
PROPOSED CONSTRUCTION OF A WIND
ENERGY FACILITY AND ASSOCIATED
INFRASTRUCTURE ON A SITE NEAR
HOPEFIELD IN THE WESTERN CAPE
DEA ref: 12/12/20/1302

MOTIVATION FOR AMENDMENT OF
ENVIRONMENTAL AUTHORISATION -
SUBMISSION TO NATIONAL DEA

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TABLE OF CONTENTS

	PAGE
1. INTRODUCTION.....	1
2. MOTIVATION FOR AMENDMENT.....	2
3. LIST OF APPENDICES.....	5

1. INTRODUCTION

Umoya Energy obtained authorisation for the construction of a wind energy facility and associated infrastructure on a site near Hopefield, Western Cape Province (EIA Ref No: 12/12/20/1302) in September 2009.

In terms of this environmental authorisation, the project description referred to the installation of 50 wind turbine units (circa 80m in height) with a circa 96 m diameter rotor. Following subsequent developments in technology, and in finalising the site development plan, Umoya Energy is now proposing to install up to 40 turbines with an increased hub height up to circa 95 m. This will enable the developer to install a newer technology on the site which is better suited to the conditions on the site (and increase the efficiency of the facility), and will further reduce the development footprint of the proposed facility (i.e. 10 less turbines than the 50 turbines originally proposed).

The activity as described in the authorisation is hereby requested to be amended as follows:

- Up to 40 wind turbine generators with a hub height of up to 95m, rotor diameter of up to 115 m.
- An underground concrete foundation of approximately 22m x 22m to support each tower.

In terms of Condition 1.19 of the Environmental Authorisation, it is possible for an applicant to apply, in writing, to the competent authority for a change or deviation from the project description to be approved. In this regard, Umoya Energy wish to request DEA's approval to amend the project description as above. Savannah Environmental has prepared this motivation in support of this request/application on behalf of Umoya Energy, and provides some detail pertaining to the significance and impacts of the proposed change to the project description in order for the competent authority to be able to reach a decision.

Should the amendment be granted, the indicative 40-turbine layout provided by Umoya Energy is illustrated in the attached Figure 1 (Site Development Plan). Figure 2 provides detail on how the 50-turbine (assessed in the EIA) and the ~40-turbine (as now proposed) layouts differ.

In order to verify the potential for a change in the impacts on visual exposure as well as avifauna, the amendment has been presented to the visual and avifauna specialists engaged as part of the EIA for their review, consideration and comment. These are attached as Appendix B and Appendix C respectively.

2. MOTIVATION FOR AMENDMENT

The following is relevant to the Hopefield Wind Energy Facility site:

- » Location: The site is located away from residential areas. The site is located approximately 3 km (at the closest) south-east of the town of Hopefield. The broader study area is an arid, sparsely populated area with less than 10 people per km² mostly concentrated within the small towns of the area.
- » Project history: The project was authorised by DEA in September 2009. The EIA considered two technology alternatives, which were related to turbine capacity. Table 5.2 in the FEIR provides a comparison of the environmental advantages and disadvantages for each technology alternative. From this table, as well as from the assessment contained within the EIR, it was concluded that the alternative which comprised fewer but larger turbines would have a reduced impact on the environment, largely due to the smaller footprint associated with fewer turbines. Therefore, Alternative 1 was nominated as the preferred alternative and was authorised. This request for amendment is consistent with the alternatives assessed through the EIR, as it is now proposed to utilise larger, yet fewer turbines to improve the efficiency of the facility (i.e. the same or improved electricity generated through fewer turbines) while further reducing the impact on the environment. It is, therefore, evident that the advantages of utilising fewer turbines would be realised with establishing 40-turbines vs the authorised 50-turbines. This is further explored in the bullet points which follow.
- » Environmental sensitivity: From the specialist investigations undertaken within the EIA process for the proposed wind energy facility development site, no absolute environmental 'no go' areas were identified. The following environmental sensitivities identified have been considered in the facility layout.
 - The area to the south of the Sout River was identified as being of high sensitivity and this area has been excluded from the turbine development footprint. The proposed 40-turbine layout adheres to this, and includes turbines to the *north* of the Sout River only.
 - Sensitive vegetation patches within the development area (of moderate, high conservation value) have been avoided as far as reasonable (areas of very high conservation value have been excluded from the development footprint). With the development of a 40-turbine layout, the development footprint is further reduced, and further minimises the potential for environmental impact. No additional turbine positions are proposed to affect areas of natural vegetation than originally proposed.

