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Attention: Ashlea Strong

Karreebosch Wind Energy Facility – PART 2 – LAYOUT AMENDMENT APPLICATION:

Karreebosch Wind Farm (RF) Ltd (the Applicant) received Environmental Authorisation (EA) for the proposed Karreebosch Wind Energy Facility (KB-WEF) in 2016. 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. EA for 65 turbines was granted on 29 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 contained in the EA.

The associated 132V overhead powerline (OHPL) and onsite 33/132kV substation previously included in the original EA are now the subject of a separate EA application process, and is running in parallel with this Part 2 amendment (including a final layout and EMPr approval process). The Competent Authority is the Department of Forestry, Fisheries and the Environment (DFFE).

The authorised KB-WEF and associated infrastructure is currently undergoing a Part 2 EA Amendment Process, final layout and EMPr approval with the proposed amendments tabulated in Table 1 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 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 Final EIA Report (2015) was not approved and must be amended to include the final layout which has undergone micro siting and walkdowns by relevant specialists including terrestrial ecology (the subject to this document), be made available for public comment and thereafter submitted to the DFFE for final approval. The final layout and EMPr approval process will run concurrently with the Part 2 EA Amendment process.

Table 1: Part 2 Amendment – authorised infrastructure versus proposed amendments

ASPECT TO BE AMENDED	AUTHORISED	PROPOSED AMENDMENT
Number of Turbines	Up to 65 with a foundation of 25m in diameter and 4m in depth	Up to 40 turbines with a foundation of 30m in diameter and 5m in depth
Turbine generating capacity	Up to 5.5 MW	up to 7.5 MW in capacity each
Turbine Hub Height	A range up to and including 125m	All turbines up to 140m
Rotor Diameter	A range up to and including 160m	All turbines up to 170m
Blade length	~80m	~85m
	Two 33/132kV Substation 100m x 200m	One 33/132kV substation 150m x 200m (3ha)

Area occupied by transformer stations/ substation	Extension of the existing 400kV substation at Komsberg	Extension of the existing 400kV substation at Komsberg
	Transformer at each turbine: total area <1500m ² (2 m ² per turbine up to 10m ² at some locations)	Transformer at each turbine: 6m x 3m= 720m ² 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 ²	Areas occupied by construction camp and laydown areas up to 14ha. Crane pads and turbine footprints up to 41ha.
Area occupied by laydown areas	Operation: (70 x 50) x 71 =248 500m ²	
Areas occupied by buildings	~10 000m ²	~10 000m ² and will be located within the construction camp for use during the operational phase
Length of (new) internal access roads	~40 km	~77 km of new internal access roads and up to ~14 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 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

Trusted Partners were appointed to prepare an ecological walkdown report for the proposed KB-WEF in fulfilment of specific conditions contained in the EA Ref. No. 14/12/16/3/3/2/807 dated 29 January 2016 and subsequent amendments issued by Department of Environmental Affairs (DEA now known as DFFE) for the project. The walkdown assessment was undertaken by Dr Malcolm Logie (*Pr. Sci. Nat. Environmental Scientist & Pr. Sci. Nat. Ecologist*) and Mr Jamie Pote (*Pr. Sci. Nat. Ecologist*) during the period August 30, 2021, and September 11, 2021. The site walkdown was undertaken shortly after a particularly rainy period, which was evident in the notable flowering proliferation, which progressed throughout the site visit period.

A further confirmatory site assessment to confirm the revised WEF Layout (Annexure A herein) was done on July 19 & 20, 2022 to assess an updated layout plan (**Trusted Partners** Report: TP220511-01B: *Biodiversity & Terrestrial Ecology assessment Walk Down Report – Karreebosch Wind Energy Project, 2022/08/15*).

While the seasonal response of local flora does vary throughout the year, with certain species flowering during different seasons, the time during which the walkdown was undertaken is deemed to have been at a time that would most effectively identify the most species, in particular geophytes and Aizoaceae.

