



Biodiversity Action Plan for the Shadwan 900 MW Wind Farm Project, Egypt

This report was prepared for The Regional Center for Renewable Energy and Energy Efficiency (RCREEE)

This document is copyright-protected by The Biodiversity Consultancy Ltd (TBC). The reproduction and distribution of this document for information is permitted without prior permission from TBC. However neither this document nor any extract from it may be reproduced, stored, translated, or transferred in any form or by any means (electronic, mechanical, photocopied, recorded, or otherwise) for any other purpose without prior written permission from TBC.

Document information	
Document title	Biodiversity Action Plan for the Shadwan 900 MW Wind Farm Project, Egypt
Document subtitle	
Project No.	RCR03
Date	6 August 2026
Version	Final
Author	Lucy Murrell, Filipe Canário, Sarah Banet-Eugene, Mihai Coroi
Client name	RCREEE

Document history						
Revision no.	Author/s	Reviewer 1	Reviewer 2	Date	Comments	Final/draft
1	LM, FC, SBE	MC		11/05/2026	For client review	Draft
2	LM, FC, SBE	MC		29/05/2026	Addressing client comments	Final
3	LM, FC, SBE	MC		09/07/2026	Updated following CHA and CEA update	Final Updated
4	LM, FC, SBE	FC		22/07/2026	Updated to include OHTL document updates	Final Updated
5	LM, FC, SBE	FC		28/7/2026	Addressing IFC's comments	Final Updated
6	LM, FC, SBE	FC		6/8/2026	Updated with revised CRM results	Final Updated

Unless otherwise stated images are copyright of The Biodiversity Consultancy

Citation: TBC (2026). Biodiversity Action Plan for the Shadwan 900 MW Wind Farm Project, Egypt. The Biodiversity Consultancy, Cambridge, United Kingdom.

Acronym table

Acronym	Definition
ATMP	Active Turbine Management Program
BAP	Biodiversity Action Plan
BMEP	Biodiversity Monitoring and Evaluation Plan
BMP	Biodiversity Management Plan
BOMIP	Biodiversity Offset Management and Implementation Plan
CEA	Cumulative Effects Assessment
CH	Critical Habitat
CHA	Critical Habitat Assessment
CR	Critically Endangered
EEAA	Egyptian Environmental Affairs Agency
EETC	Egyptian Electricity Holding Company
EBRD	European Bank of Reconstruction and Development
EIB	European Investment Bank
EN	Endangered
ESA	European Space Agency
ESR6	(EBRD) Environmental and Social Requirement 6
ESIA	Environmental and Social Impact Assessment
ESS4	(EIB) Environmental and Social Standard 4
GIIP	Good International Industry Practice
GN	(IFC) Guidance Note
IBA	Important Bird and Biodiversity Area
IFC	International Performance Corporation
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
LC	Least Concern
NCE	Nature Conservation Egypt
NG	Net Gain
NNL	No Net Loss
NREA	New and Renewable Energy Authority
NT	Near Threatened
OFS	Offset Feasibility Study
PBF	Priority Biodiversity Feature
PCFM	Post-Construction Fatality Monitoring

Acronym	Definition
PS6	(IFC) Performance Standard 6
RCREEE	Regional Center for Renewable Energy and Energy Efficiency
TBC	The Biodiversity Consultancy
VU	Vulnerable

Table of contents

Acronym table.....	4
Executive Summary	9
1 Introduction	10
1.1 Scope and objectives	10
1.2 The Project.....	11
1.3 Spatial and temporal scope of the BAP	12
2 Stakeholder consultation	13
3 Corporate policies and commitments and lender requirements.....	13
3.1 Corporate policy.....	13
3.2 Lender requirements	14
4 Biodiversity context.....	15
4.1 Ecological setting.....	15
4.2 Baseline and monitoring studies	17
4.3 Priority biodiversity	18
4.3.1 Critical Habitat qualifying biodiversity	20
4.3.2 Priority Biodiversity Features.....	20
4.3.3 Priority VECs.....	21
5 Potential impacts on priority biodiversity	21
5.1 Construction impacts	21
5.2 Operational impacts	22
6 Mitigation approach for biodiversity management	22
6.1 Mitigation hierarchy	22
6.2 Mitigation and monitoring actions.....	23

6.2.1	Priority birds.....	23
6.2.2	Priority bats	28
6.2.3	Egyptian Spiny-tailed Lizard	28
6.2.4	Dorcas Gazelle.....	30
6.2.5	General GIIP mitigation and monitoring actions.....	30
7	Residual impact assessment.....	36
7.1	Priority birds	36
7.2	Priority bats	41
7.3	Egyptian Spiny-tailed Lizard.....	41
7.4	Dorcas Gazelle	41
8	Offset strategy	42
8.1	No Net Loss approach.....	42
8.2	Offset governance	42
8.3	Offset requirements and targets	43
8.4	Offset options	44
8.5	Additional actions to support conservation.....	52
9	Biodiversity Monitoring and Evaluation Plan Framework	52
10	BAP implementation.....	56
10.1	Integration into Project management.....	56
10.2	Roles and responsibilities.....	57
11	Next steps	57
11.1	Update of the BAP.....	57
11.2	Stakeholder Engagement.....	57
11.3	Biodiversity Management Plan	58
11.4	Offset Feasibility Study.....	58

11.5	Biodiversity Offset Management and Implementation Plan	59
12	References	59
Appendix 1	Stakeholder Engagement.....	65
1	Rationale and requirements for biodiversity stakeholder engagement.....	65
2	Identification of relevant stakeholders	65
Appendix 2	Critical habitat criteria and thresholds.....	68

Executive Summary

This document is the Biodiversity Action Plan for the Shadwan 900 MW Wind Farm Project (the Project), which comprises 83 wind turbines and is located in the Ras Gharib region of the Red Sea Governorate, Egypt. The Project seeks funding from international lenders and is therefore required to comply with the biodiversity requirements of the International Finance Corporation (IFC) Performance Standard 6, the European Bank for Reconstruction and Development (EBRD) Environmental and Social Requirement 6, and the European Investment Bank (EIB) Environmental and Social Standard 4.

This BAP identifies a suite of 'priority biodiversity' and describes the series of actions by which the Project will demonstrate Net Gain for Critical Habitat values and No Net Loss for Priority Biodiversity Features and priority Valued Environmental Components. The BAP also sets out the approach for how the mitigation hierarchy will be followed, and the roles and responsibilities for internal staff and external partners.

All migratory soaring bird species that migrate through the Project area were identified as a priority biodiversity for the Project, as well as three bats, the Dorcas Gazelle (*Gazella dorcas*) and the Egyptian Spiny-tailed Lizard (*Uromastix aegyptia*). Impacts to the birds come from, primarily, collisions with turbines and transmissions lines. The Project will implement a shut-down on demand program for the life of the Project, collaborate with the Egyptian Electricity Transmission Company (EETC) to install Bird Flight Diverters along the transmission line, and implement a mitigation program to prevent impacts on the Egyptian Spiny-tailed Lizard (see Section 6). Residual impacts for birds are estimated to range from ~0 (for most species) to 35.8 (for White Stork) (). Bat populations in the region are known to be scarce and very few bat fatalities have been recorded during Post-Construction Fatality Monitoring (PCFM) at any of the operational wind farms in the region, therefore, no significant residual impacts to priority bats are predicted. With just a single Dorcas Gazelle recorded and no suitable grazing habitat present in the Project area, residual impacts are likely to be negligible for this species. Impacts to the Egyptian Spiny-tailed Lizard are expected to arise primarily from disturbance to burrows, and this will be avoided as far as possible. Where avoidance is not possible, individuals will be safely translocated following an approved protocol. With the implementation of these measures, residual impact to this species is predicted to be negligible (see Section 7).

A long list of offset options is proposed to compensate for these residual impacts and to provide a Net Gain for two species that were identified as Critical Habitat triggers: Steppe Eagle (*Aquila nipalensis*) and White Stork (*Ciconia ciconia*) (Table 6). These options will be evaluated in an offset feasibility study to be included either in the next phase of the BAP or as a stand-alone document. The options include retrofitting power lines in Kazakhstan, Jordan and/or Egypt, managing unofficial dumping sites in Egypt and rehabilitating a water treatment station in Egypt.

1 Introduction

1.1 Scope and objectives

The Regional Center for Renewable Energy and Energy Efficiency (RCREEE, the Client) has commissioned The Biodiversity Consultancy (TBC) to prepare this Biodiversity Action Plan (BAP) for the Shadwan 900 MW Wind Farm Project (the Project), located in the Ras Gharib region of the Red Sea Governorate, Egypt.

The Project is being developed by Scatec ASA through a Special Purpose Vehicle (SPV), “Shadwan Wind Power SAE”, which is wholly owned by Scatec ASA and responsible for the development and implementation of the Project. The Project is seeking financing from international lenders. As such, the Project is required to align with the biodiversity requirements of the International Finance Corporation (IFC) Performance Standard 6 (PS6) (IFC PS6, IFC 2012), the European Bank for Reconstruction and Development (EBRD) Environmental and Social Requirement 6 (ESR6) (EBRD 2024), the African Development Bank (AfDB) Environmental and Social Operational Safeguards (OF6) the European Investment Bank (EIB) Environmental and Social Standard 4 (ESS4) (EIB 2022), and the Equator Principles (Equator Principles 2020).

The development of this BAP follows the completion of a Critical Habitat Assessment (CHA) and a Cumulative Effects Assessment (CEA) for the Project. The CHA (TBC 2026a) identified that the Project was located within Critical Habitat for the Steppe Eagle (*Aquila nipalensis*) and the White Sork (*Ciconia ciconia*) as defined by IFC PS6, EBRD ESR6 and EIB ESS4. and confirmed the presence of several Priority Biodiversity Features (PBFs) under EBRD ESR6: all migratory birds that regularly occur in the area, the Egyptian Spiny-tailed Lizard (*Uromastix aegyptia*) and the Dorcas Gazelle (*Gazella dorcas*). The CHA also found that the Project area and wider areas of analysis were predominantly Natural Habitat (desert). The CEA (TBC 2026b) assessed biodiversity cumulative effects for the Project and other wind energy developments in the Gulf of Suez and identified priority Valued Environmental Components (VECs) most at risk from cumulative impacts, including eight migratory bird species, three bat species, and one ecosystem/habitat type. It is a requirement from IFC PS6 that a mitigation strategy should be developed in a BAP for Projects located within Critical Habitat.

In line with lender requirements and international good practice, Net Gain (NG) is required for Critical Habitat qualifying features and No Net Loss (NNL) is required for PBFs, priority VECs and Natural Habitat. Therefore, a NG/NNL strategy is required, which is presented in this BAP. This BAP sets out the Project’s strategy to achieving NG/NNL as appropriate for these priority biodiversity values through the application of the mitigation hierarchy (avoid, minimise, restore and, where required, offset). The overarching objectives of this BAP are to:

- Identify the priority biodiversity features in the Project area that are subject to NNL/NG targets;
- Identify key stakeholders relevant to the implementation of the BAP

- Set out mitigation and monitoring measures to manage biodiversity risks, particularly those associated with collision risk for migratory birds;
- Estimate residual impacts to priority biodiversity values;
- Set out a framework for biodiversity offsets;
- Provide a framework for adaptive management based on monitoring results; and
- Encompass and present the Project's NG/NNL strategy in a single document useful for planning, communication and audit purposes.

This BAP has been prepared in-line with IFC PS6 and IFC Guidance Note 6 (IFC 2012, 2019), EBRD ESR6 and EBRD ESR6 Guidance Note 6 (EBRD 2024, 2025a), EIB ESS4 (EIB 2022), World Bank Group's Environmental Health and Safety (EHS) Industry General and Sectoral Guidelines on Wind Energy (World Bank Group 2015), and other international/ national guidance (e.g. IPIECA 2022).

This BAP is a living document and will be reviewed and updated as new information becomes available, including results from ongoing monitoring and any relevant regional strategic assessments.

This current BAP does not include an Offset Feasibility Study (OFS). When the OFS has been prepared, the outcomes, and details of stakeholder engagement, should be incorporated into the next revision of the BAP.

1.2 The Project

The Shadwan 900 MW Wind Farm Project is located in the Red Sea Governorate of Egypt, within the Ras Gharib District ([Figure 1](#)). The Project site covers an area of approximately 90 km². The closest community settlement to the Project site is Ras Gharib city, located around 22 km to the north-east.

The wind farm is planned to comprise 83 wind turbines (11 MW each), with a rotor diameter of 210 m and a tip height of 220 m. The turbines will be connected via underground medium-voltage (MV) cables (33 kV or 35 kV) to an onsite substation, and the Project will include a Supervisory Control and Data Acquisition (SCADA) system and communications network (including fibre optic cables installed in the same trenches as the MV cables) to enable remote operation. The Project will also require onsite infrastructure (e.g., administrative/office facilities, control room, workshop and warehouse), and an internal road network to support turbine installation during construction and access for maintenance during operation. Temporary construction-phase infrastructure is expected to include temporary offices, laydown areas, a batching plant, borrow pits and generators (EcoConsult & Safe Soar 2025).

The Project will be connected to the national electricity grid via 45 km long overhead transmission line (OHTL) of 220 kV or 500 kV. The OHTL is therefore considered outside the direct scope of this BAP but is recognised as an associated facility under IFC PS1 and EBRD ESR1,

requiring cooperation with the relevant third-party operators to manage biodiversity risks where feasible.

The Project is located within an arid desert landscape and overlaps the Red Sea/Rift Valley flyway, one of the most important migration corridors globally for migratory soaring birds. As a result, collision risk with wind turbines (and OHTL) represents the primary biodiversity risk.



Figure 1. Project location and boundaries

1.3 Spatial and temporal scope of the BAP

The spatial scope of this BAP covers the Project area of influence, associated infrastructure within the Project boundary and the locations of potential offsets. Biodiversity risks associated with the OHTL are considered to the extent required under lender standards for associated facilities, recognising that the Project does not have direct control over the design or operation of this infrastructure.

The biodiversity baseline and impact assessment underpinning this BAP is informed by existing Project documentation, including recent bird migration studies (Camina 2025a, 2025b), the CHA and the CEA. No additional field surveys were undertaken specifically for the preparation of this BAP.

The temporal scope of the BAP extends across the lifespan of the Project, expected to be 27 years (two years of construction and 25 years of operation (EcoConsult & Safe Soar 2025)). Biodiversity mitigation and monitoring requirements outlined in this BAP are designed to be

implemented throughout construction and operation and updated periodically through an adaptive management approach, informed by monitoring results and evolving regional and regulatory guidance.

2 Stakeholder consultation

To identify and implement appropriate biodiversity actions, and to take lessons from ongoing actions and monitoring, it is important to seek advice and develop partnerships with recognised and credible conservation organisations, academic institutes, biodiversity experts and the relevant government agencies. Appendix 1 provides further detail on the stakeholder engagement approach, including the rationale and identification of key biodiversity stakeholders relevant to the BAP, including those identified in the Project Environmental and Social Impact Assessment (ESIA). Consultation with stakeholders is especially important for projects located in Natural Habitat and Critical Habitat, or in legally protected and recognized areas (IFC 2019; EBRD 2025a).

Biodiversity-related stakeholder engagement undertaken to inform the ESIA (EcoConsult & Safe Soar 2025) focused primarily on key regulatory authorities and technical organisations. Consultation with the Egyptian Environmental Affairs Agency (EEAA) addressed biodiversity survey methods, data availability and monitoring requirements, including bird and bat surveys and operational monitoring, and the EEAA Red Sea Protectorates recommended maintaining safe bird corridors between wind farms. The New and Renewable Energy Authority (NREA) and EETC were engaged through consultation sessions and project discussions. RCREEE and SafeSoar contributed to discussions on bird migration and collision risk management.

Additional information was obtained for the BAP from stakeholders such as RCREEE and SafeSoar, regarding monitoring results from various wind energy projects in the region and efficiency of the Active Turbine Management Program (ATMP).

No further stakeholder consultation is planned specifically for the BAP at this stage. A likely next step will be to develop an offset feasibility study which will require additional stakeholder engagement (see Section 11.4).

3 Corporate policies and commitments and lender requirements

3.1 Corporate policy

Scatec has a framework for identifying and managing all environmental and social (E&S) aspects relevant to the business under its Environmental and Social Management System (ESMS). This system guides the management of biodiversity risks throughout the projects lifecycle, starting from the initial project assessment, planning, construction and operations to the project decommissioning phase. Scatec is committed to operating in line with the Equator Principles,

IFC's Environmental and Social Performance Standards and OECD Guidelines for Multinational Enterprises (OECD 2023) to ensure consistent practices across all projects.

