Appendix J

SITE SENSITIVTY VERIFICATION

SITE SENSITIVITY VERIFICATION REPORT – PHEFUMULA EMOYENI ONE WIND ENERGY FACILITY, BATTERY ENERGY STORAGE SYSTEM AND ASSOCIATED INFRASTRUCTURE, MPUMALANGA PROVINCE

1. INTRODUCTION

Phefumula Emoyeni One (Pty) Ltd proposes to develop a 837 MW Wind Energy Facility (WEF); 200 MW Battery Energy Storage System (BESS); and associated infrastructure near Ermelo located in the Mpumalanga Province, South Africa.

This Site Sensitivity Verification Report forms part of the Application for Environmental Authorisation (EA) in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) for the above mentioned project.

2. PURPOSE OF THE REPORT

WSP Group Africa (Pty) Ltd (WSP) has been appointed by Phefumula Emoyeni One (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to undertake the required Scoping and Environmental Impact Assessment (S&EIA) process.

The Department of Forestry, Fisheries and the Environment (DFFE) has developed the National Web-based Environmental Screening Tool in order to flag areas of potential environmental sensitivity related to a site as well as a development footprint and produces the screening report required in terms of regulation 16 (1)(v) of the EIA Regulations (2014, as amended). The Notice of the requirement to submit a report generated by the national web-based environmental screening tool in terms of section 24(5)(h) of the NEMA, 1998 (Act No 107 of 1998) and regulation 16(1)(b)(v) of the EIA regulations, 2014, as amended (GN 960 of July 2019) states that the submission of a report generated from the national web-based environmental screening tool, as contemplated in Regulation 16(1)(b)(v) of the EIA Regulations, 2014, published under Government Notice No. R982 in Government Gazette No. 38282 of 4 December 2014, as amended, is compulsory when submitting an application for environmental authorisation in terms of regulation 19 and regulation 21 of the EIA Regulations, 2014 as of 04 October 2019.

The Screening Report generated by the National Web-based Environmental Screening Tool contains a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development footprint as well as the most environmentally sensitive features on the footprint based on the footprint sensitivity screening results for the application classification that was selected.

A screening report for the construction of the WEF was generated on 04 September 2023 and is attached as Appendix I of the Draft EIA Report. The Screening Report for the project identified various sensitivities for the site. The report also generated a list of specialist assessments that should form part of the legalisated process based on the development type and the environmental sensitivity of the site. Assessment Protocols in the report provide minimum information to be included in a specialist report to facilitate decision-making.

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The Screening Report recognises that "it is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the footprint situation." This report therefore addresses the findings of the Screening Report and provides a motivation for the proposed specialist studies identified to be conducted.

It also discusses whether the specialist studies forming part of this project are required to comply with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes in terms of Section 24(5) (a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation ("the Protocols") (Government Notice No. 320 as published in Government Gazette No. 43110 on 20 March 2020 (GNR 320)).

3. METHODOLOGY

In line with GNR 320, the site sensitivity verification requirements have been achieved as per **Table 1** below.

Table 1: Site Sensitivity Verification and Minimum Report Content Requirements

REQUIREMENT	REFERENCE
1.1. The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.	This Site Sensitivity Verification Report was compiled by Ashlea Strong, a registered Environmental Assessment Practitioner (EAP). Details of the EAP are provided in Table 1-3 of the Draft EIA Report. The CV of the EAP and the EAP declaration of interest and undertaking are included in Appendix A and Appendix B of the Draft EIA Report, respectively.
1.2. 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.	The Site Sensitivity Verification was undertaken through the use of the following: • Available satellite imagery • Preliminary site inspections that took place during October 2023 by various specialists • Available desktop information • Additional supporting information supplied by specialists
1.3. 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 the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;	A summary of the environmental sensitivities identified by the DFFE Screening Tool and the confirmed sensitivity is provided in Table 5. Motivation for the confirmed sensitivity rating is provided in Section 4.4.
(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and	Motivation for the confirmed sensitivity rating is provided in Section 4.4.
(c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations1 (EIA Regulations).	This Site Sensitivity Verification Report is being submitted as Appendix J of the Draft EIA Report.

4. FINDINGS

4.1. PROJECT AND SITE OVERVIEW

The proposed site for the Phefumula Emoyeni One is located approximately 16km north of Ermelo in the Msukaligwa Local Municipality and Gert Sibande District Municipality, in the Mpumalanga Province of South Africa. The locality of the facilities is illustrated in **Figure 1**. Selected photographs taken by specialists during site visits undertaken during October 2023 are provided in **Table 2**.

The project will comprise the following components:

- Up to 837MW Wind Energy Facility;
- 132kVA Powerline;
- Site Substation including O&M Building;
- BESS; and
- Temporary laydown area.

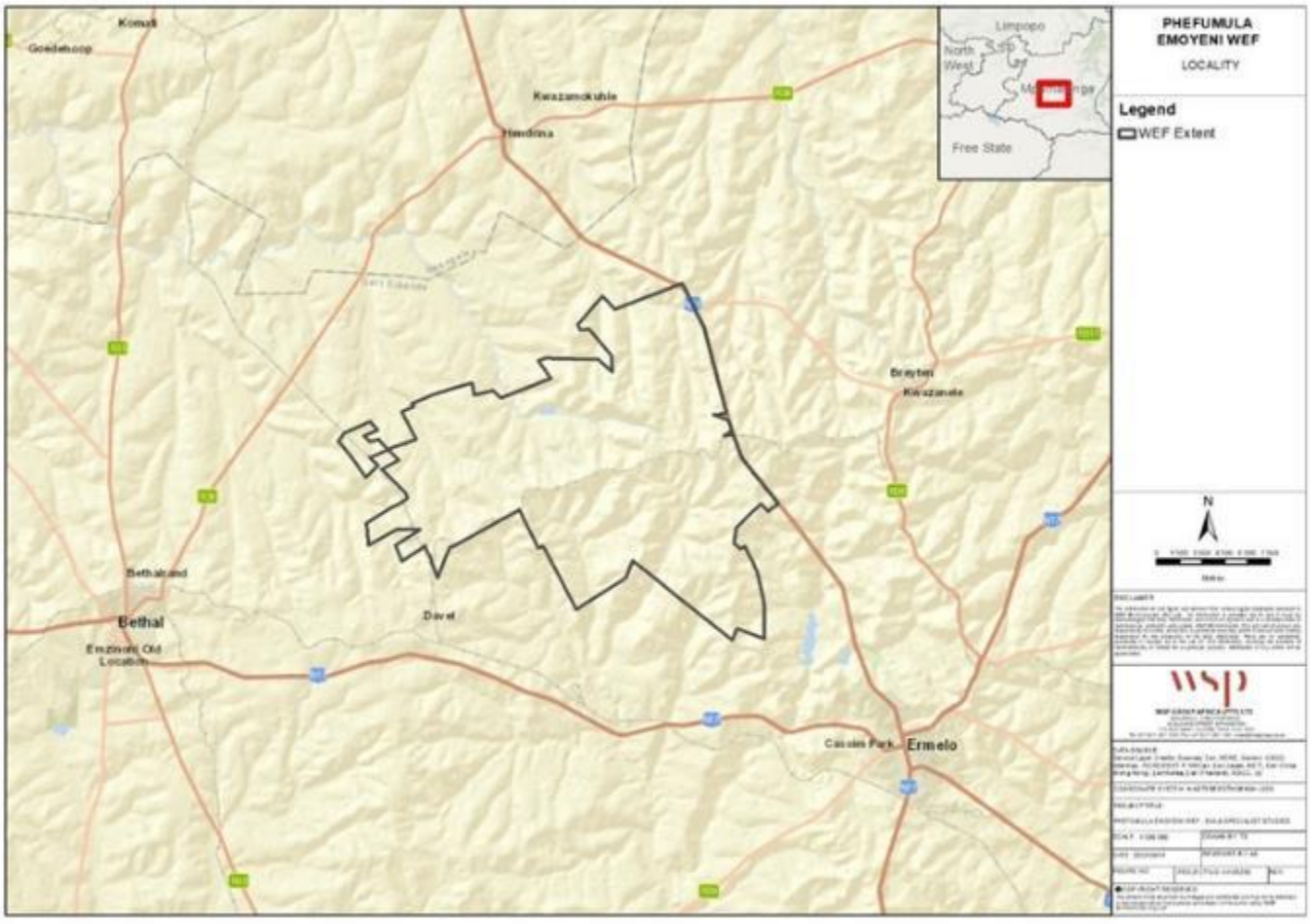

Figure 1: Regional locality map

Table 2: Photos from site visits undertaken in October 2023

A seep wetland within a vertic setting, with the majority of the lateral extent of the wetland being located within the confines of the single thread channel	
A typical seep in a shallow valley head in the northern part of the study area	
A large dam along the Klein Olifants River	
Rolling plains and low hills are locally interspersed by small ridges and flattish plateaus	
Large parts of the study area have been converted to planted cropland	

A significant percentage of the study area is also used for livestock grazing	
Several high-mast power lines traverse the project site	

4.2. ENVIRONMENTAL SENSITIVITY

As per the Screening Tool Report (Appendix D of the DSR), the proposed site is indicated to be located within areas ranging from low to very high sensitivity. These are identified in **Table 3**.

Table 3: Sensitivities identified in the DFFE Screening Report

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Agricultural Theme	✓			
Animal Species Theme		✓		
Aquatic Biodiversity Theme	✓			
Archaeological and Cultural Heritage Theme		✓		
Avian Theme (Wind)				✓
Bats Theme		✓		
Civil Aviation (Wind) Theme		✓		
Defence Theme				✓
Flicker Theme	✓			
Landscape (Solar) Theme	✓			
Palaeontology Theme	✓			
Noise Theme	✓			
Plant Species Theme			✓	

Theme	Very High Sensitivity	High Sensitivity	Medium Sensitivity	Low Sensitivity
Radio Frequency Interference (RFI) Theme	✓			
Terrestrial Biodiversity Theme	✓			
Vulture Species Theme			✓	

Based on information gathered through a desktop study and site assessment, not all of the identified sensitivities apply to the site in its current state. **Section 4.3** below serves to:

- Verify land use and sensitivities identified in the Screening Tool Report (as indicated above);
- Provide motivation and evidence of either the verified or different use of the land and environmental sensitivity; and
- Confirm / refute the need for the various specialist inputs recommended in terms of the Screening Tool Report.

4.3. SPECIALIST ASSESSMENTS

The specialist studies required for the proposed Phefumula Emoyeni WEF and BESS Project, as identified by the DFFE Screening Tool are included in **Table 4**. The table also identifies the specialist studies commissioned and provides motivation for specialist studies not commissioned.

Table 4: Specialist Studies identified by the DFFE Screening Tool

Specialist Study Identified	Specialist Study Commissioned	Specialist and Report Reference	Motivation for Exclusion
Agricultural Impact Assessment	Yes	Johann Lanz (Independent) Appendix G.8	N/A
Landscape/Visual Impact Assessment (including Flicker assessment)	Yes	Johan Bothma (WSP) Appendix G.6	N/A
Archaeological and Cultural Heritage Impact Assessment	Yes	Jaco van de Walt (Beyond Heritage Consulting) Appendix G.11	N/A
Palaeontology Impact Assessment	Yes	Jaco van de Walt (Beyond Heritage Consulting) Appendix G.11	N/A
Avifaunal Impact assessment	Yes	Albert Froneman (AfriAvian Environmental) Appendix G.4	N/A
Bat Impact Assessment	Yes	Caroline Lotter (Inkululeko Wildlife Services (Pty) Ltd) Appendix G.5	N/A

Specialist Study Identified	Specialist Study Commissioned	Specialist and Report Reference	Motivation for Exclusion
Terrestrial Biodiversity Impact Assessment	Yes	Andrew Zinn (Hawkhead) Appendix G.3	N/A
Plant Species Assessment	Yes	Andrew Zinn (Hawkhead) Appendix G.3	N/A
Animal Species Assessment	Yes	Andrew Zinn (Hawkhead) Appendix G.3	N/A
Aquatic Biodiversity Impact Assessment	Yes	Stephen van Staden and Paul da Cruz (Scientific Aquatic Services (SAS) (Pty) Ltd) Appendix G.2	N/A
Civil Aviation Assessment	No	N/A	A formal Civil Aviation Assessment will not be undertaken as part of the S&EIA Process. Nevertheless, the relevant Authorities have been included on the project stakeholder database. As of the 1st of February 2022, ATNS has been appointed as the new Obstacle application Service Provider for Solar Plants. Their responsibility would pertain to the assessments, maintenance, and all other related matters in respect to Solar assessments. A wind turbine Obstacles application has been submitted to ATNS for the project and the required permits will be obtained prior to the development of the project. The South African Civil Aviation Authority (SACAA) has been included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought. This theme has been identified as a high sensitivity, and a compliance statement has been undertaken by the EAP.
Defence Assessment	No	N/A	The Department of Defence has been included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought. As this theme has been identified as a low sensitivity, no compliance statement is required.
RFI Assessment	No	N/A	An RFI Study will not be undertaken. The SAWS and relevant

Specialist Study Identified	Specialist Study Commissioned	Specialist and Report Reference	Motivation for Exclusion
			telecommunications stakeholders will be engaged with as part of the Public Participation Process. This theme has been identified as a very high sensitivity, and a compliance statement has been made by the EAP.
Geotechnical Assessment	Yes - Desktop Assessment	Heather Davis (WSP) Appendix G.1	A detailed Geotechnical Assessment will not be undertaken as this will be undertaken during the design phase.
Socio-Economic Assessment	Yes	Steve Horack (WSP) Appendix G.7	N/A
Traffic Assessment	Yes	Iris Wink (iWink Consulting) Appendix G.9	N/A
Noise Assessment	Yes	Kirsten Collett (WSP) Appendix G.10	N/A
SHE Risk Assessment	Yes	Debra Mitchell (ISHECON cc) Appendix G.12	N/A

Specialist assessments were conducted in accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes, which were promulgated in Government Notice No. 320 of 20 March 2020 and in Government Notice No. 1150 of 30 October 2020 (i.e. "the Protocols"), or Appendix 6 of the EIA Regulations, depending on which legislation apply to the assessment under consideration. A summary of the DFFE screening tool, the applicable legislation as well as the specialist sensitivity verification are detailed in **Table 5** below. The motivation for the site sensitivity verification for each environmental theme is discussed in **Section 4.4** below.

