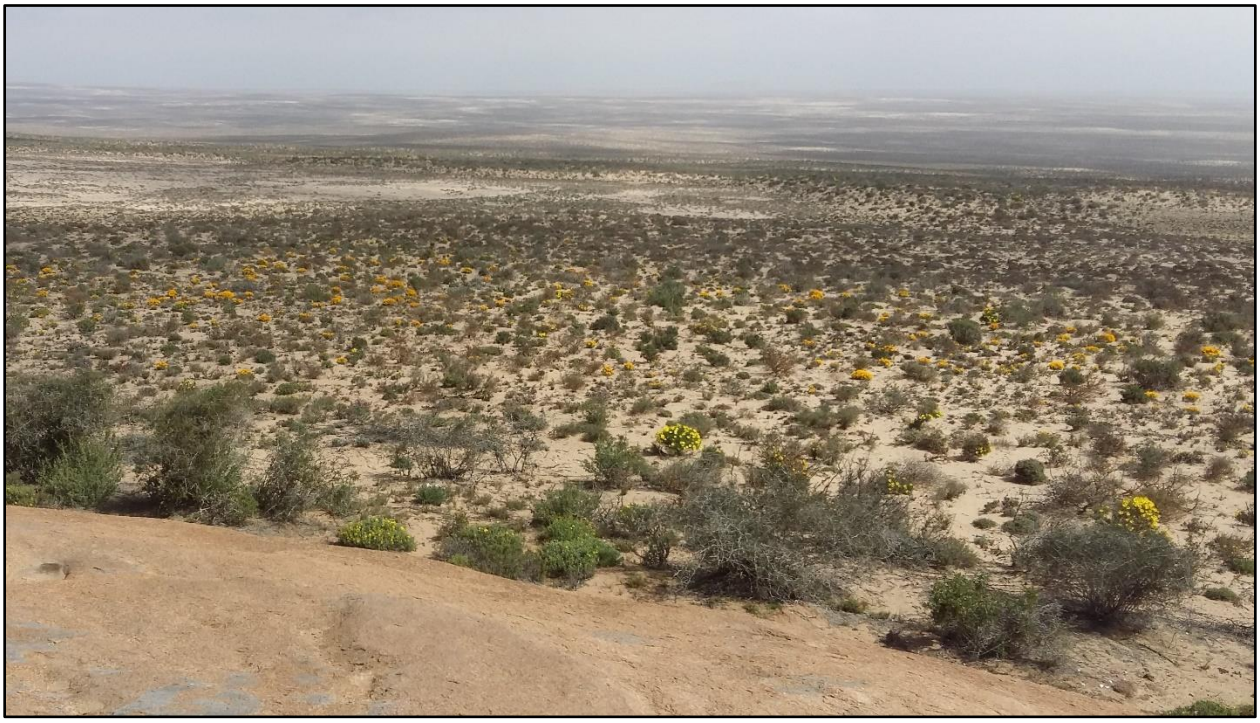
REVISED SENSITIVITY MAPPING FOR THE RICHTERSVELD WIND FARM



PRODUCED FOR RINA ON BEHALF OF RICHTESVELD WIND FARM (PTY) LTD

BY

3Foxes Biodiversity Solutions

Simon.Todd@3foxes.co.za

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1 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. In terms of the above amendment, the project requires terrestrial ecological input regarding the revised layout. To these ends RINA has appointed 3Foxes Biodiversity Solutions to provide input on the amendment application in terms of the following"

- Reassess the baseline conditions as a passage of time since the previous assessment, might have resulted in a change in the baseline.
- 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.

As part of meeting the above outputs, a site visit and associated field assessment was conducted to the site on the 30th of September 2021 in order to address potential concerns around a number of turbines that were close to or encroaching onto sensitive areas. A fine-scale sensitivity map of these areas was produced as an outcome of the field assessment. This report provides a description of these changes and provides recommendations as to the layout within these areas. Once the layout has been finalised, the amendment will be addressed.

2 Site Visits & Field Assessment

The site was visited on the 30th of September 2021. During the site visit, the areas deemed sensitive and which are potentially being encroached by the development were assessed in the field. While in the field, specific attention was paid to the presence of sensitive habitats and species of concern within the affected areas. A GPS was used to demarcate and record features of importance and were used to inform a fine-scale sensitivity map of the areas of concern. Conditions at the time of the field assessment were good as there had been late rains in the area and the vegetation was in an excellent condition with many species in flower. As such, there are no major limitations with regard to the field assessment or the accuracy of the information collected.