3.2 Lender requirements

The Project is committed to align with IFC PS6 (IFC 2012, 2019) EBRD ESR6 (EBRD 2024, 2025a, 2026), EIB ESS4 (EIB 2022) and other good international industry practice (GIIP) guidance such as the World Bank Group's Environmental Health and Safety Industry General and Sectoral Guidelines on Wind Energy (World Bank Group 2015). Specific PS6, ESR6 and ESS4 requirements applicable to this BAP are highlighted in the relevant sections of this document.

The objectives of IFC PS6, EBRD ESR6 and EIB ESS4 are to protect and conserve biodiversity, maintain benefits from ecosystem services and promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities. IFC PS6 requirements depend on the classification of Project area in three classes based on condition and significance for biodiversity. These three classes are:

- Modified Habitat
- Natural Habitat
- Critical Habitat

IFC PS6 defines Natural Habitats as "areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition". Monoculture plantations, intensive agricultural areas and urban areas show substantial modification and are classified as Modified Habitat.

Areas of "high biodiversity value" are termed Critical Habitat by IFC, EBRD and EIB. Such a designation is based on the presence and/or quantity of significant types of biodiversity (e.g. threatened species, highly threatened ecosystems etc) and is independent of the condition of the habitat. The criteria for the definition of Critical Habitat according these lenders are summarised in [Appendix 2](#). In addition, IFC PS6 states that certain internationally recognised areas of high biodiversity value are likely to be classified as Critical Habitat.

IFC PS6 compliant projects must achieve 'no net loss' for Natural Habitats and net gain' for Critical Habitat values. IFC PS6 also requires projects in Protected Areas and internationally recognized areas to be developed in line with any government recognized management plans, be legally permitted, and implement additional programs to promote and enhance the conservation aims and effective management of the area.

In addition to CH, this BAP considers the Priority Biodiversity Features (PBF) as defined by the EBRD in its ESR6.

4 Biodiversity context

4.1 Ecological setting

The Project is located in the Red Sea Governorate, within the Red Sea Coastal Desert Ecoregion (Dinerstein *et al.* 2017). This ecoregion extends along the Red Sea coast of Egypt and Sudan and is characterised by an arid climate and represents a transition zone between the hyper-arid Sahara Desert and the Red Sea marine environment. The landscape consists of a desert area of sand and gravel plains, bisected by several shallow wadis. Land cover consists primarily of bare ground with very scattered low-growing vegetation, supporting a low diversity and abundance of terrestrial fauna (Zahran & Willis 2008).

The site's topography is entirely flat, with no significant hills or plateaus, dissected by several wadis and drainage channels that flow eastward (Safe Soar 2025). There is a large number of quarries operating in the region, which are scattered throughout the area. Based on land-cover mapping (TBC 2026a), the Project area and the wider landscape are classified predominantly as Natural Habitat (desert), with small and localised patches of Modified Habitat associated with existing infrastructure and developments outside the Project footprint.

The Project area is situated within the Red Sea/Rift Valley migratory flyway for migratory soaring birds (Figure 3), which connects breeding grounds in Europe and western Asia with wintering areas in Africa (BirdLife International 2015). This flyway is internationally recognised as one of the most important migration corridors globally, supporting very large numbers of migratory birds, particularly migratory soaring birds such as raptors, storks and pelicans during spring and autumn migration. The flyway is used by over 1.5 million individuals from 37 species of migratory soaring birds, as well as a suite of migratory passerines and other bird groups (Porter 2005; BirdLife International 2015; Jobson *et al.* 2021). While the terrestrial habitats within the Project area are not identified as key resting or roosting sites for migratory birds, the airspace above the wider region forms part of this major flyway.

The Project is located approximately 6 km west of the Gebel El Zeit Key Biodiversity Area (KBA) and Important Bird Area (IBA) (Figure 2).

This site represents a globally important migration corridor for soaring migratory birds which are funnelled through this stretch of coast, between the Gulf of Suez and the Red Sea Mountains, on their spring and/or autumn migrations. Birds of prey, storks and pelicans migrate through and usually land, rest or roost near the coastline and on the surrounding desert plains and hills. Gebel El Zeit itself serves as a stepping-stone for birds that make the crossing between the western coast of the Gulf of Suez and south Sinai in spring. In autumn the area is especially critical as many birds, after crossing the Gulf of Suez, arrive tired, flying at low altitudes and often land in large numbers.

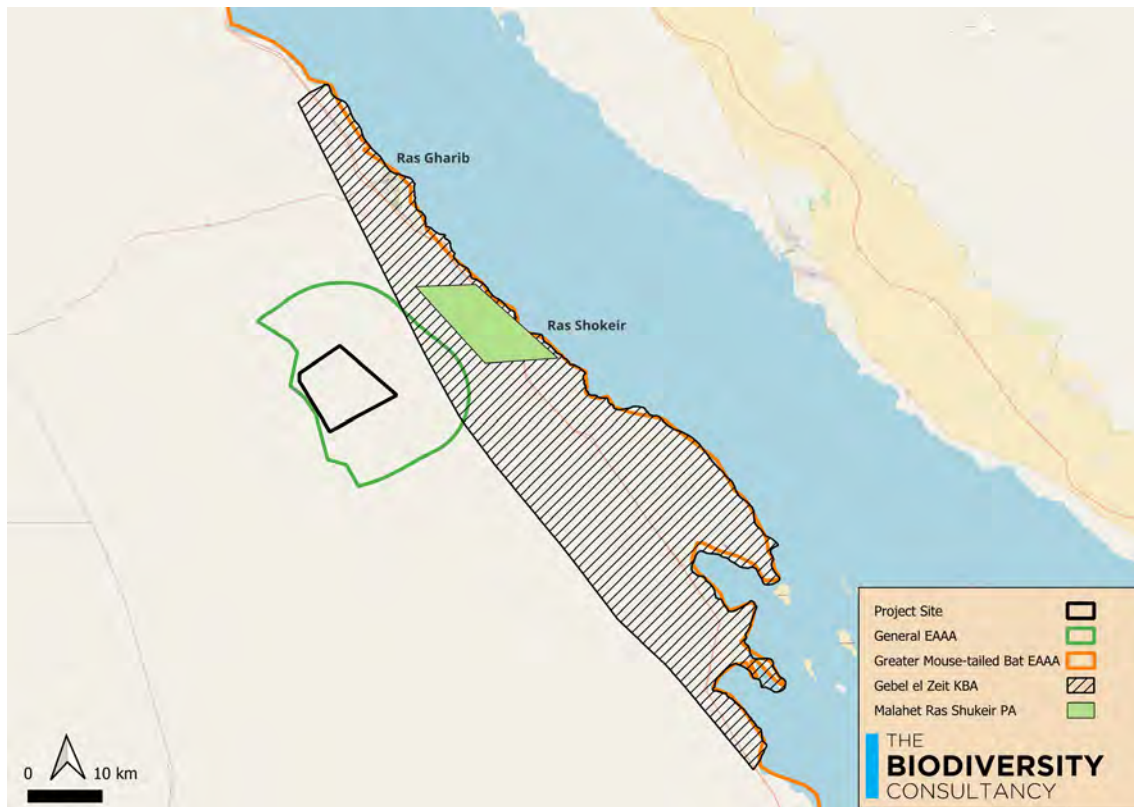


Figure 2. Map of Protected Areas and Internationally Recognised Areas in the context of the Project area and the Ecologically Appropriate Area of Analysis (EAAA) defined in the CHA.

Despite the proximity of the Project from the Gebel El Zeit KBA, it is considered that the Project does not compromise the integrity, conservation objectives and/or biodiversity of the KBA (EcoConsult & Safe Soar 2025).

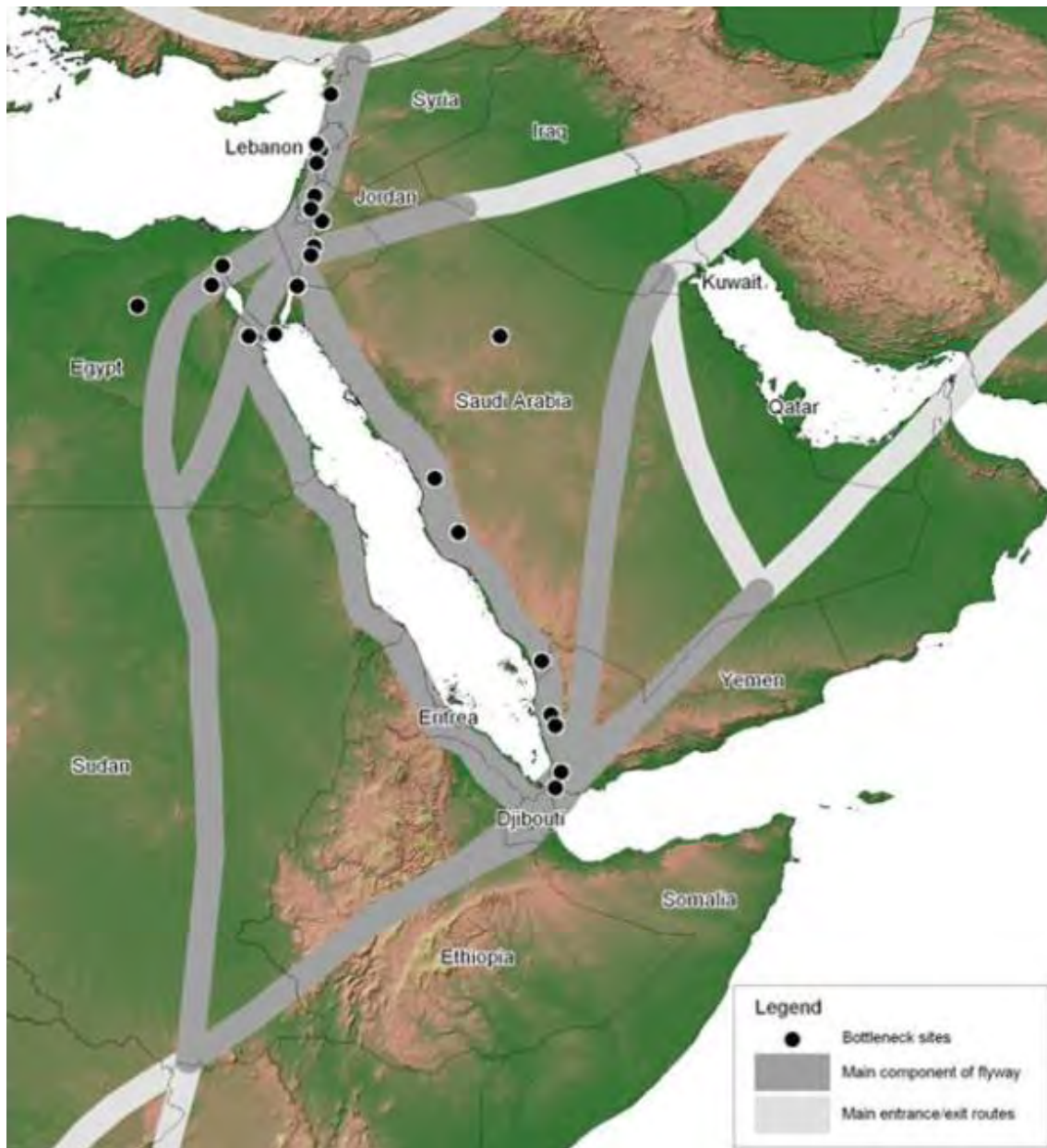


Figure 3. Map of the main elements of the Rift Valley/Red Sea flyway showing key bottleneck sites (source: BirdLife International).

4.2 Baseline and monitoring studies

The following documents developed for the Project have been consulted in the preparation of this assessment:

- Critical Habitat Assessment for the Project (TBC 2026a)
- Cumulative Effects Assessment for the Project (TBC 2026b)

- Draft Environmental and Social Impact Assessment (ESIA) Report (EcoConsult & Safe Soar 2025)
- Biodiversity Assessment Study (Safe Soar 2025)
- Bird Migration Study Spring Season 2025 (Camina 2025a)
- Bird Migration Study Autumn Season 2025 (Camina 2025b)
- Updating Survey for Egyptian Spiny tailed Lizard *Uromastyx aegyptia* (Safe Soar 2024)
- Biodiversity risk assessment for the installation of wind measuring masts at the GigaWind 900 MW wind power plant, Egypt (TBC 2025a).

This BAP has been based on existing Project documents and secondary data. No specific field surveys have been completed to inform the development of the BAP.

4.3 Priority biodiversity

This BAP focuses on biodiversity features that require special management measures rather than all biodiversity. This section confirms the priority biodiversity values for the Project to which the goals of NNL apply.

The following categories of biodiversity values, that are likely affected by the Project, are priorities in this BAP (see Table 1)

- Species that qualify the area as **Critical Habitat** under IFC PS6, EBRD ESR6 or EIB ESS4, identified in the CHA (TBC 2026a)
- Migratory Soaring Bird species classified as **PBFs** under EBRD ESR6, identified in the CHA (TBC 2026a)
- Non-bird species classified as **PBFs** under EBRD ESR6, identified in the CHA (TBC 2026a)
- Migratory Soaring Bird species considered as **priority VECs**, identified in the CEA (TBC 2026b)
- Species of stakeholder concern: two raptor species which are considered to possibly be breeding in the mountains adjacent to the Project: Golden Eagle (*Aquila chrysaetos*) and Sooty Falco (*Falco concolor*)

Additionally a suite of PBFs (EBRD 2024, 2025b) have been identified for the Project (TBC 2026a). One is reptile, the Egyptian Spiny-tailed Lizard (*Uromastyx aegyptia*) and another a mammal, the Dorcas Gazelle (*Gazella dorcas*). The remaining are all migratory bird species that are considered to be regularly present in the Project area (see TBC 2026a for a full list of the species).

Table 1. Priority biodiversity for the Project. Species marked with an asterisk (*) are considered to be of stakeholder concern.

Scientific name	English name	IUCN Category ^a	CH species ^b	PBF species ^b	Priority VEC ^c
<i>Accipiter brevipes</i>	Levant Sparrowhawk	LC		✓	✓
<i>Accipiter nisus</i>	Eurasian Sparrowhawk	LC		✓	
<i>Aquila chrysaetos</i> *	Golden Eagle	LC			
<i>Aquila heliaca</i>	Eastern Imperial Eagle	VU		✓	✓
<i>Aquila nipalensis</i>	Steppe Eagle	EN	✓		✓
<i>Buteo buteo vulpinus</i>	Eurasian (Steppe) Buzzard	LC		✓	✓
<i>Buteo rufinus</i>	Long-legged Buzzard	LC		✓	
<i>Ciconia ciconia</i>	White Stork	LC	✓		✓
<i>Ciconia nigra</i>	Black Stork	LC		✓	✓
<i>Circus gallicus</i>	Short-toed Eagle	LC		✓	
<i>Circus aeruginosus</i>	Western Marsh Harrier	LC		✓	
<i>Circus macrourus</i>	Pallid Harrier	NT		✓	✓
<i>Circus pygargus</i>	Montagu's Harrier	LC		✓	
<i>Clanga clanga</i>	Greater Spotted Eagle	VU		✓	✓
<i>Clanga pomarina</i>	Lesser Spotted Eagle	LC		✓	
<i>Falco biarmicus</i>	Lanner Falcon	LC		✓	
<i>Falco concolor</i> *	Sooty Falcon	VU		✓	
<i>Falco eleonora</i>	Eleonora's Falcon	LC		✓	
<i>Falco naumanni</i>	Lesser Kestrel	LC		✓	
<i>Falco peregrinus</i>	Peregrine Falcon	LC		✓	
<i>Falco subbuteo</i>	Eurasian Hobby	LC		✓	
<i>Falco tinnunculus</i>	Common Kestrel	LC		✓	
<i>Falco vespertinus</i>	Red-footed Falcon	VU		✓	
<i>Grus grus</i>	Common Crane	LC		✓	✓
<i>Gyps fulvus</i>	Griffon Vulture	LC		✓	
<i>Hieraetus pennatus</i>	Booted Eagle	LC		✓	✓
<i>Milvus migrans</i>	Black Kite	LC		✓	✓
<i>Neophron percnopterus</i>	Egyptian Vulture	EN		✓	
<i>Pandion haliaetus</i>	Osprey	LC		✓	
<i>Pelecanus onocrotalus</i>	Great White Pelican	LC		✓	✓
<i>Pernis apivorus</i>	European Honey-buzzard	LC		✓	✓
<i>Pernis ptilorhynchus</i>	Crested Honey Buzzard	LC		✓	
<i>Eptesicus bottae</i>	Botta's Serotine	LC			✓
<i>Hypsugo ariel</i>	Desert Pipistrelle	DD			✓
<i>Pipistrellus rueppellii</i>	Rüppel's Pipistrelle	LC			✓
<i>Uromastix aegyptia</i>	Egyptian Spiny-tailed Lizard	VU		✓	
<i>Gazella dorcas</i>	Dorcas Gazelle	VU		✓	

^a LC = Least Concern, DD = Data Deficient, EN = Endangered, VU = Vulnerable and NT = Near Threatened.

