EIA LEVEL REPORT

SOIL, LAND USE, LAND CAPABILITY AND AGRICULTURAL POTENTIAL SURVEY:

UMSINDE EMOYENI WIND ENERGY FACILITY IN THE WESTERN AND NORTHERN CAPE PROVINCE

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DECLARATION

I, Johan Hilgard van der Waals, declare that –

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

J.H. VAN DER WAALS
TERRA SOIL SCIENCE

Table of Contents

EIA LEVEL REPORT: SOIL, LAND USE, LAND CAPABILITY AND AGRICULTURAL POTENTIAL SURVEY – UMSINDE EMOYENI WIND ENERGY FACILITY IN THE WESTERN AND NORTHERN CAPE PROVINCE

1. TERMS OF REFERENCE

Terra Soil Science (TSS) was commissioned by Arcus Consulting to undertake an EIA level soil, land use, land capability, and agricultural potential survey for the proposed Umsinde Emoyeni Wind Energy Facility that lies on the border between the Western Cape and Northern Cape Provinces near Murraysburg.

2. INTRODUCTION

2.1 Study Aim and Objectives

The study area has been proposed to serve as a locality for the construction of a wind energy facility and associated infrastructure for power generation purposes. This study aims to determine the possible impact that this development could have on the soils, land use, land capability and agricultural potential as well as to identify areas of high sensitivity regarding turbine placement.

The study has as objectives the identification and estimation of:

» Soil form (SA taxonomic system) and soil depth for the area;
» Soil potential linked to current land use and other possible uses and options;
» Discussion of the agricultural potential in terms of the soils, water availability, surrounding developments and current status of land; and
» Discussion of impacts (potential and actual) as a result of the development.

2.2 Agricultural Potential Background

The assessment of agricultural potential rests primarily on the identification of soils that are suited to crop production. In order to qualify as high potential soils they must have the following properties:

» Deep profile (more than 600 mm) for adequate root development,
» Deep profile and adequate clay content for the storing of sufficient water so that plants can weather short dry spells,
» Adequate structure (loose enough and not dense) that allows for good root development,
» Sufficient clay or organic matter to ensure retention and supply of plant nutrients,
» Limited quantities of rock in the matrix that would otherwise limit tilling options and water holding capacity,
» Adequate distribution of soils and size of high potential soil area to constitute a viable economic management unit, and

» Good enough internal and external (out of profile) drainage if irrigation practices are considered. Drainage is imperative for the removal (leaching) of salts that accumulate in profiles during irrigation and fertilization.

In addition to soil characteristics, climatic characteristics need to be assessed to determine the agricultural potential of a site. The rainfall characteristics are of primary importance and in order to provide an adequate baseline for the viable production of crops rainfall quantities and distribution need to be sufficient and optimal. The combination of the above mentioned factors will be used to assess the agricultural potential of the soils on the site.

2.3 Survey Area Boundary

The WEF survey area lies between 31° 41' 06'' and 32° 01' 28'' south and 23° 45' 47'' and 24° 05' 33'' east about 60 km north-west of the town of Graaf-Reinet (**Figure 1**). The town is situated in the Eastern Cape Province and the development site in the Western and Northern Cape Provinces.

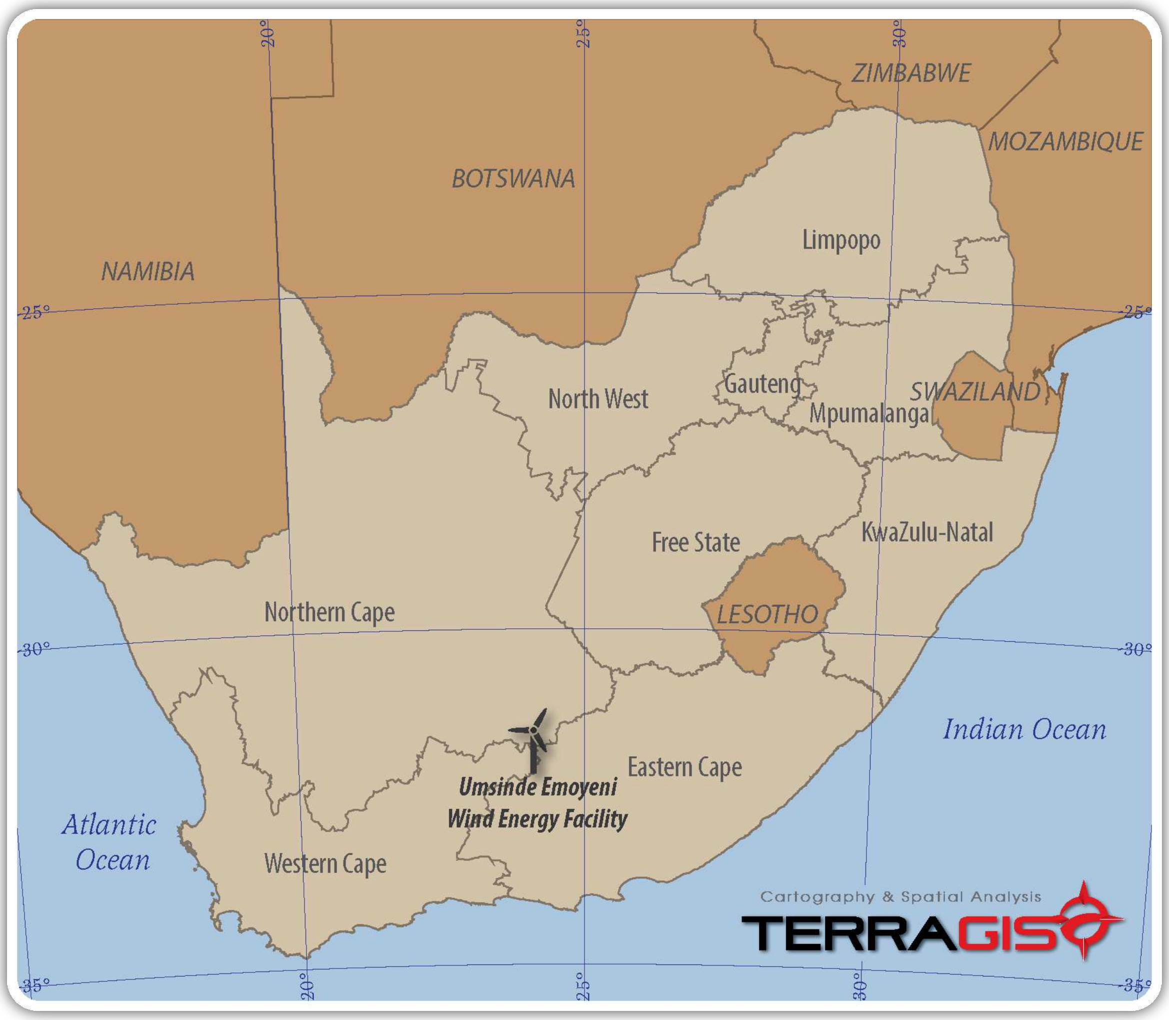

Figure 1 Locality of the survey site

The grid connection envelope lies between 31° 38' 43'' and 31° 50' 21'' south and 23° 21' 47'' and 23° 50' 28'' between Murraysburg and Richmond.

2.4 Survey Area Physical Features

The survey area lies on hilly terrain with numerous ephemeral and seasonal drainage features. The altitude varies between 1200 m and 1900 m above mean sea level from west to east. The geology is dominated by mudstone, shale and sandstone with numerous dolerite intrusions.

3. SOIL, LAND CAPABILITY, LAND USE SURVEY AND AGRICULTURAL POTENTIAL SURVEY

3.1 Method of Survey

The EIA level soil, land capability, land use and agricultural potential surveys were conducted in four phases.

3.1.1 Phase 1: Topographic Parameters

The topography of the site was determined from 20 m contours. From this data a digital elevation model (DEM) was generated. From this data in turn a slope map and a topographic wetness index (TWI) map was generated. The TWI indicates areas of concentrated water flows and therefore correlates with drainage features.

3.1.2 Phase 2: Land Type Data

Land type data for the site was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC). The land type data is presented at a scale of 1:250 000 and entails the division of land into land types, typical terrain cross sections for the land type and the presentation of dominant soil types for each of the identified terrain units (in the cross section). The soil data is classified according to the Binomial System (MacVicar et al., 1977). The soil data was interpreted and re-classified according to the Taxonomic System (Soil Classification Working Group, 1991).

3.1.3 Phase 3: Aerial Photograph Interpretation and Land Use Mapping

The most up to date aerial photographs of the site were obtained from Google Earth. The images were used to interpret aspects such as land use and land cover as well as historic land uses such as cultivation.

