

ADDENDUM TO HERITAGE IMPACT ASSESSMENT (DATED 20 October 2010)

In terms of section 38(8) of the National Heritage Resources Act 25 of 1999 as part of an Application for Amendment of the Environmental Authorisation undertaken by Holland & Associates Environmental Consultants for

SPRINGBOK WIND ENERGY FACILITY

Portions 17 and 19 of Farm No. 134; Portion 0 (Remaining Extent) and Portion 1 (Remaining Extent) of Farm No. 132; Portion 0 (Remaining Extent) of Farm No. 946; Portion 0 (Remaining Extent) of Farm No. 215; Portion 0 of Farm No. 635; and Portion 9 (Remaining Extent) of Farm No.

133

NAMAQUALAND MAGISTERIAL DISTRICT



Prepared for:

**Mulilo Springbok Wind Power (Pty) Ltd,
c/o Holland & Associates Environmental Consultants**

By

Ron Martin Heritage Consultancy

Heritage Impact Assessments, Heritage Statements (as part of EIA's), Heritage Evaluations of historic structures & sites, Oral History studies and evaluations, Socio-historic evaluations, etc.



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EXECUTIVE SUMMARY

The original Phase 1 Heritage Impact Assessment report formed part of an Environmental Impact Assessment conducted in 2010 for the Springbok Wind Energy Facility, situated just outside Springbok in the Namaqualand Magisterial district, on the following properties: Farm 134 Portion 19, Farm 134 Portion 17, Farm 132 Portion 0 (Remaining Extent), Farm 946 Portion 0 (Remaining Extent), Farm 215 Portion 0 (Remaining Extent), Farm 132 Portion 1 (Remaining Extent), Farm 635 Portion 0, Farm 133 Portion 9 (Remaining extent).

Environmental authorization (EA) was granted for the proposed 55.5MW Springbok Wind Power Generation Facility (Authorized Project) on the site by the Department of Environmental Affairs, (DEA) on 27th July 2011. The applicants', (then Mulilo Renewable Energy (Pty) Ltd), preferred alternative of 37 wind turbine generators, (WTG), with a generating capacity of 1.5MW per turbine, as well as associated infrastructure such as underground cables, a 3.8km long overhead power line, a substation, internal access roads, and a construction camp was granted authorisation by DEA.

An EA amendment application was later submitted to DEA to change the Special Purpose Vehicle (SPV) name from Mulilo Renewable Energy (Pty) Ltd to Longyuan Mulilo Springbok Wind Power (Pty) Ltd in 2011. This amendment to the EA was granted by DEA 24th October 2011

In March 2014, Longyuan Mulilo Springbok Wind Power (Pty) Ltd submitted an Application for Amendment of the EA to DEA for an extension of the validity period of the EA and amendment to the property descriptions included in the EA (to correct editorial errors). DEA granted the amendment of the EA on 27 June 2014.

In March 2015, Longyuan Mulilo Springbok Wind Power (Pty) Ltd submitted an Application for Amendment of the EA to DEA to amend the project description (including amendments to turbine specifications and layout). The amendment of the EA was refused¹ by DEA on 2 July 2015.

In February 2016, Longyuan Mulilo Springbok Wind Power (Pty) Ltd submitted an Application for Amendment of the EA to DEA to extend the validity period of the EA, as well as to amend the name of the holder from "Longyuan Mulilo Springbok Wind Power" to "Mulilo Springbok Wind Power (Pty) Ltd". DEA granted the amendment of the EA on 18 May 2016.

Mulilo Springbok Wind Power (Pty) Ltd now proposes to amend the project description of the authorised WEF, including: reducing the number of turbines from 37 to 25, increasing the rotor diameter from 88m to a maximum of 160m, increasing the hub

¹The reasons for the refusal included the following: DEA stated that the proposed increase in the generation capacity of the authorised facility from 55.5MW to 100MW constitutes a listed or specified activity, and triggers activity 1 of GN R. 984 of the EIA Regulations, 2014 (albeit that this listed activity is already authorised by DEA for the proposed project). Furthermore, DEA indicated that the report dated March 2015 submitted by the applicant to DEA for the proposed amendments did not include the completed 12 months bat monitoring which would have been further required for the decision making process.

height from 80m to a maximum of 140m, increasing the temporary construction pad from 40m x 20m to 40m x 40m, and minor refinements to the layout of the WEF. The generation capacity of the WEF would remain 55.5MW, as authorized by DEA.

These amendments require the re-assessment of the potential impacts associated with the proposed project to update the specialist study.

This heritage report finds that there is sufficient information to conclude that the development proposals (i.e. the proposed amendments) can be supported without any further study needing to be undertaken, but subject to the mitigation measures and other recommendations contained in this report – all as underpinned by its heritage indicators.

Consequently, this report concludes:

That Heritage Northern Cape (HNC) can endorse the Phase 1 report (including this addendum) as having satisfied the requirements of the National Heritage Resources Act (NHRA): Section 38(3)(a)(b)(c)(d)(e) and (g);

That NHRA Section 38 (3)(f) is not applicable, as the preferred alternative is assessed, and will not adversely affect any heritage resources, as mitigated; and

That in terms of section 38(8), HNC endorses the conclusion in this report that further study is not required and that the proposed development be allowed to proceed subject to the following conditions:

- That the development remains substantially in accordance with the Amended Alternative 1(i.e. the Proposed Amended Option) as addressed and mitigated in this report;
- That the recommendations entrenched in the SAHRA APM RoD, as summarized in the AIA, are implemented.
- That the proposed development serves to provide a mechanism for the local communities to conduct a heritage program with the aim to re-interpret existing narrative while redressing gaps in the overall historical narrative in order to promote the celebration of a complete, holistic historical interpretation of the landscape that would be acceptable to all affected communities, especially in light of the impending WHS nomination, in terms of section 38(3)(d).
- That the mitigation measures proposed in the Visual Impact Assessment be entrenched in the environmental management plan (EMP) for the development in terms of the EIA regulations; and
- That failure to observe any of the abovementioned conditions will automatically result in HNC's endorsement for these development proposals being withdrawn, thereby requiring a new submission to HNC in terms of NHRA Section 38(8)

