

8 August 2022

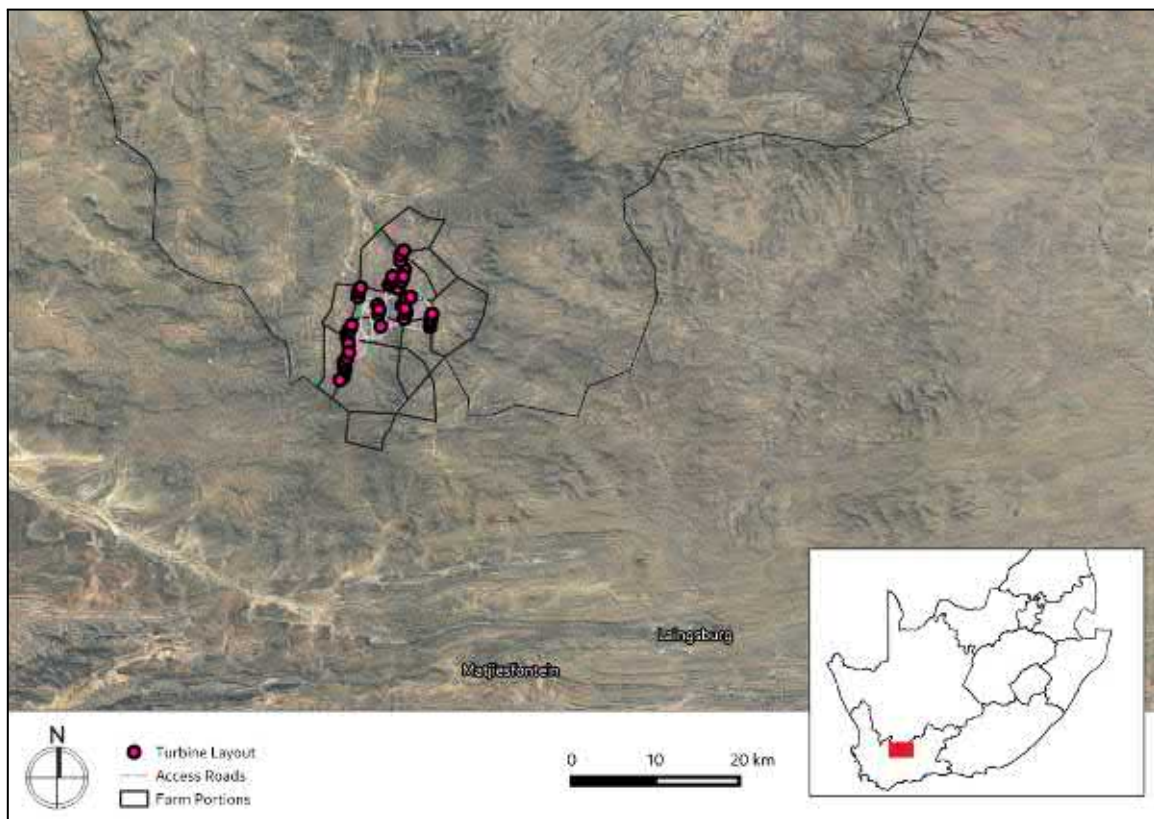
Ashlea Strong  
WSP

Dear Ms Strong,

**RE: KARREEBOSCH WEF PART 2 AMENDMENT, FINAL LAYOUT & EMPR APPROVAL**

**PROJECT LOCATION**

Karreebosch Wind Farm RF (Pty) Ltd proposes the establishment of a wind energy facility on a site located approximately 30km north of Matjiesfontein, and approximately 40 km south of Sutherland. The site falls largely within the Karoo Hoogland Local Municipality of the Northern Cape Province. The authorised Karreebosch Wind Energy Facility (WEF) falls within the Northern Cape and as such, falls under the jurisdiction of the South African Heritage Resources Agency (SAHRA) which manages heritage resources in the Northern Cape.