^b As defined in the Critical Habitat Assessment (TBC 2025b).

^c As defined in the Cumulative Effects Assessment (TBC 2025c)

The CHA also found that the Project is in an area of primarily Natural Habitat as defined by IFC (IFC 2012, 2019). The ESIA considers this habitat to be 'common in the wider region and with no specific importance or vulnerability', and therefore of low sensitivity (EcoConsult & Safe Soar 2025). The ESIA considers that the Natural Habitat that will be affected by construction activities is highly disturbed and degraded and not considered a priority (EcoConsult & Safe Soar 2025). The Project footprint will impact essentially areas of bare soil with no vegetation, and the few plants that can be found (mostly in the wadis where no permanent infrastructure will be installed) belong to widespread and non-threatened species. The globally Vulnerable Egyptian Spiny-tailed Lizard (*Uromastix aegyptia*) can be found in this habitat (especially in areas close to vegetation patches, where it forages), but specific measures will be implemented to safeguard this species (see Section 6.2.3)

Therefore, Natural Habitat in the Project area is not considered a priority biodiversity value in this BAP. While IFC PS6 requires>NNL of Natural Habitat, where feasible (following IFC 2012 paragraph 15 and footnote 9), the assumption of this BAP is that Project impacts to Natural Habitat are minimised as far as practicable through controls in the Project's ESIA and supporting documents (EcoConsult & Safe Soar 2025). Any further impacts are considered to be insignificant and therefore Natural Habitat will not be discussed further in this BAP. It should also be noted that the Natural Habitat is desert, with almost no vegetation in this case.

Additionally, wadis with permanent vegetation, an ecosystem/habitat VEC identified in the CEA, are also not considered a priority biodiversity value in this BAP. The assumption of this BAP is that the construction of infrastructure in wadi habitats has been avoided as far as possible due to the associated flood risk (EcoConsult & Safe Soar 2025) and no further mitigation has been proposed. Any further impacts are considered to be insignificant and therefore this habitat is not discussed further in this BAP.

4.3.1 Critical Habitat qualifying biodiversity

The CHA concluded that two migratory soaring bird species trigger Critical Habitat (TBC 2026a). Consequently, and according to paragraph 18 of IFC PS6 (IFC 2012), the Project must develop a BAP describing a mitigation strategy designed to achieve Net Gain of those biodiversity values for which Critical Habitat was triggered.

4.3.2 Priority Biodiversity Features

In addition to CH values, EBRD also defines a suite of PBFs which are of lower concern, but still important for a project to consider (EBRD 2024, 2025a). The Project CHA (TBC 2026a) classified a set of species as PBFs), including 29 migratory soaring bird species, one resident bird species, the Golden Eagle, *Aquila chrysaetos*, three bat species, the Egyptian Spiny-tailed Lizard, which was recorded within the Project area and surrounding landscape and for which evidence indicates a local population within the region, and the Dorcas Gazelle (*Gazella dorcas*), for which a single individual was recorded within the Project area. This record is considered to represent a

potentially isolated or newly identified occurrence and is treated with particular caution (TBC 2026a).

Non soaring bird species that qualify as PBF were not considered a priority for the Project, since, so far, those species suffer negligible impacts resulting from collisions with the Project infrastructure.

According to EBRD ESR6, the Project must achieve an NNL for PBFs. The Project's mitigation strategy to achieve NNL for these features is described in the following sections of this report. Where significant residual impacts on PBFs remain, additional remediation and offset measures may be required to achieve NNL.

4.3.3 Priority VECs

Valued Environmental Components (VECs) is a concept used in the practice of cumulative impact assessment to indicate an environmental or social attribute that is considered important in assessing risk. Priority VECs are those at highest risk of cumulative effects from the Project in the study area, and identification of Priority VECs allows mitigation, monitoring and management measures to be focused on those species of highest risk. Identification of Priority VECs for the Project has been undertaken in a Cumulative Effects Analysis (CEA), which identified ten migratory bird species and three bat species (TBC 2026b).

5 Potential impacts on priority biodiversity

This section provides an overview of potential biodiversity impacts related to the Project and associated infrastructures, including the OHTL. The impacts mentioned below have been compiled and interpreted using the Project ESIA (EcoConsult & Safe Soar 2025) and sector guidelines (Bennun *et al.* 2021; OECD 2024; EBRD 2026). A quantitative residual impact assessment (after mitigation) is presented in Section 7.

5.1 Construction impacts

Project impacts occurring during construction are associated with the installation of turbines and associated infrastructure (e.g., access roads, hard stands, buildings, powerlines).

These activities will primarily affect the Egyptian Spiny-tailed Lizard through habitat loss and degradation and direct loss of individuals. Also, the species could be impacted by disturbance (e.g. due to noise, light, vibration, and human presence), collision with vehicles or hunting pressure by Project staff.

The Dorcas Gazelle may also be impacted by disturbance, collision with vehicles or hunting pressure by staff. However, as the Project area is not considered suitable grazing habitat for the species (Safe Soar 2025), impacts are likely to be non-significant.

Construction activities are unlikely to significantly impact resting or foraging areas for migratory birds as there are no identified preferential stop-over or regular roosting sites within the Project area (EcoConsult & Safe Soar 2025; Safe Soar 2025).

5.2 Operational impacts

The main impact of the operational wind farm is the collision of susceptible bird species with turbines (Bennun *et al.* 2021; EcoConsult & Safe Soar 2025; EBRD 2026). Turbines may also act as a barrier to the normal movements of some bird species (Bennun *et al.* 2021).

Bats are also very much susceptible to collisions with wind turbines (Thaxter *et al.* 2017; Adams *et al.* 2021; Bennun *et al.* 2021). However, bats are scarce in the region and, so far, results from Post-Construction Fatality Monitoring (PCFM) have revealed negligible bat mortality (SafeSoar, RCREEE pers. comm.).

Electrocutions of birds may also occur at transmission pylons, while collisions of birds may occur with wires of the transmission line (Prinsen *et al.* 2011; Bennun *et al.* 2021). The transmission line may also act as a barrier to the normal movements of some bird species.

Potential impacts to the Egyptian Spiny-tailed Lizard during operation are related to:

- Disturbance due to noise, light, and human presence (machinery, vehicles, blasting);
- collision with vehicles; and,
- hunting pressure by project staff.

Operational impacts to the non-bird priority species are expected to be non-significant. Impacts during operations on the Egyptian Spiny-tailed Lizard are expected to be negligible. Impacts during operations on bat species, specifically the risk of collision with turbine blades, are also expected to be negligible. Nonetheless, continued monitoring through PCFM is required, and adaptive management measures will be implemented if impacts are detected.

The Dorcas Gazelle could be impacted by disturbance caused by operational turbines or maintenance activities. However, as the Project area is not considered suitable grazing habitat for the species (Safe Soar 2025), impacts are likely to be non-significant.

6 Mitigation approach for biodiversity management

6.1 Mitigation hierarchy

The mitigation measures adopted by the Project will follow the mitigation hierarchy: avoid, minimise, restore, and compensate/offset (Figure 4). Avoidance entails 'designing out' an impact or risk (e.g., through relocating a project component, avoiding a harmful activity, employing alternative technology), preventing their expected impacts on biodiversity. Minimisation reduces the severity of impacts on biodiversity by controlling or limiting the source of that impact and reduce the likelihood or magnitude of biodiversity impacts, but do not completely prevent them.

Restoration seeks to recreate the original (pre-project) habitat type or to actively enhance the rate of recovery of degraded habitats on the Project site, with a focus on areas affected temporarily during construction. Where significant residual impacts remain, compensation and/or offset actions to achieve an overall NNL for the relevant biodiversity features will need to be developed.

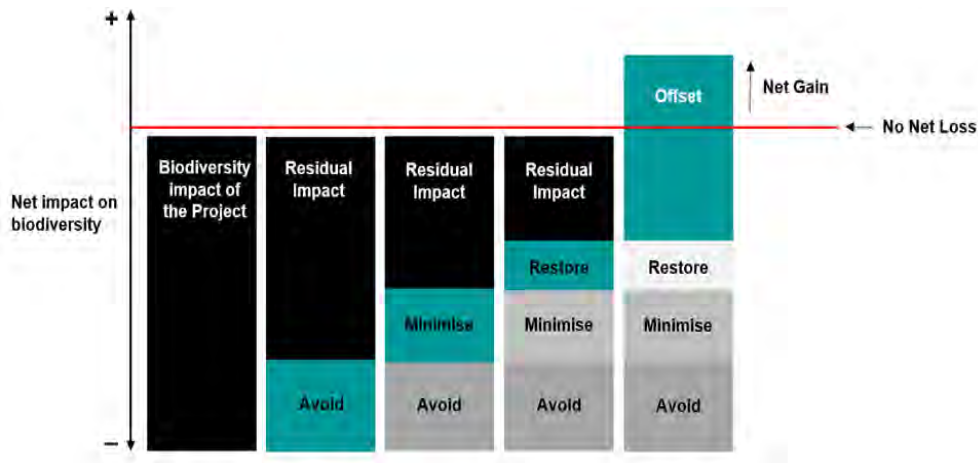


Figure 4. The mitigation hierarchy and delivery of net positive impact on biodiversity

6.2 Mitigation and monitoring actions

The overall approach to mitigation is detailed within the Project ESIA (EcoConsult & Safe Soar 2025). The following sections present the mitigation and monitoring actions for each priority biodiversity value that may be impacted by Project activities. General GIIP mitigation and monitoring actions are presented in Section 6.2.5.

6.2.1 Priority birds

The main impacts on priority birds species result from the presence and operation of wind turbines, thus **Avoidance** of impacts is not possible without moving the wind farm which is unfeasible.

Soaring bird collision mortality has been identified as the main biodiversity risk associated with the Project. **Minimisation** of such impacts (Section 6.2.1.1) on migratory soaring birds will be implemented in the Project from the start of operation, through the adoption of Shut-Down On Demand (SDOD) following the protocols established under the overarching framework of the Active Turbine Management Program (ATMP) for Wind Power Projects in the Gulf of Suez (e.g. GreenPlus Environmental Solutions 2021, 2022; NREA & SafeSoar 2023; EcoConsult & Safe Soar 2025).

Onsite **restoration** of habitats is not possible for these species as none are likely to regularly use any terrestrial habitat present.

The requirement for **offsets** for priority birds is discussed in Section 8.

6.2.1.1 Priority birds – Minimisation of turbine collision mortality

Shutdown on demand

The project will implement bird monitoring and this SDOD approach during spring and autumn migratory seasons for the life of the Project. The start and end of the monitoring period and the final detailed delineation of the ATMP will be agreed with the ATMP Technical Committee¹ prior to commencement of each migration season.

Based on current information, monitoring must take place during the spring migration season (from 20 February until 15 May) and autumn migration season (from 10 August until 15 November). Throughout these periods, monitoring will take place every day and last for 10 – 12 hours each day, between one hour after sunrise and one hour before sunset. A set of Vantage Points (VPs) for monitoring flight activity and to facilitate effective SDOD will be defined, ensuring all the turbines and a buffer area will be covered by constant observation. The buffer will ensure that enough time is available for turbines to be shut down when birds approach. Observers at vantage points will use walkie-talkies (and mobile phones, as a backup) to communicate between each other and the SCADA coordinator (when a shutdown is necessary). Observers will work in pairs and in shifts to ensure a vigilance throughout the daily survey period. During the SDOD monitoring, observers will detect and count all migratory soaring birds in the Project area and map their movements. They also will evaluate collision risk and determine whether one or more wind turbines should be temporarily shut-down, based on pre-determined shut-down criteria, that include:

- *Condition 1 – Threatened species*
Whenever a targeted soaring bird(s) of a threatened species (according to up-to-date IUCN Red List) is detected in the wind farm area or heading towards it at risky flight altitudes (≤ 200 m);
- *Condition 2 – Flocks with 10 or more targeted soaring birds*
Whenever flocks with 10 or more soaring birds are detected in the wind farm area, or heading towards it, at risky flight altitudes (≤ 200 m);
- *Condition 3 – Imminent risk of collision*
Even when the previous conditions are not met, one or more turbines should be shut down whenever there is an imminent high risk of collision of migratory soaring bird(s) with turbine(s);
- *Condition 4 – Extreme weather*

¹ This includes members from Regional Center for Renewable Energy and Energy Efficiency, Egyptian Environmental Affairs Agency (EEAA) and Egyptian Electricity Transmission Company (EETC)

Turbines should be shut down during extreme weather events (e.g., sand/dust storms) or other precarious events that threaten the safety of the monitoring team or the targeted soaring birds, whenever conditions 1 or 2 have been verified in the two hours that preceded the event; and,

- *Condition 5 – Roosting inside or near windfarm area*

Whenever bird(s) of a threatened species (Condition 1) or flocks with 10 or more soaring birds (Condition 2) are detected roosting or attempting to roost inside or near the windfarm area (≤ 2000 m), risky turbines should be shut down until the bird(s) depart the risk zone, or until the risk is assessed as low by the Field Coordinator.

Flexible Fixed Shutdown Program

A **Flexible Fixed Shutdown Program** will be implemented whenever the conditions in the field do not allow for the correct implementation of SDOD (e.g. the team cannot be present in the field due to health and safety limitations such as adverse weather conditions, including sand storms, there is not enough visibility to perform SDOD, there is reason to believe that SDOD criteria would be triggered during the period when the team is not in the field in the early morning or late evening).

In these situations, the team coordinator will decide to shutdown risky turbines for a fixed period of time, even if none of the SDOD criteria can be confirmed.

Fixed shutdown will be implemented in turbines that are considered to pose higher risk, based on existing baseline and monitoring information (adaptive management will be regularly applied, i.e., before the start of each season, incorporating the results of previous monitoring periods) or based on conditions observed in the field (density of migration on that particular day, presence of resting birds, etc.).

Breeding raptor surveys

The ESIA (EcoConsult & Safe Soar 2025) proposes the following actions targeting the potential breeding pair of Golden Eagle and potentially breeding Sooty Falcons:

- Specific cliff nesting raptor pre-construction monitoring during the breeding seasons (from early February until the end of the breeding season). Efforts will be made to determine the location of the nest site. These surveys should also include an effort to detect potentially breeding Sooty Falcons.
- Depending on the nest location, monitoring of the breeding success. The methods will be developed by international consultants with experience with cliff nesting raptors in arid environments.
- Recommended satellite tracking of the breeding pair of Golden Eagle and nestlings (if it is feasible to capture the individuals safely). This will allow to determine the foraging areas and overlap with the Project area. This will allow to establish mitigation throughout the year.

If the presence of breeding attempts by either of these species is recorded during the pre-construction surveys a priority breeding raptor protection plan will be developed (including a no construction activity buffer informed by evidence-based disturbance buffers).

Adaptive Management

Existing and future data on bird monitoring, bird behavioural variables, site specific characteristics and weather data and other relevant data will be used to:

- define/delimit the key flight activity periods at the Project area; and,
- identify high-risk areas and times, and definition of groups of turbines by zones for the SDOD and Flexible Fixed Shutdown Program and achieve effective coverage throughout the Project.

Additionally, all occurrences of birds roosting in the Project area or its vicinity will be reporting and analysed (species, numbers and location) in the ATMP monitoring reports. If adequate, further measures will be adopted to reduce risk associated with this behaviour (e.g., setting camera traps to investigating disturbance causes, limiting access to frequent roost sites).

Collective data on monitoring results (migration counts, shutdown on demand operations and fatalities) from all seasons (aiming to provide insights relevant to inform ongoing ATMP and fatality monitoring) will be compilation and analysed.

Use of radars or cameras to improve the performance of the ATMP

The use of technology to support shutdown on demand operations can enhance performance (Tomé *et al.* 2017). In Egypt, however, the deployment of such technologies depends on permits from the relevant authorities, and their operation is subject to specific limitations and constraints. An ongoing Strategic Environmental and Social Assessment (SESA) for renewable energy projects in the Gulf of Suez, is evaluating the applicability of these technologies. If the SESA concludes that they could improve the current ATMP, even considering existing constraints, their integration into the project will be considered.