SECTION A: INTRODUCTION

A.1 Background and Brief

In 2010, Ron Martin Heritage Consultancy was appointed by Mulilo Renewable Energy (Pty) Ltd to conduct and submit a Heritage Impact Assessment as part of an Environmental Impact Assessment in respect of a proposed development of a 40-turbine (subsequently revised to 37) wind farm to generate 55.5MW of electricity on Farm 134 Portion 19, Farm 134 Portion 17, Farm 132 Portion 0 (Remaining Extent), Farm 946 Portion 0 (Remaining Extent), Farm 215 Portion 0 (Remaining Extent), Farm 132 Portion 1 (Remaining Extent), Farm 635 Portion 0, Farm 133 Portion 9 (Remaining extent) which together comprise an existing stock farm outside Springbok, Namaqualand) as per the requirements of Heritage Northern Cape (HNC) in terms of section 38(8) of the National Heritage Resources Act 25 of 1999 (the Act).

A full Phase 1 Heritage Impact Assessment was conducted and submitted to Heritage Northern Cape (HNC) during October 2010.

Environmental authorisation was granted for the proposed 55.5MW Springbok Wind Energy Facility on the site by the Department of Environmental Affairs, (DEA) on 27th July 2011. The applicants', (then Mulilo Renewable Energy (Pty) Ltd, now Mulilo Springbok Wind Power (Pty) Ltd) preferred alternative of 37 wind turbine generators, (WTG), with a generating capacity of 1.5MW per turbine, as well as associated infrastructure such as underground cables, a 3.8km long overhead power line, a substation, internal access roads, and a construction camp, was approved.

An Application for Amendment of the Environmental Authorisation (EA) was submitted to DEA in 2011 to change the Special Purpose Vehicle (SPV) name from Mulilo Renewable Energy (Pty) Ltd to Longyuan Mulilo Springbok Wind Power (Pty) Ltd in 2011. This amendment to the EA was granted by DEA 24th October 2011. In March 2014, Longyuan Mulilo Springbok Wind Power (Pty) Ltd submitted an Application for Amendment of the EA to DEA for an extension of the validity period of the EA and amendment to the property descriptions included in the EA (to correct editorial errors). DEA granted the amendment of the EA on 27 June 2014.

On 2 March 2015, Longyuan Mulilo Springbok Wind Power (Pty) Ltd submitted an Application for Amendment of the EA to DEA, to amend the project description. The amendment of the EA was refused by DEA on 2 July 2015. The reasons for the refusal included the following: DEA stated that the proposed increase in the generation capacity of the authorised facility from 55.5MW to 100MW constitutes a listed or specified activity, and triggers activity 1 of GN R. 984 of the EIA Regulations, 2014 (albeit that this listed activity is already authorised by DEA for the proposed project). Furthermore, DEA indicated that the report dated March 2015 submitted by the applicant to DEA for the proposed amendments did not include the completed 12 months bat monitoring which would have been further required for the decision making process.

In February 2016, Longyuan Mulilo Springbok Wind Power (Pty) Ltd submitted an Application for Amendment of the EA to DEA, to extend the validity period of the EA, as well as to amend the name of the holder from "Longyuan Mulilo Springbok Wind Power"

to “Mulilo Springbok Wind Power (Pty) Ltd”. DEA granted the amendment of the EA on 18 May 2016.

Mulilo Springbok Wind Power (Pty) Ltd now proposes to amend the project description of the authorised wind energy facility (WEF). The primary reason for this amendment is that, as WEF’s receive continued support worldwide from governments and energy regulators, technological improvements are being seen on a constant basis. In order to ensure that the WEF has the smallest possible footprint per total installed capacity, the wind turbine generators (WTG) are evolving in higher yielding and more efficient generating units. As the engineering loads and fatigues are better understood on the units, it allows the designers and engineers to design the most optimal and highest yielding WTGs for the specific terrain and climatic conditions. The proposed amendments are described in greater detail, as follows:

a) Proposed amendments to the project description:

Mulilo Springbok Wind Power (Pty) Ltd (hereafter referred to as the Applicant) wishes to increase the generating size of the WTG’s in order to align to current international WTG models, while reducing the number of WTGs at the WEF. In light of the above, the following amendments to the project description are proposed:

Table 1: Proposed amendments to project description

Component	Approved	Proposed amendment
Number of turbines	37	Maximum of 25 (i.e. potential range of 12 turbines @ 4.5MW to 25 turbines @ 2.0MW - 2.2MW)
Generation capacity per turbine	1.5MW	2.0MW – 4.5MW
Generation capacity of the WEF	55.5MW	Same as authorised (55.5MW)
Rotor diameter	88m	Maximum of 160m
Hub height	80m	Maximum of 140m
Temporary construction pad	40 x 20m	40 x 40m
Permanent affected area (foundation size)	16 x 16m and 2 m deep	16 x 16m and 3 m deep

(Note: The Application for amendment of the EA will assess the “worst case scenario” of 25 turbines @ 2.0MW - 2.2MW per turbine with the understanding that should the Applicant use 4.5MW turbines, which would have the same maximum dimensions as the 2.0MW - 2.2MW turbines, then the Applicant would reduce the number of turbines to 12. It is furthermore noted that the generation capacity of the WEF would remain 55.5MW, as authorized by DEA).

The EIA Report for the project (December 2010) stated that “Each turbine, with the underground base and the crane lifting pad, occupies an area of 15 by 15 metres”. It

also states that “In terms of the foundations, a 16 by 16 metre wide and two metre deep foundation would be required for the turbine” and “the area required for construction is 40 by 20 meters”.

In terms of the proposed amendments, the turbine hardstands will increase to an area of 40m by 40m. These construction related footprints are however temporary and will be rehabilitated as far as possible once construction has been completed.

