

# CRITICAL HABITAT ASSESSMENT (CHA)

## SUEZ Wind Energy BOO Wind Power Plant 1.1. GW – SWE North (PLOT 1)

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**TABLE OF CONTENTS**

**Table of Contents** ..... **iv**

**List of Figures** ..... **v**

**List of Tables** ..... **vi**

**1. Introduction** ..... **1**

    1.1 Background ..... 1

    1.2 Purpose of Report ..... 1

    1.3 The Project Site and Study Area ..... 1

**2. Assessment Framework and Methodologies** ..... **4**

    2.1 Frameworks ..... 4

    2.2 Assessment Methods ..... 5

    2.3 Assessment against Priority Biodiversity Feature Criteria ..... 9

**3. Baseline Ecological Information** ..... **12**

    3.1 Methods ..... 12

    3.2 Results ..... 12

**4. Critical Habitat Assessment** ..... **18**

    4.1 Introduction ..... 18

    4.2 Criterion 1 / ii, 2 / iii and 3 / iv ..... 18

    4.3 Criterion 4 (PS6) - Highly threatened and/or unique ecosystems & PR 6 Criterion 1 – Threatened ecosystems ..... 25

    4.4 Criterion 5 (PS6) – Areas Associated with Key Evolutionary Processes ..... 25

    4.5 Determination of Critical Habitat ..... 26

    4.6 Priority Biodiversity Features ..... 28

**5. Mitigation and future management** ..... **30**

    5.1 General ..... 30

**6. Summary** ..... **31**

**LIST OF FIGURES**

Figure 1: Plot 1 Project Site.....2

Figure 2: Project Site in relation to Gebel El Zeit IBA and Red Sea Flyway .....3

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

Figure 4: EAAA of White Stork showing the location of the KBA/IBA and roosting area with buffer within the survey area and showing the proposed wind farm .....28

**LIST OF TABLES**

Table 1:Critical Habitat Criteria as defined by IFC PS 6 .....7

Table 2:Critical Habitat Criteria as defined by EBRD PR 6 .....7

Table 3: Priority Biodiversity Feature (PBF) Criteria as Defined by EBRD PR 6 .....9

Table 4:Criteria and conditions for identifying priority biodiversity features and critical habitats\* .....10

Table 5:Species Recorded during Vantage Point Monitoring in during 2022 and 2023.....14

Table 6:Recorded Populations as a Proportion of their Respective Global Populations.....15

Table 7:CHA Screening: Species requiring detailed consideration as part of CHA process .....19

Table 8:Summary of assessment of habitats in the project site against Criterion IFC 4 / EBRD 1 .....25

## 1. INTRODUCTION

### 1.1 Background

A consortium composed of ACWA Power and Hassan Allam Utilities B.V (hereafter referred to as the ‘**Developer**’) is proceeding with developing a new wind power plant project (Suez Wind Energy – SWE) with a capacity of 1,100MW under the BOO scheme. SWE will be developed over two (2) Plots – the first located within the northern parts of the Gulf of Suez (hereafter referred to as ‘**Plot 1**’) and the second located within the southern parts of the Gulf of Suez (hereafter referred to as ‘**Plot 2**’).

Given that Plot 1 and Plot 2 are located at a distance from each other (more than 50 km apart) they will be treated as two (2) separate projects. This will include submission of an ESIA study for each plot separately as well as a Critical Habitat Assessment (CHA) report.

This report presents the CHA for Plot 1.

### 1.2 Purpose of Report

This report details the Critical Habitat Assessment (CHA) for PLOT 1, Egypt 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).

### 1.3 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 174 km to the southeast of the capital city of Cairo. The nearest town is Ras Gharib which is located 18 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 1,500 MW and covers 300 km<sup>2</sup>, with the ACWA Plot 1 Wind Farm proposed to occupy approximately 135.0 km<sup>2</sup> 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 12 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 spring 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 1 Project Site