- Drainage lines and other wetlands, and the floodplain of the Sout River (with a buffer area) have been avoided as far as reasonable. With the development of a 40-turbine layout, the development footprint is further reduced, and further minimises the potential for environmental impact.
- Cultural/historical sites or features within or adjacent to the development area have been avoided. With the development of a 40-turbine layout, the development footprint is further reduced, and further minimises the potential for impact on heritage resources.
- Noise sensitive receptors have been buffered by 500m, and with the development of a 40-turbine layout, the development footprint is further reduced, and further minimises the potential for impact on receptors.

When considering local site-specific impacts, it can be concluded that a smaller development footprint associated with fewer turbines would have a lower impact on the environment. Although the permanently affected area would be similar in extent, the temporary impacts from crane hardstanding areas, laydown areas would be ~20% less should 10 less turbines be constructed on the site. The following provides support for a reduced number of turbines:

- Smaller footprint associated with fewer turbines and associated infrastructure.
 - Both the direct and indirect negative impacts on the vegetation will be about 20% less during the construction phase, reducing habitat loss.
 - Effective total surface area of rotating blades up to 17% reduced (final turbine dependent), potentially posing a lower collision risk for birds.
 - Lower geomorphological impacts due to smaller physical footprint of facility.
- » Avifauna sensitivity: The Endangered Wildlife Trust have confirmed that the proposed change of turbine hub height (from ~80m to 95m) does not present any change in the significance of the impacts on birds as previously assessed within the EIA. The data available on bird flight movement, and particularly flight height, is not at that level of accuracy to allow for predictions on the change in impact significance (bird collisions with turbine blades) to be made based on a 15m difference in turbine height.

Furthermore, the increased turbine size is accompanied by a decrease in the proposed number of turbines from 50 to 40 – which may in fact lessen the impacts on birds.

The submission from the Endangered Wildlife Trust is included in Appendix C.

- » Visual Impacts associated with the Wind Energy Facility: The most significant impact associated with the proposed wind energy facility and associated infrastructure is the visual impact on the surrounding area imposed by the components of the facility. Potential sensitive receptors identified in the EIR include residents within the town of Hopefield, local homesteads and agricultural holdings, as well as users of the Arterial Roads (R45, R311 and R307) and secondary roads in the area, and visitors to the West Coast National Park, the Elandsfontein Private Nature Reserve and the Hopefield Private Nature Reserve.

The proposed facility will potentially be visible from the major roads within the region, the town of Hopefield and from various homesteads within the study area. The facility appears to be relatively shielded from the core area of the West Coast National Park and the West Coast Biosphere Reserve (even though it is situated within the Biosphere Reserve's transitional area).

A comparative viewshed analysis has been undertaken in order to be able to draw a comparison between the potential visibility of the facility as per the authorised 50-turbine layout (original layout), and the now proposed maximum 40-turbine layout (revised layout). From the comparative viewshed analysis undertaken, it can be concluded that the medium- to short-distance observation (and potential visual impact) of the two alternatives will be very similar (refer to Figures 3 and 4), but that the potential frequency of visual exposure will be less/lower due to the reduced number of wind turbines. This is especially valid in locations where the absence of other familiar structures makes it difficult to judge the scale of the wind turbines. To this end, the construction of fewer turbines (even if they are taller) would be favoured for short to medium distance sightings.

When considering the two alternatives under investigation from a broader (regional) scale (i.e. at distances in excess of 10 km), it has been concluded that the slightly smaller, less imposing 80 m hub height turbines would be marginally less conspicuous.

