

Specialist Briefing Note for the Richtersveld Windfarm Part 2 Amendment Process

1 Project Introduction

RINA was appointed by Richtersveld Wind Farm (Pty) Ltd to prepare a Part 2 Amendment Application in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), as amended. The client holds an existing Environmental Authorisation (EA) (DEAT/EIA/12668/2011) and subsequent amendments. Based on project description changes (both layout and technical design) proposed by the client, there is a need to amend the EA as required in terms of NEMA and thus support any future applications for the Renewable Energy Independent Power Producer Programme in South Africa.

The Department of Forestry, Fisheries and the Environment (DFFE) is the competent authority for the Part 2 Amendment as contemplated by the NEMA.

2 Project Changes Triggering the Need for an Amendment

An EA was issued on 28 May 2012 for the proposed Richtersveld Wind Farm with Reference Number: DEAT/EIA/12668/2011. The EA lapses on 28 May 2022.

The proposed amendments include inter alia the following, of which further detail is provided in the subsequent sections:

Specification	Approved	Proposed
Hub height	100 m	120 m
Rotor diameter	117 m	155 m
Number of turbines	70	32

2.1 Number of turbines and output generation capacity

The EA authorised the construction of seventy (70) wind turbines with an output of between 2 MW – 3 MW per turbine, with a total energy generation capacity for the facility of up to 225 MW. The revised project description now reduces the number of turbines to thirty two (32) with an output of approximately 4.5 MW per turbine. Total potential generation capacity is 144 MW, enabling to be bid for the maximum allowable capacity.

2.2 Hub height of turbines

The Hub Height of the new thirty two (32) proposed wind turbines will increase from the approved 100 m to a proposed 120 m.

2.3 Rotor diameter of turbines

The rotor diameter from tip of blade to tip of blade of the approved wind turbines is 117 m in extent and is increased to a rotor diameter from tip of blade to tip of blade of 155 m in extent.

2.4 Vertical disturbance area

It is anticipated that there will be a reduction in the vertical bat/bird collision area as a result of the reduced number of turbines of up to 19.768%.

2.5 Wind turbine and laydown area disturbance footprint

The approved seventy (70) wind turbine total disturbance footprint is approximately: $70 \times 400 \text{ m}^2 = 28\,000 \text{ m}^2$ (for wind turbine foundations) and $70 \times 2500 \text{ m}^2 = 175\,000 \text{ m}^2$ for the laydown area footprint, thus totalling $203\,000 \text{ m}^2$. The proposed disturbance footprint for the thirty two (32) wind turbines is: $32 \times 362 \text{ m}^2 = 11\,584 \text{ m}^2$ (for wind turbine foundations) and $32 \times 2500 \text{ m}^2 = 80\,000 \text{ m}^2$ for the laydown area footprint, thus totalling $91\,584 \text{ m}^2$ in extent.

2.6 Change in the layout plan

The layout plan approved in the Environment Authorisation differs from the new proposed layout. The revised project layout is presented in Figure 1.

3 Scope of Work and Objectives for Specialist Studies

This document is the terms of reference for the specialist studies required to assess the impacts of the proposed amendments. In addition to the reasons detailed above, the baseline environment was initially defined in 2012/2013 and may have modified/changed in the past 8-9 years. There is thus the need, wherever a new impact is anticipated, to re-establish baseline conditions so as to re-assess the impact.

It is anticipated that the following studies will be required to support the amendment application and form the scope of this terms of reference:

- Birds
- Bats
- Terrestrial biodiversity
- Visual
- Cultural heritage (potentially)

This terms of reference firstly provides information relevant to all of the specialist investigations that are being undertaken and then presents the requirements of the individual studies. If there are any changes that you feel are required, please notify the RINA Project Team.

3.1 General Requirements for all of the Specialist Studies

3.1.1 Available Information

The specialist shall consider and include the relevant information of the GUMA Richtersveld wind farm project from the following sources, as relevant to the specific specialist study:

- Relevant GIS layers if these are available from ERM
- Relevant .kmz files
- 5.-GW 155-4.5 Wind Turbine Technical Specification.pdf
- 2013-04-15_Richtersveld_70-turbine layout_with no-go zones.pdf
- Appendix E_List of coordinates_70 turbine layout_FINAL.pdf
- RICHTERSVELD 6800_02 32wtg layout 4,5MW_REV5.pdf
- Richtersveld WTG heights.xls
- RICHTERSVELD Layout Comparison_Rev0
- Environmental Authorisation, previous EIR including amendments and monitoring reports.

