Critical Habitat Assessment (CHA)

SUEZ Wind Energy BOO Wind Power Plant 1.1. GW – SWE South (PLOT 2)

August 2024

DRAFT
REV-2

EcoConServ ENVIRONMENTAL SOLUTIONS

SafeSoar

ECO Consult

Client:

RCREEE
Regional Center for Renewable Energy and Energy Efficiency
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

Prepared by:

EcoConServ
12 El-Saleh Ayoub St., Zamalek Cairo, Egypt, 112111
Tel: + (2 02) 2735 9078 / 2736 4818
Fax: + (20 2) 2736 5397

ECO Consult
Jude Center, Salem Al-Hindawi Street, Shmeisani, Amman, Jordan
Tel: 962 6 569 9769
Fax: 962 6 5697264
E-mail: info@ecoconsult.jo

Safe Soar for Environmental studies and consultations
No.23 Borg Elmaamon st. – Mohamed Anwar Elsadet St.
Tel: +201064666395
Fax: + (20 2) 2736 5397
E-mail: safesoar@gmail.com

Prepared for:

RCREEE - Regional Centre for Renewable Energies and Energy Efficiency
Hydro Power Building, Floor 7
Block 11, Piece 15, Melsa District
Ard el Golf, Nasr City, Cairo
Arab Republic of Egypt

Issue and Revision Record:

Template Code		**QF-PM-01-15**	**Template Revision No.**	**REV – 2**
Version	**Date**	**Description**	**Reviewed By**	**Approved by**
REV 0	30 Nov 23	Draft CHA	ACWA Power	
REV 1	4 Jan 24	Draft CHA		
REV 2	25 Aug 24	Final CHA		

Disclaimer:

This report should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of the Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) being obtained. EcoConServ and ECO Consult accepts no responsibility or liability for the consequence of this document being used for a purpose other than the purposes for which it was commissioned.

This Report is confidential to the Regional Centre for Renewable Energy and Energy Efficiency (RCREEEE) and the Consultant accepts no responsibility of whatsoever nature to third parties whom this Report, or any part thereof, is made known. Any such party relies upon this Report at their own risk.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

1.1 Purpose of Report

This report details the Critical Habitat Assessment (CHA) for the Suez Wind Energy (SWE) wind farm project which has been completed in line with IFC Performance Standard 6 (PS 6) and EBRD Performance Requirement 6 (PR 6) and the corresponding Guidance Notes (GN) to identify if the Project area or parts thereof are considered as Critical Habitat.

This CHA aims to:

- Identify Critical Habitat qualifying species or habitats, Priority Biodiversity Features and Natural Habitat associated with the Project.
- Outline the implications of the CHA for the Project, and
- Highlight future actions for the Project where applicable, including identification and filling of data gaps and the need for additional field surveys as well as outline details to be included in a Biodiversity Management Plan (BMP).

1.2 The Project Site and Study Area

The Project is located in the Ras Gharib Local Governmental Unit of the Red Sea Governorate of Egypt, approximately 305 km to the southeast of the capital city of Cairo. The nearest town is Ras Shukeir which is located 8.5 km to the southeast of the Project area.

The Project is located within a Strategic Area that has been allocated by the New and Renewable Energy Authority (NREA) for wind farm development projects (shown in *Figure 1*). The Strategic Area has a total planned capacity of 1,500MW and covers 300 km^2 with the ACWA Plot 2 windfarm proposed to occupy approximately 50 km^2 of this (*Figure 1*).

Being located by the western coastline of the Gulf of Suez, the Project Site and the general study area are located along the Red Sea/Rift Valley flyway, which is one of the most important migration flyways for migratory soaring birds in the world with over 1.5 million soaring birds migrating through it twice a year (Birdlife, 2020). The flyway links the European breeding grounds with the African wintering areas for at least 37 migratory soaring bird species. Regular migration monitoring along the western coast of the Gulf of Suez where the project is located has shown that there is a significant difference in the level of use of the area during migration seasons. Research has shown that this part of the flyway is used by much larger numbers of birds during spring migration in comparison with autumn migration seasons.

Approximately 8.5 km east of the site is the Gebel El Zeit Important Bird Area (IBA) which is a narrow, 100-km-long strip of land extending along the Gulf of Suez/Red Sea coast, from Ras Gharib in the north to the Bay of Ghubbet El Gemsa in the south. The IBA contains several pools of hyper-saline water and large patches of saltmarsh as well as two large shallow bays with extensive intertidal mud and sandflats (Birdlife, 2023). The IBA and surrounding area is known to be used by over 250,000 migratory soaring birds each year, with many of these birds crossing between the western shore of the Gulf of Suez and the Sinai Peninsula on their spring and autumn migrations. The IBA location in relation to the Project Site is shown in *Figure 2* and a map of the main Rift Valley/Red Sea flyway elements is shown in *Figure 3*.

As part of the Environmental and Social Impact Assessment (ESIA) for the project, in-flight monitoring assessments were undertaken at the Project Site during the spring and autumn seasons 2022 and 2023. Additionally, a comprehensive literature review was undertaken. Based on the Egyptian

Environmental Affairs Agency (EEAA) requirements, avifaunal in-flight monitoring has been carried out in 2022 and 2023. Operational monitoring will be carried out, including shutdown on demand and fatality monitoring as part of the Active Turbine Management Plant (ATMP) that is already being implemented in the region as a whole.