Table 5: Assessment Protocols and Site Sensitivity Verifications

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Impact Assessment	Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more	Very High Sensitivity	Confirmed High and Medium Sensitivity
Landscape/Visual Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Very High Sensitivity	Confirmed moderate to high Sensitivity

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Archaeological and Cultural Heritage Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Low Sensitivity	Confirmed low, medium and high Sensitivity
Palaeontology Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Very High Sensitivity	Confirmed low sensitivity
Terrestrial Biodiversity Impact Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity	Very High Sensitivity	Very High/High in areas of primary grassland and wetland habitat and areas designated as CBA Irreplaceable and CBA Optimal. Low/ Medium in areas of secondary grassland habitat. Very Low in areas of modified habitat.
Aquatic Biodiversity Impact Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity	Very High Sensitivity	Confirmed very High Sensitivity
Civil Aviation Assessment	Protocol For The Specialist Assessment And Minimum Report Content Requirements For Environmental Impacts On Civil Aviation Installations	High Sensitivity	Confirmed Low Sensitivity
Defence Assessment	Protocol For The Specialist Assessment And Minimum Report Content Requirements For Environmental Impacts On Defence installations	Low Sensitivity	Confirmed Low Sensitivity
RFI Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Very High Sensitivity	Confirmed Low Sensitivity
Geotechnical Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	No sensitivity identified by the screening tool	N/A

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Socio Economic Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	No sensitivity identified by the screening tool	N/A
Plant Species Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species	Medium Sensitivity	Confirmed Medium Sensitivity Medium in areas of primary grassland and wetland habitat.
Animal Species Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species	High Sensitivity	Confirmed High Sensitivity High in areas of grassland and wetland habitat.
Bat assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Bats	High Sensitivity	Confirmed High Sensitivity
Avifauna Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Low Sensitivity	Confirmed High Sensitivity
Vulture Species theme	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Bats	Medium Sensitivity	Confirmed Low Sensitivity
Flicker Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Flicker installations	Very high Sensitivity	Confirmed High Sensitivity
Noise Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Noise impacts	Very high Sensitivity	Confirmed Very High Sensitivity

4.4. SPECIALIST SITE SENSITIVITY VERIFICATION MOTIVATION

4.4.1. Agricultural Impact Assessment

The output of the DFFE Screening Tool for the Agriculture Theme is illustrated in **Figure 2** and indicates that the site is classified as Very High Sensitivity.

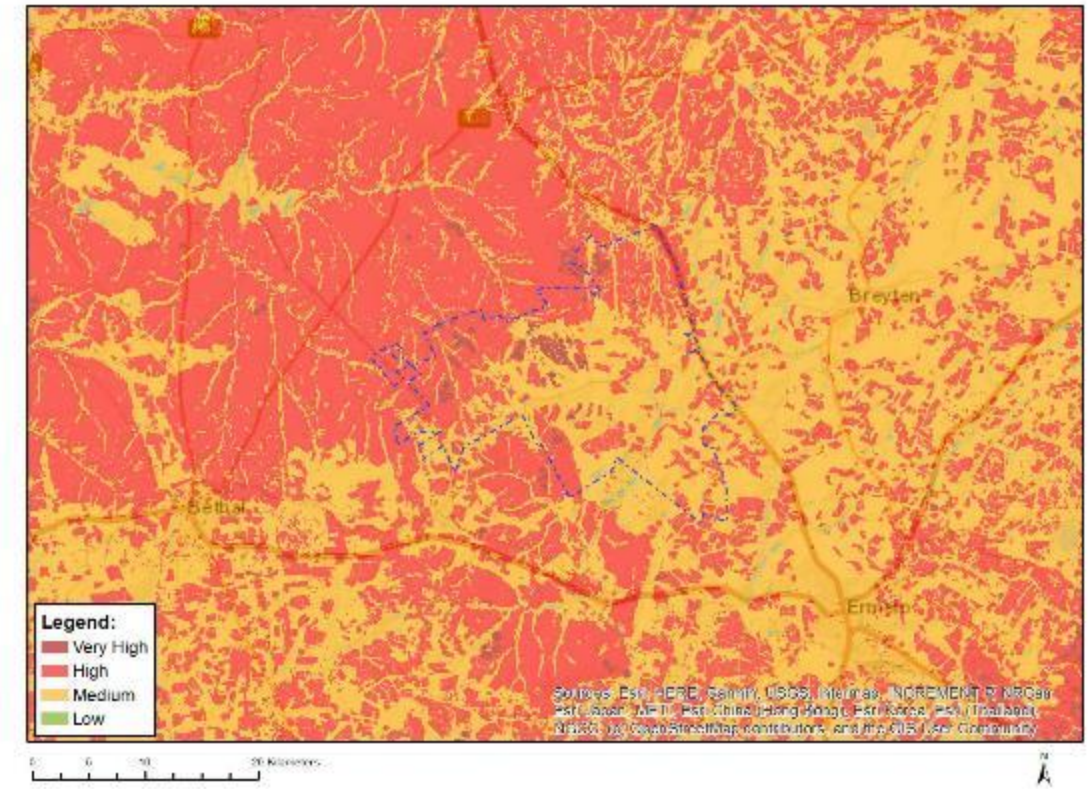

Figure 2: Map of Agriculture Sensitivity

Source: DFFE Screening Report

The site falls within an area that is classified as a Protected Agricultural Area. A Protected Agricultural Area is a demarcated area in which the climate, terrain, and soil are generally conducive for agricultural production and which, historically, has made important contributions to the production of the various crops that are grown across South Africa. Within Protected Agricultural Areas, the protection, particularly of arable land, is considered a priority for the protection of food security in South Africa.

However, there may be much variation within a Protected Agricultural Area and all land within it is not necessarily of sufficient agricultural potential to be suitable for crop production, due to site-specific terrain, soil, and other constraints. All land within a Protected Agricultural Area is therefore not necessarily worthy of prioritised protection as agricultural production land. There are no existing impacts on the site that are relevant to agricultural impact.

The screening tool classifies agricultural sensitivity according to two independent criteria, from two independent data sets, both of which may be indicators of the land's agricultural production potential but are limited in that the first is outdated and the second relies on fairly course data. The two criteria are:

- whether the land is classified as cropland or not on the field crop boundary data set, and
- its land capability rating on the land capability data set

All classified cropland is, by definition, either high or very high sensitivity. Land capability is defined as the combination of soil, climate, and terrain suitability factors for supporting rain-fed agricultural production. It is rated by the Department of Agriculture's updated and refined, country-wide land capability mapping (DAFF, 2017). The higher land capability values (≥8 to 15) are likely to indicate suitability as arable land for crop production, while lower values (<8) are only likely to be suitable as non-arable grazing land. The direct relationship between land capability rating and the screening tool's agricultural sensitivity is shown in the Table below.

Table 6: Relationship between land capability and agricultural sensitivity as given by the screening tool.

Land capability value	Agricultural sensitivity
1 - 5	low
6 - 8	medium
9 - 10	high
11 - 15	very high

The agricultural sensitivity of the site, as classified by the screening tool, is shown in **Figure 3.**

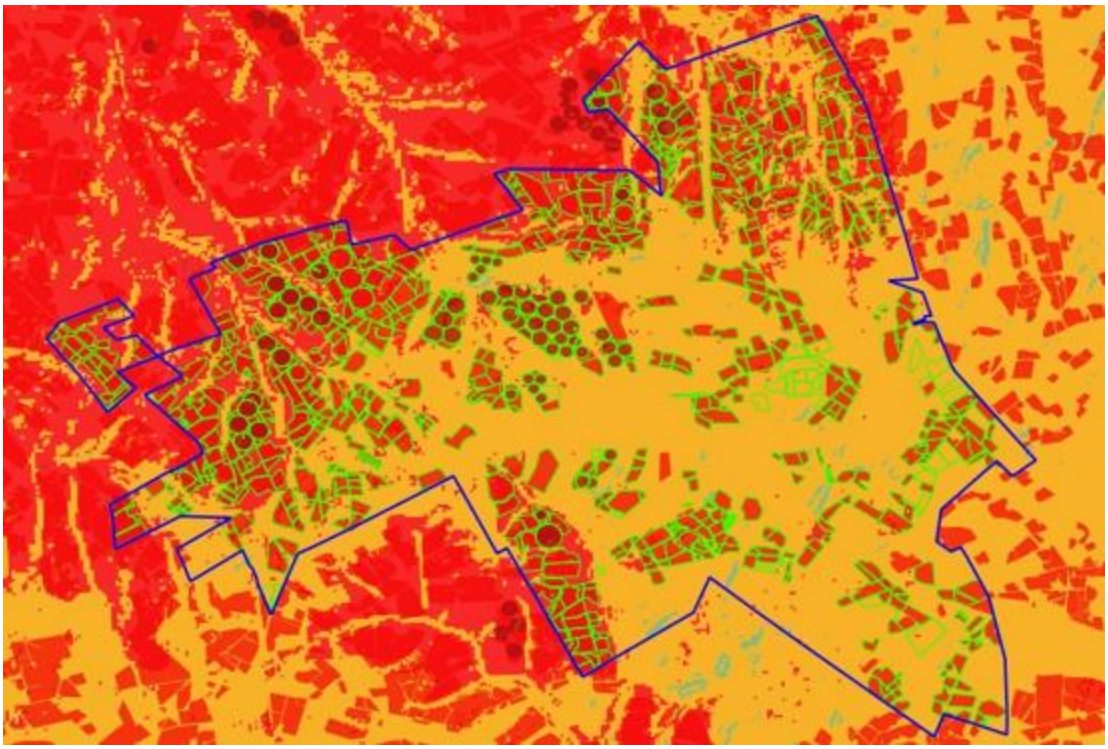

Figure 3: The assessed area (dark blue outline) overlaid on agricultural sensitivity, as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high). The field-verified and updated indication of croplands are shown in bright green outline.

The screening tool classifies the assessed area as ranging from low to very high agricultural sensitivity. The high and very high sensitivity classification is due to a combination of some land being classified by the screening tool as cropland (irrigated cropland = very high sensitivity) and some being classified with a land capability of 9 and 10.

The data set used by the screening tool to classify cropland is outdated. The field-verified and updated indication of croplands are shown in **Figure 3**.

The classified land capability of the site ranges from 4 to 10. Soil capability is determined in the land capability data largely by an average soil capability value attributed to each land type. However, there are a range of soil capabilities within each land type, which the land capability data is unable to take account of and map. On the ground, the soils (and therefore the land capability) vary in a complex pattern across the landscape, which is not reflected at the scale of the land capability data. The most reliable indication of soil cropping potential or soil capability is current and historical land use. The suitable versus the unsuitable soils have been identified over time through trial and error. In an agricultural environment like the one being assessed, all the suitable soils are generally cropped. Cropped soils have a real land capability of ≥8 because the relationship between land capability and agricultural production potential is such that a land capability of ≥8 should denote land that is suitable for viable rain-fed crop production. Uncropped soils can fairly reliably be considered to have limitations that make them unsuitable for crop production with the result that their real land capability is less than 8.

This site sensitivity verification verifies those parts of the site that are indicated as cropland in **Figure 3** as being of high agricultural sensitivity (or very high for irrigated cropland), and the rest of the site as being of medium agricultural sensitivity with a maximum land capability of 7.

4.4.2. Landscape/Visual and Flicker Impact Assessment

The output of the DFFE Screening Tool for the Landscape/Visual Theme is illustrated in **Figure 4** and indicates that the site is classified as Very High Sensitivity. The Screening Tool shows that the site for the proposed Phefumula Emoyeni One WEF and BESS facility contains sensitivities ranging from medium to very high owing to the fact that the site is located between 2 and 4km of a town or village, and located on mountain tops and high ridges.

The DFFE sensitivity screening tool landscape (wind) theme was indicated as ranging from medium to very high, and was included in the VIA as the appearance and character of the visual landscape can be expected to be notably impacted by the proposed development.

The DFFE sensitivity screening tool flicker theme result indicated that the site and surroundings range from low (undeveloped farmland and other rural areas) to very high (farmsteads, smallholding and rural dwellings, commercial enterprises, and towns and associated settlements).

