CONSOLIDATED SPECIALIST SITE SENSITIVITY VERIFICATION REPORTS

FE TANGO WIND ENERGY FACILITY NEAR ABERDEEN, DR BEYERS NAUDE LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE
(DFFE REFERENCE: TBA)

A project site[1] consisting of a single affected property, has been identified as the preferred area for the development of the turbines and the associated infrastructure of the FE Tango Wind Energy Facility. The project site and development area[2] is located on Portion 1 of Farm Klipstavel 72.

The identification of the project site and development area was undertaken through a site selection process which included a regional screening process assessing aspects including wind speed, predominant wind direction, grid connection costs, site accessibility, site topography and ecological features. This confirmed the suitability of the development area for a wind energy facility, and provided an upfront understanding of the potential social and environmental challenges which may be present within the project site and surrounding areas.

The project site/development area has an extent of ~2 250ha, which is considered sufficient in extent (allowing sufficient space to avoid any major environmental sensitivities) and suitable from a technical perspective for the development of up to 18 wind turbines with a contracted capacity of up to 150MW. The smaller facility development footprint[3] will be sited within the development area, with an estimated disturbance area of up to 75ha of the development area. The infrastructure associated with the 150MW FE Tango Wind Energy Facility will include:

Access to the facility will be via an existing (unnamed) gravel road originating off the MR00599 which turns off from the R61 between Beaufort West and Aberdeen. A main access road up to 8m in width will provide access to the facility. It is likely sections of this road will require upgrading and widening to 8m to accommodate the movement of heavy vehicles. This existing road traverses Portions 1 and 5 of Farm Klipstavel 72.

FE Tango (Pty) Ltd has confirmed that the project site is particularly suitable for wind energy development from a technical perspective due to the strength of the wind speed, predominant wind direction, grid connection costs, site accessibility, site topography and ecological features. The unique features of this site eliminates the possibility of alternatives with similar site conditions. Alternatives are restricted to on-site aspects such as turbine footprints and layouts, roads and related infrastructure option (refer to Chapter 3 for further details). Depending on the final turbine selection, the estimated total contracted capacity for the wind farm is up to 150MW.

[1] The project site is that identified area within which the development area and development footprint are located. It is the broader geographic area assessed as part of the BA process, within which indirect and direct effects of the project may occur. The project site is ~2 250ha in extent. The project site is the entire extent of the property for the wind farm, namely Portion 1 of Farm Klipstavel 72.
[2] The development area is that identified area where the 150MW wind energy facility is planned to be located. This area has been selected as a practicable option for the facility, considering technical preference and constraints. The development area is ~2 250ha in extent.
[3] The development footprint is the defined area (located within the development area) where the wind farm and other associated infrastructure for the facility is planned to be constructed. This is the actual footprint of the facility, and the area which would be disturbed.

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SITE SENSITIVITY VERIFICATION METHODOLOGY:

The various site sensitivity verification reports was compiled by the independent specialists appointed for this project and is based on specialist desktop information and field work undertaken as part of the BA process.

SITE SENSITIVITY VERIFICATION:

The table below and reference to specialist assessments serve to:

» Verify land use and sensitivities identified in the screening report; and
» Confirm / contest the need for the various specialist inputs called for in terms of the screening tool report.

Environmental Theme/Specialist Assessment	Sensitivity Rating and Specialist Input Identified in Terms of the DFFE Screening Tool	Verification of Site-Specific Sensitivity and Motivation of the Need for Specialist Investigation
Agricultural Impact Assessment	Screening tool: **High Sensitivity** Required an agricultural impact assessment (in accordance with the protocol prescribed in GNR 320). Verified Sensitivity by Specialist: **Low to Medium Sensitivity**	The specialist findings showed that most of the infrastructure components of the FE Tango Wind Energy Facility are located well within areas with Low Sensitivity. Low agricultural sensitivity is due to the Low (Class 05) land capability and the absence of any field crop boundaries. Areas shown as having field crops did not show any signs of cultivation during the site visit. The Low Sensitivity areas have shallow effective soil depth, and the arid climate reduces the land capability of the area significantly. The area is mainly used for livestock grazing. Turbines 4 and 25 fall within Medium agricultural sensitivity and is allocated a Medium sensitivity due the deeper effective depth of the soil and the soil having a higher land capability of Low-Moderate (Class 06 and 07) and Moderate (Class 08). A SSVR is included in **Appendix P5,** and a Soils and Agricultural Potential Impact Assessment is included as **Appendix L** of the Basic Assessment Report.
Landscape/Visual Impact Assessment Flicker and Shadow Assessment	Screening tool: **Very High Sensitivity** (General Assessment Protocols) Verified Sensitivity by Specialist: **Medium Sensitivity - visual**	The DFFE screening tool generated for the proposed FE Tango Wind Facility indicated that the facility has a very high sensitivity owing to the fact that the site is located near a potential temporarily or permanently inhabited residence where shadow flicker may be an issue. Based on the specialist findings, it can be found that the overall sensitivity of the visual environment for the proposed FE Tango Wind Facility is confirmed to be **moderate** and the **expected shadow flicker sensitivity low** due to: » The avoidance of placement of turbines on any steep slopes, mountain tops or ridges » No location of any homesteads within the 1km shadow flicker buffer » Low occurrence of homesteads within 5km » Low VAC of the receiving environment

Environmental Theme/Specialist Assessment	Sensitivity Rating and Specialist Input Identified in Terms of the DFFE Screening Tool	Verification of Site-Specific Sensitivity and Motivation of the Need for Specialist Investigation
		» The placement of the development within the Beaufort REDZ » Scenic R61 arterial road located more than 5km from the site » Limited existing built infrastructure within the study area A SSVR is included in **Appendix P8.** A Visual Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included in this BA Report as **Appendix I.**
Archaeological and Cultural Heritage Impact Assessment	Screening tool: **Very High Sensitivity** Verified Sensitivity by Specialist: **Very High Sensitivity**	The results of the Heritage Impact Assessment (including archaeology and cultural heritage) in terms of site sensitivity are summarised as follows: » The cultural value of the pristine Karoo Landscape is **very high** and the location of the proposed development will impact this significance. » Some significant archaeological resources were identified in the development area giving it a **high** sensitivity. A SSVR is included in **Appendix P6.** A Heritage Impact Assessment (which covers both archaeological and cultural aspects of the development area and development footprint) has been undertaken for the FE Tango Wind Energy Facility and is included in this Basic Assessment Report as **Appendix H.** The HIA complies with the requirements of the NHRA.
Palaeontology Impact Assessment	Screening tool: **Very High Sensitivity** Verified Sensitivity by Specialist: **Very High Sensitivity**	The results of the Heritage Impact Assessment (including palaeontology) in terms of site sensitivity are summarised as follows: » No highly significant palaeontological resources were identified within the development area, however the geology underlying the development area is very sensitive for impacts to significant fossils giving it a **very high** sensitivity. A SSVR is included in **Appendix P6.** A Heritage Impact Assessment (which covers the paleontological aspects of the development area and development footprint) has been undertaken for the FE Tango Wind Energy Facility and is included in this Basic Assessment Report as **Appendix H.** The HIA complies with the requirements of the NHRA.
Terrestrial Biodiversity Impact Assessment	Screening tool: **Very High Sensitivity** Required a terrestrial biodiversity impact assessment (Terrestrial Biodiversity Assessment Protocols)	The overall combined Terrestrial Biodiversity theme indicates that the majority site consists of **Very High** sensitivity areas due to the presence of CBA2, ESAs and FEPA Sub catchments. The site verification confirms that a portion of the site overlaps with designated terrestrial Critical Biodiversity and Ecological Support Areas, associated with broader landscape level ecological processes and conservation priorities of the affected

Environmental Theme/Specialist Assessment	Sensitivity Rating and Specialist Input Identified in Terms of the DFFE Screening Tool	Verification of Site-Specific Sensitivity and Motivation of the Need for Specialist Investigation
	Verified Sensitivity by Specialist: **Low Sensitivity**	vegetation units. Based on the presence of these features within the site, a full terrestrial biodiversity assessment is required. Based on the confirmed habitat and the field surveys, the classification of very high sensitivity for Terrestrial Biodiversity according to the Screening Tool is partially supported, as the verified sensitivity is very high for portions of the site, but fine scale mapping has reduced the overall sensitive area with portions designated low sensitivity. As such, should all the proposed mitigation be implemented, the FE Tango Wind Energy Facility development is deemed acceptable from a terrestrial ecological impact perspective. A SSVR is included in **Appendix P1**. A Terrestrial Biodiversity Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included as **Appendix D** of the Basic Assessment Report.
Aquatic Biodiversity Impact Assessment	Screening tool: **Very high Sensitivity** Required an Aquatic Biodiversity impact assessment (in accordance with the protocol prescribed in GNR 320, Aquatic Biodiversity Assessment Protocols). Verified Sensitivity by Specialist: **Very high Sensitivity**	The baseline assessment investigated the watercourses present within the project site and identified the presence of numerous drainage features comprising of an extensive braided watercourse network, presenting ephemeral conditions. Only two watercourses were flowing at the time of the survey and these were assessed for aquatic biota. These were the Ouplaas River and one of its tributaries. Due to the sensitivity of the catchment and watercourse soils to erosion, together with the flat topography and braided alluvial fan nature of the watercourses within the project site, an increase in anthropogenic activities poses a risk to the ecological integrity of the watercourses notably from a hydrological perspective. Any proposed activities within the watercourse should not further contribute to the deterioration of the instream and riparian zones as this will compromise the ecological integrity of the reach and the Management Class may not be achieved. According to the DFFE screening tool the aquatic systems have a **very high** sensitivity rating. Based on the survey findings, the specialist confirms the **Very High** aquatic theme sensitivity. A SSVR is included in **Appendix P2**. An Aquatic Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included as **Appendix E** of the Basic Assessment Report.
Avian Impact Assessment	Screening tool: **Low Sensitivity**	The DFFE Screening tool classifies the site as having **low** avian sensitivity. However, the Screening Tool identified the animal species theme as having **high** sensitivity. This is based on the potential presence of the following Red Data (RD) species:

Environmental Theme/Specialist Assessment	Sensitivity Rating and Specialist Input Identified in Terms of the DFFE Screening Tool	Verification of Site-Specific Sensitivity and Motivation of the Need for Specialist Investigation
	Required an Avian Impact Assessment (in accordance with the protocol prescribed in GNR 320, Avian Biodiversity Assessment Protocols). Verified Sensitivity: **High Sensitivity**	» Southern Black Bustard » Burchell's Courser » Ludwig's Bustard » Verreaux's Eagle » Martial Eagle » Black Harrier » Black Stork The occurrence of SCC at the Project Site was confirmed during the six pre-construction monitoring surveys (January 2021 to October 2022) with observations of Ludwig's Bustard, Blue Crane *Grus paradisea* (Globally Vulnerable and Regionally Near-threatened), Karoo Korhaan *Eupodotis vigorsii* (Regionally Near-threatened), Kori Bustard *Ardeotis kori* (Globally and Regionally Near-threatened), Martial Eagle *Polemaetus bellicosus* (Globally and Regionally Endangered), Southern Black Korhaan, Secretarybird *Sagittarius serpentarius* (Globally Endangered and Regionally Vulnerable), Verreaux's Eagle *Aquila verreauxii* (Regionally Vulnerable) and Lanner Falcon *Falco biarmicus* (Regionally Vulnerable) recorded on-site. Based on the confirmed habitat and the field surveys, the classification of **Low** sensitivity for avifauna according to the Screening Tool is not supported, as sensitive bird species were identified and the sensitivity rating has been increased to **High** sensitivity. A SSVR is included in **Appendix P3**. An Avifauna Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included as **Appendix F** of the Basic Assessment Report. The assessment has been undertaken in accordance with the requirements of the BirdLife SA Best Practice Guidelines for Wind Developments.
Civil Aviation Assessment	Screening tool: **Low Sensitivity** Verified Sensitivity: **Low Sensitivity**	The project site is not located within close proximity of any aerodromes, landing strips or infrastructure. The **low** sensitivity rating is supported, and no study is required in this regard. The South African Civil Aviation Authority (SACAA) and Air Traffic Navigation Services (ATNS) will be consulted throughout the Basic Assessment process to obtain input and details of any requirements for further studies.
Defence Assessment	Screening tool: **Low Sensitivity** Verified Sensitivity: **Low Sensitivity**	The project site is not located within close proximity of any military base or infrastructure. The **low** sensitivity rating is supported, and no study is required in this regard. The South African National Defence Force will be consulted throughout the Basic Assessment process.
RFI Assessment	Screening tool: **High Sensitivity**	The FE Tango Wind Energy Facility is located outside of an Astronomy Advantage Area and within 1km of a

Environmental Theme/Specialist Assessment	Sensitivity Rating and Specialist Input Identified in Terms of the DFFE Screening Tool	Verification of Site-Specific Sensitivity and Motivation of the Need for Specialist Investigation
	Verified Sensitivity: **Low Sensitivity**	telecommunication facility as classified as having high sensitivity for telecommunication. Communication with Openserve indicated that the proposed FE Tango Wind Energy Facility will not have an impact on their infrastructure. Therefore, a low sensitivity rating is supported, and no study is required in this regard.
Social Impact Assessment	The screening report does not indicate a rating for this theme.	A Social Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included in the Basic Assessment Report as **Appendix K.** No SSVR is required for this theme.
Noise Impact Assessment	Screening tool: **Very High Sensitivity** Verified Sensitivity: **Low to Medium Sensitivity**	The DFFE Screening tool classifies the site as having **Very High** Sensitivity due to the potential presence of numerous sensitive noise receptors around the project site. However, there were no potential noise-sensitive receptors located in these areas and the findings of the screening tool is disputed. There are a number of structures (NSR01, NSR02, NSR03 and NSR04) used for residential purposes that was not identified by the screening tool report. During the Noise Impact Assessment, residential areas, and potential noise-sensitive developments/receptors/ communities (NSR) were identified using aerial images as well as a physical site visit, with only one location identified that is used on a temporary basis for residential purposes. According to the specialist the significance of the noise impact is of **medium to low** sensitivity. It is the Specialists opinion that where mitigation measures are implemented the noise impact is of **medium to low** sensitivity. A SSVR is included in **Appendix P7**. A Noise Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included in the Basic Assessment Report as **Appendix J.**
Bats Impact Assessment	Screening tool: **High Sensitivity** Verified Sensitivity: **Medium to Low Sensitivity**	The DFFE Screening tool classifies the site as having high bat sensitivity. This is based on the presence of wetlands and watercourses that can potentially create optimal roosting habitats for sensitive bat species. No confirmed roosts have been identified on site to date, although it is recommended for a final specialist site walk-through to take place prior to construction to confirm this, and to provide further construction and roost management recommendations, if required (i.e. if roosts are found). A SSVR is included in Appendix P3. An Avifauna Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included as Appendix F of the Basic Assessment

Environmental Theme/Specialist Assessment	Sensitivity Rating and Specialist Input Identified in Terms of the DFFE Screening Tool	Verification of Site-Specific Sensitivity and Motivation of the Need for Specialist Investigation
		Report. The assessment has been undertaken in accordance with the requirements of the BirdLife SA Best Practice Guidelines for Wwind Developments. A SSVR is included in **Appendix P4**. A Bat Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included in the Basic Assessment Report as **Appendix I.** This study has been completed in accordance with the South African Best Practise Guidelines for Surveying Bats in Wind Energy Facility Developments.
Traffic Impact Assessment	The screening report does not indicate a rating for this theme.	A Traffic Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included in the Basic Assessment Report as **Appendix M.** No SSVR is required for this theme.
Plant Species Assessment	Screening tool: **Medium Sensitivity** Necessitating a plant species assessment (General Assessment Protocols). Verified Sensitivity by Specialist: **Low Sensitivity**	The DFFE Screening Tool indicates that there are several sensitive plant species from the FE Tango Wind Energy Facility study area, with the result that the majority of the site is mapped as **Medium** Sensitivity for the Plant Species Theme. Based on site investigations and site sensitivity verification, no flora Species of Conservation Concern, including endemic, or range restricted species, or having an elevated conservation status were found to occur. No plant species assessment is required. A SSVR is included in **Appendix P1**. A Terrestrial Biodiversity Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included as **Appendix D** of the Basic Assessment Report.
Animal Species	Screening tool: **High Sensitivity** Necessitating an animal species assessment (in accordance with Animal Species Assessment Protocols prescribed in GN 43855) Verified Sensitivity by Specialist: **Low Sensitivity**	The DFFE Screening Tool identified the entire site as having a **medium and high** animal sensitivity theme due to the presence of several bird species of concern. A **medium** sensitivity was assigned due to the possible presence of the Karoo Padloper, *Chersobius boulengeri*. Given the scarcity and low activity levels of this species, this indicates that it is unlikely to be present. The presence of the Karoo Padloper was not confirmed at the site. The site inspection suggests that it is highly unlikely that this species is present on the site as the low gravel hills present do not contain much rock shelter for this species. In some areas it may occur within plains habitats. However, as this species was not observed, it is considered unlikely that the Karoo Padloper is present. As such, the site is considered **low** sensitivity for this species. No animal species assessment (in accordance with Animal Species Assessment Protocols prescribed in GN 43855).

Environmental Theme/Specialist Assessment	Sensitivity Rating and Specialist Input Identified in Terms of the DFFE Screening Tool	Verification of Site-Specific Sensitivity and Motivation of the Need for Specialist Investigation
		A SSVR is included in **Appendix P1**. A Terrestrial Biodiversity Impact Assessment has been undertaken for the FE Tango Wind Energy Facility and is included as **Appendix D** of the Basic Assessment Report.

The following site sensitivity verification reports are included in this document:

Appendix P1: Terrestrial Ecology Site Sensitivity Verification Report
Appendix P2: Aquatic Ecology Site Sensitivity Verification Report
Appendix P3: Avifauna Site Sensitivity Verification Report
Appendix P4: Bats Site Sensitivity Verification Report
Appendix P5: Soil & Agricultural Potential Site Sensitivity Verification Report
Appendix P6: Heritage Site Sensitivity Verification Report
Appendix P7: Noise Site Sensitivity Verification Report
Appendix P8: Visual Site Sensitivity Verification Report

The specialist studies undertaken for this project are required to comply with either the above Protocols or, alternatively, with the requirements of Appendix 6 of the NEMA EIA Regulations of 2014 (as amended 2017 & 2021).

APPENDIX P1:
TERRESTRIAL ECOLOGY SITE SENSITIVITY VERIFICATION REPORT

Terrestrial Biodiversity Site Sensitivity Verification

FE Tango Wind Energy Facility (Aberdeen)

Date: 14/08/2023
Version: Draft Report
Author: J. Pote

Terrestrial Biodiversity Site Sensitivity Verification

FE Tango Wind Energy Facility (Aberdeen)

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Compiled for: Savannah Environmental

Date of report: **14/08/2023**

Revised Draft Report

Revisions

Report/Revision Version:	Date:	Approved by:
First Draft	14/08/2023	Jamie Pote
Revisions/Comments		
Final Report		

Table of Contents

List of Figures

List of Tables

1 Site Sensitivity Verification Report

1.1 Purpose of Report

The "*Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of sections 24 (5) (a) and (h) and 44 of the Act, when applying for Environmental Authorisation*", as published on 20 March, 2020 in National Gazette, No. 43110 in terms of NEMA (Act 107 of 1998) sections 24(5)(a), (h) and 44, lists protocols and minimum report requirements for environmental impacts on terrestrial biodiversity and provides the criteria for the assessment and reporting of impacts on terrestrial biodiversity for activities requiring environmental authorisation. The assessment and minimum reporting requirements of this protocol are associated with a level of environmental sensitivity identified by the National web based Environmental Screening Tool. Prior to commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site under consideration, identified by the screening tool, must be confirmed by undertaking a **site sensitivity verification**, which must include the following.

1. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.
2. The site sensitivity verification must be undertaken through the use of:
    a. a desk top analysis, using satellite imagery.
    b. a preliminary on -site inspection; and
    c. any other available and relevant information.
3. The outcome of the site sensitivity verification must be recorded in the form of a report that:
    a. confirms or disputes the current use of the land and environmental sensitivity as identified by the screening tool.
    b. contains a motivation and evidence of either the verified or different use of the land and environmental sensitivity; and
    c. is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

The National Web Based Screening Tool was used to generate the potential environmental sensitivity of the site which has then been compared to various online and other databases and information sources in order to verify and confirm the validity of the screening tool findings. This was further supported with on-site observations and analysis of most recent aerial photography.

This terrestrial biodiversity site verification has been undertaken as per the requirements of the Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for environmental authorisation (GN 320, 20 March 2020).

1.2 Data sources and references

Data sources that were utilised for this 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, 2018) and South Africa Protected Area database (2020) – protected area information.
- Bioregional Planning: Northwest Biodiversity Sector Plan (2015).
- Critical Biodiversity Areas of the Northern Cape (2016) – Bioregional Plan.
- 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).
- 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.

1.3 Site visit

A preliminary site verification for screening purposes was conducted between 25 and 28 April 2023. This initial site visit did not include any detailed habitat or species assessments, the purpose being to obtain an overview of the site only and to identify possible risks to the proposed activity and undertake preliminary habitat mapping. A follow up site visit was conducted between 24 & 26 May 2023 in order to supplement the initial findings, undertake further species surveys as well as refine sensitivity mapping.

1.4 Assumptions, Uncertainties and Gaps in Knowledge

The findings and recommendations of this report may be susceptible to the following uncertainties and limitation:

- No assessment has been made of aquatic aspects relating to any wetlands, pans and rivers/seeps and/or estuaries outside of the scope of a terrestrial biodiversity report and have been undertaken by an aquatic specialist.
- No specific faunal assessment has been undertaken, but animals have been assessed in term of the terrestrial Biodiversity Assessment requirements.
- Any flora surveys based upon a limited sampling time-period, may not reflect the actual species composition of the site due to seasonal variations in flowering times.
- As far as possible, site collected data has been supplemented with desktop and database-centred distribution data as well as previous studies undertaken in the area.

1.5 Site and Activity Description

The site is situated between **Beaufort West to the north-west and Aberdeen to the south-east, in the Eastern Cape** province, with the FE Tango Wind Energy Facility site lying to the east, slightly north of the R61 district road. The site is situated within a commercial livestock and game farming area (Refer to Figure 1), generally comprising dryland grazing. The portion assessed is approximately 2 250 Ha in extent. The area falls within a low, predominantly summer rainfall area.