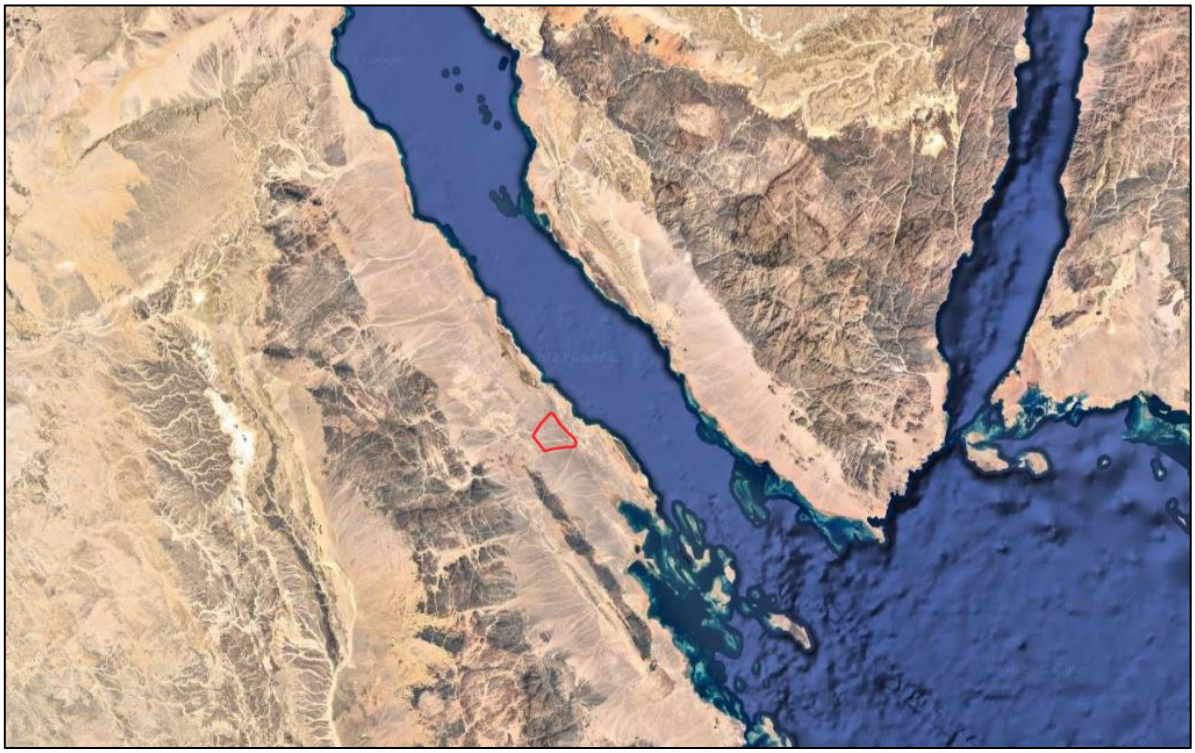

Figure 1: Plot 2-Project Site

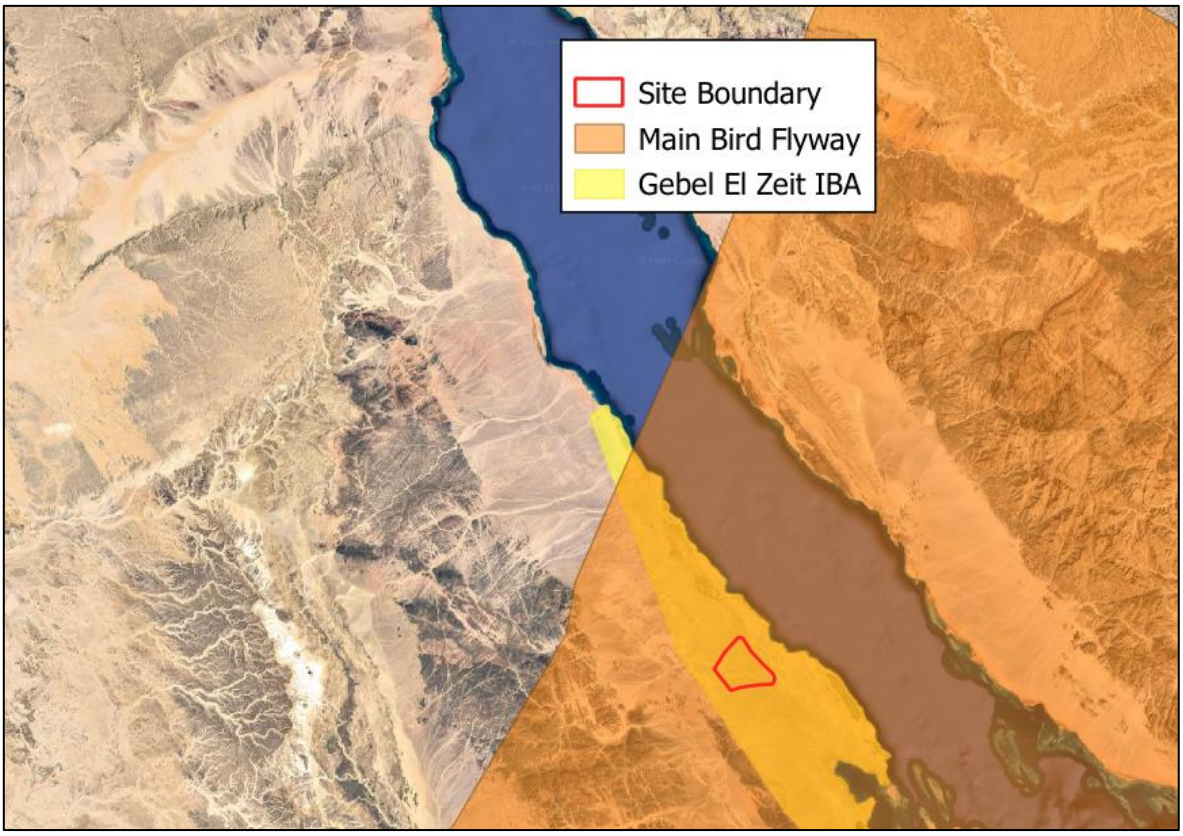

Figure 2: Project Site in relation to Gebel El Zeit IBA and Red Sea Flyway

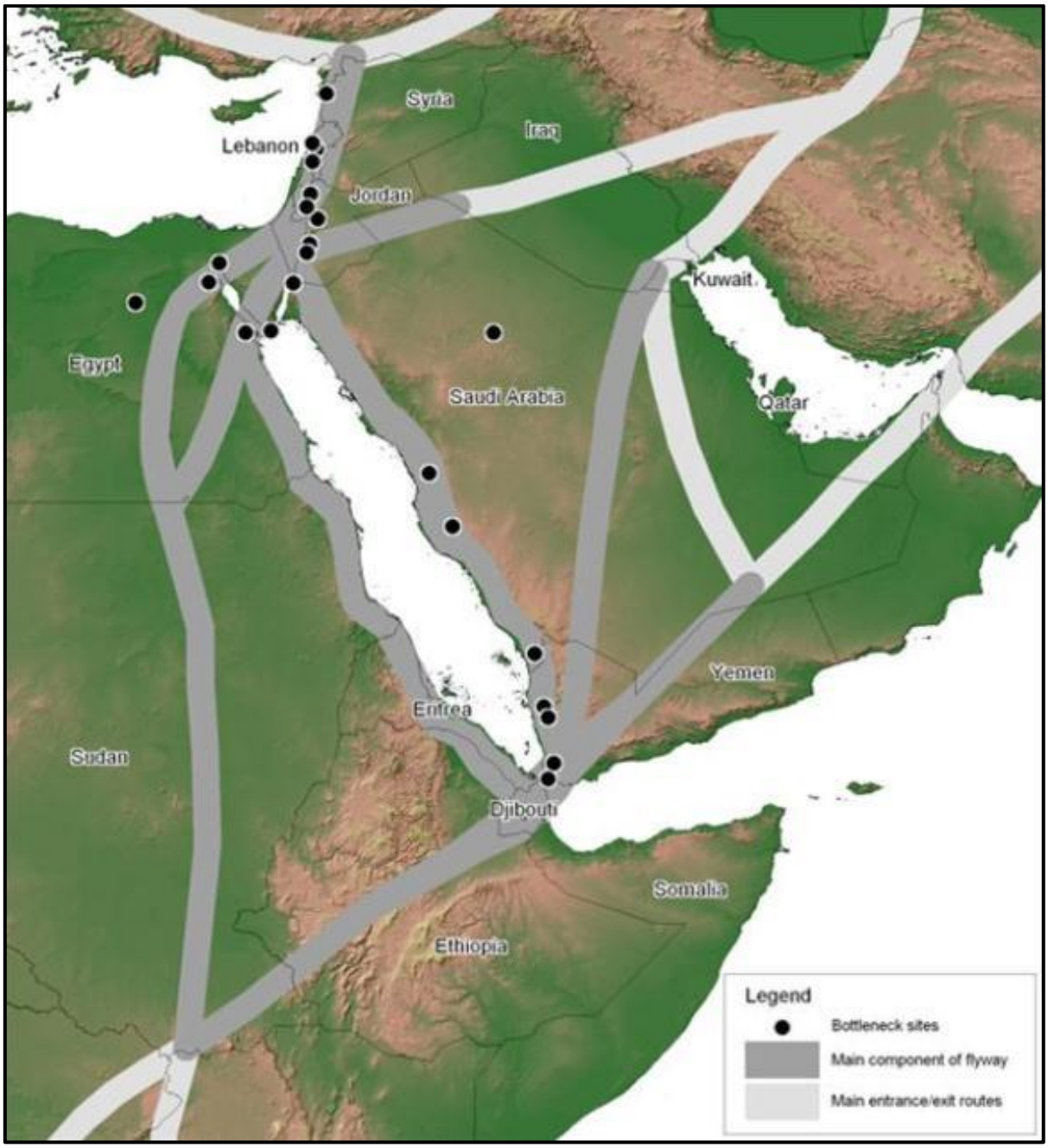

Figure 3: Map of the main elements of the Rift Valley/Red Sea flyway showing key bottleneck sites (Source: BirdLife International)

2 ASSESSMENT FRAMEWORK AND METHODOLOGIES

2.1 Frameworks

2.1.1 General

Standards for the IFC and EBRD performance standards/requirements are detailed below. Other potential lenders which could be involved in this Project (Proparco and JICA) use standards which reflect those stipulated by IFC therefore to avoid repetition the institutions needs are covered in this section of the CHA.

2.1.2 International Finance Corporation Performance Standard (PS) 6

In accordance with IFC PS 6, habitats are divided into modified habitats, natural habitats, and critical habitats. Critical Habitats (CH) are a subset of either modified or natural habitats supporting high biodiversity value, including:

- Habitat of significant importance to critically endangered and/or endangered species (International Union for Conservation of Nature and Natural Resources (IUCN) Red List)
- Habitat of significant importance to endemic and/or restricted-range species
- Habitat supporting globally significant concentrations of migratory species and/or congregatory species
- Highly threatened and/or unique ecosystems
- Areas associated with key evolutionary processes

Since habitat destruction is recognised as a major threat to the maintenance of biodiversity and to assess likely significance of impacts, IFC PS 6 requires the following depending on habitat status:

Modified Habitat: exercise care to minimise any conversion or degradation of such habitat, depending on scale of project, identify opportunities to enhance habitat and protect and conserve biodiversity as part of operations.

Natural Habitat: developer will not significantly convert or degrade such habitat unless no financial/technical feasible alternatives exist, or overall benefits outweigh cost (including those to biodiversity), and conversion or degradation is suitably mitigated. Mitigation must achieve no net loss of biodiversity where feasible; offset losses through creation of ecologically comparable area that is managed for biodiversity, compensation of direct users of biodiversity.

Critical Habitat: in areas of CH, the Developer will not implement project activities unless there are no measurable adverse impacts on the ability of the critical habitat to support established populations of species described or on the functions of the critical habitat; no reduction in population of a recognised critically endangered or endangered species and lesser impacts mitigated as per natural habitats. The Project must achieve net gains for the biodiversity value for which the Critical Habitat was designated.

2.1.3 European Bank for Reconstruction and Development (EBRD) Performance Requirement (PR) 6

The EBRD PR 6 sets objectives to protect and conserve biodiversity using a precautionary approach, utilise the mitigation hierarchy to achieve no net loss/net gains where appropriate, maintain ecosystem services, and promote good practice in the management and use of natural resources.

In addition to the Critical Habitat noted above, the PR 6 also builds on the requirements to preserve important areas of natural habitats, defining these as “Priority Biodiversity Features” (PBF), with a criterion-based qualitative approach also used to determine their significance.

2.2 Assessment Methods

2.2.1 General

The CHA comprises several steps in order to ensure the process is robust:

- Initial Screening – which involves making stakeholder consultation and/or an initial published and grey literature *e.g*. Lekela WF CHA (TBC, 2018), Amunet WF CHA (EcoConsult 2022); BirdLife International Migratory Soaring Birds toolkit (Migratory Soaring Birds Tool V3 (birdlife.org)); Integrated Biodiversity Assessment Tool (IBAT, 2020); IUCN Red List of Threatened Species; IFC PS6 GN6 (IFC, 2012) ; EBRD PR6; Biodiversity Conservation and Sustainable Management of Living Natural Resources Guidance Note (EBRD 2022); Determining Biodiversity Management Requirements Related to Airspace around Wind Energy Facilities (IFC, EBRD 2023) and; World Database of Key Biodiversity Areas.
- Establishment of baseline which includes field data collection and verification of available information *e.g.* Habitat Survey; Bird Survey; Bat Survey; Invertebrate Survey; Reptile Survey
- Critical habitat determination:
  - Identification of appropriate scale for assessment
  - Determination of Ecologically Appropriate Area of Analysis.
  - Assessment against Critical Habitat criteria.