6.2.1.2 Priority birds – Minimisation of OHTL collision mortality

The OHTLs associated with the Project are considered an associated facility and are the responsibility of the Egyptian Electricity Holding Company (EETC). In accordance with IFC PS1 and EBRD ESR1, the Project must make all possible efforts to reach an understanding with EETC to ensure that impacts caused by the OHTL on priority species are addressed, including the implementation of mitigation and monitoring in line with GIIP. Specifically, the Project will liaise with EETC to develop a protocol for the installation of Bird Flight Diverters (BFDs) along all the transmission line to minimize bird collisions. General guidance for BFDs implementation is included in [Table 2](#) in section 6.2.5. Electrocution impacts are not considered relevant for the high voltage transmission lines.

6.2.1.3 *Priority birds - Post Construction Fatality Monitoring (PCFM)*

PCFM will be conducted at the turbines and along the transmission line, to determine the success of mitigation measures and contribute to the adaptive management process.

PCFM design will be informed by the Decision Support Tool in IFC *et al.* (2023) and will remain consistent as much as possible to allow for comparison over time.

PCFM will be supervised by a wildlife expert with a proper background on data collection and statistical analysis.

PCFM results will be regularly compared with the fatality threshold values defined for each of the priority bird species potentially impacted by the Project (see the Project's Cumulative Effects Assessment: TBC 2026b).

6.2.1.4 *Priority birds – Adaptive management*

Adaptive management is triggered when the results of PCFM show that the fatality thresholds have been exceeded, for any species. The adaptive management approach will be aligned with the following process.

Adaptive management will follow a set of clear sequential actions, specifically:

- Conduct a review to determine the primary reasons why a threshold was exceeded; and,
- Review the effectiveness of existing mitigation and determine whether a revised mitigation strategy is required, and if so, design revised mitigation. Possible options for revised mitigation for birds may include expanding SDOD to include other (non-Red Listed) priority species, extending the temporal period of SDOD, increasing the number of observers, additional observer training, using additional technology to assist shutdown on demand (e.g., cameras, radar) etc. The type and intensity of mitigation, and at which turbines and during which periods it must be implemented, must be based on a combination of actual carcass data found at specific turbines and the bird flight data in those specific areas. If improved mitigation proves insufficient, compensation may need to be considered to account for any losses above the thresholds.
- If needed, define a revised threshold.
- Define the actions to be taken if the new threshold is exceeded.

This process is iterative, and the breaching of successive thresholds will be matched by an increase in the measures to protect and promote the viability of priority bird populations.

Adaptive management responses are not limited to exceeded thresholds and may be triggered in response to other events, such as:

- Evidence of an increased risk to a population from other non-project sources, e.g., evidence of increased persecution during the operations phase may lead to reassigning a priority bird to a zero-fatality threshold.

- An elevated risk situation, such as increased presence of a high collision-risk priority species in the wind farm, e.g., carcass dumping may result in increased large raptor activity in the area.
- A near-miss incident, in which no fatality occurred but existing mitigation failed to prevent the risk, e.g., a priority raptor observed flying through rotor airspace.
- A mortality event, which will be investigated to provide indications for improvement under adaptive management. For each carcass that is found an investigation must be conducted by the ATMP team to investigate the likely reasons leading to the failure in the SDOD system (e.g., communication failure, bird was not detected, adverse weather/sand storm, bird disturbed while roosting, SCADA failure). Results of this investigation, along with any resulting changes in protocols, will be included in the ATMP monitoring report.
- The results of the periodic revision of the Project's CEA (TBC 2026b), i.e. when increased information from the study area and from elsewhere along the flyway alters the level of risk to priority bird species or results in the identification of new priority species. Such information may include changes in species' Red List status, improved flyway population estimates, updated study area data (and therefore revised estimates of the proportion of flyway populations passing through the project area of influence), and improved understanding of the likelihood and magnitude of Project impacts.

In addition, a regional SESA and CIA is currently being undertaken for the entire Gulf of Suez region. The results of this assessment which are expected to be available before the end of 2026, may influence both the selection of priority bird species and a revision of mortality thresholds. The new regional SESA is expected to provide guidance regarding mitigation for all projects operating in the region.

6.2.2 Priority bats

No avoidance or minimisation of impacts to the priority bat VECs has been incorporated into Project design. Bat populations are scarce in the region and, so far, very few mortality events have been recorded in any of the operational wind farms (SafeSoar & RCREEE pers. comm.) Continued monitoring through PCFM is required, and adaptive management measures will be implemented if impacts are detected.

6.2.3 Egyptian Spiny-tailed Lizard

Project impacts to the Egyptian Spiny-tailed Lizard are primarily the destruction of habitat, plus the potential loss of, or disturbance to, individuals from construction activities (noise, light, vibration) and human presence (machinery, vehicles, blasting), collision with vehicles and increased hunting pressure by project staff.

Pre-construction surveys for sensitive species of herpetofauna have taken place, allowing to map the locations of known/active burrows used by Egyptian Spiny-tailed Lizard throughout the Project Area (Safe Soar 2024). Detailed design for the final layout will consider the results of these pre-construction surveys and Project infrastructure and access roads will be sited to avoid the identified burrows to the greatest extent possible.

Before any construction activity takes place, pre-clearance surveys will be conducted to ensure that no burrows will go undetected. Where occupied burrows are identified at the commencement of clearance works, these burrows will be carefully excavated and the animals captured and translocated as per the protocol described below.

Capture and translocation of Spiny-tailed Lizards will only be completed as a **last resort**. This measure is applied when avoidance is not possible, or when fresh burrows are identified at the commencement of clearance works or within active working areas. The translocation protocol would be as follows:

- If any animal is found in the working areas or if excavation is necessary, the burrow will be excavated carefully by hand;
- The animal will be captured and immediately placed in a secure box;
- It will then be transported to a cool location to await translocation to the receptor site;
- Once the lizard is removed, the original burrow hole will be collapsed and made unsuitable for future use to prevent reoccupation in an unsafe area;
- Prior to any translocation, suitable areas for translocation will be identified (appropriate vegetation and soil – preferably with existing abandoned burrows),
- If areas suitable for translocation exist within the Project Area, these will be prioritized. This minimizes the impacts of transporting animals away from their familiar local environment. If no such sites exist, suitable sites within 10 km of the Project area will be identified for future release of individuals considering the presence of suitable soil and habitats, but which is not at apparent carrying capacity.

Seasonal Translocation Protocol:

- **Summer or Spring Translocation:** If translocation takes place in the **summer or spring season**, adult lizards in good condition can be translocated **directly to the suitable receptor site**. These seasons offer optimal conditions for immediate release and adaptation.
- **Winter or Autumn Translocation:** If translocation occurs in the **winter or autumn season**, or the lizard is a juvenile or adult in poor condition, the lizard **will be kept in a suitable enclosure** until its release in the subsequent summer or spring season. This protects the animal from harsh weather and scarce resources.

After the relocation period, a comprehensive report will be prepared, including the following information:

- **Survey Details:** Dates and timing of surveys, capture, and release efforts.
- **Environmental Conditions:** Weather conditions during survey and relocation.
- **Captured Individuals:** Location of captured individuals and the number of individuals captured during each relocation effort.
- **Demographics:** Number of juveniles, mature males, and mature females.
- **Release Sites:** Specific release sites used for each relocation effort.

- **Gender Distribution at Release:** Number of males and females released at each site.
- **Mortality:** Number of mortalities observed during the relocation effort.

The following measures will also be implemented to minimize onsite disturbance on the species:

- Promote awareness among staff and contractors of the ban on hunting and train them in the environmentally appropriate procedures to follow on site during construction and operation;
- If the use of explosives is necessary during construction, pre-cutting techniques and micro-retarders will be used, attenuating the intensity of the vibrations produced;
- Establish low-speed traffic rules and adequate signposting on the project's roads/accesses to reduce the likelihood of road kills.

6.2.4 Dorcas Gazelle

Project impacts to Dorcas Gazelle are considered unlikely. Only one individual was recorded in the Project area, where no suitable grazing habitats for the species were identified (Safe Soar 2025). Nevertheless, this record appears to be far from any other recent known population of the species, so it should be treated as a newly discovered population and handled with caution. Additional surveys are required to clarify the status of the Dorcas Gazelle in the Project area and its vicinity. If the species is found to be regularly present in the Project's area of impact, this BAP will be updated to include detailed mitigation measures based on the survey results.

It is recommended that monitoring with camera traps is conducted prior to the start of, and during, construction to assess whether disturbance or barrier effects are occurring. If monitoring reveals that impacts may be occurring, adaptive management will be implemented (this may include offsetting or additional conservation actions, depending on the significance of impacts).

The additional measures proposed for the Egyptian Spiny-tailed Lizard consisting of awareness raising for the workers, ban on hunting, low speed traffic rules and installation of appropriate signposting also apply for this species.

6.2.5 General GIIP mitigation and monitoring actions

In addition to the species-specific mitigation measures outlined in this BAP, the Project will implement a suite of general Good International Industry Practice (GIIP) mitigation actions to further reduce biodiversity risks and support consistent application of the mitigation hierarchy. The mitigation measures cover a range of temporary and permanent impacts that are expected to occur from the construction and operation of the Project. The actions will be implemented in conjunction with any other relevant management documents and plans developed for the Project.

Table 1 includes GIIP mitigation actions, including those from the World Bank Group Environmental, Health, and Safety (EHS) General Guidelines, and EHS Guidelines for Wind Energy (World Bank Group 2007, 2015), and the guidelines for mitigating biodiversity impacts

associated with solar and wind energy development (Bennun *et al.* 2021). The ultimate implementation and oversight of the measures are under the responsibility of Scatec.

Table 1. GIIP mitigation measures to be implemented during construction and operation of the wind farm

ID	Requirement	Mitigation measure	Responsibility	Timeline	Frequency
BAP1	Minimise disturbance of priority bird and bat species	Avoid conducting wind farm construction and maintenance activities in the evening and at night (i.e. after 22:00), and avoid disturbance to active breeding attempts of priority species (determined by pre-construction surveys)	Scatec / Biodiversity Manager	During construction and operation	Continuous during construction and operation phase
BAP2	Minimise mortality and disturbance of priority bird and mammal species	Restrict vehicle traffic to pre-approved routes and enforce low-speed limits (30 km/h) on Project roads/access tracks to reduce the likelihood of wildlife roadkills and to minimise noise disturbance.	Scatec / Biodiversity Manager	During construction and operation	Continuous during construction and operation phase
		Limit the entrance and circulation of non-Project vehicles on site, as much as possible, through appropriate signage, in order to reduce the likelihood of wildlife roadkills and minimise noise disturbance.			
		Limit horn usage to essential safety situations only			
BAP3	Minimise mortality and disturbance of priority bird and mammal species	Enforce good behaviour by construction and maintenance workers, including the strict prohibition of hunting, poisoning, trapping, or any form of harassment of wild animals.	Scatec / Biodiversity Manager	During construction and operation	Continuous during construction and operation phase
BAP4	Minimise mortality and disturbance of priority bird and mammal species	Provide induction training to new staff upon their arrival, and periodically refresh staff on the working schedule, traffic regulations, and appropriate behaviour towards fauna	Scatec / Biodiversity Manager	Upon the arrival of new staff Throughout the project lifecycle	Once for new starters Refresh every six months during construction and

ID	Requirement	Mitigation measure	Responsibility	Timeline	Frequency
					once per year during operation
BAP5	Minimise mortality of priority bird species due to turbine collisions	Avoid attracting birds to predictable food sources, such as on-site or off-site waste disposal areas, or landfills; this is especially relevant for the priority raptors. Lighting of wind turbines will be reduced to the minimum recommended for aviation safety to avoid attracting birds.	Scatec / Biodiversity Manager	During operation	Continuous during operation phase
BAP6	Minimise mortality of priority bird species due to turbine collisions	Implement and maintain the Active Turbine Management Programme (ATMP) for the Project, including Shutdown-on-Demand (SDOD) measures consistent with the national ATMP framework for wind power projects in the Gulf of Suez. This includes the use of observer-led shutdowns and, where applicable, radar-assisted tools, in line with the Project-specific CEA and agreed ATMP protocols.	Scatec / Biodiversity Manager	During operation, throughout spring and autumn migration periods, in line with agreed ATMP protocols.	Daily during the monitoring period, for 10 – 12 hours each day, between c. one hour after sunrise and c. one hour before sunset.
BAP7	Minimise mortality of priority bird species due to turbine collisions	Develop and implement a protocol for the rescue and recovery of wild animals found injured.	Scatec / Biodiversity Manager	During operation	Develop protocol at the start of operation. Apply continuously in the operation phase

Table 2 includes mitigation measures for the OHTL. Construction and operation of all OHTLs associated with the Project are the responsibility of the EETC. These transmission lines are considered an associated facility to the Project, and responsibility of impact mitigation and monitoring lies with EETC. Scatec will make all possible efforts to reach an understanding with EETC to ensure that the prescribed mitigation and monitoring OHTL will be implemented.

Table 2. GIIP mitigation measures to be implemented during construction and operation of the transmission line

ID	Requirement	Mitigation measure	Responsibility	Timeline	Frequency
BAP8	Minimise disturbance of priority bird and bat species	Avoid conducting wind farm construction and maintenance activities in the evening and at night (i.e. after 22:00), and avoid disturbance to active breeding attempts of priority species (determined by pre-construction surveys)	EETC / Biodiversity Manager (collaboration with Scatec required)	During construction and operation	Continuous during construction and operation phase
BAP9	Minimise mortality and disturbance of priority bird and mammal species	Restrict vehicle traffic to pre-approved routes and enforce low-speed limits (30 km/h) on Project roads/access tracks to reduce the likelihood of wildlife roadkills and to minimise noise disturbance.	EETC / Biodiversity Manager (collaboration with Scatec required)	During construction and operation	Continuous during construction and operation phase
BAP 10	Minimise mortality and disturbance of priority bird and mammal species	Enforce good behaviour by construction and maintenance workers, including the strict prohibition of hunting, poisoning, trapping, or any form of harassment of wild animals.	EETC / Biodiversity Manager (collaboration with Scatec required)	During construction and operation	Continuous during construction and operation phase
BAP 11	Minimise mortality and disturbance of priority bird and mammal species	Provide induction training to new staff upon their arrival, and periodically refresh staff on the working schedule, traffic regulations, and appropriate behaviour towards fauna	EETC / Biodiversity Manager (collaboration with Scatec required)	Upon the arrival of new staff Throughout the project lifecycle	Once for new starters Refresh every six months during construction and once per year during operation

BAP 12	Minimise collisions of priority bird species due to transmission line collisions	Avoid attracting birds to predictable food sources, such as on-site or off-site waste disposal areas, or landfills; this is especially relevant for the priority raptors.	EETC / Biodiversity Manager (collaboration with Scatec required)	During operation	Continuous during operation phase
BAP 13	Minimise mortality of priority bird species due to transmission line collisions	Bird flight diverters (BFDs) will be installed on all overhead transmission lines (OHTLs) associated with the Project, for the full span length and on guyed meteorological masts according to the applicable International Best Practice standards at the time (e.g. Bernardino et al. 2019, Bennun et al. 2021, Martín Martín et al. 2022, McGowan 2024). BFDs will be placed on ground wires and fitted at 5 m intervals if there is only one ground wire, or alternating at 10 m intervals if there are two parallel ground wires, so as to generate a visual effect (as seen from a side perspective) equivalent to one BFD every 5 m (e.g. CIBIO 2020, Martín Martín et al. 2022, McGowan 2024). If the power line does not have ground wires, these devices will be placed on the conductors. Recommended BFDs are those showing some motion and/or reflective or fluorescing elements, e.g. Dynamic FireFly (HAMMARPRODUKTER AB), Rotamarka (Balmoral Engineer Pty Ltd), OWL - Overhead Warning Lights (Preformed Line Products) or Hawk Eye BFD-050 (Power Line Sentry). The OHTL must be insulated to avoid bird electrocution. Insulating materials will be installed near supports and conductors on poles to reduce electrocution risk.	EETC / Biodiversity Manager (collaboration with Scatec required)	During operation	Install once and ensure regular maintenance
BAP 14	Minimise mortality of priority bird species with transmission line collisions	Develop and implement a protocol for the rescue and recovery of wild animals found injured.	EETC / Biodiversity Manager (collaboration with Scatec required)	During operation	Develop protocol at the start of operation Apply continuously in the operation phase

The Project should implement monitoring activities to evaluate the implementation of the species-specific and general GIIP biodiversity mitigation measures presented in this section. The monitoring activities are briefly presented in Section 9.