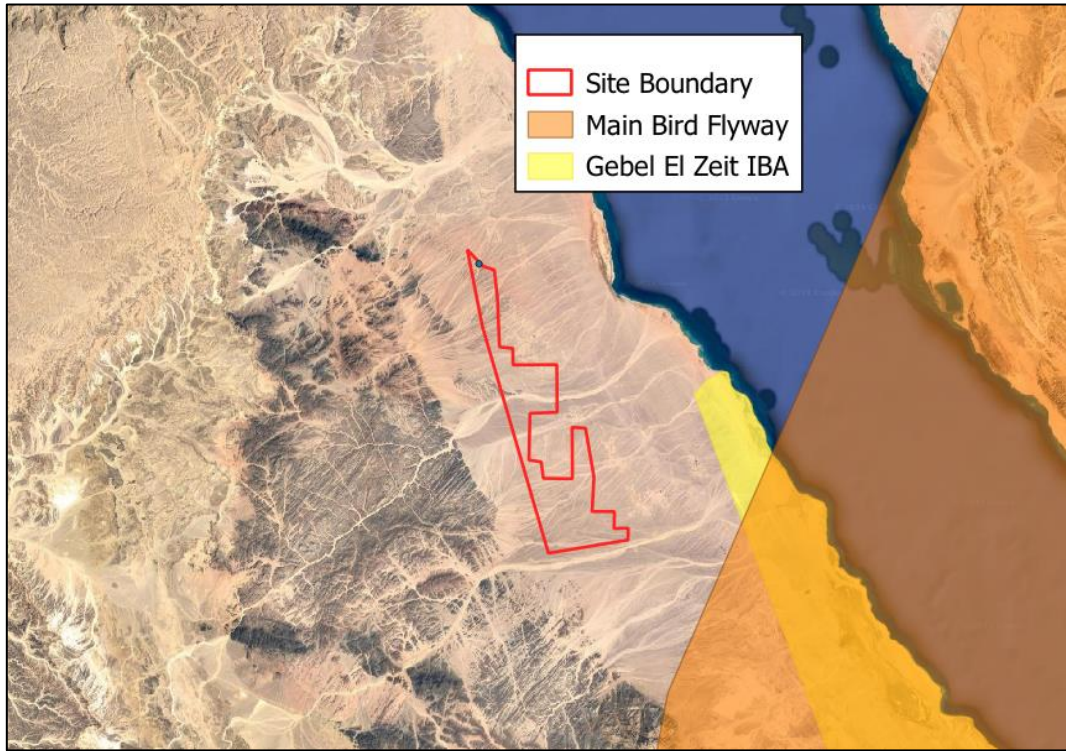


Figure 2: Project Site in relation to Gebel El Zeit IBA and Red Sea Flyway

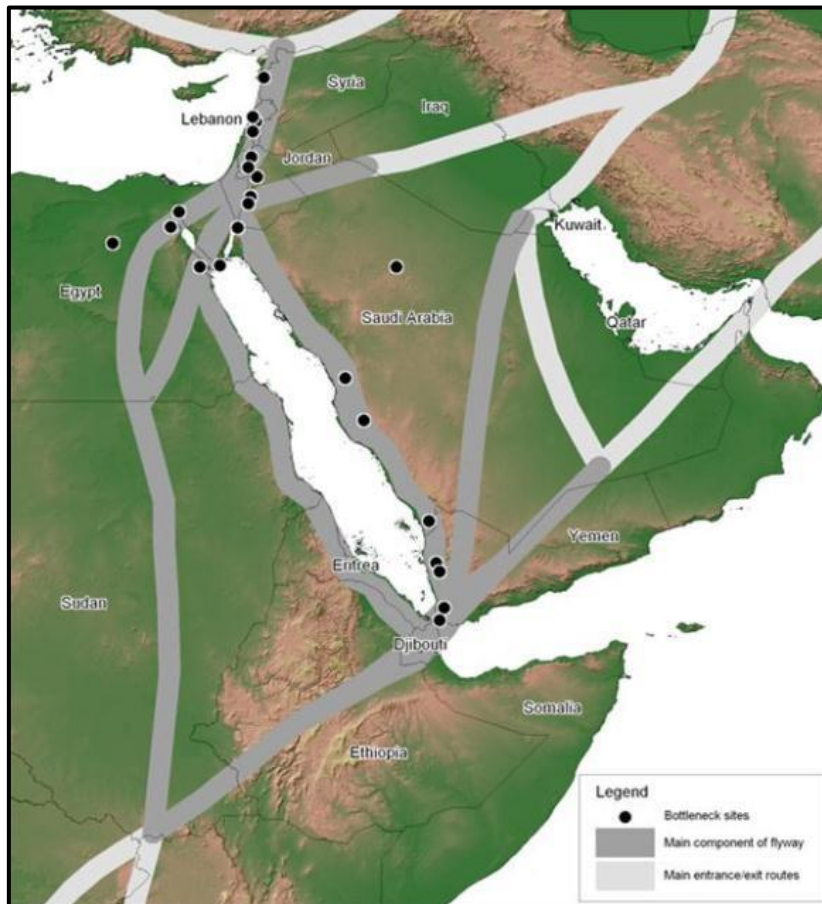


Figure 3: Map of the main elements of the Rift Valley/Red Sea flyway showing key bottleneck sites (Source: Bird Life International)

## 2. ASSESSMENT FRAMEWORK AND METHODOLOGIES

### 2.1 Frameworks

#### 2.1.1 General

Standards for the IFC and EBRD performance standards/requirements are detailed below. Although Project could include other potential lenders (e.g. Proparco and JICA) however such other lenders 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); Bird Life International Migratory Soaring Birds toolkit ([Migratory Soaring Birds Tool V3 \(birdlife.org\)](https://www.birdlife.org/resources/migratory-soaring-birds-toolkit)); 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, 2023). 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 & Zydalis 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. While this area does have significant concentrations of migratory activity, it does not have birds landing to roost in numbers that would exceed the CH criterion threshold. In many cases, these sites have already been designated as IBAs based on the KBA criteria and thresholds<sup>1</sup>.

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 135km<sup>2</sup> 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)).

### **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

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<sup>1</sup> Memorandum Determining Biodiversity Management Requirements Related to Airspace around Wind Energy Facilities (EBRD, June 2023)

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.

### 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 **Error! Reference source not found.** and **Error! Reference source not found.** 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  $\leq 50,000 \text{ km}^2$ . In order to trigger CH under these criteria, the EAAA must contain  $\geq 10\%$  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,  $\geq 1$  percent of the global population of a migratory or congregatory species at any point of the species’ lifecycle.
- Areas that predictably support  $\geq 10$  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  $\geq 5$  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.

## **2.3 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. **Error! Reference source not found.** 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**