3 Results & Fine-Scale Sensitivity Mapping

The largest area of concern regarding the wind farm and the revised turbine locations is in the south west of the site around Turbines 18, 6 and 27. The fine-scale sensitivity map around this area is illustrated below in Figure 1. Turbine 18 is well away from the sensitive area and does not appear to represent any problems. Turbines 6 and 27 are on the margin of the area demarcated as sensitive and care should be taken to ensure that the turbine foundations, lay-down areas and access roads do no impinge on the no-go area. If necessary, it is recommended that the turbines are relocated slightly further away from the area if it cannot be avoided by the development footprint. In addition, there were some individuals of *Aloe arenicola* (Near Threatened) close to the current turbine location and it is recommended that the turbine is relocated westwards by approximately 50m to avoid impact on these individuals and that the hard-stand is not orientated eastwards of the turbine.

Figure 1. Fine-scale ecological sensitivity map for the south of the site, showing the sensitive area mapped around turbines 18, 6 and 27.

Figure 2. The location of Turbine 27. Although the location of the turbine itself is considered acceptable, it is close to more sensitive areas and it may not be possible to avoid impact to these areas if the turbine is not relocated slightly further away.

Figure 3. The location of Turbine 6. This is a moderately sensitive area and some plant species of concern (*Aloe arenicola* - Near Threatened) were observed within the current footprint.

The other area of potential concern is located near to Turbine 22 and consists of a small rocky outcrop that is home to numerous protected plant species as well as being an important habitat for reptiles. The current location of Turbine 22 is outside the sensitive area, but this has been mapped and illustrated below in Figure 4 to ensure that access roads or other infrastructure do not impinge on this area. The demarcated area should be treated as a no-go area for turbines, roads and underground cabling.