Therefore, the two alternatives are considered to be very **similar** from a visual perspective. It is envisaged that the structures would be easily and comfortably visible regardless of the hub height selected, especially within a 10 km radius of the wind energy facility.

The submission from MetroGIS is included in Appendix B.

The change in hub height of the proposed turbines does not result in a change in the overall area of disturbance as assessed in the EIA. The reduction in the number of turbines supports condition 1.13 of the Environmental Authorisation, as the reduced area of impact would keep the footprint of the impact to a minimum.

Umoya Energy requests that the wording within the authorisation in terms of the project description be amended to accommodate this change in technology. This request is made in terms of condition 1.19 of the Environmental Authorisation.

Should the requested amendment be acceptable, the revised site layout would include the repositioning of the wind turbine generators on the site, as well as the repositioning of access roads and underground cabling. This repositioning will take into account all environmental constraints identified through the EIA process, as well as the conditions of the environmental authorisation granted in 2009. A final facility layout will be submitted to DEA, and will include the required amendments as per condition 1.14 of the Environmental Authorisation.

3. LIST OF APPENDICES

The following Appendices are attached in support of the motivation for amendment:

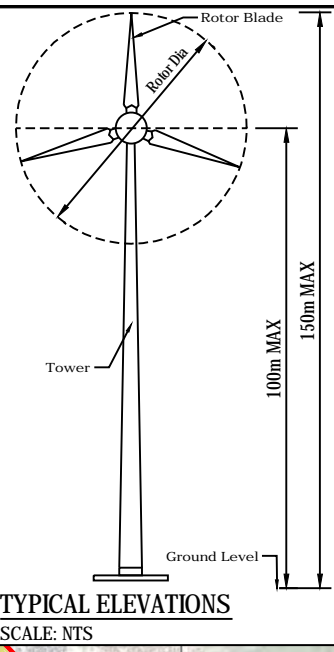
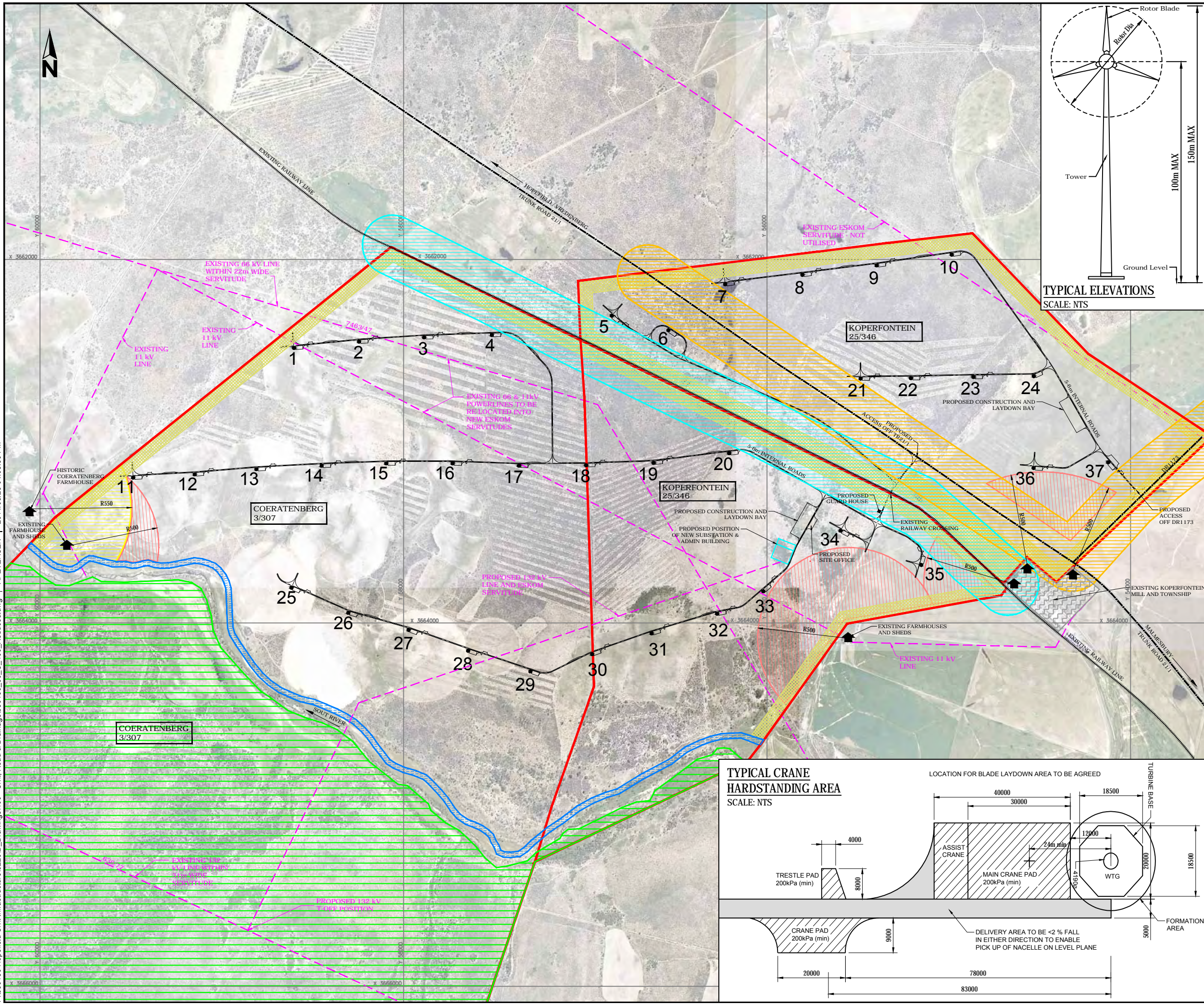
Appendix A: Figures 1, 2, 3 and 4 in support of this request for amendment

