontological potential of the WEF area, and given the pre-construction mitigation measures recommended by the HIA that will be required to be implemented prior to development commencing.

The disadvantages for the cultural landscape and setting of the increased height of the WTGs are likely to remain significant and the visual impact of an increase in the size of the WTGs on sensitive visual receptors in the region is expected to remain high, due to the effect larger wind turbines will have on the regional sense of place.

In terms of additional measures to avoid, manage and mitigate impacts associated with the proposed changes for inclusion in the EMP, it is our reasoned opinion that the mitigation measures set out in the HIA remain fit for purpose and that provided they are implemented, **the overall impact of the construction of the Ishwati Emoyeni WEF is tolerable and generally of low significance.**

From a heritage perspective, therefore, the proposed amendments are considered acceptable.

7 REFERENCES

- CSIR. 2014. *Specialist Integrated HIA Impact Assessment Report: Ishwati Emoyeni Wind Energy Facility*. Unpublished report prepared for Special Energy Project (Pty) Ltd and Eskom Holdings SOC Limited. CSIR.
- Halkett, D. 2014. *Archaeological Impact Assessment: Ishwati Emoyeni Wind Energy Facility*. Unpublished report prepared for the CSIR. ACO Associates. Cape Town.
- Rossouw, L. 2014. *Palaeontological Impact Assessment: Ishwati Emoyeni Wind Energy Facility*. Unpublished report prepared for the CSIR.
- Sampson, C.G. 1985. *Atlas of stone age settlements in the central and upper Seacow Valley*. Memoirs of the National Museum Bloemfontein No. 20.
- Sampson, C.G., 1992. *Stylistic boundaries among mobile hunter-gatherers in the Zeekoe Valley, Eastern Cape*. Washington, Smithsonian Institution Press.
- Sampson, C.G., Moore, V., Bousman, C.B., Stafford, B., Giordano, A. and Willis, M. 2015. A GIS analysis of the Zeekoe valley Stone Age archaeological record in South Africa. *Journal of African Archaeology* 13:2. 167-185.



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Ishwati Emoyeni Wind Energy Facility: Amendment Application

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at <https://www.environment.gov.za/documents/forms>.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

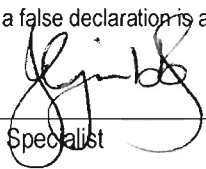
Specialist Company Name:	ACO Associates cc		
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition
Specialist name:	John Gribble		
Specialist Qualifications:	MA Archaeology		
Professional affiliation/registration:	Association of Southern African Professional Archaeologists Member ASAPA (#043)		
Physical address:	Unit D17, Prime Park, 21 Mocke Road, Diep River		
Postal address:	As above		
Postal code:	7800	Cell:	Not available
Telephone:	021 706 4104	Fax:	078 616 2961
E-mail:	john.gribble@aco-associates.com		

DECLARATION BY THE SPECIALIST

I, John Gribble, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, 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 particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist



ACO Associates cc

Name of Company:

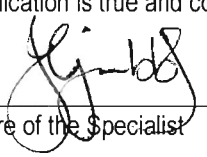
10 May 2021

Date

2. UNDERTAKING UNDER OATH/ AFFIRMATION

I, John Gribble, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist



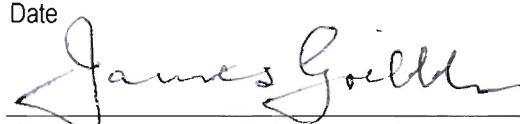
ACO ASSOCIATES

Name of Company

10 May 2021

Date

Signature of the Commissioner of Oaths



Rev. James Gribble
COMMISSIONER OF OATHS
MARRIAGE OFFICER (V3146) - REPUBLIC OF SOUTH AFRICA
"Windfall", 123 Woodgate Road, Plumstead 7800

10 May 2021

Date

Details of Specialist, Declaration and Undertaking Under Oath