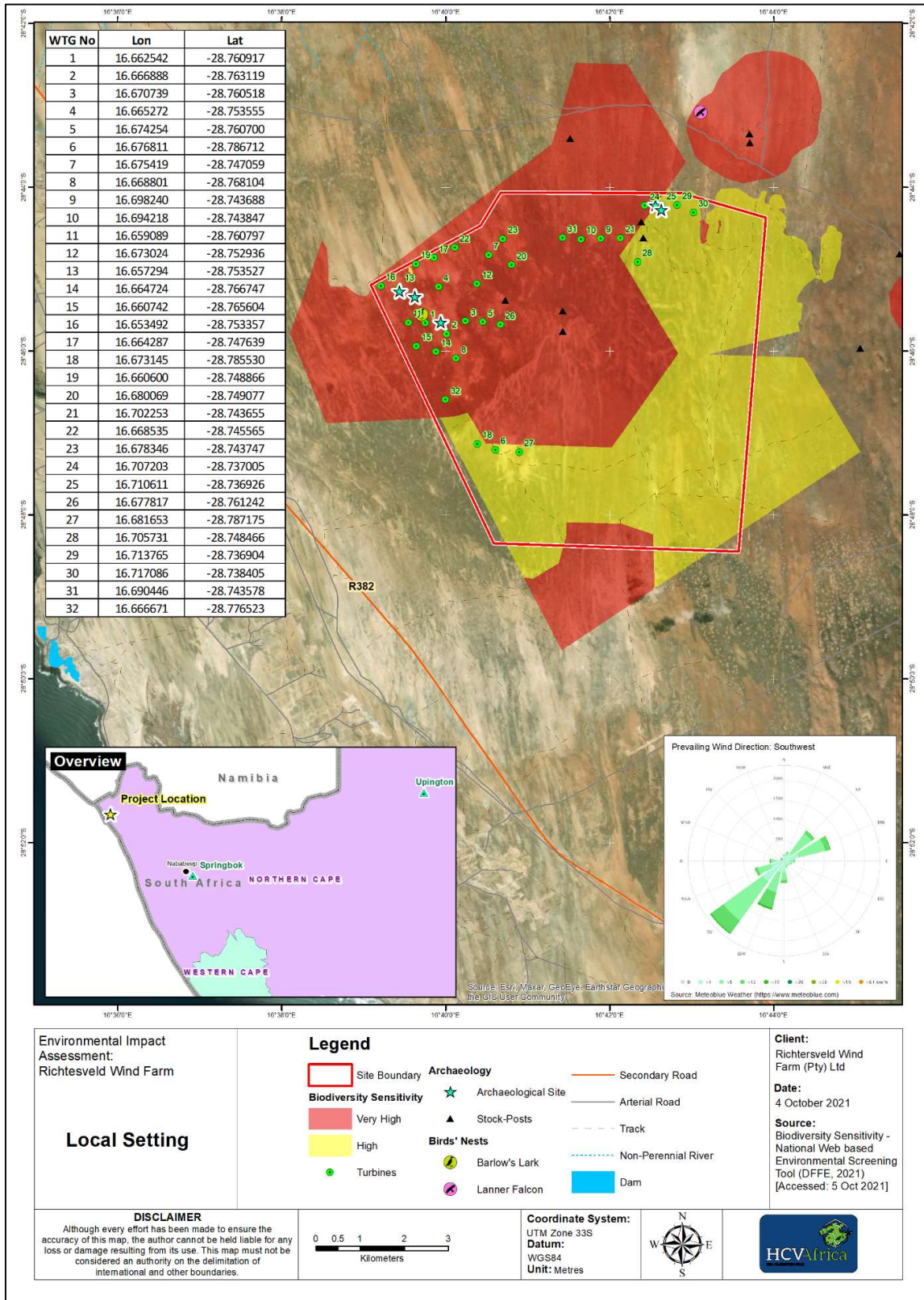


Figure 1: Richtersveld Wind Farm (Pty) Ltd. project location

3.1.2 Report Structure

3.1.2.1 Report structure

The structure and content for each specialist report is presented in this section; if specialists wish to deviate from this, we encourage you to discuss this further with RINA.