1.6 National Environmental Screening Tool

The DFFE National Environmental Screening Tool indicates the following:

- Terrestrial Biodiversity – Very High & Low
- Animal Species – High, Medium, & Low
- Plant Species – Medium & Low
- Aquatic Biodiversity – Very High & Low

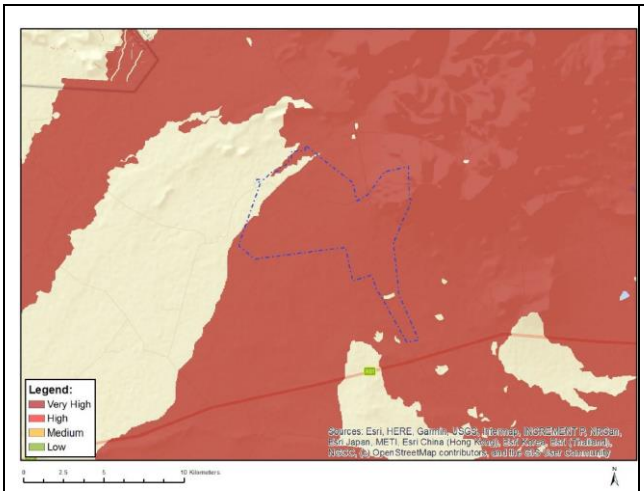

Figure 1: Terrestrial Biodiversity Sensitivity

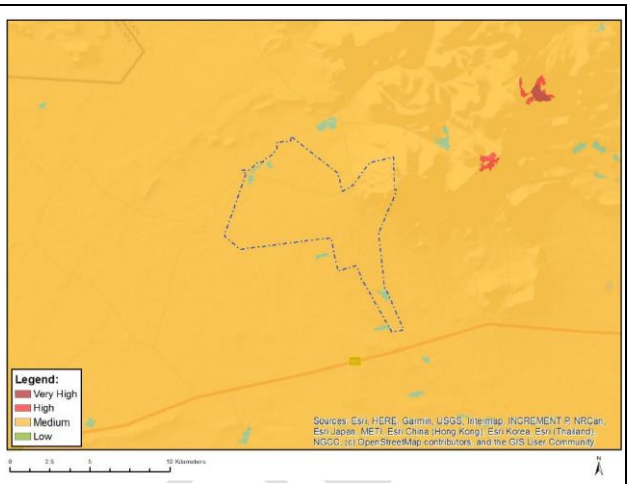

Figure 2: Plant Species Sensitivity

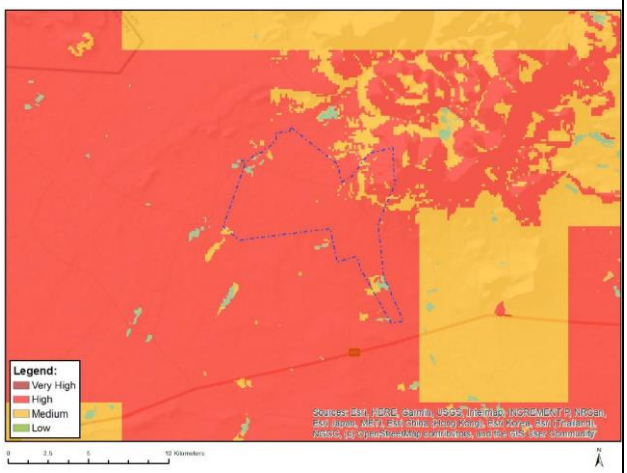

Figure 3: Animal Species Sensitivity

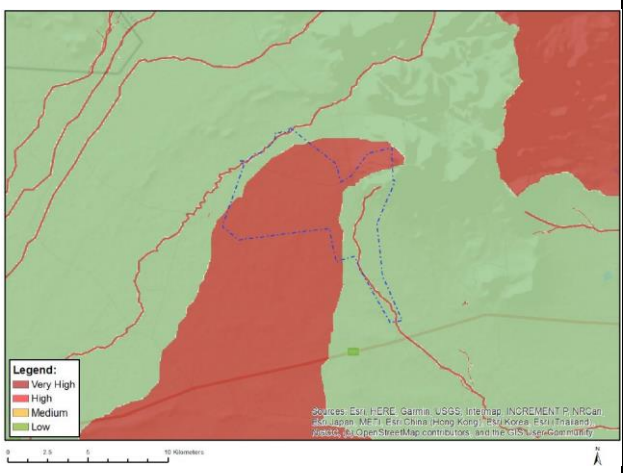

Figure 4: Aquatic Sensitivity

SENSITIVITY	DESCRIPTION - FEATURE(S) IN PROXIMITY
Terrestrial Sensitivity	
Very High	CBA 2, ESA 1 & 2, FEPA sub-catchments
High	None
Medium	None

SENSITIVITY	DESCRIPTION - FEATURE(S) IN PROXIMITY
Low	Present
Plant Sensitivity	
Very High	None
High	None
Medium	Sensitive species 1212 & 1039, *Peersia frithii, Tridentea virescens, Cliffortia montana, Dierama grandiflorum, Erica passerinoides*
Low	Present
Animal Sensitivity	
Very High	*None*
High	*Aquila verreauxii, Polemaetus bellicosus, Neotis ludwigii, Afrotis afra, Circus maurus* (Birds)
Medium	*Neotis ludwigii, Ciconia nigra, Circus maurus* (Birds) & *Chersobius boulengeri* (reptile)
Low	Present
Aquatic Sensitivity	
Very High	Rivers & Wetlands, FEPA quinary catchments
High	None
Medium	None
Low	Present

The following is deduced from the DFFE National Environmental Screening Tool:

- As apparent from the National Environmental Screening Tool, the terrestrial biodiversity theme is Very High.
- Several flora (plant) species regarded as being of concern are flagged and will be assessed further in the report, however none were found to be present during the site visit and are furthermore not deemed likely to be present, as the site is outside of the known range.
- Faunal (animal) species regarded as being of concern is flagged. This species is confirmed to not be present, supported by the fact that suitable habitat is not present.
- The aquatic sensitivity is Very High, supported by on site observations. Refer to separate aquatic assessment for specific findings outside the scope of this terrestrial biodiversity assessment.
- The terrestrial flora and fauna impacts are assessed further in the relevant report sections for flora and fauna in the accompanying report.

The site assessment has physically screened for the presence of any species as listed in the National Environmental Screening Tool, as well as other possible species or sensitivities that are not identified in the screening tool. Not all features are directly affected, but being in proximity, the risks associated with the activity will be investigated further and addressed in the report.

1.7 Findings, Outcomes and Recommendations

1.7.1 Terrestrial Biodiversity

Site verification of the Terrestrial Biodiversity sensitivities is summarised in *Table 1* and depicted in *Figure 5*. Designated Critical Biodiversity Area or Ecological Support Area intersects with the site or project area. Rivers and Wetlands are also indicated.

Table 1: Terrestrial Biodiversity Features.

Feature		COMMENT
Critical Biodiversity Area	Present	CBA 2 is present overlapping a portion of the site.
Ecological Support Area	Present	ESA 1 is present overlapping a portion of the site.

Based on the confirmed habitat and the field surveys, the classification of VERY HIGH sensitivity for Terrestrial Biodiversity according to the Screening Tool is partially supported, as the verified sensitivity is VERY HIGH for portions of the site, but fine scale mapping has reduced the overall sensitive area with portions designated LOW Sensitivity.

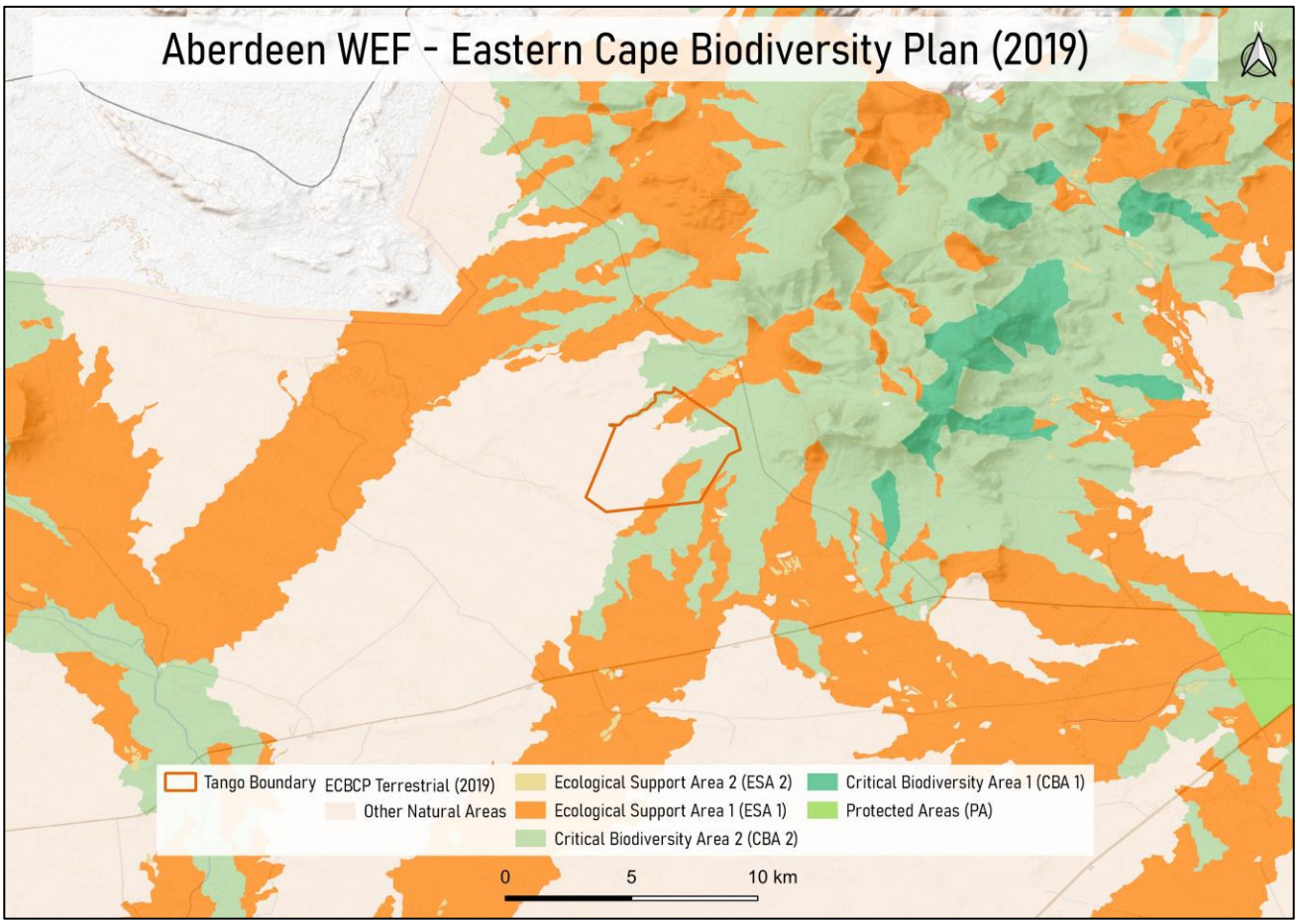

Figure 5: Map indicating Eastern Cape Conservation Plan (ECBCP).

1.7.2 Plant Species (Flora)

National Environmental Screening Tool flagged several flora species. None were found to occur along within the site at the time of assessment. Construction of the WEF is unlikely to pose any risk of significance to the flagged species due to the limited impact and footprint.

Based on the confirmed habitat and the field surveys, the classification of MEDIUM sensitivity for Plant Species according to the Screening Tool is not supported, as the verified sensitivity is LOW due to none of the species flagged being found to be present.

1.7.3 Animal Species (Fauna)

A reptile species is listed in the screening tool; however, the preferred habitat for this species is not considered to be abundant within the site. Refer to Avifaunal report regarding bird species.

Based on the confirmed habitat and the field surveys, the classification of MEDIUM sensitivity for Animal Species (excluding Avifauna) according to the Screening Tool is not supported, as the verified sensitivity is LOW due to suitable habitat nor the habitat specific species not being present.

1.7.4 Aquatic

Wetland and River features are present in the broader area. Refer to Aquatic assessment report regarding aquatic aspects.

Based on the confirmed habitat and the field surveys, the classification of HIGH sensitivity for Aquatic Sensitivity according to the Screening Tool is partially supported, as the verified sensitivity is VERY HIGH for portions of the site, but fine scale mapping has reduced the overall sensitive area with portions designated LOW Sensitivity.

1.7.5 Conclusions

The site verification thus confirms that a portion of the site overlaps with designated terrestrial Critical Biodiversity and Ecological Support Areas, associated with broader landscape level ecological processes and conservation priorities of the affected vegetation units. It further confirms that the listed plant species were not recorded at the time of assessment.

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APPENDIX P2:
AQUATIC ECOLOGY SITE SENSITIVITY VERIFICATION REPORT

Aquatic Biodiversity Site Sensitivity Verification Report for the Proposed FE Tango Wind Energy Facility and Associated Infrastructure

Aberdeen, Eastern Cape Province

Report Date: September 2023

CLIENT

Prepared by:

The Biodiversity Company

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1 Introduction

1.1 Background

The Biodiversity Company was appointed by Savannah Environmental (Pty) Ltd (Savannah) to conduct an Aquatic Biodiversity Site Sensitivity Verification (SSV) for the proposed FE Tango Wind Energy Facility (WEF) and associated infrastructure. The SSV is required to confirm the current land use and environmental sensitivity of the proposed project areas as identified by the Department of Forestry; Fisheries and the Environment (DFFE) National Web-Based Environmental Screening Tool. The applicant, FE Tango (Pty) Ltd, is proposing the development of a wind energy facility and associated infrastructure between Beaufort West to the north-west and Aberdeen to the south-east, in the Eastern Cape Province of South Africa.

This assessment was conducted in accordance with the Environmental Impact Assessment Regulations, 2014 (Government Notice (GN) 326, 7 April 2017) (EIA Regulations) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the Assessment Protocol. The Screening Tool has characterised the aquatic biodiversity sensitivity theme for the Project Area of Influence (PAOI) as "*Very High*" and therefore specialist assessments were completed for the project. A single dry season survey was conducted on the 23rd to the 25th of May 2023 by a qualified freshwater ecologist.

1.2 Project Area and Description

The project is located approximately 20 km west of Aberdeen in the Eastern Cape Province (Figure 1-1). The project is located within the Dr Beyers Naude Local Municipality and the greater Sarah Baartman District Municipality. The project site comprises a single affected property, Portion 1 of Farm Klipstavel 72. The project is known as the FE Tango WEF. The project is planned as part of a cluster of renewable energy projects, which includes a second wind energy facility, FE Kudu WEF, located approximately 20 km west of the FE Tango WEF.

The entire extent of the site falls within the Beaufort West Renewable Energy Development Zones (i.e. REDZ Focus Area 11). The undertaking of a basic assessment process for the project is in-line with the requirements stated in GNR 114 of 16 February 2018.

The Tango WEF will have a contracted capacity of up to 150 MW and comprise wind turbines with a capacity of up to 7.5 MW each. The project has a preferred project site of approximately 2 250ha. Access to the site will be via an access road off of the nearby R61. The FE Tango WEF project site is proposed to accommodate the following infrastructure:

- Up to 18 wind turbines, turbine foundations and turbine hardstands.
- An on-site substation hub incorporating:
    - A132 kV on-site facility substation (OSS);
    - Switchyard with collector infrastructure;
    - Battery Energy Storage System (BESS); and
    - Operation and Maintenance buildings.
- A balance of plant area incorporating:
    - Temporary laydown areas; and

- A construction camp laydown and temporary concrete batching plant.

- Power lines internal to the wind farm, trenched and located adjacent to internal access roads, where feasible. The intention is for internal project cabling to follow the internal roads.
- Access roads (gravel) to the site and between project components with a width up to 8 m for primary access routes.

The proposed project will require clearing of natural vegetation for the construction of the WEF, and the associated infrastructure which includes access roads, turbines and grid connections (substation, BESS and cabling), as well as any construction areas and laydown areas. These project aspects could potentially have negative impacts to the freshwater ecosystems and associated biota.

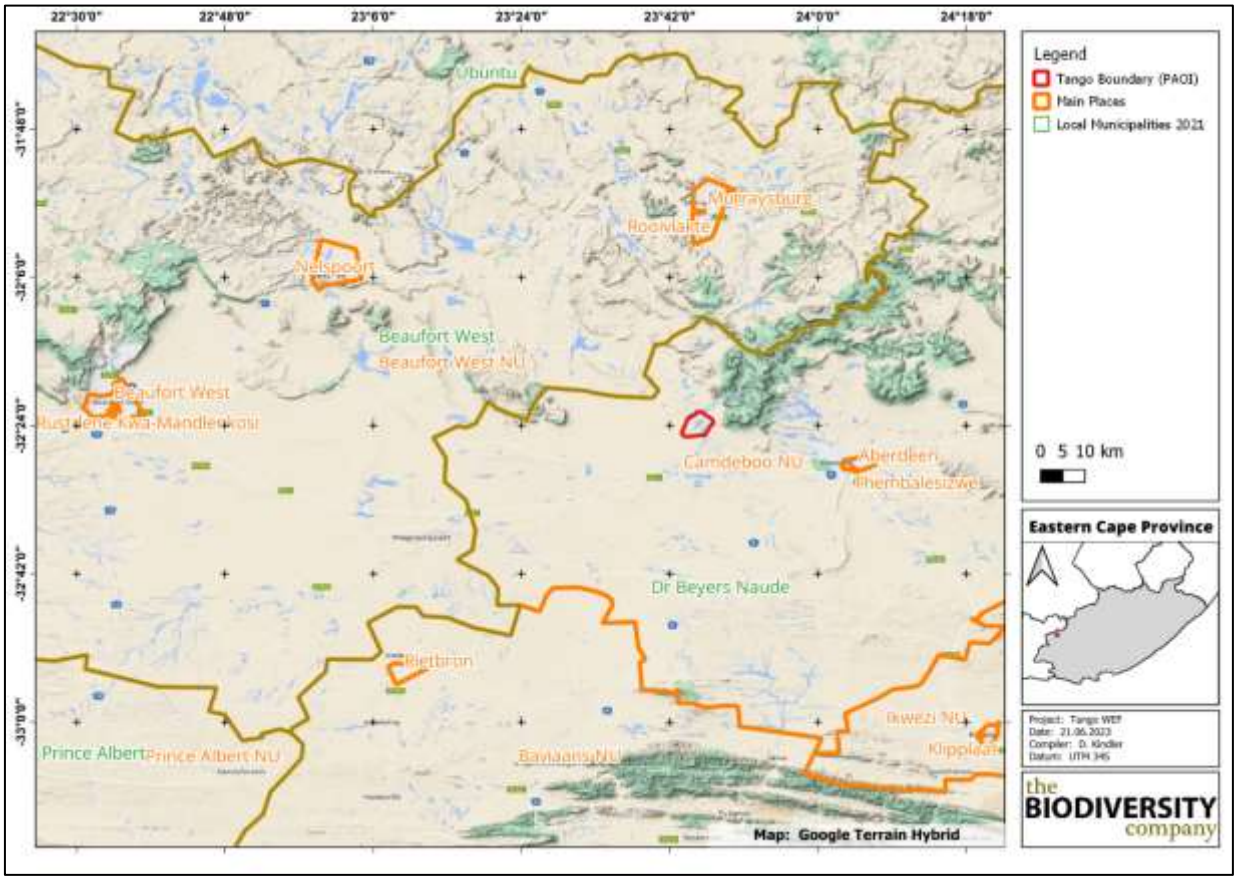


Figure 1-1 Locality of the project area

The farm boundary was used as the Project Area of Influence (PAOI) to incorporate the proposed development footprint and represents the total project area of assessment. A map illustrating the proposed project infrastructure and PAOI is presented on the next page in Figure 1-2. The proposed project infrastructure presents the optimized layout (August 2023) which planned to avoid sensitive aquatic and terrestrial features following specialist feedback following the respective studies May 2023 site investigations.

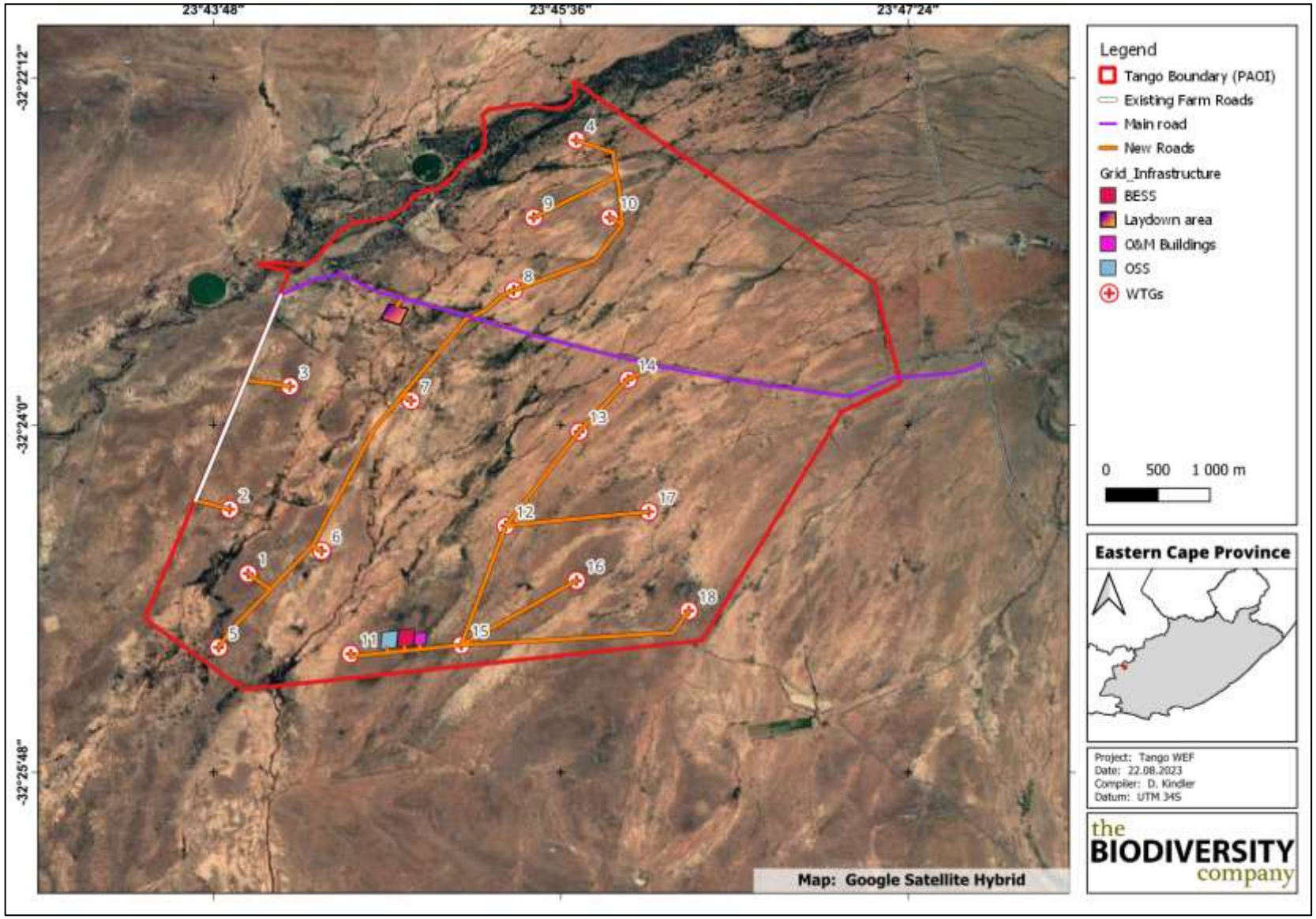


Figure 1-2 Spatial layout of the proposed project infrastructure (Optimized)

1.3 Specialist Details

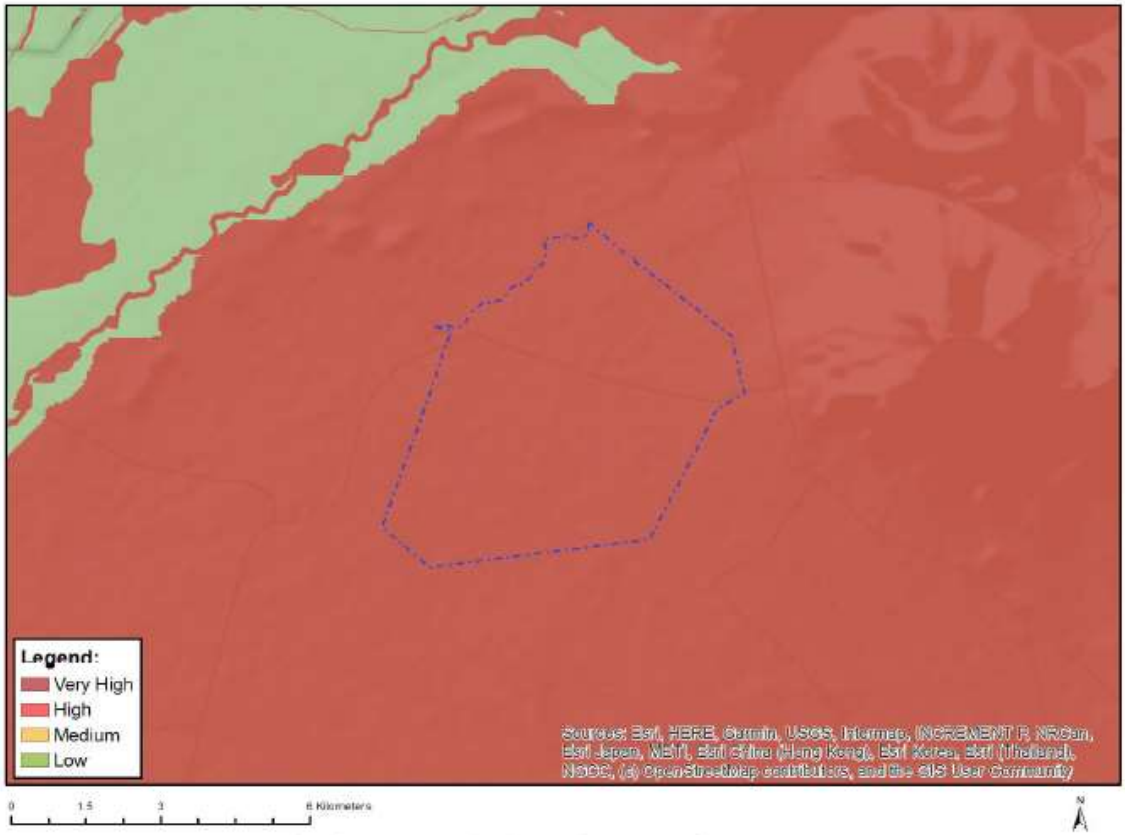
Report Name	**Aquatic Biodiversity Site Sensitivity Verification Report for the Proposed FE Tango Wind Energy Facility and Associated Infrastructure**
Submitted to	savannah environmental
Survey Date	23-25 May 2023
Fieldwork Surveyor & Report Writer	**Dale Kindler** dale@thebiodiversitycompany.com  Dale Kindler (MSc Aquatic Health) is a registered Professional Natural Scientist (Pr. Sci. Nat. 114743). He has 10 years' experience in conducting Aquatic Specialist Assessments and is SASS 5 Accredited with the Department of Water and Sanitation (DWS). Dale has completed numerous specialist studies locally and internationally, ranging from Basic Assessments (BA) to Environmental Impact Assessments (EIAs), following IFC standards.
Reviewer	**Prasheen Singh** prasheen@thebiodiversitycompany.com  Prasheen Singh (MSc in Aquatic Health) is a registered Professional Scientist in the field of Aquatic Science (Pr. Sci. Nat. 116822) and he is a accredited SASS5 Practitioner. He is an Aquatic Ecologist whose 10 years' experience comprises numerous Aquatic Scientific Studies, Peer Reviews, Research, and having served as a SANAS accredited Technical Signatory at an Ecotoxicology Laboratory. Over and above his qualification he has completed training courses for wetlands, river eco-status monitoring, hydropedology, and ecosystem restoration.
Declaration	The Biodiversity Company and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the EIA Regulations, 2014 (as amended). We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time and budget) based on the principles of science.