It must be understood that these are the upper limits of possible future WTG sizing, and if the Springbok WEF is to be constructed in the next few years, the actual WTG sizing in the amended project will be in the middle range. The general benefits of using larger sized turbines, compared to older generation turbines are:

- Improved grid code compliance and voltage regulation, providing a more secured energy supply;
- Improved warranted power and noise curves;
- Decrease in WTG load fatigue, maintenance costs and downtime;
- Decrease in the road area coverage per installed capacity;
- More efficiently yielding the wind energy resource, and reducing the need for further WEF development to increase the total installed capacity.

Ensuring that the newer generation WTG can be used at the Springbok WEF, would offset a new ‘virgin’ green-field WEF development, as the WEF is situated on a formerly mined exploited mountain range. Furthermore the proposed site in Springbok is adequately positioned for a WEF, due to the following attributes:

- Excellent consistent wind resource;
- Eskom substation positioned close to the WEF, with minimal distance required for the transmission lines to be built;
- Most accessible positions have been chosen, with the least impact on the environment and construction costs;
- The Wind Energy Facility is located in a central position in the Northern Cape/Namaqualand, thereby being able to offset any electrical losses that occur due to transmitting electricity to the region” (Mulilo Springbok Wind Power (Pty) Ltd, April 2016).

b) Amendments to WEF layout

Refinements to the WEF layout has also been made and are to be considered and assessed in the re-assessment of potential heritage impacts. The total generation capacity of the wind energy facility will remain 55.5MW (as authorized by DEA).

Assuming a worst case scenario of using the smallest turbines (2.0MW - 2.2MW), there will be a total of 25 turbines in the amended proposal, as opposed to 37 in the authorised project.

The proposed amended layout, as well as a topographic map of the proposed updated layout, is attached as appendices to this addendum.

These amendments require the re-assessment of the potential impacts associated with the proposed project to update the specialist study, in this case, the Heritage Impact Assessment.

Site inspections were conducted on 16-18 February 2017 and 21 March 2017. I was accompanied (16 Feb) by Mr P J (Basie) Fourie, CEO of Okiep Copper Mine. The sites for the proposed footprints of the turbines were inspected.

A.2 Scope of Study

The scope of work for this process is to compile an addendum to the Phase 1 HIA conducted in 2010 to address the following:

- The implications of the proposed amendments in terms of the potential impact(s);
- A re-assessment of the significance (before and after mitigation) of the identified impact(s) in light of the proposed amendments (as required in terms of the 2014 EIA Regulations), for the construction and operational phases, including consideration of the following:
 - Cumulative impacts;
 - The nature, significance and consequence of the impact;
 - The extent and duration of the impact;
 - The probability of the impact occurring;
 - The degree to which the impact may cause irreplaceable loss of resources;
 - The degree to which the impact can be avoided, managed or mitigated;
- The addendum to the report must include an impact summary table outlining the findings of the re-assessment in terms of the abovementioned assessment criteria;
- A statement as to whether the proposed amendments will result in a change to the significance of the impact assessed in the original EIA for the proposed project (and if so, how the significance would change), if applicable.
- A detailed description of measures to ensure avoidance, management and mitigation of impacts associated with the proposed changes.
- An outline of the potential advantages and disadvantages of the proposed amendments in terms of potential impacts in terms of the provisions of the NHR Act.
- Provide confirmation as to whether or not the proposed amendments will require any changes or additions to the mitigation measures recommended in the HIA. If so, provide a detailed description of the recommended measures to ensure avoidance, management and mitigation of impacts associated with the proposed amendments.
- Should any comments be raised during the Public Participation Process for the Application for Amendment of the EA relating to the addendum to the HIA, provide responses to such comments raised (as part of the Comments and Response Report for the amendment application).

These elements will be outlined under their appropriate headings and specific recommendations formulated in relation to each.

A.3 Declaration of Independence

I hereby declare that I have no conflicts of interest related to the work of this project. Specifically I declare that I have no personal or financial interests in the property and/or the development being assessed in this report and that I have no personal or financial connections to the relevant property owners, developers, planners, financiers or consultants of the development. I declare that the opinions expressed in this report are my own, and a true reflection of my professional expertise.