- **Executive Summary** summarising the key information of the report, dates of surveys, and survey area, summary of the baseline conditions, key impacts and their ratings and proposed mitigation measures.
- **Section 1:** Introduction introducing the assessment objectives and providing a report outline.
- **Section 2:** Terms of Reference summarising the ToR as provided by RINA / the EAP (outlining the scope of the assessment); include approach and methodology.
- **Section 3:** Baseline environment outlining current conditions; include maps, plans, photographs and data; include references where used. Local and regional study areas must be defined with reasons for defining the two types of study area.
- **Section 4:** Impact Assessment reviewing concisely the impacts, mitigation and residual impact (following application of mitigation). Impacts should be separated into the construction; operational and decommissioning phases of the project. A narrative discussion of the impacts per project phase will be required but please avoid merely repeating the information given in the table (i.e., the discussion should add value and information, and assist reader understand what the impacts are).
 - Subsections under the impact assessment chapter of the report should comprise the following:
 - Potential Impact Assessment Rating (see section 3.1.3)
 - Description of Potential Impacts
 - The Project impact assessment methodology is presented in Section 3.1.3.
 - Assessment of alternatives and cumulative impacts should be included (e.g. project alternatives and the no-go options).
- **Section 5:** Recommendations for mitigation/management and monitoring measures with specific management measures proposed to implement them. Refer to the old EIR and update to remain relevant in terms of the new project description / layout and in line with updated baseline information.
- **Section 6:** Limitations (data gaps and assessment shortcomings) and any assumptions used in the assessment.
- **Section 7:** References - list of all references used in the study. *The format for recording references is provided in Section 11 and must be used consistently.*
- **Appendices** - please include methodology, raw data, equipment certifications, and other supportive materials / documentation in appendices so that the main body of text focusses on the important aspects and findings.

3.1.3 RINA Impact Assessment Methodology

The impact assessment should be undertaken in line with RINA's impact assessment methodology, which is presented below:

An 'impact' is any change to a resource or receptor caused by the presence of a project component or by a project-related activity. Impacts can be negative or positive and are described in terms of their characteristics, including the impact's type and the impact's spatial and temporal features (namely extent, duration, scale and frequency). Impact characteristics are defined in the subsections below.

Type of Impact

- ✓ Direct: applies to an impact which can be clearly and directly attributed to a particular environmental or social parameter (e.g. dust generation directly affects air quality)
- ✓ Indirect: applies to impacts which may be associated with or subsequent to a particular impact on a certain environmental or social parameter (e.g. high levels of dust could entail nuisance and health effects to workers on site).
- ✓ Induced: applies to impacts that result from other activities (which are not part of the Project) that happen as a consequence of the Project.
- ✓ Cumulative: applies to impacts that arise as a result of an impact and effect from the Project interacting with those from another activity to create an additional impact and effect.

Duration of Impact

- ✓ Temporary - applies to impacts whose effects are limited to a period of less than 3 years, or only associated with Project pre-construction or construction phases.
- ✓ Short-term: applies to impacts whose effects are limited to a five-year period.

- ✓ Long-term: applies to impacts whose effects last longer than a period of five years, but limited to within the project lifetime.
- ✓ Permanent: applies to impacts whose effects last longer than the life of project – i.e. irreversible.

Extent of Impact

- ✓ On-site: impacts that are limited to the Project site.
- ✓ Local: impacts that are limited to the Project site and adjacent properties.
- ✓ Regional: impacts that are experienced at a regional scale.
- ✓ National: impacts that are experienced at a national scale.
- ✓ Trans-boundary/International: impacts that are experienced outside of Ghana.

Scale of Impacts

The scale of an impact is a quantitative measure, such as the size of the area damaged / impacted or the fraction of a resource that is lost / affected, etc. It is generally described using numerical values and units rather than assigned fixed designations.

Frequency of Impacts

The frequency of an impact the measure of the constancy or periodicity of an impact, described using numerical values or a qualitative description.

Likelihood

Likelihood is a measure of the degree to which the unplanned event (e.g. incidents, spills) is expected to occur. The likelihood of an unplanned event occurring is determined qualitatively, or when data is available, semi-quantitatively. Definitions of likelihood as applied in the ESIA are provided as follows:

- ✓ Unlikely: The event is unlikely but may occur at some time during normal operating conditions
- ✓ Possible: The event is likely to occur at some time during normal operating conditions.
- ✓ Likely: The event will occur during normal operating conditions (i.e. it is essentially inevitable).

A consistent approach to the assessment of impacts will be followed to enable E&S impacts to be broadly compared across the ESIA. A set of generic criteria are used to determine significance and are applied across the various environmental and social parameters.