Appendix B: Visual - statement from MetroGIS

Appendix C: Avifauna – statement from the Endangered Wildlife Trust

**APPENDIX A:
FIGURES 1, 2, 3 AND 4 IN SUPPORT OF THIS
REQUEST FOR AMENDMENT**

P:\J30156 Hopefield Civil Infrastructure\82201D_Drawings\400 - Civil, Road & Drainage\J30156_00_C_400_Reduced.dwg | APETERSEN | 2011/05/25 04:05:56 PM



LEGEND:

- Wind Farm Boundary (Feb 2011)
- Proposed Wind Turbines (37N°)
- ▲ Domestic Residence
- Critical Infrastructure Exclusion Zone - Road (165m Offset from €)
- Critical Infrastructure Exclusion Zone - Rail (165m Offset from €)
- Noise Exclusion Zone (500m Radius)
- Cultural Exclusion Zone (550m Radius)
- Boundary Exclusion Zone (65m Offset)
- 30m Offset from 100yr floodline (approx.)
- Proposed Conservation Area
- High and Low Intensity Agriculture Planned for Practice amongst Turbines.

NOTES:

1. No of Turbines: 37
2. Height to blade tip: 150m maximum
3. Setback: 1.1 times the overall blade tip height of the turbine except for the following turbines: 1, 7, 8, 9, 10, 11, 18, and 30
4. Finishing and colour: a neutral and non-reflective colour will be used
5. Lighting: lighting of wind turbines is according to the requirements the South African Civil Aviation Authority
6. Signage and advertising: complies with national and local signage regulations
7. Noise: a noise exclusion zone of 500m radius from residences imposed
8. Land clearing, soil erosion and habitat impact will be in accordance with RoD conditions
9. Maintenance: will be in accordance with RoD conditions
10. Modification: will be in accordance with RoD conditions
11. Decommissioning and abandonment: will be in accordance with RoD conditions
12. Appurtenant structures: will be in accordance with municipal requirements

Client

EMPOWERED BY NATURE

Rode

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Approved By

Drawn By	Designed By	Reviewed By
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Project

