Environmental Impact Assessment

PUBLIC

Project Number: 57342-001
Draft
December 2023

Uzbekistan: Kungrad 1 Wind Power BESS Project

Critical Habitat Assessment (CHA)

Prepared by ACWA Power and ECO Consult for the Asian Development Bank (ADB).

Critical Habitat Assessment (CHA)

Kungrad 1.5 GW Wind Farm and 800 km OHTL Route in Uzbekistan

REV-01

December 2023

Issue and Revision Record:

Template Code		**QF-PM-01-15**	**Template Revision No.**	**REV-1**
Version	**Date**	**Description**	**Prepared By**	**Approved by**
REV 00	5 Nov 2023	Draft CHA Report	1. Turnstone Ecology	Mark Gash / Ibrahim Masri
REV 01	11 Dec 2023	Second Draft CHA Report (inc ADB comments)	1. Turnstone Ecology	Mark Gash / Ibrahim Masri

Disclaimer:

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

This report is confidential to ACWA Power, and the Consultant accepts no responsibility of whatsoever nature to third parties whom this Report, or any part thereof, is made known. Any such party relies upon this report at their own risk.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS

Acronym	Definition
ADB	Asian Development Bank
AoI	Area of Influence
BAP	Biodiversity Action Plan
BMEP	Biodiversity Monitoring Evaluation Plan
BMP	Biodiversity Management Plan
CH	Critical Habitat
CHA	Critical Habitat Assessment
CR	Critically Endangered
EAAA	Appropriate Areas of Analysis
EBRD	European Bank for Reconstruction and Development
EN	Endangered
ESIA	Environmental and Social Impact Assessment
EU	European Union
GN	Guidance Notes
GW	Giga Watt
IBAs	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
IFC	International Finance Corporation
IFHC	International Fund for Houbara Conservation
IUCN	International Union for Conservation of Nature and Natural Resources
KBAs	Key Biodiversity Areas
LC	Least Concern
MSBs	Migratory Soaring Birds
NGOs	Non-Governmental Organizations
NT	Near Threatened
NW	Northwest
OHTL	Overhead Transmission Line
PBF	Priority Biodiversity Features
PR	Performance Requirements
PS	Performance Standards
SCADA	Supervisory Control And Data Acquisition
SE	Southeast
SNH	Nature Scot
SW	Southwest
UzRDB	Uzbekistan Red Data Book
VPs	Vantage Points
VU	Vulnerable
WF	Winf Farm
WTGs	Wind Turbine Generators

1. INTRODUCTION

1.1 Purpose of Report

This report details the Critical Habitat Assessment (CHA) for the proposed 1.5GW Kungrad Wind Farm (WF) and associated 800 km Overhead Transmission Line (OHTL). The OHTL runs from the proposed project site to an existing sub-station at Karakul to the south-west of Bukhara, Uzbekistan. This CHA has been completed in line with International Finance Corporation (IFC) Performance Standard 6 (PS 6) and European Bank for Reconstruction and Development (EBRD) Performance Requirement 6 (PR 6) and the corresponding Guidance Notes (GN) to identify if the Project area or parts thereof are considered as Critical Habitat.

This CHA aims to:

- Identify Critical Habitat qualifying species or habitats, Priority Biodiversity Features and Natural Habitat associated with the Project.
- Outline the implications of the CHA for the Project, and
- Highlight future actions for the Project where applicable, as well as outline details that will need to be included in a Biodiversity Management Plan (BMP) or Biodiversity Action Plan (BAP).

1.2 The Project Site and Study Area

The wind farm site is located within the Autonomous Republic of Karakalpakstan (Figure 1).

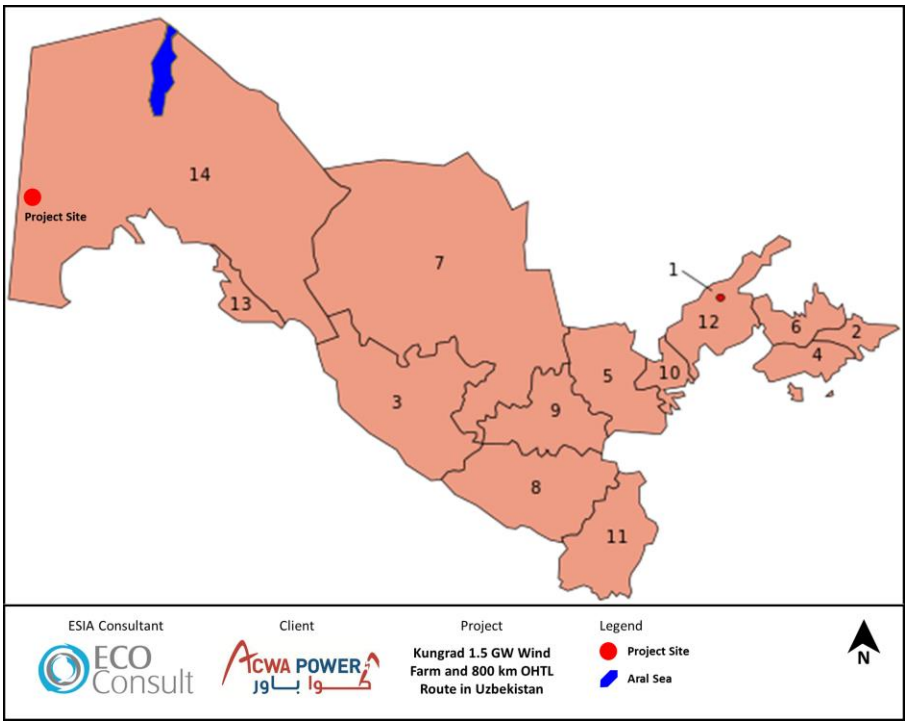


Figure 1: Location of the Wind Farm Site

The wind farm site is located within Kungrad District, approximately 225 km west of Karakalpakstan's capital city of Nukus, and 150 km west of the District's capital (Kungrad City). The proposal is to construct and operate a 1.5GW Wind Energy Project which will be achieved through the installation of between 188 and 260 Wind Turbine Generators (WTGs). The WTGs will be connected through buried cables (along with Supervisory Control And Data Acquisition (SCADA) control cables) to a new on-site substation and will be exported to the national grid via an 800 km OHTL terminating at an existing sub-station at Karakul to the south-west of Bukhara. The OHTL will connect with two other sub-stations along the route, a new substation at Nukus and an existing sub-station at Sarymai (Figure 2).

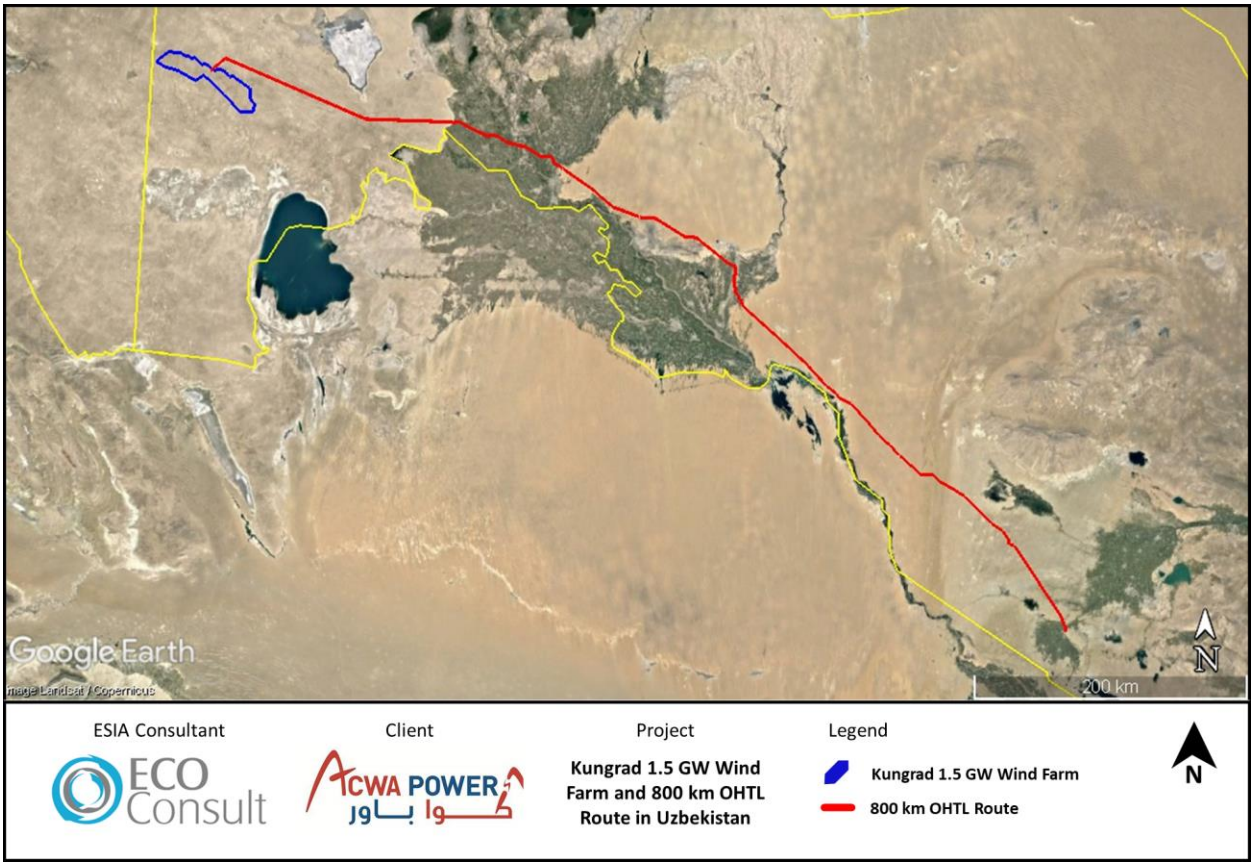


Figure 2: Location of Proposed WF and OHTL Route

As part of the Environmental and Social Impact Assessment (ESIA) for the project, biodiversity surveys were undertaken at the Wind Farm Project Site during the winter, spring, summer and autumn seasons 2023 (January 2023 to November 2023). This document uses data from all survey seasons however bird data from autumn 2023 has not been fully finalized so headline results, where relevant, are referenced. Biodiversity surveys have also been completed along the OHTL including terrestrial flora and fauna surveys in spring / summer 2023. Bird surveys commenced in August 2023 and again data has not been finalized and only headline results are included in this report. For both the WF and OHTL a comprehensive literature review has been undertaken, including an IBAT PS6 report.