2 Site Sensitivity Verification

2.1 Environmental Screening Tool

This approach has also taken cognisance of the recently published Minimum Criteria for Reporting on Identified Environmental Themes (DWS, 2020). The aquatic biodiversity theme sensitivity as indicated in the screening tool report indicates "Very High" sensitivity areas as presented in Figure 2-1.

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	CBA 2
Very High	ESA 1
Very High	FEPA Subcatchment
Very High	Rivers_Z
Very High	Wetlands_(River)

Figure 2-1 Aquatic Biodiversity Combined Sensitivity (National Web based Environmental Screening Tool)

2.2 Site General Habitat Description

2.2.1 Ecologically Important Landscape Features

The following spatial features describes the general area and associated freshwater resources (ecologically important landscape features). This assessment is based on spatial data that are provided by various sources such as the provincial environmental authority and the South African National Biodiversity Institute (SANBI). The desktop analysis and their relevance to this project are listed in Table 2-1.

Table 2-1 Summary of the proposed project to ecologically important landscape features

Desktop Information Considered	Features
Powerline Corridor	**Relevant** – The PAOI falls within the Eastern corridor
Renewable Energy Development Zones (REDZ)	**Relevant** – The PAOI falls within the Beaufort West REDZ.
Strategic Water Source Areas (SWSA)	**Irrelevant** – PAOI is not located within the surface water or groundwater SWSAs
NFEPA Rivers	**Relevant** – NFEPA features located in PAOI
Conservation Plan	**Relevant** – Overlaps with Ecological Support Areas
Ecosystem Threat Status	**Relevant** – Overlaps with the *Least Threatened* non-perennial river ecosystems
Ecosystem Protection Level	**Relevant** – Overlaps with poorly protected non-perennial river ecosystems
Protected Areas	**Relevant** – The PAOI does not occur or influence any protected areas.

2.2.2 Present Ecological Status of Sampled Watercourses

The on-site assessment of the watercourses presented largely dry conditions, with the non-perennial systems displaying ephemeral characteristics which is typical for watercourses in an arid region (Figure 2-2). Channel habitat modification has taken place through land use activities as discussed below, however the ecosystems and adjacent terrestrial habitat is considered open and largely intact, although modified. Portions of the watercourses are braided within the site, creating an extensive alluvial fan landscape surrounding the watercourses which intersect terrestrial habitat, highlighting their interdependence. Despite their current level of modification and ephemeral nature, the watercourses are sensitive to further modification as these systems do provide drinking opportunities (in times of rainfall) and habitat for foraging, nesting and refugia for terrestrial biota and avifauna (see associated terrestrial report for project). Therefore, the watercourses in the project area are regarded as sensitive environments in relation to changes in habitat integrity, flow and water quality requiring avoidance from the project related disturbance activities and maintenance of baseline conditions.

Figure 2-2 Illustration of some of the ephemeral watercourse traversed by the main farm road (May 2023)

The SASS5 macroinvertebrate assessment results obtained for the sampled systems during the survey are presented in Table 2-2. An illustration of selected macroinvertebrates are presented in Figure 2-3.

Table 2-2 Macroinvertebrate assessment results (May 2023)

Site	OP	TC7
SASS5 Score	40	25
No. of Taxa	11	6
ASPT*	3.6	4.2
Category (Dallas, 2007)	Seriously Modified (class E/F)	Seriously Modified (class E/F)
Biotope Score % & Comment	63	23
	High diversity of stones and substrates with low diversity of flow classes and vegetation	Low diversity of stones and substrates with low diversity of flow classes and abundant marginal vegetation

*ASPT: Average score per taxon; **Nama Karoo Ecoregion as a substitute – Interpret with caution

Based on the *in situ* water quality section and sampled habitat, the systems currently support aquatic biota, albeit a low diversity with a low portion of moderately sensitive taxa present. This low diversity and modified ecological category is expected for these non-perennial systems that presented ephemeral characteristics. The sampled communities reflected this, as a large portion of the sampled community where adults that are known to fly between waterbodies, which is a common feature of arid region communities. The presence of some taxa in juvenile life stages (Baetidae and Gomphidae) indicated that both the sampled watercourses have had some resident water allowing recruitment of these taxa. According to personal communication with landowners, the resident water can be attributed to the two rainfall events that occurred two weeks before the survey, and the night before the survey. Additional areas of resident water can be attributed to larger/ deeper pools within the Ouplaas, and off channel impoundments present within the catchment and PAOI. The resultant ecological categories must be used with caution, and the community is not considered to be seriously modified, but rather largely intact for ephemeral watercourses. Therefore, the specialist recommends a *class B (Largely Natural)* ecological category.

Figure 2-3 Examples of sampled macroinvertebrates juvenile Baetidae (left), adult Corixidae (Centre) and adult Gyrinidae (right)

Sampling for fish was conducted in both systems, however despite adequate habitat suitability for fish, no fish were collected. The absence of fish is likely due to the ephemeral nature of the watercourses that may not be conducive to support fish year-round.

The PES assessment for the sampled watercourses is based on the collective data collected during the May 2023 survey and the results are provided in Table 2-3.

Table 2-3 Present Ecological Status of the watercourse (May 2023)

Aspect Assessed	Ouplaas	Unnamed Ouplaas tributary
Instream Ecological Category	C	C
Riparian Ecological Category	C	C
Aquatic Invertebrate Ecological Category	B	B
Fish Community	-	-
Ecostatus	**C**	**C**
PES (DWS, 2014)	**B (Largely Natural)**	
Management Class	**C**	**C**

The results of the PES assessment derived a *moderately modified (class C)* status. The anthropogenic activities within the catchment have resulted in large modifications to the riparian and instream habitat integrity of the watercourse. These activities have contributed to alteration of hydrology and erosion of the river banks, with evidence of flow and channel modification, cumulatively reducing the biotic integrity of the sampled watercourses. The biotic integrity must be interpreted with caution due to the ephemeral nature of the watercourses and limited availability of surface water to support a diverse aquatic ecosystem.

The Ouplaas River and its tributary fell short of the DWS (2014) PES. However, the PES data is outdated and the status was derived from a large reach of the Ouplaas River. Despite this, the specialist recommends that the *moderately modified (class C)* status be set as the Management Class for the project areas watercourses.

Due to the sensitivity of the catchment and watercourse soils to erosion, together with the flat topography and braided alluvial fan nature of the watercourses within the PAOI, an increase in anthropogenic activities poses a risk to the ecological integrity of the watercourses notably from a hydrological perspective. Any proposed activities within the watercourse should not further contribute to the deterioration of the instream and riparian zones as this will compromise the ecological integrity of the reach and Management Class may not be achieved.

2.2.3 Sensitivity and Buffer Assessment

As noted in the geomorphological description of the project area, the watercourses considered in this assessment represented ephemeral system characteristics that have naturally been subjected to instream erosion and sedimentation compounded by agricultural influence. As can be observed in Figure 2-4, riparian areas were not well defined and comprised of a mix of herbaceous species with sparse woody species present. Despite alteration, these areas were considered to be largely intact.

Figure 2-4 Typical arid zone watercourse and associated instream and riparian areas in the project area

The ecological sensitivity of the watercourses draining the PAOI was determined to be largely uniform across the project area. The watercourses presented evidence of reliance/ dependence on these systems by terrestrial biota for drinking (in times of surface water presence after rainfall), foraging, nesting and refugia, with animal tracks observed in the substrates in majority of the watercourses. Despite the absence of water and aquatic taxa in majority of the braided channels at the time of the survey, the watercourses in the project area are regarded as sensitive environments in relation to changes in habitat integrity, flow and water quality (ecological drivers).

Given the varied geomorphological features of the watercourses, flat topography and absence of a clear and consistent riparian zone, no riparian delineation could be assigned to the local watercourse networks. Despite this, the watercourse/ drainage extent was mapped with associated sensitivity assigned by identifying vegetation features on aerial imagery and confirmation through ground truthing during the survey. An example of the typical watercourse extent as well as where appropriate buffer areas are located is provided in Figure 2-5. The various layouts and their respective delineated sensitive areas are depicted in Figure 2-6 and all infrastructure should avoid the high and medium sensitivity areas and apply a 32 m buffer from the edge of the watercourse as per the sensitivity maps. The High sensitivity areas (red areas) are to be treated as no-go areas, allowing only minimum critical watercourse crossing in these areas.

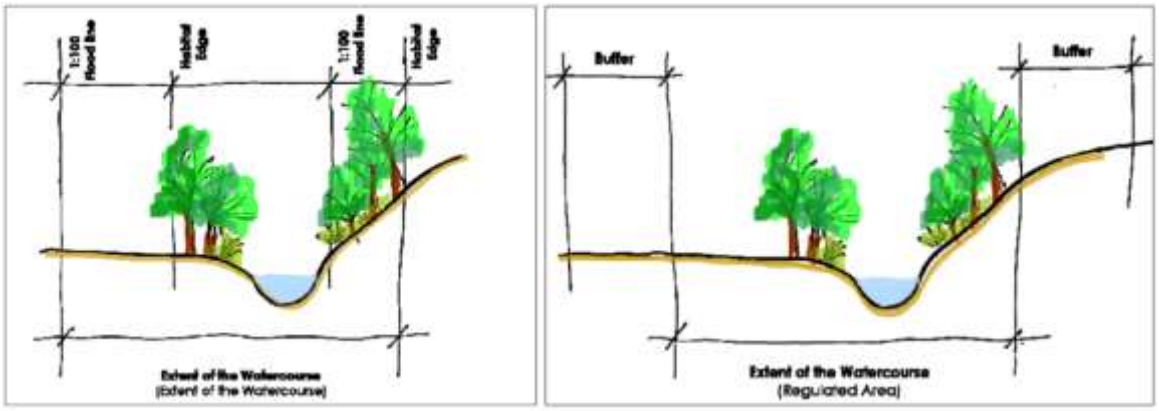


Figure 2-5 Illustration of the extent of a watercourse and the Regulated Area (DWA, 2012)

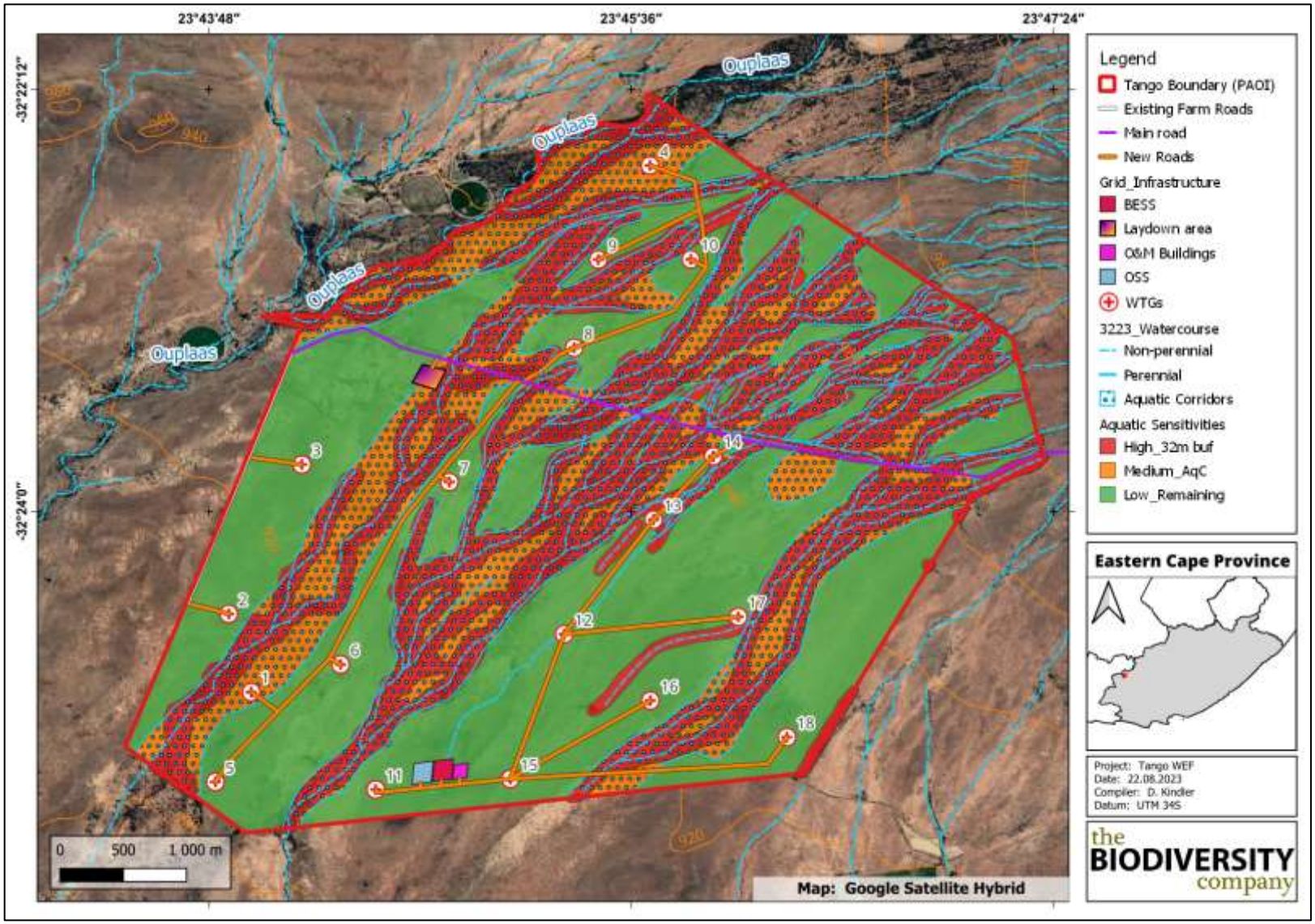


Figure 2-6 Project related infrastructure and associated sensitivity of freshwater resources

2.3 Screening Tool Comparison

Table 2-4 provides a comparison between the Environmental Screening Tool and the specialist determined Site Habitat and System Characterisation. The specialist-assigned sensitivity ratings are based largely on the functionality assessment processes followed in the previous section, and consideration is given to any observed or likely presence of SCC.

Table 2-4 Sensitivity features associated with Aquatic Biodiversity in comparison to the Screening Tool

Sensitivity	Features	Specialist Verification and reasoning
Very High	CBA2	**Yes CBA present**, the Ouplaas River on the western border forms a CBA2.
Very High	ESA1	**Yes ESA1 present**, overlaps with an ESA1 which is associated with the watercourses.
Very High	FEPA Sub catchment	**Yes FEPA present**, the Ouplaas River SQR 7294 in the western portion of the PAOI forms an upstream management area, while the Gannaleegte River SQR 7429 in the eastern portion of the PAOI forms a NFEPA catchment.
Very High	Rivers_Z	**Yes**, the tributary ecosystems present in catchment have been modified by instream dams, and their condition conforms with desktop model of being 'not intact'. However, this is limited to some sections being modified with large portions remaining intact.
Very High	Wetlands_(River)	**Yes**, the Ouplaas River ecosystem is present in catchment as per NWM5 dataset.

The freshwater ecology of the immediate project area and further downstream areas are considered sensitive to disturbance from a hydrological and biological perspective, however due to the ephemeral nature of the watercourses, this sensitivity applies more to the watercourses' physical characteristics that influence the hydrological and biological aspects in times of surface water presence/ inundation. This will include all watercourses within the project area which are considered sensitive due to their relatively small spatial scale when compared to adjacent terrestrial habitat with a large demand for the ecosystem services which they provide. Construction and operation activities must take cognisance of this and avoid any unnecessary disturbance of the watercourses and adjacent habitat.

3 Conclusion

3.1 Baseline Ecology

The baseline assessment investigated the watercourses present within the PAOI. Numerous drainage features are present comprising of an extensive braided watercourse network, presenting ephemeral conditions. Only two watercourses were flowing at the time of the survey and these were assessed for aquatic biota. These were the Ouplaas River and one of its tributaries. The results of the PES assessment derived a moderately modified (class C) status. The existing and historic anthropogenic activities within the catchment have resulted in large modifications to the riparian and instream habitat integrity of the watercourse. These activities have contributed to alteration of hydrology and erosion of the river banks, with evidence of flow and channel modification, cumulatively reducing the biotic integrity of the sampled watercourses. The biotic integrity must be interpreted with caution due to the ephemeral nature of the watercourses and limited availability of surface water to support a diverse aquatic ecosystem.

Despite modification, the instream water quality was suitable for aquatic biota, which was supporting a low diversity of aquatic macroinvertebrates. This low diversity is a common feature of arid region communities due to surface water limitations. Sampling for fish was conducted, however despite adequate habitat suitability for fish, no fish were collected. The

absence of fish is likely due to the ephemeral nature of the watercourses that may not be conducive to support fish year-round. It is likely that the absence of sufficient rainfall leading up to the survey may have limited the presence of fish at the time of the survey. Despite this, fish are likely present within the Kariega River immediately downstream of the PAOI, highlighting the need to limit water quality and habitat impacts during the execution of the project to conserve fish and aquatic life within the downstream watercourse and those potentially occurring within the sampled watercourses. The specialist recommends that the moderately modified (class C) status be set as the Management Class for the watercourses traversed by the project infrastructure.

Due to the sensitivity of the catchment and watercourse soils to erosion, together with the flat topography and braided alluvial fan nature of the watercourses within the PAOI, an increase in anthropogenic activities poses a risk to the ecological integrity of the watercourses notably from a hydrological perspective. Any proposed activities within the watercourse should not further contribute to the deterioration of the instream and riparian zones as this will compromise the ecological integrity of the reach and the Management Class may not be achieved.

The aquatic features presented in this report require a buffer of 32 m and are to be treated as a no-go zone and avoided as far as is feasible. The optimized layout has implemented the avoidance strategy and positioned majority of the turbine platforms and road networks outside the buffer areas. There are however some watercourse crossings proposed and these are deemed acceptable and appropriately placed. Ensuring that aquatic features and buffers are intact increases the resilience of a watercourse to future disturbances. These buffers would ensure adequate ecological integrity maintenance from the adjacent proposed wind energy facilities.

3.2 Impact Assessment

An impact statement is required as per the NEMA regulations with regards to the proposed development. As a result of the ephemeral and braided nature of the watercourses and susceptibility to erosion and the flat topography likely to be seasonally flooded, the construction and operation phase activities would influence the hydrology, water quality and soil movement within the affected watercourses, notably where the proposed infrastructure traverse these aquatic features and their associated 32 m buffer. The optimized layout has largely avoided the ESAs and associated aquatic features with some watercourse crossings proposed and these are deemed acceptable and appropriately placed. Provided the mitigation and recommendations are implemented responsibly the project will present low rated residual impacts to the watercourses.

3.3 Specialist Opinion

Based on the on the confirmed habitat and field survey findings, the specialist agrees with the “Very High” aquatic theme sensitivity as per the Screening Tool. This is due to the presence of NFEPA features, CBAs, ESAs and watercourses supporting aquatic biota. Therefore, the Screening Tool sensitivity of the watercourses in the project area is supported.

Appendix A Specialist Declaration

I, Dale Kindler 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.

Dale Kindler

Freshwater Ecologist

The Biodiversity Company

31 August 2023

APPENDIX P3:
AVIFAUNA SITE SENSITIVITY VERIFICATION REPORT

APPENDIX I: SITE SENSITIVITY VERIFICATION – WEF

RECONNAISSANCE REPORT
(IN TERMS OF PART B OF THE ASSESSMENT PROTOCOLS PUBLISHED IN GN 320 ON 20 MARCH 2020 AND GN 43855 ON 30 OCTOBER 2020)

INTRODUCTION

In accordance with Appendix 6 of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, a reconnaissance visit has been undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (Screening Tool).

SITE SENSITIVITY VERIFICATION

The following methods and information sources were used to compile this report:

- Bird distribution data from the Second Southern African Bird Atlas Project (SABAP2) was obtained (https://sabap2.birdmap.africa/) to ascertain which species occur in the pentads where the proposed Project is located. A pentad grid cell covers 5 minutes of latitude by 5 minutes of longitude (5' × 5'). Each pentad is approximately 9 × 8 km in size. To get a representative impression of the bird species in the area a consolidated dataset was obtained for a total of nine (9) pentads some of which intersect and others that are near the Project Site, henceforth referred to as "the Broader Area". The nine pentad grid cells are the following: 3220_2340, 3220_2345, 3220_2350, 3225_2340, 3225_2345, 3225_2350, 3230_2340, 3230_2345, and 3230_2350. To date, a total of 123 full protocol lists (i.e. intensive bird listing surveys lasting at least two hours each) and 188 ad hoc protocol lists (surveys lasting less than two hours but still yielding valuable data) have been completed for the nine pentads where the Project Site is located.
- The SABAP2 data was regarded as a reliable reflection of the avifauna which occur in the Broader Area, but the data was also supplemented with data collected during the on-site surveys and with general knowledge of the area.
- A classification of the vegetation types in the Project Site was obtained from the First Atlas of Southern African Birds (SABAP1) and the National Vegetation Map (2018) compiled by the South African National Biodiversity Institute (Mucina & Rutherford 2006).
- The national threatened status of all priority species was determined with the use of the most recent edition of the Red List Book of Birds of South Africa, Lesotho and Swaziland (Taylor *et al.* 2015), and the latest authoritative summary of southern African bird biology (Hockey *et al.* 2005).
- The global threatened status of all priority species was determined by consulting the latest (2022.2) IUCN Red List of Threatened Species (http://www.iucnredlist.org/).
- The Important Bird and Biodiversity Areas of South Africa (Marnewick *et al.* 2015; http://www.birdlife.org.za/conservation/important-bird-areas) was consulted for information on potentially relevant Important Bird Areas (IBAs).
- An intensive internet search was conducted to source information on the impacts of wind energy facilities on avifauna.
- Satellite imagery (Google Earth © 2022) was used to view the broader area on a landscape level and to help identify bird habitat on the ground.
- The South African National Biodiversity BGIS map viewer was used to determine the locality of the Project Site relative to National Protected Areas.
- The DFFE National Screening Tool was used to determine the assigned avian sensitivity of the Project Site.
- The following sources were consulted to determine the investigation protocol that is required for the site:

- Procedures for the Assessment and Minimum criteria for reporting on identified environmental themes in terms of sections 24(5)(a) and (h) and 44 of NEMA when applying for Environmental Authorisation (Gazetted October 2020)
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts om avifaunal species by onshore wind energy generation facilities where the electricity output is 20MW or more (Government Gazette No. 43110 – 20 March 2020).
- Jenkins, A.R., Van Rooyen, C.S., Smallie, J.J., Anderson, M.D., & A.H. Smit. 2015. Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy Project Sites in southern Africa. Produced by the Wildlife & Energy Programme of the Endangered Wildlife Trust & BirdLife South Africa.

- The primary source of information on avifauna in the area came from the pre-construction monitoring which was conducted at the Tango WEF Project Site and surrounds across four seasons during 2021–2022.