2.2.2 Literature review and stakeholder consultation

This assessment is based on existing literature in addition to global and regional datasets, including Integrated Biodiversity Assessment Tool (IBAT, 2020). All species classified as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Data Deficient in the IUCN Red List were screened, as well as all species mapped by IUCN which could be considered restricted-range. Additionally, up-to-date ecological assessments, including avifaunal in-flight monitoring, flora survey and others, that are included in the ESIA of the Project Site were used in the analysis. Other sources of data included the following:

- Environmental and Social Impact Assessments of all surrounding Wind Power Projects,
- Critical Habitat Assessments from surrounding Wind Power Projects,
- Publicly available satellite telemetry data (Feltrup-Azafzaf *et al.* 2016; Dagys & Zydelis 2018; Nagy *et al.* 2018) and published literature (Buechley *et al.* 2018, Gauld *et al. 2022*)
- BirdLife International's Important Bird Area Data Zone website
- BirdLife International Migratory Soaring Birds Tool V3 (birdlife.org)
- Protected Planet's Word Database on Protected Areas (WDPA)

This assessment was conducted using the best recent and available information at the time of its production. In an area where regular avifaunal monitoring is being carried out, a better understanding of the level of use, species present, and seasonal fluctuations is becoming increasingly understood every season. It is believed that as more research is planned for the future, at the Project Site and in the adjacent projects, a better understanding of the area as a whole will be obtained. These results could affect the results of this assessment, however the location of the Project along a major migration flyway and adjacent to a IBA which is a significant stopover or congregatory site, will not change the importance of the area for migratory soaring birds specifically nor will it change the need for detailed

mitigation measures and monitoring plans to ensure the conservation of the species that use the flyway, the Gulf of Suez and the project site.

2.2.3 Scale of Assessment

A Critical Habitat Assessment is usually carried out at a landscape scale, using ecologically appropriate areas of analysis (EAAA) for determining the presence or absence of Critical Habitat qualifying features under PS6 Criteria 1 – 3 and PR6 Criterion 2 – Priority Species and their Habitats. They are identified at a landscape scale, considering large-scale ecological processes where appropriate, and can therefore be much larger than the project concession or lease area itself. The principles of determination of EAAA only apply to terrestrial areas and cannot be applied to airspace above a site unless it is associated directly with the utilization of a terrestrial habitat.

The Critical Habitat Assessment (CHA) methodology described in IFC's Guidance Note 6 heavily draws on the IUCN's Key Biodiversity Area (KBA) Standard, which focuses on geographic areas of land and water that are amenable to site-based conservation. It is for this reason that, for birds, the CHA methodology can be readily applied to terrestrial and water areas, such as stopover points and breeding grounds where concentrations of birds are dependent on the conservation of the habitat at these areas. Considering the airspace in a CHA is more challenging.

Birds utilizing important terrestrial areas will naturally also use the airspace above and around it. Under certain circumstances, this airspace should be considered as part of the habitat and part of the EAAA of a CHA.

Using this approach, a CHA would not be conducted with respect to the airspace where there is no associated important terrestrial area used by birds (or concentrations of them) and no intersection with the project footprint, which will often be the case for long-distance migrants using high altitude airspace between continents or countries. In this scenario, it would be difficult or impossible to delineate the airspace EAAA at this large scale, recalling that "critical habitat boundaries should be equivalent in scale to areas mapped for practical site-based conservation management activities" PS6 GN59). Without an EAAA, the Critical Habitats thresholds cannot be applied. It is also important to note that the location of a project within a recognised bird migratory corridor (flyway) does not automatically generate high collision risk, not trigger CH determination, because most bird migration activity occurs in a diffuse "broad front" pattern, and recognised bird migration corridors are as ubiquitous as bird migration activity itself, and collectively covers most terrestrial land areas. The migratory/congregatory species criterion described in the CHA sections of IFC PS6 and EBRD PR6 is intended to trigger CH determination only in areas that host continentally significant concentrations of migratory activity. In many cases, these sites have already been designated as IBAs based on the KBA criteria and thresholds[1].

Taking this into consideration, the study area scale of this assessment is based on the flyway of the birds that intersect with the Project area (*e.g.* the 52km^2 consented area identified in *Section 1.2*) and results of the site specific surveys will be discussed to demonstrate the relationship between the flyway (*e.g.* airspace) and the terrestrial habitats present within the Project area. This approach is consistent with other wind energy projects located within the same flyway within Egypt (*e.g.* Amunet Project and Lekela North Ras Gharib 250MW Project (TBC, 2018)).

[1] Memorandum Determining Biodiversity Management Requirements Related to Airspace around Wind Energy Facilities (EBRD, June 2023)

2.2.4 Determination of Ecologically Appropriate Area of Analysis

IFC PS6 and EBRD PR6 requires identification of Ecologically Appropriate Area of Analysis (EAAA) to determine the presence of critical habitat for each species with regular occurrence in the Project's Area of Influence (AoI), or ecosystem, covered by IFC Criteria 1-4 and EBRD Criteria 2 – Priority Species and their Habitats. The boundaries of an EAAA are determined by taking into account the distribution of species or ecosystems (within and sometimes extending beyond the project's AoI and the ecological patterns, processes, features, and functions that are necessary for maintaining them. This approach ensures that all important biodiversity within the project footprint and linked surrounding habitats are taken into consideration.

Criteria used to define CH under EBRD PR 6 are closely aligned to the IFC guidance and these require that the study area be defined by comparable parameters to the above. In essence any CH assessment must encompass all direct and indirect impacts within a broad landscape unit which is large enough to include features and functions relevant to the species being considered.

For terrestrial animals and plants the wind farm boundary plus a 1km buffer is used as the EAAA. The buffer area contains the same habitat type as the Project site. EAAA for migratory birds is discussed in the relevant sections below under detailed assessment.

2.2.5 Assessment against Critical Habitat criteria

Criteria

The CH determination refers to the evaluation of the area in question with respect to each of the five CH criteria defined in IFC PS 6 GN and the six defined in EBRD PR 6 GN. Each criterion is described in detail in paragraphs GN70–GN83 of IFC PS 6 GN and Section 3.7 of EBRD PR 6 GN as summarised in Tables 1 and 2 below. Definitions and quantitative thresholds for each criterion of the assessment in both guidance notes follow those set out in the IFC guidance as this is considered the most appropriate source by both IFC and EBRD at the time of writing:

Table 1: Critical Habitat Criteria as defined by IFC PS 6

Critical Habitat Criteria as defined by IFC PS 6	PS 6 Criterion Number
Critically Endangered (CR) and/or Endangered (EN) species	1
Endemic or restricted-range species	2
Migratory or congregatory species	3
Highly threatened and/or unique ecosystems	4
Key evolutionary processes	5

Table 2: Critical Habitat Criteria as defined by EBRD PR 6

Critical Habitat Criteria as defined by EBRD PR 6	PR 6 Criterion Number
Highly threatened and/or unique ecosystems	i
Habitats of significant importance to endangered or Critically Endangered species	ii
Habitats of significant importance to endemic or range restricted species	iii
Habitats supporting globally significant concentrations of migratory or congregatory species	iv
Areas associated with key evolutionary processes	v
Ecological functions that are vital in maintaining the viability of biodiversity features described (as critical habitat features)	vi

PS 6 Criterion 1 and PR 6 Criterion ii: Critically Endangered (CR) and/or Endangered (EN) Species

Species or areas supporting species threatened with global extinction and listed as Critically Endangered (CR) and Endangered (EN) on the IUCN Red List or local equivalent trigger CH under these criteria. The principal thresholds for triggering CH are:

- The EAAA contains "globally important concentrations" of an IUCN CR or EN species, defined as at least 0.5% of the global population AND over 5 reproductive units.
- Areas that support globally important concentrations of an IUCN Red-listed Vulnerable (VU) species, the loss of which would result in the change of the IUCN Red List status to EN or CR and meet the thresholds in (a).
- Is as appropriate, areas containing important concentrations of a nationally or regionally listed EN or CR species (providing the national/regional red lists are produced in accordance with IUCN standards and guidance).

PS 6 Criterion 2 and PR 6 Criterion iii: Endemic and/or Restricted-Range Species and Supporting Habitats

IFC GN6 - Paragraph 74 (2019) defines "endemic" as synonymous with "restricted range" species, and for terrestrial vertebrate and plant species, this criterion refers to species with a global range size of ≤ 50,000 km^2. In order to trigger CH under these criteria, the EAAA must contain ≥10% of the global population of such a species AND at least 10 reproductive units.

PS 6 Criterion 3 and PR 6 Criterion iv: Migratory or Congregatory Species and Supporting Habitats

Migratory species are defined as any species of which a significant proportion of its members cyclically and predictably move from one geographical area to another (including within the same ecosystem). Congregatory species are defined as species whose individuals gather in large groups on a cyclical or otherwise regular and/or predictable basis. Examples of Congregatory species are:

- Species that form colonies.
- Species that form colonies for breeding purposes and/or where large numbers of individuals of a species gather at the same time for non-breeding purposes (for example, foraging and roosting).
- Species that utilize a bottleneck site where significant numbers of individuals of a species occur in a concentrated period of time (for example, for migration).
- Species with large but clumped distributions where a large number of individuals may be concentrated in a single or a few sites while the rest of the species is largely dispersed (for example, wildebeest or Argali distributions).
- Source populations where certain sites hold populations of species that make an inordinate contribution to recruitment of the species elsewhere (especially important for marine species) (IFC PS 6 GN76-77).

Thresholds for these criteria as per IFC PS 6 GN78 are the following:

- Areas known to sustain, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle.
- Areas that predictably support ≥10 percent of the global population of a species during periods of environmental stress.

PS 6 Criterion 4 and PR 6 Criterion i: Highly Threatened or Unique Ecosystems

As per IFC PS 6 GN79, it is necessary to use the Red List of Ecosystems where formal IUCN assessments have been performed. Where formal IUCN assessments have not been performed, assessments may be made using systematic methods at the national/regional level, carried out by governmental bodies, recognized academic institutions and/or other relevant qualified organizations (including internationally recognized NGOs).