This document has been carried out on a location where there are large gaps in available data due to the rarity of species and lack of historic local, regional, and national survey data. In certain specific cases the report ensures that a precautionary approach is taken when dealing with these species. In particular where wider population levels are unknown a precautionary assumption of low population levels is used and where species are not recorded within the survey area, but habitat is present that is suitable the species is considered to have potential to use the site over the lifetime of the project and is screened in.

2. ASSESSMENT FRAMEWORK AND METHODOLOGIES

2.1 Frameworks

2.1.1 General

Standards for the International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD) performance standards/requirements are detailed below. Other lenders involved in this Project (Proparco and Asian Development Bank (ADB)) use standards which reflect those stipulated by IFC therefore to avoid repetition the institutions needs are covered in this section of the CHA.

2.1.2 International Finance Corporation Performance Standard 6 (PS 6)

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

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

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

- **Modified Habitat**: exercise care to minimize any conversion or degradation of such habitat, depending on scale of project, identify opportunities to enhance habitat and protect and conserve biodiversity as part of operations.
- **Natural Habitat**: developer will not significantly convert or degrade such habitat unless no financial/technical feasible alternatives exist, or overall benefits outweigh cost (including those to biodiversity), and conversion or degradation is suitably mitigated. Mitigation must achieve no net loss of biodiversity where feasible; offset losses through creation of ecologically comparable area that is managed for biodiversity, compensation of direct users of biodiversity.
- **Critical Habitat**: in areas of CH, the Developer will not implement project activities unless there are no measurable adverse impacts on the ability of the critical habitat to support established populations of species described or on the functions of the critical habitat; no reduction in population of a recognized critically endangered or endangered species and lesser impacts mitigated as per natural habitats. The project must achieve net gains for the biodiversity value for which the Critical Habitat was designated.

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

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

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

2.2 Assessment Methods

2.2.1 General

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

- Initial Screening – which involves making stakeholder consultation and an initial review of published and grey literature e.g. Important Bird Areas (IBAs) in Uzbekistan, Red Data Book of Plants and Animals, IUCN Red List of Threatened Species, Integrated Biodiversity Assessment Tool (IBAT, 2023), IFC PS6 GN6 (IFC, 2012), EBRD PR6, Biodiversity Conservation and Sustainable Management of Living Natural Resources Guidance Note (EBRD, 2022) and World Database of Key Biodiversity Areas.
- Establishment of baseline which includes field data collection and verification of available information e.g. Habitat Survey, Bird Survey, Bat Survey, Invertebrate Survey and Reptile Survey.
- Critical habitat determination:
    a. Identification of appropriate scale for assessment.
    b. Determination of Ecologically Appropriate Area of Analysis.
    c. Assessment against Critical Habitat criteria.

2.2.2 Literature review and stakeholder consultation

This assessment is based on existing literature in addition to global and regional datasets, including Integrated Biodiversity Assessment Tool (IBAT, accessed in 2023). All species classified as Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) in the IUCN Red List were screened, as well as all species mapped by IUCN which could be considered restricted-range. Additionally, up-to-date ecological assessments, including avifaunal in-flight monitoring, flora survey, mammal, reptile and invertebrate surveys, are included in the ESIA of the Kungrad Wind Farm and surveys completed on the associated OHTL (survey reports and ESIA in prep) were used in the analysis.

2.2.3 Scale of Assessment

A Critical Habitat Assessment is usually carried out at a landscape scale, using Ecologically Appropriate Areas of Analysis (EAAA) for determining the presence or absence of Critical Habitat qualifying features under PS6 Criteria 1 – 3 and PR6 Criterion 2 – Priority Species and their Habitats. They are identified at a landscape scale, considering large-scale ecological processes where appropriate, and can therefore be

much larger than the project concession or lease area itself. The principles of determination of EAAA only apply to terrestrial areas and cannot be applied to airspace above a site unless it is associated directly with the utilization of a terrestrial habitat.

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

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

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

That said when taking this into consideration, and being mindful of the precautionary principles, those species which are included on the IUCN Red List (CR, EN and VU only) that could potentially migrate through the Kungrad WF and traverse the OHTL are included in this assessment where appropriate.

2.2.4 Determination of Ecologically Appropriate Area of Analysis

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

Criteria used to define CH under EBRD PR 6 are closely aligned to the IFC guidance and these require that the study area be defined by comparable parameters to the above. In essence any CH assessment must

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

encompass all direct and indirect impacts within a broad landscape unit which is large enough to include features and functions relevant to the species being considered.

2.2.5 *Assessment Against Critical Habitat Criteria*

Criteria

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

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

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

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

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

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

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

- The EAAA contains “globally important concentrations” of an IUCN CR or EN species, defined as at least 0.5% of the global population AND over 5 reproductive units.
- Areas that support globally important concentrations of an IUCN Red-listed Vulnerable (VU) species, the loss of which would result in the change of the IUCN Red List status to EN or CR and meet the thresholds in (a).

- As appropriate, areas containing important concentrations of a nationally or regionally listed EN or CR species providing the national/regional red lists are produced in accordance with IUCN standards and guidance, which in the case of the UzRDB are not and as such a species with an in-country rating of CR and EN do not correspond to a similar IUCN rating. In-country RDB status is determined through a range of criteria, including IUCN criteria, however in-country conservation status is also weighted based on the prevalence of species within Uzbekistan.

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

IFC GN6 - Paragraph 74 (2019) defines "endemic" as synonymous with "restricted range" species, and for terrestrial vertebrate and plant species, this criterion refers to species with a global range size of ≤ 50,000 km2. In order to trigger CH under these criteria, the EAAA must contain ≥10% of the global population of such a species AND at least 10 reproductive units.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.2.6 Assessment Against Priority Biodiversity Feature Criteria

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3. BASELINE ECOLOGICAL INFORMATION

3.1 Methods

The ecological baseline (habitat identification, floral survey, terrestrial fauna and avifauna survey) was established by undertaking site specific surveys within the project areas. On the Kungrad WF area surveys have been completed in Winter, Spring and Summer 2023, whilst along the route of the OHTL terrestrial flora and fauna surveys were completed in late spring / early summer. Bird surveys on the OHTL route commenced in August 2023 (Autumn surveys). Additional surveys will be completed at the Kungrad WF in Autumn 2023 and surveys along the OHTL route will include Winter 2023-2024 and Spring 2024. The surveys that have and will be completed include:

Kungrad Wind Farm

- Walkover transect survey for habitat assessment categorization and rare and endemic species of plants.
- Botanical surveys also included quadrat surveys across the Project site;
- Walkover transect surveys for mammals and reptiles. Camera trap surveys were deployed across the site in Winter 2023 and were repositioned in Spring 2023 to determine the assemblage of large and small mammals with the Project site. Camera traps will remain on the site until the end of the Autumn 2023 surveys;
- Invertebrate surveys using a range of methods including active searching from transects and the deployment of pit-fall and light traps. Two surveys have been completed in 2023;
- Acoustic monitoring for bats completed commenced at the end of April 2023 and will remain deployed until the end of the Autumn surveys. 35 detectors have been deployed, including seven at height detectors;
- Ornithological survey consisting of Vantage Point (VP) surveys with methodology of such survey based on Nature Scot (formerly SNH) Guidelines. 45 VPs were selected to provide comprehensive coverage of the area and each VP was subject to 36 hours observation in each survey season. Cumulative survey hours were as follows:

- Winter 2023 – Total Hours – 1620 hours
- Spring 2023 – Total Hours – 1620 hours
- Summer 2023 – Total Hours – 1620 hours
- Autumn 2023 – Total Hours – 1620 hours (TBC)

OHTL

- Full walkover of the site for habitat assessment categorization including quadrat surveys to record species present;
- Walkover transect surveys for mammals and reptiles;

- Desk-based literature review to identify invertebrate species likely to be present, in particular identifying sensitive species (conservation concern or range restricted) that may be present;
- Bat roost search and identification of suitable roost habitats;
- Ornithological survey consisting of Vantage Point (VP) surveys with methodology of such survey based on Nature Scot (formerly SNH) Guidelines. 19 VPs were selected to provide comprehensive coverage of the OHTL and each VP was subject to 12 hours observation in each survey season. Cumulative survey hours were as follows:

- Autumn 2023 – Total Hours – 228 hours (TBC)
- Winter 2023-2024 – Total Hours – 228 hours (TBC)
- Spring 2024 – Total Hours – 228 hours (TBC)

- Ornithological survey consisting of waterbird counts at wetland sites in the vicinity of the OHTL route.

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

3.2 Results

3.2.1 Habitats and Flora

Wind Farm

The habitats within the area are natural habitats and belong to the Type 8 (Desert) and Sub-type 8.2 (Temperate Desert) according to IUCN Habitats Classification Scheme, or Stony (gypsum) Desert, according to National Strategy of Biodiversity Conservation. The landscape is represented with almost flat, slightly inclined and undulating plains, and gently sloping hills, dissected with numerous shallow dry erosion gullies, small saline depressions, and small plots of takyrs (periodically inundated loamy depressions with very sparse vegetation). The soils are gypsaceous and sometimes saline loamy or stony grey-brown desert soils.