OUTCOME OF SITE RECONNAISSANCE

➢ **Natural Environment**

The Project Site falls within the Nama-Karoo Biome (Mucina & Rutherford 2006). The Nama-Karoo covers an extensive part of the south-central plateau of South Africa - an area of 248 284 km^2 (Mucina and Rutherford, 2006). The biome is characterized by low rainfall (70 to 500 mm per year) that falls mostly in late summer (Mucina & Rutherford 2006) resulting in a high summer aridity index (Rutherford & Westfall 1985). The biome is classified as arid (Mucina & Rutherford 2006). Summers are hot (maximum >30^{o}C), winters are cold (minimum close to 0^{o}C) and frost is common. The vegetation of the Nama-Karoo is dominated by chamaephytes (low-growing shrubs) and hemicryptophytes (graminoids) in a grassy, dwarf shrubland. The main vegetation types within the Project Site are Southern Karoo Riviere (Inland Saline Vegetation Bioregion) and Eastern Lower Karoo (Lower Karoo Bioregion). The Southern Karoo Riviere vegetation type occurs along the rivers of the semi-arid regions of the Nama-Karoo. It is dominated by *Vachellia karroo* trees and is tolerant of severe flooding. Associated species include *Diospyros dichrophylla*, *Lycium oxycarpum*, *Cenchrus ciliaris* and *Gymnosporia heterophylla*. The Eastern Lower Karoo is characterised by flat plains interrupted by some dolerite dykes, butts, and mesas (koppies). The dominant vegetation is low to middle-height microphyllous shrubland with drought-resistant 'white' grasses becoming abundant in places, especially on sandy and silty bottomlands. Leaf-succulent dwarf shrubs of the families Aizoaceae and Crassulaceae can also be encountered.

The Project Site also contains several non-perennial rivers with their associated drainage line woody vegetation. These areas are of particular importance to avifauna for roosting, nesting, and foraging. Raptors may also use these areas to hunt other bird species. There is a prominent mountain and its associated rocky cliffs and ridges ~2km east of the Project Site, which could be utilized by several priority species, especially raptors.

Whilst the distribution and abundance of the bird species in and near the Project Site is mostly associated with natural vegetation, as this comprises virtually all the habitat, it is also necessary to examine the anthropogenic modifications to the environment that have relevance for birds.

➢ **Modified Environment**

The following avifaunal-relevant anthropogenic habitat modifications were recorded within the Project Site:

- **Surface Water:** The Project Site contains sources of permanent surface water, namely boreholes with water troughs or cement dams. There are also several earth dams. The land use in the broader area is mostly small stock and game farming. The entire area is divided into large grazing camps with associated boreholes and drinking troughs. In this arid environment, open water is a big attraction for birds that use the open water troughs to bath and drink.
- **Agriculture:** The land use in the broader area is mostly small stock (sheep) and game farming. The Project Site and nearby areas contain irrigated fields, usually lucerne, or planted grazing pasture for sheep. Birds such as Blue Cranes could utilize these areas for foraging.

➢ **DFFE Screening Tool**

The Project Site and immediate environment is classified as **HIGH** sensitivity for avifauna according to the Animal Species Theme (**Figure 1**). The sensitivity classification is linked to the possible occurrence of Ludwig's Bustard *Neotis ludwigii* (Globally and Regionally Endangered), Southern Black Korhaan *Afrotis afra* (Globally and Regionally Vulnerable) and Black Harrier *Circus maurus* (Globally and Regionally Endangered). The Project Site contains confirmed habitat for species of conservation concern (SCC) as defined in the Protocol for specialist assessments and minimum report content requirements for environmental impacts on avifaunal species by onshore wind energy generation facilities where the electricity output is 20MW or more (Government Gazette No. 43110 – 20 March 2020). SCCs are listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered, Near-threatened or Vulnerable.

The occurrence of SCC at the Project Site was confirmed during the six pre-construction monitoring surveys (January 2021 to October 2022) with observations of Ludwig's Bustard, Blue Crane *Grus paradisea* (Globally Vulnerable and Regionally Near-threatened), Karoo Korhaan *Eupodotis vigorsii* (Regionally Near-threatened), Kori Bustard *Ardeotis kori* (Globally and Regionally Near-threatened), Martial Eagle *Polemaetus bellicosus* (Globally and Regionally Endangered), Southern Black Korhaan, Secretarybird Sagittarius serpentarius (Globally Endangered and Regionally Vulnerable), Verreaux's Eagle *Aquila verreauxii* (Regionally Vulnerable) and Lanner Falcon *Falco biarmicus* (Regionally Vulnerable) recorded on-site. Based on the confirmed habitat and the field surveys, the classification of **HIGH** sensitivity for avifauna according to the Screening Tool is supported.

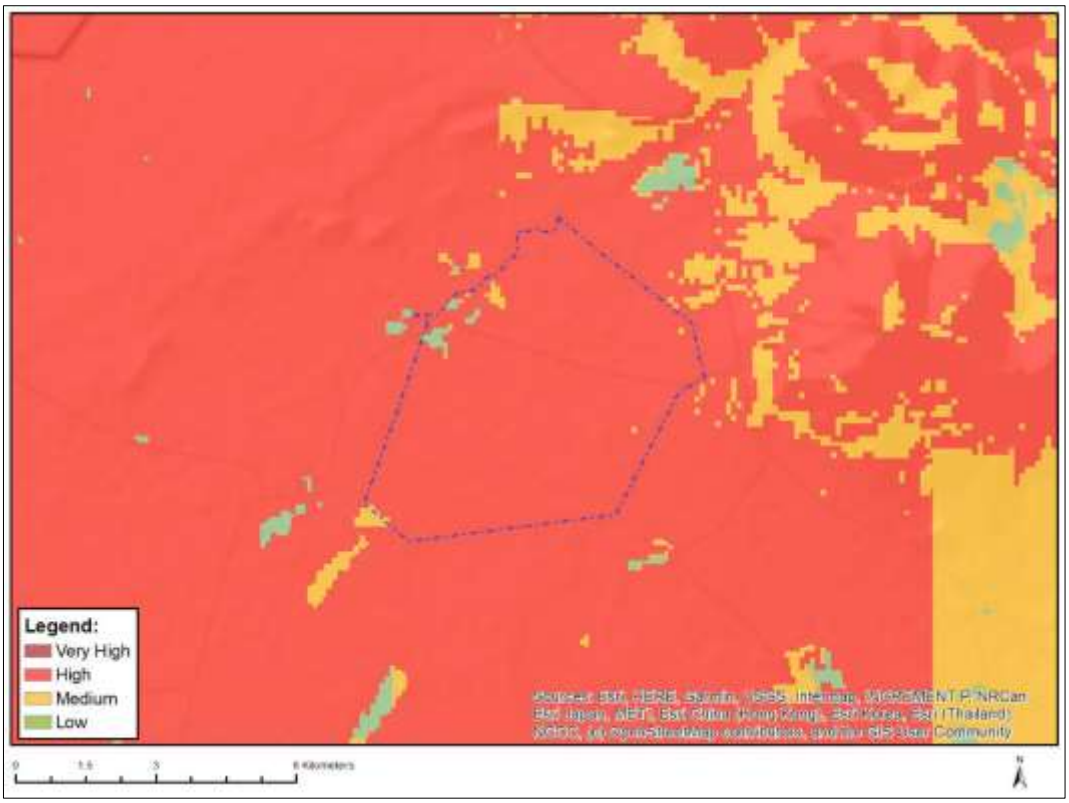


Figure 1: The classification of the FE Tango WEF Project Site according to the animal species theme in the DFFE National Screening Tool. The High and Medium sensitivity classification is linked to the potential occurrence of Ludwig's Bustard (Globally and Regionally Endangered), Southern Black Korhaan (Globally and Regionally Vulnerable) and Black Harrier (Globally and Regionally Endangered).

CONCLUSION

The occurrence of SCC at the Project Site was confirmed during the six pre-construction monitoring surveys (January 2021 to October 2022) with observations of Ludwig's Bustard, Blue Crane *Grus paradisea* (Globally Vulnerable and Regionally Near-threatened), Karoo Korhaan *Eupodotis vigorsii* (Regionally Near-threatened), Kori Bustard *Ardeotis kori* (Globally and Regionally Near-threatened), Martial Eagle *Polemaetus bellicosus* (Globally and Regionally Endangered), Southern Black Korhaan, Secretarybird Sagittarius serpentarius (Globally Endangered and Regionally Vulnerable), Verreaux's Eagle *Aquila verreauxii* (Regionally Vulnerable) and Lanner Falcon *Falco biarmicus* (Regionally Vulnerable) recorded on-site. Based on the confirmed habitat and the field surveys, the classification of **HIGH** sensitivity for avifauna according to the Screening Tool is supported.

APPENDIX P4:
BATS SITE SENSITIVITY VERIFICATION REPORT

FE Tango Wind Energy Facility, Eastern Cape Province

Site Sensitivity Verification Report

11 September 2023

Project No.: 0669510

The business of sustainability

Document details	
Document title	FE Tango Wind Energy Facility, Eastern Cape Province
Document subtitle	Site Sensitivity Verification Report
Project No.	0669510
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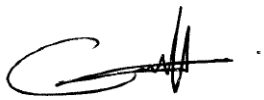
Draft	1.0	Monique du Plessis	Craig Campbell Dieter Rodewald	Dieter Rodewald	11.09.23	Draft for Client Consideration

Signature Page

11 September 2023

FE Tango Wind Energy Facility, Eastern Cape Province

Site Sensitivity Verification Report



Craig Campbell
Pr.Sci.Nat (Ecological Sciences)

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Partner

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CONTENTS

List of Tables

List of Figures

1. INTRODUCTION

The National Gazette, No. 43110 of 20 March 2020: "National Environmental Management Act (107/1998) Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24 (5) (a) and (h) and 44 of the Act ('the Regulations'), when applying for Environmental Authorisation" includes the requirement that a Site Sensitivity Verification must be produced. The outcome of the Initial Site Sensitivity must be provided in a report format which:

a) Confirms or dispute the current use of the land and environmental sensitivity as identified by the national web based environmental screening tool;

b) Contains a motivation and evidence of either the verified or different use of the land and environmental sensitivity; and

c) Is submitted together with the relevant reports prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.

This initial site sensitivity report is produced to consider only the bats theme and to address the requirements of a) to c) above.

2. INITIAL SITE VERIFICATION

Table 1 and Figure 1 below show the sensitivities for bats identified by the Department of Forestry, Fisheries and the Environments' (DFFE) Screening Tool for the Tango WEF. There are some suitable habitats and waterbodies that can be used for drinking water, roosting, foraging, and commuting in the study area. Bats are known to use linear landscape features such as rivers and tree lines for commuting routes to get to and from foraging sites, roost sites, and to access water sources.

Table 1: DFFE Screening Tool Output in the Bat (Wind) Theme (Tango Wind Energy Facility)

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Bats (Wind) Theme		X		
Sensitivity		**Feature(s)**		
High		Within 500 m of a river		
High		Wetland		
High		Within 500 m of a wetland		
Medium		Croplands		

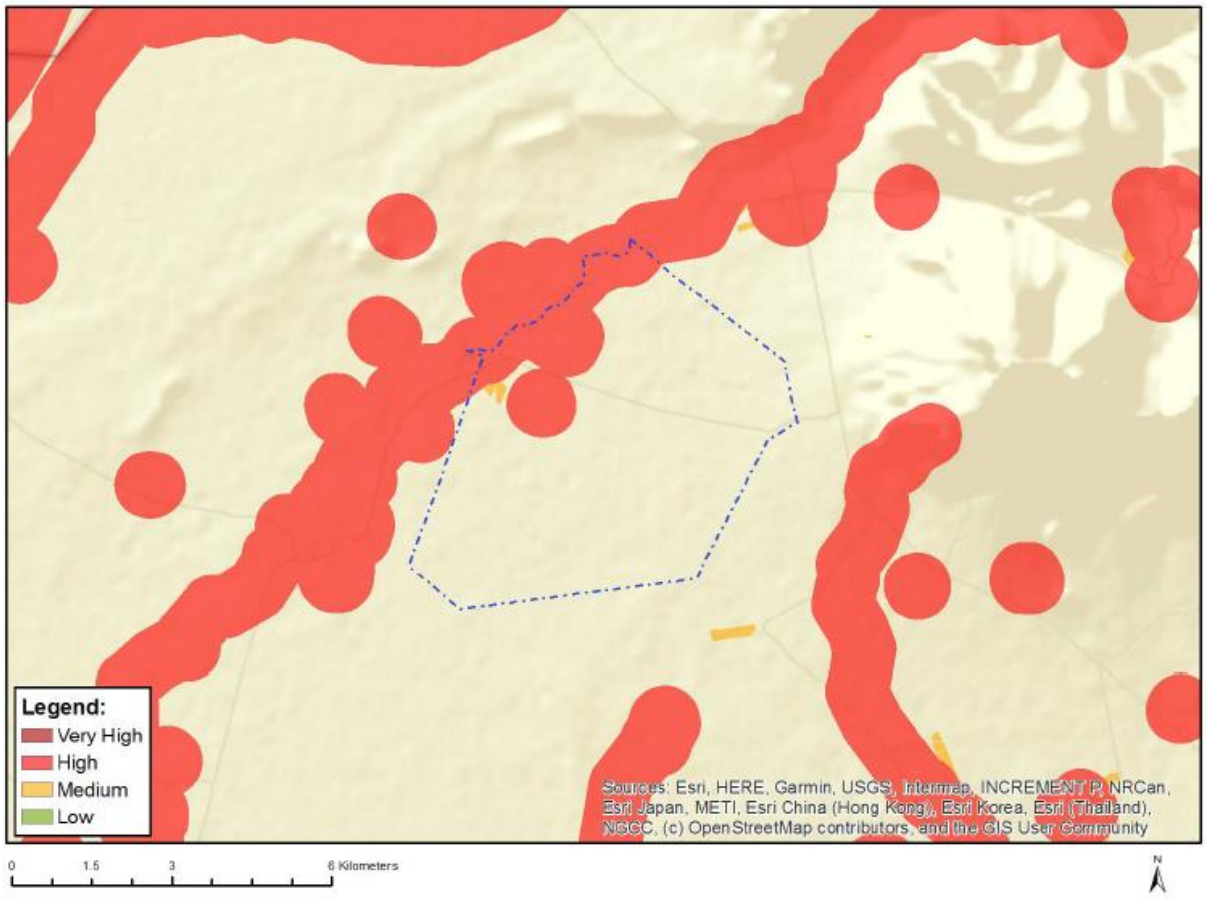

Figure 1: DFFE Screening Tool Output for the Bats (Wind) Theme (FE Tango Wind Energy Facility)

The baseline environment for bats at the proposed development site was defined utilising a desktop study of available bat locality data, literature and mapping resources. This information was examined to determine the potential location and abundance of bats, including their potential habitats, which may be sensitive to the Tango WEF development.

3. OUTCOME OF THE INITIAL SITE VERIFICATION

After the selected resources were mapped, they were aggregated to produce initial constraints maps for the respective developments, under the assumption that areas where resources are concentrated will be more important for bats (**Error! Reference source not found.**)

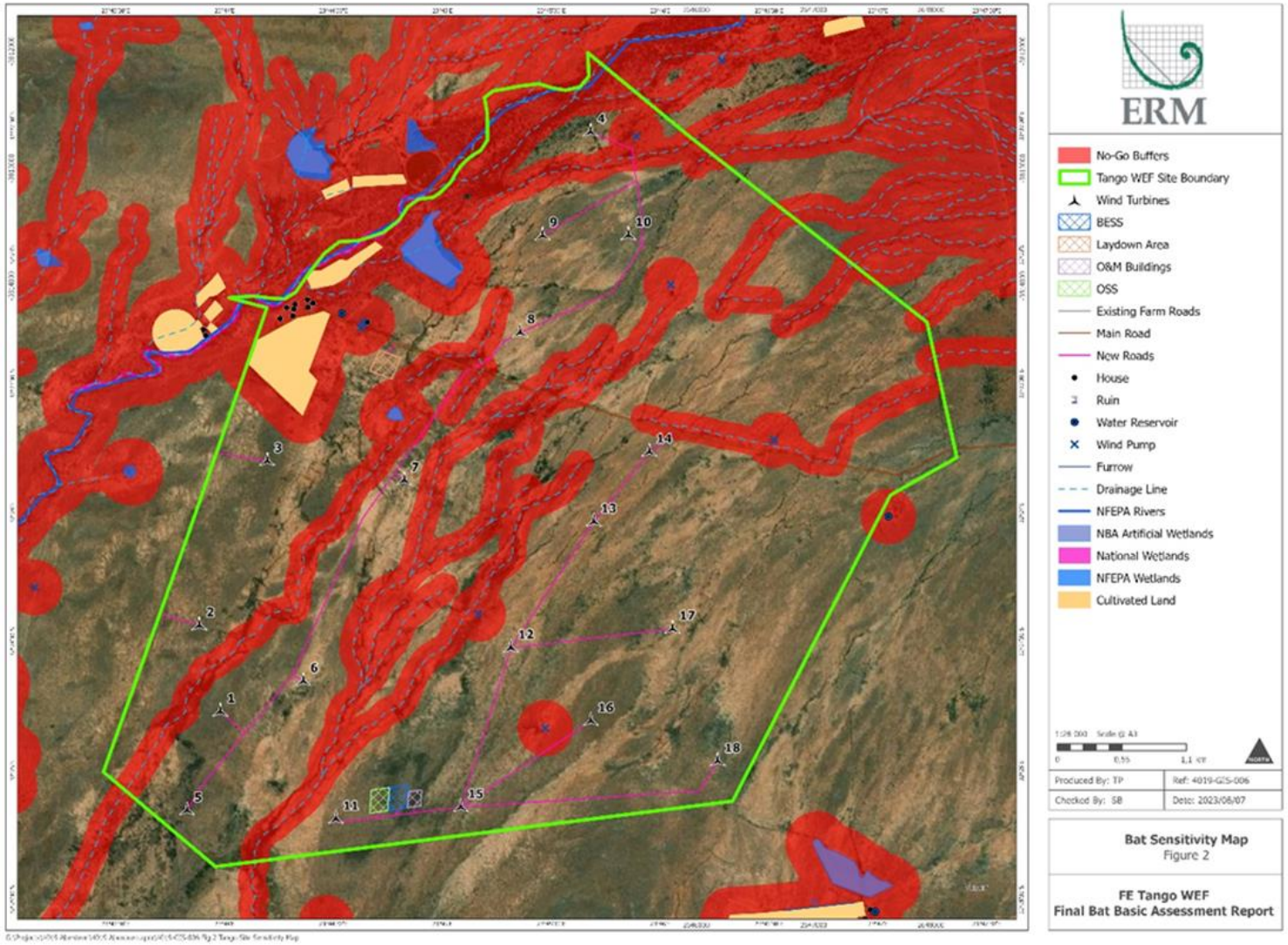

Figure 2: Initial Constraints Map for FE Tango WEF

4. CONCLUSION

The DFFE Screening Tool identified two sensitivity ratings within the FE Tango WEF development footprint, namely, high and medium. The constraints mapped by the specialist (Figure 2) were based on the full pre-construction monitoring campaign identifying specific areas of high sensitivity and, in the specialist's opinion, confirms the current use of land and environmental sensitivity as identified by the national web based environmental screening tool. Additionally, evidence suggests additional high sensitivity areas for consideration, as demonstrated in Figure 2, which should be considered No-Go areas with the remainder of the site potentially hosting medium to low sensitivity for bats.

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APPENDIX P5:
SOIL & AGRICULTURAL POTENTIAL SITE SENSITIVITY VERIFICATION REPORT

TerraAfrica

SOIL. AGRICULTURE. ENVIRONMENT.

Site Sensitivity Verification Report for the Proposed Tango Wind Facility

Submitted by TerraAfrica Consult cc

Date of Submission:

07 September 2023

Table of Contents

List of Figures

List of tables

1. Introduction

FE Tango (Pty) Ltd is proposing the development of a wind energy facility and associated infrastructure on a site located approximately 20km west of Aberdeen in the Eastern Cape Province. The project is located within the Dr Beyers Naude Local Municipality and the greater Sarah Baartman District Municipality. The project site comprises a single affected property, Portion 1 of Farm Klipstavel 72. The project is known as the FE Tango Wind Energy Facility (from here onwards referred to as Tango WEF). The project applicant is FE Tango (Pty) Ltd. The project is planned as part of a cluster of renewable energy projects, which includes a second facility, FE Kudu Wind Energy Facility, located approximately 20km to the west of the site. The entire extent of the site falls within the Beaufort West Renewable Energy Development Zones (i.e. REDZ Focus Area 11).

The site visit and site sensitivity verification report are the first phase of a phased approach for the environmental authorisation process required for the planned Wind Energy Facility. Once the most suitable areas with the lowest combined sensitivity risk are identified, the number of wind turbines will be decided, and the layouts of the projects will be finalised. When the final layouts are available, the data gathered during the site visits will be reprocessed to compile the agricultural impact assessment reports for each of the projects. TerraAfrica Consult cc was appointed by Savannah Environmental (Pty) Ltd to conduct the site sensitivity verification that will is the first phase of the agricultural assessment of the Basic Assessment (BAR) process for the Tango Wind WEF.

2. Terms of reference

The terms of reference for the data collection and site verification report, follows the requirements of protocol for agricultural assessment as outlined in the GNR 320 of NEMA. The protocols, including the protocol for agricultural assessment, state that the methodology for gathering information for the report, must include data from:

- a desktop analysis, using satellite imagery;
- a preliminary on-site inspection; and
- any other available and relevant information.

The protocol specify that the report must:

- confirm or dispute the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status;
- contain a motivation and evidence (e.g., photographs) of either the verified or different use of the land and environmental sensitivity; and
- be submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations (EIA Regulations).