Thresholds for these criteria as per IFC PS 6 GN80 are the following:

- Areas representing ≥5 percent of the global extent of an ecosystem type meeting the criteria for IUCN status of CR or EN.
- Other areas, not yet assessed by IUCN, but determined to be of high priority for conservation by regional or national systematic conservation planning.

PS 6 Criterion 5 and PR 6 Criterion v: Key Evolutionary Processes

According to the GN81 of IFC PS 6, the structural attributes of a region, such as its topography, geology, soil, temperature, and vegetation, and combinations of these variables, can influence the evolutionary processes that give rise to regional configurations of species and ecological properties. In some cases, spatial features that are unique or idiosyncratic of the landscape have been associated with genetically unique populations or subpopulations of plant and animal species. Physical or spatial features have been described as surrogates or spatial catalysts for evolutionary and ecological processes, and such features are often associated with species diversification. By conserving species diversity within a landscape, the processes that drive speciation, as well as the genetic diversity within species, ensures the evolutionary flexibility in a system, which is especially important in a rapidly changing climate.

It should be noted that the IFC PS 6 GN provides qualitative guidance for assessing the projects against these criteria rather than quantitative thresholds, unlike PS 6 Criteria 1-4.

EBRD PR 6 Criterion vi: Ecological Functions that are Vital to Maintaining the Viability of the Biodiversity Features Described.

EBRD PR 6 describes this as "ecological functions without which critical biodiversity features could not persist." Examples of these are given as riparian zones and rivers, dispersal or migration corridors, hydrological regimes, seasonal refuges or food sources, keystone or habitat-forming species.

As with PR 6 Criterion v this item holds a qualitative threshold rather than a quantitative one, and as such the likelihood of triggering CH should be informed by survey data and the use of relevant expert opinions.

2.2.6 Assessment against Priority Biodiversity Feature Criteria

Four criteria relating to the determination of PBF are presented within EBRD PR 6. As noted above there are no quantitative thresholds stated within the guidance for the determination of PBF and as such background data, field data and expert opinion is used to complete a qualitative assessment. *Table 3* shows the criteria for defining PBFs with examples of each feature taken from the EBRD PR 6 guidance note.

Table 3: Priority Biodiversity Feature (PBF) Criteria as Defined by EBRD PR 6

Feature	PR 6 PBF Criterion Number
Threatened Habitats	1
Vulnerable Species	2
Significant biodiversity features identified by stakeholders or governments (e.g. IBAs or KBAs)	3
Ecological structure and functions that are vital to maintaining the viability of priority biodiversity features	4

Examples of threatened habitats are given as: Habitats considered under pressure by national, regional or international assessments. They include natural and priority habitats identified under Annex I of the EU Habitats Directive.

Examples of Vulnerable species are given as: Species listed by the IUCN or any other national/regional lists (e.g., national Red Lists or Red Data Books) as Vulnerable or equivalent (N.B. in Uzbekistan the Vulnerable tier is split into Vulnerable: Rare and Vulnerable: Declining). These include animal and plant species of community interest identified under the EU Habitats Directive (Annex II).

Examples of Significant biodiversity features are given as: Key Biodiversity Areas and Important Bird and Biodiversity Areas.

Examples of Ecological structure and functions needed to maintain the viability of priority biodiversity features are given as: Locations essential for priority biodiversity features, riparian zones and rivers, dispersal or migration corridors, hydrological regimes, seasonal refuges or food sources, keystone or habitat-forming species.

Criteria and conditions for determining Critical Habitat and Priority Biodiversity Features in line with EBRD Performance Requirement 6 are detailed below in *Table 4* (taken from EBRD Guidance Note 6, *EBRD 2022*).

Table 4: Criteria and conditions for identifying priority biodiversity features and critical habitats*

Criterion	Priority Biodiversity Feature	Critical Habitat
1. Priority ecosystems		
Threatened ecosystems (a) Habitats listed in Annex 1 of EU Habitats Directive (EU members only) or Resolution 4 of Bern Convention (signatory nations only) (b) IUCN Red-List EN or CR ecosystems	(PR6 para. 12-i) (a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention (b) EAAA** < 5% of the global extent of an *ecosystem* type with IUCN status of CR or EN	(PR6 para. 14-i) (a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive marked as "priority habitat type" (b) EAAA ≥5% of global extent of an ecosystem type with IUCN status of CR or EN (c) EAAA is ecosystem determined to be of high priority for conservation by national systematic conservation planning
2. Priority Species and their Habitats		
Threatened species (a) Species and their habitats listed in EU Habitats Directive and Birds Directive	(PR6 para. 12-ii) (a) EAAA for species and their habitats listed in Annex II of Habitats Directive, Annex I of	(PR6 para. 14-ii) (a) EAAA for species and their habitats listed in Annex IV of

(EU members only) or Bern Convention (signatory nations only) (b) IUCN Red List EN or CR species (c) IUCN Red List VU species (d) Nationally or regionally (e.g., Europe) listed EN or CR species	Birds Directive, or Resolution 6 of Bern Convention (b) EAAA supports < 0.5% of global population OR < 5 reproductive units of a CR or EN species. (c) EAAA supports VU species (d) EAAA for regularly occurring nationally or regionally listed EN or CR species	the Habitats Directive (See EU restrictions) (b) EAAA supports ≥ 0.5% of the global population AND ≥ 5 reproductive units of a CR or EN species (c) EAAA supports globally significant population of VU species necessary to prevent a change of IUCN Red List status to EN or CR, and satisfies threshold (b) (d) EAAA for important concentrations of a nationally or regionally listed EN or CR species
Range-restricted species	(PR6 para 12-ii) (a) EAAA for regularly occurring range-restricted species	(PR6 para. 14-iii) (a) EAAA regularly holds ≥ 10% of global population AND ≥ 10 reproductive units of the species***
Migratory and congregatory species	(PR6 para 12-ii) (a) EAAA identified per Birds Directive or recognized national or international process as important for migratory birds (esp. wetlands)	(PR6 para. 14-iv) (a) EAAA sustains, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population at any point of the species' lifecycle (b) EAAA predictably supports ≥10 percent of global population during periods of environmental stress

*Quantitative thresholds derived from IUCN Key Biodiversity Area Standard and aligned with International Finance Corporation's (IFC) Guidance Note 6 (rev. 2019)

**EAAA = *ecologically appropriate area of analysis*, as defined above

***The IUCN Key Biodiversity Areas standard cites the following definition for reproductive unit: "the minimum number and combination of mature individuals necessary to trigger a successful reproductive event at a site. Examples of five reproductive units include five pairs, five reproducing females in one harem, and five reproductive individuals of a plant species."

3 BASELINE ECOLOGICAL INFORMATION

3.1 Methods

The ecological baseline (habitat identification, floral survey, terrestrial fauna and avifauna survey) was established by undertaking site specific surveys within the Project area. These surveys were completed in Spring 2022, Autumn 2022 and Spring 2023and Autumn 2023 and included:

- Walkover transect survey for habitat assessment categorization and rare and endemic species of plants;
- Walkover transect surveys for mammals and reptiles. Trapping and camera trap surveys were also completed to determine the assemblage of small mammals with the Project site;
- Invertebrate surveys using a range of methods including active searching from transects and the deployment of pit-fall traps;
- Acoustic monitoring for bats completed from May to November 2023;
- Ornithological Survey consisting of Vantage Point (VP) surveys with methodology of such survey based on modified Nature Scot (formerly SNH) Guidelines. As stated in the ESIA the following hours of observation were completed from four VPs which offered comprehensive coverage of the airspace above the Project site. Cumulative survey hours were as follows:
    - Spring 2022 – Total Hours – 1668 hours, 0 minutes
    - Autumn 2022 – Total Hours – 2443 hours, 30 minutes
    - Spring 2023 – Total Hours – 2199 hours, 0 minutes
    - Autumn 2023 – Total Hours – 2468 hours, 0 minutes

The following sections present a brief synopsis of relevant baseline information pertinent to the determination of Critical Habitat, however the ESIA should be referred to for the full results of the baseline surveys completed at the Project site.

3.2 Results

3.2.1 Habitats and Flora

According to Olson et al (2001), the Project area is located in the Desert and Xeric Shrublands Biome and more specifically in the Ecoregion of Red Sea Coastal Desert. Applying the classification elaborated by Harhash et al. (2015) to the habitats found in the Project area, the whole Project area must be attributed to the main habitat system “Desert”. The vast majority of the Project area can be classified as “Hamada Desert” (Sub-System: “Plain Land”) that is crossed by wadis which belong to the Sub-System “Low Land”.

A total of fifteen plant species were identified in the Project site. The most abundant plant species were *Acacia tortilis* and *Tamarix nilotica* The Shannon-Weiner diversity index for plant species was 1.64, indicating a good level of diversity.