During the summer 2023 surveys 84 plant species of 30 families and 73 genera were recorded (81 species of them were recorded within quadrats and 3 species outside quadrats). Among them, one species is a small tree (Black Saxaul), six species are shrubs, ten subshrubs, 30 species are perennial herbs, 34 annuals, and three species are parasites. Leading families are Amaranthaceae (13 species), Boraginaceae (13), Asteraceae (12 species), Fabaceae (8) and Poaceae (5). Families Convolvulaceae, Plantaginaceae and Zygophyllaceae are represented with 3 species each; Apiaceae, Polygonaceae and Rutaceae includes 2 species, and remaining 19 families are represented with single species. Small stands of Black Saxaul are also scattered sporadically across the AoI, with some denser areas of Saxaul scrub located along small gullies in the center and eastern parts of the AoI.

No species that are listed on the IUCN Red List as Critically Endangered, Endangered, Vulnerable or Near Threatened were recorded during the spring and summer 2023 surveys. In additional no species listed on the UzRDB were recorded.

The vegetation coverage across the AoI is sparse (mostly with typically 20–30 % cover or less, rarely 40–50 %). Plants are scattered or occur in patches, or sometimes form an interrupted canopy, and the diversity

of species is rather low (2 to 12 species per sample quadrat), however this is typical of vegetation within gypsum deserts.

The habitats of the wind farm area can be assessed as habitats of poor quality with a score of 0.4 (see ESIA for habitat score definitions) because of relatively low plant species composition, sparse vegetation coverage, and absence of threatened species included in the IUCN Red List or Red Data Book of Uzbekistan. There are also areas of very degraded habitats across the Project AoI and in these areas the habitats would be assessed as being Modified and would be Condition Score 0.0 (habitat lost), or 0.2 (very poor). These habitat areas are associated with vehicle tracks and areas where blasting has been completed for geological exploration. The upper soil layer is very fragile and once lost the likelihood of habitat recovery is very low and the modification of the habitat and poor condition is further exacerbated by continuous erosion both natural (wind and rain) and unnatural (repeated vehicle movements). This is especially true of the access road which will follow the wide (up to 50m in places) and deeply rutted existing vehicle track from Kyrkkyz to the Project AoI. There are also regularly used vehicle tracks crossing the Project AoI and, in these areas, habitat has also been lost.

The habitats present on the site do not meet any of the criteria for Annex I or Priority Habitats and are assessed as being of Low to Moderate Sensitivity.

OHTL

OHTL route Section 1 is partially located parallel to the proposed Kungrad Wind Farm and the habitat along the whole section is largely the same as the wind farm area itself (Section Maps are provided below).

Section 2 of the OHTL route passes through the cities of Kanlikul, Shumanay, Akmangit and Nukus of Karakalpakstan. The territory of Section 2 consists mainly of agricultural crops, including farm lands. The area is highly saline and there are almost no ephemeral plants.

Section 3 of the OHTL route begins from Nukus and ends in Boston District, Xorazam Region. Part of the route runs parallel to the A380 road (Guzor – Beyneu road) and this section mostly corresponds to the desert habitat and another section runs parallel to the Karatog (Sultan Uwais mountains). Section 3 is located in an area of ancient alluvial deposits however; the main part crosses the plumes of the Sultanuizdak landscape region. The area of ancient alluvial deposits is a low plain. It is composed of alluvial sandy-argillaceous sediments associated with the activity of former channels that connected with the Amu Darya. For the most part, the alluvial plain of the territory is a takyr-like surface, on which there are individual mounds of loose steel-grey micaceous sand, and near the outskirts of the region - yellow "Kyzylkum" sand. The area has been heavily urbanized. Closer to the border of the cultural zone, near settlements and roads, takyrs are replaced by areas of grey dunes, and also takyr surfaces are interrupted by low hollows with Tugai areas.

Section 4 of the OHTL route is located in the landscapes of the eolian plains of Uzbekistan - South-Western Kyzylkum. This section starts from Turtkul District of the Republic of Karakalpakstan going through to Karakul District of Bukhara region. This section has a complex landscape structure, including landscapes of sandy and gravelly deserts, and closed solonchak depressions. The landscapes of large ridge-cellular sands on ancient alluvial deposits, small-hilly sands with outcrops of Paleogene deposits, and dune hilly sands stand out in particular.

Forty-three species were recorded during the surveys. Details of the species recorded in the different sections and therefore different habitat conditions are detailed in the ESIA. A list of all recorded plant species is detailed in the ESIA; however no species of international conservation concern or range

restricted species were recorded along the OHTL nor are any such species considered to be potentially present (based on known ranges / in-country botanical expert assessment).

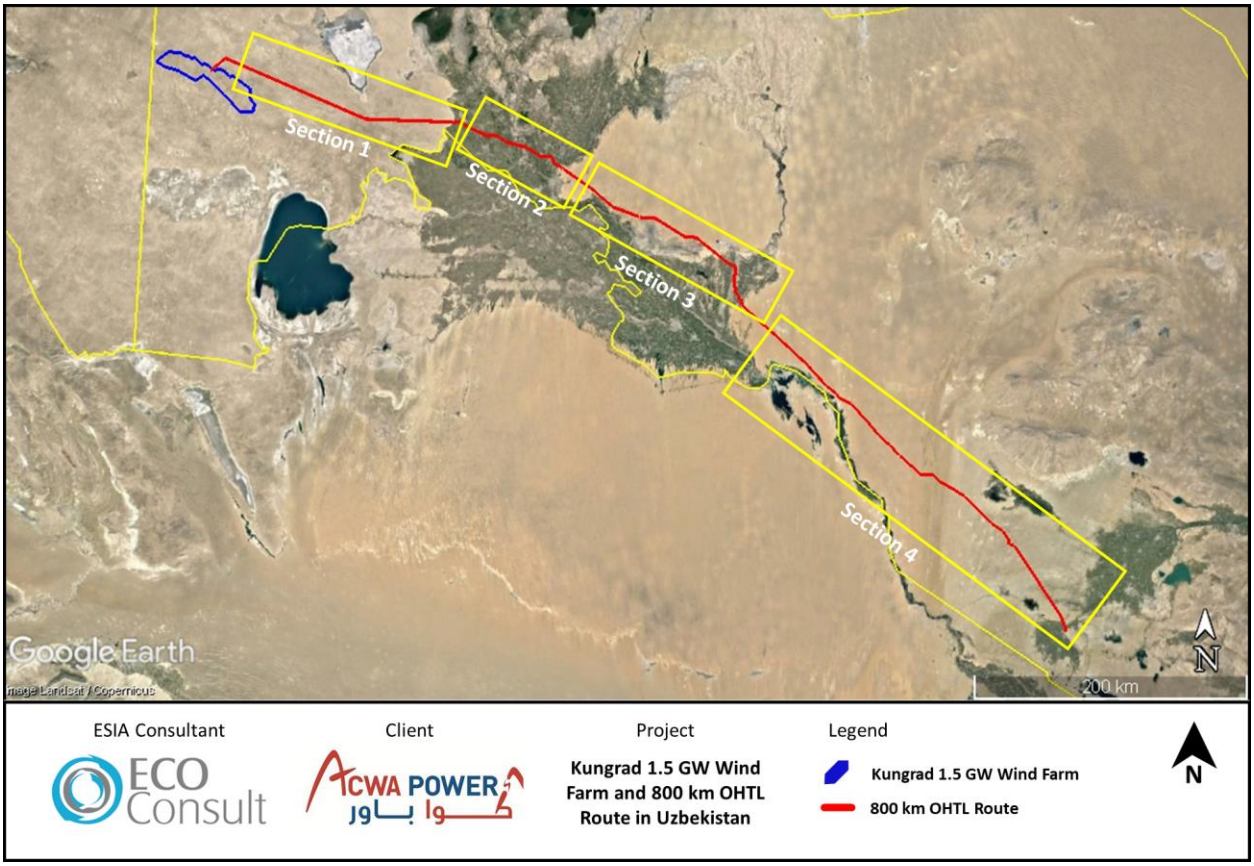


Figure 3: OHTL Recording Sections

3.2.2 Mammals (excluding bats)

Wind Farm

Twenty-one species were recorded during the surveys. Of the species recorded, two are of international conservation concern:

- Goitered Gazelle (Gazella subgutturosa) – IUCN VU, UzRDB VU:D
- Marbled Polecat (Vormela peregusna) – IUCN VU, UzRDB VU

Of the species of mammal recorded within the Project AoI, three are of national conservation importance and are included on the Uzbekistan Red Data Book. These are:

- Honey Badger (Mellivora capensis) – IUCN LC, UzRDB CR
- Caracal (Caracal caracal) – IUCN LC, UzRDB CR
- Brandt's Hedgehog (Hemiechinus hypomelas) – IUCN LC, UzRDB VU

OHTL

Twenty-nine species were recorded during the surveys. Of the species recorded, two are of international conservation concern:

- Marbled Polecat (Vormela peregusna) – IUCN VU, UzRDB VU
- Goitered Gazelle (Gazella subgutturosa) – IUCN VU, UzRDB VU:D

Of the species of mammal recorded within the Project AoI, two are of national conservation importance and is included on the Uzbekistan Red Data Book:

- Brandt's Hedgehog (Hemiechinus hypomelas) – IUCN LC, UzRDB VU
- Corsac Fox (Vulpes corsac) – IUCN LC, UzRDB VU

None of the mammal species recorded within the Project AoI are considered endemic or range-restricted.