**Figure 1: Satellite image indicating the proposed location of the Karreebosch WEF development**



## PROJECT HISTORY

The original Environmental Impact Assessment (EIA) was undertaken in September of 2015 for up to 71 wind turbines with a hub height of up to 100m and a rotor diameter of up to 140m including associated infrastructure. Environmental authorisation (EA) for 65 turbines was granted on the 29th of January 2016 (EA Ref: 14/12/16/3/3/2/807). The project underwent subsequent amendments (EA Ref: 14/12/16/3/3/2/807/AM1, 14/12/16/3/3/2/807/AM2, 14/12/16/3/3/2/807/AM3) which included increases in the hub height (up to 125m), rotor diameter (up to 160m), blade length (up to 80m), and minor amendments to the wording of certain conditions of the authorisation, as well as an extension of the validity of the EA to 2026. The associated 132V overhead powerline (OHPL) and onsite 33/132kV substation is currently subject to a separate EA application process.

The Karreebosch WEF was previously referred to as Phase 2 of the Roggeveld WEF. SAHRA has made numerous comments on both the Roggeveld WEF HIA (Hart and Webley, 2013) and the Karreebosch WEF HIA (Hart and Kendrick, 2014) with the last comment issued on 26 September 2018 as part of the 2018 Part 2 EA Amendment process (14/12/16/3/3/2/807/AM2) for the Karreebosch WEF. As such, section 38(8) of the NHRA has been complied with.

The original EA (EA ref: 14/12/16/3/3/2/807) contains various requirements relating to the mitigation of impacts to Historical, Cultural and Palaeontological sites (refer to Table 1 below). SAHRA, during the above mentioned EIA/Amendment processes of the project, also stated that the Final Layout of the proposed development be subject to a walkdown by an archaeologist (refer to Table 1 below). This walkdown was completed by CTS Heritage between 24 and 28 July 2021. Subsequent to the completed walkdown assessment, the layout was further amended in July 2022.

EA was granted for the Karreebosch WEF on 29 January 2016. In the EA, various requirements were stipulated in terms of impacts to Historical, Cultural and Palaeontological sites. In their response, SAHRA, as well as the EA, required that the Final Layout of the proposed development be subject to a walkdown by an archaeologist. This walkdown was completed by CTS Heritage between 9 and 14 August 2021. Subsequent to the completed walkdown assessment, the layout was amended in July 2022.



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Table 1: EA requirements for Heritage (EA Ref: 14/12/16/3/3/2/807)

<b>No.</b>	<b>EA Requirements</b>	<b>Implementation</b>
109	If concentration of archaeological heritage material, fossils and human remains are uncovered during construction, all work must cease immediately and be reported to SAHRA and HWC so that systematic and professional investigation/excavation can be undertaken	Operational
110	Construction managers/foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may be encountered and the procedures to follow when they find sites	Operational
111	All buffers and no-go areas stipulated in this report must be adhered to for both the facilities and all roads and powerlines	Addressed in the Walkthrough Report (July 2022)
112	Should any human remains be uncovered during development they must be immediately protected in situ and reported to the heritage authorities or to an archaeologist. The remains will need to be exhumed at the cost of the developer.	Operational
113	All construction and maintenance crew and vehicles (except small vehicles which may use existing farm tracks) should be kept out of the buffer zones.	During construction

## PROPOSED AMENDMENTS

The authorised Karreebosch WEF and associated infrastructure is currently undergoing a Part 2 EA Amendment Process for further amendment requests as tabulated in Table 2 below. Condition 16 of the original EA (EA Ref: 14/12/16/3/3/2/807) requires that the final development layout plan be made available for public comment and thereafter submitted to the Department of Forestry, Fisheries and Environment (DFFE) for approval. Condition 18 of the original EA (Ref: 14/12/16/3/3/2/807) states that the Environmental Management Programme (EMPr) submitted as part of the FEIAR (2015) was not approved and must be amended to include the final layout which has undergone micro siting and walkdowns by relevant specialists, be made available for public comment and thereafter re-submitted to the DFFE for final approval. The final layout and EMPr approval process will run concurrently with the Part 2 EA Amendment process.