SECTION B: THE SITE

B.1 Locality, Site Description and Context

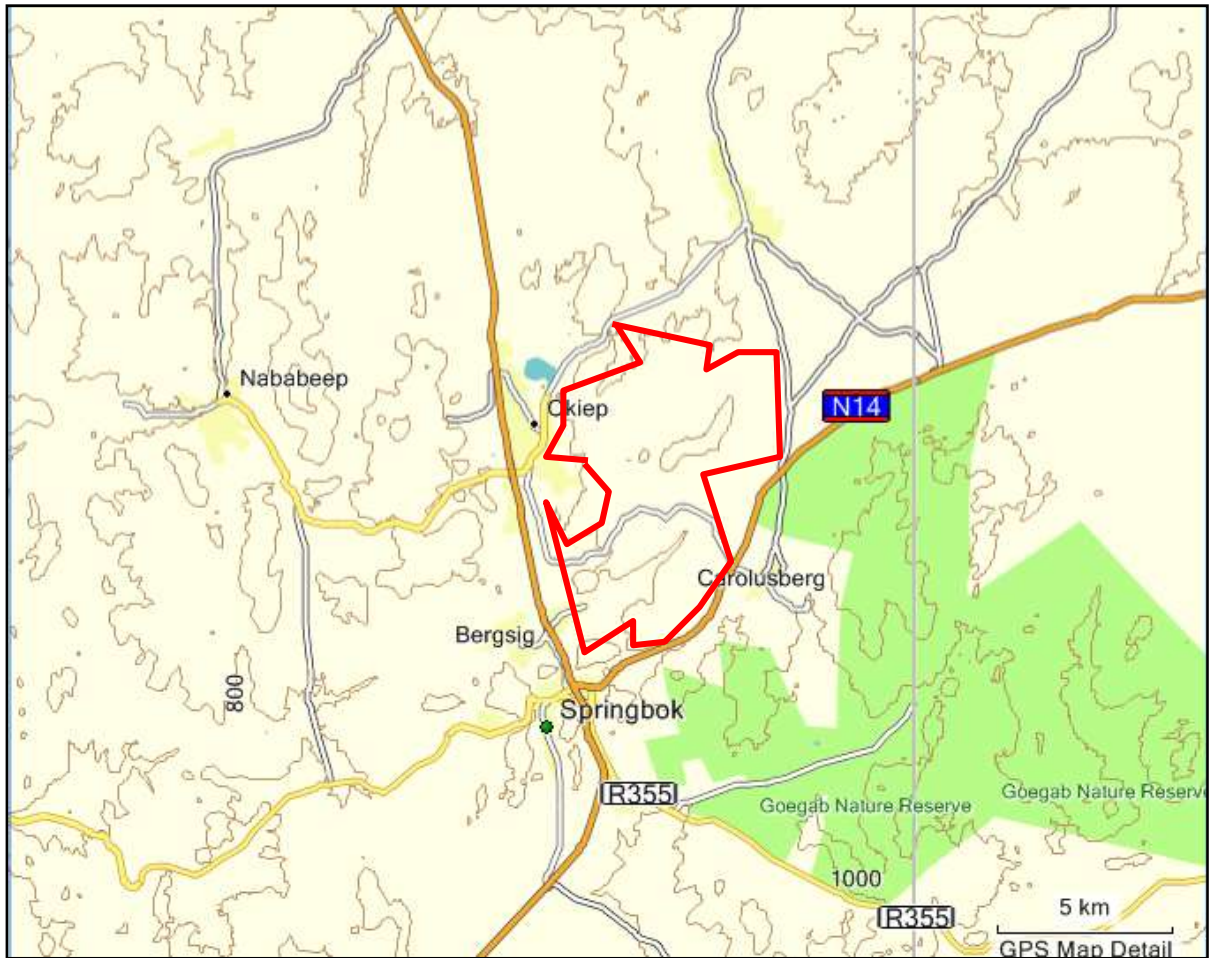


Figure 1a: Locality Map

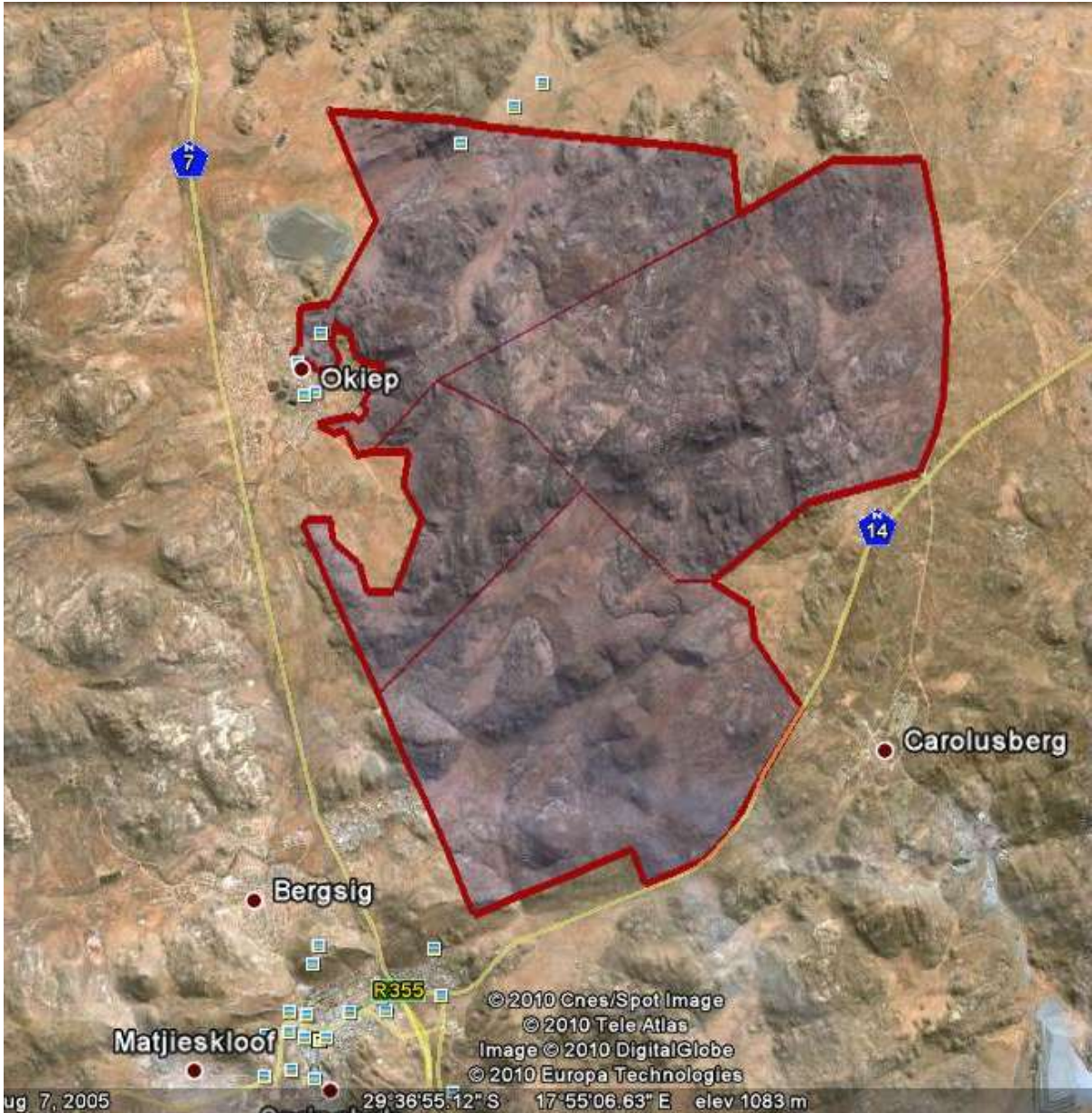


Figure 1b: Local Aerial Locality (Courtesy, Google Earth)

The site is located east of the N7, north and north-west of the N14 and north-east of Springbok (Bergsig) and occupies approximately 3000ha in the mountainous region between Carolusberg, Okiep and Bergsig. See figures 1 a & b.