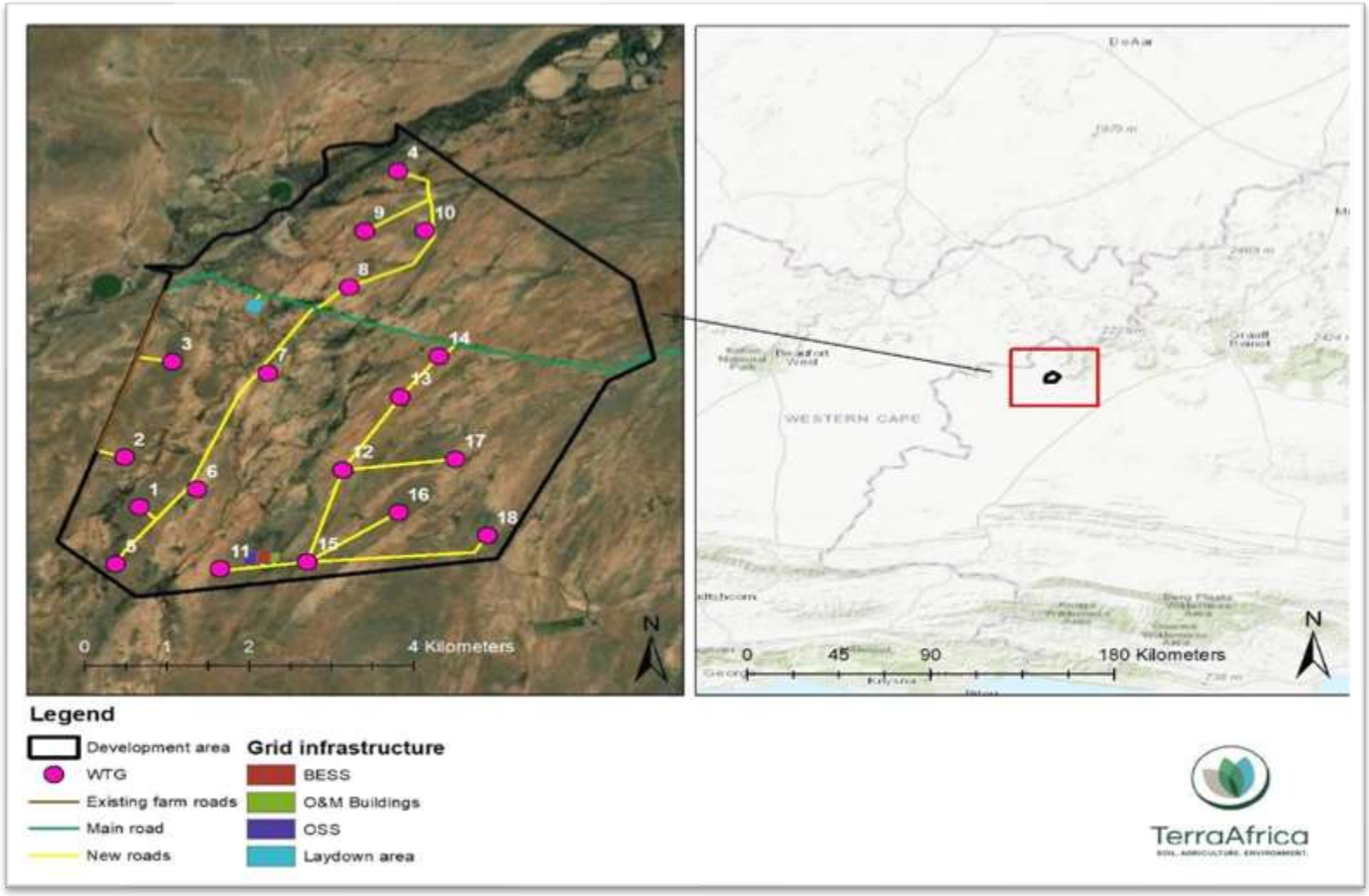


Figure 1: Locality of the proposed development area

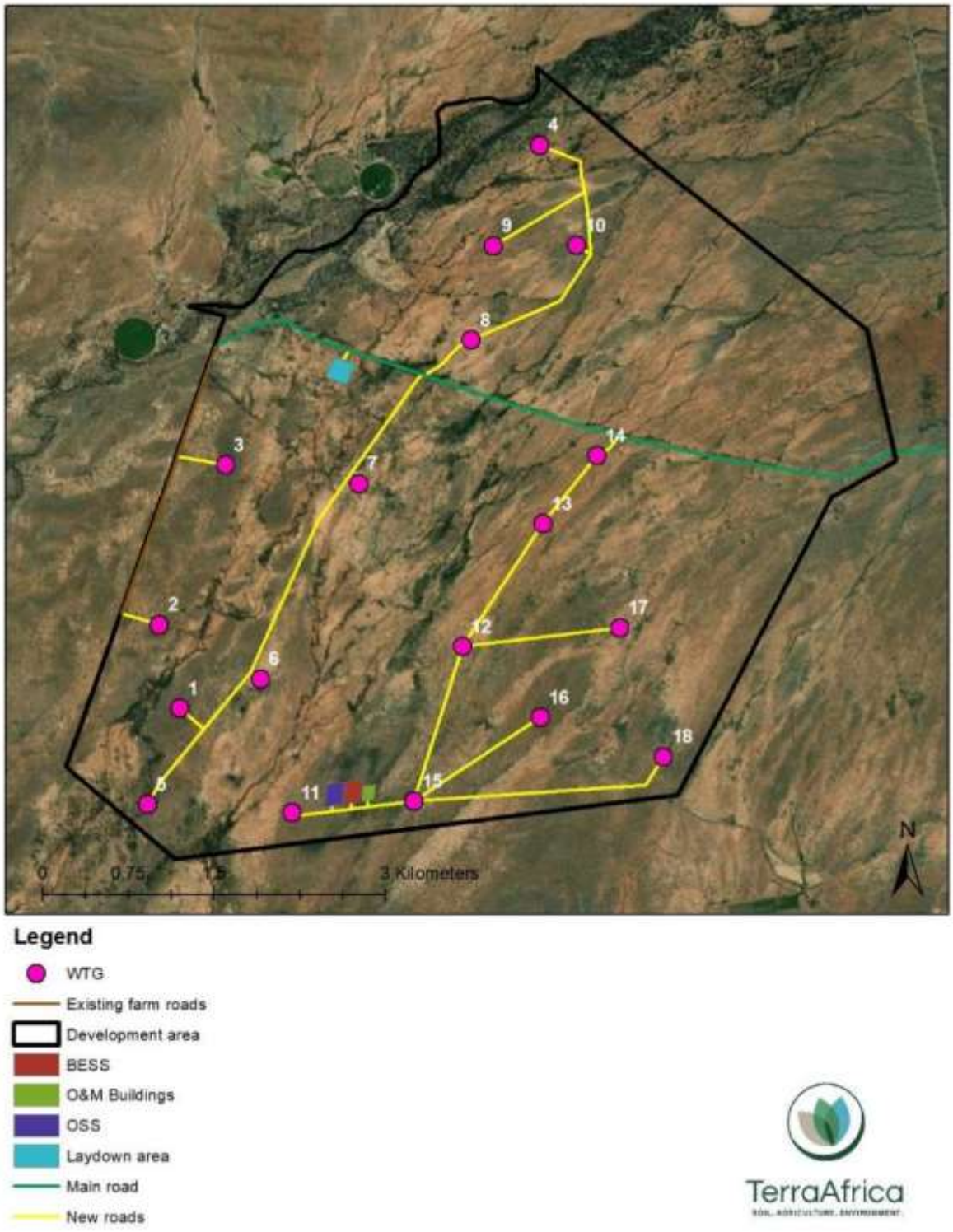


Figure 2: Layout of the proposed development

3. Details of specialist

Mariné is a scientist registered with the South African Council for Natural Scientific Professions (SACNASP) and is specialised in the fields of Agricultural Science and Soil Science. Her SACNASP Registration Number is 400274/10. Mariné holds a BSc. degree in Agricultural Science (with specialisation in Plant Production) from the University of Pretoria and a MSc. Degree in Environmental Science from the University of the Witwatersrand. She has consulted in the subject fields of soil, agriculture, pollution assessment and land use planning for the environmental sector of several African countries including Botswana, Mozambique, Democratic Republic of Congo, Liberia, Ghana and Angola. She has also consulted on the soil and agricultural assessment of a gas infrastructure project in Afghanistan. Mariné's project experience conducting assessments for renewable energy projects include solar and wind energy facilities in the Western, Northern and Eastern Cape as well as the North West, Free State and KwaZulu Natal Provinces. Her contact details are provided in Appendices 1 and 2 attached.

Jan-Dirk is a candidate scientist registered with the South African Council for Natural Scientific Professions (SACNASP) and is specialized in the field of Soil Science. His SACNASP registration number is 400274/13. Jan-Dirk holds a BSc. Degree in Agricultural Science (with specialization in Soil Science) from the University of the Free State and a MSc. Degree in Soil Science from the University of the Free State.

4. Methodology

The proposed development area was superimposed on three data sets to determine the anticipated sensitivities of the properties to the development. The data sets are:

- The National Land Capability Evaluation Raster Data Layer was obtained from the Department of Agriculture, Land Reform and Rural Development (DALRRD) to determine the land capability classes of the development area assessment zone according to this system. The data was developed using a spatial evaluation modelling approach (DALRRD, 2017).
- The long-term grazing capacity for South Africa 2018 was analysed for the development area and surrounding area. The values indicated for the different areas represent long term grazing capacity with the understanding that the veld is in a relatively good condition (DALRRD, 2018).
- The Eastern Cape Province Field Crop Boundaries (November 2019) was analysed to determine whether the proposed PV development area falls within the boundaries of any crop production areas. The crop production areas may include rainfed annual crops, non-pivot and pivot irrigated annual crops, horticulture, viticulture, old fields, small holdings and subsistence farming (DALRRD, 2019).
- Land type data for the development area was obtained from the Institute for Soil Climate and Water (ISCW) of the Agricultural Research Council (ARC) (Land Type Survey Staff, 1972 – 2006). 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.

For the site verification visit, the development area was on the 19th to 22nd June 2023 (Winter). The soil profiles were examined to a maximum depth of 1.5 m using a hand-held auger. Observations on site were made regarding soil texture, structure, colour and soil depth at each survey point. A cold 10% hydrochloric acid solution was used on site to test for the presence of carbonates in the soil. Qfield software were used to the log the coordinates of each of the survey points. The soils are described using Soil Classification: A Natural and Anthropogenic System for South Africa (Soil Classification Working Group, 2018). Photographic evidence of soil properties, current land uses, and farm infrastructure were taken with a digital camera.

5. Baseline description

5.1 Land types

The development area consists of the Ia43, Ag8 and the Da74 land types. The Ia land type consists of deep alluvial soils comprising more than 60% of land type, while the Da land type consists of duplex soils (sandier topsoil abruptly overlying more clayey subsoil) allocated to more than 50% of land type. The Ag land type has freely drained, shallow (<300 mm deep), red, eutrophic, apedal soils that cover more than 40% of the land type.

5.2 Soil properties

The following soil forms are identified within the development area: Addo, Burgesfort, Coega, Dundee, Glenrosa, Mispah, Nkonkoni and Valsrivier soil forms. The position of the soil within the development area is illustrated in Figure 3 and the horizon organtisation of each soil form outlined below.

- The Addo soil consists of a bleached orthic horizon with a brown aluvic neocarbonate underneath (Figure 4A). A soft carbonate is present underneath the neocarbonate.
- The Burgersfort has a bleached topsoil, with a brown aluvic neocarbonate horizon underneath. Unlike the Addo the Burgersfort has a saprollithic horizon underneath the neocarbonate (Figure 4B).
- The Coega is clearly visible with the hard carbonate being on the surface. Deeper areas have a bleached topsoil (Figure 4C).
- The Dundee consists of a bleached orthic with brown alluvial underneath. The alluvial was calcareous with wetness being absent (Figure 5A).
- The Glenrosa as with the other soil forms have a orthic horizon with saprolithic material that contain calcrete, underneath (Figure 5B).
- The Mispah consists of a calcareous chromic topsoil and fractured rock underneath. The Mispah soils are between 50 and 350mm deep.

- The Nkonkoni consists of a chromic topsoil and an aluvic red apedal horizon underneath (Figure 5C). A saprolithic horizon is found underneath the red apedal.
- The Valsrivier soil form consist of a bleached orthic horizon with a Pedocutanic subsoil horizon underneath (Figure 5D). The pedocutanic was brown without vertic properties and is also calcareous.

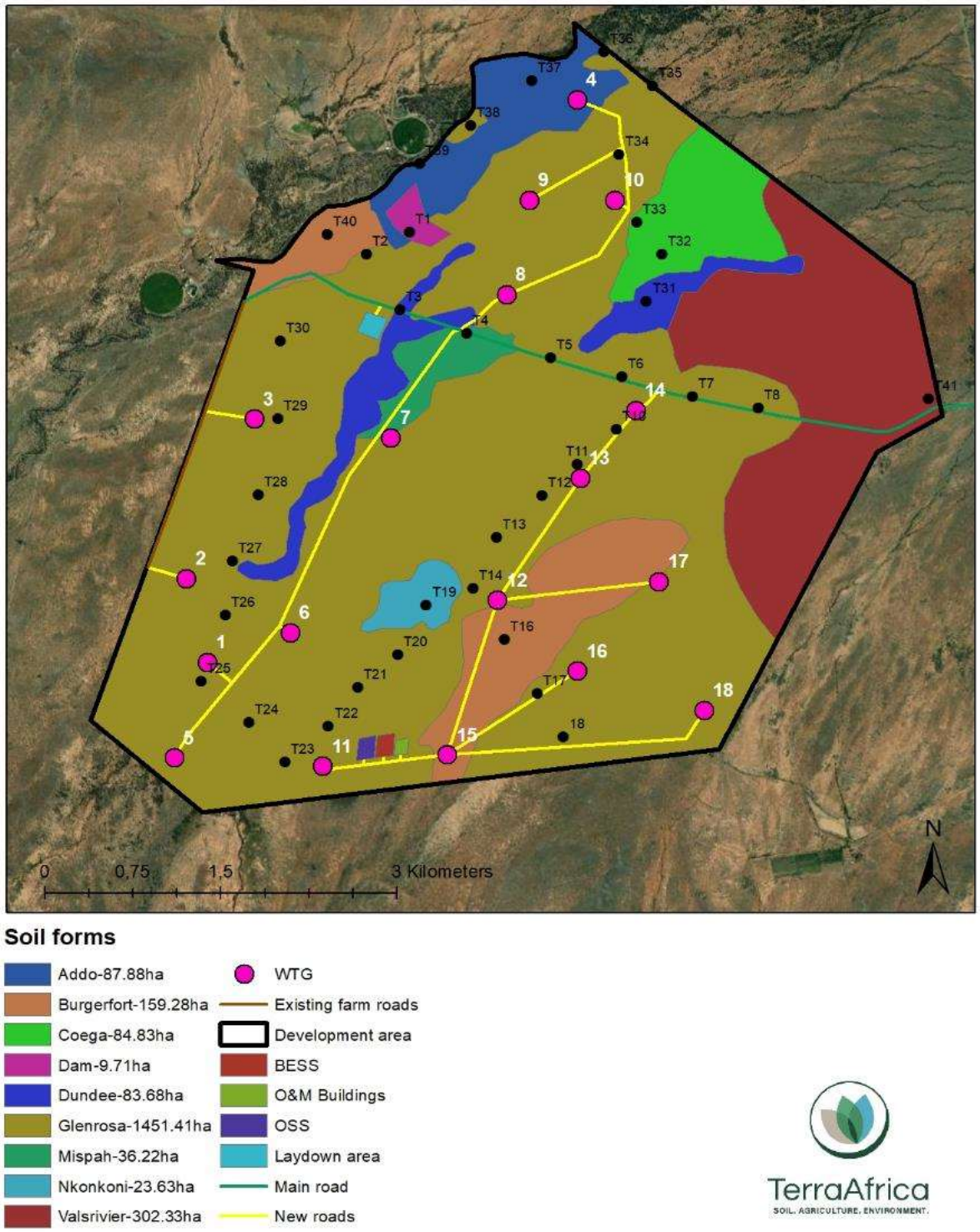


Figure 3: Soil classification map of the Tango Wind Energy Facility development area

Figure 4:Addo (A), Burgersfort (B) and Coega (C) soil forms.

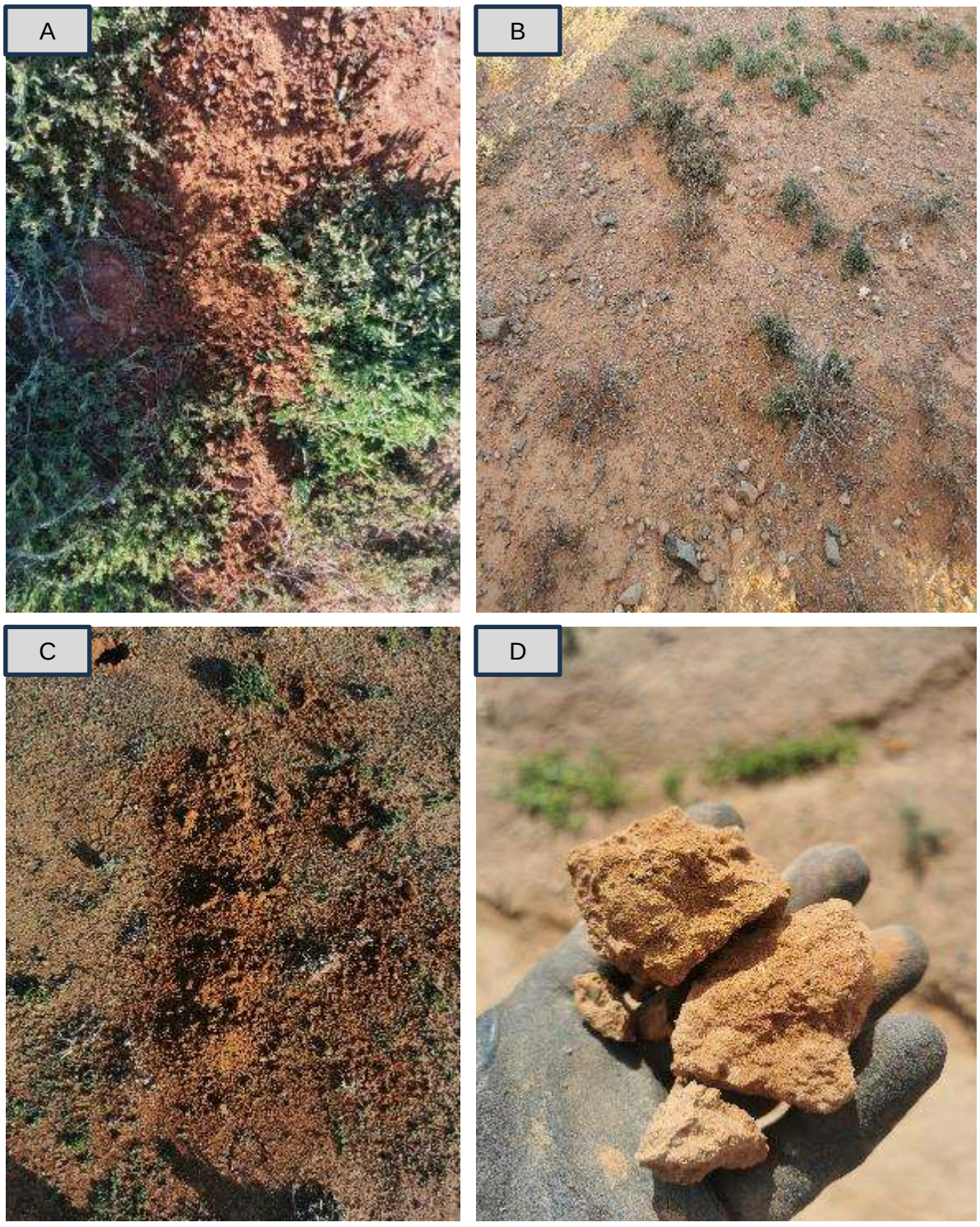


Figure 5: Dundee (D), Glenrosa (E), Nkonkoni (F), and Valsrivier (G).

5.3 Land capability

5.3.1 Land capability according to desktop data (DALRRD, 2016)

According to DALRRD (2016), the development area has four different land capability classes (Figure 6) Most of the development area largely consists of land with Low-Moderate (Class 06 and 07) and Moderate (Class 08) land capability. Moderate (Class 08) land capability is found mainly on the western side of the development area whereas Low-Moderate (Class 06 and 07) land capability is found on the eastern side. Small areas of Low (Class 05) land capability are scattered in the eastern side of the development area.

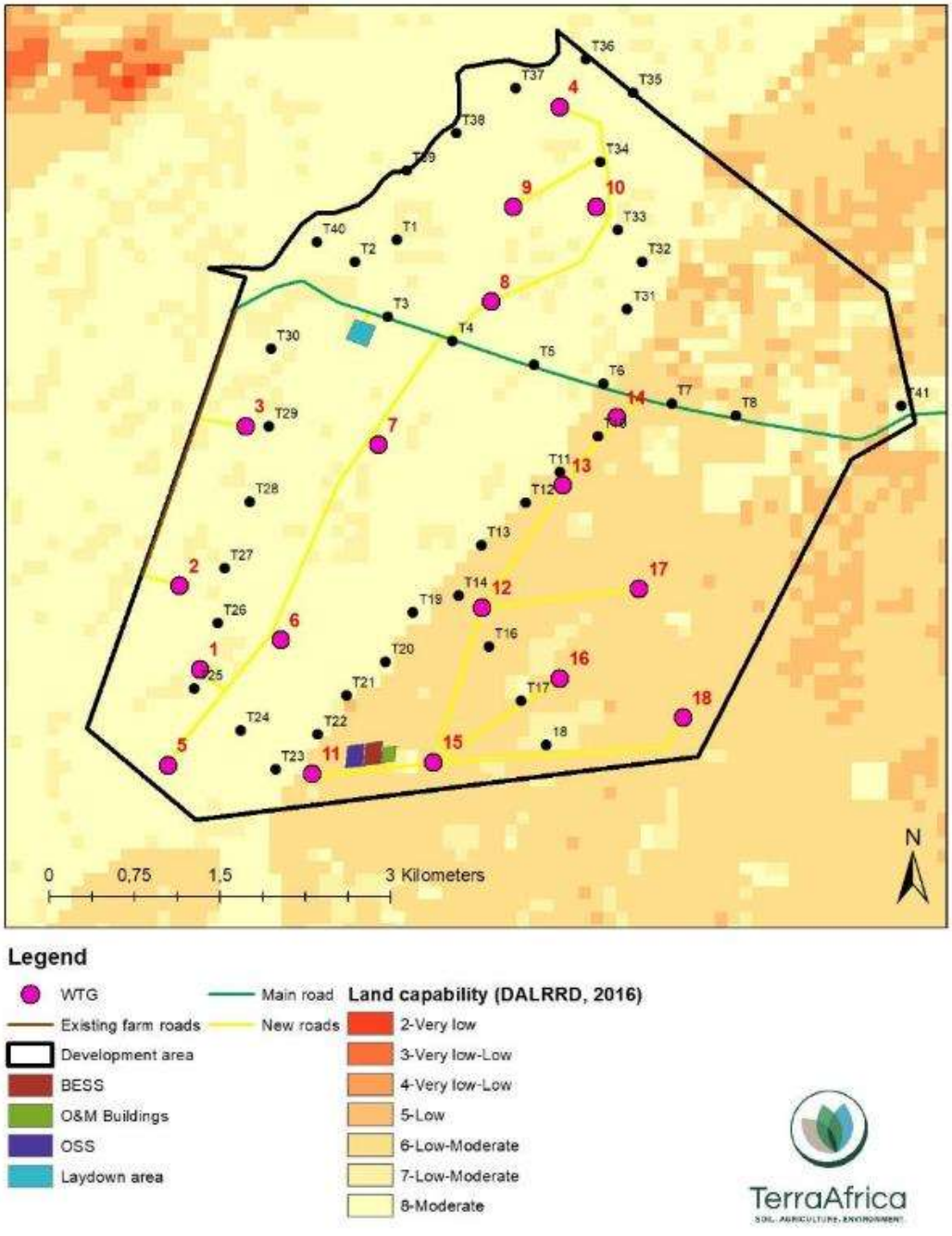


Figure 6: Land capability of the proposed Tango Wind Energy Facility (DALRRD, 2016)

5.3.2 Verified land capability classification

Most of the development area has Low (Class 05) land capability (1535.09ha) with most of the wind turbines falling within Low land capability areas. Low land capability areas are mainly due to the shallow effective soil depth of the Glenrosa soils. Higher land capabilities are attributed to soil with a sufficient effective soil depth such as the Valsrivier, Addo and Burgersfort soil forms and has a Low-Moderate (Class 06 and 07) and Moderate (Class 08) land capability. The lower land capability of the development footprint is confirmed by the absence of any cultivated fields as verified during the site visit and the farmers.

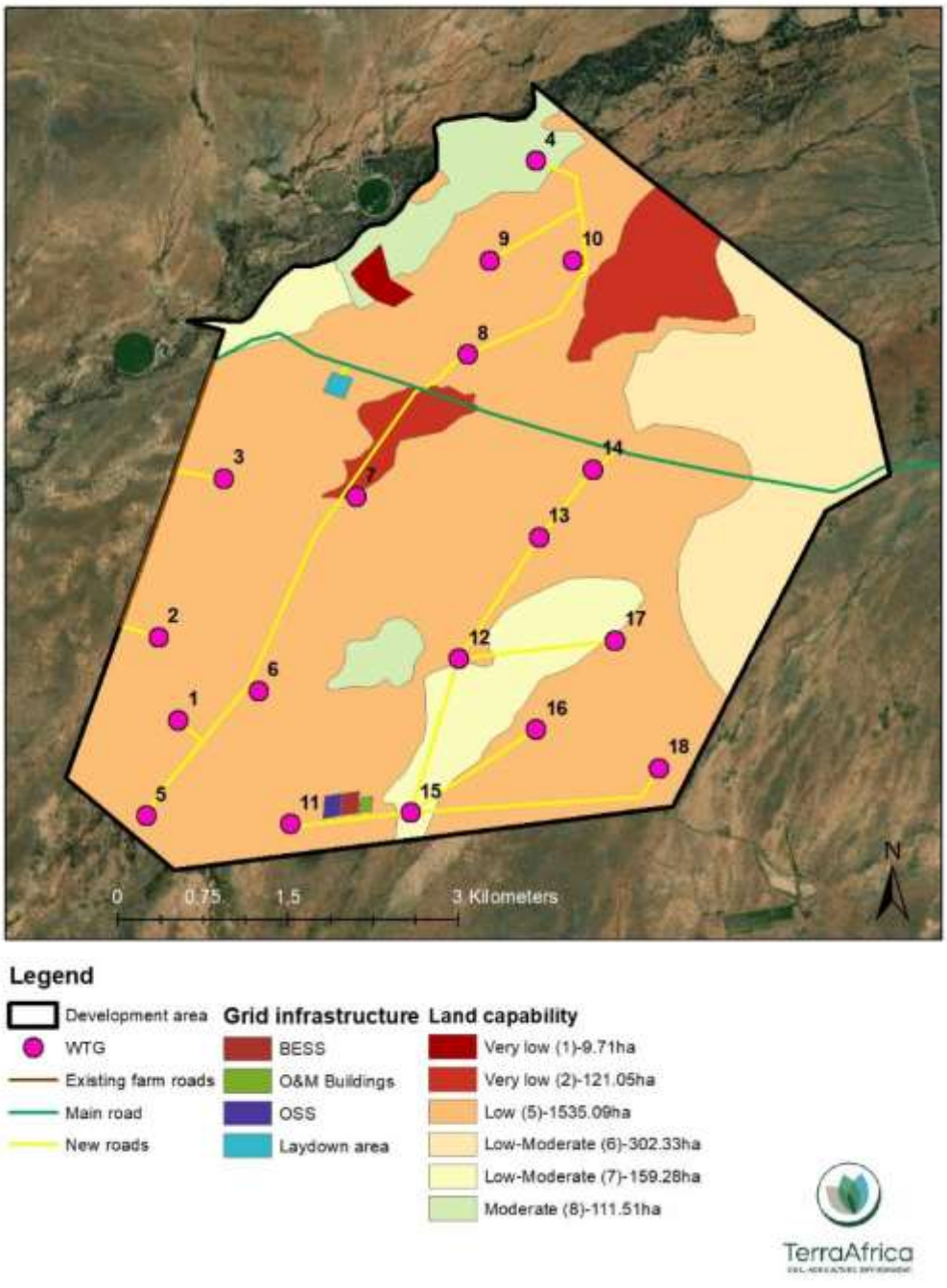


Figure 7: Refined land capability of the proposed Tango Wind Energy Facility

5.4 Agricultural land use

5.4.1 Crop production

The field crop boundary map (Figure 8) shows that rainfed annual crops/planted pastures are present within the development area. During the site visit no crop fields or planted pastures were found. The main land use of the development area is livestock farming with various areas having water prevision for the animals (Figure 9).