3.2.3 Bats

Wind Farm

During the spring and summer up to three species of bats have been recorded at the windfarm area and only infrequently. Eptesicus species - Serotine (Eptesicus serotinus) and Ognev's Serotine (Eptesicus ognevi) are currently not clearly separated by their call parameters. An Eptesicus species (one of the two noted above) was recorded 1,222 times in spring from across the whole wind farm and on all 35 bat detectors and 103 times in summer from the whole wind farm on 25 of the ground level detectors only. Kuhl's Pipistrelle was only recorded twice in the spring.

All bat species recorded at the WF are classified as Least concern on the IUCN red list and are not considered threatened or included in the UzRDB.

OHTL

The route of the OHTL largely passes through open desert or agricultural areas. There are no built (man-made) structures within 100m of the OHTL route, but there are some areas where a building or small number of buildings are within 100-300m of the route. It is certain that these structures will not be directly impacted by the project, and it is very unlikely that any bat roosts (if present) would be indirectly impacted by the project.

Some natural features that have the potential to be suitable for use by roosting bats are present along the OHTL route, which includes a cliff (c.70m height) at the western edge of the Nukus/agricultural area and areas with trees, e.g. around the Amu Darya. No features were identified during the walkover surveys as being confirmed as bat roosts along the route. It is uncertain at this stage how much these features would be impacted by the project. It is unlikely the cliff will be directly impacted by the project but there may be indirect disturbance to bat roosts if they are present. Impacts on trees will depend on the exact location of the transmission towers and work areas around them, which is unknown at this stage. It is possible trees will need to be felled to facilitate ground clearance for work areas.

3.2.4 Reptiles

Wind Farm

Eleven species were recorded during the surveys. Of the species recorded, one is of international conservation concern:

- Central Asian Tortoise (Testudo horsfieldii) – IUCN: Vulnerable
- Of the species of reptile recorded within the Project AoI, three are of national conservation importance and are included on the Uzbekistan Red Data Book. These are:
- Central Asian Tortoise (Testudo horsfieldii) – UzRDB: Vulnerable (2), declining
- Desert Sand Boa (Eyrx miliaris) – UzRDB: Near Threatened (3)
- Blotched Rat-snake (Elaphe sauromates) – UzRDB: Vulnerable, Naturally Rare

OHTL

Nineteen species were recorded during the surveys. Of the species recorded, one is of international conservation concern:

- Central Asian Tortoise (Testudo horsfieldii) – IUCN: Vulnerable

Of the species of reptile recorded within the Project AoI, three are of national conservation importance and are included on the Uzbekistan Red Data Book. These are:

- Central Asian Tortoise (Testudo horsfieldii) – UzRDB: Vulnerable (2), declining
- Desert Monitor (Varanus griseus) – UzRDB: Vulnerable (2)
- Desert Sand Boa (Eyrx miliaris) – UzRDB: Near Threatened (3)

None of the species of reptile recorded within the Project AoI are considered endemic or range-restricted.

3.2.5 Invertebrates

Wind Farm

No species of national or international conservation concern were recorded within the Project AoI and no species considered to be range-restricted, endemic or near-endemic were recorded. The invertebrate assemblage is considered typical for the Ustyurt Plateau and the habitats present within the AoI and are of negligible sensitivity.

OHTL

The literature review identified 106 species from 59 families that are potentially present along the OHTL route. Based on the information available none of the species likely to occur are IUCN red list species or

range restricted. Two species are listed in the Uzbekistan Red Data Book as Vulnerable (Catocala optima - a species of moth) and Near-threatened (Hypermnestra helios – a species of Swallowtail butterfly).

3.2.6 Birds

Wind Farm

Winter Bird Surveys

During the winter season, 46 bird species were recorded during Vantage Point monitoring, including six species with elevated IUCN status, and seven with national protected status. These were:

- Mute Swan (UzRDB NT),
- White-tailed Sea-eagle (UzRDB VU),
- Pallid Harrier (IUCN and UzRDB VU),
- Greater Spotted Eagle (IUCN and UzRDB VU),
- Steppe Eagle (IUCN EN and UzRDB VU),
- Eastern Imperial Eagle (IUCN and UzRDB VU),
- Golden Eagle (UzRDB VU),
- Northern Lapwing (IUCN NT),
- Pallas's Gull (UzRDB VU), and
- Pin-tailed Sandgrouse (UzRDB VU).

Spring Migration Surveys

During the Spring Migration Surveys a total of 80 species were recorded as a result of the Vantage Point and transect surveys as well as those species recorded as incidental sightings (e.g. travelling between VPs or to and from the surveyor's camp). Registrations of note during the Spring Migration Surveys include the following species of conservation concern:

- Golden Eagle (UzRDB VU)
- Eastern Imperial Eagle (IUCN and UzRDB VU)
- Steppe Eagle (IUCN EN and UzRDB VU),
- MacQueen's Bustard (IUCN VU and UzRDB VU:D)
- Short-toed Eagle (IUCN LC and UzRDB VU D)
- Pallid Harrier (IUCN and UzRDB VU),
- Lesser Kestrel (UzRDB NT),

- Pallas's Fish Eagle (IUCN and UzRDB EN)

Summer Surveys

- A total of 54 species were recorded during the summer bird surveys. Of these only five were 'target' species of the VP surveys and these were Golden Eagle, Steppe Eagle, Long-legged Buzzard, MacQueen's Bustard and Egyptian Vulture. Recorded activity during the summer period was very low when compared to winter and spring.
- The table below provides a summary of Vantage Point Data for the winter, spring, summer and autumn surveys and includes details of relevant species conservation status, total number of individuals recorded, and total number of at-risk flights recorded.

Table 5 below provides a summary of Vantage Point Data for the winter, spring, and autumn surveys and includes details of relevant species conservation status, total number of individuals recorded, and total number of at-risk flights recorded. Headline results of the autumn surveys is included later in this report, where relevant, however the dataset has not been fully evaluated at the time of writing this report. Autumn data (up to the end of October will be included in the ESIA which, along with the CHA, will be updated (addendum) on completion of the autumn surveys and detailed analysis of the data.

Table 5: Results of Winter and Spring Vantage Point Surveys – Notable Species or Registrations

Common Name	Scientific Name	IUCN	UzRDB	Winter		Spring		Summer		Autumn	
				Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)
Northern Goshawk	Accipiter gentilis	LC	N/A	0	0	0	0	0	0	2	0
Eurasian Sparrowhawk	Accipiter nisus	LC	N/A	0	0	0	0	0	0	17	5
Cinereous Vulture	Aegypius monachus	NT	NT	0	0	0	0	0	0	20	12
Golden Eagle	Aquila chrysaetos	LC	VU:R	25	15	1 (out)	1 (out)	1	0	39	8
Eastern Imperial Eagle	Aquila heliaca	VU	VU:D	10	7	1	1	0	0	164	72
Steppe Eagle	Aquila nipalensis	EN	VU:D	404	202	27	20	7	4	558	198
Eurasian Eagle Owl	Bubu bubo	LC	N/A	0	0	0	0	0	0	2	0
Common (Steppe) Buzzard	Buteo buteo vulpinus	LC	N/A	0	0	1	0	0	0	1	1
Long-legged Buzzard	Buteo rufinus	LC	LC	11	5	35	28	26	20	42	27
MacQueen's Bustard	Chlamydotis macqueenii	VU	VU:D	0	0	6	3	8	3	21	5
Short-toed Eagle	Circaetus gallicus	LC	VU:D	0	0	1	1	0	0	0	0
Greater Spotted Eagle	Clanga clanga	VU	VU:R	3	2	0	0	0	0	0	0

Common Name	Scientific Name	IUCN	UzRDB	Winter		Spring		Summer		Autumn	
				Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)
Western Marsh Harrier	Circus aeruginosus	LC	LC	0	0	2	2	0	0	4	3
Hen Harrier	Circus cyaneus	LC	LC	4	0	12	0	0	0	17	2
Pallid Harrier	Circus macrourus	NT	NT	1	0	14	9	0	0	25	7
Montagu's Harrier	Circus pygargus	LC	LC	0	0	1	0	0	0	7	6
Mute Swan	Cygnus olor	LC	NT	2	0	0	0	0	0	0	0
Merlin	Falco columbarius	LC	LC	5	0	0	0	0	0	11	1
Lesser Kestrel	Falco naumanni	LC	NT	0	0	2	1	0	0	13	10
Eurasian Hobby	Falco subbuteo	LC	LC	0	0	1	0	0	0	3	1
Common Kestrel	Falco tinnunculus	LC	LC	1	1	33	17	0	0	90	57
Black-winged Pratincole	Glareola nordmanni	NT	VU	0	0	20	8	0	0	0	0
White-tailed Eagle	Haliaeetus albicilla	LC	VU:R	3	1	0	0	0	0	1	0
Pallas's Fish Eagle	Haliaeetus leucoryphus	EN	-	0	0	1	1	0	0	0	0
Booted Eagle	Hieraaetus pennatus	LC	VU	0	0	0	0	0	0	1	1

Common Name	Scientific Name	IUCN	UzRDB	Winter		Spring		Summer		Autumn	
				Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)	Tot Inds Recorded	Tot at Risk Flight (inds)
Pallas's Gull	Ichthyaetus ichthyaetus	LC	VU:D	1	0	0	0	0	0	0	0
Egyptian Vulture	Neophron percnopterus	EN	VU:D	0	0	0	0	1	1	0	0
Black Kite	Milvus migrans	LC	LC	3	3	13	1	0	0	18	17
Honey Buzzard	Pernis apivorus	LC	-	0	0	0	0	0	0	6	5
Pin-tailed Sandgrouse	Pterocles alchata	LC	VU:D	21	3	0	0	0	0	50	0
Black-bellied Sandgrouse	Pterocles orientalis	LC	LC	0	0	20	20	0	0	834	378
Pallas's Sandgrouse	Syrrhaptes paradoxus	LC	LC	10,686	1,484	0	0	0	0	405	192
Northern Lapwing	Vanellus vanellus	NT	LC	3	0	0	0	0	0	0	0