The proposed amendments are detailed in Table 2 below. The following alternatives, as part of the amendments, have been proposed for consideration:



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- Substation Options 1 and 2, along with the associated 33kV Overhead Powerline Lines (OHPL) and 4x4 access road alignment (refer to **Figure 2** below).
- The southern 33kV and access road alignment are associated with Substation Option 1, whereas the northern 33kV and access road alignment are associated with Substation Option 2.
- Four alternative construction camp locations have been considered (refer to **Figure 2** below). Construction Camp 1 Alternative is preferred by the developer - nearest to the R354. A batching plant will be located within the construction camp.
- Two access roads off the R354 to the eastern turbine ridge have been considered. The access roads along the ridge lines avoid previous no-go's as much as practically possible, where there are route alternatives, specialists should state which is preferred and where any minor amendments are needed.

**Table 2: Project Amendments**

Project Details	EA first issue 2016 (14/12/16/3/3/2/807)	2022 Amendments needed
Properties	Farm Appelsfontein 201	Farm Roode Wal No. 187
	Remainder of Ekkraal 199	Farm Appels Fontein No. 201
	Portion 1 of Ekkraal 199	Portion 1 of Farm Ek Kraal No. 199
	Portion 2 of Ekkraal 199	Portion 2 (Nuwe Kraal) of Farm Ek Kraal No. 199
	Remainder of Karreebosch 200	Portion 1 of Farm Klipbanks Fontein No. 198
	Remainder of Karreekloof 196	Remainder of Farm Klipbanks Fontein No. 198
	Remainder of Klipbanksfontein 198	Remainder of Farm Wilgebosch Rivier No. 188
	Portion 1 of Klipbanksfontein 198	Farm Rietfontein No. 197
	Farm Kranskraal 189	Remainder of Farm Kareebosch No. 200
	Farm Oude Huis 195	Portion 1 of Farm Karreebosch No. 200
	Farm Rietfontein 197	Farm Oude Huis No. 195
	Farm Roode Wal 187	Portion 1 of Farm Karree Kloof No. 196
	Portion 2 of Standvastigheid 210	Remainder of Farm Brandvalley No. 75
	Remainder of Wilgebosch Rivier 188	



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	Farm Aprils Kraal 105	
	Remainder of Bon Espirange 73	
	Portion 1 of Bon Espirange 73	
<b>EA Approved Infrastructure</b>	<b>EA first issue 2016 (14/12/16/3/3/2/807)</b>	<b>2022 Amendment</b>
<b>Page 1</b>	Karreebosch Wind Farm (Pty) Ltd	Karreebosch Wind Farm RF (Pty) Ltd
<b>Technical details of the proposed facility</b>		
<b>Component</b>	<b>EA first issue 2016 (14/12/16/3/3/2/807)</b>	<b>2022 Amendment</b>
number of turbines	Up to 65 turbines (generation capacity of up to 140MW)	Up to 40 turbines (installed capacity is 149.9 MW and export capacity will be 140MW) with a foundation of 30m in diameter and 5m in depth
Hub Height	100m	up to 140m
Blade Length	~70m	~85m
Rotor Diameter	140m	up to 170m
Area occupied by transformer stations/ substation	>> One 33/132kV Substation 100m x 200m >>Extension of the existing 400kV substation at Komsberg >>Transformer art each turbine: total area <1500m <sup>2</sup> (2 m <sup>2</sup> per turbine up to 10m <sup>2</sup> at some locations)	One 33/132kV substation 150m x 200m (3ha)  Extension of the existing 400kV substation at Komsberg  >>Transformer at each turbine: 6m x 3m= 720m <sup>2</sup> total area <0.4ha (up to 10mX10m at some locations)
Capacity of on-site substation	132kV	33/132kV
Areas occupied by construction camp	300 x 300m = 90 000m <sup>2</sup>	Areas occupied by construction camp and laydown areas up to 14ha
Area occupied by laydown areas	Operation: (70 x 50) x 71 =248 500m <sup>2</sup>	(included above)
Areas occupied by buildings	~10 000m <sup>2</sup>	~10 000m <sup>2</sup> and will be located within the construction camp for use during the operational phase
Length of (new) internal access roads	~40 km	~76 km of new internal access roads and up to ~13 km of 4x4 access tracks. ~30km of existing access roads which are 4m wide will be widened by up to 9m
Width of internal roads	Up to 12m	Internal Access roads up to 12m wide (turns will have a radius of up to 55m) with additional yet associated servitudes/ reserve for above/underground cabling installation and maintenance where