Data sources that were utilised for the walkdown and report include the following:

- National (DFFE) Web Based Screening Tool – to generate the sites potential environmental sensitivity.
- National Vegetation Map 2018 (NVM, 2018), Mucina & Rutherford (2006) and National Biodiversity Assessment (NBA, 2019) – description of vegetation types, species (including endemic) and vegetation unit conservation status.
- National and Regional Legislation including Provincial Nature Conservation Ordinance (P.N.C.O). NEM:BA Threatened or Protected Species (ToPS).
- Botanical Database of Southern Africa (BODATSA) and New Plants of Southern Africa (POSA) – lists of plant species and potential species of concern found in the general area (SANBI.)
- International Union for Conservation of Nature (IUCN) - Red List of Threatened Species.
- Animal Demography Unit Virtual Museum (VM) – potential faunal species.

- Global Biodiversity Information Facility (GBIF) – potential faunal species.
- Southern African Bird Atlas Project 2 (SABAP2) – for bird species records.
- National Red Books and Lists - mammals, reptiles, frogs, dragonflies & butterflies.
- National Freshwater Ecosystem Priority Areas assessment (NFEPA, 2011) - important catchments.
- National Protected Areas Expansion Strategy (NPAES, 2010 & 2018) and South Africa Protected Area database (2020) – protected area information.
- Critical Biodiversity Areas of the Northern Cape (2016) – Bioregional Plan.
- Namakwa District Biodiversity Sector Plan (2008) – Bioregional Plan.
- Succulent Karoo Ecosystem Planning (SKEP, 2002).
- SANBI BGIS – All other biodiversity GIS datasets.
- Aerial Imagery – Google Earth, Esri, Chief Surveyor General (<http://csg.dla.gov.za>).
- Cadastral and other topographical country data - Chief Surveyor General (<http://csg.dla.gov.za>).
- Original Ecological conducted for the project, excluding bats and avifauna by Todd (2011, 2014, 2016, 2019); and other adjacent Critical Habitat and Biodiversity Assessments by Trusted Partners (2020).
- Other sources include peer-reviewed journals, regional and local assessments and studies in the general location of the project and its area of influence, landscape prioritization schemes (Key Biodiversity Areas), systematic conservation planning assessments and plans (as above), and any pertinent masters and doctoral theses, among others

Subsequently, **Trusted Partners** have been requested to provide further opinion on the potential impact to biodiversity and terrestrial ecological process from proposed changes to the layout of the KB-WEF. A further site assessment was undertaken by **Trusted Partners** on **July 19 & 20, 2022** to verify ecological process and any additional impact that may be realised under the KB-WEF revised layout plan.

The revised KB-WEF Layout plan is proved in ANNEXURE A (attached herein).

SPECIALIST STATEMENT:

Change to WTG Technology and Capacity

In terms of the proposed technology changes noted in Table 1 above, these changes will not have any additional impact on terrestrial biodiversity and ecological functionality than that previously identified in the original specialist reports and those identified by other specialists. A reduction in WTG number and the concomitant lesser ancillary infrastructure required, will lessen the overall impact of the KB-WEF on terrestrial biodiversity and ecological functioning.

Change to Supporting Road Infrastructure

The proposed alignment of internal KB-WEF roads and substitutions have been assessed within a 200 metre corridor/buffer. This has been done to facilitate necessary vertical and horizontal alignment required to facilitate safe vehicle movement on the internal roads and placement of the substations. Prior to construction of any road and substations, the final route and sites must be surveyed and demarcated with survey pegs, and a plant search and rescue (S&R) exercise implemented in accordance with necessary permits from the provincial authorities. Throughout the road network, attention should be given to effective management of stormwater as detailed in the Stormwater Management Plan, so as to prevent erosion.

A detailed list of SCC has been identified in **Trusted Partners** Report: TP220511-01B: *Biodiversity & Terrestrial Ecology assessment Walk Down Report – Karreebosch Wind Energy Project, 2022/08/15*, which should be the focus for S&R efforts prior to construction commencing.

Development of internal roads and substations within the 200 metre corridors/buffers will not have any additional impact to the terrestrial biodiversity and ecological functionality that was not previously assessed, or mitigation measures identified.