3.1.4 Phase 4: Site Visit and Soil Survey

A site visit was conducted on the 10th and 11th of June, 2014, during which a reconnaissance soil survey was conducted. The site was traversed in a vehicle and selected areas were investigated on foot. Soils and landscape characteristics were described and photographs were taken of pertinent soil, landscape and land use characteristics.

3.2 Survey Results

3.2.1 Phase 1: Topographic Parameters

The DEM for the sites is provided in **Figures 2** and **3** and the slope map in **Figures 4** and **5**. The TWI is provided in **Figures 6** and **7**. The drainage features indicated on this map correlate with areas of deposition and erosion with deeper soils (as is discussed under the land type data).

3.2.2 Phase 2: Land Type Data

The site falls predominantly into the Fc131 and Da147 land types with the Fb488, Fc402, Ia94, Ib126, Ib262 and Ib397 land types having a limited occurrence (Land Type Survey Staff, 1972 - 2006). (Refer to **Figure 8** for the land type map of the area). Below follows a brief description of the land types in terms of soils, land capability, land use and agricultural potential.

Land Type Da147
Land Type: Da land types denote areas where duplex soils with red B horizons dominate.
Soils: Mainly variable depth duplex soils throughout the landscape with hills being dominated by rocky soils and rock outcrops.
Land capability and land use: Land use is limited to extensive sheep grazing with small occurrences of crop production in alluvial deposits in drainage features. The land capability mimics the land use.
Agricultural potential: The agricultural potential is linked to the soil depth and the bulk of the land type is therefore of low crop production potential (land capability classes VII and VIII). The soils are suited to extensive grazing only due the low and erratic rainfall (around 300 mm per year – **Figure 9**). Irrigated crop production is possible where adequate water resources are available but these land uses require very intensive management in duplex soil environments.

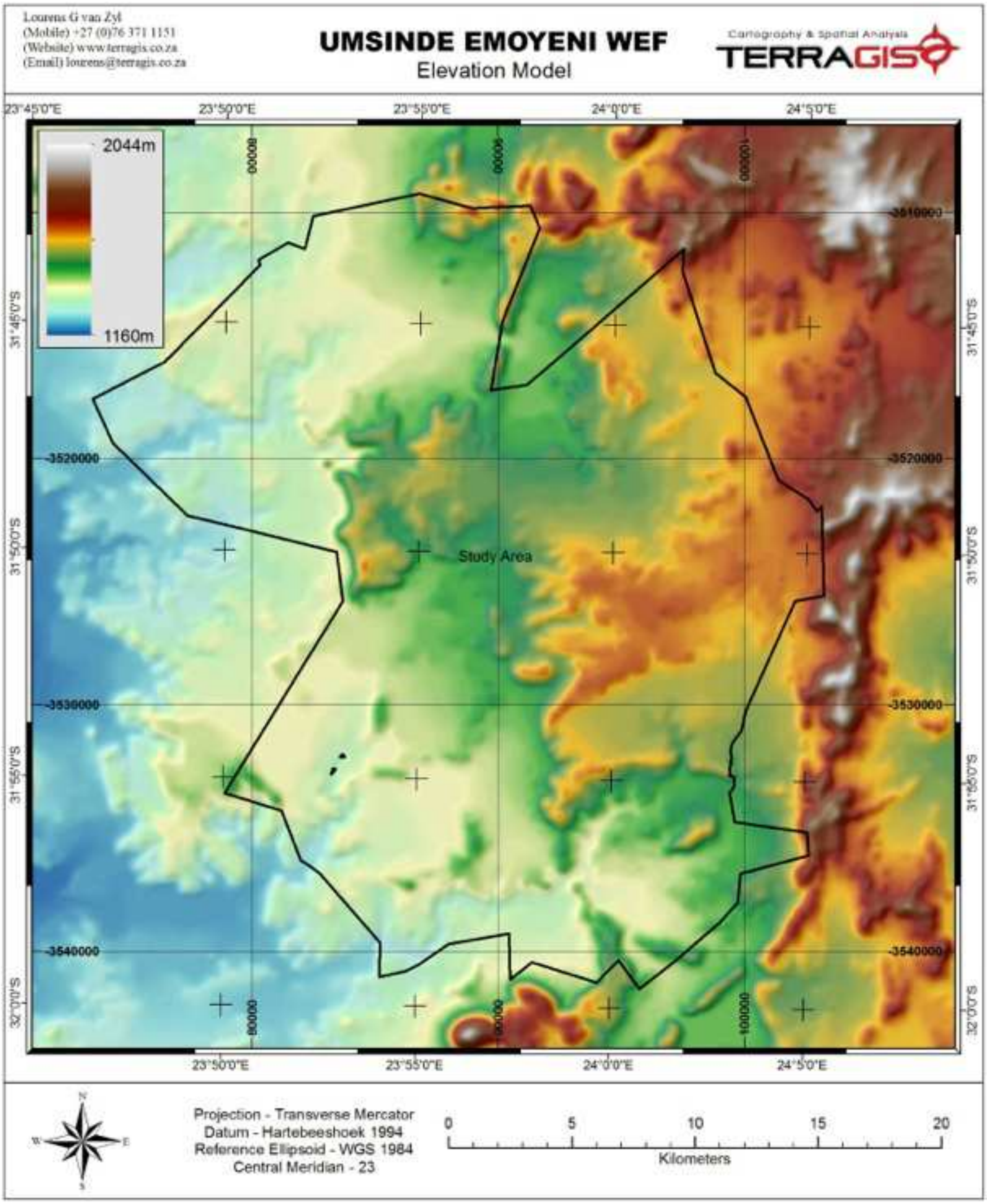

Figure 2 Digital elevation model for the survey area (WEF)

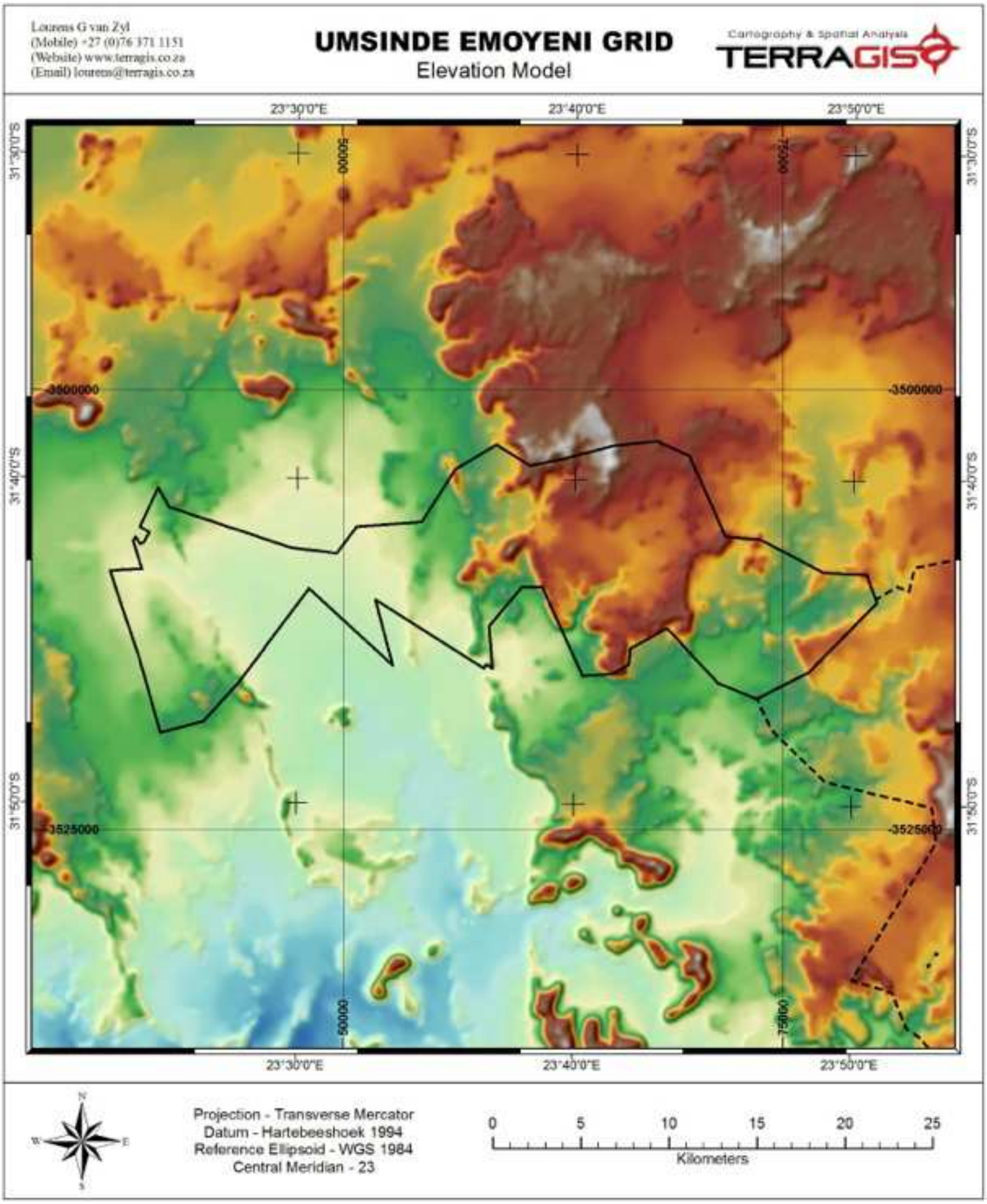

Figure 3 Digital elevation model for the survey area (Grid)