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		needed. 200m wide road corridor along the internal access roads for micro-siting during construction. Internal 4x4 tracks associated with the 33kV and 132Kv OHPLs will be up to 4m wide and substation access roads of up to 9m.
height of fencing	Up to 3m	Up to 4m
Type of Fencing	Steel or wire mesh	Steel or wire mesh

## METHODOLOGY

In determining the possible impacts to heritage resources that may result from the proposed amendments, the HIA's completed for the Roggeveld WEF (Hart and Webley, 2013) and the Karreebosch WEF (Kendrick and Hart, 2015) were consulted. Additionally, the findings made in the walkthrough completed in July 2021 were also considered.

The HIA for the Karreebosch WEF (Kendrick and Hart, 2015) notes that *"the study area is relatively austere in terms of pre-colonial heritage, however valley bottoms contain evidence of early trekboer cultural landscapes - ruins, graves and occasional middens. These consist of collections of ruined stone and mud buildings, threshing floors and kraals located exclusively in the valley areas between the high longitudinal ridges that characterise the study area."* These findings reiterate the earlier findings from the Roggeveld WEF HIA (Hart and Webley, 2013).

Very few archaeological resources were identified during the archaeological field assessment completed for the proposed Karreebosch WEF (Kendrick and Hart, 2015). The resources that were identified were all single artefact occurrences or low density artefact scatters, none of which were determined to have any scientific cultural value. Where archaeological material was found, lithics consisted of local quartzites used to manufacture Middle and Later Stone Age flakes as well as cherts that were sourced in the more general region such as the Tanqua and Ceres Karoo by people in the Later Stone Age.

All of the heritage resources identified by Hart and Webley (2013) and Kendrick and Hart (2015) as well as the findings from the July 2021 walkthrough have been mapped relative to the final proposed layout for the Karreebosch WEF (July 2022). The previously identified heritage resources located in close proximity to the development area have been mapped in **Figure 2**.



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### **SPECIALIST COMMENT**

This letter is therefore drafted to confirm that the amended layout dated July 2022 for the Karreebosch WEF does not impact any known heritage resources and adheres to the recommendations included in the CTS Heritage Walkdown report for this development (July 2022) which concludes that *“The final layout for the Karreebosch WEF avoids impact to all known significant heritage resources present within the development area. The walkdown of the final layout revealed no new significant heritage resources that are likely to be impacted. It is therefore recommended that this report is accepted as satisfying the following conditions of the Environmental Authorisation issued for the Karreebosch West WEF project:*

- *The final layout should be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.*
- *All buffers and no-go areas stipulated in this (HIA) report must be adhered to for both the facilities and all roads and power lines.”*

### **CONCLUSION**

There is no objection to the proposed amendments in terms of impacts to heritage resources. No deviations are required and the impacts to heritage resources are reduced compared to the impacts anticipated in the HIAs completed for the Roggeveld WEF (Hart and Webley, 2013) and the Karreebosch WEF (Kendrick and Hart, 2015) due to the reduced number of turbines. There are no preferred alternatives for the proposed access roads, construction camps or substations from a heritage perspective.

Please feel free to contact me should you have any further questions or concerns in this regard.