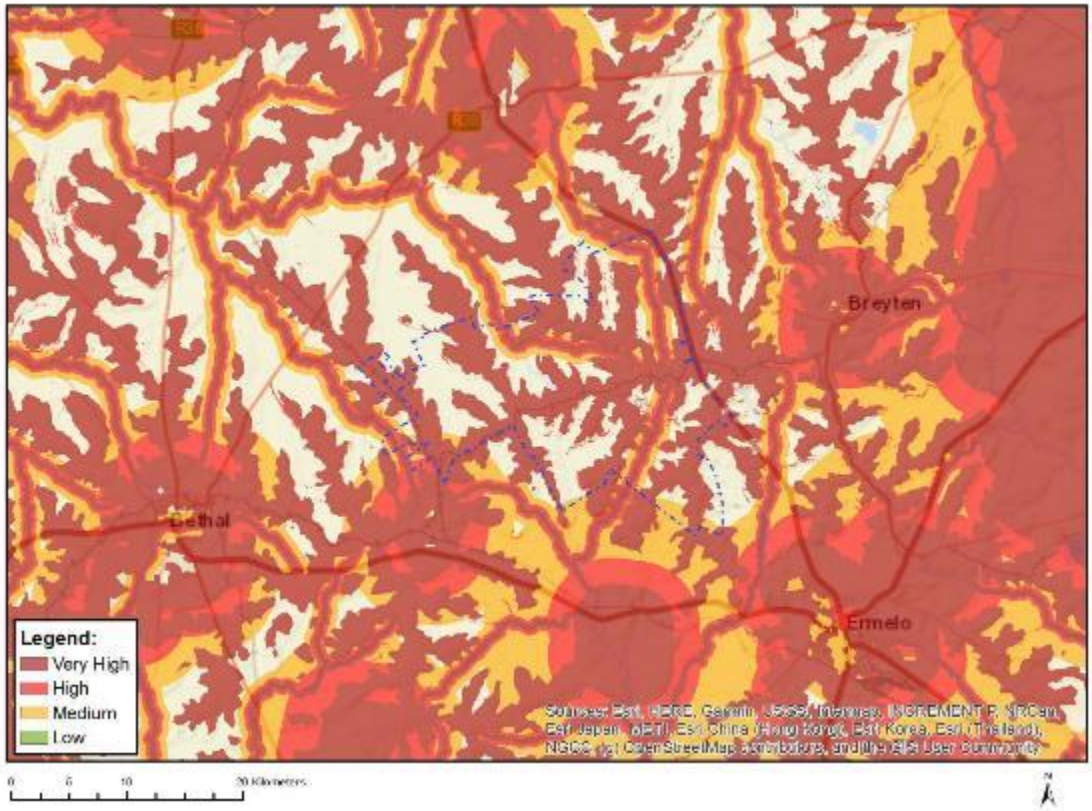

Figure 4: Map of Landscape / Visual Sensitivity

Figure 5: Map of Flicker Sensitivity

Source: DFFE Screening Report

The following ratings have been applied to the identified visual receptor groups:

Resident receptors: Resident receptors comprise at least a moderate to possibly large number of people (incidence factor) living and/or working in the study area. We advance that considering the low existing levels of development associated with the rural setting, a notable contingent of this receptor group will probably attach a high value (vulnerability factor) to the visual appearance of the project site.

Transient receptors: People travelling through the study area will include residents, itinerant workers, regional tourists, and people on route to towns in the area, or destinations elsewhere. Given the proximity of numerous towns and the fact that the site is bordered by the N11 it is likely that many people (incidence factor) see the site on a frequent basis. It can be assumed that different people within this receptor group will have widely divergent views on the value of the site and surroundings as a visual resource, which will largely be determined by their relationship to the area. To account for this degree of variability, it is assumed that this group on a whole will on average attach at least a moderate degree of value to the proposed project site (vulnerability factor).

Based on the above, a comparatively large number of people (incidence factor) are expected to be visually affected by the project, and that the perceived landscape value (vulnerability factor) is expected to vary from moderate to high, depending on the relationship of the individual receptor with the area.

4.4.3. Archaeological and Cultural Heritage Impact Assessment

The output of the DFFE Screening Tool for the Archaeological and Cultural Heritage Theme is illustrated in **Figure 6** and indicates that the site is classified as Low Sensitivity.

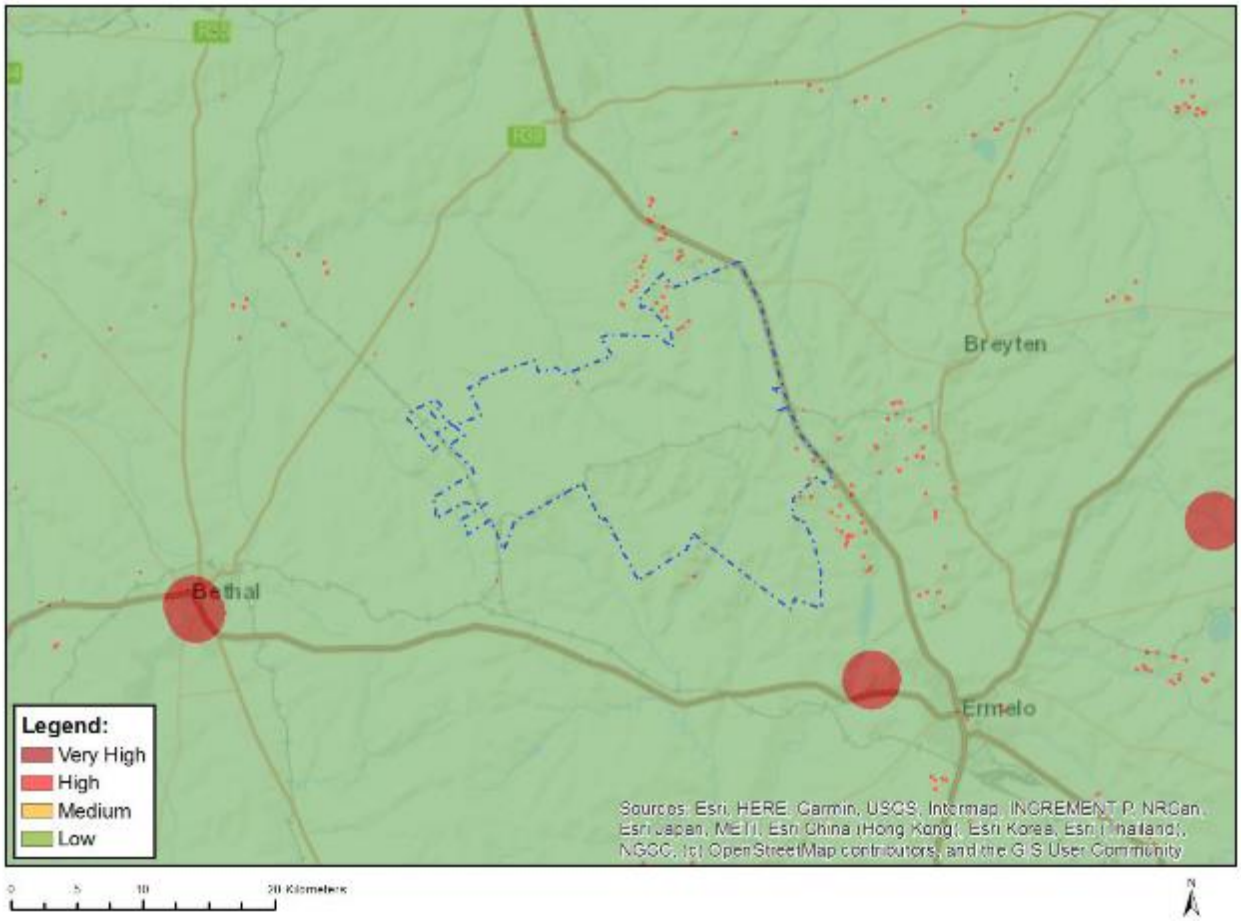

Figure 6: Map of Archaeological and Cultural Heritage Sensitivity

Source: DFFE Screening Report

Based on areal imagery and a desktop assessment the study area includes heritage sensitive areas that specifically relate to historical occupation of the Project area and associated burial sites. Archaeological sites in the form of Late Iron age (LIA) stone walled settlements are also considered to be sensitive. Known sites close to the area consist of Shelters with Rock Art sites and LIA stone walled settlements (**Figure 6**).

Based on the distribution of such sites in the landscape, additionally sensitive areas were noted and indicated on **Figure 7** as areas of heritage potential. These areas are derived from predictive modelling based on human behavioural ecology (HBE) theory but need to be ground-truthed. Features visible on areal imagery were overlain on the map showing possible sensitivities. It has been confirmed that the study area has low, medium and high sensitivity areas.

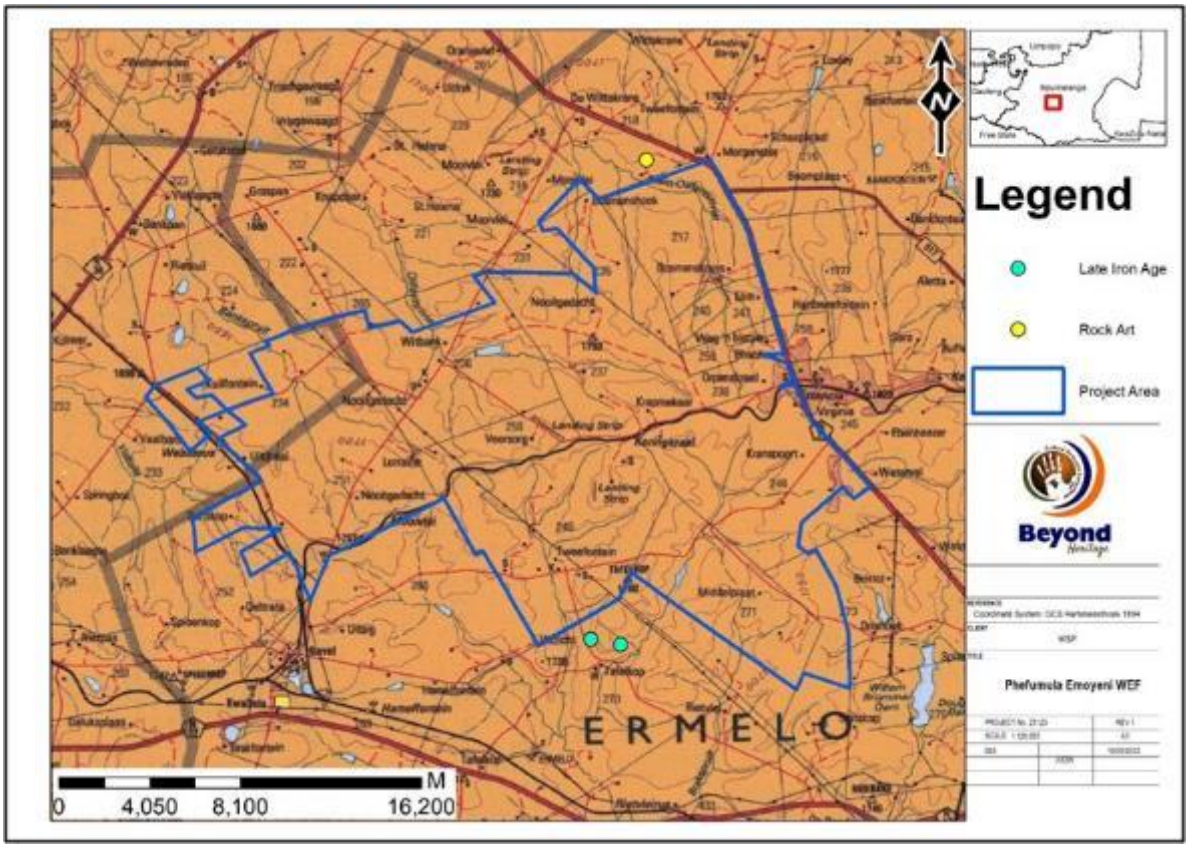

Figure 7: Known sites in relation to the study area.

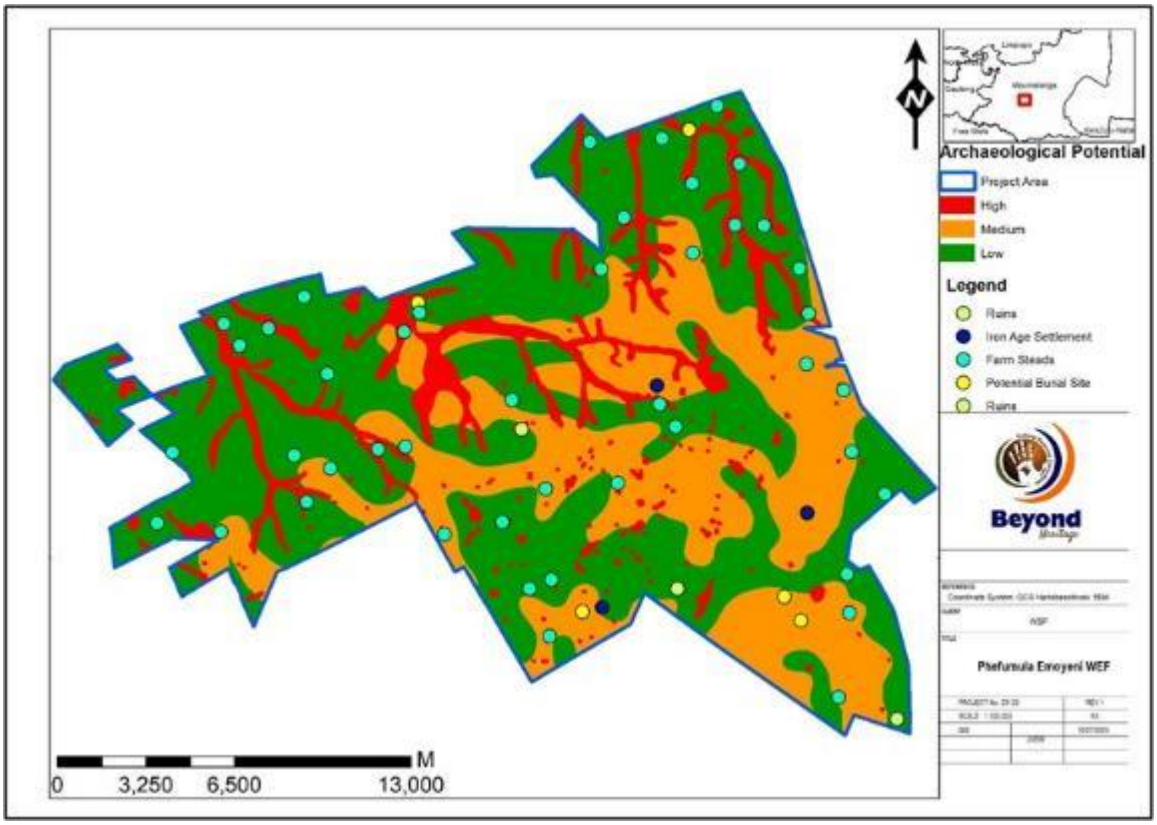

Figure 8: Map showing areas of heritage potential and possible heritage sensitivities in the Project Area.

4.4.4. Palaeontology Impact Assessment

The output of the DFFE Screening Tool for the Palaeontology Theme is illustrated in **Figure 9** and indicates that the site is classified as Very High Sensitivity.