It falls within the planning jurisdiction of the Nama Khoi Municipality

Neither the site for the proposed amended wind energy facility (WEF) nor its description and context have changed from the original authorized proposal.

SECTION C: AMENDED PROJECT PROPOSAL

C.1: Motivation

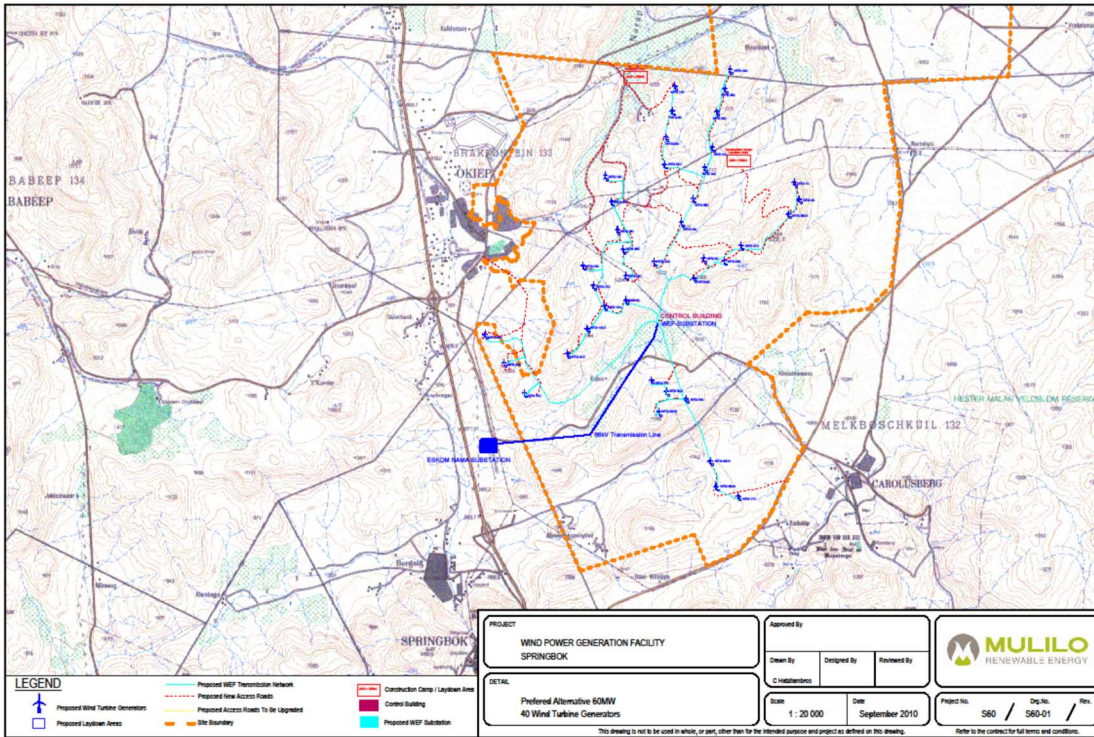


Figure 2: Original 2010 layout plan, approved by DEA in July 2011, with 37 turbines. Note that the symbols depicting the turbines themselves are somewhat over-scaled.

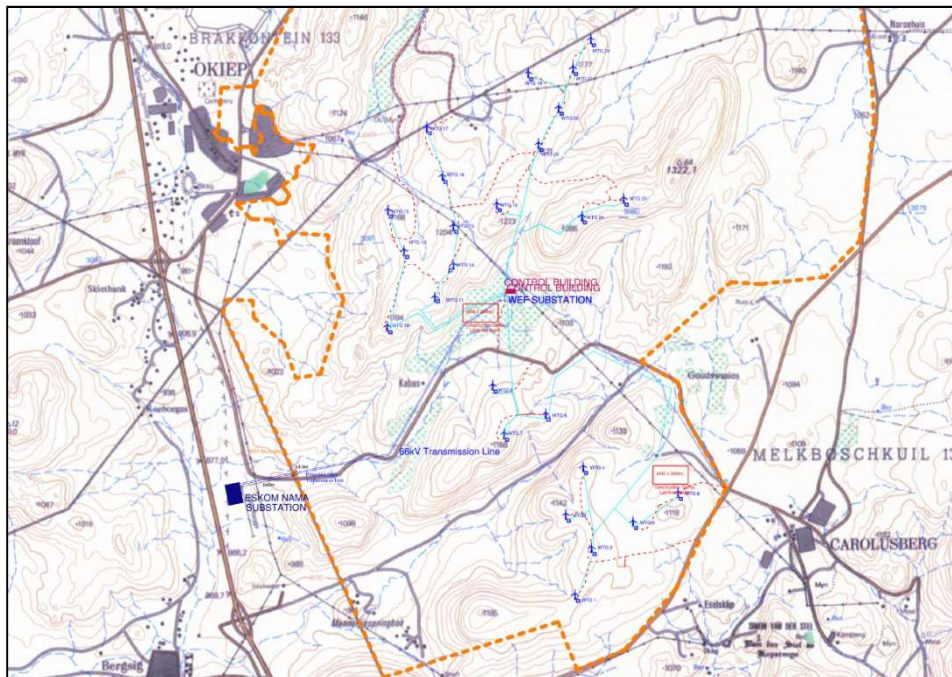


Figure 2a: Preferred amended layout plan, showing reduced number (25) of turbines relative to the area as well as nearby towns. Note that, if the larger turbine is allowed, this concentration can be reduced to 12. Note, too, that the symbols depicting the turbines themselves are somewhat over-scaled.