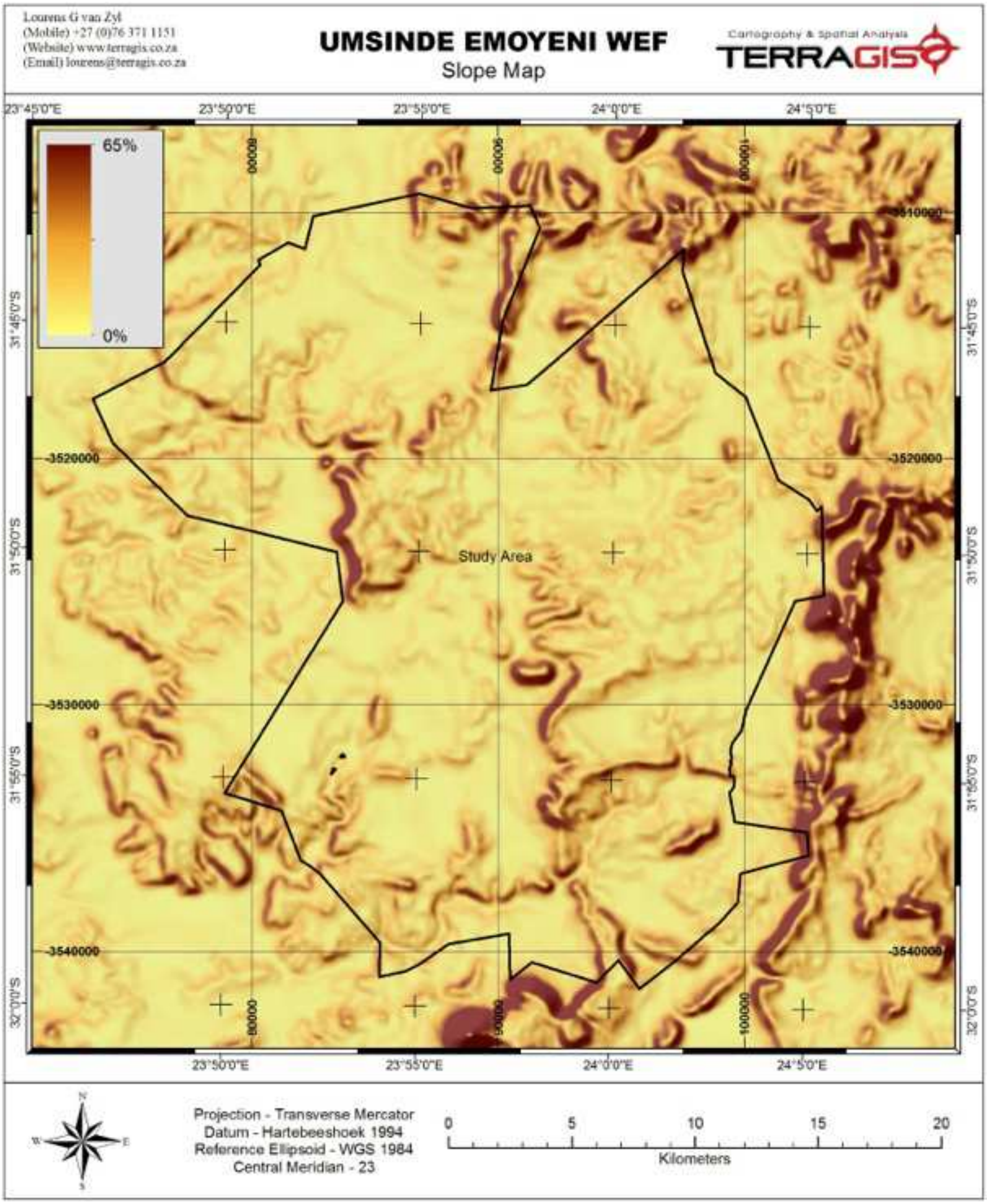

Figure 4 Slope map for the survey area (WEF)

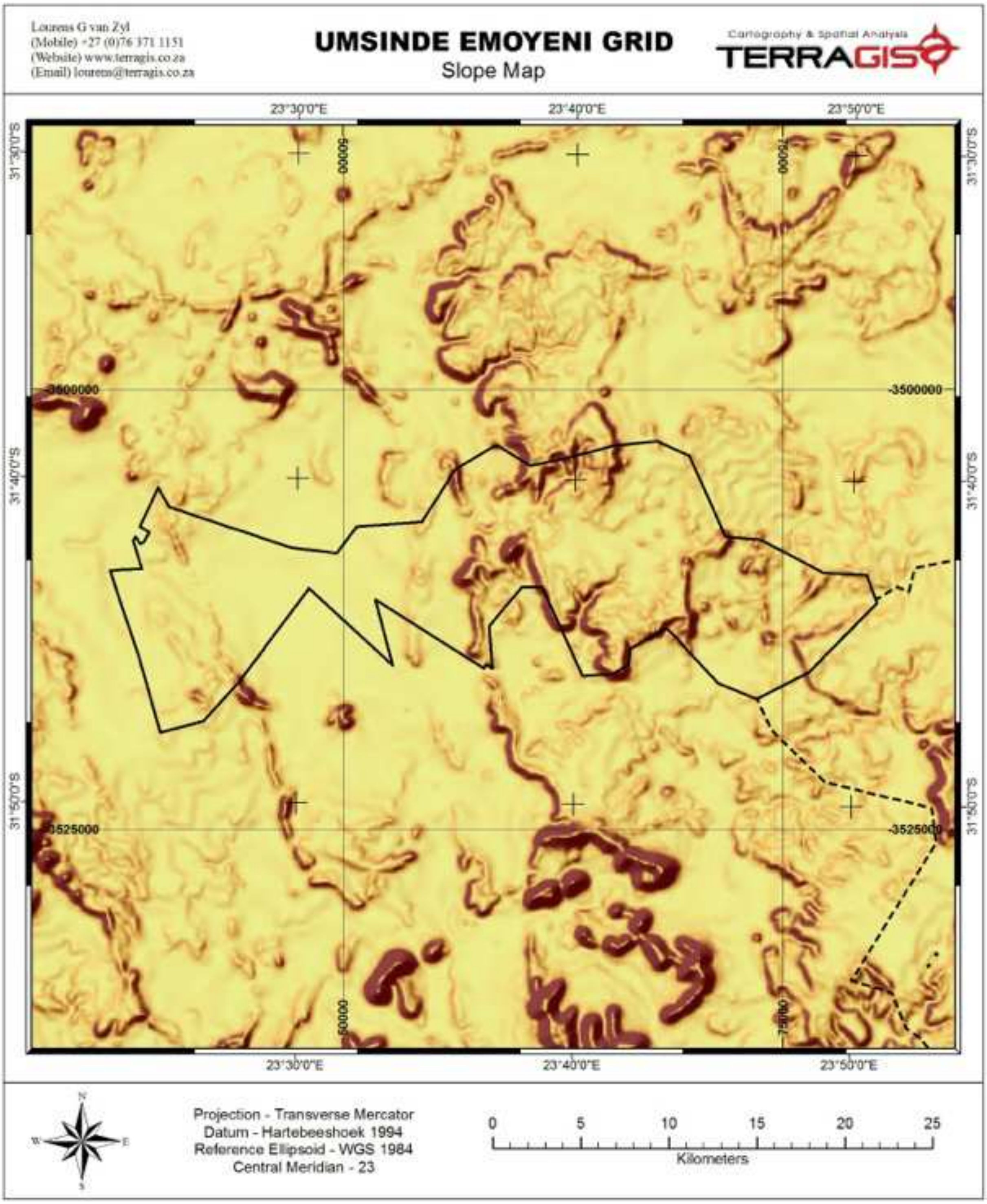

Figure 5 Slope map for the survey area (Grid)