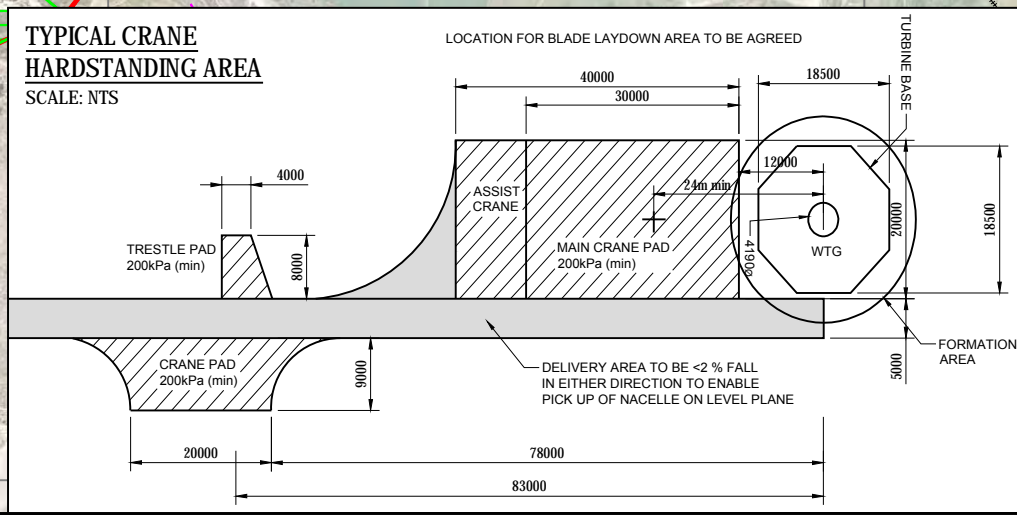
HOPEFIELD WIND FARM

Description

SITE DEVELOPMENT PLAN (DRAFT)