Table 6: Combined (Yearly) Counts of Notable Species and Records and Number of At Risk Flights Recorded by Species

Common Name	Scientific Name	IUCN	UzRDB	Combined Totals	
				Total Inds Recorded	Total At Risk Flights (inds)
Northern Goshawk	Accipiter gentilis	LC	N/A	2	0
Eurasian Sparrowhawk	Accipiter nisus	LC	N/A	17	5
Cinereous Vulture	Aegypius monachus	NT	NT	20	12
Golden Eagle	Aquila chrysaetos	LC	VU:R	66	24
Eastern Imperial Eagle	Aquila heliaca	VU	VU:D	175	80
Steppe Eagle	Aquila nipalensis	EN	VU:D	996	424
Eurasian Eagle Owl	Bubu bubo	LC	N/A	2	0
Common (Steppe) Buzzard	Buteo buteo vulpinus	LC	N/A	2	1
Long-legged Buzzard	Buteo rufinus	LC	LC	114	80
MacQueen's Bustard	Chlamydotis macqueenii	VU	VU:D	35	11
Short-toed Eagle	Circaetus gallicus	LC	VU:D	1	1
Greater Spotted Eagle	Clanga clanga	VU	VU:R	3	2
Western Marsh Harrier	Circus aeruginosus	LC	LC	6	5
Hen Harrier	Circus cyaneus	LC	LC	33	2
Pallid Harrier	Circus macrourus	NT	NT	40	16
Montagu's Harrier	Circus pygargus	LC	LC	8	6
Mute Swan	Cygnus olor	LC	NT	2	0

Common Name	Scientific Name	IUCN	UzRDB	Combined Totals	
				Total Inds Recorded	Total At Risk Flights (inds)
Merlin	Falco columbarius	LC	LC	16	1
Lesser Kestrel	Falco naumanni	LC	NT	15	11
Eurasian Hobby	Falco subbuteo	LC	LC	4	1
Common Kestrel	Falco tinnunculus	LC	LC	124	75
Black-winged Pratincole	Glareola nordmanni	NT	VU	20	8
White-tailed Eagle	Haliaeetus albicilla	LC	VU:R	4	1
Pallas's Fish Eagle	Haliaeetus leucoryphus	EN	-	1	1
Booted Eagle	Hieraaetus pennatus	LC	VU	1	1
Pallas's Gull	Ichthyaetus ichthyaetus	LC	VU:D	1	0
Egyptian Vulture	Neophron percnopterus	EN	VU:D	1	1
				0	0
Black Kite	Milvus migrans	LC	LC	34	21
Honey Buzzard	Pernis apivorus	LC	-	6	5
Pin-tailed Sandgrouse	Pterocles alchata	LC	VU:D	71	3
Black-bellied Sandgrouse	Pterocles orientalis	LC	LC	854	398
Pallas's Sandgrouse	Syrrhaptes paradoxus	LC	LC	11091	1676

Common Name	Scientific Name	IUCN	UzRDB	Combined Totals	
				Total Inds Recorded	Total At Risk Flights (inds)
Northern Lapwing	Vanellus vanellus	NT	LC	3	0

Summary of Notable Records from Vantage Point Survey, Transect Surveys, Camera Trapping Surveys and Incidental Surveys

The following section provides a summary of registrations of species of national or international conservation concern recorded during the Winter and Spring Migration Vantage Point Surveys.

Mute Swan (UzRDB NT)

Two birds recorded during the Winter surveys only. Not at-risk flight seconds recorded.

White-tailed Sea-eagle (UzRDB VU)

Three individual birds recorded during the Winter surveys with one at-risk flight registered. This species regularly occurs in Uzbekistan, generally in the Aral Sea region and the wintering population is considered to be between 300 and 400 individuals. Regularly occurs on migration however is a very rare breeding species. Not recorded in the Spring Migration season. A single bird was recorded on the Autumn Migration surveys however this flight was above rotor swept area.

Pallid Harrier (IUCN and UzRDB NT)

1 individual recorded in the Winter season (not at-risk height) and 14 individuals recorded during the Spring Migration surveys with nine flights registered at-risk height. 40 individuals were also recorded during the Autumn Migration surveys, with 16 of these flights registered at risk height.

Greater Spotted Eagle (IUCN and UzRDB VU)

Only recorded during the Winter bird surveys and registrations are likely to be of early migrating birds or birds that may have over-wintered within Uzbekistan. Three individuals were recorded with two at-risk flights registered.

Steppe Eagle (IUCN EN and UzRDB VU)

Significantly more Steppe Eagles were recorded during the Winter surveys than on the Spring Migration surveys, indicating that 'spring' migratory movement for this species through the Project AoI occurs earlier in the 'migration season', in February and March (Figure 4). A total of 404 individuals were recorded in the Winter season with a significant peak in movements between the 10th and 14th March when 358 individuals were recorded. Of the 404 individuals recorded, 202 were at risk height.

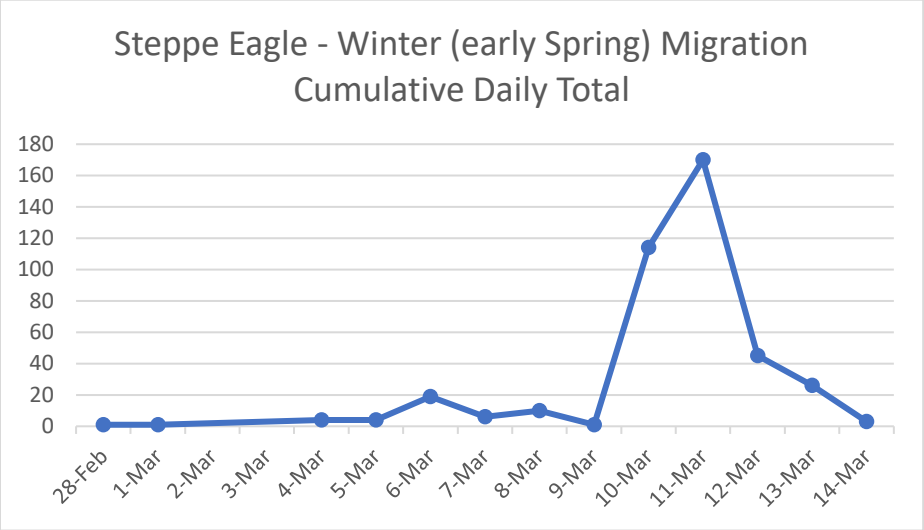


Figure 4: Cumulative Daily Totals – Steppe Eagle Winter Survey Period

There were 31 recorded flights in the breeding bird season and these are likely to be of locally breeding birds, as there was one active nest of this species within the AoI in 2023. Seven flights were recorded during the summer surveys with four at risk flights registered. Spring / summer activity of this species is considered to be minimal.

During the Autumn migration surveys at total of 538 individuals were recorded with a total of 198 birds recorded at risk height. There was a significant peak of migration in October (Figure 5) with the majority of the autumn records being recorded between the 13th and 15th October when 359 flights were recorded. There was also a smaller peak in activity on the 14th September when 60 individuals were recorded.

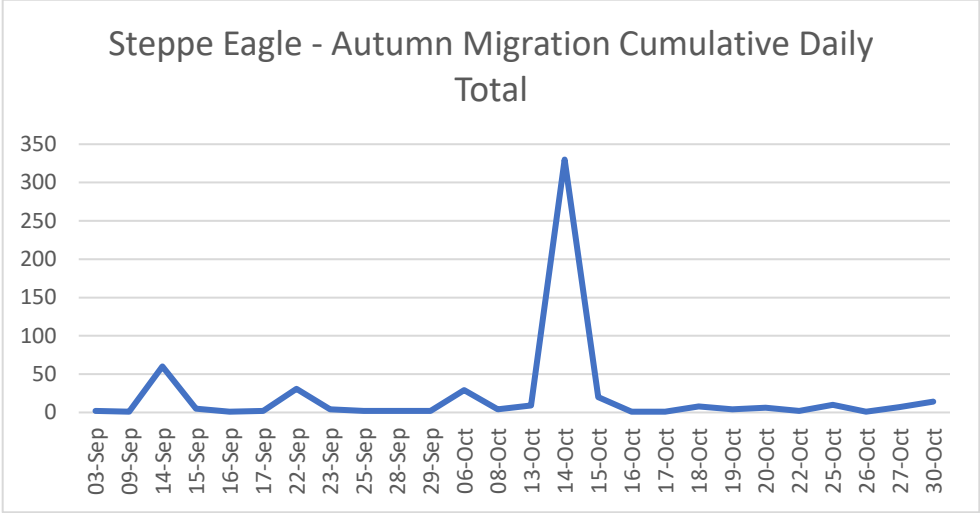


Figure 5: Cumulative Daily Totals – Steppe Eagle Autumn Migration Survey Period

Eastern Imperial Eagle (IUCN and UzRDB VU)

Recorded in the Winter (10 individuals), Spring Migration (1 individual) and Autumn Migration (164 individuals) survey seasons and it is likely that all individuals recorded where migrating through the Ustyurt Plateau. Of the birds recorded in the autumn surveys, 72 individuals were recorded at risk height. As

shown on the graph below there was a peak in movement on the 14th October 2023, with a smaller spike in migratory behaviour towards the end of October.