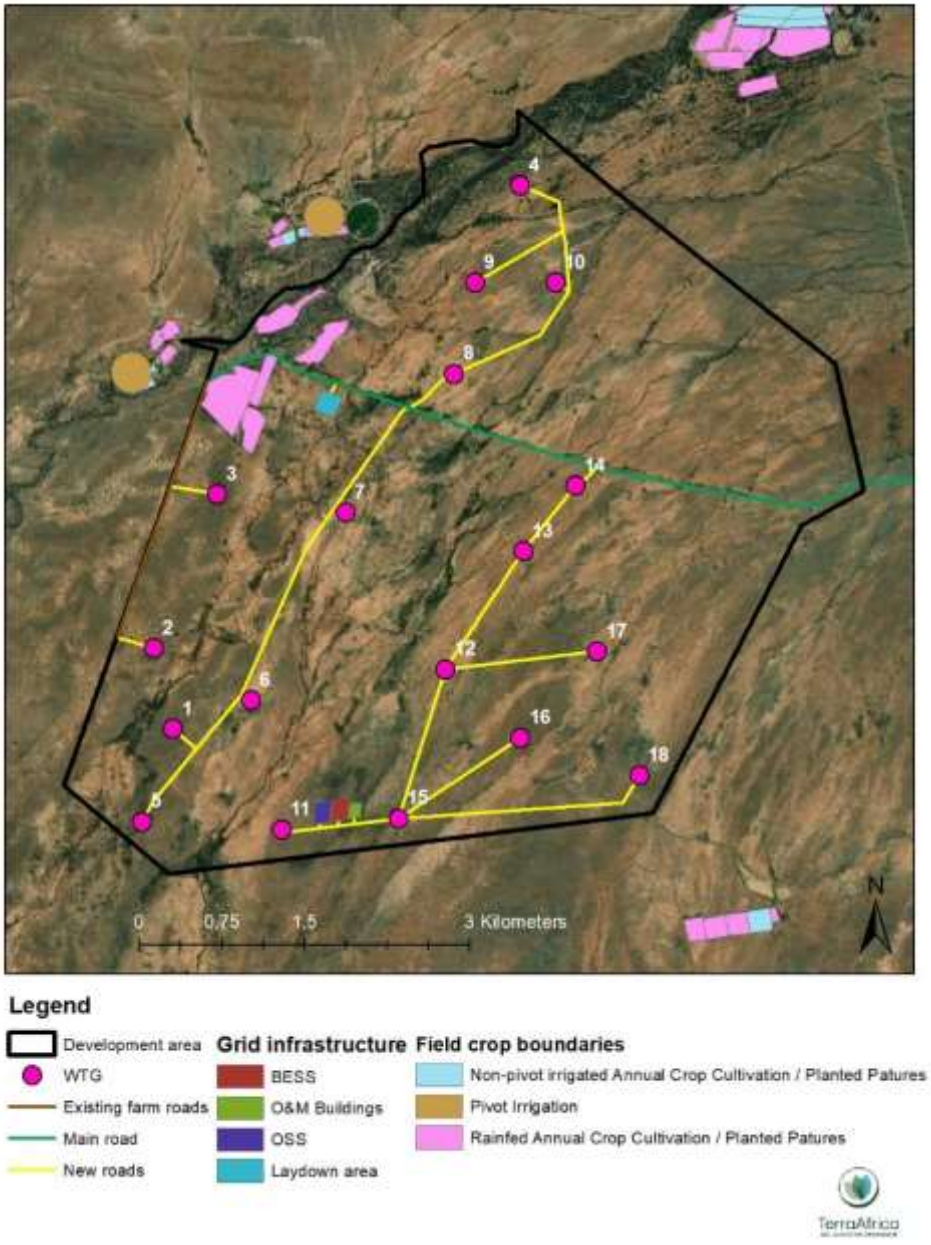


Figure 8: Location of field crop boundaries within around the proposed Tango Wind Energy Facility (DALRRD, 2019)

5.4.2 Animal production

Following the metadata layer obtained from DALRRD, the grazing capacity for most of the study area, is 20 ha/LSU, with 14ha/LSU and 24ha/LSU found in the eastern side (refer to Figure 10). This unit used for large animals such as cattle can be converted to small animal units or small stock units (SSU). The conversion factor is 4 small stock units that equates one large stock unit. Since livestock farming in the region within which the development area is located is dominated by small stock farming, the grazing capacity for the 20ha/LSU area can be converted to 5 ha/SSU and can thus provide forage to 254 small stock units, the 24ha/LSU (6ha/SSU) can provide forage for 97 small stock units and the 14ha/LSU (3.5ha/SSU) area 111 small stock units. These estimates are made for areas demarcated as 20ha/LSU, 24ha/LSU and 14ha/LSU.

Figure 9: Photo evidence of grazing small stock within the study area with signs of water provision for animals.

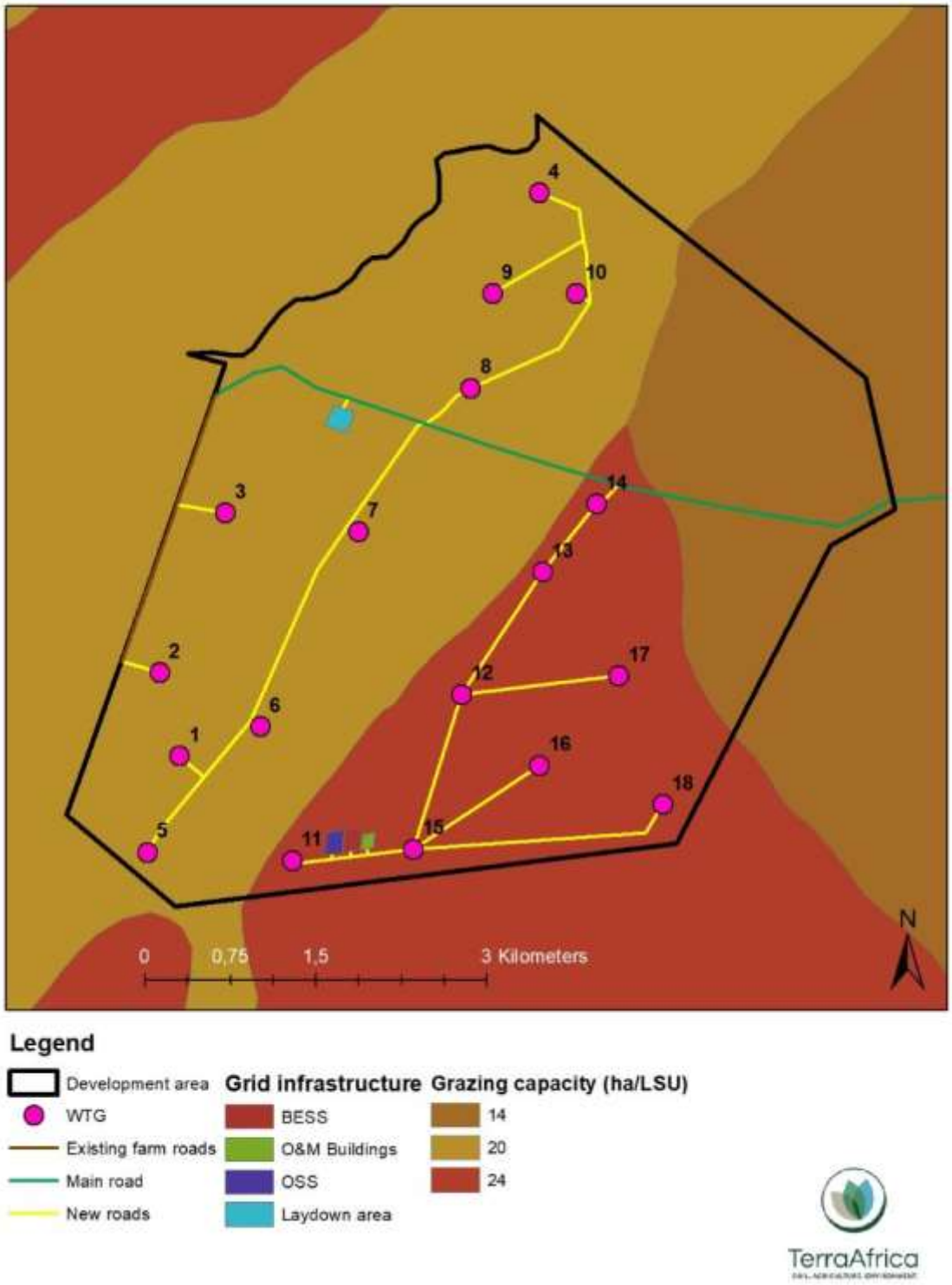


Figure 10: Grazing capacity of the proposed Tango Wind Energy Facility (data source: DALRRD, 2018).

6. Agricultural sensitivity

6.1 Sensitivity according to the environmental screening tool

The screening report for the proposed Tango Wind Energy Facility was evaluated prior to the site visit. The screening report for the development area was generated by Savannah in 2023. The agricultural sensitivity map is shown Figure 11.

The screening report was generated by Savannah Environmental (Pty) Ltd for proposed development area (Refer to Figure 11). According to the agricultural sensitivity, the development area, consists predominantly of land with Medium sensitivity. Three areas show a High agricultural sensitivity and are allocated to areas with annual crops cultivation, planted pasture rotation and soils with a Low-Moderate (Class 06 & 07) and Moderate (Class 08) land capability. Medium sensitive areas are allocated to areas with Low-Moderate (Class 06 & 07) and Moderate (Class 08) land capability. Low agricultural sensitivity is found in the eastern side of the development area and is allocated to areas with a land capability of Very low (Class 01) to Low (Class 05).

6.2 Verified agricultural sensitivity of the Tango Wind Energy Facility

Following the consideration of the desktop data as well as data gathered during the site verification visit, the development area can be classified into four different sensitivity classes. The sensitivity classification is shown in Figure 12.

Most of the infrastructure components are located well within areas with Low Sensitivity (refer to Figure 12). Low agricultural sensitivity is due to the Low (Class 05) land capability and the absence of any field crop boundaries. Areas shown as having field crops did not show any signs of cultivation during the site visit. The Low Sensitivity areas have shallow effective soil depth, and the arid climate reduces the land capability of the area significantly. The area is mainly used for livestock grazing. Turbines 4 and 25 fall within Medium agricultural sensitivity and is allocated a Medium sensitivity due the deeper effective depth of the soil and the soil having a higher land capability of Low-Moderate (Class 06 and 07) and Moderate (Class 08).

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

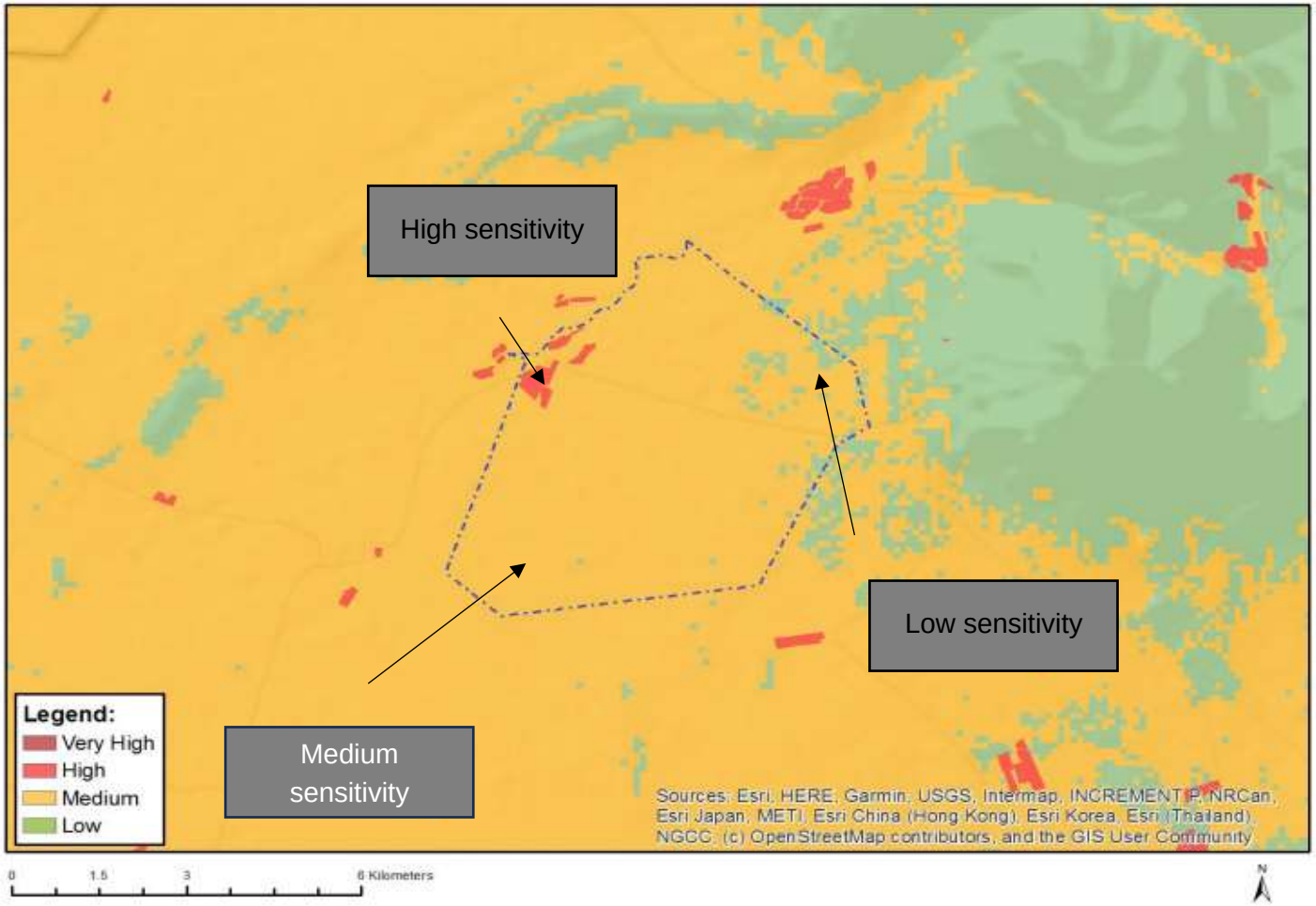


Figure 11: Map of agricultural sensitivity according to the screening report of the Environmental Screening Tool.

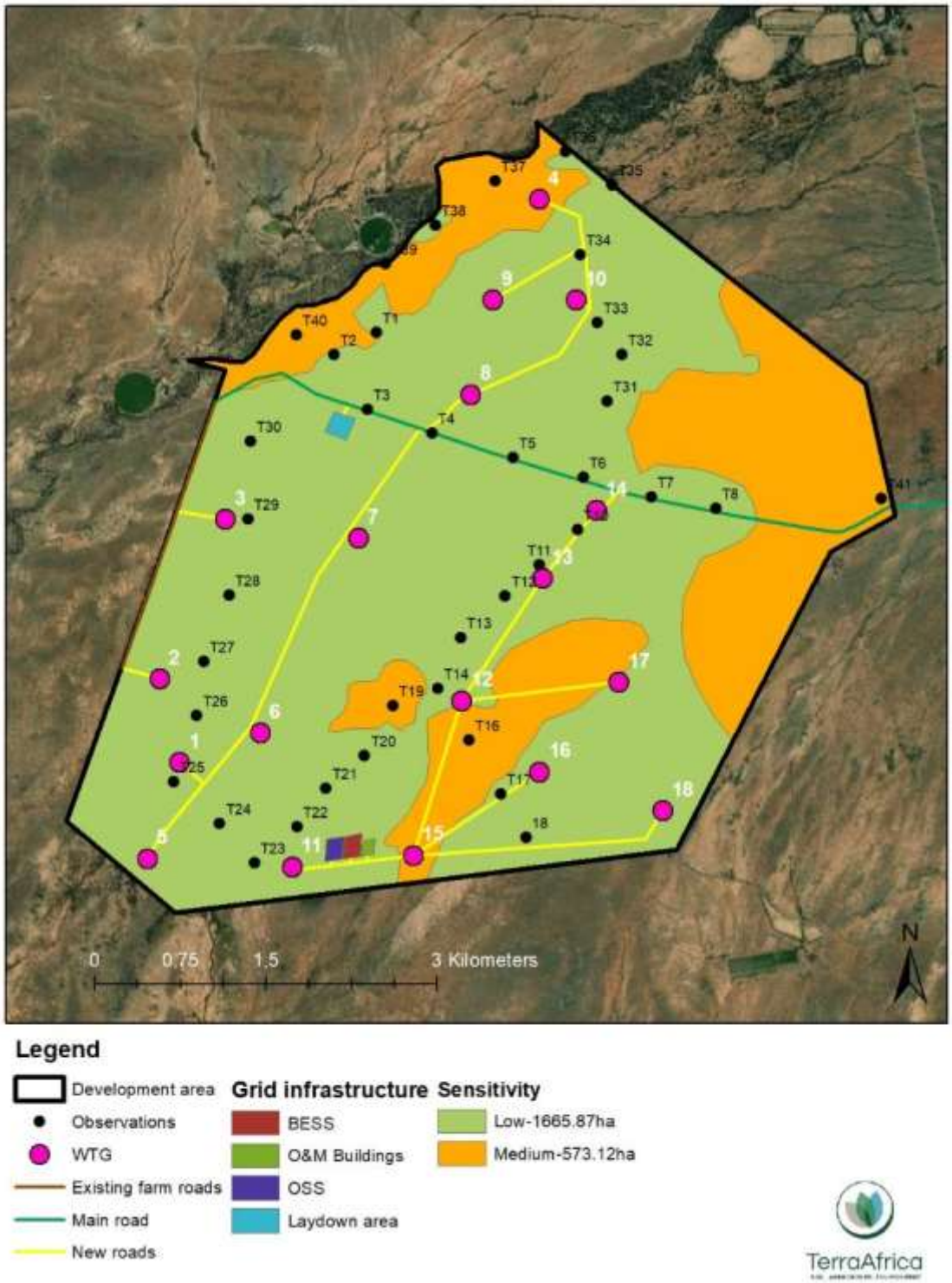


Figure 12: Agricultural sensitivity of the development area.

7. Conclusion

Following the desktop analysis of available data, as well as a site verification visit, it is concluded that the Tango WEF is dominated by shallow soils of the Glenrosa soil form. The Glenrosa has a Low (Class 05) land capability and Low agricultural sensitivity and most of the infrastructure falls on Low agricultural sensitivity which is mainly used for livestock grazing.

The entire development area is used for livestock grazing an although the field crop boundary map shows that rainfed cultivated fields are present, no fields were observed during the site visit, which further contributes to the lower agricultural sensitivity. It was only turbine 4 and 25 that is located on Medium agricultural sensitivity areas. Medium agricultural sensitivity is allocated to areas with a higher land capabilities and soils with a viable effective soil depth like the Addo and Burgersfort soil forms.

It is in my professional opinion that the development footprint be suitable for the development. Areas with Low and Medium agricultural sensitivity is considered acceptable. During the site verification visit, it was verified that there are no areas with high agricultural sensitivity within the development area.

8. Reference list

Crop Estimates Consortium, 2019. *Field crop boundary data layer (Eastern Cape)*, 2019. Pretoria. Department of Agriculture, Land Reform and Rural Development.

Department of Agriculture, Land Reform and Rural Development, 2018. *Long-term grazing capacity for South Africa*: Data layer. Government Gazette Vol. 638, No. 41870. 31 August 2018. Regulation 10 of the Conservation of Agricultural Resources Act (CARA): Act 43 of 1983. Pretoria. Government Printing Works.

Land Type Survey Staff (1972 – 2006). *Land Types of South Africa data set*. ARC – Institute for Soil, Climate and Water. Pretoria.

The Soil Classification Working Group, 2018. *Soil Classification – Taxonomic System for South Africa.* Dept. of Agric., Pretoria.

APPENDIX P6:
HERITAGE SITE SENSITIVITY VERIFICATION REPORT

CTS HERITAGE

SITE SENSITIVITY VERIFICATION (IN TERMS OF PART A OF THE ASSESSMENT PROTOCOLS PUBLISHED IN GN 320 ON 20 MARCH 2020)

1 Introduction

FE Tango (Pty) Ltd is proposing the development of a wind energy facility and associated infrastructure on a site located approximately 20km west of Aberdeen in the Eastern Cape Province. The project is located within the Dr Beyers Naude Local Municipality and the greater Sarah Baartman District Municipality. The project site comprises a single affected property, Portion 1 of Farm Klipstavel 72. The project is known as the FE Tango Wind Energy Facility. The project is planned as part of a cluster of renewable energy projects, which includes a second facility, FE Kudu Wind Energy Facility, located approximately 20km to the west of the site.

CTS Heritage was appointed by Savannah Environmental to undertake a Site Verification and Sensitivity analysis that forms part of the Environmental Authorisation (EA) for the proposed Tango Wind Farm and its associated grid connections.

2 Site sensitivity verification

The site sensitivity verification was undertaken as follows:

- A Desktop Study was conducted of relevant reports previously written (please see the reference list for the age and nature of the reports used)
- An archaeologist conducted an assessment of archaeological resources likely to be disturbed by the proposed development. The archaeologist conducted his site visit from 20 to 24 June 2023.
- A palaeontologist conducted an assessment of palaeontological resources likely to be disturbed by the proposed development. The palaeontologist conducted his site visit in from 20 to 24 June 2023.
- A cultural landscape assessment was conducted that covers the proposed development area with fieldwork completed in July 2023.

A Heritage Impact Assessment (HIA) process has been undertaken and is reported on in a separate HIA report that will be submitted to the South African Heritage Resources Agency (SAHRA) as is required in terms of Section 38(8) of the National Heritage Resources Act (NHRA).

3 Outcome

In terms of site sensitivity with specific consideration of heritage resources, clarity on the broader context and its cultural value is important to understand overall heritage sensitivity and in order to contextualise site specific findings. Please find both contextual information as well as site specific information below.

Cultural Landscape and the Built Environment

The concept of cultural landscape gives spatial and temporal expression to the processes and products of the interaction between people and the environment. It may thus be conceived as a particular configuration of topography, geology, vegetation, land use and settlement pattern and associations which establishes some coherence of natural and cultural processes.

The overall landscape of the study area is a vast, open, barren, largely featureless plain. It lies to the west of an area of high scenic value framed to the north by the south-west sector of the Camdeboo Mountains, notably the Sleeping Giant. The R61 and N9 are regional linkage routes traversing a representative Karoo landscape and having some scenic heritage value in terms of its sense of remoteness.