Scale	Date
A3 Layout - 1:20 000	MAY 2011

Project No.	Drg.No.	Rev.
J30156	/00_C_400-A3	/ -



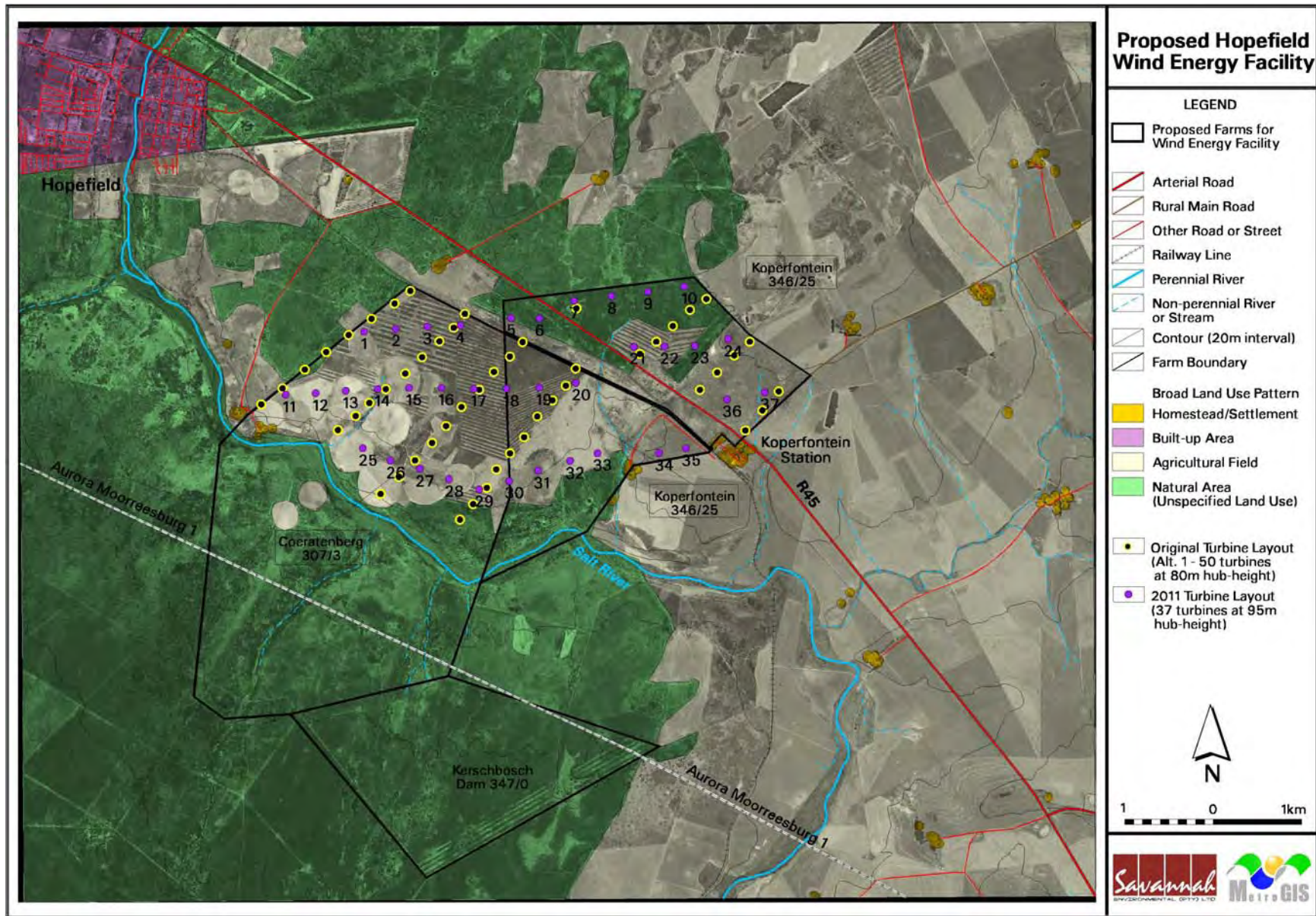


Figure 2: Map showing the 50-turbine (i.e. the original approved/authorised layout) and 40-turbine (as now proposed) layouts