7 Residual impact assessment

7.1 Priority birds

Residual impacts from the Project were estimated based on the Collision Risk Model (CRM) results provided by the Client (EcoConsult & Safe Soar 2025). CRMs rely several key assumptions, including species-specific bird avoidance rates (Band *et al.* 2007; Band 2012). Model outputs are particularly sensitive to this parameter, and even small changes in avoidance rates can substantially influence the predicted collision estimates (Cook *et al.* 2025). The ESIA (EcoConsult & Safe Soar 2025) presents a table with published avoidance rates for most of the relevant species, including a 'most realistic' value for each.

[Table 3](#) presents the CRM results for avoidance rates of 95%, 98% and 99.5% (EcoConsult & Safe Soar 2025). The avoidance rate identified in ESIA as the most likely value is highlighted in the table and has been used as the basis for the residual impact assessment. For those species that didn't have a most likely avoidance rate in the ESIA, we considered the value for a species of the same Genus with similar flight behaviour.

For the residual impact assessment, the effectiveness of shut-down on demand was assumed to be 93.16% (average for all species)² for all species, based on the success rate of the ATMP at the Lekela Wind Farm (TBC 2025d).

Additional fatalities from the Project's OHTL were based on the estimates produced in the Assessment of Associated Facilities for Shadwan 900 MW Project, which is an Appendix to the Project ESIA ([Table 4](#)). These estimates consider that the OHTL will be fitted with BFDs and that these will have a 50% efficacy in avoiding collisions.

Total annual estimated fatalities for the Project (wind turbines and OHTL) were 61.2 soaring birds, including 35.5 White Storks ([Table 3](#) and [Table 4](#)).

These estimated residual impacts will be revised when the results of PCFM (that will also cover the OHTLs) are available during Project operation.

² Note that ATMP success rate at the Lekela Wind Farm differed between spring (99.1%) and autumn (85%), showing that the ATMP may have different success rates in different conditions and therefore this figure should be interpreted with care.

Table 3. Estimated annual fatalities from collisions with wind turbines at the Project area for priority birds, based on CRM (EcoConsult & Safe Soar 2025) and predicted residual impacts assuming the ATM reduces fatalities by 93.16% for all species

English name	Target	Fatality threshold ³	Predicted annual collisions from CRM: Avoidance 99.5%	Predicted annual collisions from CRM: Avoidance 98%	Predicted annual collisions from CRM: Avoidance 95%	Predicted residual impacts from CRM: Avoidance 99.5%	Predicted residual impacts from CRM: Avoidance 98%	Predicted residual impacts from CRM: Avoidance 95%
Black Kite	NNL	3	7	30	72	0.5	2.1	4.9
Black Stork	NNL	3	4	18	44	0.3	1.2	3.0
Booted Eagle	NNL	0	0	1	3	0.0	0.1	0.2
Common Crane	NNL	3	0	0	0	0.0	0.0	0.0
Common Kestrel	NNL	5	0	0	0	0.0	0.0	0.0
Crested Honey Buzzard	NNL	0	0	0	0	0.0	0.0	0.0
Eastern Imperial Eagle	NNL	0	0	0	0	0.0	0.0	0.0
Egyptian Vulture	NNL	0	0	0	1	0.0	0.0	0.1
Eleonora's Falcon	NNL	0	0	0	0	0.0	0.0	0.0
Eurasian (Steppe) Buzzard	NNL	5	10	41	103	0.7	2.8	7.0

³ As defined in the Cumulative Effects Assessment (TBC 2026b).

English name	Target	Fatality threshold ³	Predicted annual collisions from CRM: Avoidance 99.5%	Predicted annual collisions from CRM: Avoidance 98%	Predicted annual collisions from CRM: Avoidance 95%	Predicted residual impacts from CRM: Avoidance 99.5%	Predicted residual impacts from CRM: Avoidance 98%	Predicted residual impacts from CRM: Avoidance 95%
Eurasian Hobby	NNL	3	0	0	0	0.0	0.0	0.0
Eurasian Sparrowhawk	NNL	0	0	0	0	0.0	0.0	0.0
European Honey-buzzard	NNL	5	3	13	32	0.2	0.9	2.2
Great White Pelican	NNL	3	20	82	206	1.4	5.6	14.1
Greater Spotted Eagle	NNL	0	0	0	0	0.0	0.0	0.0
Griffon Vulture	NNL	0	0	0	0	0.0	0.0	0.0
Lanner Falcon	NNL	0	0	0	0	0.0	0.0	0.0
Lesser Kestrel	NNL	3	0	0	0	0.0	0.0	0.0
Lesser Spotted Eagle	NNL	3	0	3	6	0.0	0.2	0.4
Levant Sparrowhawk	NNL	3	0	0	0	0.0	0.0	0.0
Long-legged Buzzard	NNL	3	0	1	2	0.0	0.1	0.1
Montagu's Harrier	NNL	3	0	0	0	0.0	0.0	0.0
Osprey	NNL	0	0	0	1	0.0	0.0	0.1
Pallid Harrier	NNL	0	0	0	0	0.0	0.0	0.0

English name	Target	Fatality threshold ³	Predicted annual collisions from CRM: Avoidance 99.5%	Predicted annual collisions from CRM: Avoidance 98%	Predicted annual collisions from CRM: Avoidance 95%	Predicted residual impacts from CRM: Avoidance 99.5%	Predicted residual impacts from CRM: Avoidance 98%	Predicted residual impacts from CRM: Avoidance 95%
Peregrine Falcon	NNL	0	0	0	0	0.0	0.0	0.0
Red-footed Falcon	NNL	3	0	0	0	0.0	0.0	0.0
Short-toed Eagle	NNL	0	1	3	7	0.1	0.2	0.5
Sooty Falcon	NNL	0	0	0	0	0.0	0.0	0.0
Steppe Eagle	NG	0	0	1	3	0.0	0.1	0.2
Western Marsh Harrier	NNL	3	0	0	2	0.0	0.0	0.1
White Stork	NG	5	325	1296	3221	22.2	88.6	220.3

Table 4 Wind turbine, OHTL and total residual impacts for the priority migratory soaring birds

Common name	OHTL predicted residual impacts	WTG predicted residual impacts	Project predicted residual impacts (WTG + OHTL)
Black Kite	1.2	0.5	1.7
Black Stork	0.1	0.3	0.4
Booted Eagle	0	0	0
Common Crane	0	0	0
Common Kestrel	0	0	0
Crested Honey Buzzard	0	0	0
Eastern Imperial Eagle	0	0	0
Egyptian Vulture	0	0	0
Eleonora's Falcon	0	0	0
Eurasian (Steppe) Buzzard	1.0	0.7	1.7
Eurasian Hobby	0	0	0
Eurasian Sparrowhawk	0	0	0
European Honey-buzzard	10.5	0	10.5
Great White Pelican	5.0	5.6	10.6
Greater Spotted Eagle	0	0	0
Griffon Vulture	0	0	0
Lanner Falcon	0	0	0
Lesser Kestrel	0	0	0
Lesser Spotted Eagle	0	0.2	0.2
Levant Sparrowhawk	0	0	0
Long-legged Buzzard	0	0	0
Montagu's Harrier	0	0.2	0.2
Osprey	0	0	0
Pallid Harrier	0	0	0
Peregrine Falcon	0	0	0

Common name	OHTL predicted residual impacts	WTG predicted residual impacts	<i>Project predicted residual impacts (WTG + OHTL)</i>
Red-footed Falcon	0	0	0
Short-toed Eagle	0	0.1	0.1
Sooty Falcon	0	0	0
Steppe Eagle	0	0	0
Western Marsh Harrier	0.1	0	0
White Stork	13.6	22.2	35.8

7.2 Priority bats

Bat populations in the region are known to be very scarce and so far very few instances of bat mortality have been recorded during PCFM at any of the operational wind farms (SafeSoar & RCREEE pers. comm.). Therefore, no significant residual impacts to any of the three priority bat VECs are predicted. Hence, no offsetting will be required to reach the Project's NNL requirement for these species. This conclusion is supported by post-construction fatality monitoring at adjacent wind farms in the Gulf of Suez region which have not found any bat carcasses during regular monitoring (e.g. Riad 2019, 2021, 2023; Safe Soar 2026). Nevertheless, PCFM will include bats and adaptive management should be implemented if fatalities occur.

7.3 Egyptian Spiny-tailed Lizard

The devised mitigation actions targeting the Egyptian Spiny-tailed Lizard are considered adequate to ensure that there are no predicted residual impacts for the species associated to the Project area and accordingly no offsetting will be required to reach the Project's NNL target for this species.

7.4 Dorcas Gazelle

With just a single Dorcas Gazelle recorded and no suitable grazing habitat present in the Project area (Safe Soar 2025), residual impacts are likely to be negligible, and therefore no offsetting is currently proposed for this species to reach the Project's NNL target. Nevertheless, due to the uncertainty of any residual impacts occurring, monitoring and adaptive management is recommended (see Section 6.2.4).

8 Offset strategy

8.1 No Net Loss approach

Offsets should be used as the last resource in the mitigation hierarchy, if significant residuals impacts remain after the previous steps (avoidance, minimization, restoration) have been implemented (e.g. CSBI & TBC 2015).

Offset actions can generate biodiversity gains either through averted loss (i.e. conservation actions that prevent predicted impacts from happening) and/or improvement (i.e. actions that increase a species' survival or productivity).

The development of potential offset actions should follow good practice (BBOP 2012, ICMM & IUCN 2013, Ledec & Johnson 2016) and key offset principles for achieving NNL include:

- **Ecological equivalence:** Biodiversity gains from offsets will be planned as "like-for-like or better".
- **Landscape context:** Offsets will be designed accounting for connectivity across the landscape, avoiding fragmentation, and maintaining flows of ecosystem services.
- **Additional:** Conservation gains will be clearly attributable to the Project's actions and will demonstrably be above and beyond results that would have occurred if the offset had not taken place.
- **Transparency:** The design, implementation and monitored outcomes of biodiversity offsets will be transparent, and communicated in the public domain.
- **Precautionary approach:** Estimates of gains and losses will be conservative and include a margin of precaution proportional to the risks involved in offset delivery.
- **Long-term outcomes:** Offsets will use an adaptive management approach, incorporating monitoring and evaluation, to secure outcomes that last at least as long as the Project impacts. Securing long-term financing is essential to ensuring permanence of the offset.
- **Stakeholder participation:** Offsets will be based upon appropriate, extensive and transparent stakeholder consultation.

8.2 Offset governance

Biodiversity offsets are more likely to be feasible in contexts with clear institutional arrangements, good governance and management responsibility, including a high level of stakeholder involvement throughout. This provides a good basis for long-lasting implementation of conservation actions. Important design principles for establishing this type of management system approach are to:

- Use existing governance structures wherever feasible
- Ensure any new structures that are created are appropriate to the scale and stakeholders involved
- Develop downward as well as upward accountability (implementation and financial) for all management structures
- Ensure structures to function efficiently

8.3 Offset requirements and targets

Annual offset goals for the priority species are shown in [Table 5](#). White Stork (estimated annual fatalities are 35.8) and Steppe Eagle (annual estimated fatalities are zero) trigger Critical Habitat and therefore offsets will be required to achieve NG.

For two other species (European Honey-Buzzard and Great White Pelican) predicted annual fatalities exceed the acceptable mortality threshold ([Table 5](#)). It should be noted that Great White Pelican fatalities resulting from collisions with the turbines may be overestimated, since SDOD efficacy should be higher for this species (close to 100%) because it is a slow flying bird, with large size and usually migrates in compact flocks. This makes them easy to spot at long distances and shutdown the relevant turbines in time. If the expected mortality rates (mainly from collisions with the OHTL) are confirmed, on a first phase, an adaptive management response will be triggered. If fatality rates still persist after adaptive management has been implemented, resulting in a non-compliance with NNL requirements, compensation through the form of offsets will be necessary.

For the Lesser Spotted, Eagle, Black Stork, Montagu's Harrier and Short-toed Snake Eagle annual estimated fatalities are between zero and one, which likely reflects an occasional mortality event, as fatalities in these species are usually quite rare in the operational wind farms in the region. If PCFM results indicate that mortality is occurring regularly, adaptive management actions will be required. Should these actions fail to reduce mortality, offsets should also be considered.

Annual offset targets are zero for all other species, but similarly to what has been mentioned before, if unexpected mortality is found as a result of PCFM, an adaptive management response will be triggered.

It must be acknowledged that a SESA for wind energy developments in the Red Sea region is being developed. One of the outcomes of the SESA is to propose annual mortality thresholds for migratory soaring birds and it is likely that any offset strategy for projects in the region will need to be informed by the guidance to be proposed in the SESA. Therefore, it is likely that offset goals for this Project will need to be revised once the SESA is published.

Table 5. Annual offset goals for biodiversity priority species with predicted Residual Impacts >0 for the Project (CH qualifying and other species that require offsets are shown in bold).

Common name	Target	Estimated fatalities	Mortality thresholds (TBC 2026b)	Annual offset target ⁴
Black Kite	NNL	1.7	3	0
Black Stork	NNL	0.4	3	0
Eurasian (Steppe) Buzzard	NNL	1.7	5	0
Eurasian Sparrowhawk	NNL	0.8	0	0
European Honey-buzzard	NNL	10.5	5	6
Great White Pelican	NNL	10.6	3	8
Lesser Spotted Eagle	NNL	0,2	3	0
Montagu's Harrier	NNL	0.2	3	0
Western Marsh Harrier	NNL	0.1	3	0
Steppe Eagle	NG	0	0	≥1
White Stork	NG	35.8	5	≥32

8.4 Offset options

No offset feasibility has yet been undertaken within the scope of this BAP. At this stage, only a preliminary identification of offset options has been completed. A comprehensive Offset Feasibility Study will be developed in the next phase of the BAP to evaluate the expected biodiversity gains, social and political feasibility, implementation risk and associated cost of each option.

Scatec has developed an offset feasibility plan for White Storks and Steppe Eagles for another project in the region. Some findings of that plan have been incorporated in the text describing these options.

So far offsets for the European Honey Buzzard and Great White Pelican are not yet considered, but they might need to be considered in offset feasibility study, especially if results from PCFM confirm the expected mortality rates.

Table 6 presents the potential offset options and indicates which of the target species each option is expected to benefit.

⁴ No multipliers were used to account uncertainty in delivery and delays between impact and gains. Any uncertainty should be appropriately presented in reports from offset action delivery partners.

Table 6. Potential offset options and their relevance to the target species.

	Steppe Eagle	White Stork
1. Retrofitting power lines, Kazakhstan	X	
2. Retrofitting power lines, Jordan	X	X
3. Managing unofficial waste dumping sites, Egypt	X	
4. Reducing illegal trapping, Egypt	X	
5. Rehabilitating a water treatment station, Egypt		X
6. Retrofitting power lines, Egypt		X

Retrofitting power lines in Kazakhstan

Electrocutions on 6-10 kV power lines is one the most impactful threats to raptors, in particular to Steppe Eagles, in Kazakhstan (Dwyer *et al.* 2023). Recent research conducted by the Association for the Conservation of Biodiversity of Kazakhstan ([ACBK](#), BirdLife International partner in Kazakhstan) and the Biodiversity Research and Conservation Center ([BRCC](#)) found up to 44 Steppe Eagles electrocuted per 10 km in some sections in Western and Central Kazakhstan (ACBK 2024). Mortality of raptors due to collisions with power lines also occurs in the same areas but is probably underestimated or unreported (Dwyer *et al.* 2023).

This offset would involve installing bird-protection (insulating) devices on pre-identified sections of the most dangerous 6-10 kV power lines for birds.

The length of power lines to be retrofitted would be calculated based on the existing data on fatality rates in different sections, and the on the required gain for different target species. As an initial exercise, the estimated Steppe Eagle annual mortality rate in identified mortality hotspots in Kazakhstan is 0.61 birds per km, thus retrofitting 4 km of powerline would be sufficient to compensate for the expected mortality for this species. Ideally, the offset program should be aggregated with the offsets for other project(s) in the region for increased cost effectiveness, provided that additionality is ensured.

The retrofitting of power lines in the proposed high-risk area would likely result also in moderate to high benefits for other raptors species that are not listed as priorities for the Project, but have also been found electrocuted in the conducted surveys, including Eastern Imperial Eagle (*Aquila heliaca*), Greater Spotted Eagle (*Clanga clanga*), Golden Eagle (*Aquila chrysaetos*), Short-toed Snake Eagle (*Circaetus gallicus*), Black Kite (*Milvus migrans*), Long-legged Buzzard (*Buteo rufinus*), Saker Falcon (*Falco cherrug*) and Common Kestrel (*Falco tinnunculus*) (Dwyer *et al.* 2023).