The Camdeboo Plains and mountain backdrop, with its core lying east of the proposed development area, is of high local historical, aesthetic architectural and social significance. Of particular heritage significance is the town of Aberdeen, which is worthy of Grade IIIA heritage status in terms of the following:

- Historical value dating to the mid-19th century and including its local role in the South African War.
- Architectural and aesthetic value in terms of its street pattern, streetscape and townscape, concentration of conservation worthy buildings, and its relationship with its setting, notably its mountain backdrop to the north.
- Cultural landscape value as providing a focal and destination point within a vast open flat landscape and at the intersection of two regional routes.

The cultural landscape to the west of Aberdeen and forming part of the landscape affected by the proposed WEF has historical value in terms of forming part of a pattern of land grants dating to the mid-19th century. Natural features and patterns of use over time contribute to its landscape character (watercourses, topographical features, routes, farmsteads, stone kraals). While the landscape itself is not worthy of formal protection in terms of the NHRA, it possesses conservation-worthy landscape elements for aesthetic (visual, place making) and historical reasons.

Archaeology

The non-perennial stream (Ouplaasrivier) runs roughly northeast to southwest along the western side of the study site and all the werfs cluster around this source of sporadic water. A few small patches of land have been tilled and irrigated to provide feed for stock farming while the rest of the ground has been left to grazing. A small area has been transformed by creating sand banks using heavy earthmoving equipment and this was commonly done in the 1950s as has been noted in our assessments of the surrounding farms. Most of the active farms have many modern buildings with some older fabric dating to the early 20th century.

Given the lack of natural rock shelters on the landscape and absence of dolerite boulders favoured by rock engravers during the Later Stone Age, the vast majority of the observations consisted of open air scatters of Middle and Later Stone Age artefact scatters. The vast majority of the archaeological sites recorded consisted of Middle Stone Age open site scatters of tools made of hornfels and siltstone which are abundant and easily sourced within the local area. The Later Stone Age scatters tended to contain high quality hornfels that appeared to be introduced into the area and were far less patinated and weathered than the extensive MSA material. The terrain starts to gently rise slightly as one moves towards the slopes of the Sleeping Giant and this results in changes in soil depth and water availability where a few thicker stands of thorntrees and grassland were found outside of the Ouplaasrivier. For the most part, however, the level terrain is covered in patchy shrubland with many deflated areas holding dispersed archaeological material spread thinly across a wide area.

No significant archaeological or cultural landscape heritage resources were identified within the area proposed for development.

Palaeontology

The Tango WEF project area on the northern margins of the Aberdeen *Vlaktes* are underlain at depth by potentially fossiliferous continental (fluvial / lacustrine) bedrocks of the Lower Beaufort Group (Adelaide Subgroup). These bedrocks probably belong largely or entirely to the Middle Permian Abrahamskraal Formation rather than the Late Permian Teekloof Formation as currently mapped. There are no historical records of fossil vertebrates from the project area; this is probably largely due to the extremely poor levels of bedrock exposure found here. Fragmentary remains of large dinocephalians have recently been recorded from the Aberdeen *Vlaktes* just to the south as well as from the slopes of the Oorlogskloofberge to the west. During the recent 3-day palaeontological field visit no occurrences of fossil vertebrates were recorded.

A background scatter of petrified (silicified) wood blocks reworked from the Lower Beaufort Group bedrocks occurs within surface gravels of eluvial and alluvial origin in several sectors of the Tango WEF project area. Most of the fossil wood material is poorly preserved and of very limited scientific value. Only one, fairly well-preserved block of Palaeozoic petrified wood, was recorded within the Tango project area. Mitigation of the recorded fossil wood sites is not recommended here, given the abundance and widespread occurrence of better-preserved material regionally in the northern Aberdeen *vlaktes* and the fact that the material is not *in situ*.

Most of the low-relief terrain within the WEF project area is covered by a thin to thick blanket of Late Caenozoic superficial deposits, including alluvial gravels and sands, eluvial and colluvial surface gravels, calcrete hard pans, pan sediments and gravelly to sandy soils. Apart from reworked fossil wood blocks and Late Caenozoic calcretised plant root casts of widespread occurrence and limited palaeontological interest, no fossils of Caenozoic age have been recorded within these younger sediments.

Tango WEF is mapped relative to significant heritage resources including cultural landscape elements, archaeology and palaeontology in Figure 1 and 2 below.

4 National Environmental Screening Tool

According to the DFFE Screening Tool analysis, the development area has Very High levels of sensitivity for impacts to palaeontological heritage and High levels of sensitivity for impacts to archaeological and cultural heritage resources. The results of this assessment in terms of site sensitivity are summarised below:

- The cultural value of the pristine Karoo Landscape is very high and the location of the proposed development will impact this significance (Very High)
- Some significant archaeological resources were identified within the development area (High)
- No highly significant palaeontological resources were identified within the development area, however the geology underlying the development area is very sensitive for impacts to significant fossils (Very High)

As per the findings of this assessment, and its supporting documentation, the outcome of the sensitivity verification confirms the results of the DFFE Screening Tool for Palaeontology and disputes the results of the screening tool for archaeology and cultural heritage - this should be considered to be Very High. This evidence is provided in the body of this report and in the appendices (Appendix 1 and 2).

5 Conclusion

It is confirmed that the site sensitivities identified in the specialist study have been verified as per section 4 above.

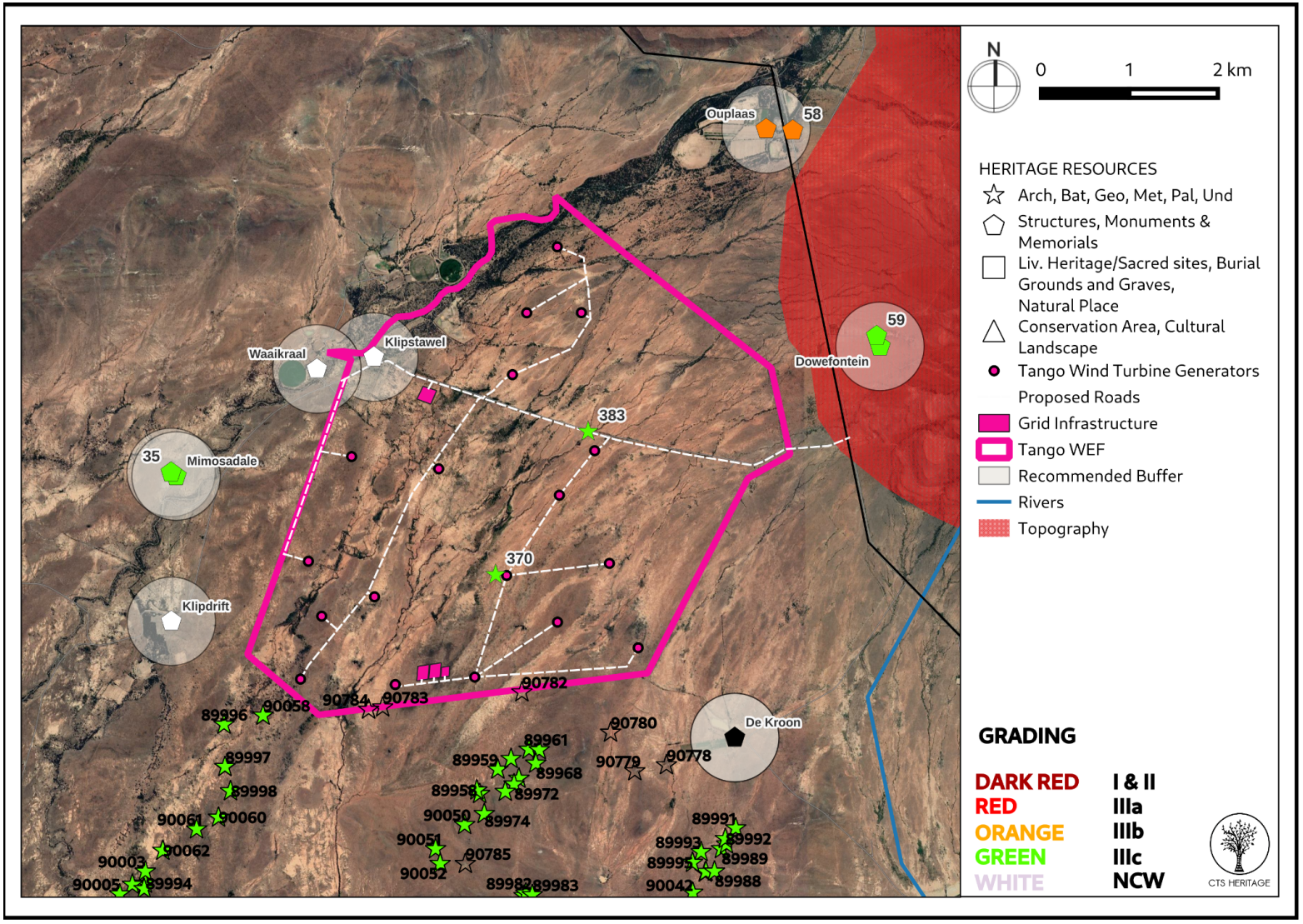


Figure 1: All heritage resources within proximity to the development area

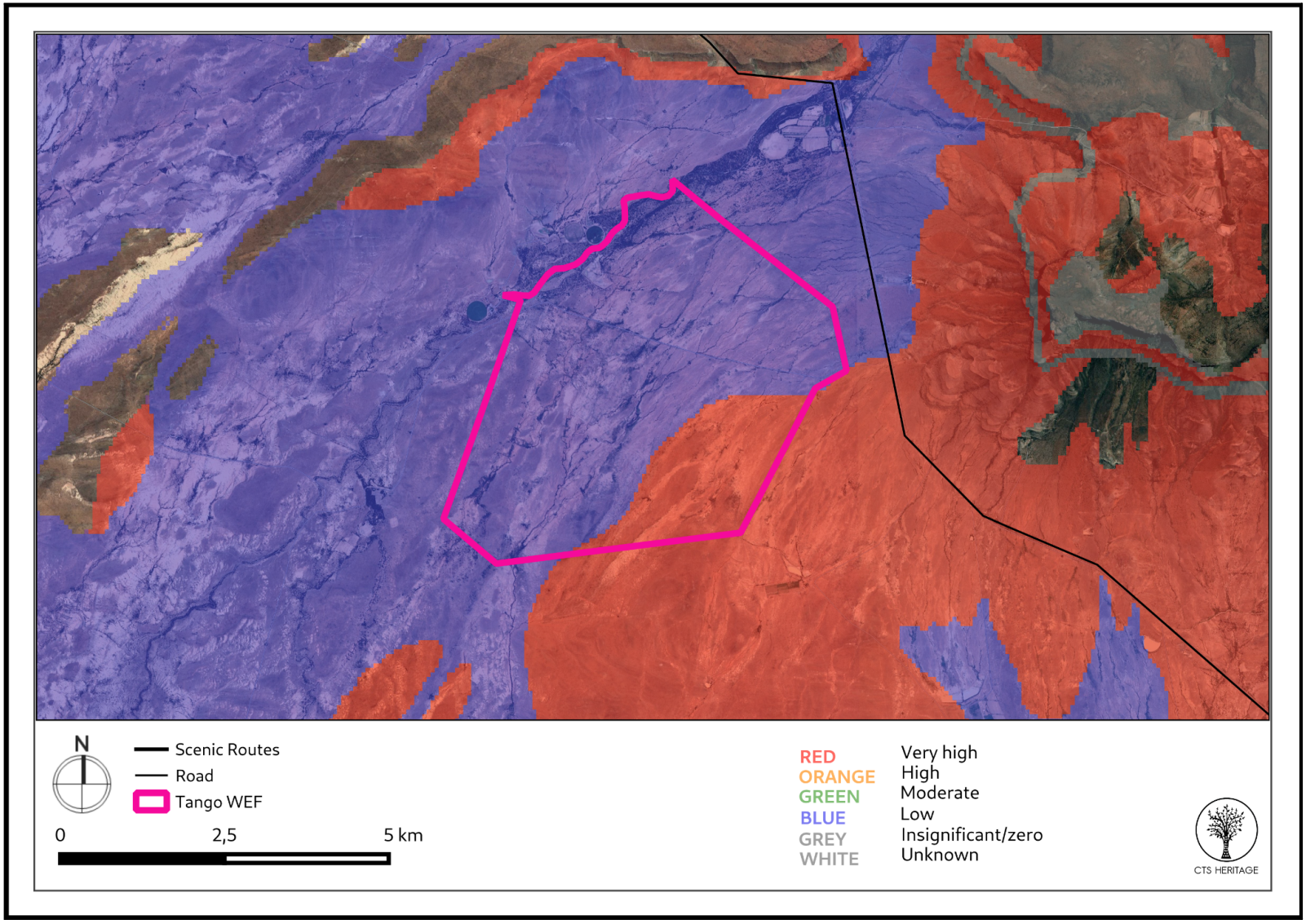


Figure 2: Palaeontological sensitivity of the development area from SAHRIS

APPENDIX P7:
NOISE SITE SENSITIVITY VERIFICATION REPORT

EARES
Enviro Acoustic Research

Name: Morné de Jager
Cell: 082 565 4059
email: morne@eares.co.za
Date: 29 August 2023
Ref: SSV-Tango

Savannah Environmental
Woodlands Drive Office Park
Woodmead
2191

Attention: Ms. Chantelle Geyer / Karen Judas

Dear Madam

SITE SENSITIVITY VERIFICATION (IN TERMS OF PART A OF THE ASSESSMENT PROTOCOLS PUBLISHED IN GOVERNMENT NOTICE 320 ON 20 MARCH 2020) FOR THE PROPOSED TANGO WIND ENERGY FACILITY NEAR ABERDEEN CONSIDERING THE SENSITIVITY TO NOISE

The above-mentioned issue is of relevance.

Part A of the Assessment Protocols published in GN 320 on 20 March 2020 (i.e., Site sensitivity verification is required where a specialist assessment is required but no specific assessment protocol has been prescribed) is applicable where the Department of Environment, Forestry and Fisheries Screening Tool has the relevant themes to verify.

In accordance with Appendix 6 of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations of 2014, a site sensitivity verification has been undertaken in order to confirm the current land use and environmental sensitivity of the proposed project area as identified by the National Web-Based Environmental Screening Tool (Screening Tool). The details of the site sensitivity verification are noted below:

Date of Site Visit	15, 16 and 18 July 2022
Specialist Name	Francois Stephanus de Vries (Noise)
Professional Registration Number (if applicable)	Not applicable, there is no registration body in South Africa that could allow professional registration for acoustic consultants.
Specialist Affiliation / Company	Enviro-Acoustic Research CC

<u>Output from National Environmental Screening Tool</u>

The site was initially assessed using the National Environmental Screening tool, available at, https://screening.environment.gov.za. The output from the National Online Screening tool indicates a number of areas within, and up to 2,000 m from the project boundary is considered to be of a “very

high" sensitivity to noise. These potentially "very high" sensitive areas (in terms of noise) are indicated on **Figures 1** together with the potential noise-sensitive receptors as identified after the site visit.

Description on how the site sensitivity verification was undertaken

The site sensitivity was verified using:

a) *available aerial images (Google Earth®) (See **Figure 1** for initially identified potential noise-sensitive receptors);*
b) *the statuses of these structures were defined during the site visit done in July 2022.*

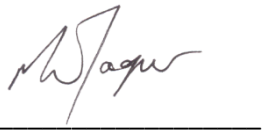
Outcome of the Site Sensitivity Verification

Potential noise-sensitive activities were identified (verified during the July 2022 site visit) and marked as green dots on **Figure 1** below. Based on the site sensitivity verification:

- the online screening tool identified a number of areas with a "very high" sensitivity to noise in the vicinity of the proposed development. There are however no potential noise-sensitive receptors located in these areas and the finding of the online screening tool is disputed; and
- there are a number of structures (NSR01, NSR02, NSR03 and NSR04) used for residential purposes. This was not identified by the online screening tool.

Because there are a number of noise-sensitive receptors within the potential area of influence, the potential impact from noise from the project is assessed in this Noise Specialist Study.

Should you require any further details, or have any additional questions, please do not hesitate to call me on the above numbers.



Signature
Morné de Jager
2023 – 08 – 29

Signature
Francois Stephanus de Vries
2023 – 08 – 29

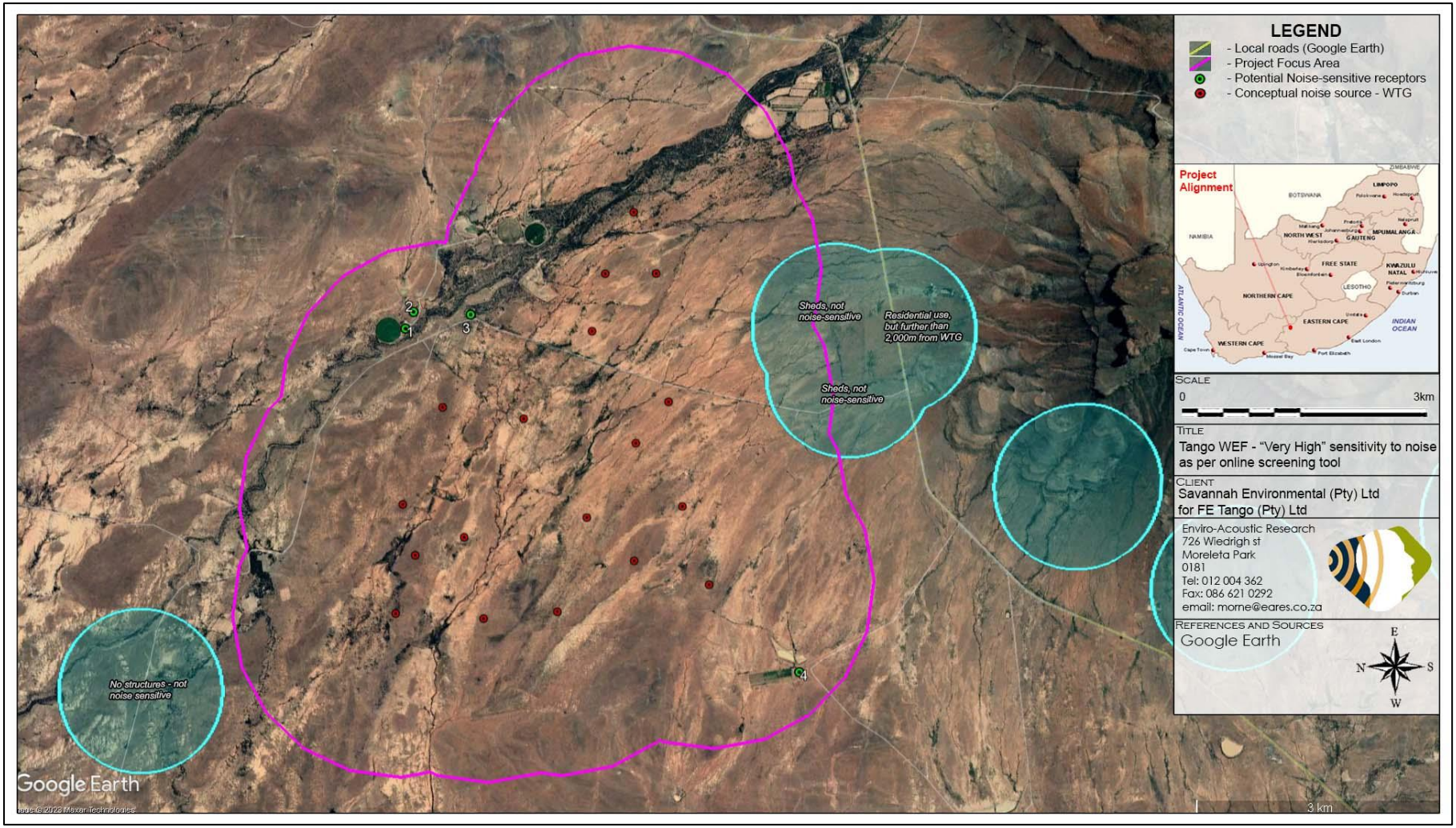


Figure 1: Areas defined to be of "Very High" sensitivity in terms of noise by the online screening tool

APPENDIX P8:
VISUAL SITE SENSITIVITY VERIFICATION REPORT

SITE SENSITIVITY VERIFICATION FOR THE PROPOSED DEVELOPMENT OF THE ABERDEEN WIND FACILITY 1, EASTERN CAPE PROVINCE

Produced for:

Savannah Environmental (Pty) Ltd
1st Floor, Block 2, 5 Woodlands Drive Office Park,
Cnr Woodlands Drive & Western Service Road
Woodmead, 2191

Produced by:

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- September 2023 -

TABLE OF CONTENTS

LIST OF TABLES

LIST OF MAPS

LIST OF FIGURES

1. INTRODUCTION

FE Tango (Pty) Ltd is proposing the development of a wind energy facility and associated infrastructure on a site located approximately 20km west of Aberdeen in the Eastern Cape Province. The project is located within the Dr Beyers Naude Local Municipality and the greater Sarah Baartman District Municipality. The project site comprises a single affected property, Portion 1 of Farm Klipstavel 72. The project is known as the FE Tango Wind Energy Facility. The project is planned as part of a cluster of renewable energy projects, which includes a second facility, FE Kudu Wind Energy Facility, located approximately 20km to the west of the site.

The entire extent of the site falls within the Beaufort West Renewable Energy Development Zones (i.e. REDZ Focus Area 11). The undertaking of a basic assessment process for the project is in line with the requirements stated in GNR 114 of 16 February 2018.

The FE Tango Wind Energy Facility will have a contracted capacity of up to 150MW and comprise wind turbines with a capacity of up to 7.5MW each. The project has a preferred project site of approximately ~2 250ha. Access to the site will be via an existing road off of the nearby R61. The FE Tango Wind Energy Facility project site is proposed to accommodate the following infrastructure:

- Up to 18 wind turbines, turbine foundations and turbine hardstands
- An on-site substation hub incorporating:
  - A132kV on-site facility substation
  - Switchyard with collector infrastructure
  - Battery Energy Storage System (BESS)
  - Operation and Maintenance buildings
- A balance of plant area incorporating:
  - Temporary laydown areas
  - A construction camp laydown and temporary concrete batching plant
- Power lines internal to the wind farm, trenched and located adjacent to internal access roads, where feasible[1].
- Access roads to the site and between project components with a width up to 8m for primary access routes.

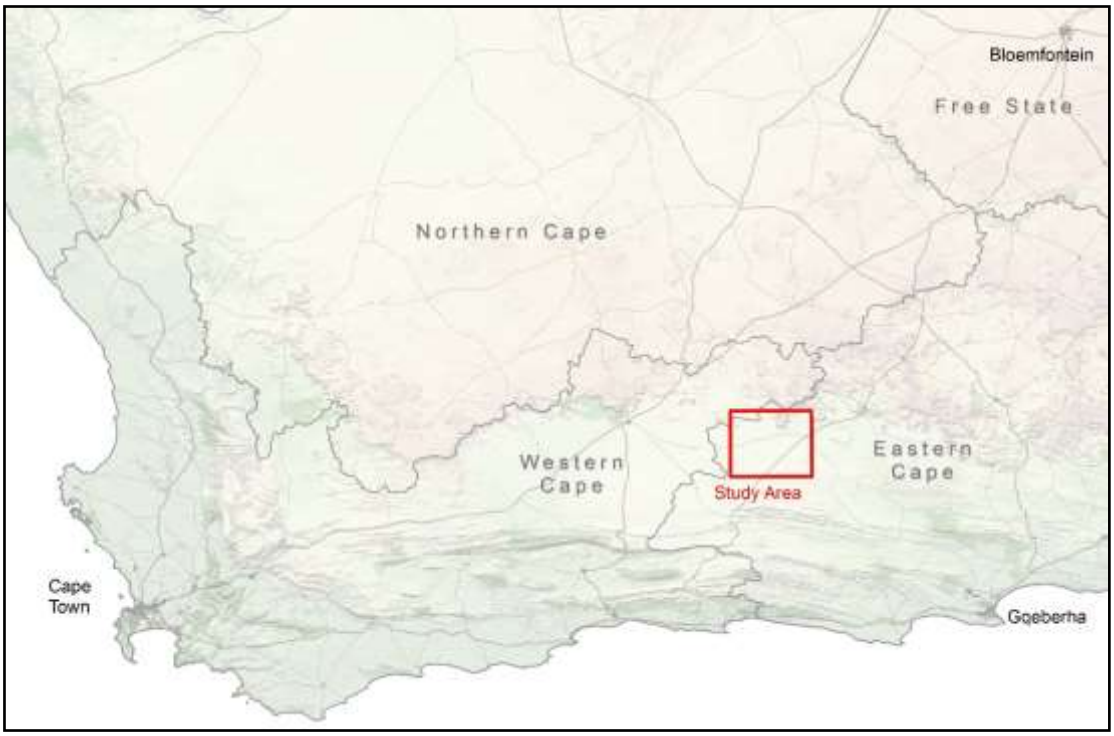


Figure 1: Regional locality of the study area

A technically viable development footprint was proposed by the developer and assessed as part of the studies. The details of the project are as follows:

[1] The intention is for internal project cabling to follow the internal roads.