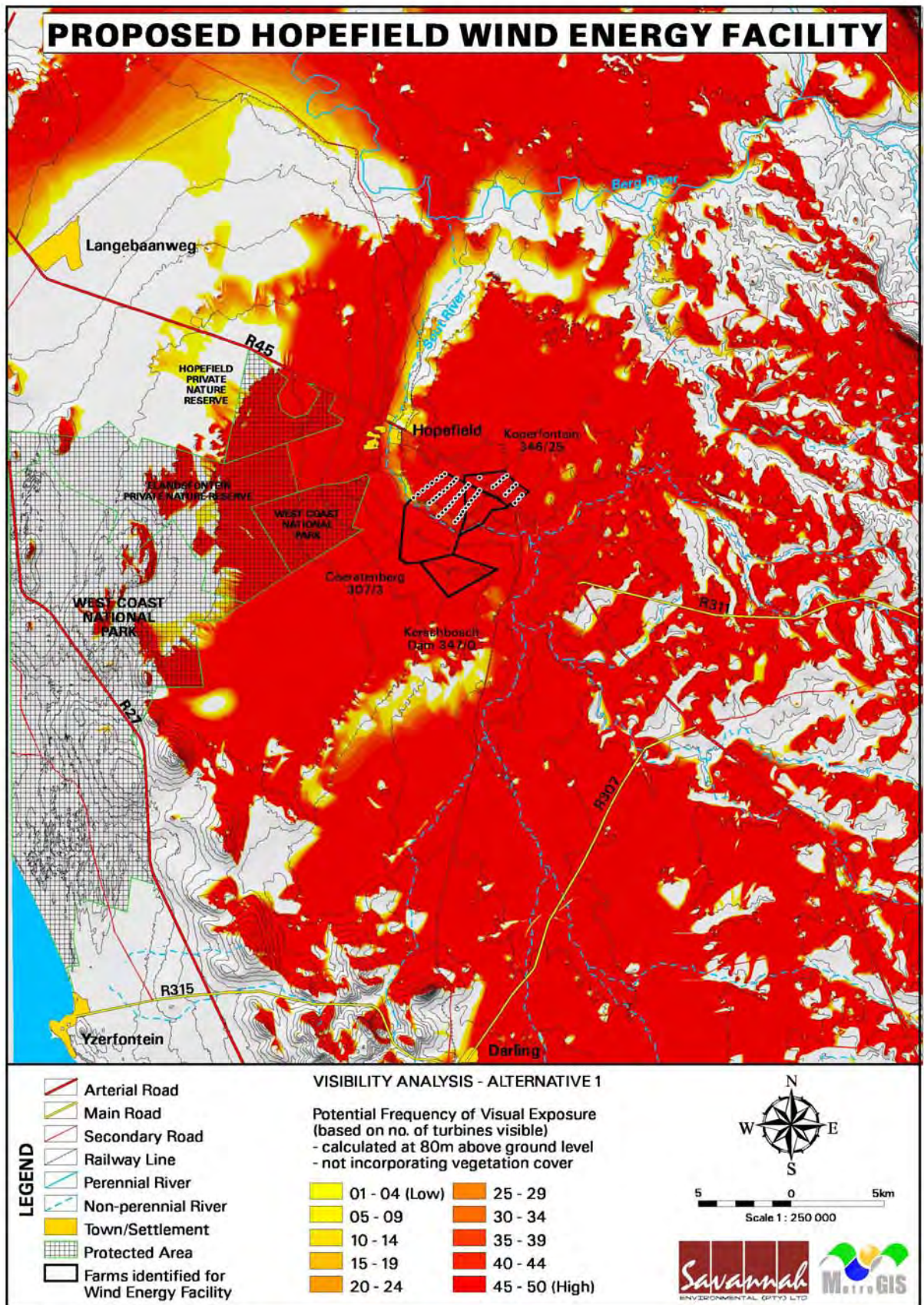


Figure 3: Potential visual exposure of 50 wind turbines calculated at 80m above ground level (i.e. the original approved/authorised layout)