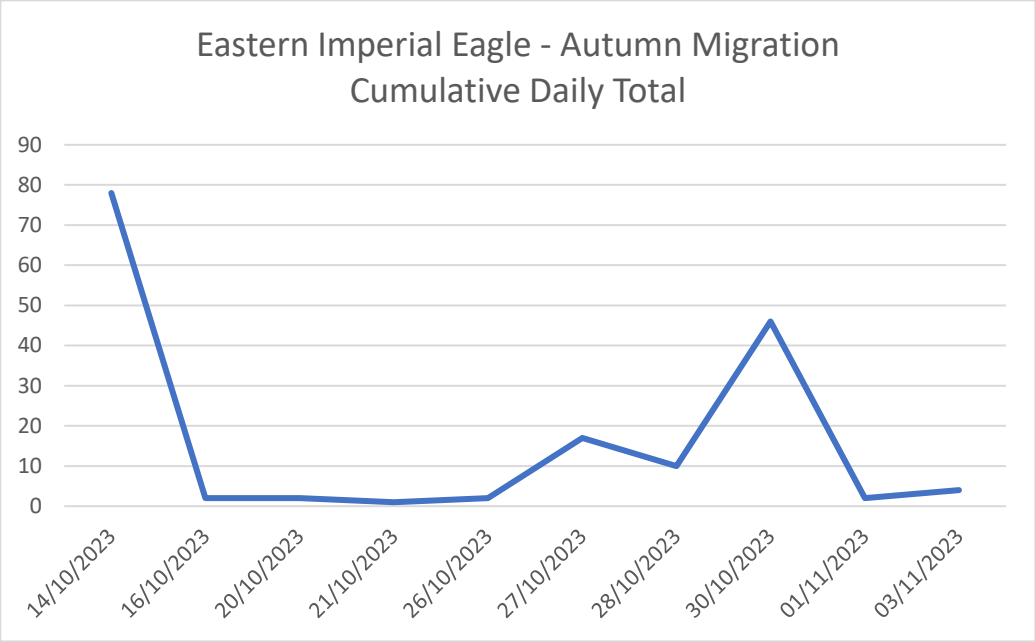


Figure 6: Cumulative Daily Totals – Eastern Imperial Eagle Autumn Migration Survey Period

Golden Eagle (UzRDB VU)

Recorded in both the Winter (25 individuals), Spring Migration (1 individual), Summer (1 individual) and Autumn Migration (39 individuals) survey seasons and it is likely that all individuals recorded where migrating through the Ustyurt Plateau. This species did not breed in the vicinity to the wind farm however one active nest was recorded on the shores of Sarygamysh Lake IBA by Turnstone Ecology in April 2023.

Pallas's Gull (UzRDB VU)

A single registration of a single bird in the Winter bird surveys.

Pin-tailed Sandgrouse (UzRDB VU)

A total of 23 individuals were recorded flying through the Project AoI during the Winter bird surveys. Of these, only three flights were recorded at-risk height. In Autumn 2023 a total of 50 individuals were recorded flying through the wind farm and of these none were at risk height.

Pallas's Sandgrouse (IUCN and UzRDB LC)

During the winter bird survey period a total of 10,686 individual Pallas's Sandgrouse were recorded flying through the wind farm and approximately 14% of these were at-risk height. 405 birds were recorded during the Autumn migration surveys and of these 192 were recorded at risk height. This is a species of Least Concern (IUCN and UzRDB) and are a fast flying and highly mobile species. It is not considered further in this assessment.

MacQueen's Bustard (IUCN VU and UzRDB VU)

No MacQueen's Bustard were recorded during the winter period. A total of six birds were recorded during the Spring Migration Vantage Point surveys and of these only three were at-risk height. This level of low

flight activity in the spring mirrored general recorded activity across the AoI during the survey period. This species was encountered very sporadically during the transects surveys or registered as incidental sightings and where encountered only individual birds were observed (check table below). A single bird was also recorded on one occasion on the camera traps deployed within the AoI.

MacQueen's Bustard are not considered to have bred within the Project AoI as no evidence of breeding (e.g. lekking, or presence of chicks). Surveyors were present on site for the entire breeding period and due to the size of the survey team (three teams of two observers) and number of surveys being completed daily, site coverage was very good. Each VP would have been subject to survey every five days and observers were driving from camp to the VPs and between VPs daily. In addition, transects were completed every two weeks during the breeding bird season.

Given the extent of the site coverage as well as the fact that other cryptic species (e.g. Greater Sandplover) were recorded with chicks it is considered that if MacQueen's Bustard were breeding on site some evidence of this activity would likely have been recorded.

Table 7: Registration of MacQueen's Bustard during the Spring Migration Period

Date	VP Number	Coordinates
24/03/2023	VP-7	43.21355, 56.28072
26/03/2023	VP-30	43.07023, 56.75256
05/04/2023	-	43.04595, 56.88765
10/04/2023	-	42.96186, 56.78958
11/04/2023	VP-45	42.88260, 56.87791
13/04/2023	VP-20	43.14260, 56.44649
26/04/2023	-	42.98802, 56.83836
27/04/2023	-	43.16439, 56.44223
29/04/2023	VP-18	43.11842, 56.36441
17/05/2023	VP-17	43.14658, 56.39265

There were also 8 individuals (3 at risk height) recorded in the Summer and 9 individuals (2 at risk height) recorded in the Autumn Migration Vantage Point surveys.

Twenty-one birds were recorded on the Autumn migration VP surveys and of these five at risk flights were recorded. In addition a small flock of five birds was also recorded during the transect surveys completed during the Autumn Migration surveys.

MacQueen's Bustard are being released in the northern part of the Ustyurt Plateau (outside of the Project AoI), with birds thought to be from Kazakhstan..

Based on consultations undertaken (refer to "Section **Error! Reference source not found.**"), it was indicated that there are release programs for the MacQueen's Bustards into Karakalpakstan. MacQueen's Bustard release programs are undertaken mainly the International Fund for Houbara Conservation in Abu Dhabi (OAE) and brought to the framework of the partnership between Ministry of Ecology, Environmental Protection and Climate Change. In addition, Falcon Hunting Solutions (private sector company) is involved in organizing hunting expeditions in Karakalpakstan for the bustards in Uzbekistan by Arab state royalty whom use a private civil airport within the area.

Based on consultations it was indicated that no activities (release programs or hunting expeditions) are undertaken within the Project specific area. However, no further details were provided on specific inquiries stating that it is confidential information.

It is however clear from the survey data collected in winter, spring, summer and autumn) that the Project AoI is not of significance for this species (both wild or released birds).

Short-toed Eagle (IUCN:LC and UzRDB VU:D)

Single individuals recorded on both the Winter and Spring Migration bird surveys. Neither flight was recorded at risk height.

Pallas's Fish Eagle (IUCN EN)

A single bird was recorded during the Spring Migration surveys.

Egyptian Vulture (IUCN EN and UzRDB VU)

Single bird seen flying through the wind farm during the summer surveys.

Booted Eagle (IUCN LC and UzRDB VU)

A single individual was recorded (at risk height) during the Autumn Migration surveys.

Cinereous Vulture (IUCN NT and UzRDB NT)

20 individuals (12 at risk height) recorded during the Autumn Migration surveys.

Notable Incidental Records (*e.g.* not during VP or transect surveys)

Incidental records of note recorded during the Spring Migration period include:

- Cinereous Vulture (IUCNNT and UzRDB NT) – one registration of two birds seen on 26th April 2023 and a single bird was recorded on the camera trap near VP38 on the 10th March 2023. Not recorded during the Vantage Point Surveys.
- Eurasian Griffon Vulture (IUCN LC and UzRDB VU) – one registration of a single bird seen on 26th April with the two Cinereous Vultures. Not recorded during the Vantage Point surveys.
- White-tailed Eagle (IUCN LC and UzRDB VU) – one recorded on a camera trap near VP28 on the 13th March 2023. This species was not recorded during the Vantage Point surveys.
- Eagle Owl – a dead Eagle Owl was found under the low voltage power line running through the Project AoI on the 12th April 2023. Individual birds were seen occasionally across the site during the survey period including one adult bird recorded during the Turnstone Ecology field visit.
- Eagle Owl Pellet Analysis – the following species were recorded from analysis of Eagle Owl pellets; Great Bittern, Glossy Ibis, Common Shelduck, Common Teal, Common Quail, Black-headed Gull, Common Kingfisher, Kentish Plover, Jack Snipe, White-tailed Lapwing, Black-winged Stilt, Eurasian Collared Dove, Eurasian Hoopoe, and Eurasian Wryneck.

Nesting Raptor Surveys

A single active nest of Steppe Eagle was identified within the Project AoI however despite laying two eggs the nest failed mid-way through the season and the bird abandoned the nest. The reasons for abandonment are unknown however it is possible that the nest was predated by Caracal as there is a camera trap picture of a Caracal visiting the nest in the early spring period. The nest was constructed on

the ground and given its size is obviously a regularly used nesting location that had been used for a number of years. A further three abandoned / damaged nests considered to be Steppe Eagle nests were located within the Project AoI.

A total of 57 Long-legged Buzzard nests were recorded in the Project AoI and breeding raptor survey areas however of these only seven were active in 2023. The majority of the 57 nests found were former nests that were irreparably damaged or the bushes they were constructed on had fallen over and are unlikely to be used in the future.

An old Eagle Owl nest was found near to VP27; however, this species is not considered to have bred within the AoI during the 2023 season.