Table 1: Infrastructure and dimension breakdown of the proposed WEF

Project Name	FE FE Tango Wind Energy Facility
Location	Portion 1 of Farm Klipstavel 72
Applicant	FE Tango (Pty) Ltd
Contracted capacity	Up to 150MW (turbines up to 7.5MW in capacity)
Number of turbines	Up to 18 turbines
Turbine hub height	Up to 164m
Turbine top tip height	Up to 250m
Rotor swept area	up to 21m^2
Capacity of on-site substation	132kV
Area occupied by the on-site substation	~ 2ha in extent
Underground cabling	Underground cabling, with a capacity of 33kV, will be installed to connect the turbines to the on-site facility substation.
Battery Energy Storage System (BESS)	Solid state battery technology (e.g. Lithium-ion technology) as a preferred technology. BESS will be housed in containers approximately 20m long, 3m wide, and 5m high with an approximate footprint of up to 5ha.
Operation and maintenance (O&M) buildings	~ 1ha in extent
Balance of plant area	Temporary laydown areas with an extent up to 6ha. Temporary warehouse of 1 ha Temporary site camp establishment and concrete batching plants of 1 ha.
Access and internal roads – Main Road	Main access road to the site and between project components with a width up to 8m and a servitude of 13.5m.
Access and internal roads – internal network	Road network between project components with a width up to 8m
Turbine hardstand footprint	For each turbine the following will be relevant: ~up to 7500m^2 for the turbine hardstand area
Turbine foundation footprint	~ 1000m^2 per turbine

The project is intended to provide electricity to the national grid through the Department of Mineral Resource and Energy's (DMRE) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme or other public or private off-taker programmes.

In accordance with GN 320 and GN 1150 (20 March 2020) of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the proposed project areas as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool).

2. METHODOLOGY

The site sensitivity verification visual assessment was undertaken using the following information sources:

- Topographical maps and GIS generated data were sourced from the Surveyor General, Surveys and Mapping in Mowbray, Cape Town;
- Chief Directorate National (CDN) Geo-Spatial Information, varying dates. *1:50 000 Topographical Maps and Data.*
- DFFE, 2018/2020. *National Land-cover Database 2018/2020 (NLC2018/2020).*
- DFFE, 2022. *South African Protected Areas Database (SAPAD_OR_2022_Q2).*
- JAXA, 2021. Earth Observation Research Centre. *ALOS Global Digital Surface Model (AW3D30).*
- Google Earth Pro. *Up to date and recent satellite images.*
- Professional judgement based on experience gained from similar projects;
- Literature research on similar projects;
- Observations made and photographs taken during site visits;

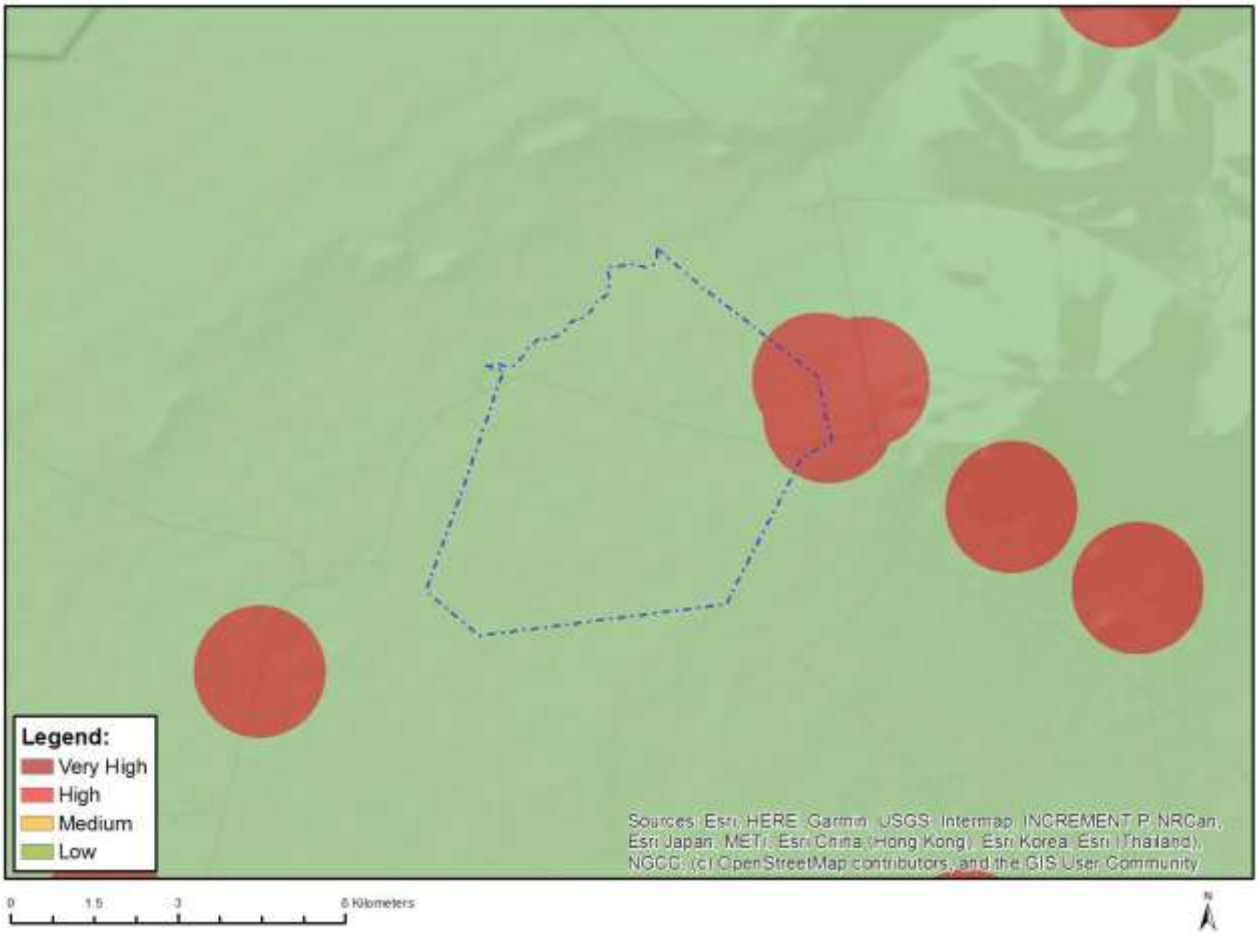
- Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of NEMA

3. OUTCOME OF SITE SENSITIVTY VERIFICATION

3.1. DFFE Screening Tool

The DFFE screening tool generated for **FE Tango Wind Facility** indicated that the facility has an overall sensitivity of **Very High** relating to the visual aspects of Flicker Theme Sensitivity (Potential temporarily or permanently inhabited residence).

Refer to



Map *1*. No relative Landscape (Wind) Theme Sensitivities are indicated in the DFFE screening tool generated.

Map 1: Relative Flicker Theme Sensitivity as per the DFFE Screening Tool for the proposed FE Tango Wind Facility

3.2. Affected Environment

The proposed deveopment site is located in a rural area, currently zoned as agriculture, at a distance of approximately 25km north west of the town Aberdeen.

Topography, hydrology and vegetation

The study area occurs on land that ranges in elevation from approximately 800m (in the southern and eastern portion of the study area) to 2300m (at the top of the Camdeboo Mountains east of the site). The terrain surrounding the proposed development area is predominantly flat with an even slope towards the south-west and north-east respectively. This valley, or large plain, known as the Plains of Camdeboo, is flanked to the north east by the *Camdeboo Mountains (Kamdebooberg)* and the Oorlogspoortberge (further west of the development site and north of the R61).

The proposed development site itself is located at an average elevation of 900 - 1000m above sea level. The site is predominantly flat, with limited undulation. The overall terrain morphological description of the study area is *Plains interrupted by some dolerite dykes, butts and mesas*. Refer to **Map 2** for a shaded relief map of the study area.

The larger region is known as the Great Karoo, consisting predominantly of plains framed by mountains to the north and lower hills in the east. Due to the flat topography and arid climate, the area is characterised by the occurrence of many non-perennial drainage lines traversing across the study area. The Kariega River is located in the western portion of the study area and flows from the north to the south. The non-perennial Kraai River also drains from the southern slops of the Cambedoo Mountains to the east towards the Aberdeen Nature Reserve (also known as the Fonteinbos Nature Reserve) which features a natural spring. The perennial spring, known as *Die Oog* (The Eye), supplies water to the town of Aberdeen, as well as irrigation to a large area of arable land. A number of man-made farm dams are also scattered through the study area.

Vegetation cover in this semi-desert region is primarily *low shrubland and grassland, shrubland* and *bare rock and soil* (depending on the season). The vegetation types are described as *Eastern Lower Karoo* (along the plains), *Southern Karoo Riviere* (along the Kariega and Kraai River floodplains) and *Upper Karoo Hardeveld*, and *Karoo Escarpment Grassland* along the mountain ranges to the north of the development area. Refer to **Map 3** for the land cover map of the study area.

Land use and settlement patterns

The majority of the study area is sparsely populated (less than 3 people per km^2) and consists of a landscape of wide-open spaces and very little development. The low rainfall and scarcity of water has as a consequence resulted that the region has not been transformed entirely by dryland agriculture or irrigated cultivation of crops. The study area is therefore largely in a natural state, with mainly sheep farming as the primary economic activity. The district is renowned for its wool and mohair production, being the largest mohair producing area in South Africa. Farm residences, or homesteads, dot the landscape at an irregular interval. These homesteads are generally located at great distances from each other (i.e. more than 5km apart).

The site is nestled between the R61 arterial road (south of the site) linking the towns of Aberdeen and Beaufort West and the Camdeboo Mountains. The R61 is one of two major routes which provides motorised access to the region from the town of Aberdeen. Access to the site will most likely be from a secondary gravel road leading off from the R61.

There is only one designated protected area within the region, namely; the Aberdeen Nature Reserve (also known as the Fonteinbos Nature Reserve) which is situated on the banks of the Kraai River, 1km west of the town of Aberdeen and approximately 20km from the FE Tango Wind Energy Facility. The reserve covers an area of 1,500ha, and features a natural spring, which as mentioned above supplies water to the town of Aberdeen, as well as irrigation to an area of arable land.

Other than this protected area, the other identified tourist attractions or destinations in closer proximity to the development site is the town of Aberdeen itself, as well as, the Karoo Secret Farm Stay (located on the farm known as Rooidraai). Aberdeen boasts a well-preserved architectural heritage with an array of examples of Georgian, Victorian, Edwardian, Art Nouveau, Gothic Revival and Flemish Revival styles of architecture interspersed with the typical Karoo style cottages throughout the town.[2] While Karoo Secret Farm Stay, located on the plains of Camdeboo to the north west of the site, is a working Karoo farm that has a variety of tourist accommodation offerings and activities available including, cycling and hiking trails, opportunities for birding, as well as, various activities for relaxation such as sundowners, swimming, tennis, etc.

Further to this, the entire proposed FE Tango Wind Energy Facility site is located within the Beaufort West Renewable Energy Development Zone (REDZ). REDZ are described a, *"areas where large scale wind and solar PV energy facilities can be developed in terms of SIP 8 and in a manner that limits significant negative impacts on the environment, while yielding the highest possible socio-economic benefits to the country."*[3]

3.3. Results

In order to determine the overall visual sensitivity of the proposed site in the absence of any mitigation, the following matrix was utilized:

Table 2: Matrix to determine overall visual sensitivity for the proposed FE Tango Wind Facility

	Sensitive Receptor	Very High Sensitivity (4)	High Sensitivity (3)	Moderate Sensitivity (2)	Low Sensitivity (1)
1.	**Topographic features incl mountain ridges**	Within 500m	Within 500m - 1km	Within 1 - 2km	>2km

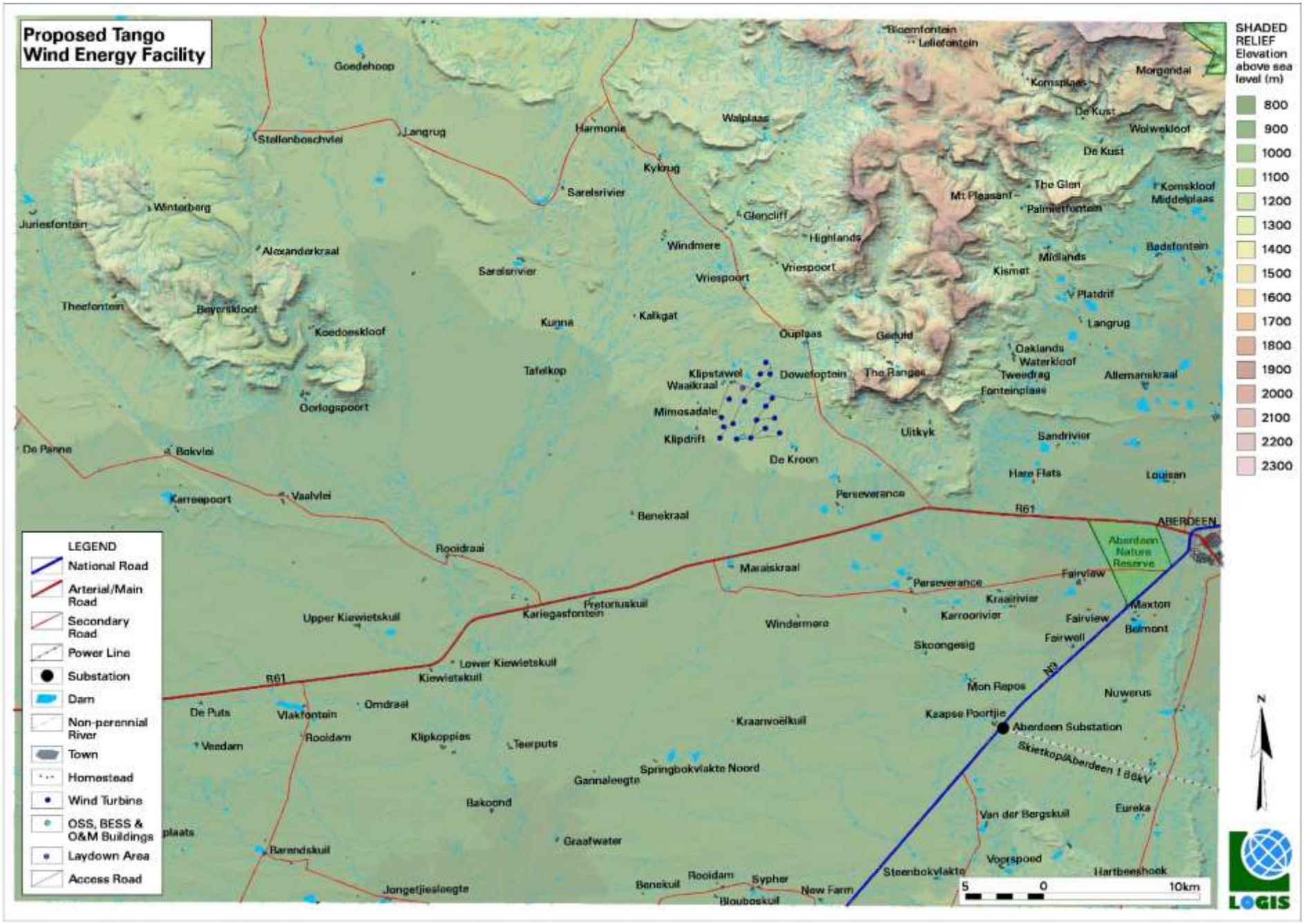
[2] Sources: DEAT (ENPAT Western Cape), NBI (Vegetation Map of South Africa, Lesotho and Swaziland), NLC2013-14 (ARC/CSIR), REEA_OR_2022_Q1 and SAPAD2021-22 (DEA).

[3] Source: https://redzs.csir.co.za

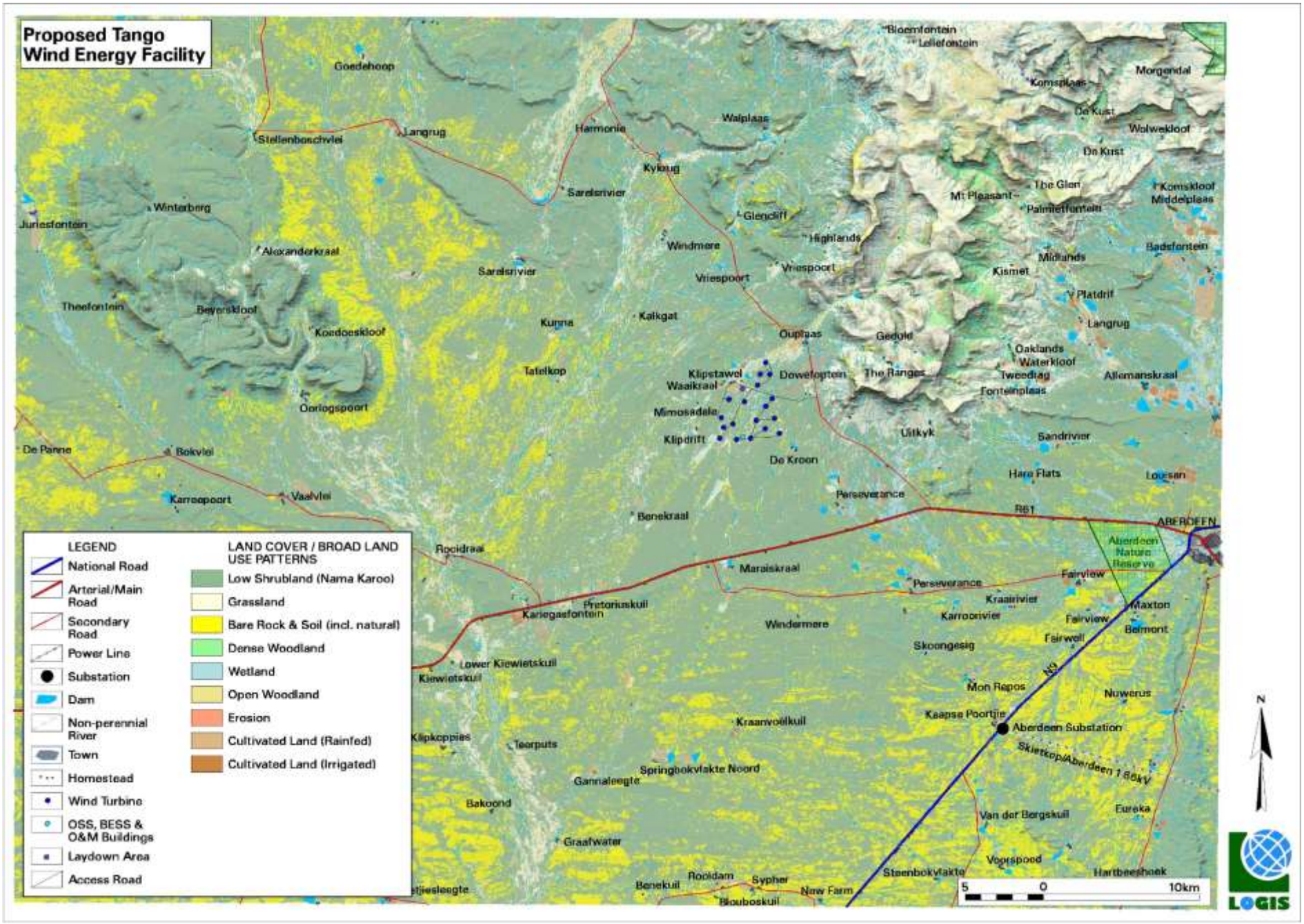
2.	**Steep slopes**	Slopes with more than 1:4	Slopes between 1:4 and 1:10	-	-
3.	**Major rivers, water bodies, perennial rivers and wetlands with scenic value**	Within 250 m	Within 250-500m	Within 500m – 1km	>1km
4.	**Coastal zone**	Within 1km	Within 1 - 2km	Within 2 – 4km	>4km
5.	**Protected area: National Parks**	Within 5km	Within 5 - 10km	Within 10 - 15km	>15km
6.	**Protected areas: Nature Reserves**	Within 3km	Within 3 – 5km	Within 5 – 10km	>10km
7.	**Private reserves and game farms**	Within 1.5km	Within 1.5 – 3km	Within 3 – 5km	>5km
8.	**Cultural landscape**	On the site itself	Within 500m	Within 500m – 1km	>1km
9.	**Heritage Sites Grades I, ii and iii**	On the site itself	Within 500m	Within 500m – 1km	>1km
10.	**Towns and Villages**	Within 2km	Within 2 – 4km	Within 4 – 6km	>6km
11.	**Home/farmsteads**	Within 5km	Within 5 - 10km	Within 10 - 20km	>20km
12.	**National Roads**	Within 1km	Within 1 - 2.5km	Within 2.5 - 5km	>5km
13.	**Provincial/arterial roads**	Within 500m	Within 500m - 1km	Within 1 - 3km	>3km
14.	**Scenic routes**	Within 1km	Within 1 - 2.5km	Within 2.5 - 5km	>5km
15.	**Passenger rail lines**	Within 500m	Within 500m – 1km	Within 1 – 3km	>3km
16.	**Located with Renewable energy development zone**	No	-	-	Yes – Beaufort West REDZ
17.	**VAC**	Low VAC	Moderate VAC	High VAC	Very High VAC
18.	**Shadow Flicker**	YES - Within 1km	YES - Within 1km but not permanently occupied	YES - Within 1km but uninhabited / derelict	No
19.	**Visual Quality**	Natural environment intact with no built infrastructure	Natural environment intact with limited built infrastructure	Natural environment somewhat intact with fair amount of built infrastructure	Built infrastructure is dominant with little to no natural environment remaining
20.	**Presence of existing infrastructure**	Absent	Very low densities	Present in moderate quantities	High densities
	Total	**Moderate (35)**			

Overall visual sensitivity rating:

- Low (0 - 20)
- Moderate (21 - 40)
- High (41 - 60)
- Very High (61 - 80)



Map 2: Shaded relief map of the study area



Map 3: Land cover / broad land use map of the study area

4. CONCLUSION

The study area consists of a landscape of wide-open spaces and very little development within the Plains of Camdeboo. It is largely in a natural state, with mainly sheep farming as the primary economic activity. Farm residences, or homesteads, dot the landscape at an irregular interval, resulting in an overall high visual quality.

Visual Absorption Capacity (VAC) of the receiving environment is deemed low by virtue of the nature of the low growing vegetation and the low occurrence of urban development. In addition, the scale and form of the proposed structures mean that it is unlikely that the environment will visually absorb them in terms of texture, colour, form and light/shade characteristics.

The immediate area surrounding the proposed sites is sparsely populated (less than 3 people per km^2) with majority of people residing in the town of Aberdeen, located approximately 25km north west of the site. The site is nestled north of the scenic R61 arterial road which both provide motorised access to the region between Beaufort West and the town of Aberdeen.

Homesteads and farmsteads, by virtue of their visually exposed nature, are considered to be sensitive visual receptors. Residential receptors in natural contexts are more sensitive than those in more built-up contexts, due to the absence of visual clutter in these undeveloped and undisturbed areas. Commuters and possible tourists using the national (N1), the scenic main arterial (R61) and secondary roads may also be negatively impacted upon by the visual exposure to the proposed facilities, however, this intrusion would be fleeting.

The DFFE screening tool generated for the proposed FE Tango Wind Facility indicated that the facility has a very high sensitivity owing to the fact that the site is located near a potential temporarily or permanently inhabited residence where shadow flicker may be an issue. Based on the above findings, it can be found that the **overall sensitivity** of the visual environment for the proposed FE Tango Wind Facility is confirmed to be **moderate** and the **expected shadow flicker sensitivity low** due to:

- The avoidance of placement of turbines on any steep slopes, mountain tops or ridges
- No location of any homesteads within the 1km shadow flicker buffer
- Low occurrence of homesteads within 5km
- Low VAC of the receiving environment
- The placement of the development within the Beaufort REDZ
- Scenic R61 arterial road located more than 5km from the site
- Limited existing built infrastructure within the study area

5. REFERENCES

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