As onshore wind energy facilities (WEF) receive continued support worldwide from governments and energy regulators, technological improvements are being seen on a constant basis. In order to ensure that a wind energy facility has the smallest possible footprint per total installed capacity, the wind turbine generators (WTG) are evolving in higher yielding and more efficient generating units. As the engineering loads and fatigues are better understood on the units, it allows the designers and engineers to design the most optimal and highest yielding WTGs for the specific terrain and climatic conditions.

The Springbok WEF wishes to increase the generating size of the WTG in order to align to current internal WTG models. The following changes to the WTG parameters are proposed:

- Increasing hub heights from 80m to a maximum of 140m
- Increasing blade diameters from 88m to a maximum of 160m
- Increasing WTG generation size from 1.5MW to 2.0MW (at 25 turbines) - 4.5MW (at 12 turbines)

These changes would result in the temporary construction pad would increase from 40 X 20m to 40 x 40m. These construction- related footprints are however temporary and will be rehabilitated once construction has been completed.

It must be understood that these are the upper limits of possible future WTG sizing, and if the Springbok WEF is to be constructed in the next few years, the actual WTG sizing will be in the middle range. The general benefits of using larger sized turbines, compared to older generation turbines are:

- Improved grid code compliance and voltage regulation, providing a more secured energy supply;
- Improved warranted power and noise curves;
- Decrease in WTG load fatigue, maintenance costs and downtime;
- Decrease in the road area coverage per installed capacity;
- More efficiently yielding the wind energy resource, and reducing the need for further WEF development to increase the total installed capacity.

Ensuring that the newer generation WTG can be used at the Springbok WEF, would offset anew 'virgin' Greenfield WEF development, as the WEF is situated on a formerly mined and exploited mountain range. Furthermore the proposed site in Springbok is adequately positioned for a Wind Energy Facility, due to the following attributes:

- Excellent consistent wind resource;
- Eskom substation positioned close to the WEF, with minimal distance required for the transmission lines to be built;
- Most accessible positions have been chosen, with the least impact on the environment and construction costs;
- The Wind Energy Facility is located in a central position in the Northern Cape/Namaqualand, thereby being able to offset any electrical losses that occur due to transmitting electricity to the region".(Mulilo Springbok Wind Power (Pty) Ltd, April 2016)

The total generation capacity of the wind energy facility will remain 55.5MW (as authorized by DEA). Assuming a worst case scenario of using the smallest turbines (2.0MW - 2.2MW), there will be a total of 25 turbines. Refer to the link (“Springbok WEF 25WTG 29Apr16.kmz”) of the proposed amended layout, as well as figure 2a for a topographic map of the proposed updated layout.

C.2 Alternatives

Alternatives, including the “no go” option were discussed and assessed as part of the original Phase 1 HIA (2010). As the proposed amendment is considered to be an improvement (from a heritage perspective) on the APPROVED alternative, these need not be discussed as part of this addendum.

SECTION D: STATUTORY FRAMEWORK, HERITAGE STATEMENT AND HERITAGE INDICATORS

D.1 Statutory Framework and Related Information

There is no change to the original section content (Phase 1 HIA).

D.2 Heritage Statement

There is no change to the original section content.

D.3 IDENTIFICATION OF POSSIBLE HERITAGE INDICATORS

D.3.1 Historical Significance

There is no change to the original section content.

D.3.2 Physical & Aesthetic Characteristics of the Site (Cultural Landscape)

There is no change to the original section content.

D.3.3 Archaeological Significance

An amendment to his Archaeological Impact Assessment attached to the Phase 1 HIA was conducted by Agency for Cultural Resource Management (Jonathan Kaplan), and is summarized as follows:

STATEMENT OF SIGNIFICANCE

Overall, from an archaeological perspective there are no fatal flaws and provided that the recommendations (for mitigation & management) are implemented, there are no objections to the proposed development proceeding.

It is maintained that the proposed Amended Alternative 1 layout for the Springbok WEF will not result in any changes to the significance of the impacts assessed in the original AIA for the proposed project.

MITIGATION AND MANAGEMENT ACTIONS

1. A walk through survey of the final power line corridor must be undertaken by a heritage specialist to identify areas where mitigation may be required.
2. If stipulated by SAHRA, the position of the turbines in the final layout must be inspected by an archaeologist before construction. However, indications are that this is no longer required.
3. During the construction phase, the rock shelter and the identified graves should be cordoned off to ensure that no accidental damage to the heritage sites occurs.
4. A report from the survey must be submitted to SAHRA APM unit for further comments.”

For further information, the full AIA is attached as an addendum hereto.

SECTION E: SUMMARY OF HERITAGE INDICATORS, IMPACTS AND RESPONSES

The Summary of Heritage Indicators, its impacts and the responses thereto, as per the Phase 1 HIA, is still applicable in terms of the amended proposals, and is repeated (with the exception to references to visual impact and the cultural landscape) as follows:

- The site itself cannot be regarded as a heritage resource of outstanding value, but it forms an inalienable part of the broader cultural landscape associated with the copper mining industry.
- If development is allowed to proceed, its treatment should respect the heritage value of its receiving landscape. Indicators are therefore not only applicable to the site, but to its receiving landscape, and these are outlined as follows:

E.1 Historical significance

The historical significance of the receiving landscape as well as the associative historical significance of the site has been described in detail in Section D.3.1 of the Phase 1 HIA (2010) report. It comprises a holistic, multi-layered representation of chronological events that cover several significant heritage elements, the most significant being:

- Displacement of indigenous populations and the subsequent demise of the cultural heritage and language.
- Establishment of the first sustained mining industry in South Africa.
- Area of conflict, both between colonists and indigenous populations as well as between colonial powers.

The historical significance of the receiving landscape can therefore be regarded as significant in the national context.