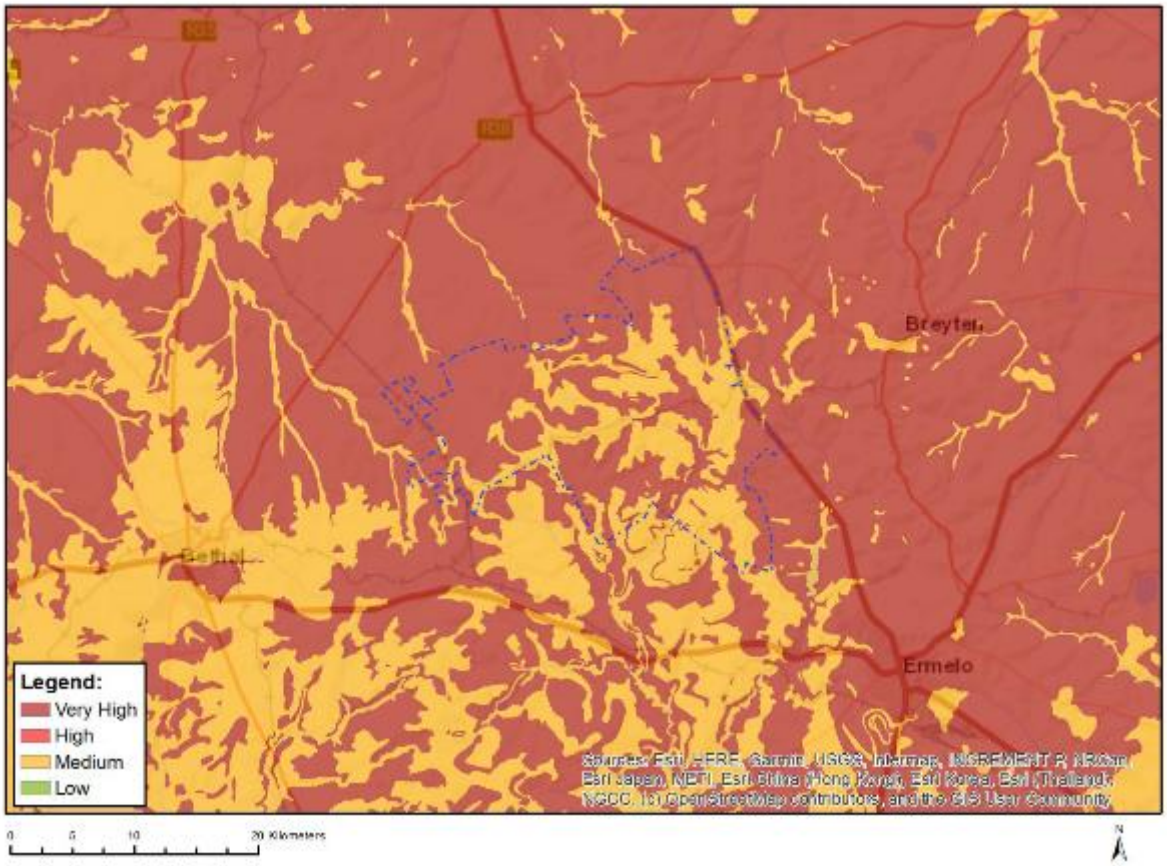

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Figure 9: Map of Palaeontology Sensitivity

Source: DFFE Screening Report

The study area is of insignificant and very high palaeontological sensitivity and further studies will be required in the EIA phase. Previous assessments by Bamford (2022 and 2023) concluded that based on the fossil record and confirmed by site visits, there were NO FOSSILS of the Glossopteris flora even though fossils have been recorded from rocks of a similar age and type in South Africa. It is extremely unlikely that any fossils would be preserved in the overlying soils and sands of the Quaternary. There is a very small chance that fossils may occur below the ground surface in the shales of the Vryheid Formation (Ecca Group, Karoo Supergroup) so a Fossil Chance Find Protocol should be added to the EMPr. Therefore, is has been confirmed that the study area has a low sensitivity for the palaeontological theme.

4.4.5. Terrestrial Biodiversity Impact Assessment

The output of the DFFE Screening Tool for the Terrestrial Biodiversity Theme is illustrated in **Figure 10** and indicates that the site is classified as Vey High Sensitivity due to its overlap with land mapped as 'Critical Biodiversity Area' (CBA) 1 and 2 by the Mpumalanga Biodiversity Sector Plan, 2019. Primary grassland and wetland habitat comprise

Eastern Highveld Grassland and Soweto Highveld Grassland, which are listed as threatened ecosystems. Many of these areas are also CBAs and Priority Focus Areas for protected area expansion.

Secondary grasslands and modified habitats cannot contribute to provincial conservation targets, which is the intention of CBAs.

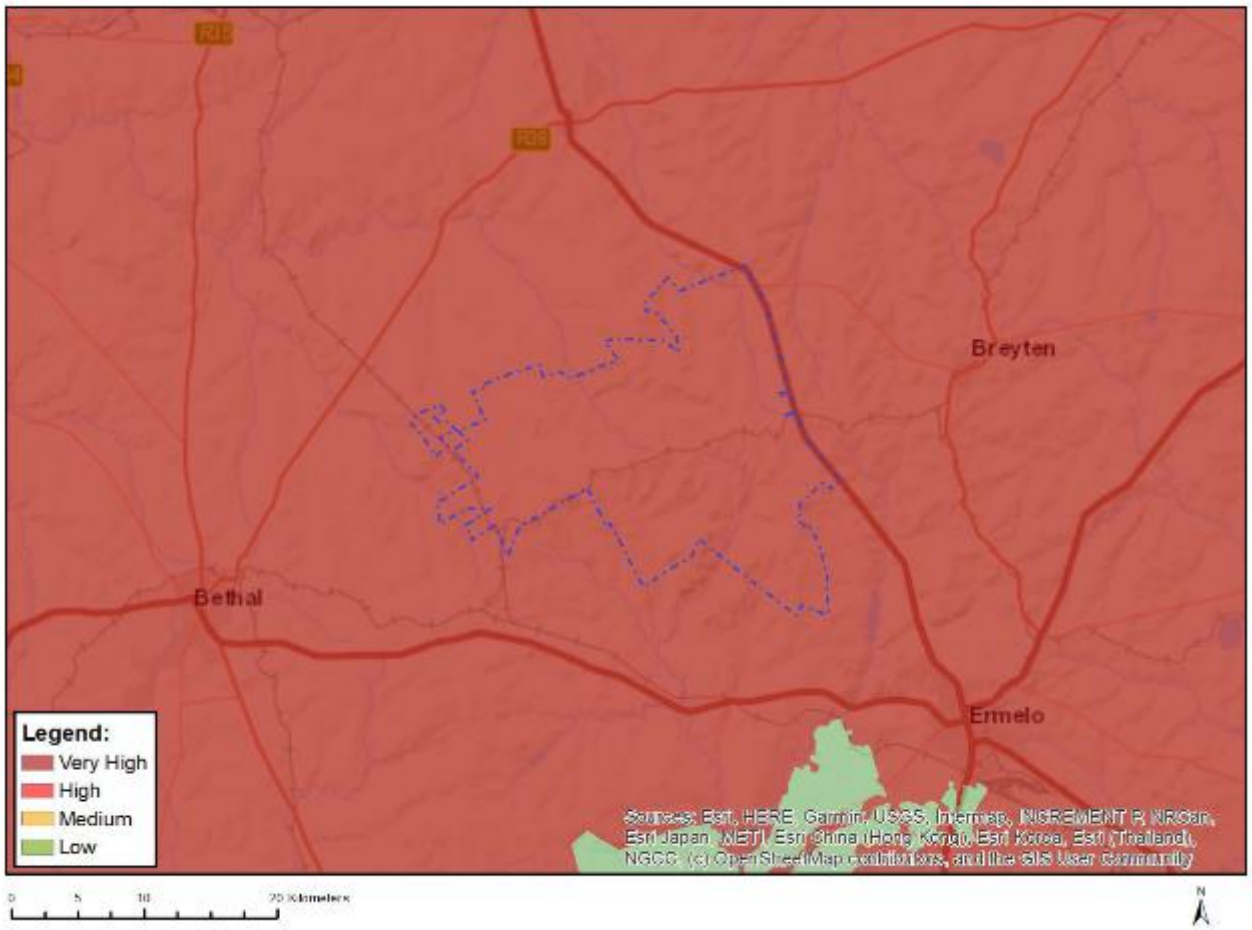

Figure 10: Map of Terrestrial Biodiversity Sensitivity

Source: DFFE Screening Report

The sensitivity is confirmed to be Very High/High in areas of primary grassland and wetland habitat and areas designated as CBA Irreplaceable and CBA Optimal. As well as Low/ Medium in areas of secondary grassland habitat. Very Low in areas of modified habitat.

The following comments can be made regarding the preliminary layout with respect to the Terrestrial Biodiversity Specialist Assessment, including Animal Species and Plant Species:

- A primary concern in the study area is the loss of natural habitat that is designated as Critical Biodiversity Areas (CBA) Irreplaceable, CBA Optimal and Ecological Support Areas (ESA), as per the Mpumalanga Biodiversity Sector Plan (MBSP) (2019). These areas comprise patches of undisturbed grassland and wetland habitat that represent threatened vegetation types, i.e., Eastern Highveld Grassland (Endangered) and Soweto Highveld Grassland (Vulnerable). They also provide viable and functional habitat for flora and fauna, including species of conservation concern (SCC);
- Several fauna SCC were observed in the study area during the terrestrial biodiversity/fauna survey, including the following mammals: Mountain Reedbuck (*Redunca fulvorufula fulvorufula*) – Endangered, Cape Clawless Otter (*Aonyx capensis*) – Near Threatened, Serval (*Leptailurus serval*) - Near Threatened, and the following birds: Blue

Crane (*Anthropoides paradiseus*) – Near Threatened, Lesser Flamingo (*Phoeniconaias minor*) - Near Threatened, Greater Flamingo (*Phoenicoperus roseus*) - Near Threatened, Southern Bald Ibis (*Geronticus calvus*) - Vulnerable, Yellow-billed Stork (*Mycteria ibis*) – Endangered, and Blue Korhaan (*Eupodotis caerulescens*) – Vulnerable (on the NEMBA ToPS, 2007)[1];

- Several flora species that are listed as protected in Mpumalanga Province were also recorded in the study area during the terrestrial biodiversity/flora survey, including inter alia, *Crinum bulbispermum*, *Boophone disticha*, *Aloe ecklonis* and *Gladiolus* species;
- The preliminary layout of wind turbines, as shown above, has been configured to, as far as possible, avoid the placement of turbines on land designated as CBA Irreplaceable, although a number of turbines are located on CBA Optimal land.
- It is noted that the avoidance of CBA Irreplaceable in the turbine layout does provide a high level of mitigation with respects to negative impacts on terrestrial biodiversity, including flora and fauna SCC;
- It is noted, however, that the proposed turbines will be accompanied by an extensive access road network, which is likely to result in habitat fragmentation and may also impact CBA and ESA land (Habitat fragmentation refers to the break-up of natural habitat into smaller disjointed patches, which may negatively affect fauna and flora through the impeding of movement and dispersal, and flora through the impeding of propagule (seed) dispersal and pollinator movement);
- To minimise habitat loss and fragmentation associated with the access road network, it is strongly recommended that all planned access roads should be actively routed to: 1) avoid CBA land, and 2) wherever possible, align with existing farm roads and access tracks in the study area;

It is anticipated that additional key mitigation that will need to be considered during the impact assessment phase and likely included in the proposed Project's Environmental Management Programme include, inter alia:

- Conducting walkdowns of the proposed footprints of turbines, access roads and other supporting infrastructure that are located on CBA land in order to identify and locate sensitive biodiversity features (e.g., flora SCC), and inform micro-siting options (i.e., placement of infrastructure footprints to avoid flora SCC) and optimise placement on localised disturbed sites;
- To minimise direct impacts on fauna SCC, anticipated measures are likely to include 1) the appointment of an Environmental Control Officer (ECO) during construction to manage any fauna incidents; 2) the enforcement of a speed limit (to avoid vehicle collisions) for all construction vehicles; 3) measures to prevent hunting/snaring by construction workers; and 4) measures to reduce sensory disturbances (e.g., noise and dust) associated with construction; and
- Notwithstanding the above, it is noted that where direct impacts on CBA areas cannot be avoided, it is likely that additional conservation measures may be required, such as biodiversity offsets.

4.4.6. Aquatic Biodiversity Impact Assessment

The output of the DFFE Screening Tool for the Aquatic Biodiversity Theme is illustrated in **Figure 11** and indicates that the site is classified as Very High Sensitivity due to the presence of wetlands features in and around the study area.

[1] For more detailed information of bird SCC observed in the study area during monitoring, refer to the Avifauna Specialist Assessment Report.