Retrofitting power lines in Jordan

A study led by the Royal Society for the Conservation of Nature ([RSCN](#); BirdLife International partner in Jordan) along 161 km of power lines in the north and south of Jordan and with surveys conducted three migratory seasons (spring and autumn 2019 and autumn 2021) revealed 215 electrocuted birds from nine species (Qaneer & Demerdzhiev 2023). The most common victim (197 individuals) was the White Stork, whereas 1 to 6 individuals of different raptor species (Short-toed Snake Eagle, Black Kite, Steppe Eagle, Egyptian Vulture (*Neophron percnopterus*, Peregrine Falcon (*Falco peregrinus*) and Golden Eagle, by decreasing order of importance) were also found.

As a result of these survey efforts, at least 250 poles causing a high number of electrocutions were identified, especially close to stopover sites used by White Storks during migration (RSCN 2020b). RSCN and Irbid Electricity Company (IDECO) signed an MoU aiming at facilitating the cooperation between the two institutions to provide a joint framework that guides the implementation of powerlines and transformers insulation projects along the flyways of migratory birds. Through the EU-funded "Egyptian Vulture New LIFE" project RSCN purchased insulation materials that were used to retrofit the most hazardous poles (RSCN 2022). RSCN also signed MoUs with the remaining electricity companies in the country and cooperates with them to identify the power lines and poles that represent higher electrocution risk to birds and need further retrofitting actions (Tareq Qaneer pers. comm.).

This offset would involve equipping with bird-protection devices (safe crossarm configurations, insulating elements and/or deterrent devices; Martín Martín *et al.* 2022) pre-identified sections associated with a high number of electrocutions (0.2 White Storks/km of power line), with the plan of retrofitting ~500 pylons over ~30 km.

For the expected mortality ~77 km of powerline would need to be retrofitted. However, PCFM results should be used to calibrate this figure. Initial target should probably be lower.

Fatality monitoring of the retrofitted power lines would then be conducted during the following years to assess the efficiency of the mitigation measure and the gains generated to the different target species.

The proposed retrofitting of power lines would likely result also in moderate benefits for other raptors species that are not listed as priorities in the Project BAP which may perch in power lines.

Managing unofficial waste dumping sites in Egypt

Major non-natural causes of Steppe Eagle mortality include electrocution and collision with unsafe powerlines and wind farms, which are considered the primary driver for the species' decline. Illegal killing, capture, and poisoning are also significant threats (Weston et al. 2025).

This species migrates through Egypt in spring and to a lesser extent in autumn on its journey mainly from breeding grounds in Central Asia to its wintering areas in Eastern Africa. In Egypt,

Steppe Eagles primarily follow the Red Sea desert corridor, along the coast, where feeding opportunities are scarce. As facultative scavengers, they are readily attracted to waste disposal sites (Keijmel et al. 2020; McGrady et al. 2021), particularly those associated with the numerous chicken farms distributed across the country (Figure 5).



Figure 5: Steppe Eagle aggregations at a dumping site in Egypt (photo Filipe Canário, TBC)

These dumping sites pose serious threats to Steppe Eagles in three main ways:

- **Poisoning/contamination** – These sites lack sanitary controls and therefore present multiple risks, including disease transmission, exposure to veterinary drugs administered to poultry or other livestock (e.g. diclofenac), and toxicosis caused by ingesting plastic remains or ropes (Kohler n.d.). In addition, dumping sites attract stray dogs and foxes, which are often considered pests by local people. Carcasses are sometimes deliberately poisoned to control these animals, inadvertently killing Steppe Eagles and other raptors that feed on them (NCE, pers. comm.).
- **Illegal taking** - The high concentrations of Steppe Eagles and other raptors at dumping sites attract falconers who exploit these locations to capture large numbers of birds (NCE, pers. comm.). NCE's monitoring of falconry and illegal bird-trade groups on social media in Egypt indicates that more than 100 soaring birds are traded per year (only from birds advertised on social media), with Steppe Eagle being the most frequently targeted species (NCE, pers. comm.)
- **Increased collision and electrocution risk** – When dumping sites are located near powerlines or wind turbines, they draw birds into close proximity to these infrastructures, thereby increasing the likelihood of collisions and electrocution.

This conservation action involves developing a coordinated management system for informal dumping sites used for chicken waste, in collaboration with the veterinary authority and chicken farm operators. The primary objective is to reduce the number of uncontrolled disposal sites and ensure that poultry waste (and other waste) is transported to facilities equipped with appropriate sanitary standards. These facilities would also be secured to prevent access by falconers and poachers.

Appropriately designed facilities - with proper transportation and handling systems - can be established in strategically selected locations, well away from any powerlines and wind farms. When adequately maintained, these sites may provide a safe and reliable supplementary food for migratory soaring species, particularly Steppe Eagles. Such additional resources can be, especially beneficial for juvenile and immature birds, less experienced in getting food (e.g., Donázar 1992)

This action is beneficial to all other soaring birds that potentially use waste dumping sites, especially Black Kite, Griffon Vulture (*Gyps fulvus*), Egyptian Vulture, White Stork, Lesser Spotted Eagle, Steppe Buzzard and Eastern Imperial Eagle.

Having controlled dumping sites can also prevent the spread of disease in stray dogs and foxes.

Reducing illegal trapping in Egypt

The hunting and/or capture of migratory birds is a long-lasting tradition in North Africa and the Middle East. Traditionally using basic hunting techniques and minimal tools, hunting practices have become nowadays more widespread and intensive, based on technological developments and a growing market for illegally captured birds (NCE 2018). Illegal hunting impacts a huge number and variety of migratory bird species, including raptors and other soaring birds. A study conducted by Nature Conservation Egypt ([NCE](#)) under the Responsible Hunting Programme (RHP) initiative along Egypt's northern Mediterranean coast estimated that more than 13 raptors were captured per day and over 72 raptors were sold per day in markets in the region during the annual autumn migration (NCE 2018).

This programme would include the development of a wide range of actions in Egypt, including:

- Training and support of rangers' teams and law enforcement agencies to increase vigilance and implementation of relevant environmental laws on illegal trapping/trade;
- Development and roll-out of awareness campaigns targeting trappers, local communities involved in illegal trapping and trade, and general public;
- Support of teams, installations and equipment for the seizing and recovery of illegally captured birds; and.
- Development of social support programs to identify and provide alternative income or livelihood options (e.g. ecotourism).

The proposed Programme against illegal capture would very likely result in moderate-high benefits for a wide range of soaring birds and non-soaring birds hunted or captured illegally every year across the Middle East.

Rehabilitating a water treatment station in Egypt

Improper wastewater management has severe impacts on biodiversity and the environment in general, and particularly along the Red Sea/Rift Valley flyway (Kohler n.d.). However, wastewater treatment plants represent a type of man-made wetlands that can play an important role in avian ecology. When properly designed and maintained, they can offer valuable resources and

habitats for a variety of species, providing potential conservation benefits (Hamilton *et al.* 2005; Murray & Hamilton 2010).

Due to its geographic position, Southern Sinai is a key bottleneck site for migratory soaring birds along the Red Sea / Rift Valley flyway, with thousands of individuals crossing the Gulf of Suez each season (Figure 6). Near the southern tip of the peninsula lies the Sharm El Sheikh wastewater treatment plant, which attracts thousands of birds and functions as an important stop-over site during migration. Multiple stakeholders (NCE, RCREEE, SafeSoar) have identified this large facility as a significant source of mortality for soaring species, particularly White Storks. Other species, such as Egyptian Vultures, have also been found dead around the ponds, while individuals of additional species, such as the Lesser Spotted Eagle, have been found dead as a result of exhaustion and/or malnutrition (Tamas Papp, pers. com.).



Figure 6. Heat map from migratory soaring bird satellite tracks along the migratory flyway, showing a high concentration of tracks in Southern Sinai and on the opposite side of the Gulf of Suez, close to where the Project is located (Data: Movebank)

This conservation action would involve developing a comprehensive management and protection system for the Sharm El Sheikh wastewater treatment plant. Key components of this system would include:

- Water decontamination – implementing effective treatment processes to reduce pollutants and improve overall water quality, minimizing risks to birds (and other wildlife) using the site.

- Water level management and creation of pools – adjusting and stabilising water levels and constructing designated pools that provide safe resting and foraging areas for migratory soaring birds
- Habitat improvement around the site - improving vegetation structure and diversity in the surrounding area to create more suitable habitats and reduce risks associated with poor environmental conditions.
- Strengthening site security - Introducing security measures to prevent illegal hunting or trapping within and around the facility
- Developing birdwatching activities and awareness campaigns. - Establishing controlled birdwatching opportunities and running awareness campaigns to highlight the site's importance for migratory species, increasing community involvement and support.

Apart from White Storks, this action has the potential to benefit a wide range of species, including Egyptian Vultures, which have already been confirmed to die at the site. The species group which will benefit the most are waterbirds, which will profit from improvement in the water quality and habitat management. Other birds, such as migratory passerines, will also benefit from the water quality improvement and from habitat restoration.

Retrofitting power lines in Egypt

Both the Regional Center for Renewable Energy and Energy Efficiency (RCREEE) and [NCE](#) have conducted fatality surveys along hundreds of kilometres of power lines in the Gulf of Suez region during the last six years, to assess collision impacts on migratory soaring birds from the existing electricity grid infrastructure. These surveys resulted in the finding of multiple carcasses of White Stork, but fatalities of a wide suite of other migratory soaring bird species were also found, including e.g. Great White Pelican, Common Crane, European Honey-buzzard and Steppe Buzzard. This work resulted in the identification of important fatality hotspots in the country, in both sides of the Gulf.

This offset would consist of the installation of the most effective model of Bird Flight Diverters (BFDs) (e.g. Rotamarka, OWL - Overhead Warning Lights (Preformed Line Products) or Hawk Eye BFD-050 (Power Line Sentry)) following GIIP (e.g. Martín Martín *et al.* 2022) along the target (highest risk) OHTL sections. This action would be coordinated by RCREEE and/or NCE in close cooperation with the Egyptian Electricity Transmission Company (EETC) and other relevant partners.

Fatality monitoring of the retrofitted power lines would be conducted for the following years to assess the efficiency of the mitigation measure and the gains generated for each target species.

The retrofitting of power lines in high-risk areas would result in important gains for White Storks and also in moderate benefits for other species of migratory soaring birds that are not listed as priorities for the Project, as well as to non-soaring migratory or resident species,

8.5 Additional actions to support conservation

The present version of the BAP does not include specific additional actions to support conservation. However, in line with IFC PS6 (IFC 2012, paragraph 20, EIB 2022 paragraph 29) projects located within an Internationally Recognized Area (such as a KBA or IBA) are required to 'implement additional programs, as appropriate, to promote and enhance the conservation aims and effective management of the area'. Although the Project does not overlap the KBA, it lies in very close proximity and forms part of the same migratory flyway for which the KBA is recognised as a major bottleneck.

Accordingly, the Project will investigate potential additional conservation actions, and will consider incorporating these in future versions of the BAP.

Should the Project wish to support conservation actions for priority biodiversity for which no impacts are predicted or non-priority biodiversity, these would remain voluntary additional actions unless and until a fatality is recorded above the defined threshold, at which point it would automatically be considered.

9 Biodiversity Monitoring and Evaluation Plan Framework

Monitoring of the species-specific and general GIIP mitigation measures, and Some general guidance relevant for determining the Project's net position (i.e. losses and gains), are presented below. **Post Construction Fatality Monitoring**

This BAP assumes that standardized PCFM, in line with current best practice guidance (IFC *et al.* 2023) will be implemented in the wind farm and associated OHTLs for the life of the Project to monitor actual levels of mortality. PCFM must be completed at all the turbines and OHTL and the program of PCFM must include carcass searching, searcher efficiency trials and carcass persistence trials. This information will be used to estimate annual fatalities using GenEst. The PCFM results are essential to evaluate the effectiveness of mitigation measures targeting the minimisation of bird collisions with turbines, allow for adaptive management of the ATMP and refine the Project's need for offsets if fatalities are much less or greater than predicted in this BAP.

Recent assessments of the current methods and analysis of the bird monitoring associated with windfarms at the Gebel El Zeit IBA (Camiña *et al.* 2024) suggest that specific monitoring of Project OHTLs should also occur immediately after each sandstorm. This is important to provide realistic information about the impact of this type of environmental event when bird visibility is minimal and manoeuvrability may be limited, likely increasing the likelihood of collision.

Overhead Transmission Line mitigation

Once an agreement is reached with EETC regarding the installation of BFDs on the OHTL, this installation will be recorded by the Project Ecologist and all BFDs checked prior to the spring and autumn migration seasons to confirm they are in place and operational for these higher risk periods. Any damaged or defective BFDs will be replaced within two months of being reported as faulty.

Egyptian Spiny-tailed Lizard

The success of the translocation of the Egyptian Spiny-tailed Lizard must be monitored, targeting the translocated individuals as well of non-translocated individuals in the receptor area and other 'control' populations with no intervention. This should include details of any translocations, and the long-term survival of translocated individuals compared to resident individuals.

Table 7 presents the monitoring activities to evaluate the implementation of the GIIP biodiversity mitigation measures presented in Table 1 and Table 2. Scatec will report and evaluate performance against the targets in this table.

Table 7. Overview of indicators for monitoring biodiversity during construction and operation

Associated mitigation measures	Indicator / Monitoring Information	Monitoring Measure / KPI	Monitoring method	Target	Threshold		Data Collection Frequency	Responsibility
					Warning	Critical		
BAP1, BAP2, BAP3, BAP8, BAP9, BAP10	Non-compliances with procedures	Number of non-compliances reported from the operational procedures	Inspection of records	No non-compliances reported	3 non-compliances reported	5 non-compliances reported	Monthly during construction and operation	Scatec
BAP4, BAP11	Biodiversity awareness training	Number of staff and contractors trained in environmentally appropriate procedures	Inspection of training records	100% of staff receive training with biodiversity component in the last 6 months	<90% of staff have received training with biodiversity component in the last 6 months	<85% of staff have received training with biodiversity components in the last 6 months	Monthly during construction and operation	Scatec
BAP5, BAP6, BAP7	Bird mortality data due to collision with turbines	Number of fatalities per priority species	Post-construction Fatality Monitoring at all Project turbines.	No fatalities above the thresholds established for each priority bird species, as presented in the Project Cumulative Effects Assessment (CEA) (See TBC 2026b)	Mortality of any priority species, that exceeds the threshold established for that specific species, as presented in the Project CEA	Mortality of any species requiring Net Gain, that exceeds the threshold established for that specific species, as presented in the Project CEA	Daily during the migration periods: 20 February – 15 May in spring, and 10 August – 15 November in autumn, covering the full migration periods for soaring birds in the region.	Scatec

Associated mitigation measures	Indicator / Monitoring Information	Monitoring Measure / KPI	Monitoring method	Target	Threshold		Data Collection Frequency	Responsibility
					Warning	Critical		
BAP12, BAP13, BAP14	Bird mortality data due to collision with the transmission line	Number of fatalities per priority species	Post Construction Fatality Monitoring along the Project transmission line.	No fatalities above the thresholds established for the priority bird species in the Project Cumulative Effects Assessment (CEA) (See TBC 2026b)	Mortality of any priority species, that exceeds the threshold established for that specific species, as presented in the Project CEA	Mortality of any species requiring Net Gain, that exceeds the threshold established for that specific species, as presented in the Project CEA	Daily during the migration periods: 20 February – 15 May in spring, and 10 August – 15 November in autumn, covering the full migration periods for soaring birds in the region.	EETC (with Scatec)
NA	Bird surveys	Number of priority birds migrating through the Project area	Migratory soaring bird surveys in the Project area conducted under Shutdown-on-Demand.	Not applicable	Not applicable	Not applicable	Daily during the migration periods: 20 February – 15 May in spring, and 10 August – 15 November in autumn, covering the full migration periods for soaring birds in the region.	Scatec

Offsets

For the proposed set of offset actions, once they are contracted, the Project, in consultation with lenders and implementing partners, would need to:

- Agree on the level of quantification for any predicted gain, and define an agreed set of biological monitoring indicators to demonstrate gains to the level required for the relevant species; or,
- Agree that the cost of quantifying gains for some actions may be disproportionately high compared with the cost of implementing the action and reach a collective agreement between the Project, lenders and implementing parties on likely gains from any effort or intervention; and
- Agree on process indicators to show that the action is proceeding in a manner to deliver the assumed gain (i.e. process indicators).