Assessment of Impact Significance

As far as possible, E&S impacts will be quantified. Where it is not possible to quantify impacts, a qualitative assessment will be conducted using professional judgement, experience and available knowledge, and including the consideration of stakeholder views. Where there are limitations to the data, and/or uncertainties, these will be recorded in the relevant chapters, along with any assumptions made during the assessment.

In order to determine the significance of each impact, two overall factors are considered:

- ✓ magnitude and nature of impacts;
- ✓ the importance and/or sensitivity of the environmental and social receiving parameter, as determined during the assessment of baseline conditions.

Magnitude of Impact

Once impacts are characterised (see section above) they are assigned a 'magnitude'. Magnitude is typically a function of some combination (depending on the resource / receptor in question) of the following impact characteristics:

- ✓ extent;
- ✓ duration;
- ✓ scale;
- ✓ frequency.

Magnitude (from small to large) is a continuum. Evaluation along the continuum requires professional judgement and experience. Each impact is evaluated on a case-by-case basis and the rationale for each determination is noted. Magnitude designations for negative effects are: negligible, small, medium and large. The magnitude designations themselves are universally consistent, but the definition for the designations varies by issue. In the case of a positive impact, no magnitude designation is assigned as it is considered sufficient for the purpose of the impact assessment to indicate that the Project is expected to result in a positive impact.

In the case of impacts resulting from unplanned events, the same resource/receptor-specific approach to concluding a magnitude designation is used. The likelihood factor is also considered, together with the other impact characteristics, when assigning a magnitude designation.

Sensitivity of Receiving Parameter

In addition to characterising the magnitude of impact, the other principal step necessary to assign significance for a given impact is to define the sensitivity of the receptor. There are a range of factors to be taken into account when defining the sensitivity of the receptor, which may be physical, biological, cultural or human. As in the case of magnitude, the sensitivity designations themselves are universally consistent, but the definitions for these designations will vary on a resource/receptor basis. The universal sensitivity of receptor is set as either negligible, low, medium or high.

For ecological impacts, sensitivity is assigned as low, medium or high based on the conservation importance of habitats and species. For socio-economic impacts, the degree of sensitivity of a receptor is defined as the level of resilience (or capacity to cope) with sudden social and economic changes. Comment needs to be provided as to whether an irreplaceable loss of a resource is anticipated or not.

Assessing the Significance of Impacts

In order to assess the significance of an impact, the sensitivity of the receiving environmental or social parameter is considered in association with the magnitude of the impact, according to the matrix shown in the table below.

Table 7.3: Matrix for Assessing Impacts Significance

Magnitude of Impact	Sensitivity of Receiving Receptor		
	Low	Medium	High
Negligible	Negligible	Negligible	Negligible
Low	Negligible	Minor	Moderate
Medium	Minor	Moderate	Major
High	Moderate	Major	Major

While the above matrix provides a framework for the determination of significance and enables comparison across environmental and social parameters, a degree of professional judgement must be used and some parameter-specific factors considered in making a determination of impact significance. The ESIA will provide additional guidance to the degrees of significance.

Note that positive impacts are defined, but not rated for significance.

Mitigation Measures and Residual Impacts

A key objective of an ESIA is to identify and define socially, environmentally and technically acceptable and cost effective measures to manage and mitigate potential impacts. Mitigation measures are developed to avoid, reduce, remedy or compensate for potential negative impacts, and to enhance potential environmental and social benefits. The approach taken to define mitigation measures is based on a typical hierarchy of decisions and measures, as described in the table below.

The priority is to first apply mitigation measures to the source of the impact (i.e. to avoid or reduce the magnitude of the impact from the associated Project activity), and then to address the resultant effect to the resource/receptor via abatement or compensatory measures or offsets (i.e. to reduce the significance of the effect once all reasonably practicable mitigations have been applied to reduce the impact magnitude).

Once mitigation measures are applied, the next step in the impact assessment process is to assign residual impact significance.

This means a repetition of the impact assessment steps reported above.

Table 7.4: Mitigation Hierarchy

<p>Avoid / reduce at source: avoiding or reducing at source through the design of the Project (e.g. avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).</p>
<p>Abate on Site: add something to the design to abate the impact (e.g. pollution control equipment).</p>
<p>Abate at Receptor: if an impact cannot be abated on-site then control measures can be implemented off-site (e.g. traffic measures)</p>
<p>Repair or Remedy: some impacts involve unavoidable damage to a resource (e.g. material storage areas) and these impacts require repair, restoration and reinstatement measures</p>
<p>Compensate in Kind/Compensate Through Other Means where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g. financial compensation for degrading agricultural land and impacting crop yields)</p>

3.1.4 References

References in the text to be provided as:

- **Single Author:** (Nairn 1997);
- **Two Authors:**(Geis and Bunn 1997);
- **Multiple Authors:** (Geis *et al.* 1997);
- **Group or Corporate Author:** (Global Environment Coordination 1994); and
- **For direct quotations the page number is also included:** (Nairn 1997, 73).