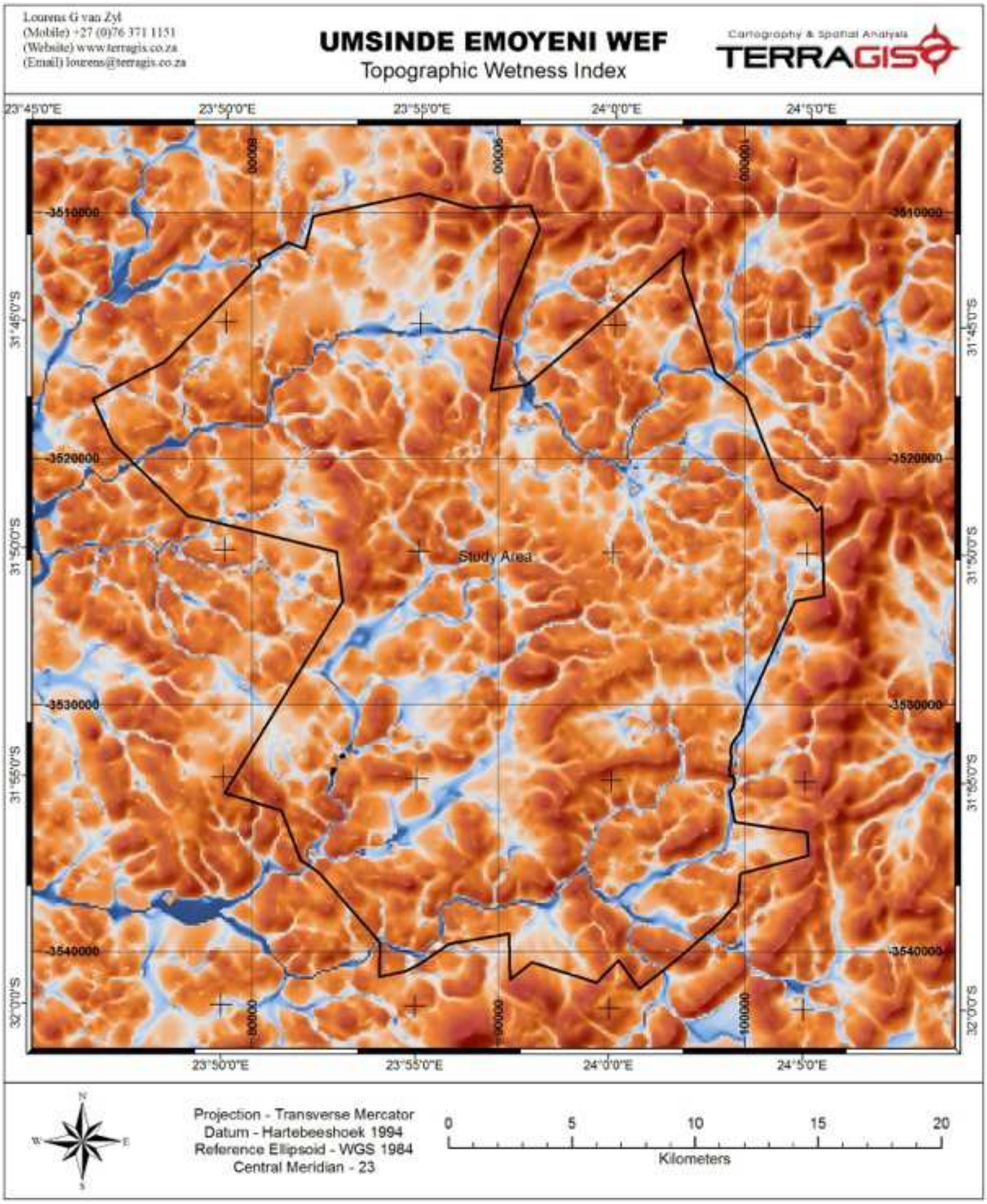

Figure 6 Topographic wetness index for the survey area (WEF)

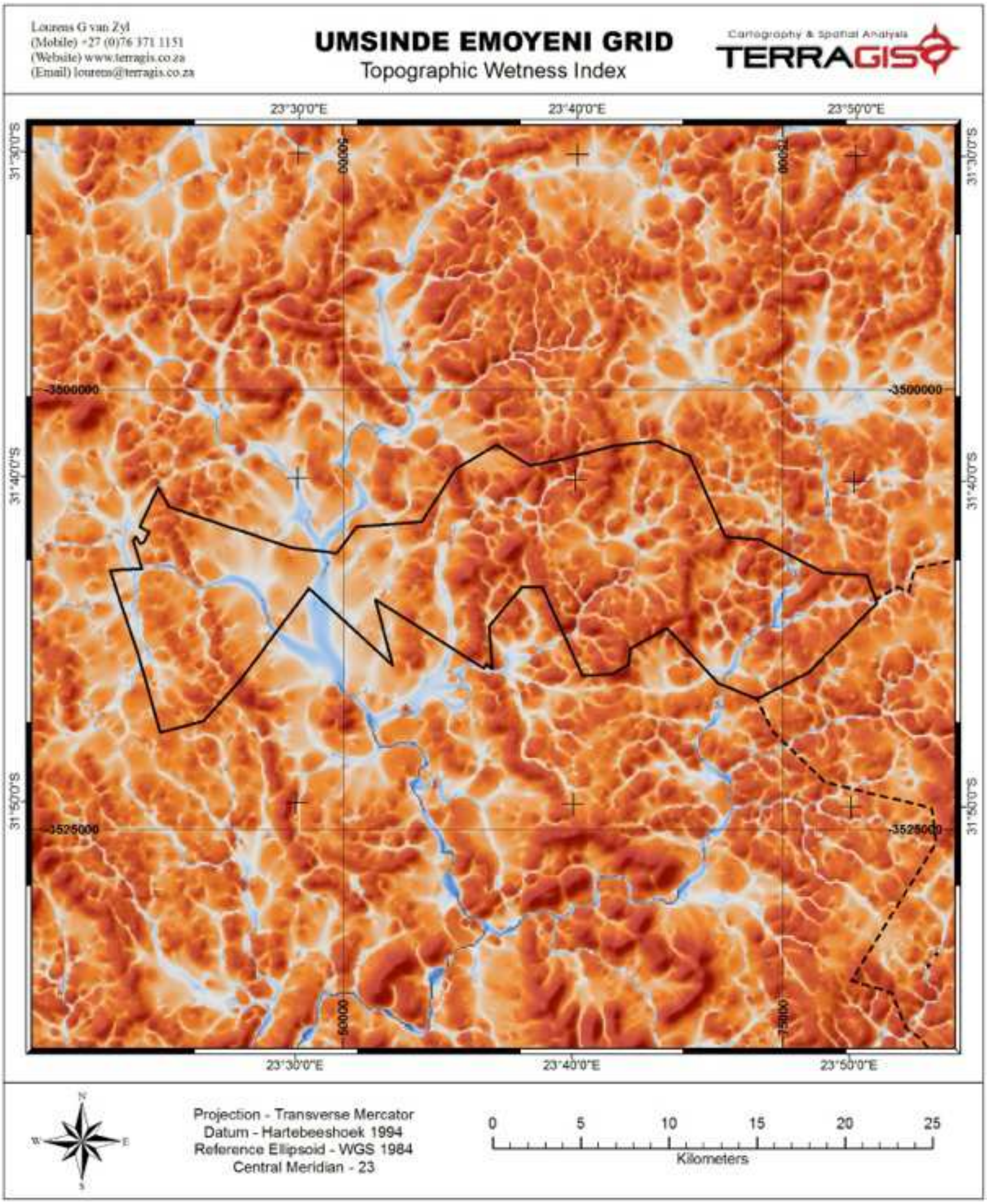

Figure 7 Topographic wetness index for the survey area (Grid)