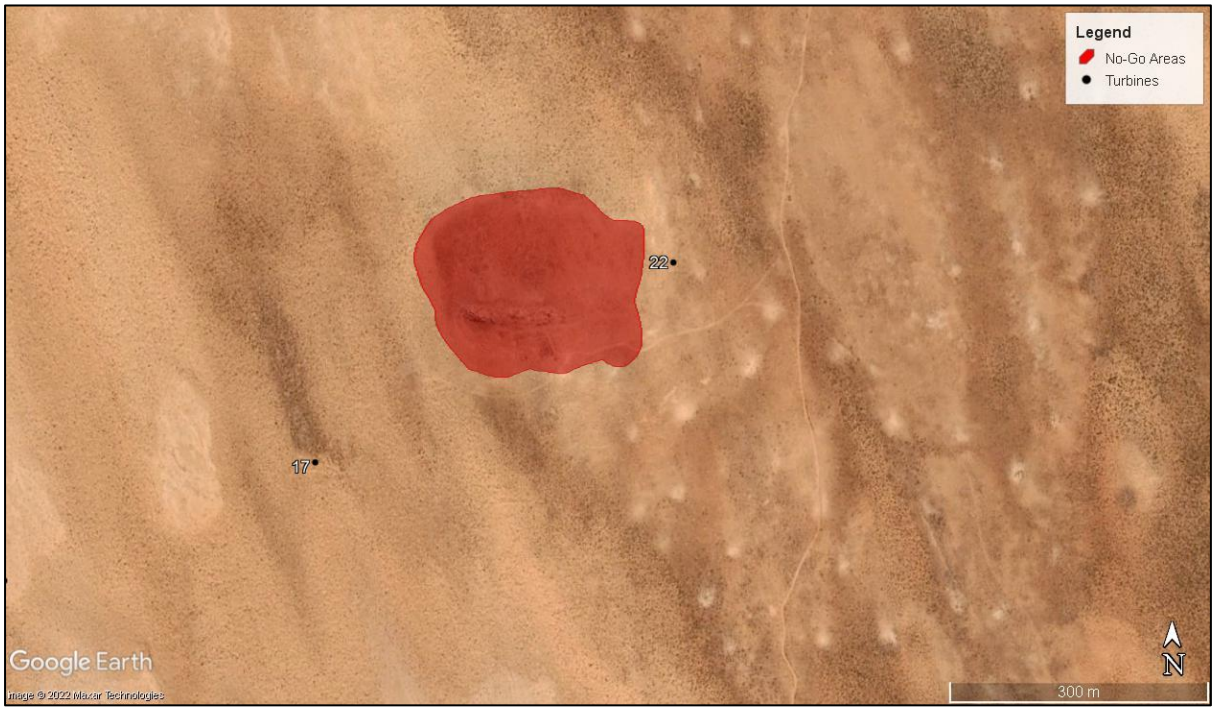

Figure 4. There is a small rocky outcrop around Turbine 22 that should be avoided.

Figure 5. There is a rocky outcrop near to Turbine 22 that is considered sensitive and which must be avoided. Apart from the presence of numerous plant species of concern, this habitat is not common in the area and represents and important area for reptiles.

4 Site Sensitivity Analysis & Limits of Acceptable Change

A sensitivity map for the whole of the Richtersveld site is illustrated below in Figure 6. The majority of turbines are located within the high sensitivity dune systems of the site. These areas are considered high sensitivity due to the sensitivity of the dunes to disturbance as well as the likely presence of some fauna and flora of concern within this habitat. In the original study the presence of turbines in this area was considered acceptable. However, turbines in high sensitivity areas are generally not favoured by DFFE and the provincial authorities.

Development within high sensitivity areas can to some degree be motivated through the use of limits of acceptable change. These limits provide a guide for the developer in terms of ensuring that the spatial distribution of impact associated with the development is appropriate with respect to the sensitivity of the site. In addition, it provides a benchmark against which impacts can be assessed and represents an explicit threshold that when exceeded indicates that potentially unacceptable impacts may have occurred. In terms of this latter criterion, exceeding the limits of acceptable change for either High or Very High/No-Go sensitivity areas is considered to represent an immediate fatal flaw, while the limits within either Low or Medium sensitivity areas could potentially be exceeded, provided that the total footprint in these two areas combined does not exceed the overall combined acceptable loss within these classes.