| <b>Feature</b>   | <b>PR 6 PBF Criterion Number</b> |
|--|----------------------------------|
| 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 **Error! Reference source not found.** (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   |
|--|--|--|
| <b>Priority ecosystems</b>   |  |  |
| Threatened ecosystems  | (PR6 para. 12-i)   | (PR6 para. 14-i)   |
| Habitats listed in Annex 1 of EU Habitats Directive (EU members only) or Resolution 4 of Bern Convention (signatory nations only)            | EAAA is habitat type listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention   | EAAA is habitat type listed in Annex 1 of EU Habitats Directive marked as “priority habitat type”  |
| IUCN Red-List EN or CR ecosystems  | EAAA** < 5% of the global extent of an ecosystem type with IUCN status of CR or EN   | EAAA ≥5% of global extent of an ecosystem type with IUCN status of CR or EN<br><br>EAAA is ecosystem determined to be of high priority for conservation by national systematic conservation planning |
| <b>Priority Species and their Habitats</b>   |  |  |
| Threatened species   | (PR6 para. 12-ii)  | (PR6 para. 14-ii)  |
| Species and their habitats listed in EU Habitats Directive and Birds Directive (EU members only) or Bern Convention (signatory nations only) | EAAA for species and their habitats listed in Annex II of Habitats Directive, Annex I of Birds Directive, or Resolution 6 of Bern Convention | EAAA for species and their habitats listed in Annex IV of the Habitats Directive (See EU restrictions)   |
| IUCN Red List EN or CR species   | EAAA supports < 0.5% of global population OR < 5 reproductive units of a CR or EN species.   | EAAA supports ≥ 0.5% of the global population AND ≥ 5 reproductive units of a CR or EN species   |
| IUCN Red List VU species   | EAAA supports VU species   | 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)   |
| Nationally or regionally (e.g., Europe) listed EN or CR species  | EAAA for regularly occurring nationally or regionally listed EN or CR species  | EAAA for important concentrations of a nationally or regionally listed EN or CR species  |
| Range-restricted species   | (PR6 para 12-ii)   | (PR6 para. 14-iii)   |
|  | EAAA for regularly occurring range-restricted species  | EAAA regularly holds ≥ 10% of global population AND ≥ 10 reproductive units of the species***  |
| Migratory and congregatory species   | (PR6 para 12-ii)   | (PR6 para. 14-iv)  |
|  | EAAA identified per Birds Directive or recognized national or  | EAAA sustains, on a cyclical or otherwise regular basis, ≥ 1 percent   |



|  |  |  |
|--|--|--|
|  | international process as important for migratory birds (esp. wetlands) | of the global population at any point of the species' lifecycle<br><br>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, Spring 2023 and 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 in 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 eighteen VPs which offered comprehensive coverage of the airspace above the Project site. Cumulative survey hours were as follows:
  - Spring 2022 – Total Hours – 3345 hours, 3 minutes
  - Autumn 2022 – Total Hours – 4768 hours, 0 minutes
  - Spring 2023 – Total Hours – 4455 hours, 0 minutes
  - Autumn 2023 – Total Hours – 4796 hours, 5 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 thirty-two 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 2.25, indicating high species diversity. The floral diversity and species richness across the AoI was highest in the north and lowest in the southern areas, with a decline in diversity between the two areas.

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, four species of mammal were recorded on the site and these were:

- Arabian Red Fox (*Vulpes vulpes*),
- Sundevall's Jird (*Meiones crassus*)
- Lesser Egyptian Jerboa (*Jaculus jaculus*),
- Lesser Egyptian Gerbil (*Gerbillus gerbillus*).

All the rodent species 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 (*Uromastix aegyptia*),
- Red-spotted Lizard (*Mesalina rubropunctata*),
- Bosc's Lizard (*Acanthodactylus boskianus*),
- Pallid Agama (*Trapelus pallidus*),
- Steudner's Pygmy Gecko (*Tropiocolotes steudneri*),
- 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

A single bat pass was recorded across sixty full nights of recording and this is most likely to be of Egyptian Tomb Bat (*Taphozous perforatus*) which is of Least Concern. 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 208,370 individuals of twenty-seven species were recorded. In spring 2023, a total of 266,570 individuals of twenty-seven species were recorded.

In autumn 2022, a total of 8,244 individuals of twenty species were recorded. In autumn 2023, a total of 17,619 individuals of twenty-two 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 during 2022 and 2023**

| Species                | Scientific Name             | IUCN Status     | National Status                  | Spring 22 | Spring 23 | Autumn 22 | Autumn 23 |
|------------------------|-----------------------------|-----------------|----------------------------------|-----------|-----------|-----------|-----------|
| Levant Sparrowhawk     | <i>Accipiter brevipes</i>   | Least Concern   | Passage migrant                  | 1128      | 999       | 117       | 14        |
| Sparrowhawk            | <i>Accipiter nisus</i>      | Least Concern   | Passage migrant                  | 44        | 29        | 5         | 11        |
| Bonelli's eagle        | <i>Aquila fasciata</i>      | Least Concern   | Passage migrant / resident       | 1         | 0         | 0         | 0         |
| Eastern Imperial Eagle | <i>Aquila heliaca</i>       | Vulnerable      | Passage migrant                  | 24        | 41        | 0         | 1         |
| Steppe Eagle           | <i>Aquila nipalensis</i>    | Endangered      | Passage migrant                  | 2055      | 18793     | 2         | 6         |
| Steppe Buzzard         | <i>Buteo buteo vulpinus</i> | Least Concern   | Passage migrant                  | 42904     | 83900     | 158       | 166       |
| Long-legged Buzzard    | <i>Buteo rufinus</i>        | Least Concern   | Passage migrant / winter visitor | 240       | 123       | 4         | 5         |
| White Stork            | <i>Ciconia ciconia</i>      | Least Concern   | Passage migrant                  | 135042    | 114690    | 1512      | 8964      |
| Black Stork            | <i>Ciconia Nigra</i>        | Least Concern   | Passage migrant                  | 1183      | 1108      | 2         | 0         |
| Short-toed Eagle       | <i>Circaetus gallicus</i>   | Least Concern   | Passage migrant / summer breeder | 706       | 1738      | 1         | 1         |
| Marsh Harrier          | <i>Circus aeruginosus</i>   | Least Concern   | Passage migrant                  | 39        | 40        | 108       | 78        |
| Pallid Harrier         | <i>Circus macrourus</i>     | Near Threatened | Passage migrant / winter visitor | 21        | 16        | 21        | 27        |
| Montagu's Harrier      | <i>Circus pygargus</i>      | Least Concern   | Passage migrant                  | 13        | 10        | 20        | 38        |
| Greater Spotted Eagle  | <i>Clanga clanga</i>        | Vulnerable      | Passage migrant                  | 12        | 16        | 0         | 0         |
| Lesser Spotted Eagle   | <i>Clanga pomarina</i>      | Least Concern   | Passage migrant                  | 860       | 649       | 0         | 4         |
| Lanner Falcon          | <i>Falco biarmicus</i>      | Least Concern   | Passage migrant                  | 2         | 5         | 0         | 4         |
| Sooty Falcon           | <i>Falco concolor</i>       | Vulnerable      | Passage migrant / summer breeder | 0         | 1         | 21        | 15        |
| Hobby                  | <i>Falco subbuteo</i>       | Least Concern   | Passage migrant                  | 0         | 1         | 0         | 1         |
| Kestrel                | <i>Falco tinnunculus</i>    | Least Concern   | Passage migrant                  | 82        | 243       | 79        | 117       |