Breeding Bird Surveys

The breeding bird assemblage, not including Steppe Eagle and Long-legged Buzzard consists of a very small assemblage of common and widespread passerine species of low conservation concern including Greater Short-toed Lark and Turkmenistan Short-toed Lark. Greater Sand plover were also confirmed as breeding with an estimated population of up to nine breeding pairs identified across the AoI. It is considered that recent droughts within the Ustyurt Plateau have likely reduced the suitability of the AoI for this species. In addition, the general lack of taller vegetation and general sparsely vegetated site likely limits the breeding bird assemblage. Excluding raptors, the breeding bird assemblage is of negligible sensitivity.

OHTL

So far there is only preliminary data available from the August and September VP and transect surveys. During the VP survey twenty-one flightlines have been recorded, mostly from between Nukus and Karakul, involving 1 Eurasian Sparrowhawk, 3 Long-legged Buzzards, 8 Marsh Harriers, 1 Hen Harrier, 1 Pallid Harrier, 3 Common Kestrel (4 birds) and 4 Black Kite (10 birds).

During the transect surveys there has been four records of MacQueen's Bustard totaling 11 birds. Two records totaling seven birds were towards the southern end nearer to Bukhara and two records totaling four birds were in the Ustyurt Plateau area near the wind farm. The latter two records involved birds that had red leg rings and are considered likely to involve birds that have been released from a captive breeding programme for hunting.

4. CRITICAL HABITAT ASSESSMENT

4.1 Introduction

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

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

CHA was not undertaken for *Calligonum* plant species as the presence of such species within the AoI of the Project was not indicated in the IBAT search nor are these species considered to be present within the AoI. The absence of these species is further evidenced in a recent CHA for the Nur Bukhara Solar Project[2] which indicates recent ranges changes of *Calligonum molle and Calligonum matteianum*, both of which are IUCN EN species. The known ranges of both species within Uzbekistan are in habitats to the east of Bukhara, which is outside of the Project AoI. Therefore, both are considered absent from the AoI, and neither species is considered further in this assessment.

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

The species for which the screening exercise has been completed as well as the results of the screening against Criterion 1 / ii, 2 / iii and 3 / iv shown in Table 8 below. Included in Table 8 are EAAA for each of the species discussed where EAAA are relevant. In addition, the results of the CH assessment against each of the relevant criteria is also presented in Table 8. Criterion 4 / i, and 5 are discussed below the Table 8.

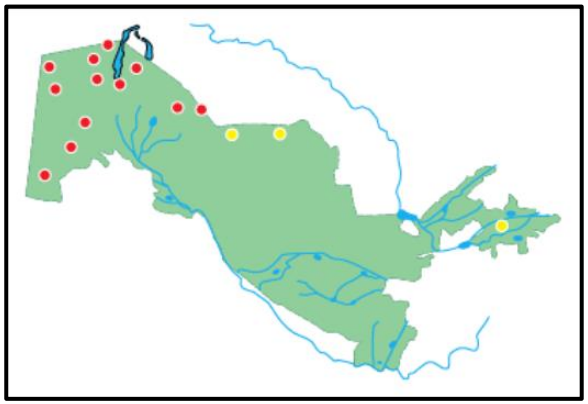
The species considered in the following accounts in the following tables follow their conservation status as defined by the IUCN Red List, starting with species listed as Critically Endangered followed by Endangered and then Vulnerable. Species have then been grouped together in species groups of the same conservation status.

[2] Critical Habitat Assessment Nur Bukhara Solar PV and BESS, UZB-MAS ESIA for Solar PV Bukhara – CHA v 2.0 (final draft), Juru Energy, August 2023

Table 8: CHA Screening and Assessment

Saiga / Saiga tatarica

	IUCN – Near-threatened (IUCN 2023 updated list)	UzRDB – Critically Endangered
Notes	Known to occur in the Ustyurt Plateau and in the eastern and southern Aral Sea region where it inhabits semi-desert and desert zones. Previously numerous in Uzbekistan however since 1990 population has declined by 99.5% (UzRDB), along with changes in ranges. In 2016 the total population of the transborder Ustyurt population was estimated at 1,900 (UzRDB) individuals. The global population of Saiga in March 2023 was estimated at 1,344,275. The population in Kazakhstan has recovered dramatically, growing by about 1100% between 2015 and 2022, and showing annual increases up to 40%. In May 2022 there was an estimated total of 1,320,000 Saiga in Kazakhstan (801,000 in Ural, 479,000 in Betpak-dala, 28,000 in Ustyurt). The Ustyurt population makes up approximately 2.1% of the global population however in the 2023 IUCN update information relating to the size of the transborder population is not stated and the numbers of Saiga present within Uzbekistan is also not discussed. No live specimens recorded during the WF surveys and considered to be recently extinct from the Uzbekistan Ustyurt. Old horn and humerus bone found during surveys.	
Criteria 1	Ustyurt population is approximately 2.1% of the global population of this species and EAAA overlaps with the Project AoI however this species is likely recently extirpated from the Project AoI because of changes in border fencing and poaching. It is unlikely, due to recent extirpation from NW Uzbekistan, that the part of the EAAA within the Project AoI would regularly support in excess of 0.5% of the global population (6,721 individuals) and as such the thresholds for determination of Critical Habitat under Criteria 1 are not met.	
Criteria 2	Saiga are not endemic nor are they range-restricted and this Criteria is not relevant.	
Criteria 3	Saiga are a migratory and congregatory species however are not known to migrate through or congregate within the Project AoI. This species has not been recently recorded within the Project AoI and records from the site during 2023 are limited to a single horn and a single humerus bone. The Project AoI is therefore not important for	



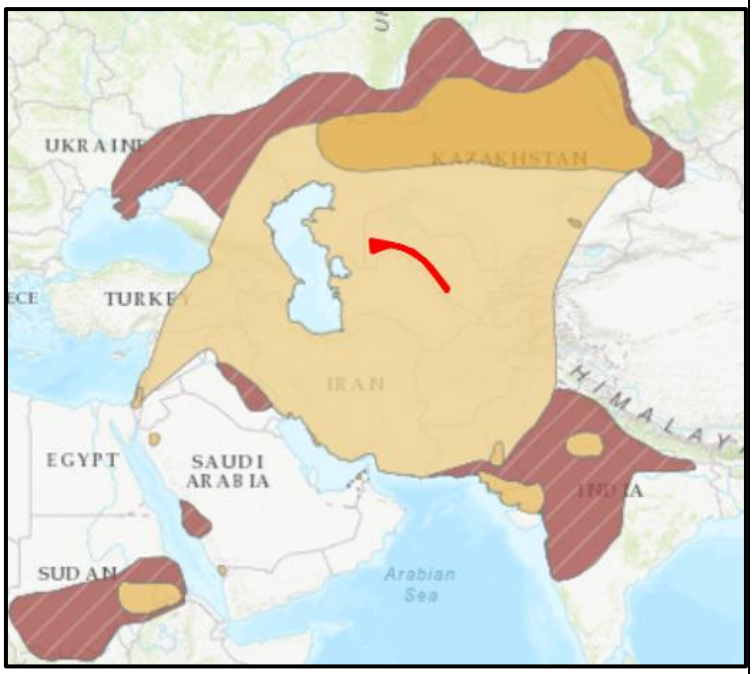
Historical Distribution of Saiga within Uzbekistan (UzRDB)

EAAA for Saiga (Ustyurt Transborder Population, IUCN range)

	this species and the thresholds for determination of Critical Habitat under Criteria 3 are not met.	

Sociable Lapwing / Vanellus gregarius

	IUCN – Critically Endangered	UzRDB – Vulnerable (2): Naturally Rare
Notes	A widespread species within Uzbekistan during spring and autumn migration periods where it is known from the Central Kyzylkum, the Aydarkul Lake and the Tudakul and the Talimarzhan water reservoirs. It can be found on the banks of reservoirs and marshes in the plainland wetlands and dry steppe areas, fallow land and harvested fields during migration periods. This species does not breed in Uzbekistan. In 1970–80s, flocks of 10–20 individuals were recorded however in recent years concentrations of birds have been found during the autumn migration in the Talimarzhan Reservoir (2000+ birds in 2012 and 4000+ birds in 2015). Global population is approximately 11,200 so recent autumn counts at Talimarzhan Reservoir, which is approximately 195 km south-west of the OHTL terminus at Karakul, are highly significant (c. 35% of global population).	
Criteria 1	Not recorded in AoI during WF surveys, however data for the OHTL is not available. This species does not breed in Uzbekistan however possibly present during autumn and spring migration, using the airspace of the Project AoI. No known stop-over sites present within the AoI. Unlikely that terrestrial habitat within the Project AoI would support ≥ 0.5% of the global population (56 birds) in any given migration season and as such the thresholds for determination of Critical Habitat under Criteria 1 are not met.	
Criteria 2	Sociable Lapwing are not endemic or range-restricted and as such Criteria 2 is not relevant.	



Global range of Sociable Lapwing (IUCN) – light orange is migratory range; dark orange is breeding range (approx. project AoI in red)

Criteria 3	See Criteria 1. Possible migration through the NW part of the Project however no birds were recorded during spring or autumn migration during the WF surveys. AoI does not support suitable staging habitats and is outside of areas where this species is known to congregate in Uzbekistan (e.g. Talimarzhan Reservoir (approx. 200km SE o f AoI) and therefore considered unlikely to regularly support 1% of this globally Critically Endangered species in any given migration season and as such thresholds for determination of Critical Habitat under Criteria 3 are not met. This species may cross the AoI on migration however this would be birds using the airspace only (see Steppe Eagle).	