**Yours sincerely**

**Jenna Lavin**

**Archaeologist**

**Heritage Assessment Practitioner**



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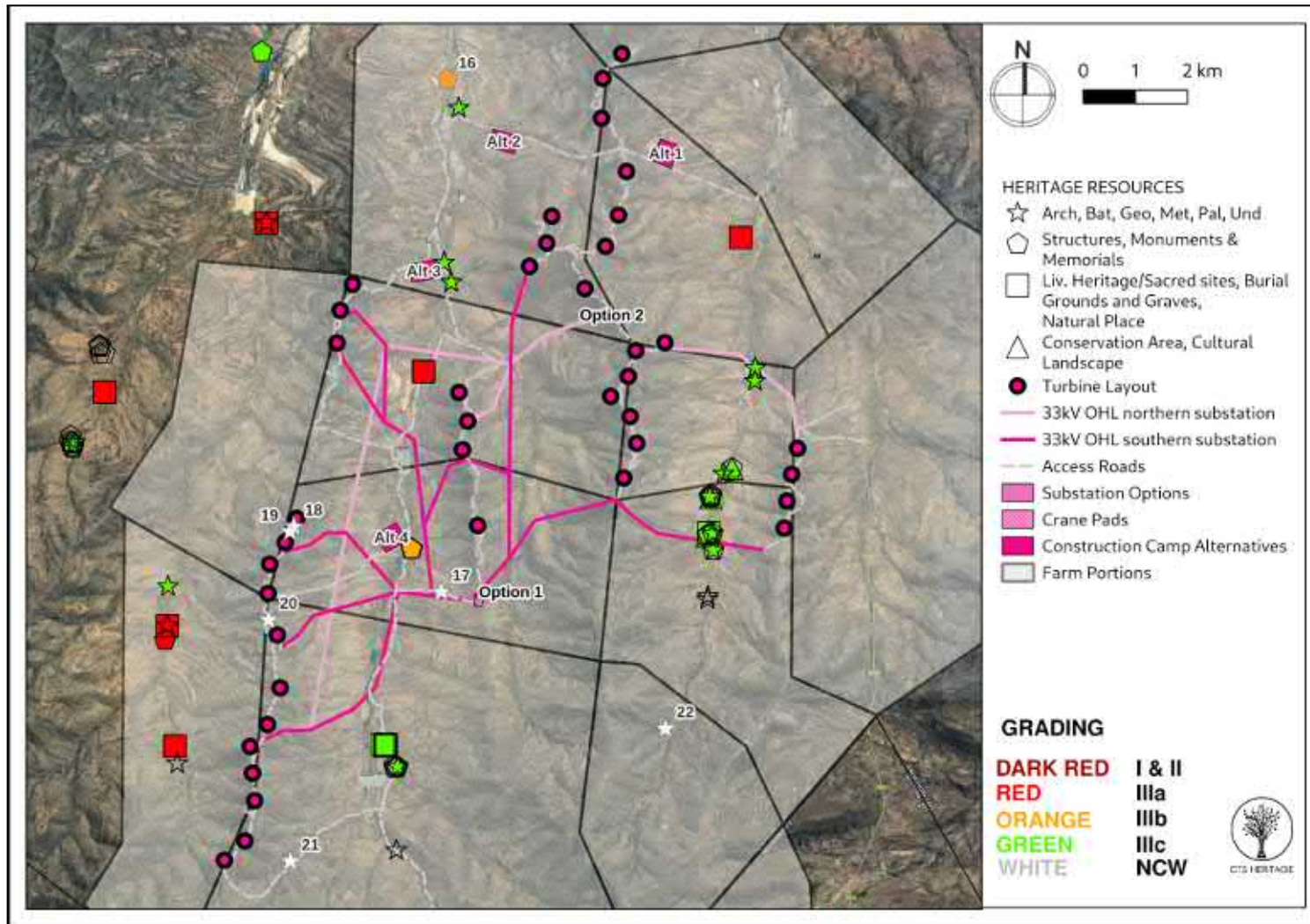


Figure 2: Amended layout mapped against all known heritage resources in close proximity to the development area

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