Response:

The developer should serve to provide some form of tangible contribution to the equitable, holistic collation of historical data that could serve to celebrate the rich history of the area. Due to the closure of the mines, the local towns comprise relatively poor communities, and although one do not discount the positive economic benefits (albeit limited) of this development to the local area, the local historical narrative is often only told from a particular (colonial) perspective. This was a concern that was expressed by a local community and indigenous group during the site visit in September 2010. This could be recommended as a condition in terms of section 38(3)(d).

In addition, the owners of the Okiep Copper Company (Pty) Ltd have indicated that they would facilitate a meaningful depiction of these heritage elements in a proposed site museum (pers comm., Mr P J Fourie (CEO), 16 February 2017). This provides the perfect opportunity for the developer to participate in/contribute to this initiative.

E.2 The site and its context as a cultural landscape

It has been determined that this is by far the most important heritage indicator. Preliminary comment from Heritage Northern Cape revealed that the declaration of the proposed Namaqualand Copper Mining Cultural Landscape as a World Heritage Site could be in jeopardy if this development is not sensitive to this heritage indicator, of possible international significance. Even though individual components of the landscape such as provincial heritage sites and other sites and structures older than 60 years within the towns and environs will not be physically affected in terms of demolition or alteration, they will be impacted upon visually, so the recommendations of the Visual Impact Assessment will provide the most important mitigation measures in terms of the cumulative impact on this resource. The conclusions of the VIA (2010) are not all negative, however, and are summarized as follows:

- This new development will provide land uses very different to existing site land uses and to uses in the immediate locality. The development is also extensive and is close to groups of receptors. This is evidenced by the Zones of Theoretical Visibility. Also noted is that many views from more remote parts of the visual envelope are mitigated by distance.
- Wind farms and wind turbines make a strong visual statement, they provide pattern in the landscape. The landscape type in which this wind farm is located makes a strong, complex, cluttered, statement, and in this case the wind farm's image of contrasting form, colour, line and elevation will be intrusive and will provide intrusive clutter in a medium to large scale landscape.
- The main concerns are the scale of the turbines in relation to the scale of the hills as they will effectively double the apparent height of the hills. The other concern is scarring visible in the landscape from disturbed ground. It is advised that care should be taken to ensure that all the disturbed ground is properly rehabilitated and that a specialist be appointed to ensure that the correct methodology is adopted.
- This landscape has moderately high visual quality as it forms the gateway to South Africa for many people. It also has cultural value and a sense of place derived from, inter alia, its cultural and mining history. The sense of place around the industrial archaeology sites at Okiep and Carolusberg will be impacted upon.
- It is accepted that the visual impact will be rated as high for people living and working locally; the impact would be moderate for tourists using the N7 and for receptors to the west of the N7.
- It is advised that the turbine masts, rotors and nacelle should all be finished in a non-reflective, matte, white, paint without decals or logos. There must be no visual clutter, (small buildings, etc) visible on the site. Visible scarring damage to the landscape must be minimised. The reduction of the number of turbines from 37 to 25 serves to reduce visual clutter to a large degree.
- During the Construction period measures must be put in place to limit the visual impact of the works and vehicle movements through the site; as the points of access are visible to users of transport corridors, the visibility of construction vehicles entering and leaving the site should be controlled.
- Main visual aim of a layout should be to convey a sense of clarity, and it is noted that the various groups of turbines will bring a degree of discord into the visual

landscape. If constructed, it must be hoped that the development would become a visual signpost, and be absorbed into the positive perception of the locality.

- The visual impact of the development is high locally, and it is evident that there are many receptors living and working locally. It is anticipated that the impact will remain high.

The conclusions of the VIA Addendum report (2017) which assessed the potential visual impacts associated with the proposed amendments to the project description are summarized below:

- The award of Environmental Authorisation in 2011 to the scheme referred to as *Authorised Project* accepts the principle that a WEF of 37 WTG, 124m high may be established on this site. The change of land use and landscape character is accepted. The landform setting is of a scale to absorb this development.
- *Proposed Amended Option*, if 25 turbines would be constructed, offers 30% fewer turbines, 77% greater in scale, along with similar infrastructure elements as before. If 12 turbines would be constructed, the layout would offer 66% fewer turbines, 77% greater in scale.
- *Proposed Amended Option* provides turbines that would be 77% more dominant in the landscape, because they have greater mass and would be easier to see.
- *Proposed Amended Option* offers a scheme where visual clutter has been reduced and the visual scale increased.
- *Proposed Amended Option* provides a WEF that could become an effective gateway and landmark, and would appear more high tech in appearance which may be eventually seen elsewhere in South Africa, in appropriate locations. The WEF would have a high significance rating, (which is a combination of intensity, extent and duration ratings), and the degree of that high rating would be somewhat greater than for the previously authorised project due to the increased height and rotor length.
- The height of the hills and the elevation of the roads and adjacent settlements all vary considerably but an average general height difference is taken to be a nominal 250m, (there are exceptions), between the average ground levels of receptors and the average ground levels of the turbines. Turbines of 220m high, could appear from many views to be almost as high as the hills and could appear to dominate and to conflict with their scale. For that reason, (potential visual impact and aesthetics), it is advised that a scheme with fewer turbines is preferred; the scheme layout of 25 turbines would have a lower impact than the Authorised Project layout of 37 turbines.
- *Proposed Amended Option* with 25 turbines is acceptable from a visual standpoint.
- *Proposed Amended Option* could proceed if mitigation measures would be undertaken (as per the visual impact mitigation measures for the authorised project) and an environmental management plan instituted.

Response:

It has to be noted that the proposed Namaqualand Copper Mining Cultural Landscape is being nominated as an **industrial cultural landscape**. It may be argued strongly that the intervention of the turbines will purely be another layer in this landscape and should therefore be allowed. This could be motivated through proper interpretive measures that could inform the visitor of the chronological layering of the industrial cultural landscape, from that of the 17th, 18th and 19th centuries through the 21st. Its very foreignness as an industrial element **not** related to the mining industry could be mitigated in this way.