Changes to Construction Camp & Laydown Area Options

Four laydown sites have been assessed (Table 2 and Annexure A)

Table 2: Laydown Area Options.

LAYDOWN		ASSESSMENT	PREFERRED STATUS
Alternative 2	Lowest in Terrestrial Ecology Sensitivity		1 st (Preferred Option)

Alternative 1	High in Terrestrial Ecology Sensitivity High population density of <i>Sensitive Species 142</i> Two significant natural storm water courses cross the area	4th
Alternative 3	Low in Terrestrial Ecology Sensitivity Two small natural water course storm water courses cross the area	2 nd
Alternative 4	High population density of <i>Sensitive Species 142</i>	3 rd

Laydown Area Alternative 2 is the preferred option as development here will result in the lowest impact to terrestrial biodiversity and ecological functionality. This site also has few, if any, *Sensitive Species 142*.

Substation Option 1 is the preferred options as described in **Trusted Partners** Report: TP220511-01A: *Karreebosch Wind Energy Facility: Biodiversity & Terrestrial Ecology Assessment – Karreebosch 132kV Powerline and Substation, 2022/08/15*; and hence the 33kV Collector System associated with Substation Option 1 is the preferred option.

With particular reference to *Sensitive Species 142* situated within the alignment of any 33kV OHP as described in **Trusted Partners** Report: TP220511-01B: *Biodiversity & Terrestrial Ecology Assessment Walk Down Report – Karreebosch Wind Energy Project, 2022/08/15*, and inasmuch that *Sensitive Species 142* is a subterranean geophyte:

- The 4x4 tracks supporting the 33kV OHPs must be developed to follow a 'path of least resistance' and without the use of bulldozers or other earth moving equipment, as much as practically possible.
- Vegetation and any *Sensitive Species 142* should not be removed/relocated to create the 4x4 track but rather left *in situ* (i.e., create the track by simply driving repeatedly over the same route). If any *Sensitive Species 142* clumps are within the 4x4 track route it would be recommended to divert slightly to avoid if possible. This will achieve the following:
 - Improved survival of *Sensitive Species 142* (and other geophytic plants) by leaving them *in situ* rather than relocating them;
 - Retention of topsoil and the seed bank *in situ* improves rehabilitation/regeneration of vegetation; and
 - Keeping a natural/endemic vegetative embedded into the soil decreases local erosion and topsoil loss from high wind.
- Where bulldozers or other earth moving equipment are used, then permits must be obtained for prior rescue and relocation of *Sensitive Species 142* and any other protected species.
- All protected species within any pylon footprint must be rescued and relocated.

Concluding remarks

It is therefore recommended that in terms of terrestrial biodiversity and ecological functionality, the amendment to change the WTG technology and infrastructure layout be approved.

Yours sincerely



Malcolm Logie

PARTNER

MSc (Botany); PhD (Biotechnology)

Pr.Sci.Nat. - Environmental Scientist (N# 400102/95)

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- ANNEXURE A: REVISED KB-WEF LAYOUT (2022/07/08)
- ANNEXURE B: ABRIDGED CURRICULUM VITAE
- ANNEXURE C: STATEMENT OF INDEPENDENCE