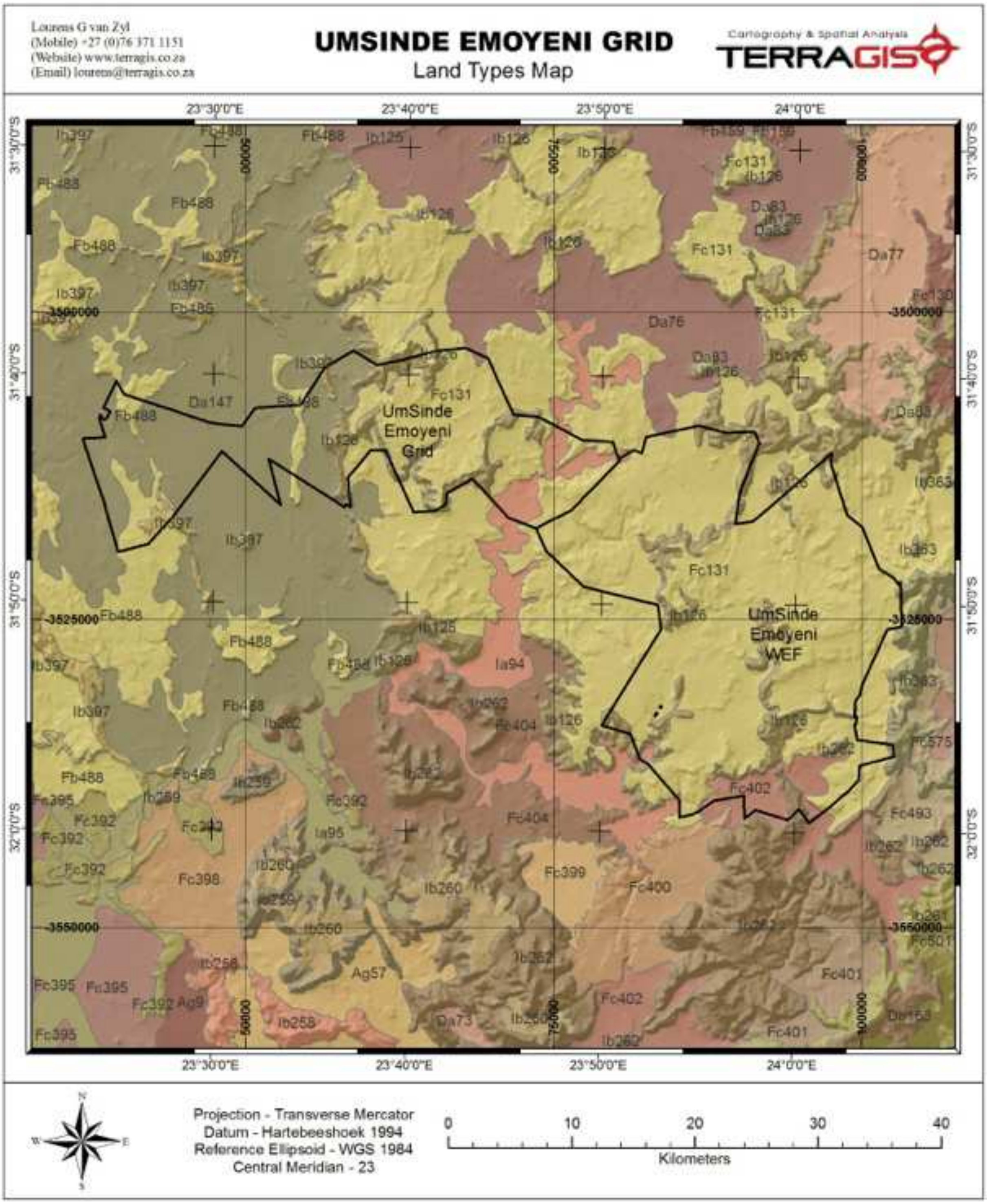

Figure 2 Land type map of the survey site

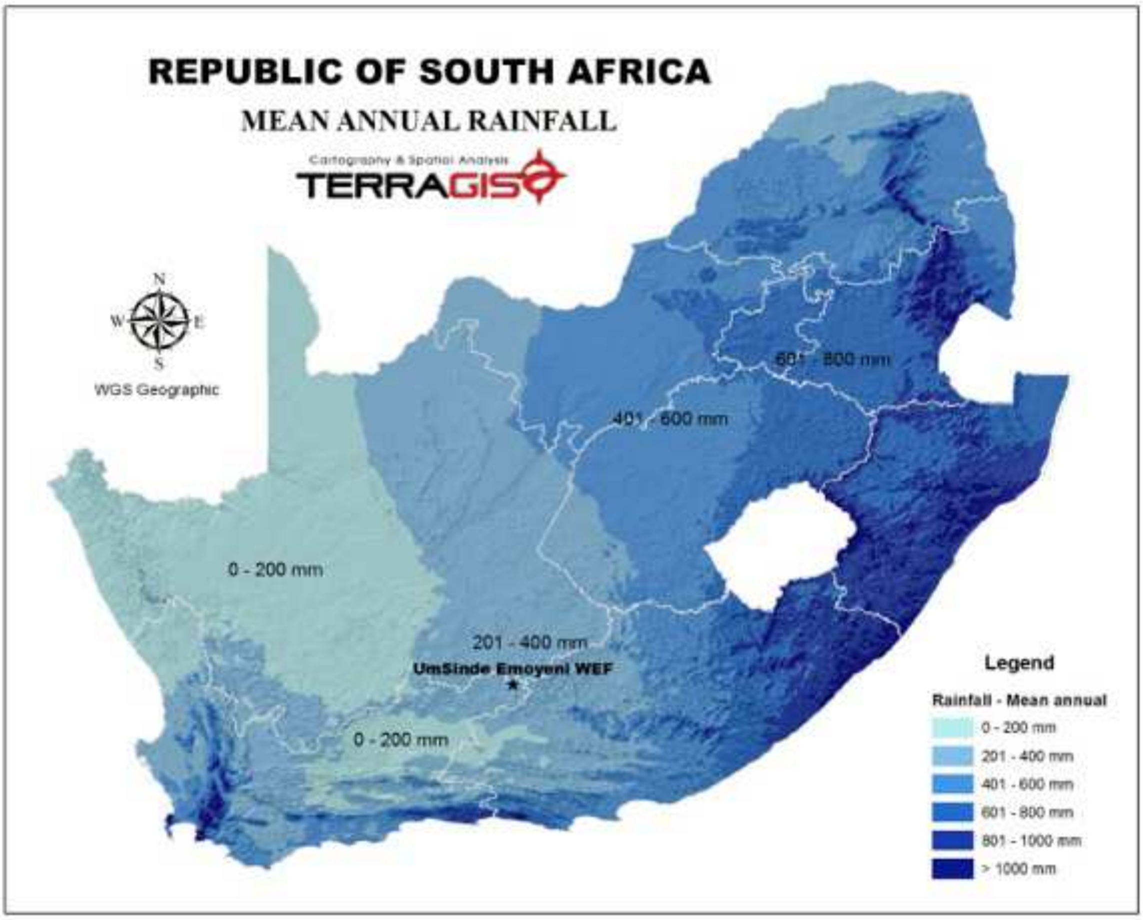

Figure 9 Rainfall map of South Africa indicating the survey site

Land Type Fc131

Land Type: Fb and Fc land types denote areas that are dominated by pedologically young landscapes with lithocutanic B horizons. Fb land types accommodate areas with lime in bottomland positions and Fc land types areas with lime in all landscape positions.

Soils: Mainly shallow and rocky soils in upland and midslope positions with a variety of structured to apedal soils of moderate to shallow depth in footslope and valley bottom positions – most containing lime. Duplex and pedologically young soils dominate in these positions with the exception of dolerite outcrops where more stable structured soils occur.

Land capability and land use: Land use is limited to extensive sheep grazing with small occurrences of crop production in alluvial deposits in drainage features. The land capability mimics the land use.

Agricultural potential: The agricultural potential is linked to the soil depth and the bulk of the land type is therefore of low to very low crop production potential (land capability classes VII and VIII). The soils are suited to extensive grazing only due the low and erratic rainfall (around 300 mm per year – **Figure 9**).

Land Type Fc402

The Fc402 land type is similar to the Fc131 land type with the difference that structured soils dominate throughout.

Land Type Ia94

Soils: Mainly pedologically young soils derived from alluvium in footslope and valley bottom positions. Lime occurs throughout.

Land capability and land use: Land use ranges from grazing through dryland agriculture to irrigated agriculture.

Agricultural potential: The agricultural potential is linked to the soil depth and large areas are of high potential in the presence of water. In the absence of irrigation water the potential is low and then limited to extensive grazing. Dryland crop production is not possible as the rainfall is in the region of 300 mm per year (**Figure 9**).

Land Types Ib126, Ib262 and Ib397

Soils: Almost exclusively shallow and rocky soils with rock outcrops due to undulating and hilly topography. A range of soils occur to a limited extent in depressions and flatter areas.

Land capability and land use: Land use is limited to extensive grazing.

Agricultural potential: The agricultural potential is very low and limited to extensive grazing sheep production (land capability classes VII and VIII). This is due to the shallow and rocky soils as well as the low rainfall (**Figure 9**).

3.2.3 Phase 3: Aerial Photograph Interpretation and Land Use/Capability Mapping

The interpretation of the Google Earth images yielded one main land use namely extensive grazing (**Figures 10** and **11**). Irrigated crop production occurs to a very limited extent on the survey site in alluvial depressions along some of the drainage features. This land use occurs more extensively to the south outside of the survey area.

3.2.4 Phase 4: Site Visit and Reconnaissance Soil Survey

The land uses as identified during the previous phase were confirmed during the site visit and survey (**Figure 12**). The reconnaissance soil survey confirmed the land type data that indicates the entire site to be dominated by shallow and rocky soils as well as extensive rock outcrops (**Figures 13** to **18**). The only areas of significant soil profile development are drainage depressions where eroded soil material accumulates (**Figures 19** to **23**). These areas are also prone to severe erosion.