10 BAP implementation

10.1 Integration into Project management

The BAP is a core component of the project's Environmental and Social Management System (ESMS), ensuring that biodiversity risks and opportunities are systematically identified, managed, and monitored throughout the Project lifecycle. The BAP aligns with and complements several forthcoming management plans and procedures, including:

- Construction Phase Biodiversity Management Plan (BMP): The BAP informs the BMP by identifying priority species and habitats, guiding mitigation measures, and ensuring that biodiversity-sensitive construction practices are implemented.
- Operations Phase BMP: The BAP provides long-term biodiversity objectives and monitoring protocols that will be embedded into operational procedures to minimize ongoing impacts and support ecological restoration or enhancement where feasible.
- Active Turbine Management Program (ATMP): The BAP informs the ATMP on the priority bird species, appropriate number of VPs needed, and recommended improvements to mitigation actions and their expected impact in reducing collisions of migratory soaring birds. Besides, ATMP support the BAP by contributing data on bird movement patterns, collision risks, and mitigation strategies such as SDOD protocols, predictive fixed shutdown periods, and any bird monitoring technologies if any needed.
- The BAP is cross-referenced with the Monitoring and Reporting framework to ensure transparency, accountability and continuous improvement in biodiversity performance.

10.2 Roles and responsibilities

It is assumed that Scatec will be the operator of the Project, and therefore the ultimate implementation and oversight of the mitigation and monitoring measures (see Section 6.2) are under the responsibility of Scatec (with the exception of the OHTL which is the ultimate responsibility of EETC but will require collaboration with Scatec). The responsibilities of Scatec include: employing a Biodiversity Manager; ensuring that sufficient resources are allocated to achieve effective implementation of this BAP; undertaking the planning, implementation and follow-up of the BAP; preparing monitoring reports as required by this BAP (see [Table 7](#) in Section 9); coordinating biodiversity-related activities in response to routine or emerging issue; ensuring that training programs informing workers of the species of concern are held (see Section 6.2.5).

The Biodiversity Manager will be employed by Scatec, who will be responsible for ensuring the correct implementation of all biodiversity-related mitigation measures detailed in this BAP.

Scatec will also be responsible for developing and implementing the required biodiversity offsets and ensuring that these initiatives achieve the NG and>NNL requirements.

11 Next steps

11.1 Update of the BAP

During the construction and operation of the Project, the BAP should be updated regularly to incorporate:

- Any changes in the Project design (including repowering or turbine extension during operations)
- Significant findings from the biodiversity monitoring
- Progress with offset implementation and gains achieved
- Findings of the ongoing SESA for renewable energy projects in the Gulf of Suez.

Further BAP revisions should be prepared by biodiversity consultants with the appropriate expertise in biodiversity conservation and experience in delivering documents that are aligned with GIIP and lender's requirements.

11.2 Stakeholder Engagement

In line with GIIP (IFC 2007), regarding stakeholder engagement (see Appendix 1), the Project will define:

- A strategy and timetable for sharing information and consulting with stakeholders regarding the selection and implementation of offsets
- How stakeholder engagement activities will be incorporated into the company's management system.

11.3 Biodiversity Management Plan

A Construction and an Operational Biodiversity Management Plan (BMP) should be prepared for the Project, in conjunction with this BAP. These BMPs should, at a minimum:

- Provide an overview of the general mitigation actions for all Project activities where this BAP has identified impacts to priority biodiversity that require management following IFC PS6 and EBRD ESR6 to help to achieve the Project's NNL targets, incorporating all mitigation actions in this BAP;
- Provide an overview of the monitoring and evaluation measures (including targets and thresholds) for biodiversity mitigation, incorporating all monitoring measures in this BAP;
- Present a comprehensive adaptive management approach;
- Define mitigation implementation and monitoring responsibilities;
- Detail the Shutdown on Demand Protocol; and,
- Detail the Post Construction Fatality Monitoring Protocol.

This BMP will be a 'living' document that should be updated as often as necessary, for example, based on the results of PCFM, bird activity monitoring, or as a result of a change in a species' IUCN status.

11.4 Offset Feasibility Study

The list of potential offset options presented in this BAP will be evaluated in an Offset Feasibility Study (OFS). The OFS will be conducted by a consultancy with expertise and proven record of developing biodiversity offsets for migratory soaring birds in the region. An offset specialist consultancy will be required to ensure the successful implementation of the agreed offsets. The OFS will involve a comprehensive stakeholder engagement process with all relevant stakeholders and managers for each of the identified projects. The goal of this engagement is to obtain a deeper understanding of the Project, including likely gains and costs, as well as the practicalities of the projects supporting implementation of a conservation action. The OFS will also provide a quantification of gains as accurate as possible, and the evaluation of the set of actions and level of effort necessary to deliver the NNL commitments for the relevant species.

Scatec has agreed to support and finance lender endorsed offsets to achieve NG for Steppe Eagle and White Stork and a minimum of NNL for other priority species if they exceed the fatality thresholds.

11.5 Biodiversity Offset Management and Implementation Plan

The following step is for a Biodiversity Offset Management and Implementation Plan (BOMIP) to be developed. The BOMIP will summarise the actions that should be developed by Scatec to generate conservation benefits to the priority species that will be sufficient to compensate for the residual impacts and demonstrate NG for Critical Habitat triggering species, specifically Steppe Eagle and White Stork and NNL for other priority species. This will require additional details to be collected for all offset actions that are found to be feasible, including detailed plans of work, the level of support, likely gains and the practicalities of engagement. The Project may also wish to visit the identified options to provide further assurance that they meet the Project's requirements. For any final suite of options, the Project and implementing agency should agree on:

- The scope of support – i.e., level of funding, time period, responsibilities; and,
- A set of financial and management indicators to demonstrate that the action is functioning as intended and likely to deliver the assumed gain.

12 References

- Adams, E.M., Gulka, J. & Williams, K.A. (2021) A review of the effectiveness of operational curtailment for reducing bat fatalities at terrestrial wind farms in North America. *PLOS ONE* 16: e0256382.
- Band, B. (2012) Using a collision risk model to assess bird collision risk for offshore wind farms. British Trust for Ornithology.
- Band, W., Madders, M. & Whitfield, D.P. (2007) Developing field and analytical methods to assess avian collision risk at wind farms. pp. 259–275 in: *Birds and Wind farms: Risk Assessment and Mitigation*. Quercus, Madrid.
- BBOP (2012) Principles for Biodiversity Offsets. Business and Biodiversity Offsets Programme, Washington D.C., USA.
- Bennun, L., van Bochove, J., Ng, C., Fletcher, C., Wilson, D., Phair, N. & Carbone, G. (2021) *Mitigating biodiversity impacts associated with solar and wind energy development*. IUCN International Union for Conservation of Nature and The Biodiversity Consultancy, Gland, Switzerland and Cambridge, UK.
- Bernardino, J., Martins, R., Bispo, R. & Moriera, F. (2019) Re-assessing the effectiveness of wire-marking to mitigate bird collisions with power lines: A meta-analysis and guidelines for field studies. *Journal of Environmental Management* 252: 109651.

- BirdLife International (2015) BirdLife is working to mainstream soaring bird conservation along the Rift Valley/Red Sea flyway. <https://datazone.birdlife.org/birdlife-is-working-to-mainstream-soaring-bird-conservation-along-the-rift-valley/red-sea-flyway>
- Camina, A. (2025a) Bird Migration Study SCATEC Power 900 MW Wind Power Plant (Scatec North Project) Spring Season 2025 (Draft).
- Camina, A. (2025b) Bird Migration Study SCATEC Power 900 MW Wind Power Plant (Scatec North Project) Autumn Season 2025 (Draft).
- Camina, A., Ceballos, P. & Vicente, N. (2024) Migration of Soaring Birds at Gebel el Zeit (IBA) in relation to wind energy developments (Report for EcoConsult on behalf of RCREEE). ACRENASL, Madrid, Spain.
- CIBIO (2020) Manual para a monitorização de impactes de linhas de muito alta tensão sobre a avifauna e avaliação da eficácia das medidas de mitigação (Cátedra REN em Biodiversidade). Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto, Vairão, Portugal.
- Cook, A.S.C.P., Salkanovic, E., Masden, E., Lee, H.E. & Kiilerich, A.H. (2025) A critical appraisal of 40 years of avian collision risk modelling: How have we got here and where do we go next? *Environmental Impact Assessment Review* 110: 107717.
- CSBI & TBC (2015) A cross-sector guide to implementing the Mitigation Hierarchy. Cross-Sector Biodiversity Initiative, Cambridge, UK. <http://www.csbi.org.uk/our-work/mitigation-hierarchy-guide/>
- Dinerstein, E., Olson, D., Joshi, A., Vynne, C., Burgess, N.D., Wikramanayake, E., Hahn, N., Palminteri, S., Hedao, P., Noss, R., Hansen, M., Locke, H., Ellis, E.C., Jones, B., Barber, C.V., Hayes, R., Kormos, C., Martin, V., Crist, E., Sechrest, W., Price, L., Baillie, J.E.M., Weeden, D., Suckling, K., Davis, C., Sizer, N., Moore, R., Thau, D., Birch, T., Potapov, P., Turubanova, S., Tyukavina, A., de Souza, N., Pintea, L., Brito, J.C., Llewellyn, O.A., Miller, A.G., Patzelt, A., Ghazanfar, S.A., Timberlake, J., Klöser, H., Shennan-Farpón, Y., Kindt, R., Lillesø, J.-P.B., van Breugel, P., Graudal, L., Voge, M., Al-Shammari, K.F. & Saleem, M. (2017) An ecoregion-based approach to protecting half the terrestrial realm. *BioScience* 67: 534–545.
- Donázar, J.A. (1992) Muladares y basureros en la biología de conservación de las aves de España. *Ardeola* 39: 39–40.
- Dudley, N. (Ed.) (2008) *Guidelines for applying protected area management categories*. IUCN, Gland, Switzerland.
- Dwyer, J.F., Karyakin, I.V., Garrido López, J.R. & Nikolenko, E.G. (2022) Avian Electrocutions on Power Lines in Kazakhstan and Russia. *Ardeola* 70.
- Dwyer, J.F., Karyakin, I.V., López, J.R.G. & Nikolenko, E.G. (2023) Avian electrocutions on power lines in Kazakhstan and Russia. *Ardeola* 70: 3–27.
- EBRD (2024) Environmental and Social Policy 2024 - Environmental and Social Requirement 6.

- EBRD (2025a) Environmental and Social Requirement 6: Biodiversity conservation and sustainable management of living natural resources. Guidance note. European Bank for Reconstruction and Development, London, UK.
- EBRD (2025b) EBRD Performance Requirement 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. Guidance Note. March 2023. European Bank for Reconstruction and Development, London, UK.
- EBRD (2026) Managing the risks of wind power plants to birds and bats. European Bank for Reconstruction and Development, London, UK.
- EcoConsult & Safe Soar (2025) Environmental & Social Impact Assessment, Scatec Shadwan 900 MW Wind Farm (Draft).
- EIB (2018) Guidance Note for Standard 3 on Biodiversity and Ecosystems. European Investment Bank.
- EIB (2022) Environmental and Social Sustainability Framework Standards. European Investment Bank.
- Equator Principles (2020) The Equator Principles EP4 July 2020.
- GreenPlus Environmental Solutions (2021) Shutdown on demand and bird monitoring. NREA wind farm complex. Final collective report autumn 2021 (Report for the New and Renewable Energy Agency). GreenPlus Environmental Solutions, Maadi, Egypt.
- GreenPlus Environmental Solutions (2022) Shutdown on demand and bird monitoring. NREA wind farm complex. Final collective report spring 2022 (Report for the New and Renewable Energy Agency). GreenPlus Environmental Solutions, Maadi, Egypt.
- Gullison, R.E., Hardner, J., Anstee, S. & Meyer, M. (2015) Good Practices for the Collection of Biodiversity Baseline Data. Prepared for the Multilateral Financing Institutions Biodiversity Working Group and Cross-Sector Biodiversity Initiative.
<http://www.csbi.org.uk/our-work/good-practices-for-the-collection-of-biodiversity-baseline-data/>
- Hamilton, A.J., Robinson, W., Taylor, I.R. & Wilson, B.P. (2005) The ecology of sewage treatment gradients in relation to their use by waterbirds. *Hydrobiologia* 534: 91–108.
- Hardner, J., R.E. Gullison, S. Anstee, & M. Meyer (2015) Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning. Multilateral Financing Institutions.
https://publications.iadb.org/bitstream/handle/11319/7094/Good_Practices_for_Biodiversity_Inclusive_Impact_Assessment.pdf?sequence=1
- ICMM & IUCN (2013) Independent report on biodiversity offsets. Prepared by The Biodiversity Consultancy, available at: www.icmm.com/biodiversity-offsets.
- IFC (2007) Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets.

- IFC (2012) Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. International Finance Corporation (IFC), Washington DC, USA. <https://www.ifc.org/content/dam/ifc/doc/2010/20190627-ifc-ps-guidance-note-6-en.pdf>
- IFC (2019) Guidance Note 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. International Finance Corporation (IFC), Washington DC, USA.
- IFC, EBRD & KFW (2023) Post-construction bird and bat fatality monitoring for onshore wind energy facilities in emerging market countries. International Finance Corporation, European Bank for Reconstruction and Development and Kreditanstalt für Wiederaufbau.
- IPIECA (2022) A guide to developing biodiversity action plans for the oil, gas and alternative energy sector.
- Jobson, B., Allinson, T., Sheldon, R., Vansteelant, W., Oppel, S. & Jones, V.R. (2021) Monitoring of migratory soaring birds in the East African-Eurasian flyway: a review and recommendations for future steps. *Sandgrouse* 43: 1–23.
- Keijmel, M., Babbington, J., Roberts, P. & Meyburg, B.-U. (2020) The world’s largest gathering of Steppe Eagles *Aquila nipalensis* discovered in central Saudi Arabia 42: 59–68.
- Kohler, M. (n.d.) Waste management: best practices to conserve migratory soaring birds (MSBs) in the Rift Valley-Red Sea flyway 122.
- Ledec, G.C. & Johnson, S.D.R. (2016) Biodiversity offsets: a user guide (Working Paper No. 110820). World Bank Group, Washington, D.C.
- Martín Martín, J., Garrido López, J.R., Clavero Sousa, H. & Barrios, V. (Eds) (2022) *Wildlife and power lines: guidelines for preventing and mitigating wildlife mortality associated with electricity distribution networks*, 1st ed. IUCN, International Union for Conservation of Nature, Gland, Switzerland.
- McGowan, B. (2024) *Preventing Avian Collisions: Global best practice & buyers guide (2024)*. Scientias-Energy, Ireland.
- McGrady, M., Bragin, E., Karyakin, I., Batbayar, N. & Katzner, T. (2021) Steppe eagle *Aquila nipalensis*. pp. 108–116 in: Panuccio, M., Mellone, U., Agostini, N. (Eds) *Migration Strategies of Birds of Prey in Western Palearctic*. CRC Press.
- Murray, C.G. & Hamilton, A.J. (2010) Perspectives on wastewater treatment wetlands and waterbird conservation. *Journal of Applied Ecology* 47: 976–985.
- NCE (2018) Hunting and trapping practices in Egypt’s northern Mediterranean coast.
- NREA & SafeSoar (2023) Active Turbine Management Program at NREA Wind Farms.
- OECD (2023) *OECD Guidelines for Multinational Enterprises on Responsible Business Conduct*. OECD.