|                   |                              |                 |                                  |      |       |      |      |
|-------------------|------------------------------|-----------------|----------------------------------|------|-------|------|------|
| Common Crane      | <i>Grus grus</i>             | Least Concern   | Passage migrant                  | 888  | 626   | 0    | 88   |
| Griffon Vulture   | <i>Gyps fulvus</i>           | Least Concern   | Passage migrant                  | 1    | 3     | 0    | 0    |
| Booted Eagle      | <i>Hieraetus pennatus</i>    | Least Concern   | Passage migrant                  | 310  | 315   | 7    | 6    |
| Black Kite        | <i>Milvus migrans</i>        | Least Concern   | Passage migrant                  | 9312 | 12088 | 190  | 256  |
| Egyptian Vulture  | <i>Neophron percnopterus</i> | Endangered      | Passage migrant                  | 84   | 260   | 0    | 0    |
| Osprey            | <i>Pandion haliaetus</i>     | Least Concern   | Passage migrant                  | 15   | 22    | 2    | 3    |
| Dalmatian pelican | <i>Pelecanus crispus</i>     | Near Threatened | Passage migrant / winter visitor | 1    | 0     | 0    | 0    |
| White Pelican     | <i>Pelecanus onocrotalus</i> | Least Concern   | Passage migrant                  | 138  | 11091 | 535  | 1978 |
| Honey Buzzard     | <i>Pernis apivorus</i>       | Least Concern   | Passage migrant                  | 7675 | 12761 | 5195 | 5764 |
| Lesser Kestrel    | <i>Falco naumanni</i>        | Least Concern   | Passage migrant                  | 1    | 0     | 0    | 0    |
| Peregrine         | <i>Falco peregrinus</i>      | Least Concern   | Passage migrant / resident       | 0    | 0     | 1    | 2    |
| Red-footed Falcon | <i>Falco tinnunculus</i>     | Vulnerable      | Passage migrant                  | 0    | 1     | 3    | 0    |

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 | % minimum of global population | Peak Autumn Passage | % minimum of global population |
|------------------------|---------------|-----------------------|-----------------------|---------------------|--------------------------------|---------------------|--------------------------------|
| Levant Sparrowhawk     | Least Concern | 10,000                | 19999                 | 1128                | 11.28                          | 117                 | 1.17                           |
| Sparrowhawk            | Least Concern | 2,000,000             | 3,200,000             | 44                  | 0.002                          | 11                  | 0.0005                         |
| Bonelli's eagle        | Least Concern | 20,000                | 49,999                | 1                   | 0.005                          | 0                   | 0                              |
| Eastern Imperial Eagle | Vulnerable    | 2500                  | 9999                  | 41                  | 1.64                           | 1                   | 0.04                           |
| Steppe Eagle           | Endangered    | 50,000                | 75,000                | 18793               | 37.57                          | 6                   | 0.01                           |
| Steppe Buzzard         | Least Concern | 2,000,000             | 3,500,000             | 83900               | 4.20                           | 166                 | 0.01                           |
| Long-legged Buzzard    | Least Concern | 100000                | 499999                | 240                 | 0.24                           | 5                   | 0.005                          |
| White Stork            | Least Concern | 700000                | 704000                | 135042              | 19.29                          | 8964                | 1.28                           |