Figure 10 Satellite image of the survey site (WEF)

Figure 11 Satellite image of the survey site (Grid)

Figure 12 Dominant land use on the survey site (extensive grazing)

Figure 13 Shallow and rocky soils dominating the site

Figure 14 Shallow and rocky soils dominating the site

Figure 15 Shallow and rocky soils dominating the site


Figure 16 Shallow and rocky soils dominating the site


Figure 17 Shallow and rocky soils dominating the site

Figure 18 Shallow and rocky soils dominating the site

Figure 19 Eroded drainage depression areas on the site

Figure 20 Eroded drainage depression areas on the site

Figure 21 Eroded drainage depression areas on the site

Figure 22 Eroded drainage depression areas on the site

Figure 23 Eroded drainage depression areas on the site

4. INTERPRETATION OF SOIL, LAND CAPABILITY AND LAND USE SURVEY RESULTS

The interpretation of the land use and land capability results yielded a number of aspects that are of importance to the project.

4.1 Turbine Positions

All the turbine positions are on rocky soil areas in the higher lying parts of the landscape (**Figure 24**). In **Figure 25** the turbine positions are projected onto the DEM indicating that they are all situated on rocky outcrops. In **Figure 26** the turbine positions are indicated relative to the dominant flow areas of water. This projection confirms the positions to be outside of drainage depressions and therefore areas with deeper and sensitive soils.

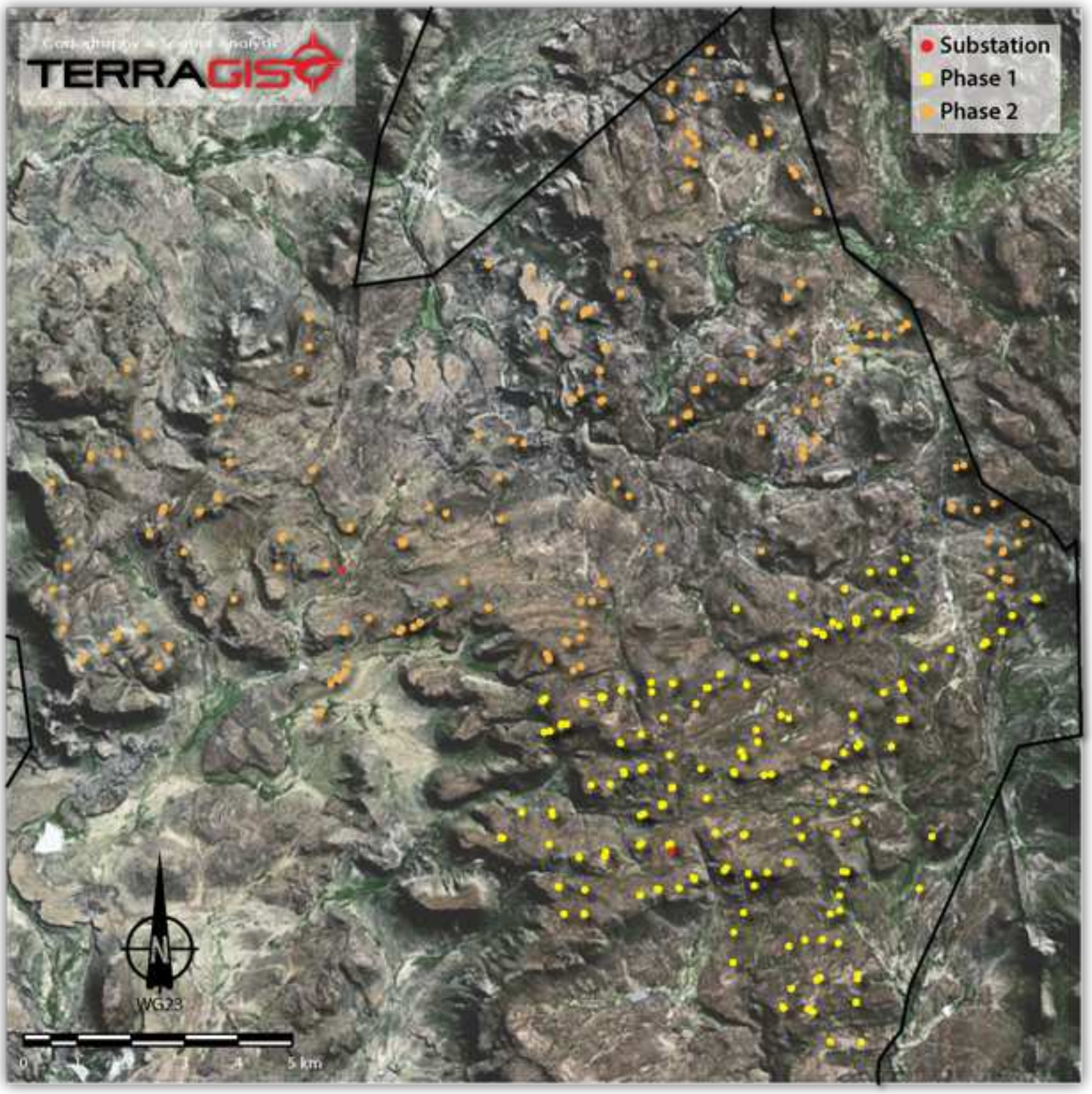

Figure 24 Phase 1, Phase 2 and Substation positions on the survey site

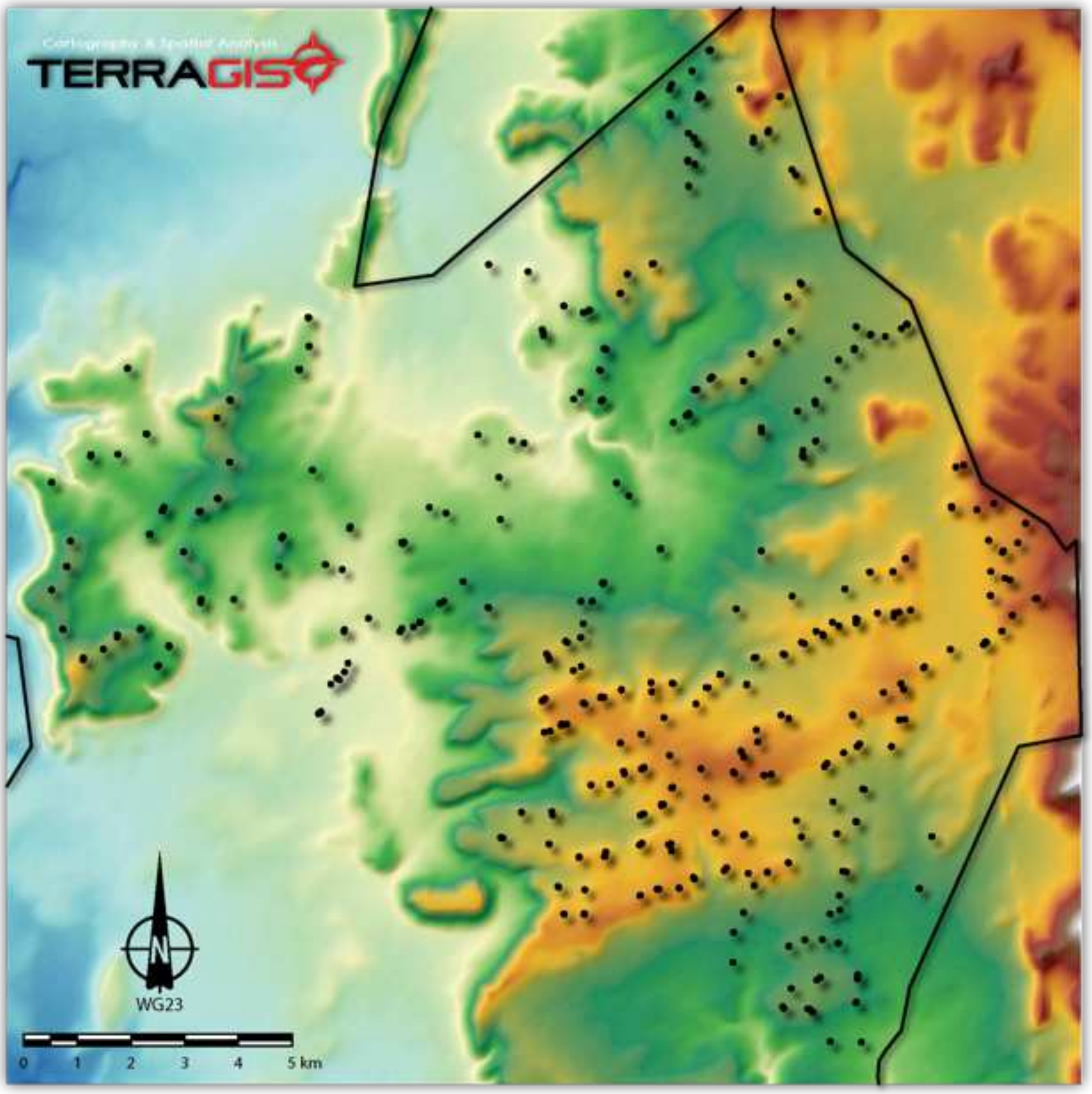

Figure 25 Turbine positions on the survey site projected on the DEM

4.2 Agricultural Potential

The agricultural potential of the site is directly linked to the soils. The shallow and rocky soils are of **very low** potential and the deeper sandy soils are of **medium** potential. The latter soils are very sensitive to erosion and due to the rainfall in the area these are only suited to extensive grazing. In very limited areas the deeper drainage depression soils could be suitable for irrigation purposes.