References shall be provided in full at the end of the technical report in the following format:

Author(s), Initials (year published); *Title: including sub-title if appropriate*, Publisher. (e.g., DETR (2000); *Environmental Impact Assessment Regulations: A Guide to Procedures*, Thomas Telford).

3.1.5 Review and Collaboration

A draft specialist report shall be submitted to RINA / EAP for review / comment. It is good practise that specialist studies do not make contradictory statements. All specialists are encouraged to engage proactively with other specialists assigned to this project to discuss their main impacts and mitigation measures to avoid disparity. Contact details of other specialists are available from RINA / EAP.

Upon the completion of the review by RINA / EAP of the said specialist study, the specialist shall update the specialist report accordingly. Should there be any queries / disagreements relating to the reviewer comments, this shall be discussed with RINA / EAP at the time to agree on a suitable way forward.

3.2 Specific Study Requirements

The specific requirements of the relevant specialist study is presented in Table 3-1.

Table 3-1 Specific study requirements

Specialist input	Objectives and scope of work
Terrestrial ecology	<p>Objectives</p> <p>The objective of the terrestrial ecology study is to reassess the baseline conditions as a passage of time since the previous assessment, might have resulted in a change in the baseline. Additionally the project layout has changed since the original study was undertaken, given the there are a reduced number of turbines and thus the new layout needs to be evaluated in greater detail, particularly in areas previously identified as being of high sensitivity. Suggestions for micro-siting may be required to avoid ecological sensitivities.</p>

	<p>Scope of work</p> <p>A. Fieldwork</p> <p>1. Three days field survey to assess the terrestrial ecology on site to determine whether any changes occurred since the previous survey in 2011 and whether there are any red flags / issues of concern with regard to the revised project layout. A brief site report will be prepared to present the results and suggestions in this regard.</p> <p>B. Reporting</p> <p>The specialist will update their previous report produced for the GUMA Richtersveld wind farm.</p> <p>The update will address:</p> <ul style="list-style-type: none"> - additional baseline data collected in 2021 - Fine scale mapping / GIS - changes to the project description / footprint - changes to impacts (and mitigation measures) as a result of the changes to the project description / footprint
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4 Project Timing

The planned project time frames as per the NEMA legal requirements (Reg 32) are:

- The total duration of the EA amendment process is 90 days which includes a 30 day public participation period. The amendment report including the specialist studies must be subjected to this PP process;
- The application for amendment is received by the competent authority on the date that such application is submitted via the prescribed online method. This implies that all documentation, including draft specialist reports shall be ready before the application is submitted;
- The following schedule for specialist delivery is envisaged – please note that these are staggered given dependencies between the studies:
 - Terrestrial biodiversity given advising on pylon and access road placement – initial site report due by 30 January 2022 and report to be delivered by 28 February 2022
 - Avifauna – site report and impact assessment received.
 - Visual – awaiting turbine placement suggestions from biodiversity. To be completed end March 2022
 - Heritage impact assessment – need still to be determined
 - Bat survey and impact assessment – monitoring to be complete end May 2022. Report to be provided end June 2022.

5 Invoicing

Invoicing shall take place in line with RINA's purchase order provisions. Invoice may be issued once final deliverable has been received and approved by RINA / EAP and the client.

Invoicing schedule for this specialist scope of work is as per

Table 5-1.

Table 5-1 Invoicing schedule

Scope completed	Amount to be invoiced (VAT exclusive)
Initial site report	R 54 950
Updated amendment report	R14 900

6 Confidentiality and rights on information

To undertake this project, the Sub-contractor will be given access to various proprietary reports, documents and data belonging to, or made available by, RINA / GUMA ("Confidential Information"). By signing and accepting this TOR document, the sub-contractor undertakes:

- To keep all such information confidential, and not to disclose to any person any Confidential Information, except:
 - when required to do so by law or by order of a Court; or
 - to the extent that the Confidential Information has become publicly available or generally known, save as a result of breach of any confidentiality obligation by the Recipients; or
 - where written permission to do so has been provided by the Client (e.g. during the public consultation when project information will need to be discussed/explained to stakeholders).

7 EAP Team contact details and the way forward

The EAP contact details are as follows:

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