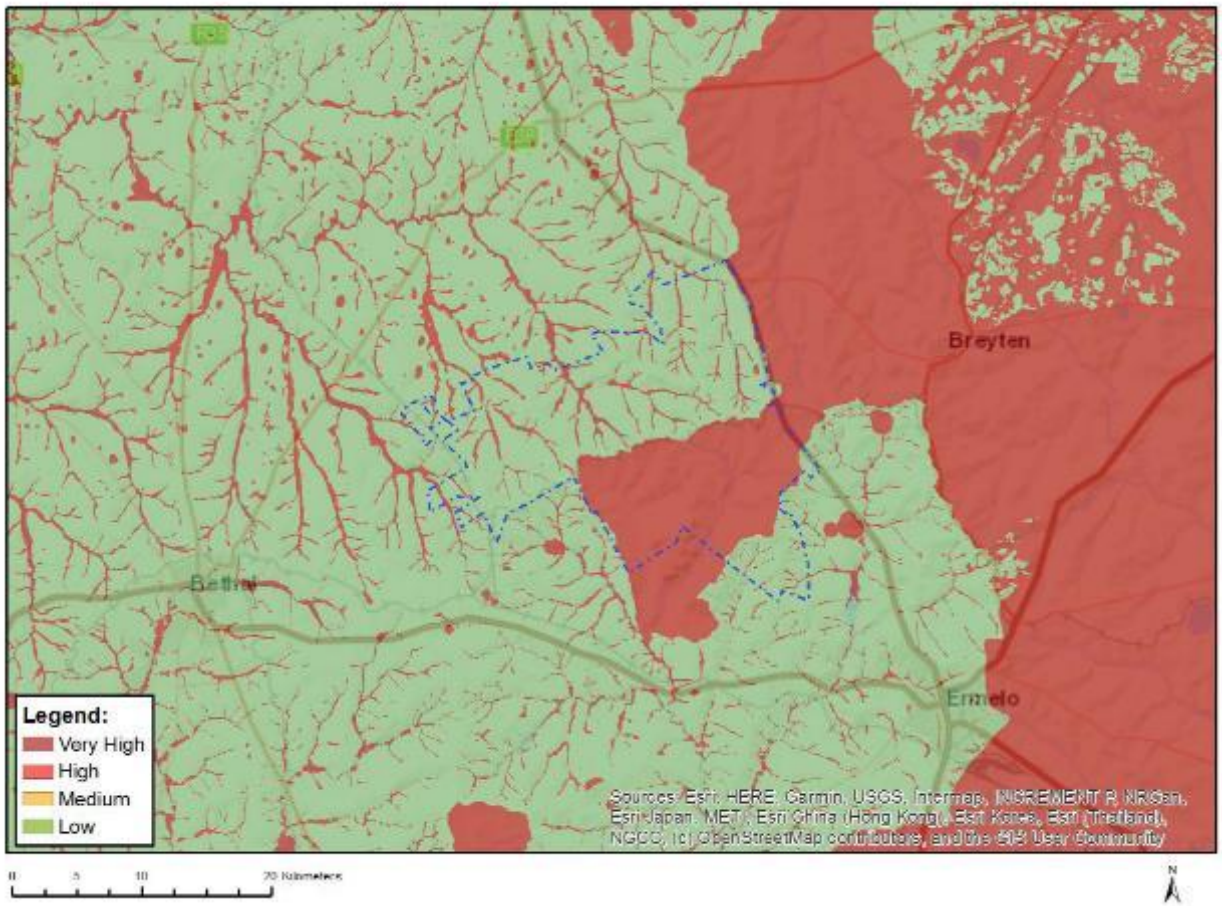

Figure 11: Map of Aquatic Biodiversity Sensitivity

Source: DFFE Screening Report

The development layout as provided to the specialists has largely considered the spatial occurrence of freshwater ecosystems as delineated for the study area. No turbines have been placed within any delineated freshwater ecosystem and turbines have rather been placed on the higher lying ground (interfluves) that typically separate the valleys in which wetlands are located, in the context of the gently undulating terrain in the study area. Accordingly, the potential for direct impacts resulting from turbines only to freshwater ecosystem habitat to materialise if the development were to proceed based on this layout are deemed to be very low. Examining the development constraints maps, it is evident that the turbine locations largely avoid the development high restriction zone.

However, a handful of turbines are located on the peripheries of such zones. For a development of such scale at an environmental scoping level, the development high restriction zones are based on the application of the Mpumalanga Tourism and Parks Agency (MTPA) 100m buffer. It should be noted that this buffer is not the final proposed freshwater buffer (non-developable area) for the development and this buffer will be refined in the EIA phase of the development, along with a site-specific assessment of certain turbine locations. It is important to note that the layout as provided only indicates turbine locations and as detailed below, direct impacts are most likely to result from proposed cabling and access roads. Such impacts will need to be more fully assessed in the EIA phase freshwater assessment, once a field verified delineation has been completed.

Based on the site verification undertaken by the specialist and the findings thereof presented in the report, the designation of very high sensitivity to freshwater features in the wider area by the DFFE Screening Tool has been

supported through the findings of the freshwater assessment that has confirmed the very high sensitivity of all freshwater ecosystems (primarily wetlands) that are present within the study and investigation areas. The ecological and hydrological functionality of the freshwater ecosystems in a study area context in the context of their location within threatened (critically endangered) freshwater ecosystems and their designation as both Freshwater Ecosystem Priority Areas (FEPAs) and CBAs renders them as ecologically very sensitive.

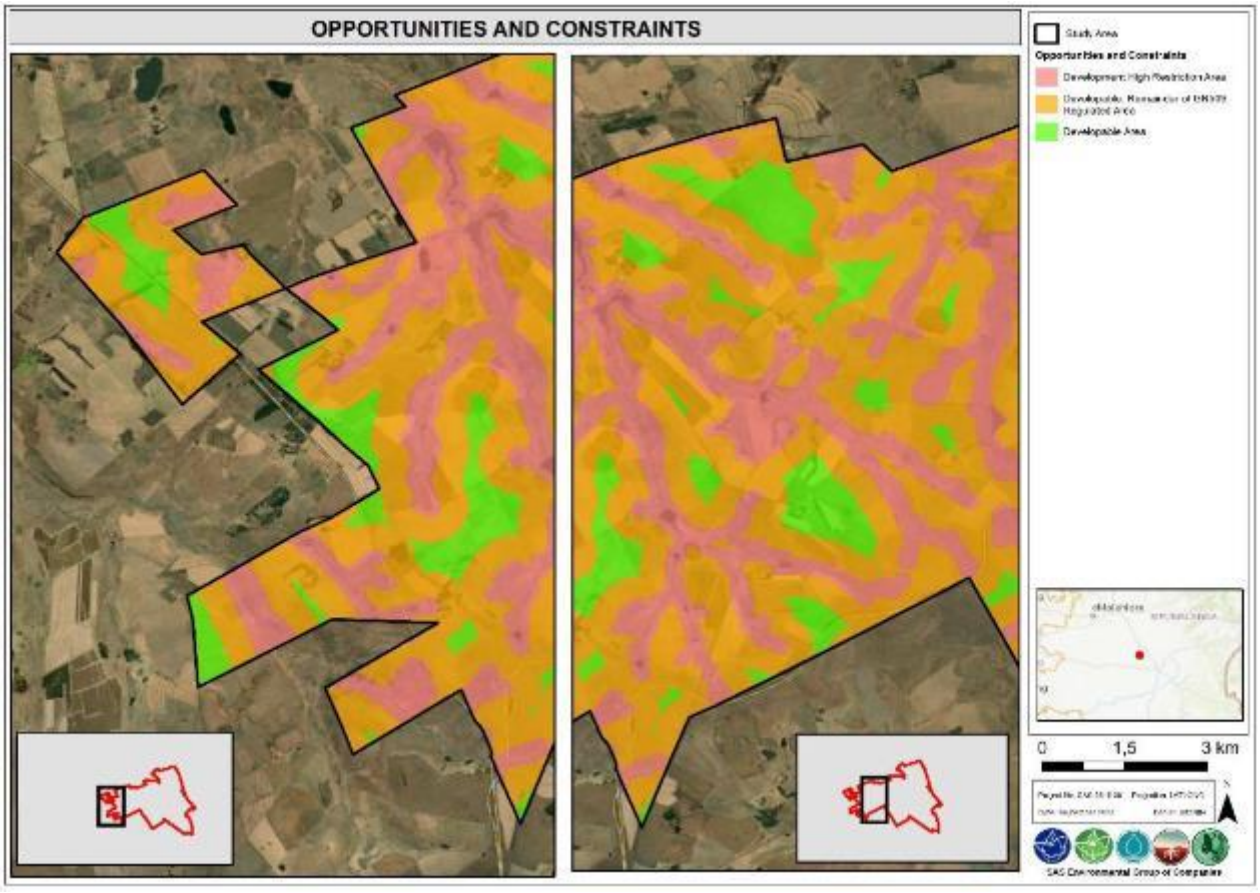

Figure 12: Opportunities and Constraints map for the south-western part of the study area showing sensitive areas in red.

4.4.7. Civil Aviation Assessment

The output of the DFFE Screening Tool for the Civil Aviation Theme is illustrated in **Figure 13** and indicates that the site is classified as High Sensitivity. The Screening Tool indicates that there is a civil aviation aerodrome within 8 km of the northern part of the site.

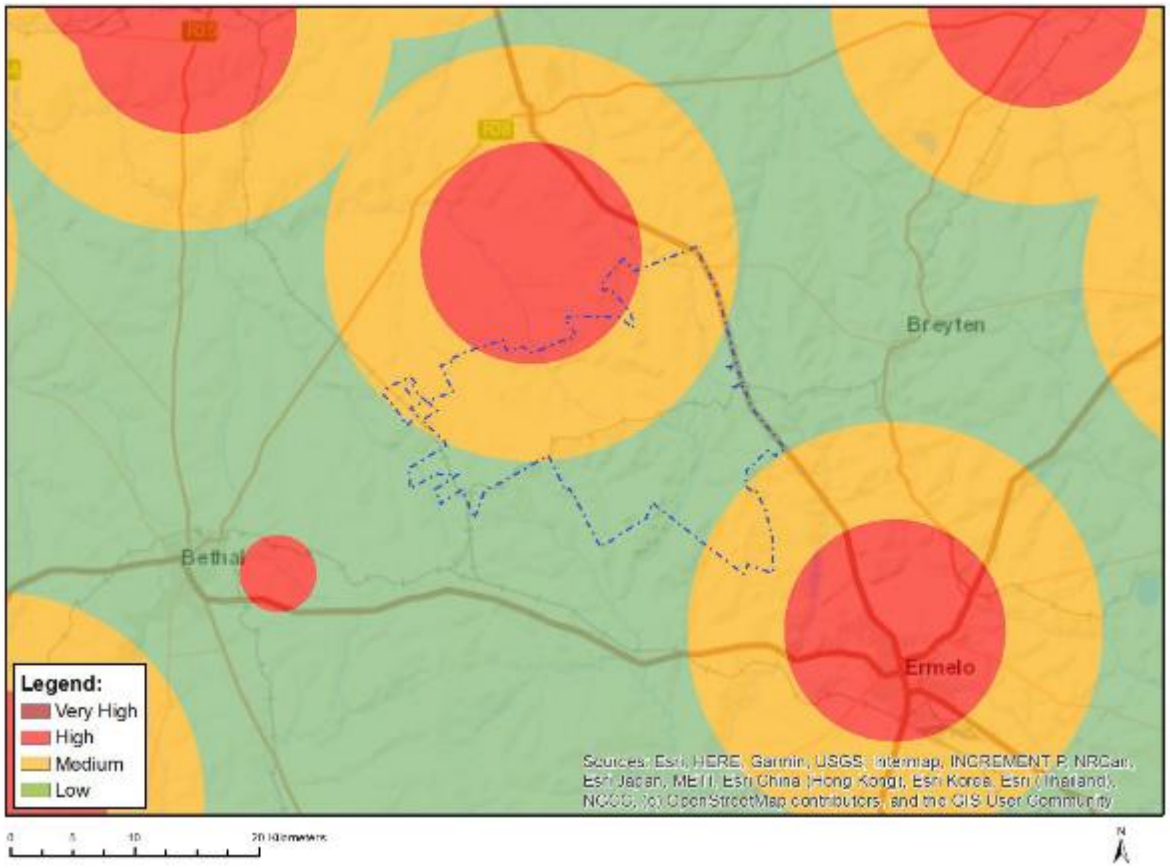

Figure 13: Map of Civil Aviation Sensitivity

Source: DFFE Screening Report

A formal Civil Aviation Assessment will not be undertaken as part of the S&EIA Process. Nevertheless, the relevant Authorities have been included on the project stakeholder database. As of the 1st of February 2022, ATNS has been appointed as the new Obstacle application Service Provider. Their responsibility would pertain to the assessments, maintenance, and all other related matters in respect to Solar assessments. A wind turbine Obstacles application have been submitted to ATNS for the project and the required permits will be obtained prior to the development of the project. The SACAA has been included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought. Their responsibility would pertain to the assessments, maintenance, and all other related matters in respect to Windfarms.

The sensitivity of the civil aviation theme can be seen as low due to the nature of the civil aviation aerodrome in the area. The Ermelo Airfield – FAEO, is a 10m asphalt strip, which will likely cater for small scale aircraft.

4.4.8. Defence Assessment

The output of the DFFE Screening Tool for the Defence Theme is illustrated in **Figure 14** and indicates that the site is classified as Low Sensitivity. The defence theme is considered to be of low sensitivity and therefore a compliance statement is not required. However, the relevant stakeholders have been included on the project stakeholder database i.e. Department of Defence and no comment has been received to date.