| Species               | IUCN Status     | Global Population min | Global Population max | Peak Spring Passage | % of minimum global population | Peak Autumn Passage | % of minimum global population |
|-----------------------|-----------------|-----------------------|-----------------------|---------------------|--------------------------------|---------------------|--------------------------------|
| Black Stork           | Least Concern   | 24000                 | 44000                 | 1183                | 4.93                           | 2                   | 0.008                          |
| Short-toed Eagle      | Least Concern   | 50000                 | 99999                 | 1738                | 3.48                           | 1                   | 0.002                          |
| Marsh Harrier         | Least Concern   | 600000                | 1100000               | 40                  | 0.007                          | 108                 | 0.018                          |
| Pallid Harrier        | Near Threatened | 18000                 | 30000                 | 21                  | 0.12                           | 27                  | 0.15                           |
| Montagu's Harrier     | Least Concern   | 300000                | 550000                | 13                  | 0.004                          | 38                  | 0.013                          |
| Greater Spotted Eagle | Vulnerable      | 3900                  | 10000                 | 16                  | 0.41                           | 0                   | 0                              |
| Lesser Spotted Eagle  | Least Concern   | 40000                 | 60000                 | 860                 | 2.15                           | 4                   | 0.01                           |
| Lanner Falcon         | Least Concern   | 67000                 | 67000                 | 5                   | 0.008                          | 4                   | 0.006                          |
| Sooty Falcon          | Vulnerable      | 2800                  | 4000                  | 1                   | 0.036                          | 21                  | 0.75                           |
| Hobby                 | Least Concern   | 900000                | 1500000               | 1                   | 0.0001                         | 1                   | 0.0001                         |
| Kestrel               | Least Concern   | 430000                | 6700000               | 243                 | 0.006                          | 117                 | 0.003                          |
| Common Crane          | Least Concern   | 491000                | 503000                | 888                 | 0.18                           | 88                  | 0.02                           |
| Griffon Vulture       | Least Concern   | 80000                 | 900000                | 3                   | 0.004                          | 0                   | 0                              |
| Booted Eagle          | Least Concern   | 150000                | 195000                | 315                 | 0.21                           | 7                   | 0.005                          |
| Black Kite            | Least Concern   | 400000                | 5700000               | 12088               | 0.30                           | 256                 | 0.006                          |
| Egyptian Vulture      | Endangered      | 12400                 | 36000                 | 260                 | 2.10                           | 0                   | 0                              |
| Osprey                | Least Concern   | 100000                | 1200000               | 22                  | 0.02                           | 3                   | 0.003                          |
| Dalmatian pelican     | Near Threatened | 11400                 | 13400                 | 1                   | 0.009                          | 0                   | 0                              |
| White Pelican         | Least Concern   | 265000                | 295000                | 11091               | 4.19                           | 1978                | 0.75                           |
| Honey Buzzard         | Least Concern   | 290000                | 430000                | 12761               | 4.4                            | 5764                | 1.99                           |
| Lesser Kestrel        | Least Concern   | 80000                 | 134000                | 1                   | 0.001                          | 0                   | 0                              |
| Peregrine             | Least Concern   | 100000                | 499999                | 0                   | 0                              | 2                   | 0.002                          |
| Red-footed Falcon     | Vulnerable      | 287500                | 400000                | 1                   | 0.0004                         | 3                   | 0.001                          |

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

<sup>1</sup> – 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. Birds will then 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 7 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   |
| Egyptian Vulture | EN          | <p>Spring 2022 – 84 individuals<br/>Spring 2023 – 260 individuals<br/>Autumn 2022 and Autumn 2023 – 0 individuals</p> <p>All registrations were of birds flying over the site</p> | <p>Global population of 18,600-54,000, meaning 93-270 individuals required to meet criteria.</p> <p>Peak of 260 individuals recorded flying over the Aol during the surveys and not recorded breeding in Project Aol.</p> <p>Species not recorded roosting within the Project Aol, in either the spring or autumn migration seasons.</p> <p>Criteria 1 is not triggered – no further assessment required.</p>                       | <p>Global population resulting in a large Extent of Occurrence (EOO) so not range restricted.</p> <p>Criteria 2 is not triggered - no further assessment required.</p> | <p>Global population of 12,400-36,000 mature individuals meaning between minimum of 62 pairs required to meet congregatory criteria (with respect to colonial breeding), and between 186 and 540 individuals to meet congregatory criteria (with respect to migration).</p> <p>Peak of 260 individuals flying over the AOI during the surveys and not recorded breeding in Project Aol.</p> <p>The species is also not recorded using the footprint of the in significant migratory numbers.</p> <p>Criterion 3 is not triggered – no further assessment required.</p> |
| Steppe Eagle     | EN          | <p>Spring 2022 – 2055 individuals<br/>Spring 2023 – 18,793 individuals<br/>Autumn 2022 – 2 individuals<br/>Autumn 2023 – 6 individuals</p>  | <p>Global population of between 50,000 and 75,000 individuals, meaning 250-375 individuals required to meet criteria.</p> <p>Spring peak in 2023 was 37.6% of global population.</p> <p>Low numbers recorded roosting within the Project Aol in spring season (although this activity will reduce now the waste food source has been removed).</p> <p><b>Criteria 1 is potentially triggered – further assessment required.</b></p> | <p>Global population resulting in a large EOO so not range restricted.</p> <p>Criteria 2 is not triggered - no further assessment required.</p>                        | <p>Global population of between 50,000 and 75,000 individuals, meaning 1% population threshold is between 500 and 750 birds (with respect to migration).</p> <p>Spring peak in 2023 was 37.6% of global population.</p> <p>Low numbers recorded roosting within the Project Aol in spring season (although this activity will reduce now the waste food source has been removed).</p> <p><b>Criteria 3 is potentially triggered – further assessment required.</b></p>   |

| Common Name  | IUCN Status | Notes   | PS / PR 6 Criterion  |  |   |
|--|-------------|---|--|--|---|
|  |             |   | 1 / ii   | 2 / iii  | 3 / iv  |
| Eastern Imperial Eagle   | VU          | Spring 2022 – 24 individuals<br>Spring 2023 – 41 individuals<br>Autumn 2022 – 0 individuals<br>Autumn 2023 – 1 individual | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from VU to CR / EN.<br><br>Criteria 1 not met, and no further assessment required. | Global population resulting in a large EOO so not range restricted.<br><br>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).<br><br>Spring peak in 2023 was 1.64 of global population.<br><br>Species not recorded roosting within the Project Aol, in either the spring or autumn migration seasons.<br><br><b>Criteria 3 is potentially triggered – further assessment required.</b> |
| Sooty Falcon   | VU          | Spring 2022 – 0 individuals<br>Spring 2023 – 1 individual<br>Autumn 2022 – 21 individuals<br>Autumn 2023 – 15 individuals | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from VU to CR / EN.<br><br>Criteria 1 not met, and no further assessment required. | Global population resulting in a large EOO so not range restricted.<br><br>Criteria 2 is not triggered - no further assessment required. | Global population of between 2,800 and 9,999 individuals, meaning 1% population threshold is between 28 and 99 birds (with respect to migration).<br><br>Autumn peak in 2022 was 0.75% of global population<br><br>Two individuals recorded roosting within the Project Aol, in autumn migration season<br><br>Criterion 3 not met; no further assessment required.   |
| Eight 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 – 135,042 individuals<br>Spring 2023 – 114,690 individuals  | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.<br><br>Criteria 1 not met, and no further assessment required.      | Global population resulting in a large EOO so not range restricted.<br><br>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.<br><br>Spring peaks in 2022 and 2023 were 19% and 16% respectively.<br><br>Up to 8964 individuals observed during autumn passage in 2023, this represents 1.2% of the global population   |