ANNEXURE A: KB-WEF – PART 2: REVISED LAYOUT Submitted for Final Approval

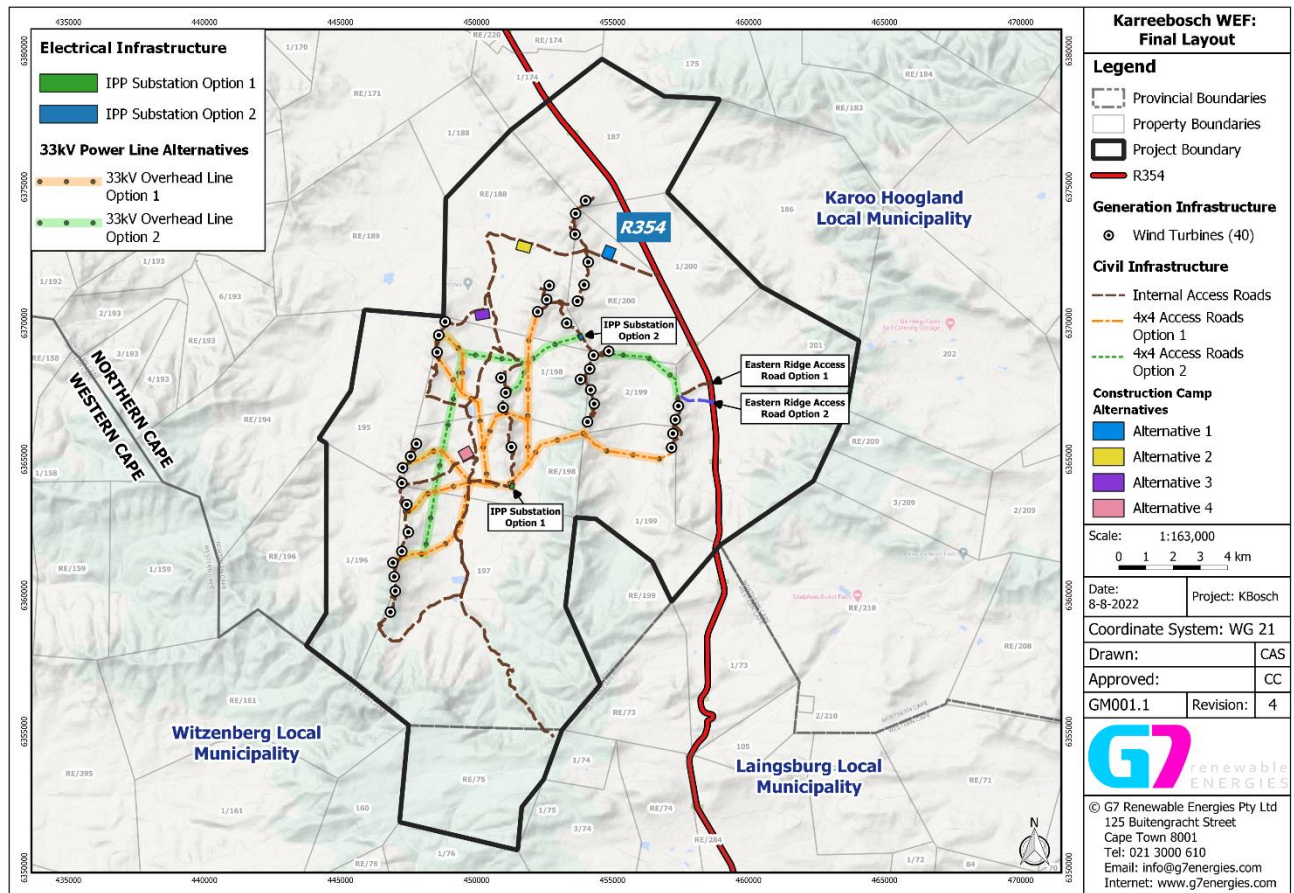


Figure 1: Part 2 Amendment - KB WEF Site Final Layout Plan (2022).

ANNEXURE B: ABRIDGED CURRICULUM VITAE

MALCOLME LOGIE

Malcolme Logie is a leading strategic thinking and performance-focused Environmental and Social Management Advisor with 30 years of experience in consulting across Africa and Eastern Europe. As a proven Advisor, Malcolme has guided public listed companies on their Environmental & Social Risk Management Strategies, Impacts and Liabilities.

He is a motivational leader known for clearly defining mission and goals, aligning people and resources, and consistently delivering results that exceed expectations.

He is an expert in:

- Environmental & Social Risk Management (ESRM);
- Environmental & Social Governance (ESG);
- Climate Change Risk Assessment
- Climate Change Transitional Risk Assessment (Equator Principles)
- The Equator Principles;
- World Bank - Environmental & Social Safeguards;
- International Finance Corporation (IFC) - Environmental & Social Performance Standards;
- European Investment Bank (EIB) - Environmental & Social Standards;
- European Bank for Reconstruction and Development (EBRD) - Environmental & Social Performance Requirements;
- Development Bank of Southern Africa (DBSA) - Environmental & Social Safeguards;
- Environmental & Social Due Diligence (ESDD);
- Environmental & Social Impact Assessment (ESIA/EIA);
- EHS Compliance and Performance Assurance;
- ISO 14001/ISO 45001 Management Systems; and
- Technical Environmental Advisory.