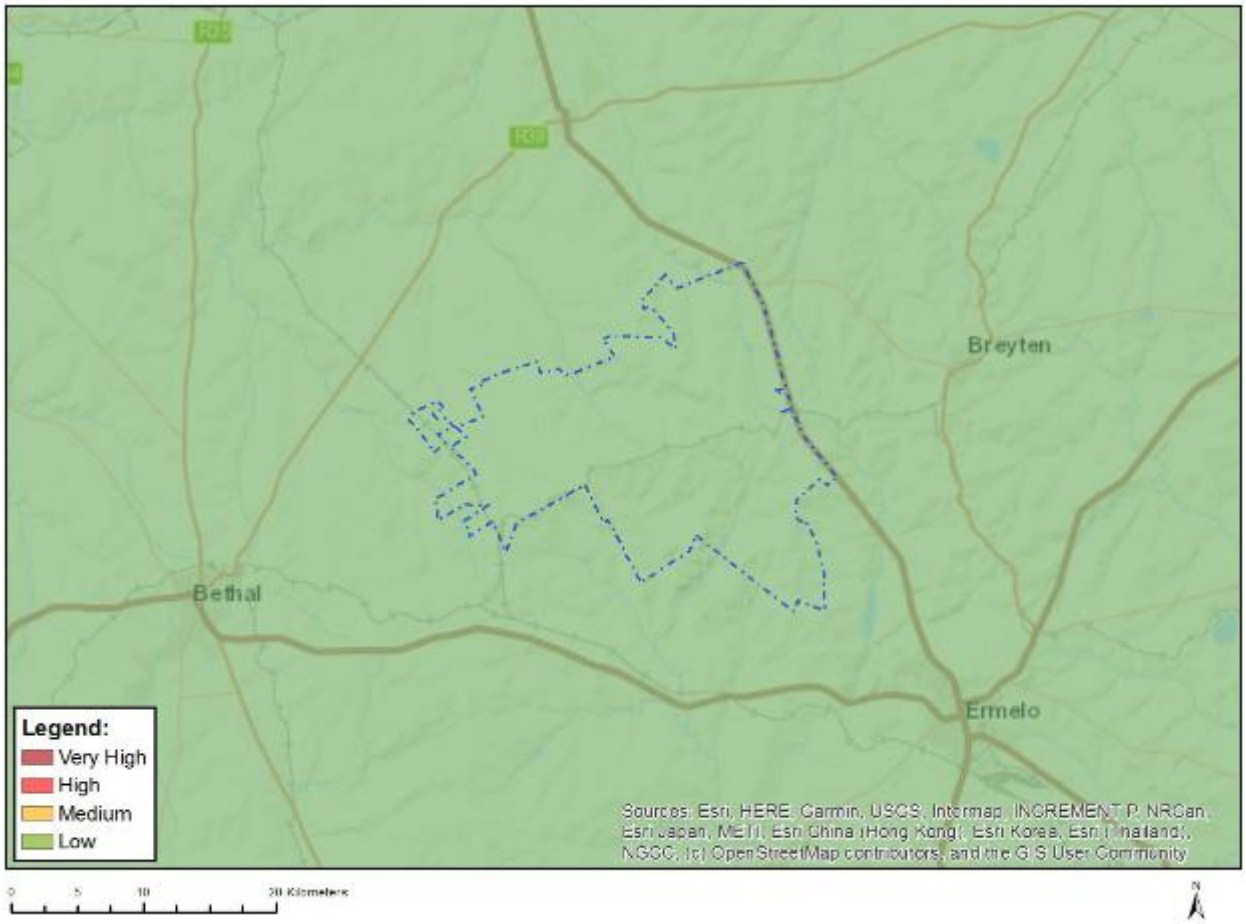

Figure 14: Map of Defence Sensitivity

Source: DFFE Screening Report

4.4.9. RFI Assessment

The output of the DFFE Screening Tool for the RFI Theme is illustrated in **Figure 15** and indicates that the site is classified as Very high Sensitivity. According to the tool, the site is within 1 km of a telecommunication facility and less than 18 km form a Weather Radar installation, and within the radar line of sight. The proposed development area is not located within any Astronomy Advantage Area and is therefore considered to be of low sensitivity. The SAWS and relevant telecommunications stakeholders have been included on the project stakeholder database. No comment has been received to date.

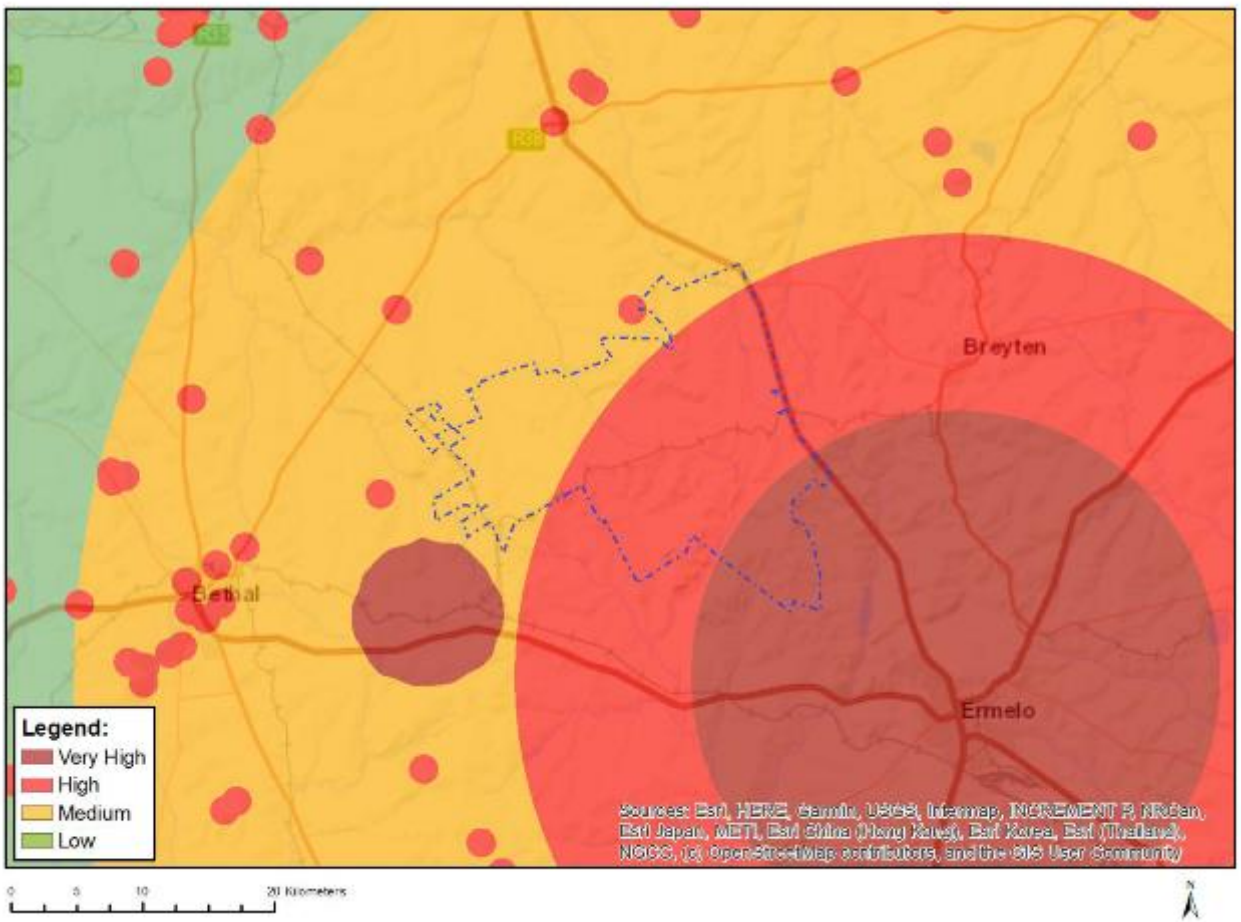

Figure 15: Map of RFI Sensitivity

Source: DFFE Screening Report

4.4.10. Animal and Plant Species Assessment

The output of the DFFE Screening Tool for the Animal Species Theme is illustrated **Figure 16** and indicates that the site is classified as High Sensitivity. The findings of the specialist study indicate that the study area is rated 'High Sensitivity' with respects to terrestrial animals. No 'no go' areas were identified with respects to terrestrial animals.

The output of the DFFE Screening Tool for the Plant Species Theme is illustrated in **Figure 17** and indicates that the site is classified as Medium Sensitivity. This rating is confirmed by the findings of the study.

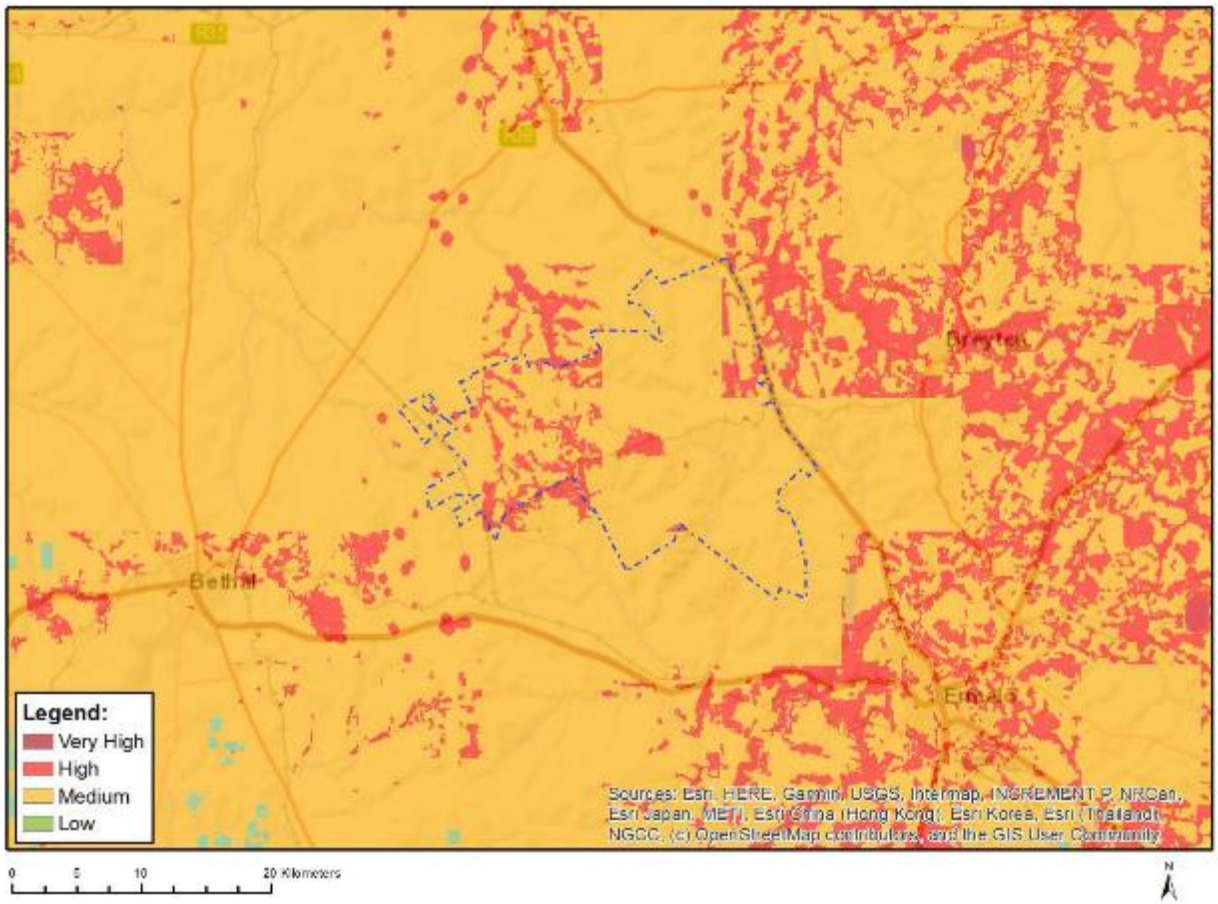

Figure 16: Map of Animal Species Sensitivity

Source: DFFE Screening Report

The study confirmed a High sensitivity in areas of grassland and wetland habitat. Presence of fauna SCC will be confirmed during the field survey. However, it is anticipated that several SCC occur in the study area, including inter alia Serval (*Leptailurus serval*), Cape-clawless Otter (*Aonyx capensis*), Secretarybird (*Sagittarius serpentarius*), Southern Bald Ibis (*Geronticus calvus*) and Grey Crowned Crane (*Balearica regulorum*).

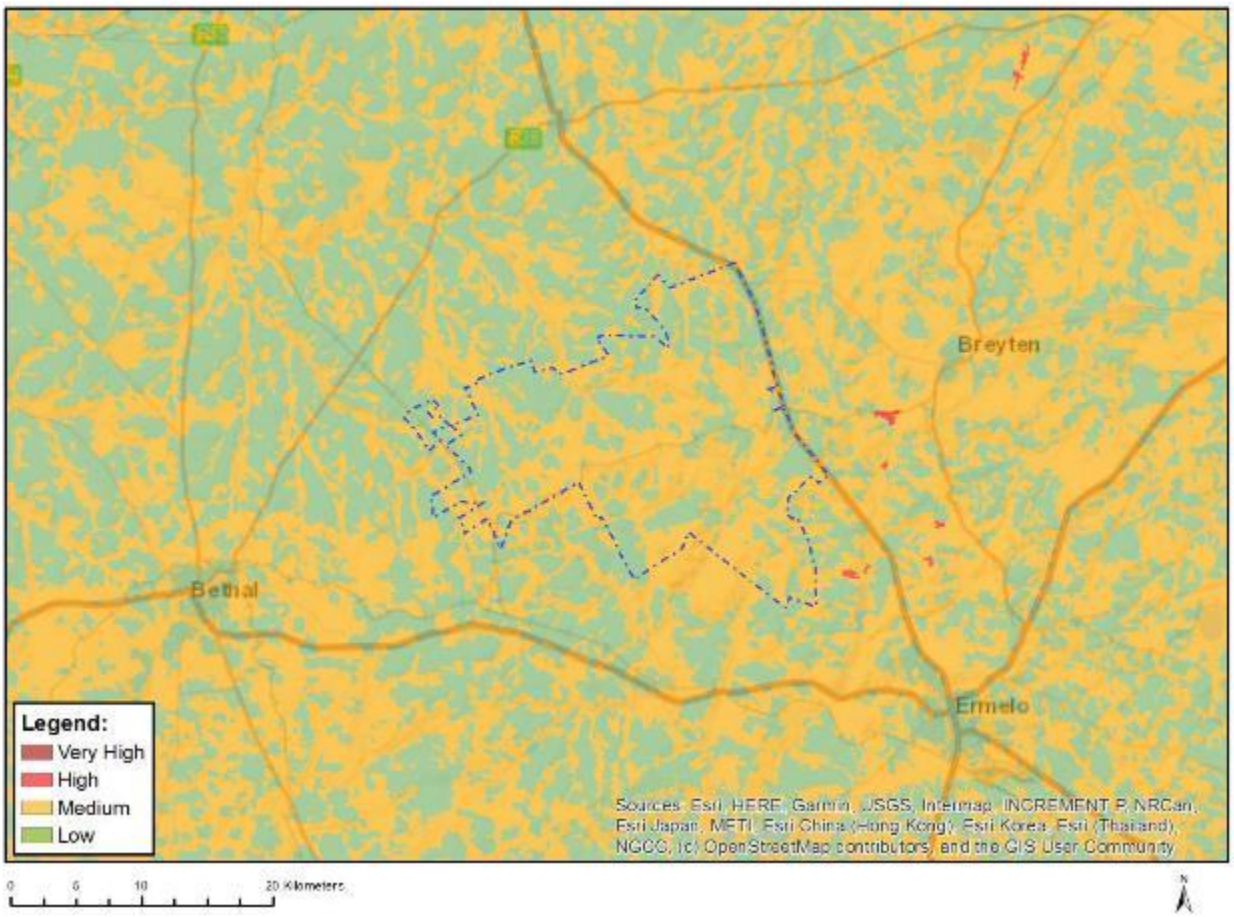

Figure 17: Map of Plant Species Sensitivity

Source: DFFE Screening Report

The study confirmed a Medium sensitivity in areas of primary grassland and wetland habitat. Presence of primary grassland and wetland habitat and flora SCC will be confirmed during the field survey.