| Common Name | IUCN Status | Notes   | PS / PR 6 Criterion  |   |  |
|-------------|-------------|---|--|---|--|
|             |             |   | 1 / ii   | 2 / iii   | 3 / iv   |
|             |             | <p>Autumn 2022 – 1512 individuals</p> <p>Autumn 2023 – 8964 individuals</p> <p>10,069 individuals recorded roosting during spring migration. A peak of around 6000 individuals recorded at the dam during spring 2022</p> |  |   | <p>A peak of 10,069 individuals were recorded roosting within the Project area during spring migration which is 1.4% of the global population.</p> <p><b>Criteria 3 is potentially triggered – further assessment required.</b></p>  |
| Black Stork | LC          | <p>Spring 2022 – 1183 individuals</p> <p>Spring 2023 – 1108 individuals</p> <p>Autumn 2022 – 2 individuals</p> <p>Autumn 2023 – 0 individuals</p>   | <p>Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.</p> <p>Criteria 1 not met, and no further assessment required.</p> | <p>Global population resulting in a large EOO so not range restricted.</p> <p>Criteria 2 is not triggered - no further assessment required.</p> | <p>Lower bound of global population is 24,000 individuals, meaning 1% threshold is 240 birds.</p> <p>Spring peaks in 2022 and 2023 were 4.9%.</p> <p>Not recorded in any significant numbers during the autumn migration season.</p> <p>Recorded in low numbers on the ground in spring migration season.</p> <p><b>Criteria 3 is potentially triggered – further assessment required.</b></p> |

| Common Name            | IUCN Status | Notes  | PS / PR 6 Criterion   |  |  |
|------------------------|-------------|--|---|--|--|
|                        |             |  | 1 / ii  | 2 / iii  | 3 / iv   |
| Great White Pelican    | LC          | Spring 2022 – 138 individuals<br>Spring 2023 – 11091 individuals<br>Autumn 2022 – 535 individuals<br>Autumn 2023 – 1978 individuals  | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.<br><br>Criteria 1 not met and no further assessment required.  | Global population resulting in a large EOO so not range restricted.<br><br>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.<br><br>Spring peaks in 2022 and 2023 were 0.05% and 4.91% respectively.<br><br>1978 birds were recorded in the autumn 2023 migration season which equates to 0.75% of the global population.<br><br><b>Criteria 3 is potentially triggered – further assessment required.</b>                            |
| European Honey Buzzard | LC          | Spring 2022 – 7675 individuals<br>Spring 2023 – 12,761 individuals<br>Autumn 2022 – 5195 individuals<br>Autumn 2023 5764 individuals | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.<br><br>Criteria 1 not met, and no further assessment required. | Global population resulting in a large EOO so not range restricted.<br><br>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.<br><br>Spring peaks in 2022 and 2023 were 2.65% and 4.4% respectively.<br><br>Autumn peaks in 2022 and 2023 were 1.79% and 1.99% respectively.<br><br>Recorded in low numbers on the ground in autumn migration season.<br><br><b>Criteria 3 is potentially triggered – further assessment required.</b> |
| Steppe Buzzard         | LC          | Spring 2022 – 42,940 individuals<br>Spring 2023 – 83,900 individuals<br>Autumn 2022 – 158 individuals                                | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.<br><br>Criteria 1 not met, and no further assessment required. | Global population resulting in a large EOO so not range restricted.<br><br>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.<br><br>Spring peaks in 2022 and 2023 were 2.15% and 4.2% respectively.<br><br>Levels of bird activity recorded in the autumn migration seasons were well below the 1% threshold.  |

| Common Name          | IUCN Status | Notes   | PS / PR 6 Criterion   |  |   |
|----------------------|-------------|---|---|--|---|
|                      |             |   | 1 / ii  | 2 / iii  | 3 / iv  |
|                      |             | Autumn 2023 – 166 individuals   |   |  | Recorded in very low peak numbers on the ground in spring and autumn migration season.<br><br><b>Criteria 3 is potentially triggered – further assessment required.</b>   |
| Short-toed Eagle     | LC          | Spring 2022 – 706 individuals<br>Spring 2023 – 1738 individuals<br>Autumn 2022 and 2023 – 1 individual in each year       | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.<br><br>Criteria 1 not met, and no further assessment required. | Global population resulting in a large EOO so not range restricted.<br><br>Criteria 2 is not triggered - no further assessment required. | Lower bound of global population is 50,000 individuals, meaning 1% threshold is 500 birds.<br><br>Spring peaks in 2022 and 2023 were 1.41% and 3.48% respectively.<br><br>1 bird was recorded in both the autumn migration seasons, which is well below the 1% threshold.<br><br>Not recorded on the ground in spring or autumn migration seasons.<br><br><b>Criteria 3 is potentially triggered – further assessment required.</b>       |
| Lesser Spotted Eagle | LC          | Spring 2022 – 860 individuals<br>Spring 2023 – 649 individuals<br>Autumn 2022 – 0 individuals<br>and 2023 – 4 individuals | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.<br><br>Criteria 1 not met, and no further assessment required. | Global population resulting in a large EOO so not range restricted.<br><br>Criteria 2 is not triggered - no further assessment required. | Lower bound of global population is 40,000 individuals, meaning 1% threshold is 400 birds.<br><br>Spring peaks in 2022 and 2023 were 1.72% and 1.3% respectively.<br><br>Between 0 and 4 birds were recorded in both the autumn migration seasons, which is well below the 1% threshold.<br><br>Recorded in low numbers during autumn migration seasons.<br><br><b>Criteria 3 is potentially triggered – further assessment required.</b> |