- OECD (2024) Mainstreaming Biodiversity into Renewable Power Infrastructure. OECD Publishing, Paris, France.
- Porter, R. (2005) Soaring Bird Migration in the Middle East and North-East Africa: the bottleneck sites. pp. 127–167 in: *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors Along the Rift Valley/ Red Sea Flyway*. UNDP.
- Prinsen, H., Boere, G., Pires, N. & Smallie, J. (2011) Review of the conflict between migratory birds and electricity power grids in the African-Eurasian region (No. CMS Technical Series No. XX, AEWA Technical Series No. XX.). Bonn, Germany.
- Qaneer, T. & Demerdzhiev, D. (2023) First data on bird electrocution in Jordan, with comments on the undertaken conservation efforts. *Acta Zoologica Bulgarica* Supplement: 59–66.
- Riad, S.A. (2019) Post-construction fatality monitoring during operation of observer-led shut-down on demand system for KFW (240 MW) and FIEM (120 MW) windfarms projects at Gabel Al-Zayt (Report for the Egyptian Environmental Affairs Agency (EEAA) & BirdLife International/UNDP/GEF Migratory Soaring Birds Project). Al-Zhar University, Egypt.
- Riad, S.A. (2021) Post-construction fatality monitoring during operation of observer-led shutdown on demand system with radar for KFW (240 MW), JICA (220MW) & FIEM (120 MW) windfarms projects at Gabel Al-Zayt (Report for the Egyptian Environmental Affairs Agency (EEAA) & BirdLife International/UNDP/GEF Migratory Soaring Birds Project). Al-Zhar University, Egypt.
- Riad, S.A. (2023) Post-construction fatality monitoring for JICA windfarm project (220 MW) at Gabel Al-Zait - spring 2023 (Report for the Egyptian Environmental Affairs Agency (EEAA) & BirdLife International/UNDP/GEF Migratory Soaring Birds Project). Al-Azhar University.
- Safe Soar (2024) Updating Survey for Egyptian Spiny tailed Lizard *Uromastix aegyptia* at Scatec Shadwan 900 MW project in the Gulf of Suez Region, Egypt.
- Safe Soar (2025) Biodiversity Assessment Study of SCATEC- SHADWAN 900MW Wind Energy site on the Gulf of Suez, Egypt (Draft).
- Safe Soar (2026) Gebel El Zeit carcass data - 2022-2025.
- TBC (2025a) Biodiversity risk assessment for the installation of wind measuring masts at the GigaWind Power Plant, Egypt. The Biodiversity Consultancy, Cambridge, U.K.
- TBC (2025b) Revised final Critical Habitat Assessment for the Scatec wind farm, Egypt (Report for RCREEE, the Regional Centre for Renewable Energy and Energy Efficiency). The Biodiversity Consultancy Ltd, Cambridge, UK.
- TBC (2025c) Draft final Cumulative Effects Analysis for the Scatec wind farm (Report for RCREEE, the Regional Centre for Renewable Energy and Energy Efficiency). The Biodiversity Consultancy Ltd, Cambridge, UK.
- TBC (2025d) West Bakr Wind Farm – Lenders’ biodiversity advisor report.

- TBC (2026a) Critical Habitat Assessment for the Shadwan 900 MW Wind Farm Project, Egypt.
- TBC (2026b) Cumulative Effects Assessment for the Shadwan Wind Farm, Egypt. The Biodiversity Consultancy.
- TBC (2026c) Biodiversity Action Plan for the Gabel El Zeit 580 MW Wind Farm, Egypt. The Biodiversity Consultancy, Cambridge, United Kingdom.
- Thaxter, C.B., Buchanan, G.M., Carr, J., Butchart, S.H.M., Newbold, T., Green, R.E., Tobias, J.A., Foden, W.B., O'Brien, S. & Pearce-Higgins, J.W. (2017) Bird and bat species' global vulnerability to collision mortality at wind farms revealed through a trait-based assessment. *Proceedings of the Royal Society B: Biological Sciences* 284: 20170829.
- Tomé, R., Canário, F., Leitão, A., Pires, N. & Repas, M. (2017) Radar assisted shutdown on demand ensures zero soaring bird mortality at a wind farm located in a migratory flyway. pp. 119–133 in: Köppel, J. (Ed.) *Wind Energy and Wildlife Interactions*. Springer International Publishing AG.
- Weston, J., Gallo-Orsi, U., Horváth, M., Karyakin, I., Kumar, S., Nikolenko, E., Odino, M. & Shobrak, M. (2025) Global Action Plan for the Conservation of the Steppe Eagle (*Aquila nipalensis*) (2026-2035). RSPB, Raptors MOU, Abu Dhabi, United Arab Emirates.
- World Bank Group (2007) Environmental, health, and safety general guidelines.
- World Bank Group (2015) Environmental, Health, and Safety Guidelines for Wind Energy. World Bank Group, Washington D.C., USA. <http://www.ifc.org/ehsguidelines>
- Zahran, M.A. & Willis, A.J. (2008) *The Vegetation of Egypt*. Springer Dordrecht.

Appendix 1 Stakeholder Engagement

1 Rationale and requirements for biodiversity stakeholder engagement

Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Most companies undertake stakeholder consultation during the planning phase of a development project. However, stakeholder engagement is a broader, more inclusive, and continuous process between a company and those potentially impacted, which encompasses a range of activities and approaches, and spans the entire life of a project (IFC 2007).

Stakeholder engagement is necessary to validate the biodiversity baseline information, predicted impacts and the mitigation measures proposed by a project. It is good practice to show that the feedback received from stakeholders is recorded, considered, and reflected in project documents where appropriate. Early engagement can help identify biodiversity values that are important to stakeholders, and local knowledge can reveal important information relevant to the biodiversity values within the project area of influence, and the dependence/use of this biodiversity value and/or ecosystem services by project-affected communities (Gullison *et al.* 2015). Local stakeholders may have a greater appreciation than external technical experts of the biodiversity values in the Project area and their sensitivity to impacts. It is good practice to document perceived impacts, even if they appear technically unfounded (Hardner *et al.* 2015).

There are specific regulatory and lender requirements that highlight the importance of engaging with stakeholders throughout the implementation of a development project.

Paragraph 20 of IFC PS6 requires that developers should 'consult protected area sponsors and managers, Affected Communities, Indigenous Peoples and other stakeholders on the proposed project'. IFC Guidance Note 6 (IFC 2019) states that 'stakeholder engagement and consultation is required for all projects located in legally protected and internationally recognized areas. The IFC requirements for stakeholder engagement are described in Paragraphs 26–33 of IFC PS1 and relevant paragraphs in Guidance Note 1.

Since the most relevant impacts on priority biodiversity will be soaring bird collision mortality during wind farm operation, stakeholder engagement should focus mainly on addressing this issue.

2 Identification of relevant stakeholders

Table 8 shows a list of relevant local stakeholders that have been identified as particularly relevant for the BAP.

Table 8. Summary of biodiversity relevant stakeholders

Stakeholder type	Stakeholder	Relevance
Government Agency	Egyptian Environmental Affairs Agency (EEAA)	Environmental licensing, Environmental authority and management of the KBA.
	New and Renewable Energy Authority (NREA)	Responsible for allocation of the land for the development of the Project. Also entrusted to plan and implement renewable energy programs in coordination with national and international institutions.
	Egyptian Electricity Holding Company (EETC)	State-owned company for electrical power generation, transmission and distribution in Egypt. Responsible for designing, building and operating the Project OHTL and connection to the grid.
Non-Government Organizations	Regional Center for Renewable Energy and Energy Efficiency (RCREEE)	Entity responsible for the implementation of the ATMP in all private sector wind energy projects in the Red Sea region.
	Nature Conservation Egypt (NCE)	Egyptian BirdLife partner and Egypt's leading experts in the field of nature and biodiversity conservation. Provider of information about soaring bird migration in the region and threats to soaring birds. Potential offset implementing partner.
Consultants/Local experts	SafeSoar	Local consultancy responsible for the implementation of the ATMP in most projects in the region.

No stakeholders have been contacted yet regarding potential offsets, as that should be conducted during the development of the Offset Feasibility Study. However, TBC has conducted several biodiversity related studies for wind energy projects in the Gulf of Suez region, and has established a strong network of experts and potential offset partners for relevant biodiversity values. One of these projects is the 200 MW Green Hydrogen project developed by Scatec. [Table 9](#) lists some potentially relevant stakeholders that could be engaged during the Offset Feasibility Study.

Table 9. Potentially relevant stakeholders for the implementation of offsets for the Project.

Stakeholder (country)	Offset option (countries)
RCREEE (Egypt)	Powerline retrofitting (Egypt)
Nature Conservation Egypt - NCE (Egypt)	Powerline retrofitting (Egypt) Anti-illegal hunting/capture program (Egypt) Managing unofficial waste dumping sites (Egypt) Rehabilitating a water treatment station (Egypt)
Association for the Conservation of Biodiversity of Kazakhstan (ACBK , BirdLife International partner in Kazakhstan) and the Biodiversity Research and Conservation Center (BRCC)	Powerline retrofitting (Kazakhstan)

Stakeholder (country)	Offset option (countries)
Royal Society for the Conservation of Nature - RSCN (Jordan)	Powerline retrofitting (Jordan)

Appendix 2 Critical habitat criteria and thresholds

Table A1. Lenders' criteria and thresholds for critical habitat used for this Critical Habitat Assessment (CHA), according to IFC PS6⁵, EBRD ESR6⁶ and EIB ESS 4⁷.

	IFC PS6	EBRD ESR6	EIB Standard 4
Globally and regionally threatened species			
Criteria	Criterion 1: Species threatened with global extinction and listed as CR and EN on the IUCN Red List of Threatened Species Species that are listed nationally/regionally as CR or EN in countries that adhere to IUCN guidance shall be determined on a project-by-project basis	Criterion 2: Threatened species (b) IUCN Red List EN or CR species (c) IUCN Red List VU species (d) Nationally or regionally (for example, Europe) listed EN or CR species	Criterion 2: A habitat of priority and/or significant importance to critically endangered, endangered or vulnerable species, as defined by the IUCN Red List of threatened species and in relevant national legislation.
Critical Habitat Thresholds	(a) Areas that support globally important concentrations of an IUCN Red-listed EN or CR species ($\geq 0.5\%$ of the global population AND ≥ 5 reproductive units of a CR or EN species) (b) 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) (c) As appropriate, areas containing important concentrations of a nationally or regionally listed EN or CR species	(b) EAAA supports ≥ 0.5 per cent 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	a) A population of an IUCN Red-listed endangered or critically endangered species that is $\geq 0.5\%$ of the global population and/or ≥ 5 established reproductive units of an endangered or critically endangered species b) Significant concentration of an IUCN Red-listed vulnerable species or of multiple IUCN Red-listed vulnerable species, especially where the loss of the area would result in the change of the IUCN Red List status to endangered or critically endangered c) Nationally or regionally-important concentration of a species listed as endangered or critically endangered on a regional/national IUCN Red List, or equivalent on national/regional listing.

⁵ (IFC 2019)

⁶ (EBRD 2025b)

⁷ (EIB 2018, 2022)

	IFC PS6	EBRD ESR6	EIB Standard 4
Priority Feature Threshold	-	(b) EAAA supports < 0.5 per cent 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	
Endemic and restricted range species			
Criteria	Criterion 2: For terrestrial vertebrates and plants, restricted-range species are defined as those species that have an Extent of occurrence (EOO) less than 50,000 square kilometers (km²). For marine systems, restricted-range species are provisionally being considered those with an EOO of less than 100,000 km². For coastal, riverine, and other aquatic species in habitats that do not exceed 200 km width at any point (for example, rivers), restricted range is defined as having a global range of less than or equal to 500 km linear geographic span (i.e., the distance between occupied locations furthest apart).	Criterion 3: Range-restricted species	Criterion 3: A habitat of priority and/or significant importance to a population, range or distribution of endemic or restricted-range species, or highly distinctive assemblages of species For terrestrial vertebrates and plants, restricted-range species are defined as those species that have an Extent of occurrence (EOO) less than 50,000 square kilometers (km²). For marine systems, restricted-range species are provisionally being considered those with an EOO of less than 100,000 km². For coastal, riverine, and other aquatic species in habitats that do not exceed 200 km width at any point (for example, rivers), restricted range is defined as having a global range of less than or equal to 500 km linear geographic span (i.e., the distance between occupied locations furthest apart).
Critical Habitat Thresholds	Areas that regularly hold ≥10% of the global population size AND ≥10 reproductive units (the minimum number and combination of mature individuals necessary to trigger a successful reproductive event) of a species.	(a) EAAA regularly holds ≥ 10 per cent of global population AND ≥ 10 reproductive units of the species	a) They regularly hold ≥10% of the global population size and support ≥10 reproductive units of an endemic or restricted-range species b) They are considered by relevant specialists to support unique or rare assemblages of species that occur there habitually, predictably or repeatably. The constituent species may not meet other critical habitat thresholds mentioned here in their own right, but may present

	IFC PS6	EBRD ESR6	EIB Standard 4
			assemblages that are considered important to maintain high biodiversity in the area
Priority Feature Threshold	-	(a) EAAA for regularly occurring range restricted species	
Migratory and congregatory species			
Criteria	Criterion 3: 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 Congregatory species are defined as species whose individuals gather in large groups on a cyclical or otherwise regular and/or predictable basis.	Criterion 4: Migratory and congregatory species	Criterion 4: A habitat required for the survival of migratory species and/or congregatory species
Critical Habitat Thresholds	(a) 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 (b) Areas that predictably support ≥10 percent of the global population of a species during periods of environmental stress	(a) EAAA sustains, on a cyclical or otherwise regular basis, ≥ 1 per cent of the global population at any point of the species' lifecycle (b) EAAA predictably supports ≥ 10 per cent of global population during periods of environmental stress	a) They sustain ≥ 1%of the global population of a migratory or congregatory species at any point of the species' lifecycle on a cyclical or otherwise regular basis b) They are needed to support migratory or congregatory species during periods of environmental stress
Priority Feature Threshold	-	(a) EAAA identified, as per recognised national or international process, as important for migratory birds (especially wetlands)	
Highly Threatened or Unique Ecosystems			
Criteria	Criterion 4: The IUCN is developing a Red List of Ecosystems, this should be used where formal IUCN assessments have been performed. Where formal IUCN assessments have not been performed, make assessments using systematic methods at the national/regional level.	Criterion 1: (b) IUCN Red List EN or CR ecosystems	Criterion 1: A highly threatened and/or unique ecosystem;

	IFC PS6	EBRD ESR6	EIB Standard 4
Critical Habitat Thresholds	a) Areas representing ≥5% of the global extent of an ecosystem type meeting the criteria for IUCN status of CR or EN. b) Other areas not yet assessed by IUCN but determined to be of high priority for conservation by regional or national systematic conservation planning.	(b) EAAA ≥ 5 per cent 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	a) Priority Habitats (listed in Annex I of the Habitats Directive) and habitats considered to be their equivalent in countries outside the EU b) ≥5% of the global extent of an ecosystem type meeting the criteria for IUCN's Red List of Ecosystems with a status of critically endangered or endangered c) Examples of ecosystems outside the EU and not yet assessed by IUCN, but determined to be of high priority for conservation on the basis of regional or national level systematic conservation planning or informed specialist input
Priority Feature Threshold	-	(b) EAAA < 5 per cent of the global extent of an ecosystem type with IUCN status of CR or EN	
Key Evolutionary Processes			
Criteria	Criterion 5: The structural attributes of a region can influence the evolutionary processes that give rise to regional configurations of species and ecological properties. For illustrative purposes, some potential examples of spatial features associated with evolutionary processes are as follows: • Landscapes with high spatial <i>heterogeneity</i>. • <i>Environmental gradients</i>, also known as <i>ecotones</i>. • <i>Edaphic interfaces</i> are specific juxtapositions of soil types (for example, serpentine outcrops, limestone, and gypsum deposits). • <i>Connectivity</i> between habitats (for example, biological corridors). • Sites of demonstrated importance to <i>climate change adaptation</i> for either species or ecosystems are also included within this criterion.		Criterion 6: A habitat of key scientific value and/or associated with key evolutionary processes. This may include, but is not limited to, exceptional representations of: a) Landscapes with high spatial <i>heterogeneity</i> b) <i>Environmental gradients</i>, also known as <i>ecotones</i> c) <i>Edaphic interfaces</i> that juxtapose soil types (e.g. serpentine outcrops, limestone and gypsum deposits) d) <i>Connectivity</i> between habitats (e.g. biological corridors) e) Sites of demonstrated importance to <i>climate change adaptation</i> for either species or ecosystems
Critical Habitat Thresholds	The significance of structural attributes in a landscape that may influence evolutionary processes will be determined on a case-by-case	Expert Judgement required, no fixed thresholds	Expert Judgement required, no fixed thresholds

	IFC PS6	EBRD ESR6	EIB Standard 4
	basis, and the determination of critical habitat will be heavily reliant on scientific knowledge.		
Priority Feature Threshold		Expert Judgement required, no fixed thresholds	
Biodiversity of socio-economic value			
Criteria	-	-	Criterion 5: Biodiversity and/or an ecosystem of significant social, economic or cultural importance to local communities and indigenous groups;
Critical Habitat Thresholds	-	-	Areas of semi-natural and natural habitat used by indigenous peoples and local communities to obtain essential or priority benefits will be considered critical from an ecosystem service perspective. Criteria for identifying priority ecosystem services should be developed for each project

Internationally recognized areas

IFC PS6 Guidance Note (GN) 54 (IFC 2019) also states that certain internationally recognized areas of high biodiversity value may be recognized as critical habitat and should be given special attention during assessments. Examples include the following:

- Areas that meet the criteria of the IUCN's Protected Areas Categories Ia, Ib and II (Dudley 2008);
- Key Biodiversity Areas (KBAs), which encompass Important Bird and Biodiversity Areas (IBAs)