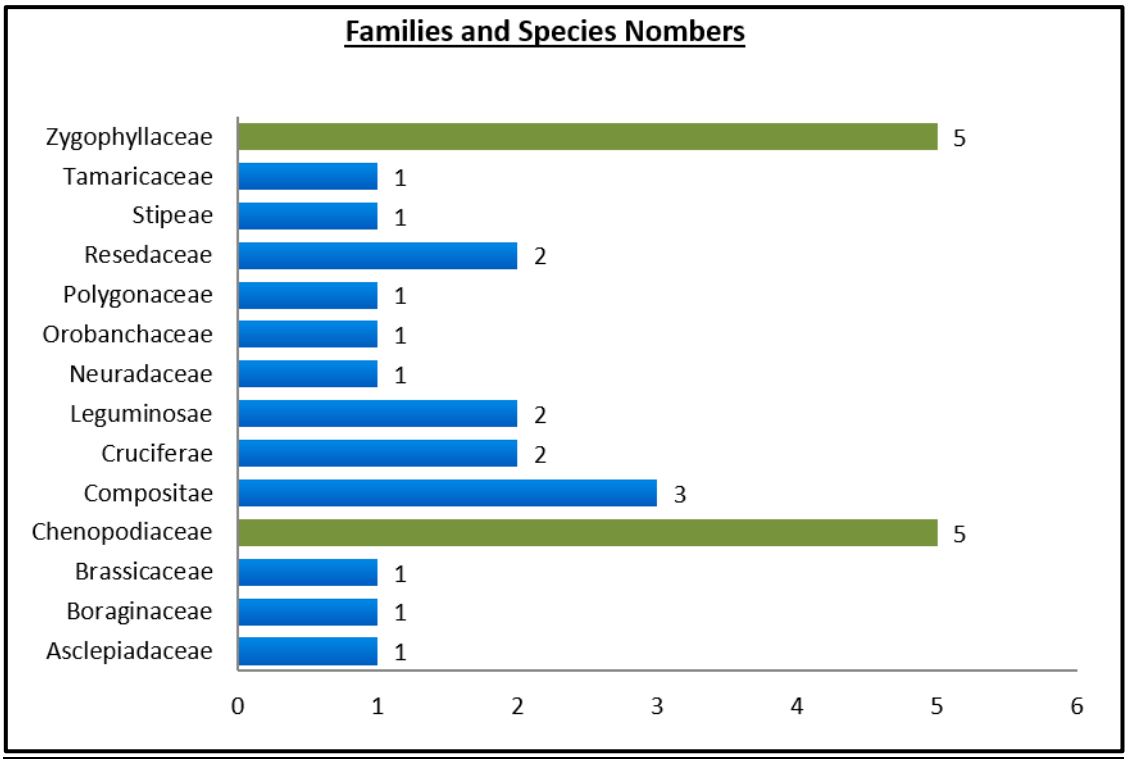

Figure 4: Plant Dominant Families recorded in the study area.

Flora species recorded showed no significant species concerning endemism or species under a specific threat or those of global or national conservation concern. The recorded plant and habitat community is very much a typical Red Sea coast community with no specific interests. The habitats on site are however considered to be Natural.

3.2.2 Mammals (excluding bats)

Based on the site surveys, two species of mammal were recorded on the site and these were:

- Arabian Red Fox (*Vulpes vulpes*) and,
- Lesser Egyptian Gerbil (*Gerbillus gerbillus*).

Lesser Egyptian Gerbil are typical species of the ecosystem present within the Project site and are all Least Concern. Red Fox is also quite common in Red Sea coast ecosystem and is also categorized by the IUCN as Least Concern.

3.2.3 Reptiles

Based on the site survey, the reptile taxa present within the Project site consisted of the following species:

- Egyptian Spiny-tailed Lizard (*Uromastyx aegyptia*),
- Red-spotted Lizard (*Mesalina rubropunctata*),
- Bosc's Lizard (*Acanthodactylus boskianus*),
- Pallid Agama (*Trapelus pallidus*),
- Steudner's Pigmy Gecko *(Tropiocolotes steudneri)* and,
- Elegant Gecko *(Stenodactylus sthenodactylus)*

The Egyptian Spiny-tailed Lizard is listed as being Vulnerable by the IUCN however of the remaining five species are not of global or national conservation concern.

3.2.4 Invertebrates

The invertebrate assemblage recorded within the Project area is typical for the habitats present and no species of national or international conservation concern were recorded.

3.2.5 Bats

No bat activity was recorded during the 60 full nights of survey completed to date. Probable Egyptian Tomb Bat (*Taphozous perforatus*) was recorded at a nearby site showing the possible presence of bats in very low numbers in and around the Project Area. It is therefore considered that the Project site is of not of significance for bat activity nor does it support landscape or habitat features that would be suitable for roosting.

3.2.6 Birds

Migration Surveys

In spring 2022, a total of 241,003 individuals of twenty-five species were recorded. In spring 2023, a total of 304,607 individuals of twenty-six species were recorded.

In autumn 2022, a total of 231,381 individuals of twenty species were recorded. In autumn 2023, a total of 234,193 individuals of twenty-three species were recorded.

The results of the 2022 and 2023 surveys are shown in the table below.

Table 5: Species Recorded during Vantage Point Monitoring in 2022 and 2023

Species	Scientific Name	IUCN Status	National Status	Spring 22	Spring 23	Autumn 22	Autumn 23
Levant Sparrowhawk	*Accipiter brevipes*	Least Concern	Passage migrant	16085	8565	40	1
Sparrowhawk	*Accipiter nisus*	Least Concern	Passage migrant	19	24	9	1
Eastern Imperial Eagle	*Aquila heliaca*	Vulnerable	Passage migrant	30	14	0	0
Steppe Eagle	*Aquila nipalensis*	Endangered	Passage migrant	1267	6859	28	27
Steppe Buzzard	*Buteo buteo vulpinus*	Least Concern	Passage migrant	15276	22645	59	32
Long-legged Buzzard	*Buteo rufinus*	Least Concern	Passage migrant / winter visitor	179	53	3	1
White Stork	*Ciconia ciconia*	Least Concern	Passage migrant	172359	221558	203147	211059
Black Stork	*Ciconia Nigra*	Least Concern	Passage migrant	782	1108	430	73
Short-toed Eagle	*Circaetus gallicus*	Least Concern	Passage migrant / summer breeder	123	143	4	1
Marsh Harrier	*Circus aeruginosus*	Least Concern	Passage migrant	69	45	85	59
Pallid Harrier	*Circus macrourus*	Near Threatened	Passage migrant /	16	1	11	11

Species	Scientific Name	IUCN Status	National Status	Spring 22	Spring 23	Autumn 22	Autumn 23
			winter visitor				
Montagu's Harrier	*Circus pygargus*	Least Concern	Passage migrant	10	6	32	16
Greater Spotted Eagle	*Clanga clanga*	Vulnerable	Passage migrant	21	6	0	0
Lesser Spotted Eagle	*Clanga pomarina*	Least Concern	Passage migrant	67	200	1	2
Lanner Falcon	*Falco biarmicus*	Least Concern	Passage migrant	2	1	1	1
Sooty Falcon	*Falco concolor*	Vulnerable	Passage migrant / summer breeder	2	1	0	4
Hobby	*Falco subbuteo*	Least Concern	Passage migrant	1	1	0	1
Kestrel	*Falco tinnunculus*	Least Concern	Passage migrant	91	97	35	17
Common Crane	*Gyps fulvus*	Least Concern	Passage migrant	2	6747	0	0
Griffon Vulture	*Gyps fulvus*	Least Concern	Passage migrant	0	2	0	0
Booted Eagle	*Hieraaetus pennatus*	Least Concern	Passage migrant	55	69	17	17
Black Kite	*Milvus migrans*	Least Concern	Passage migrant	5444	6064	322	149
Egyptian Vulture	*Neophron percnopterus*	Endangered	Passage migrant	51	51	8	5
Osprey	*Pandion haliaetus*	Least Concern	Passage migrant	14	5	6	2
White Pelican	*Pelecanus onocrotalus*	Least Concern	Passage migrant	21114	8590	20141	14375
Honey Buzzard	*Pernis apivorus*	Least Concern	Passage migrant	6213	21157	6618	8314
Raptor Sp.	*Raptor spp.*	-	-	44	189	144	2
Lesser Kestrel	*Falco vespertinus*	Least Concern	Passage migrant	0	0	0	2

Information relating to the number of birds recorded using the airspace of the Project site and their respective global populations is presented in the table below. Information is only included in the following table where the proportion of birds recorded at the Project site is over 1% of the global population. For those species not included in the table below their recorded populations do not exceed 1% of their global population.

Table 6: Recorded Populations as a Proportion of their Respective Global Populations

Species	IUCN Status	Global Population min	Global Population max	Peak Spring Passage	% of minimum global population	Peak Autumn Passage	% of minimum global population
Levant Sparrowhawk	Least Concern	10000	19999	16085	160.85	40	0.4

Species	IUCN Status	Global Population min	Global Population max	Peak Spring Passage	% of minimum global population	Peak Autumn Passage	% of minimum global population
Sparrowhawk	Least Concern	2000000	3200000	24	0.001	9	0.0005
Eastern Imperial Eagle	Vulnerable	2500	9999	30	1.2	0	0
Steppe Eagle	Endangered	50000	75000	6859	13.72	28	0.06
Steppe Buzzard	Least Concern	2000000	3500000	22645	1.13	59	0.003
Long-legged Buzzard	Least Concern	100000	499999	179	0.18	3	0.003
White Stork	Least Concern	700000	704000	221558	31.65	211059	30.15
Black Stork	Least Concern	24000	44000	1108	4.62	430	1.79
Short-toed Eagle	Least Concern	50000	99999	143	0.29	4	0.01
Marsh Harrier	Least Concern	600000	1100000	69	0.012	85	0.014
Pallid Harrier	Near Threatened	18000	30000	16	0.09	11	0.06
Montagu's Harrier	Least Concern	300000	550000	10	0.003	32	0.01
Greater Spotted Eagle	Vulnerable	3900	10000	21	0.54	0	0
Lesser Spotted Eagle	Least Concern	40000	60000	200	0.5	2	0.005
Lanner Falcon	Least Concern	67000	67000	2	0.003	1	0.0015
Sooty Falcon	Vulnerable	2800	4000	2	0.071	4	0.14
Hobby	Least Concern	900000	1500000	1	0.0001	1	0.0001
Kestrel	Least Concern	4300000	6700000	97	0.002	35	0.001
Common Crane	Least Concern	491000	503000	6747	1.37	0	0
Griffon Vulture	Least Concern	80000	900000	2	0.003	0	0
Booted Eagle	Least Concern	150000	195000	69	0.05	17	0.01
Black Kite	Least Concern	4000000	5700000	6064	0.15	322	0.009
Egyptian Vulture	Endangered	12400	36000	51	0.41	8	0.065
Osprey	Least Concern	100000	1200000	14	0.01	6	0.01
White Pelican	Least Concern	265000	295000	21114	7.97	20141	7.6
Honey Buzzard	Least Concern	290000	430000	21157	7.30	8314	2.9