| Common Name                  | IUCN Status | Notes   | PS / PR 6 Criterion  |  |  |
|------------------------------|-------------|---|--|--|--|
|                              |             |   | 1 / ii   | 2 / iii  | 3 / iv   |
| Levant Sparrowhawk           | LC          | Spring 2022 – 1128 individuals<br>Spring 2023 – 999 individuals<br>Autumn 2022 – 117 individuals<br>and 2023 – 14 individuals | Species is not Critically Endangered or Endangered. Unmitigated impacts are unlikely to result in elevation from LC to VU.<br><br>Criteria 1 not met, and no further assessment required.  | Global population resulting in a large EOO so not range restricted.<br><br>Criteria 2 is not triggered - no further assessment required. | Lower bound of global population is 10,000 individuals, meaning 1% threshold is 100 birds.<br><br>Spring peaks in 2022 and 2023 were 11.28% and 9.99% respectively.<br><br>Autumn peaks in 2022 and 2023 were 1.17 and 0.14 individuals respectively<br><br>Not recorded on the ground in spring or autumn migration seasons.<br><br><b>Criteria 3 is potentially triggered – further assessment required.</b> |
| Egyptian Spiny-tailed Lizard | VU          | Recorded on site with up to 2.78 burrows per km <sup>2</sup> recorded.  | Global population size has not been quantified however its range is widespread (extending well over 3,000,000km <sup>2</sup> ).<br><br>Species is VU and any unmitigated impacts are unlikely to result in elevation from VU to EN or CR.<br><br>Criteria 1 not met, and no further assessment required. | Global population resulting in a large EOO so not range restricted.<br><br>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, see Table 8 below. 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, these have 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 morphogenetically 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 (37.6% of global population in Spring) and Egyptian Vulture (2.1% of global population in Spring) both reach greater than 0.5% of the global population for a Critically Endangered or Endangered species. Neither species was recorded using the ground to roost/rest in a significant number Steppe Eagle (0.08% of global population) and Egyptian Vulture was not recorded on the ground and there is therefore no significant association between the terrestrial habitats present within the Project site and this species and as such CH is not triggered.

### 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 Steppe Eagle (37.6% in spring), Egyptian Vulture (2.1% in Spring), Eastern Imperial Eagle (1.64 % in spring), White Stork (19% in spring and 1.2% in autumn), Black Stork (4.9% in spring), Great White Pelican (4.91% in spring), European Honey Buzzard (2.65% in spring and 1.99% in autumn), Steppe Buzzard (4.2% in spring), Short-toed Eagle (3.48% in spring), Lesser Spotted Eagle (1.72% in spring) and Levant Sparrowhawk (11.3% in spring and 1.17% in autumn).

Sites must be of critical importance for these 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). In this latter context roosting sites are considered to be those where birds will settle for extended periods of time as opposed to resting sites where birds will settle on the ground for shorter periods of time when conditions are unfavourable for migration, from which they will leave when conditions become more favourable. For airspace to be of importance and thus triggering the criterion for determination of CH there must be a conceptual linkage between the terrestrial or aquatic habitats present and the airspace.

Using this approach, a CHA would not be conducted with respect to the airspace where there is no associated important terrestrial area. For the majority of species (all excluding White Stork) surveys completed at the site have not recorded significant (e.g. above 1% threshold of global populations) populations of MSBs and of those species recorded in low numbers on the ground it was considered that they were merely 'resting' a behaviour that could readily be observed in any area of terrestrial habitat across the whole of the flyway. Resting areas distributed at random through the landscape are not of regular significance to MSBs and would not be subject to site-based conservation management activities which would result in measurable conservation benefits. The survey data clearly shows that there is an absence of a linkage between the airspace above, and terrestrial habitats of, the Project site and as such is impossible to delineate the airspace EAAA, and without an EAAA, the Critical Habitat thresholds cannot be applied.

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.



As has been shown in the CHA the utilised airspace is not linked to an important terrestrial area and as such it is not considered to be Critical Habitat however it does meet the requirements for determination of Natural Habitat (GN 13 – 15) and the requirements for no net loss (GN43) would need to be applied.

It is also clear in EBRD PR3 GN11 that biodiversity risks should be managed in accordance with the mitigation hierarchy and good industry practice and a precautionary approach should be applied along with adaptive management strategies, which is consistent with the national approach to mitigation and monitoring. This applies with or without PBF or CH designations and EBRD can require that the client achieve no net loss. In any case a number of PBF species have been identified and are discussed further below.

### **White Stork**

White Stork have been recorded roosting within the survey area during spring surveys in significant numbers with 1.4% of the global population recorded roosting during a spring season. The roosting activity was recorded at the dam location in both 2022 and 2023 which also was used by the species during the day when the area was filled with water in 2022.

In order to understand if Critical Habitat is triggered for this species an EAAA is produced. This EAAA includes;

- The nearby IBA/KBA which is designated for migratory soaring birds and is appropriate to the definition of Critical Habitat as noted above; and
- The wadi within the Plot 1 survey area used by resting and roosting birds throughout Spring. This area includes the land itself (including lake in some years when wet) that birds physically use as well as an appropriate buffer of airspace surrounding the feature in order that birds can freely move to and from the location. This buffer has been set to 2km and notably is a feature of the design of the to wind farm layout.

The EAAA for White Stork is shown in **Error! Reference source not found.** and this confirms that the wind farm is to be constructed away from the EAAA and Critical Habitat is not triggered.