4.4.11. Avifauna Assessment and Vulture Species Theme

The output of the DFFE Screening Tool for the Avian Theme is illustrated **Figure 18** and indicates that the site is classified as Low Sensitivity.

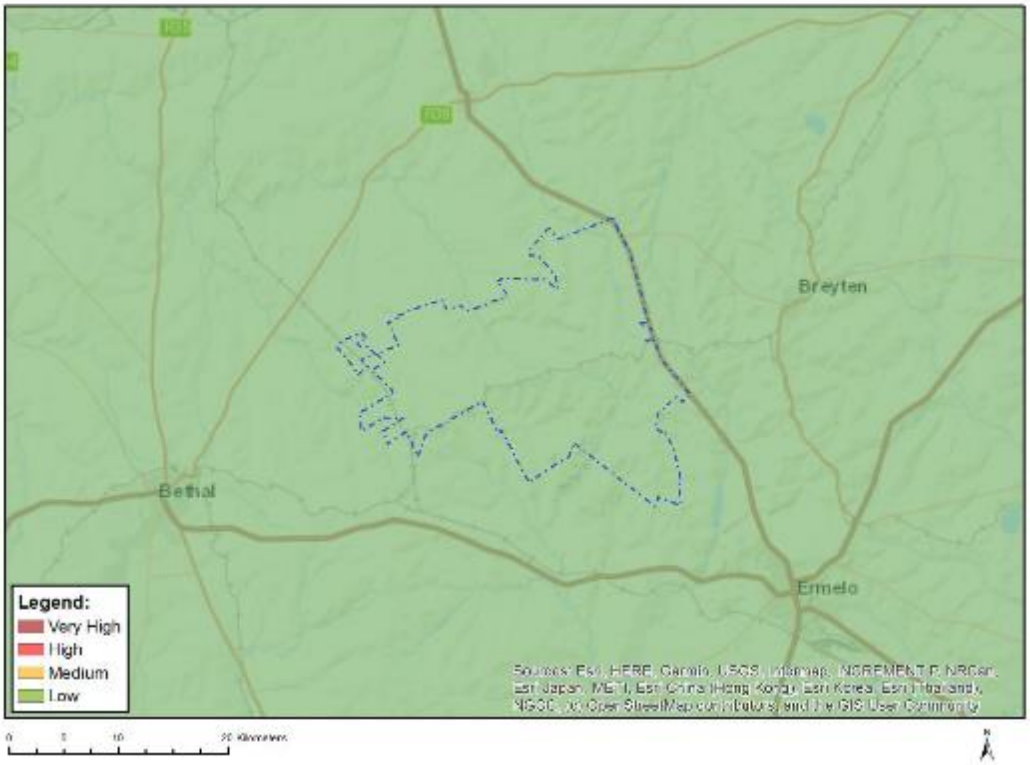

Figure 18: Map of Avian Sensitivity

Source: DFFE Screening Report

Figure 19: Map of Vulture Sensitivity

Source: DFFE Screening Report

Very High Sensitivity: All Infrastructure Exclusion Zones

Martial Eagle nest: a 2.5km all infrastructure exclusion zone should be implemented and maintained around the identified Martial Eagle nest to avoid displacement and/or breeding failure due to disturbance.

Secretarybird nests: a 500m all infrastructure exclusion buffer zone should be implemented and maintained around the identified Secretarybird nests to avoid displacement and/or breeding failure due to disturbance. However, given the lack of nest site fidelity of this species, and in order to better manage the risk of known shifts in nest sites across breeding seasons , we recommend a proactive adaptive risk management plan that is underpinned by routine and systematic nest surveys in medium risk areas identified through habitat and flight risk modelling for this species. The proposed approach includes hierarchal tiers of risk management.

Prior to the Operational Phase of the WEF all tree structures across the Project Site will be mapped by generating a canopy height model and applying a tree structure criteria-based model (Appendix K, Tier 0, action 1). Secretarybird management zones across the WEF site will be delineated (tier 0 action 2) using the mapped tree structures, known nests sites and flight risk modelled outputs. During the operational phase of the WEF monthly orthophoto assessments will be conducted to monitor the prioritized management zones to identify active nest and roost structures (Appendix K, tier 1). If active nests/roosts are identified SDoD and/or automated curtailment will be implemented.

Southern Bald Ibis colonies: a 1km all infrastructure exclusion buffer zone should be implemented and maintained around the identified Southern Bald Ibis colonies to avoid displacement and/or breeding failure due to disturbance.

Avifaunal wetland use/delineation : Wetland habitat suitability modelling was used to inform and determine all infrastructure exclusion zones. mModelled core buffer zones using habitat preference of key focal species: African Marsh Harrier, African Grass Owl, Striped Flufftail, Grey Crowned Crane.

High Sensitivity: Turbine Exclusion Zones

Wetland habitat suitability modelling. The buffer zones must be classified as rotor swept free zones. Wetlands (including dam margins) are important breeding, roosting, and foraging habitat for a variety of Species of Conservation Concern (SCC), most notably for African Grass Owl (Regionally Vulnerable), Greater Flamingo (Regionally Near Threatened), Yellow-billed Stork (Regionally Endangered), and Blue Crane (Regionally Near Threatened). Modelled turbine exclusion buffer zones using habitat preference of key focal species: African Marsh Harrier, African Grass Owl, Striped Flufftail, Grey Crowned Crane.

Modelled Rudd's Lark habitat areas to prevent displacement of the birds due to disturbance and habitat destruction.

Modelled Yellow-breasted Pipit habitat areas to prevent displacement of the birds due to disturbance and habitat destruction.

Modelled suitable habitat buffers around core habitat areas for Lesser Flamingo and Greater Flamingo to prevent displacement of the birds due to disturbance and to reduce the risk of turbine collisions.

Southern Bald Ibis colonies - A shaped turbine exclusion zone has been delineated based on modelled flight activity. The modelling workflow incorporated all the flight data collected within the area during the pre-construction monitoring. The model identifies high risk flight areas by considering associations between the underlying habitat and topography in relation to the recorded Southern Bald Ibis flight data and proximity to roosts.

Secretarybird nests - A shaped turbine exclusion zone has been delineated based on modelled flight activity. The modelling workflow incorporated all the flight data collected within the area during the pre-construction monitoring.

The model identifies high risk flight areas by considering associations between the underlying habitat and topography in relation to the recorded Secretarybird flight data and proximity to nests.

Black Sparrowhawk nests: a 250m wind turbine exclusion zone (including the rotor swept area) should be implemented and maintained around the two identified Black Sparrowhawk nests (coordinates can be provided (one nest is located on site while the other nest was located approximately 5-6km south of the project area) to minimisze the risk of collisions and to avoid displacement due to disturbance.

The Black Sparrowhawk is classified as a wind priority species with a conservation status of least concern. These birds typically nest and hunt around stands of alien trees within grassland habitats. Although a 750-meter buffer was initially assigned to their nests, this was deemed excessive given that these raptors primarily focus their hunting activities around tree stands in these habitats. A 250-meter buffer is recommended, aligning with buffer delineations for other similar-sized raptors. It is also important to note that nest locations may change regularly. Therefore, it is advised that risk management regarding Black Sparrowhawks be approached through adaptive management strategies.

Martial Eagle nest: A shaped turbine exclusion zone has been delineated based on modelled flight activity. The modelling workflow incorporated all the flight data collected within the area during the pre-construction monitoring. The model identifies high risk flight areas by considering associations between the underlying habitat and topography in relation to the recorded Martial Eagle flight data and proximity to nests.

Heronry: a 300m wind turbine exclusion zone (including the rotor swept area) should be implemented and maintained around the heronry to minimize the risk of collisions and to avoid displacement due to disturbance.

Natural pans: A 2km wind turbine exclusion zone (including the rotor swept area) should be implemented and maintained around natural pans.

Medium Sensitivity: Limited Infrastructure Zones

A similar flight risk modelling workflow was used to delineate medium risk sensitivity zones where proactive mitigation measures (e.g. Turbine Shutdown on Demand, either observer led or automated) will be required. The modelling was done for the following species:

- Secretarybird,
- Southern Bald Ibis,
- Black-winged Pratincole,
- Rudd's Lark,
- Yellow-breasted Pipit.

Flocks of priority species: A Radar-based Shutdown on Demand (SDoD) system, operated by trained personnel, will be used to identify flocks of priority bird species at the site. Turbines that could pose a risk to these flocks will be shut down to reduce the likelihood of collisions. The radar system will also detect nocturnal movements of species such as flamingos, which often fly in flocks, and trigger turbine shutdowns when such movements are observed at night. The radar's ability to differentiate specific species based on their unique size and flight characteristics, such as potentially Secretarybirds and Blue Cranes, will be used to initiate appropriate turbine shutdowns).

High Sensitivity grassland: Natural grassland. Development in the remaining natural grassland in the Project Site must be limited as far as possible. Where possible, infrastructure must be located near margins, with the shortest routes taken from the existing roads. The natural grassland is a vital breeding, roosting, and foraging habitat for a variety of SCC. These include African Grass-owl (Globally Least Concern, Regionally Vulnerable), and Secretarybird (Globally Endangered, Regionally Vulnerable).

Secretarybirds: Given the lack of nest site fidelity of this species, and in order to manage the risk of known shifts in nest sites across breading seasons , we recommend a proactive adaptive risk management plan that is underpinned by routine and systematic nest surveys in medium risk areas identified through habitat and flight risk modelling for this species (Appendix K). The proposed approach includes hierarchal tiers of risk management.

Prior to the Operational Phase of the WEF all tree structures across the Project Site will be mapped by generating a canopy height model and applying a tree structure criteria-based model (Appendix K, Tier 0, action 1). Secretarybird management zones across the WEF site will be delineated (tier 0 action 2) using the mapped tree structures, known nests sites and flight risk modelled outputs. During the operational phase of the WEF monthly orthophoto assessments will be conducted to monitor the prioritized management zones to identify active nest and roost structures (Appendix K, tier 1). If active nests/roosts are identified SDoD and/or automated curtailment will be implemented. Refer to Appendix K for further details.

Based on the Site Sensitivity Verification survey and the integrated pre-construction monitoring conducted at the Project Site, a classification of High sensitivity for avifauna is suggested for the Phefumula Emoyeni One WEF. Therefore, all mitigation measures as outlined in this Avifaunal Specialist Study should be strictly implemented.

The WEF Project Site and immediate environment is classified as Medium Sensitivity for vultures according to the Vulture Species Theme. The Medium sensitivity is due to the Project Site possibly affecting an area with between 5%–10% of the vulture population.

During the pre-construction monitoring (885 hours of vantage point observations) only four (4) Cape Vultures were observed, during the April 2023 survey in total, only 16 minutes of Cape Vulture flights were recorded at medium height (i.e. within rotor-swept height). The passage rate for Cape Vultures after 885 hours of monitoring was 0.004 birds per hour, which amounts to about 1 Cape Vulture every 17 days.

According to the Cervantes Population Utilization Distribution outputs the Phefumula Emoyeni One WEF Project Site is rated Low sensitivity (Cervantes et al 2023).

Analysis currently underway by AfriAvian as part of an updated assessment for the Renewable Energy Development Zones (REDZ) in South Africa that incorporates data sources from various NGOs and conservation authorities also support the finding that the area constitutes a low vulture risk.

The Medium Sensitivity classification is therefore considered inaccurate, and a Low Sensitivity rating is considered more appropriate.

4.4.12. Bats Assessment

The DFFE screening tool report identified the bats theme as a high sensitivity as depicted below.

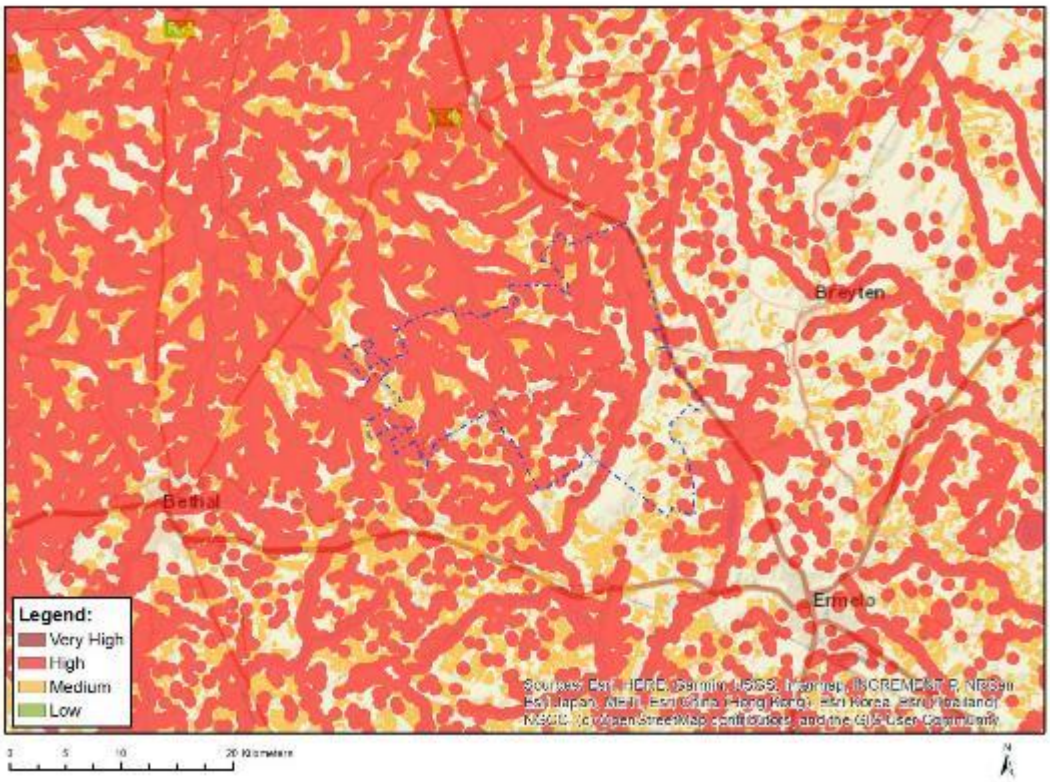

Figure 20: Map of Bat Sensitivity

The bats (wind) site sensitivity verification report relates to the Screening Tool Report completed for the site in September 2023. Six site visits were conducted by the specialists between 6 September 2022 and 14 September 2023 to inform the specialist reports required for the proposed project and confirm the site sensitivity.