Having said this, therefore, very strict mitigation measures would still need to be proposed if the development is to proceed, and the VIA recommends that the preferred layout can be proceeded with if mitigation measures are followed.

The full Visual Impact Assessment report (2010), and VIA Addendum Report (2017) by Karen Hansen is annexed hereto.

Specific heritage impacts are summarized in the Impact Summary Table below.

E3. IMPACT SUMMARY TABLE DURING CONSTRUCTION & OPERATIONAL PHASE

<u>Option</u>	<u>Nature of impact</u>	<u>Extent of impact</u>	<u>Duration of impact</u>	<u>Intensity</u>	<u>Probability of occurrence</u>	<u>Status of the impact</u>	<u>Degree of confidence</u>	<u>Level of significance</u>	<u>Mitigation measure</u>	<u>Significance after mitigation</u>
CONSTRUCTION PHASE										
PROPOSED AMENDED OPTION	Heavy construction equipment (including 120+m-high cranes) will be present on site	Site and environs	Short-term	High	Highly probable	Negative	High	Medium	Attempt to position equipment away from visible ridgelines where possible. Duration will be short, though	Low
	Heritage resources in old towns may be impacted upon by increased population (temporary construction workers)	Region	Short-term	Medium	Highly probable	Neutral	High	Medium	Increase awareness of heritage resources and their value; use the opportunity to promote the resources of the region during this period	Low
	Abnormal load trucks and other equipment will have an impact on the old mining infrastructure, including the road network.	Region	Short-term	Medium	Probable	Negative	High	Low	Rehabilitation/Road repairs when and where required, using proper heritage guidelines (monitoring by local heritage body may be applicable)	Low
OPERATIONAL PHASE										
PROPOSED AMENDED OPTION	There will be 25, 140m high wind turbines on the mountain top in visually prominent positions	Site and immediate surroundings	Long-term	Low (less than previously approved alternative)	Probable	Neutral	High	Low	Apply mitigation measures as proposed in VIA; entrench these in EMP	Low

Note that, as the Proposed Amended Option is an improvement in heritage terms and impacts are subsequently lower, it was not considered necessary to include the original Impact Summary Table as contained in the Phase 1 HIA (2010) here.

E4: CUMULATIVE IMPACT STATEMENT

As with the approved alternative, cumulative impacts relate to the permanent presence of the turbines within the receiving landscape, their long-term visual impact and their addition as a contemporary layer to the industrial cultural landscape. These cumulative impacts have the potential to become neutral, even positive elements within the landscape provided that the proposed mitigation measures are applied and entrenched in the Environmental Management Plan.

Moreover, the motivation that they be positively interpreted as a contemporary 21st-century layer to the cultural landscape and their potential to be read as a landmark within the “gateway to South Africa” setting would serve to accentuate this positive intrinsic value.

SECTION F: PUBLIC PARTICIPATION AND STATUTORY PROCESS

This Addendum to the Phase 1 HIA will form part of the Application for Amendment of the Environmental Authorisation that is to be circulated for a 30 day public comment period and is therefore subject to scrutiny in that regard.

It will also be submitted directly to Heritage Northern Cape.

SECTION G: CONCLUSIONS AND RECOMMENDATIONS

There is no change in the significance of impacts when comparing the current proposed amended alternative 1 and the approved project (Alternative 1). Consequently, the Phase 1 HIA and this addendum finds that there is sufficient information to conclude that the proposed Wind Energy Facility Amended Alternative 1 (also referred to as the Proposed Amended Option), as described, can be allowed to proceed without any further study needing to be undertaken, but subject to the mitigation measures and other recommendations contained in this report and its ancillary specialist reports, namely the Visual Impact Assessment (VIA) by Karen Hansen and the Archaeological Impact Assessment (AIA) by Jonathan Kaplan (as amended) – all as underpinned by its heritage indicators.

Consequently, this report concludes:

That Heritage Northern Cape (HNC) can endorse this Phase I report and this addendum as having satisfied the requirements of the National Heritage Resources Act (NHRA): Section 38(3)(a)(b)(c)(d)(e) and (g);

That NHRA Section 38 (3)(f) is not applicable, as the Proposed Amended Option is assessed and mitigated;

That in terms of section 38(8), HNC endorses the conclusion in this report that no further study is required and that the proposed development be allowed to proceed subject to the following conditions:

- That the development remains substantially in accordance with the Amended Alternative 1 (i.e. the Proposed Amended Option) as addressed and mitigated in this report;
- That the recommendations entrenched in the SAHRA APM RoD, as summarized in the AIA, are implemented.
- That the proposed development serves to provide a mechanism for the local communities to conduct a heritage program with the aim to re-interpret existing narrative while redressing gaps in the overall historical narrative in order to promote the celebration of a complete, holistic historical interpretation of the landscape that would be acceptable to all affected communities, especially in light of the impending WHS nomination, in terms of section 38(3)(d).
- That the mitigation measures proposed in the Visual Impact Assessment be entrenched in the environmental management plan (EMP) for the development in terms of the EIA regulations; and
- That failure to observe any of the abovementioned conditions will automatically result in HNC's endorsement for these development proposals being withdrawn, thereby requiring a new submission to HNC in terms of NHRA Section 38(8)

SOURCES

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3. M.J. Price, **Leliefontein: Structure and Decline of a Coloured Mission Community**
4. Attwell. M.J.: **Leliefontein Namaqualand: Transhumance and the architecture of the Matjieshuis**, Quarterly Bulletin of the National Library of South Africa Vol 63 No 3 and 4 December 2009.
5. Smalberger, J.M. **A History of Copper Mining in South Africa**, Struik Cape Town 1975.
6. UNESCO (2005) **Operational Guidelines for the Implementation of the World Heritage Convention UNESCO World Heritage Centre**. Paris.
7. **National Heritage Resources Act, Act 25 of 1999**

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