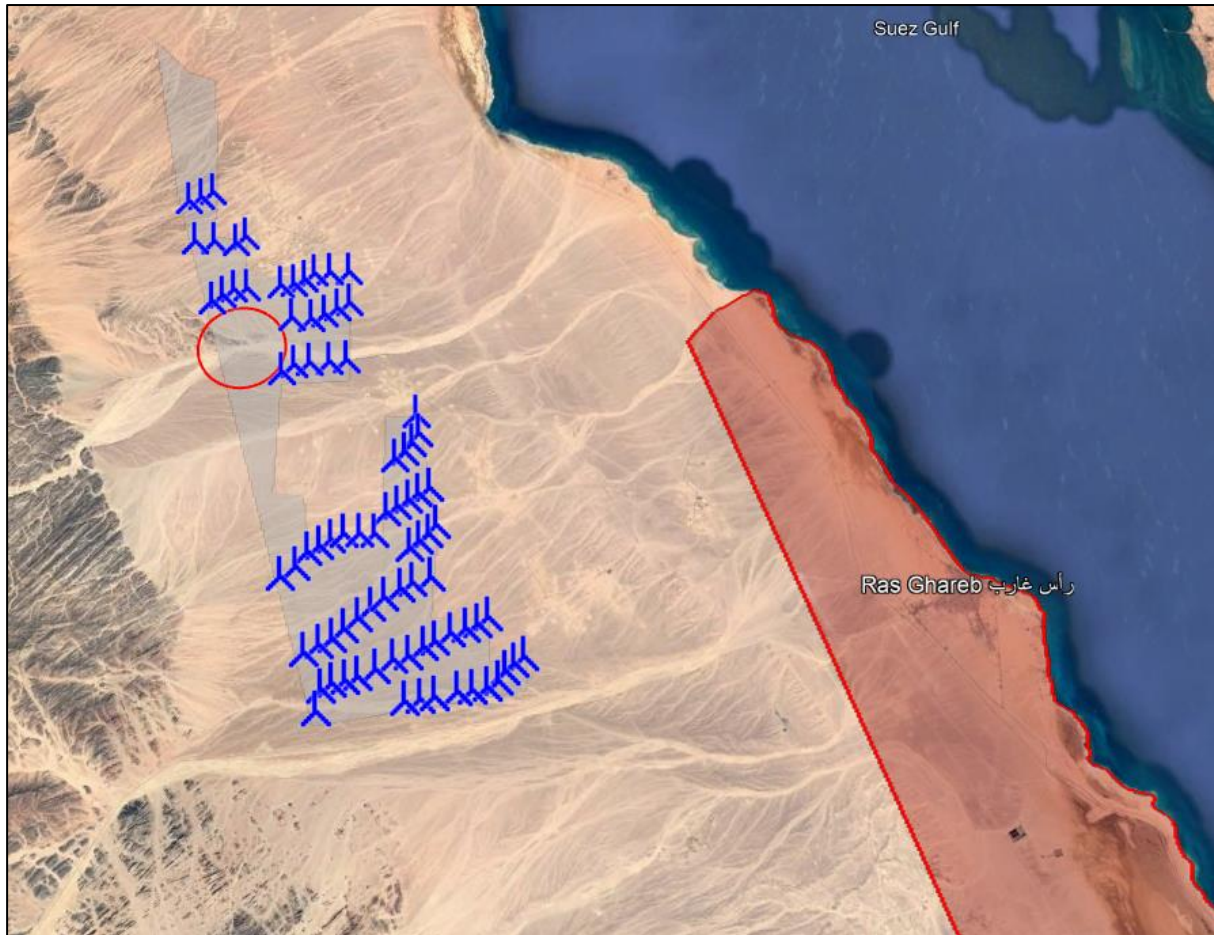


Figure 4: EAAA of White Stork showing the location of the KBA/IBA and roosting area with buffer within the survey area and showing the proposed wind farm

#### 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

The Project area is use by two globally Endangered species, Steppe Eagle (37.6% in spring) and Egyptian Vulture (2.1% in Spring), as well as two globally Vulnerable species, Eastern Imperial Eagle (1.64% in spring) and Sooty Falcon (0.5% in autumn) that are present over the Project area in numbers that qualify as PBF's.

These species were not recorded staging or concentrated in numbers that would trigger critical habitat however they were recorded on passage in the airspace above and therefore the Project will operate with the aim of avoiding all impacts to these 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 Priority Biodiversity Feature** – *Uromastix 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. Barrier effects on MSB are also likely due to cumulative impacts from other wild farms being developed along the Red Sea corridor.

Operational impacts of the project are limited to potential impacts on species of MSB migratory species of birds through the collision with turbines and associated infrastructure and potential of a barrier impact, particularly in combination with other projects in the region. All mitigation and monitoring will need to be included in a Biodiversity Management 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.

Any BMP will 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 Management Plan (BMP)

All PBF species will also be included in the Biodiversity Management Plan (BMP). The BMP will fully detail all relevant construction mitigation measures (Construction BMP) and habitat restoration and operation mitigation and enhancement measures (Operation BMP) which will be completed during and after the construction period to achieve the objectives of No Net Loss for PBFs. The Operational BMP will also include all measures included in the Active Turbine Management Plan 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).

Whilst the project is not required to develop a Biodiversity Action Plan it is recommended that a robust Biodiversity Monitoring Evaluation Plan (BMEP) is included within the BMP, and this will include details of Post Construction Fatality Monitoring.

## 6. SUMMARY

Critical Habitat has not been triggered for this project but there are a number of PBFs that will need to be safeguarded during the construction and operational phase to ensure no net loss of these features.

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 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.

It is considered that the Project has met the requirements as set out in IFC PS6 Paragraph 17 and the measures detailed above will be included in the management plan and BMP documents. These documents will also set out measures designed to achieve No Net Loss for those species defined as PBFs.