Species	IUCN Status	Global Population min	Global Population max	Peak Spring Passage	% of minimum global population	Peak Autumn Passage	% of minimum global population
Lesser Kestrel	Least Concern	80000	134000	0	0	2	0.0025

* *Global populations taken from IUCN Red List and lower estimates of population sized have been used in this assessment*

[1] *– conservation status and global population of Common Buzzard (Buteo buteo) used*

Landing and Resting

Whilst many bird species migrate at night, the species of high collision risk, as recorded during diurnal surveys at this site, typically rest overnight along migrations route, with the exception of species such as the Lesser Kestrel and the Common Crane. Overnight resting may pose a risk of being predated and as such the terrestrial habitats such as deserts are not typically secure places for long -term resting. Resting behaviour is considered different to roosting which is where birds return to the same secure locations for longer-term stopover including for feeding, washing, preening or longer periods of rest/sleeping. Overnight or shorter-term resting may occur due to sudden changes in weather (e.g. rain or sandstorm, abrupt change in wind direction) that may disrupt birds during migration or a late flight in the evening. Birds will leave these resting areas as soon as conditions allow.

4 CRITICAL HABITAT ASSESSMENT

4.1 Introduction

The first stage of the CHA is to undertake a screening exercise where the species of conservation concern that have been recorded within the Project AoI or those considered to be potentially present are rapidly assessed against the thresholds for determination of CH.

CHA screening has been undertaken for all species considered present or potentially present within the Project AoI that are of global conservation concern; Critically Endangered, Endangered and Vulnerable. Species with a global conservation status of Near Threatened or below have been excluded from the CHA screening unless they have a significant national or regional conservation status.

4.2 Criterion 1 / ii, 2 / iii and 3 / iv

The species for which the screening exercise has been completed as well as the results of the screening against Criterion 1 / ii, 2 / iii and 3 / iv shown in *Table 8* below. Those species which are considered, at the screening stage, to potentially meet the CH thresholds or are of high international conservation concern are discussed later in this section.

Table 7: CHA Screening: Species requiring detailed consideration as part of CHA process

Common Name	IUCN Status	Notes	PS / PR 6 Criterion		
			1 / ii	2 / iii	3 / iv
Steppe Eagle	EN	Spring 2022 –1267 individuals Spring 2023 – 6859 individuals Autumn 2022 – 28 individuals Autumn 2023 - 27 individuals	Global population of between 50,000 and 75,000 individuals, meaning 250-375 individuals required to meet criteria. Spring peak in 2023 was 13.72% of global population. 53 individuals recorded roosting within the Project AoI in spring season 2023. **Criteria 1 is potentially triggered – further assessment required.**	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Global population of between 50,000 and 75,000 individuals, meaning 1% population threshold is between 500 and 750 birds (with respect to migration). Spring peak in 2022 was 2.53% and in 2023 was 13.72% of global population. Autumn peaks in 2022 and 2023 were between 0.06 and 0.05% respectively 53 individuals recorded roosting within the Project AoI in spring season 2023. **Criteria 3 is potentially triggered – further assessment required.**
Eastern Imperial Eagle	VU	Spring 2022 – 30 individuals Spring 2023 – 14 individuals Autumn 2022 and 2023 – 0 individuals	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from VU to CR / EN. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Global population of between 2,500 and 9,999 individuals, meaning 1% population threshold is between 25 and 99 birds (with respect to migration). Spring peaks in 2022 and 2023 were 1.2% and 0.56% of global population respectively. Species not recorded roosting within the Project AoI, in either the spring or autumn migration seasons. **Criteria 3 is potentially triggered – further assessment required.**

Common Name	IUCN Status	Notes	PS / PR 6 Criterion		
			1 / ii	2 / iii	3 / iv
Greater Spotted Eagle	VU	Spring 2022 – 21 individuals Spring 2023 – 6 individuals Autumn 2022 and 2023- 0 individuals	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from VU to CR / EN. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Global population of between 3900 and 10,000 individuals, meaning 1% population threshold is between 39 and 100 birds (with respect to migration). Spring peak in 2022 was 0.54% of global population Criterion 3 not met, no further assessment required.
Seven other species of migratory soaring bird (MSB) were also recorded in numbers greater than 1% of global population levels, all of which are categorised by the IUCN as being of Least Concern. These species are however considered within the CH Screening Table due to the number of birds recorded and that these individuals, in some cases, make up a significant proportion of their respective global population including those utilising the Red Sea – Rift Valley Flyway. For these MSB thresholds for assessment have been calculated against the lower global population estimates. These MSBs are considered within the CH screening table against Criteria 3 / iv as significant numbers of MSB could potentially trigger the thresholds for sites that are of importance for congregatory activity.					
White Stork	LC	Spring 2022 – 172,359 individuals Spring 2023 – 221,558 individuals Autumn 2022 – 203,147 individuals Autumn 2023 – 211,059 individuals 9,505individuals recorded roosting during spring migration	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Lower bound of global population is 700,000 individuals, meaning 1% threshold is 7,000 birds. Spring peaks in 2022 and 2023 were 24.6% and 31.65 respectively. Autumn peaks in 2022 and 2023 were 29% and 30% respectively A peak of 9,505 individuals were recorded 'resting' within the Project area across spring migration 2023 which is 1.35% of the global population. **Criteria 3 is potentially triggered – further assessment required.**

Common Name	IUCN Status	Notes	PS / PR 6 Criterion		
			1 / ii	2 / iii	3 / iv
Black Stork	LC	Spring 2022 – 782 individuals Spring 2023 – 1108 individuals Autumn 2022 – 430 individuals Autumn 2023 – 73 individuals	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Lower bound of global population is 24,000 individuals, meaning 1% threshold is 240 birds. Spring peaks in 2022 and 2023 were 3.26% and 4.9% respectively. Autumn peaks in 2022 and 2023 were 1.79% and 0.3% respectively. Recorded in low peak numbers on the ground in spring migration season. **Criteria 3 is potentially triggered – further assessment required.**
Great White Pelican	LC	Spring 2022 – 21,114 individuals Spring 2023 – 8590 individuals Autumn 2022 – 20,141 individuals Autumn 2023 – 14,375 individuals	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU. Criteria 1 not met and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Lower bound of global population is 265,000 individuals, meaning 1% threshold is 2,650 birds. Spring peaks in 2022 and 2023 were 7.97% and 3.24% respectively. Autumn peaks in 2022 and 2023 were 7.6% and 5.42% respectively. 1365 individuals recorded roosting during Sping survey which is 0.5% of the world population. **Criteria 3 is potentially triggered – further assessment required.**

Common Name	IUCN Status	Notes	PS / PR 6 Criterion		
			1 / ii	2 / iii	3 / iv
Common Crane	LC	Spring 2022 – 22 individuals Spring 2023 – 6747 individuals Autumn 2022 and 2023 – 0 individuals	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU. Criteria 1 not met and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required	Lower bound of global population is 491,000 individuals, meaning 1% threshold is 4,910 birds. Spring peaks in 2022 and 2023 were 0% and 1.37% respectively. No birds were seen in Autumn 2022 or 2023 Not recorded on the ground in spring or autumn migration seasons. **Criteria 3 is potentially triggered – further assessment required.**
European Honey Buzzard	LC	Spring 2022 – 6213 individuals Spring 2023 – 21,157 individuals Autumn 2022 – 6618 individuals Autumn 2023 8314 individuals	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Lower bound of global population is 290,000 individuals, meaning 1% threshold is 2,900 birds. Spring peaks in 2022 and 2023 were 2.14% and 7.3% respectively. Autumn peaks in 2022 and 2023 were 2.28% and 2.87% respectively. Recorded on the ground in low numbers during spring and autumn migration seasons. **Criteria 3 is potentially triggered – further assessment required.**

Common Name	IUCN Status	Notes	PS / PR 6 Criterion		
			1 / ii	2 / iii	3 / iv
Steppe Buzzard	LC	Spring 2022 – 15,276 individuals Spring 2023 – 22,675 individuals Autumn 2022 – 59 individuals Autumn 2023 – 32 individuals	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Lower bound of global population is 2,000,000 individuals, meaning 1% threshold is 20,000 birds. Spring peaks in 2022 and 2023 were 0.76% and 1.13% respectively. Levels of bird activity recorded in the autumn migration seasons were well below the 1% threshold. Recorded on the ground in relatively low numbers during spring and autumn migration seasons. **Criteria 3 is potentially triggered – further assessment required.**
Levant Sparrowhawk	LC	Spring 2022 – 16,085 individuals Spring 2023 – 8565 individuals Autumn 2022 – 40 individuals and 2023 – 1 individual	Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered - no further assessment required.	Lower bound of global population is 10,000 individuals, meaning 1% threshold is 100 birds. Given a larger number of birds were seen than the lowest global population estimate we use the upper estimate of global population for this assessment. Spring peaks in 2022 and 2023 were 80.43 % and 42.8 % respectively. Autumn peaks in 2022 and 2023 were 0.42% and 0.05% respectively Not recorded on the ground in spring or autumn migration seasons.