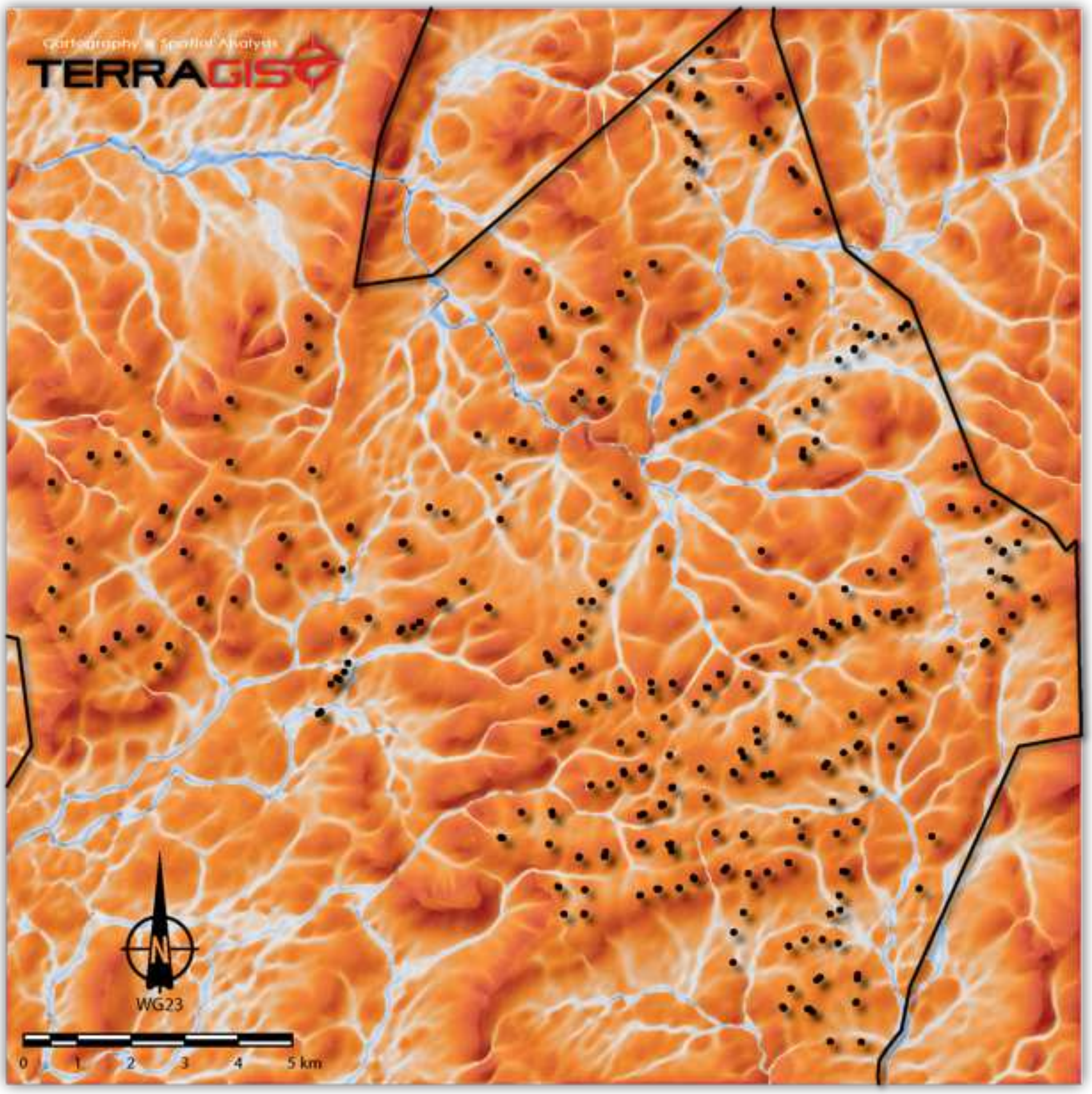

Figure 26 Turbine positions on the survey site projected on the TWI

4.3 Overall Soil Impacts

The overall soil impacts are expected to be relatively low for the shallow and rocky soil zones. The impacts on the deeper soils will be limited to road crossings and therefore limited to localised erosion.

The impacts of the wind turbines on sheep production is considered to be very low due to the small footprints of the turbines and associated infrastructure as well as the low carrying capacity of the rocky soils.

5. ASSESMENT OF IMPACT

5.1 Impact Assessment Methodology

The following section details the impact assessment methodology as prescribed by Arcus.

The significance of all potential impacts that would result from the proposed project is determined in order to assist decision-makers. The significance rating of impacts is shown below.

- **INSIGNIFICANT**: the potential impact is negligible and **will not** have an influence on the decision regarding the proposed activity.
- **VERY LOW**: the potential impact is very small and **should not** have any meaningful influence on the decision regarding the proposed activity.
- **LOW**: the potential impact **may not** have any meaningful influence on the decision regarding the proposed activity.
- **MEDIUM**: the potential impact **should** influence the decision regarding the proposed activity.
- **HIGH**: the potential impact **will** affect a decision regarding the proposed activity.
- **VERY HIGH**: The proposed activity should only be approved under special circumstances.

The **significance** of an impact is defined as a combination of the **consequence** of the impact occurring and the **probability** that the impact will occur. The significance of each identified impact must be rated according to the methodology set out below:

Step 1 – Determine the **consequence** rating for the impact by determining the score for each of the three criteria (A-C) listed below and then **adding** them. The rationale for assigning a specific rating, and comments on the degree to which the impact may cause irreplaceable loss of resources and be irreversible, must be included in the narrative accompanying the impact rating:

Rating	Definition of Rating	Score
A. ***Extent***– *the area over which the impact will be experienced*		
Local	Confined to project or study area or part thereof (e.g. site)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
(Inter)	Nationally or beyond	3
B. ***Intensity***– *the magnitude of the impact in relation to the sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources*		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2

High	Site-specific and wider natural and/or social functions or processes are severely altered	3
C. ***Duration***– *the timeframe over which the impact will be experienced and its reversibility*		
Short-term	Up to 2 years (i.e. reversible impact)	1
Medium-term	2 to 15 years (i.e. reversible impact)	2
Long-term	More than 15 years (state whether impact is irreversible)	3

The combined score of these three criteria corresponds to a **Consequence Rating**, as follows:

Combined Score	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very high

Step 2 – Assess the **probability** of the impact occurring according to the following definitions:

Probability– the likelihood of the impact	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

Step 3 – Determine the overall **significance** of the impact as a combination of the **consequence** and **probability** ratings, as set out below:

		Probabilit			
		Improbable	Possible	Probable	Definite
Consequenc	Very Low	**INSIGNIFICANT**	**INSIGNIFICANT**	**VERY LOW**	**VERY LOW**
	Low	**VERY LOW**	**VERY LOW**	**LOW**	**LOW**
	Medium	**LOW**	**LOW**	**MEDIUM**	**MEDIUM**
	High	**MEDIUM**	**MEDIUM**	**HIGH**	**HIGH**
	Very High	**HIGH**	**HIGH**	**VERY HIGH**	**VERY HIGH**

Step 4 – Note the **status** of the impact (i.e. will the effect of the impact be negative or positive?)

Step 5 – State your level of **confidence** in the assessment of the impact (high, medium or low).

Step 6 – Identify and describe practical **mitigation** and **optimisation** measures that can be implemented effectively to reduce or enhance the significance of the impact. Mitigation and optimisation measures must be described as either:

- **Essential**: best practice measures which must be implemented and are non-negotiable; and.
- **Best Practice**: recommended to comply with best practice, with adoption dependent on the proponent's risk profile and commitment to adhere to best practice, and which must be

shown to have been considered and sound reasons provided by the proponent if not implemented.

5.2 List of Activities for the Site

Table 1 lists the anticipated activities for the site. The centre two columns in the table list the anticipated forms of soil degradation and geographical distribution of the impacts.