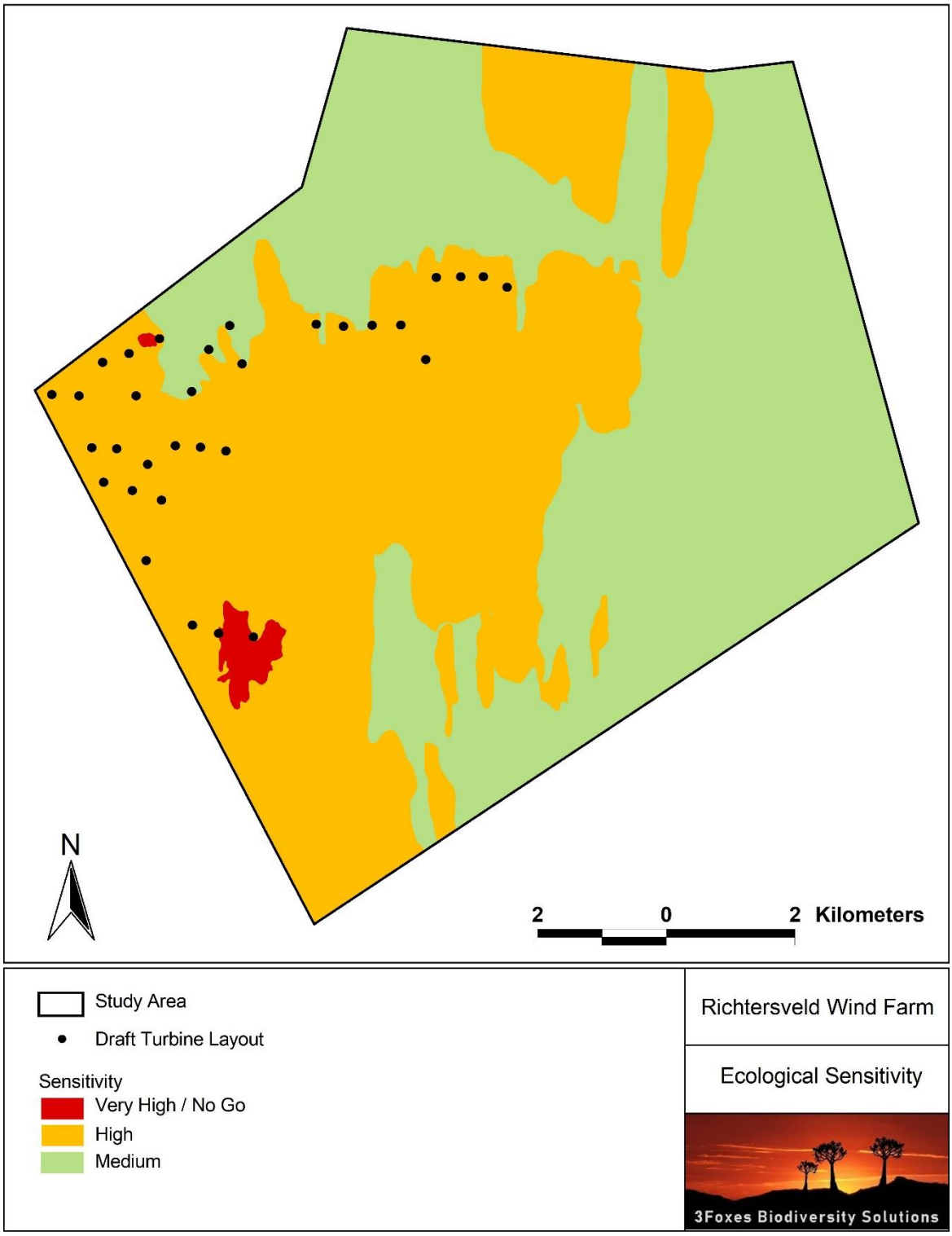

Figure 6. Ecological sensitivity map of the Richtersveld site, showing that the majority of proposed turbines are within high sensitivity areas.

Table 1. Proposed Limits of acceptable change associated with the wind farm development, within each of the sensitivity categories as defined below.

Sensitivity	Acceptable Loss (%)	Extent within Site (Ha)	Acceptable loss (Ha)	Description
Low	5%	0	0	Units with a low sensitivity where there is likely to be a low impact on ecological processes and terrestrial biodiversity. This category represents transformed or natural areas where the impact of development is likely to be local in nature and of low significance with standard mitigation measures.
Medium	2%	5080	101.6	Areas of natural or previously transformed land where the impacts are likely to be largely local and the risk of secondary impacts such as erosion are lower. Development within these areas can proceed with relatively little ecological impact provided that appropriate mitigation measures are taken.
High	1%	4970	49.69	Areas of natural or transformed land where a high impact is anticipated due to the high biodiversity value, sensitivity or important ecological role of the area. Development within these areas is usually undesirable and should proceed with caution. Where roads are required through these areas, existing access roads should preferably be used as this reduces both the impact and the footprint of any access roads.
Very High/No Go	<0.1%	91	0	Critical and unique habitats that serve as habitat for rare/endangered species or perform critical ecological roles. These areas represent no-go areas from a developmental perspective and should be avoided.

5 Conclusions and Recommendations

The fine-scale mapping indicates that the current turbine locations are outside of the very sensitive areas of the site. However, as several turbines are in close proximity to these areas, there is a danger that access roads, hard stands and other infrastructure will impinge into the sensitive areas. It is recommended that all infrastructure is designed so as to avoid impact on the no-go areas as mapped in this study. No additional buffer is required around these features, provided that the design accommodates some footprint creep such as resulting from cut or fill along access roads etc.

The changes to the turbine layout is likely to require an updated assessment and the major constraint associated with the development is the high sensitivity of the dune system that would be impacted by the development. Although the original development was considered acceptable and was authorised, the standards associated with wind farm developments has changed since the original study and DFFE and DENC are not usually very eager to authorise turbines within areas classified as high sensitivity. Although the limits of acceptable change approach and detailed here would potentially make 50ha of space available for development within the high sensitivity areas, there is no guarantee that the authorities will agree with the consultants' opinion regarding the acceptability of development within the high sensitivity areas. Since the original sensitivity mapping is already in the public space, there is little opportunity to change the existing sensitivity mapping apart from the fine-scale changes that have been included here. As such, the changes to the layout would potentially pose some risk to the development and the footprint within the high sensitivity areas should be reduced as much as possible.