Based on the preliminary identified bat sensitivities (**Figure 21**) the specialist agrees with the "High" overall sensitivity rating of the site as per the national Screening Tool. However, this is not only due to the presence of various hydrological features and croplands onsite, but due to the collective presence of hydrological features, croplands, woody vegetation, rocky terrain, and buildings (potentially including bat roosts).

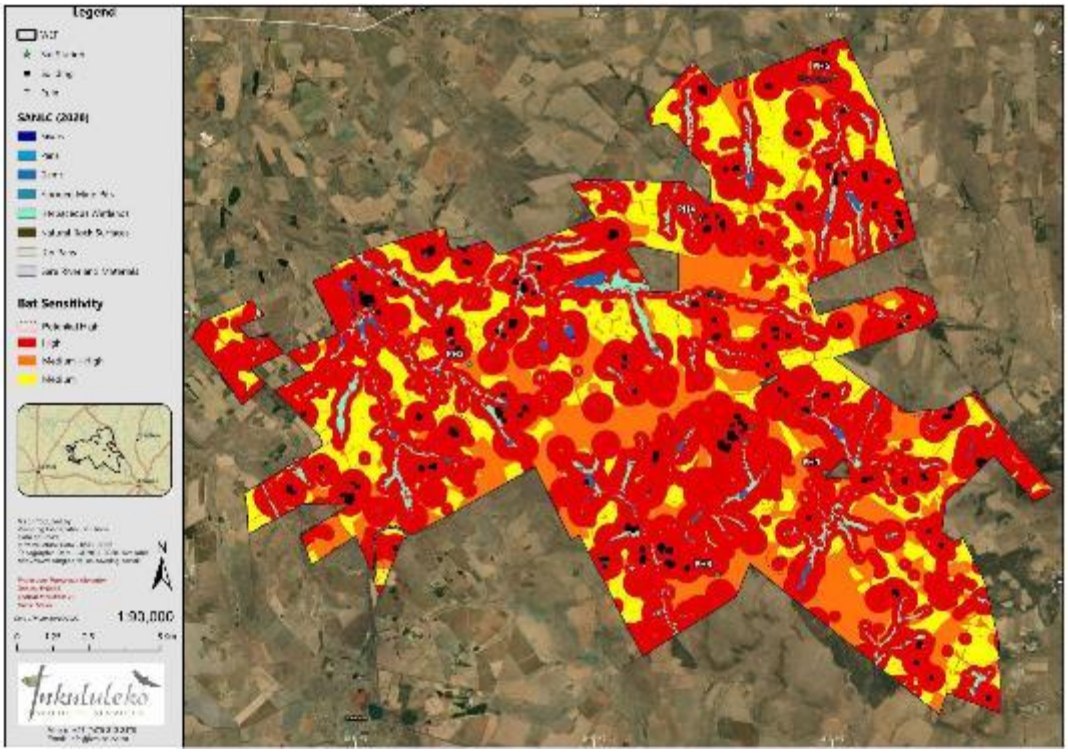

Figure 21: Preliminary Bat Sensitivity

4.4.13. Noise Assessment

The screening tool identified the noise theme as very high due to potential temporarily or permanently inhabited residence as shown in **Figure 22**.

Based on the proposed preliminary specifications of the Phefumula Emoyeni One WEF, a minimum buffer zone of 1,330 m from each turbine to the nearest receptor is recommended in order to ensure noise levels remain below the acceptable 35 dB(A) threshold stipulated by the IFC EHS guidance. Should receptors be financially vested in the Project, this LA90 threshold increases to 45 dB(A) and the suitable buffer for locating turbines will decrease to 470 m from each receptor.

Based on the large number of sensitive receptors (farmhouses) within the Project site area (**Figure 23**) and large number of proposed turbines, it is therefore confirmed that the site sensitivity from a noise perspective is “very high”, in line with the DFFE screening tool results.

Figure 22: Map of Noise sensitivity

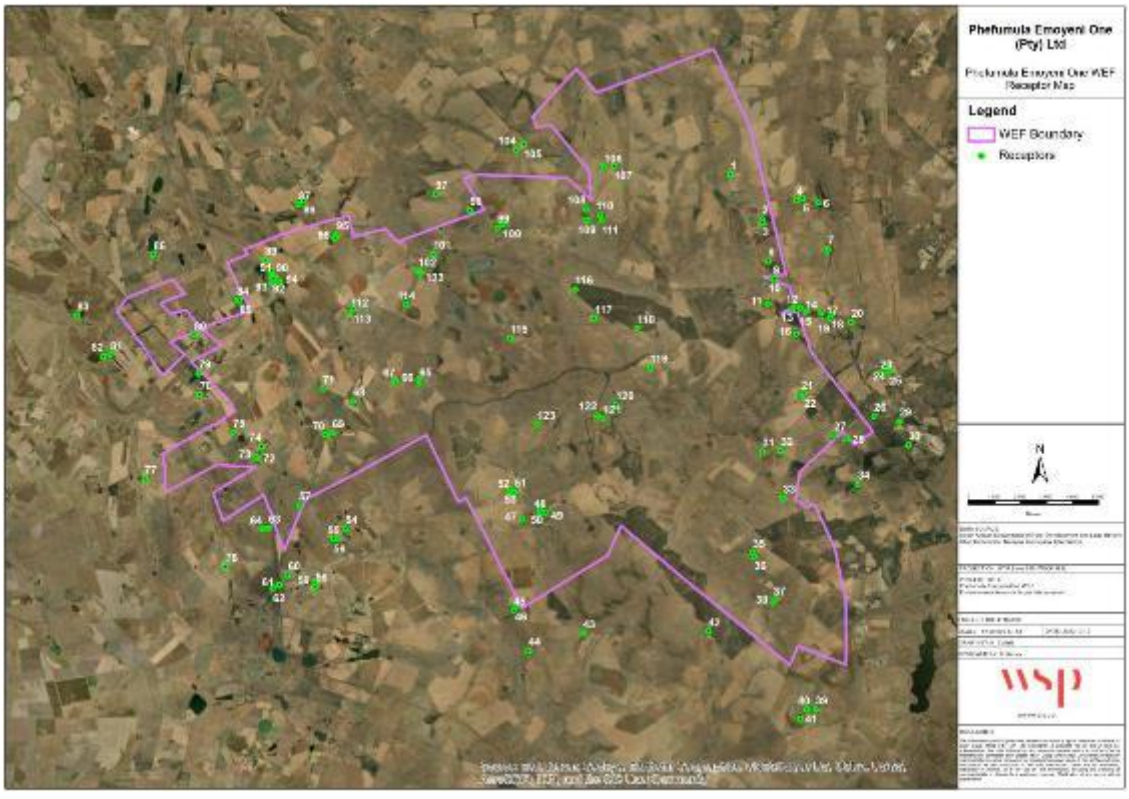

Figure 23: Noise sensitive receptors

5. CONSOLIDATED SITE SENSITIVITY

Figure 24 below shows the consolidated site sensitivities, with the optimised WEF layout overlain. The sensitivity inputs and findings from all of the appointed specialists have been combined and utilised to prepare the optimised layout.

These sensitive areas identified have been utilised during the EIA phase in order to plan and further refine the WEF layout development to avoid all sensitive areas accordingly and minimise the impacts of the proposed project on in the area.

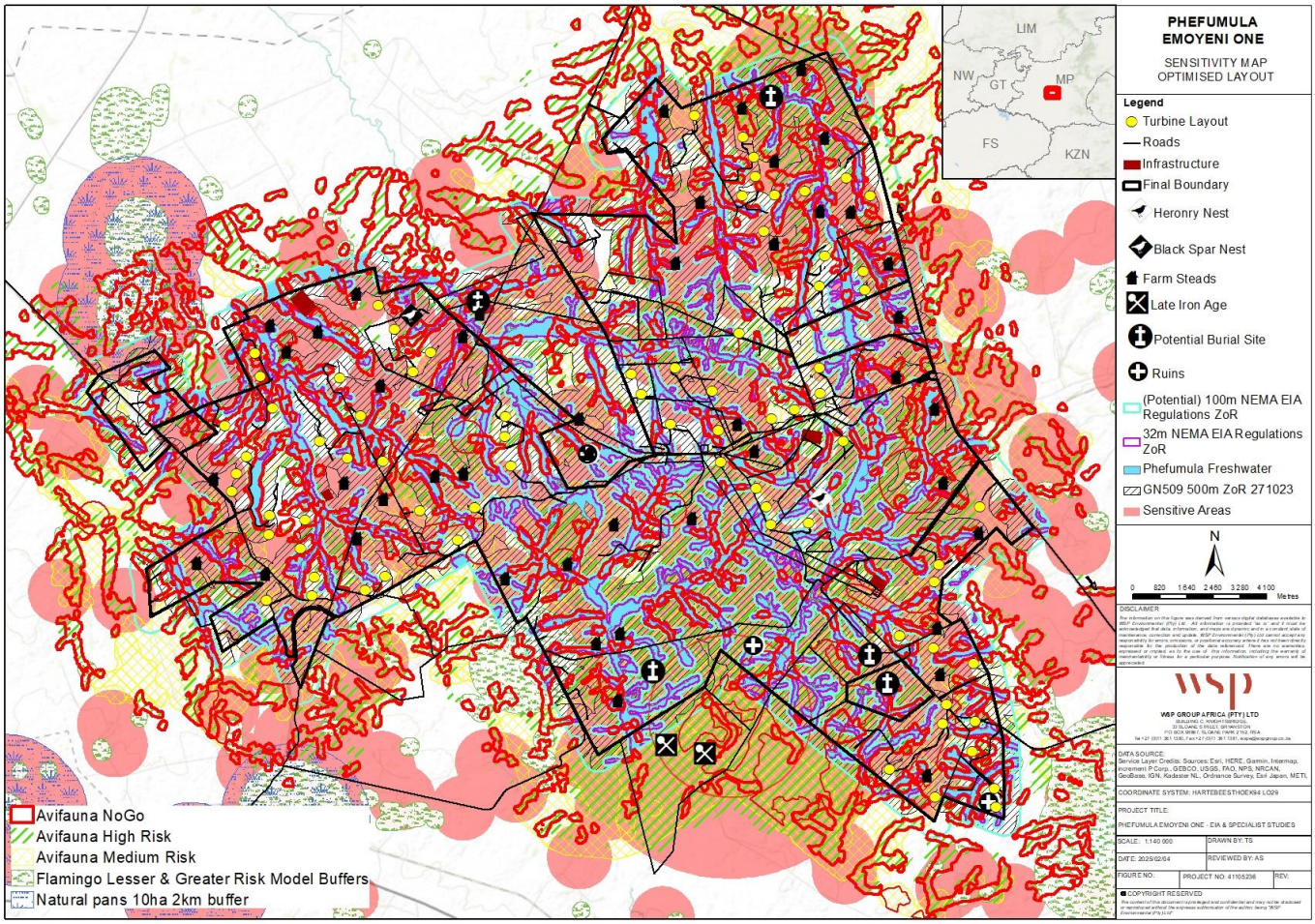

Figure 24: Consolidated site sensitivity map

6. CONCLUSION

The EAP hereby confirms the following environmental themes were confirmed to either coincide with or be of a higher sensitivity then the DFFE Screening Tool Rating:

- Terrestrial Biodiversity (confirmed very high sensitivity)
- Plant Species Assessment (confirmed medium sensitivity)
- Avifauna Assessment (confirmed high sensitivity)
- Bats Assessment (confirmed high sensitivity)
- Aquatic Biodiversity (confirmed very high sensitivity)
- Animal Species (confirmed high sensitivity)
- Flicker theme (confirmed high sensitivity)
- Noise theme (confirmed very high sensitivity)
- Defence (confirmed low sensitivity)

The following environmental themes were disputed against the DFFE Screening Tool Rating, and found to be a lower sensitivity than what was identified by the DFFE Screening Tool:

- Archaeological and Cultural Heritage (confirmed low, medium and high sensitivity)
- Agricultural Impact Assessment (confirmed moderate to high sensitivity)
- Landscape/Visual (confirmed moderate to high sensitivity)
- Civil Aviation (confirmed low sensitivity)
- RFI (confirmed low sensitivity)
- Vulture Theme (confirmed low sensitivity)
- Palaeontology (confirmed low sensitivity)

Kind Regards,

Digitally signed by Ashlea Strong
DN: cn=Ashlea Strong, c=ZA, o=WSP Group Africa, ou=Earth and Environment, email=ashlea.strong@wsp.com
Date: 2025.04.08 07:35:42 +02'00'

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Ashlea Strong

Registered EAP