Table 1 List of activities and their associated forms of soil degradation

Activity	**Form of Degradation**	**Geographical Extent**	**Comment (Section described)**
Construction Phase			
Construction of turbines (foundations)	Physical degradation (compound)	Two dimensional	Impact small in low sensitivity areas due to localised nature (Section 5.4.1)
Construction of buildings and other infrastructure	Physical degradation (compound)	Two dimensional	(Section 5.4.2)
Construction of roads	Physical degradation (compound)	Two dimensional	(Section 5.4.3)
Construction of power lines	Physical degradation (compound)	Two dimensional	(Section 5.4.4)
Construction and Operational Phase Related Effects			
Vehicle operation on site	Physical and chemical degradation (hydrocarbon spills)	Mainly point and one dimensional	(Section 5.4.5)
Dust generation	Physical degradation	Two dimensional	(Section 5.4.6)

5.3 Assessment of the Impacts of Activities

Many of the impacts are generic and their impacts will remain similar for most areas on the site. The generic activity will therefore be assessed. The impacts associated with the different activities have been assessed below for each activity. These impacts have been summarized in **Table 8**.

5.3.1 Construction of Turbine Foundations

Table 2 presents the impact criteria and a description with respect to soils, land capability and land use for the construction of turbine foundations. This activity entails the construction of turbines (with a foundation) with the associated disturbance of soils and existing land use. The cumulative impact of this activity will be relatively small as the turbines are spread out and have small footprints.

Table 2 Construction of turbine foundations

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	**Low** 5	Definite	**Low**	- ve	High
Essential mitigation measures: • None possible. Limit footprint to the immediate development area								
With mitigation	Local 1	Low 1	Long-term 3	**Low** 5	Definite	**Low**	- ve	High

5.3.2 Construction of Buildings and Other Infrastructure

Table 3 presents the impact criteria and a description with respect to soils, land capability and land use for the construction of buildings and other infrastructure. This activity entails the construction of buildings and other infrastructure with the associated disturbance of soils and existing land use. The cumulative impact of this activity will be small as it is limited in extent on land with low agricultural potential.

Table 3 Construction of buildings and other infrastructure

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	**Low** 5	Definite	**Low**	- ve	High
Essential mitigation measures: • None possible. Limit footprint to the immediate development area								
With mitigation	Local 1	Low 1	Long-term 3	**Low** 5	Definite	**Low**	- ve	High

5.3.3 Construction of Roads

Table 4 presents the impact criteria and a description with respect to soils, land capability and land use for the construction of roads. This activity entails the construction of roads with the associated disturbance of soils and existing land use. The cumulative impact of this activity will be small as it is linear and limited in geographical extent.

Table 4 Construction of roads

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	**Low** 5	Definite	**Low**	- ve	High
Essential mitigation measures: • None possible. Limit footprint to the immediate development area and keep to existing roads as far as possible								
With	Local	Low	Long-term	**Low**	Definite	**Low**	- ve	High

mitigation	1	1	3	5				

5.3.4 Construction of Power Lines

Table 5 presents the impact criteria and a description with respect to soils, land capability and land use for the construction of power lines. This activity entails the construction of power lines with the associated disturbance of soils and existing land use ate each pylon point. The cumulative impact of this activity will be small as it is linear and limited in geographical extent. Impacts are only associated with pylon foundations and not the line.

Table 5 Construction of power lines

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Low 1	Long-term 3	**Low** 5	Definite	**Low**	- ve	High
Essential mitigation measures: • None possible. Limit footprint to the immediate development area and keep to existing roads as far as possible for placement of power line.								
With mitigation	Local 1	Low 1	Long-term 3	**Low** 5	Definite	**Low**	- ve	High

5.3.5 Vehicle Operation on Site

It is assumed that vehicle movement will be restricted to the construction site and established roads. Vehicle impacts in this sense are restricted to spillages of lubricants and petroleum products. **Table 6** presents the impact criteria and a description with respect to soils, land capability and land use for the operation of vehicles on the site. This activity entails the operation of vehicles on site and their associated impacts in terms of spillages of lubricants and petroleum products. The cumulative impact of this activity will be small if managed.

Table 6 Assessment of impact of vehicle operation on site

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local 1	Medium 2	Short-term 1	**Very Low** 4	Definite	**Low**	- ve	High
Essential mitigation measures: • Maintain vehicles, prevent and address spillages								
With mitigation	Local 1	Low 1	Short-term 1	**Very Low** 3	Improbable	**Insignificant**	- ve	High

5.3.6 Dust Generation

Generated dust can impact large areas depending on environmental and climatic conditions. **Table 7** presents the impact criteria and a description with respect to soils, land capability and land use for dust generation on the site. This activity entails the operation of vehicles on site and their associated dust generation. The cumulative impact of this activity will be small if managed but can have widespread impacts if ignored.

Table 7 Assessment of impact of dust generation on site

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional 2	Medium 2	Short-term 1	**Low** 5	Definite	**Low**	- ve	High
Essential mitigation measures: • Limit vehicle movement to absolute minimum, construct proper roads for access								
With mitigation	Local 1	Low 1	Short-term 1	**Very Low** 3	Improbable	**Insignificant**	- ve	High

Table 8 Summary of the impact of the development on agricultural potential and land capability

Impact	Consequence	Probability	Significance	Status	Confidence
Impact 1: Turbine footprint construction	**Low**	Definite	**Low**	- ve	High
With Mitigation	**Low**	Definite	**Low**	- ve	High
Impact 2: Construction of buildings and infrastructure	**Low**	Definite	**Low**	- ve	High
With Mitigation	**Low**	Definite	**Low**	- ve	High
Impact 3: Construction of roads	**Low**	Definite	**Low**	- ve	High
With Mitigation	**Low**	Definite	**Low**	- ve	High
Impact 4: Construction of power lines	**Low**	Definite	**Low**	- ve	High
With Mitigation	**Low**	Definite	**Low**	- ve	High
Impact 5: Vehicle operation and spillages	**Very Low**	Definite	**Low**	- ve	High
With Mitigation	**Very Low**	Improbable	**Insignificant**	- ve	High
Impact 6: Dust generation	**Low**	Definite	**Low**	- ve	High
With Mitigation	**Very Low**	Improbable	**Insignificant**	- ve	High

6. CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the proposed development of a wind energy facility on the site will have a small impact on agricultural activities as the soils are of very low potential and only suited to extensive grazing. The turbine footprints are limited to rocky and shallow soil areas with very limited grazing potential.

Regarding the construction of turbines and associated infrastructure the following recommendations are made:

1. Limit physical impacts to as small a footprint as possible;

2. Site management has to be implemented with the appointment of a suitable environmental control officer (ECO) to oversee the process, address problems and recommend and implement corrective measures;
3. Implement site specific erosion and water control measures to prevent excessive surface runoff from the site (turbines and roads);
4. Plan the road and site layout in such a way as to make maximal use of existing roads and fence/border areas to minimise impacts and to keep grazing and natural units as intact as possible; and
5. Prevent dust generation and vehicle associated pollution and spillages.

The impacts on the site need to be viewed in relation to the opencast mining of coal in areas of high potential soils – such as the Eastern Highveld. With this comparison in mind the impact of a wind energy facility is negligible compared to the damaging impacts of coal mining – for a similar energy output. Therefore, in perspective, the impacts of the proposed facility can be motivated as necessary in decreasing the impacts in areas where agriculture potential plays a more significant role.

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5 February, 2018

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Dear Ms Bodasing

IMPACTS OF REVISED LAYOUT: UMSINDE EMOYENI WIND ENERGY FACILITY

The revised layout with a decreased footprint and intensity of the Umsinde Emoyeni Wind Energy Facility in the Western and Northern Cape Provinces refers.

I, Johan Hilgard van der Waals, generated a report entitled "Soil, Land Use, Land Capability and Agricultural Potential Survey: Umsinde Emoyeni Wind Energy Facility in the Western and Northern Cape Province", dated 21 October 2015. The following conclusions are provided:

"It is concluded that the proposed development of a wind energy facility on the site will have a small impact on agricultural activities as the soils are of very low potential and only suited to extensive grazing. The turbine footprints are limited to rocky and shallow soil areas with very limited grazing potential.

Regarding the construction of turbines and associated infrastructure the following recommendations are made:

1. Limit physical impacts to as small a footprint as possible;

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2. Site management has to be implemented with the appointment of a suitable environmental control officer (ECO) to oversee the process, address problems and recommend and implement corrective measures;
3. Implement site specific erosion and water control measures to prevent excessive surface runoff from the site (turbines and roads);
4. Plan the road and site layout in such a way as to make maximal use of existing roads and fence/border areas to minimise impacts and to keep grazing and natural units as intact as possible; and
5. Prevent dust generation and vehicle associated pollution and spillages."

The impacts for the new layout and decreased intensity are similar and smaller than the original layout. The same recommendations still apply however.

Yours sincerely,

DR. J.H. VAN DER WAALS
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