Common Name	IUCN Status	Notes	PS / PR 6 Criterion		
			1 / ii	2 / iii	3 / iv
					Criteria 3 is potentially triggered – further assessment required.
Egyptian Spiny-tailed Lizard	VU	Recorded on site in low numbers with up to 0.7 burrows per km^2 recorded across the site and a peak of 7-10 per km2	Global population size has not been quantified however its range is widespread (extending well over 3,000,000km^2). Species is VU and any unmitigated impacts are unlikely to result in elevation from VU to EN or CR. Criteria 1 not met, and no further assessment required.	Global population resulting in a large EOO so not range restricted. Criteria 2 is not triggered – no further assessment required.	Criteria 3 not applicable to this species, and no further assessment required.

4.3 Criterion 4 (PS6) - Highly threatened and/or unique ecosystems & PR 6 Criterion 1 – Threatened ecosystems

According to Olson et al (2001), the Project Area is in the Desert and Xeric Shrublands Biome and more specifically in the Ecoregion of Red Sea Coastal Desert. Applying the classification elaborated by Harhash et al. (2015) to the habitats found in the project area during site visits and field surveys the whole project area must be attributed to the main habitat system "Desert". The vast majority of the Project Area can be classified as "Hamada Desert" (Sub-System: "Plain Land") that is crossed by "Valleys and Canyons" (i.e. wadis) which belong to the Sub-System "Low Land", which is characterized by very scattered vegetation cover that is limited sparsely to wadis.

This evaluation of the primary habitats across Red Sea suggests that there are none that meet the Criterion, and has also been reviewed against definitions for IFC PS 6 Criterion 4/ EBRD PR 6 Criterion 1 and relevant Red List of Threatened Ecosystem categories (i.e. CR, EN) (*Table 9*).

Table 8: Summary of assessment of habitats in the project site against Criterion IFC 4 / EBRD 1

Habitat – Hamada Desert	
Definition	**Assessment**
Risk of significantly decreasing in area or quality	The industrial development in the region might decrease the extent and the quality of some shrub patches, but, given the wide distribution of this vegetation type, it is not currently considered to be at significant risk
Small spatial extent	The habitat is widespread
Containing unique assemblages of species including assemblages or concentrations of biome-restricted species (fine scale)	The vegetation type does not support unique assemblages or concentration of biome-restricted species
Red List of Threatened Ecosystems	**Assessment**
Reduction in geographic distribution	The ecosystem is expansive and is not believed to be facing any reduction in distribution
Restricted geographic distribution	The habitat is widespread
Environmental degradation	Wind farm development might lead to habitat degradation, but this will be limited to individual projects elements and is not believed to lead to large-scale degradation of the ecosystem
Disruption of biotic processes or interactions	No evidence

Based on the above, it can be concluded that the Project area thus does not trigger CH under IFC PS 6 Criterion 4/ EBRD PR 6 Criterion 1.

4.4 Criterion 5 (PS6) – Areas Associated with Key Evolutionary Processes

This criterion is defined by the physical features of a landscape that might be associated with particular evolutionary processes, and/or subpopulations of species that are phylogenetically or morpho-genetically distinct and may be of special conservation concern given their distinct evolutionary history (IFC 2012b, paragraph GN95).

Although key evolutionary processes may operate at various spatial scales, in the sense of PR6/PS6 these are usually considered at a relatively fine scale rather than broad biogeographic regions (e.g. an individual mountain that may have acted as a glacial refugium and thus hosted the evolution of a suite of endemic species). No quantitative significance thresholds exist for this criterion, so there is a reliance on expert opinion and qualitative value judgement. Areas associated with key evolutionary processes were screened using expert advice.

Given the very sparse vegetation, composed mainly of widespread desert plant species with limited evidence of local endemism, and the low density of animal species, it is very unlikely that any key evolutionary processes could occur in the Project area. Therefore, the Project area does not qualify for Criterion v/5.

4.5 Determination of Critical Habitat

4.5.1 Criteria 1 / ii

Steppe Eagle (13.7% of global population in Spring) and Egyptian Vulture (2.1% of global population in Spring) reached greater than 0.5% of the global population for a Critically Endangered or Endangered species. Whilst the majority of Steppe Eagle were recorded flying through the area the site is within the Gebel El Zeit IBA/KBA. The protected site is designated for migratory soaring birds due to its importance as a stopover feature and its location allowing the shortest crossing of the Gulf of Suez. The migratory/congregatory species criterion described in the CHA section of IFC PS6 and EBRD PR6 is intended to trigger a CH determination only in areas that host continentally significant concentrations of migration activity. In many cases, these sites have already been designated as Important Bird Areas (IBAs) based on the KBA criteria and thresholds. Accordingly, the EAAA for the species is considered to be the boundary of the protected site. This EAAA boundary is discrete and focuses on a key part of the broad and long migration flyway and accordingly considered appropriate. No data is available for the protected site and so data from both the project itself and the wider vicinity are considered.

Wider vicinity data (as presented within the CEA includes eight further wind project sites and freely available international data sets) has been checked to show the impact of assessing the project using peak count data from projects through the vicinity as an indication of species that could pass through the area, and accordingly pass through the EAAA in some years. This leads to a maximum potential of up to 37.59% of the worlds Steppe Eagle Population and up to 3.19% of the worlds Egyptian vulture population passing through the region. Both species are already assessed using numbers higher than the CH threshold however the use of the site does not change (only Steppe Eagle are present interacting with the land) and so the assessment overall is not changed.

Given the significant association between the terrestrial habitats present within the Project site and this species, CH is triggered for Steppe Eagle.

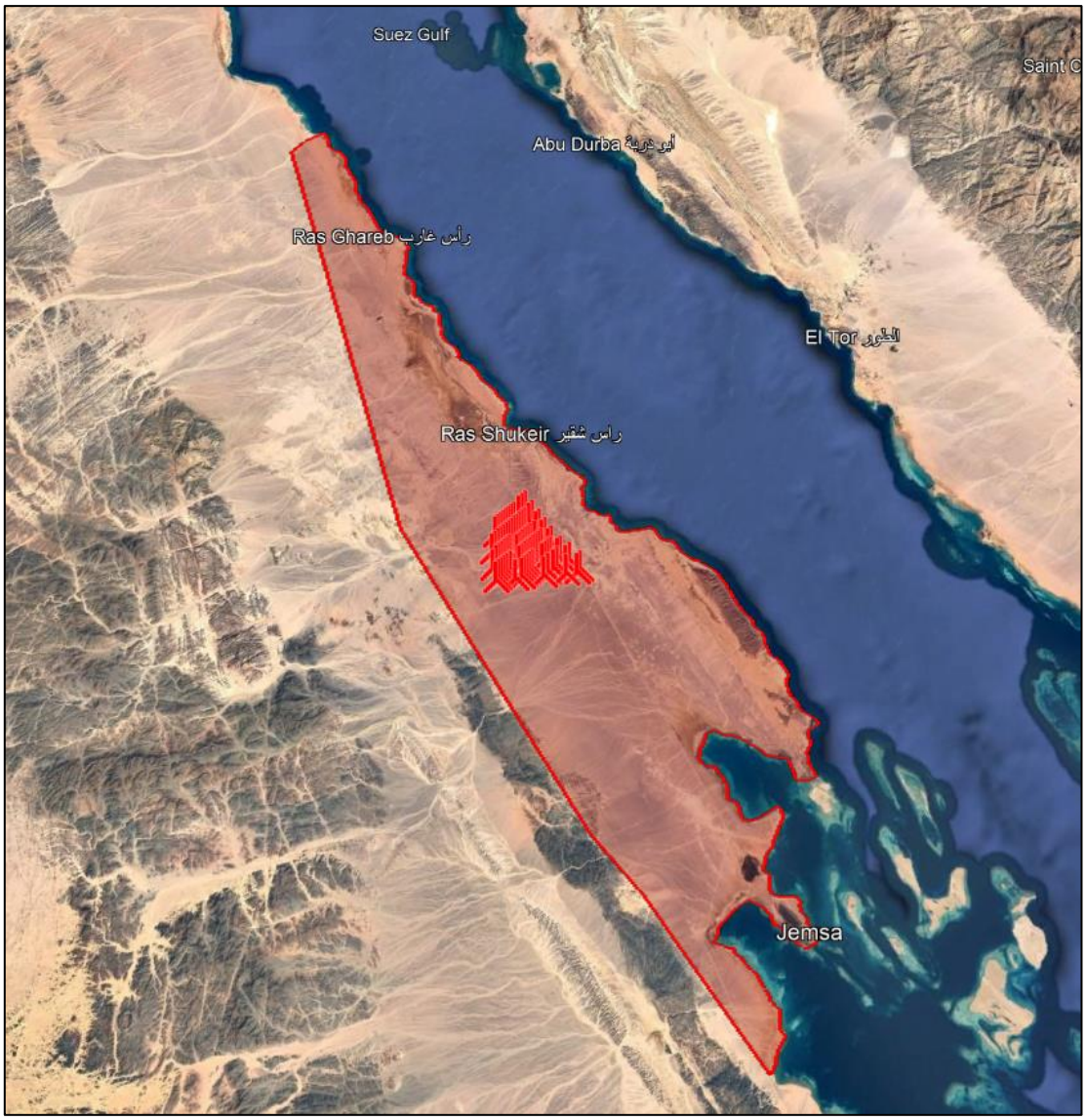

Figure 5: EAAA of Steppe Eagle outlined by the boundary of the Gebel El Zeit KBA/IBA showing the proposed wind farm

4.5.2 Criteria 2 / iii

Site specific surveys did not record any species that are considered to be endemic or range-restricted and as such thresholds for Criteria 2 are not met.