As a recognised authority in Environmental & Social Risk Management he has led multi-disciplinary teams on projects in South Africa, Angola, Botswana, Cote de Ivoire, Czech Republic, Democratic Republic of Congo, Egypt, Ethiopia, Ghana, Hungary, Kenya, Madagascar, Mauritania, Mozambique, Namibia, Nigeria, Pakistan, Poland, Romania, Slovak Republic, South Sudan, Tanzania, Uganda, and Zambia.

Malcolme recently led a team of International Experts in preparing a Climate Change Transitional Risk Assessment Report (Equator Principles) for the proposed East Africa Crude Oil Pipeline (EACOP). The report was requested by the various Development Financial Institutions that intend funding the EACOP project.

Malcolme has recently completed two Climate Change Risk Assessment Report for utility scale renewable energy project in South Africa; Wind, Solar, Battery Storage (BESS) and supporting Internal Combustion Engines (ICE).

In 2018/20 Malcolme led a Team of International Experts that developed the Environmental & Social Impact Assessment Guidelines for the Oil & Gas Sector in Kenya – encompassing all Onshore and Offshore Environmental, Social, Community, Health & Safety Risks in the Upstream, Midstream and Downstream processes. The project was funded by the World Bank.

In 2020/21, Malcolme was part of an International team of Experts that developed the Environmental and Social Tariff for the Pakistan Energy Sector: Wind, Solar, Run-of-River Hydro, Large Hydro, Biogas, and Fossil Fuel (Coal, HFO, LNG). The project was funded by the IFC.

Malcolme was a specialist Environmental & Social Risk Management Advisor to the IFC (Johannesburg) during the period November 2017-July 2021, where he has provided expert advice on Environmental & Social Risk Management and Management Systems the Consulting and Financial Sectors in South Africa, Ghana and Nigeria. The ESRM Programme aims to increase the uptake of Environmental and Social standards by financial intuitions and loan clients in the sub-Saharan region.

In 2017, Malcolme was engaged by the World Bank to assist the Land Bank of Southern Africa (Agricultural Bank) in reviewing the banks Environmental and Social Management System, to develop and present training on the ESMS to the front-line agricultural officers and client liaison personnel.

Malcolme has also lectured at the Rhodes University Business School on Industrial Environmental Management and EHSS Management Systems. Malcolme has lectured at the University of Cape Town on Environmental & Social Management Systems and Auditing Processes.

Malcolme was a member on the South African committee SABS:TC207 which formed part of the global committee that wrote the original ISO 14001:1996 Environmental Management Systems specifications standard. Malcolme was also responsible for the development of the SAATCA requirements for the registration of Environmental Auditors and was elected (under a Grandfather clause) as the first Environmental Verification Auditor in South Africa. Malcolme has more than 17 200 hours of EHS Auditing experience and has led integrated EHSQ certification level audits.

During 2006-2010 Malcolme served on the Education Review Panel for the South African Council for Natural Scientific Professions (SACNASP) where his role was to review the suitability of education and experience of individuals applying for registration as Professional Natural Scientists. Malcolme served on the Application Review Panel at SACNASP for 2016-2017.

Education

- PhD (Biotechnology), Rhodes University, 1995
- MSc (Botany), Rhodes University, 1992
- BSc Honours (Botany), Rhodes University 1990
- BSc (Plant Science & Biochemistry), Rhodes University, 1989

*Certificates available on request

Professional Memberships

- South African Council of Natural Scientific Professions (N#: 400102/95)
 - *Professional Natural Scientist – Environmental Scientist*
 - *Professional Natural Scientist – Ecological Scientist*
- Environmental Assessment Practitioners Association of South Africa (EAPASA: N#: 2020/1403)
- International Association of Impact Assessors
- Royal Society of South Africa

*Certificates available on request

ANNEXURE C: STATEMENT OF INDEPENDENCE