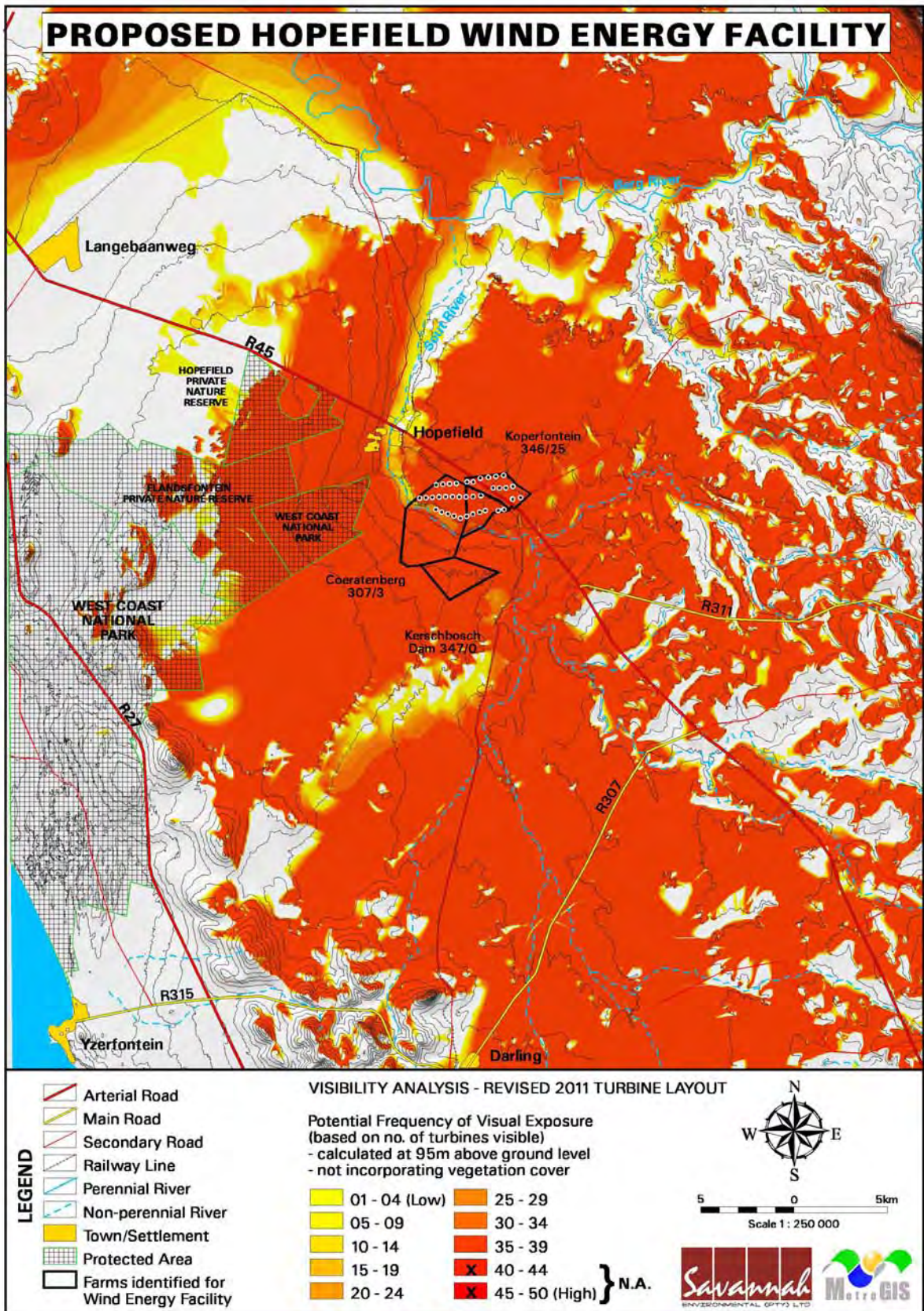


Figure 4: Potential visual exposure of 37 wind turbine positions calculated at 95m above ground level (Note: the potential visual exposure is very similar to Figure 2, but the frequency of exposure is lower due to the reduced number of turbines; i.e. categories for 40 – 50 turbines not applicable)

APPENDIX B:
VISUAL - STATEMENT FROM METROGIS



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PROPOSED HOPEFIELD WIND ENERGY FACILITY AMENDMENT: COMPARATIVE VIEWSHED ANALYSES

Dear Sir/Madam

Comparative viewshed analyses were undertaken in order to draw a comparison between the potential visibility of the facility as per the authorised 50-turbines, and the now proposed maximum 40-turbines. From the specialist study undertaken, it is concluded that the medium- to short-distance observation (and potential visual impact) of the two alternatives will be very similar (i.e. a negligible difference in visual exposure), but that the potential frequency of visual exposure will be less/lower due to the reduced number of wind turbines. This is especially valid in locations where the absence of other familiar structures makes it difficult to judge the scale of the wind turbines. To this end, the construction of fewer turbines (even if they are marginally taller) would be favoured for short to medium distance sightings.

Kind regards

Lourens du Plessis (PrGISc)
Director: MetroGIS (Pty) Ltd

**APPENDIX C:
AVIFAUNA - STATEMENT FROM THE
ENDANGERED WILDLIFE TRUST**



29 July 2011

RE: Umoya Energy – Hopefield Wind Energy Facility: Motivation for amendment of authorisation

The Endangered Wildlife Trust hereby confirm that the proposed change of turbine height, from approximately 80m hub height to 95m hub height – does not present any change in the significance of the impacts on birds as previously assessed. The data available on bird flight movement, and particularly flight height, is not accurate enough to allow us to make predictions on the change in impact significance (bird collisions with turbine blades) based on a 15m difference in turbine height.

Furthermore, the increased turbine size is accompanied by a decrease in the proposed number of turbines from 50 to 40 – which may in fact lessen the impacts on birds.

We trust that you will find this sufficient clarification

Regards

Jon Smallie

(EWT: Wildlife and Energy Program Manager)

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The Endangered Wildlife Trust is a non-profit, public benefit organisation dedicated to conserving species and ecosystems in southern Africa to the benefit of all people.

NPO Number: 015-502, **PBO number:** 930 001 777, **Member of IUCN** - The International Union for Conservation of Nature
The Endangered Wildlife Trust is US 501(c)(3) compliant under **US IRS Registration number:** EMP98-0586801.