4.5.3 Criteria 3 / iv

Criteria 3 / iv is for migratory and congregatory species and as discussed in the assessment methodology Critical Habitat can only be determined under this Criteria for sites that support populations in excess of their thresholds. Multiple migratory soaring bird (MSB) species were recorded in excess of the threshold of 1% of global populations. These include Levant Sparrowhawk (80% in spring), Eastern Imperial Eagle (1.2% in spring), Steppe Eagle (13.7% in spring), Steppe Buzzard (1.1% in spring), White Stork (31.7% in spring and 30.2% in autumn), Honey Buzzard (7.3% in spring and 2.9% in autumn), Black Stork (4.6% in spring and 1.8% in autumn), Common Crane (1.4% in spring and 7.6% in autumn) and White Pelican (8.0% in spring and 7.6% in autumn).

Sites must be of critical importance for this species and airspace is not considered to be of critical importance unless it is at bottleneck sites such as due to the presence of landscape features which 'funnel' flocks of soaring birds, or other important points along migration routes (e.g. sea crossing

points). Sites are also considered important under this criterion where large aggregations of birds are present during key parts of their life cycle (e.g. stopover sites for roosting and feeding). The migratory/congregatory species criterion described in the CHA section of IFC PS6 and EBRD PR6 is intended to trigger a CH determination only in areas that host continentally significant concentrations of migration activity. In many cases, these sites have already been designated as Important Bird Areas (IBAs) based on the KBA criteria and thresholds.

Where the EAAA for all migratory soaring birds for this project is considered to be the IBA/ KBA as described above, given the significant association between the terrestrial habitats present within the Project EAAA and these species, CH is triggered for Levant Sparrowhawk, Eastern Imperial Eagle, Steppe Eagle, Steppe Buzzard, White Stork, Honey Buzzard, Black Stork, Common Crane and White Pelican.

It is important to consider that no data is available for the protected site and so data from both the project itself and the wider vicinity are considered.

Wider vicinity data (as presented within the CEA includes eight further wind project sites and freely available international data sets) has been checked to show the impact of assessing the project using peak count data from projects through the vicinity as an indication of species that could pass through the area, and accordingly pass through the EAAA in some years. This leads to a maximum potential of up to Eastern Imperial Eagle (2.92%), Steppe Eagle (37.59%), Steppe Buzzard (4.12%), White Stork (31.65%), Honey Buzzard (12.21%), Black Stork (15.31%), Common Crane (2.44%) and White Pelican (11.70%).

All species other than Black Stork are already assessed using numbers higher than the CH threshold however the use of the site for this species does not change (as it does not interact with the land) so the assessment overall is not changed.

It is worth noting at this stage that although Black Stork is not considered to trigger CH the residual impact from the project on the species is zero and the positive offsetting associated with White Stork will also have a positive impact on this species.

4.6 Priority Biodiversity Features

4.6.1 PBF Criterion 1: Threatened habitat

Earlier assessment undertaken at the project site and the study area as a whole did not identify any vegetation or ecosystems present in the vicinity of the Project that might be threatened. Therefore, no vegetation type qualifies for Criterion 1 under Priority Biodiversity Features.

4.6.2 PBF Criterion 2 - Threatened species, Range-restricted species, or Congregatory/Migratory species

Birds

One globally Vulnerable species (not already covered above by triggering CH) is seasonally present over the Project area and would also **qualify as a PBF** - Greater Spotted Eagle (Vulnerable with a minimum of 0.54% of the estimated global population recorded during surveys). This species was not recorded staging or concentrated in numbers that would trigger critical habitat however was recorded on passage in the airspace above and therefore the Project will operate with the aim of avoiding all impacts to this species during its lifespan, and therefore achieve no net loss.

Reptiles

One globally Vulnerable reptile species has been found to be present in the Project area and is thus **identified as a PBF** – *Uromastyx aegyptia* (Egyptian Spiny-tailed Lizard).

The Egyptian Spiny–tailed Lizard has a patchy distribution from Egypt (east of the Nile), eastwards into Israel, Jordan, southern Syria, Iraq and Iran and southwards into the Arabian Peninsula. It occurs in open, flat, gravelly, stony and rocky areas, and it is infrequently seen in sandy areas. Animals forage on low vegetation close to their burrows, where it lives in loose colonies.

There is no published information about the global population, but the species is generally uncommon and declining throughout its range in Egypt. The species is threatened by habitat loss due to over-grazing, quarries and agricultural expansion, and pet and medicinal trade (some of them being illegal). The species is protected by Egyptian legislation (Wilms et al. 2012), implying that it cannot be killed or captured in any protected area.

During the ecological field assessments that were carried out at the project site, the species was recorded along with its burrows Despite its broad distribution, the Egyptian Spiny-tailed Lizard is assessed globally as Vulnerable, declining throughout its range, and poorly-known, and thus **considered a Priority Biodiversity Feature.**

Range Restricted Species

Surveys and literature searches have not identified any range restricted species present within the Project Area therefore **PBF for this criterion would not be triggered.**

Migratory/Congregatory Species

Information pertaining to the importance of the Project site for migratory and congregatory species has been previously discussed and they are considered to be **Priority Biodiversity Features** and the requirements for no net loss should be met.

5 MITIGATION AND FUTURE MANAGEMENT

5.1 General

Direct impacts from the construction of the Project include minor loss of natural habitats and the potential of killing / injuring Egyptian Spiny-tailed Lizard. Disturbance impacts to bird species that are 'resting' within the Project area during the construction period are also possible as are possible direct and indirect impacts to mammal species present within the Project area.

Operational impacts of the project are on species of MSB through the collision with turbines and associated infrastructure and potential of a barrier impact, particularly in combination with other project in the region. All mitigation and monitoring will need to be included in a Biodiversity Action Plan which will also need to include a robust Adaptive Management Strategy should the results of monitoring indicate an impact on species.

For areas of Natural Habitat, the bird, mammal and reptile species that qualify as PBFs, the Project will need to achieve at least no net loss for PBFs over the lifespan of the scheme, and measures to achieve this will be set out in the Biodiversity Management Plan.

In addition, this should eventually be integrated within the on-demand turbine shutdown and fatality monitoring as part of the Active Turbine Management Plant (ATMP) that is already being implemented in the region as a whole.

In addition, with reference to the Egyptian Spiny-tailed Lizard it is likely that mitigation to ensure that animals are not killed during construction will involve actions such as marking known burrows, avoidance, or capture and movement to holding areas/translocation receptor areas. Full details of the management for this species will be included in a Biodiversity Management Plan.

5.1.1 Biodiversity Action Plan (BAP) and Biodiversity Management Plan (BMP)

As the Project has triggered the thresholds for Critical Habitat the Project will require a Biodiversity Action Plan (BAP) in order to meet Lender requirements. The Project will detail all relevant construction mitigation measures as well as habitat restoration and operational mitigation and enhancement measures for all CH and PBF species. The measures detailed in the Construction and Operational BAP will ensure that the objectives of No Net Loss for PBF species and the requirements of Net Gain for CH qualifying species are met. The Operational documents will also include all measures included in the Active Turbine Management Plan (ATMP) to prevent collision events with operational turbines. The ATMP will be further revised based on further Project relevant surveys and monitoring as well as those completed for other Projects in the region. This will include utilising data to highlight elevated risk situations (e.g. weather and wind patterns, presence of livestock).

The Operational BAP will also include a robust Biodiversity Monitoring Evaluation Plan (BMEP) which will also details of Post Construction Fatality Monitoring and reporting and monitoring of any restorative actions which may be required.

PS6 describes measures a project should follow if it is 'located within' (usually interpreted as 'having any direct or indirect impacts upon') a PA or IRA, specifically:

- Demonstrating that the proposed development in such areas is legally permitted;
- Following any protected area management plan;
- Consultation with relevant managers, Affected Communities, Indigenous Peoples and other stakeholders; and
- Implementation of additional activities to "promote and enhance the conservation aims and effective management of the area"

Prior to the production of the operational BAP a feasibility study will be undertaken to help determine what measures may be implemented in order to achieve demonstrable net gains for CH species. Initial measures that could be considered as part of this wider compensation or off-setting package could include:

- Supporting monitoring and conservation at Batumi, Georgia (Levant Sparrowhawk, Pallid Harrier, Greater Spotted Eagle, Steppe Eagle, Booted Eagle).
- Wetland restoration and nest protection, Polesia (Black Stork, Greater Spotted Eagle and Common Crane)
- Retrofitting of power lines in Egypt (White Stork, Black Stork, Great White Pelican and Common Crane)
- Retrofitting of power lines in Portugal (Egyptian Vulture, White Stork, Black Stork, Booted Eagle, and Common Crane).
- Other possibilities include: Protected area expansion, Anti-poisoning campaign, Retrofitting Power lines (Africa); Captive breeding programmes, protecting breeding habitat (Europe)

Whilst the exact option has not yet been chosen it is important to consider that it would be a sensible time to discuss these options on a regional level and in conjunction with other possible developments in the area, working with projects that can take packages from more than one site in a joined-up approach and provide a combined benefit for birds at the flyway scale.

6 SUMMARY

Critical Habitat has been triggered for a number of MSBs at this project and there are also a number of PBFs that will need to be safeguarded during the construction and operational phase to ensure net gain / no net loss of these features.

CH species will be discussed within a Biodiversity Action Plan that will be designed to endure net gain is achieved as part of this project.

There are species of bird and reptile that are considered to be PBFs and mitigation and monitoring for these species will be included in a Biodiversity Management Plan.

Monitoring will need to be completed to ensure net gain / no net loss of PBFs during the operational phase.

Pre-clearance and pre-construction surveys, at appropriate times of the year, will need to be completed to establish presence/absence in proposed works areas and if mammals and reptiles are found to be present in these areas or considered likely to occur in these areas during construction, additional mitigation (e.g. limited translocation to a suitable receptor site) will be required.