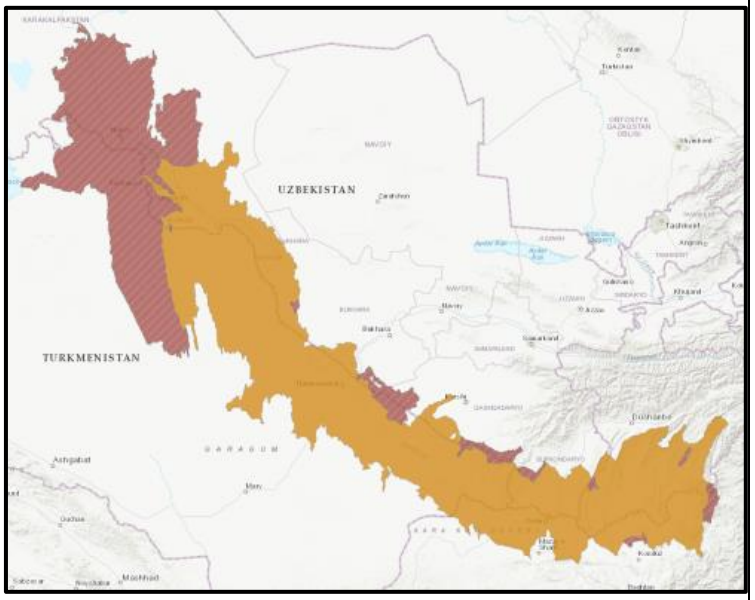
Small Amu-Darya Shovelnose Sturgeon / Pseudoscaphirhynchus hermanni

	IUCN – Critically Endangered	UzRDB – Critically Endangered
Notes	This species is very rare within Uzbekistan and is endemic to the middle (about 600 km river length) and lower (about 300 km river length) reaches of the Amu Darya River drainage basin within Uzbekistan, Turkmenistan, and Tajikistan. Current range within Uzbekistan is in the Bukhara and Surkhan Darya regions, where it inhabits deeper parts of the river within sandy and stony bottoms, in muddy water. The last individual was registered in 2010 so possibly extirpated from Uzbekistan.	
Criteria 1	Current range according to the IUCN indicates that this species is likely extirpated from the lower reaches of the Amu Darya, including around Nukus and as such Project AoI does not overlap with known range of this species. Unlikely that thresholds for determination of Critical Habitat would be met for this species and further assessment is not required.	
Criteria 2	An endemic and range-restricted (AOO < 50,000km^2) species found within the upper and middle reaches of the Amu Darya. Extirpated from the lower reaches of the Amu Darya, including around Nukus where the OHTL crosses the river, in addition likely extirpated from the rest of its previous range within Uzbekistan as last known specimen was caught in 2010. Project AoI does not overlap with known range of this species and as such threshold for determination of CH is not met.	
Criteria 3	Criteria 3 is not relevant to a resident fish species.	

Global range of Small Amu Darya Shovelnose Sturgeon

(Large) Amu Darya Shovelnose Sturgeon / Pseudoscaphirhynchus kaufmanni

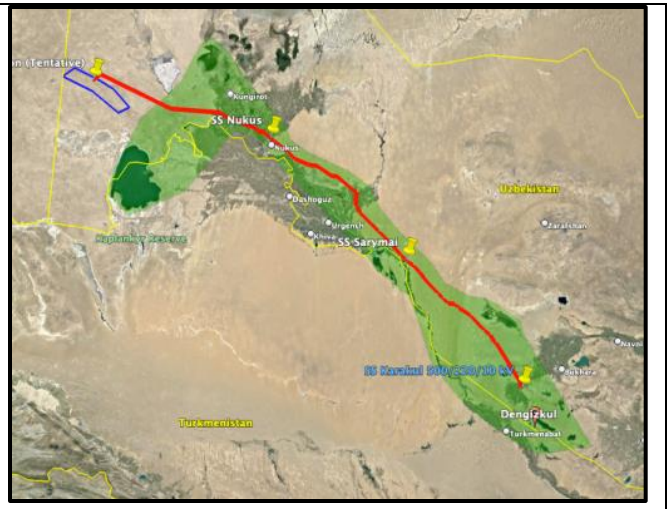
	IUCN – Critically Endangered	UzRDB – Critically Endangered
Notes	Endemic to the Amu Darya and currently found in Khorezm, Bukhara and Surkhan Darya, however it is now considered to be extirpated from the Amu Darya around Nukus towards the lower reaches of the river (before the Aral Sea).	
Criteria 1	Current range according to the IUCN indicates that this species is likely extinct from the lower reaches of the Amu Darya, including around Nukus and as such Project AoI does not overlap with known range of this species. Unlikely that thresholds for determination of Critical Habitat would be met for this species and further assessment is not required.	
Criteria 2	An endemic and range-restricted (AOO < 50,000km^2) species found within the middle and lower reaches of the Amu Darya. Extirpated from the lower reaches of the Amu Darya, including around Nukus where the OHTL crosses the river, in addition likely extirpated from the rest of its previously range as last known specimen was caught in 2010. Project AoI does not overlap with known range of this species and as such threshold for determination of CH is not met.	
Criteria 3	Criteria 3 is not relevant to a resident fish species.	



Global range of (Large)Amu Darya Shovelnose Sturgeon

White-headed Duck / Oxyura leucocephala

	IUCN – Endangered	UzRDB – Endangered	
Notes	Breeding, passage and wintering species in Uzbekistan and known to occur in adjacent IBA and non-IBA wetlands. It is distributed in the southern Aral region wetlands of Bukhara region, the rivers Amu Darya and Syr Darya, the Kyzylkum Desert, Golodnaya Steppe, Lake Dengizkul (wintering) and neighboring wetlands (irregular wintering). It inhabits large plainland reservoirs with well-developed reeds. Until 1930s, more than 30,000 individuals inhabited Central Asia and Kazakhstan. In 2000s about 2,000 birds were counted during		

	breeding period and more than 3,000 individuals during migration at Sudoche Lake. On Lake Dengizkul between 1 and 5,000 birds overwinter however populations are subject to fluctuations, and it disappeared from Dengizkul in 2009 after cold winter but was found again in 2012 (312 individuals). Numbers at this lake increased up to 2,236 individuals in winter 2015 and 10,000 in autumn (passage) 2016.	 ***EAAA for White-headed Duck*** EAAA has been determined to include Sudoche Lake, Sarygamysh Lake, Karakyr Lake and Dengizkul Lake and the Amu Darya corridor as well as flight space between these four waterbodies, which have been shown to previously support significant proportions of the global population of White-headed Duck.
	Not recorded during WF surveys. Data not available for the OHTL, including waterbody counts, but based on available data, lake systems within central-southern Uzbekistan are of significant importance for this species.	
Criteria 1	Current (2017 assessment) global population estimated between 5,300 and 8,700 individuals however this may be an under-estimate based on 2016 counts in Uzbekistan. Irrespective of population fluctuations and declines, regular recent passage and wintering counts on lake and river systems within the EAAA are likely to be well in excess of 50% of the global population.	
	Whilst the Project AoI does not support habitats suitable for this species the Project AoI bisects an EAAA which is likely to support significant concentrations of a population of a globally Endangered species and as such the thresholds for determination of Critical Habitat are met for White-headed Duck.	
Criteria 2	White-headed Duck are not endemic, or a range-restricted species and this Criteria is not relevant to this species.	
Criteria 3	See Criteria 1. EAAA supports a significant concentration of a globally endangered species and as such the thresholds for determination of Critical Habitat are met.	

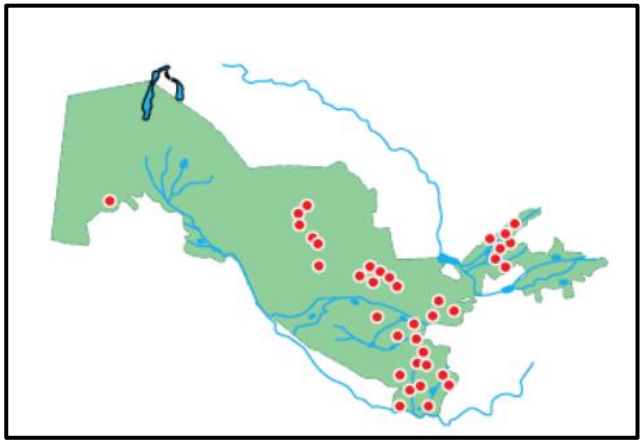
Pallas's Fish-Eagle / Haliaeetus leucoryphus

	IUCN – Endangered	UzRDB – Not included	Not possible to determine an EAAA for this rare and infrequent passage species
Notes	Single individual recorded during the spring WF VP surveys. Not recorded in the winter,		

	summer or autumn. No data available for the OHTL. Not included in the UzRDB so national population unknown however it is considered to be a rare and infrequent passage bird. Global population approximately 1,000 to 2,499 mature individuals. EAAA cannot be determined for such an irregular passage bird as possible to occur over a wide area. Project AoI likely to bisect migration routes.	
Criteria 1	Highly unlikely that irregular movement will result in significant populations of birds transiting AoI and as such thresholds for determination of Critical Habitat under Criteria 1 are not met, and no further assessment is required.	
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.	
Criteria 3	Highly unlikely that irregular movement will result in significant populations of birds transiting AoI and as such thresholds for determination of Critical Habitat under Criteria 3 are not met, and no further assessment is required.	

Egyptian Vulture / Neophron percnopterus

	IUCN – Endangered	UzRDB – Vulnerable (2): Declining
Notes	Not recorded on WF surveys to date and no data available for the OHTL. Egyptian Vulture are a widely distributed breeding species within Uzbekistan and this species will also migrate through the country. Breeding is predominantly in the eastern half of Uzbekistan however this species is known to breed, in low numbers, within South Ustyurt NP around the cliffs and chinks of Sarygamysh Lake (1 pair was recorded in May 2023 by Turnstone Ecology). Current national breeding population considered to be between 134 – 140 breeding pairs. New congregation sites found in 2023 were confirmed to hold a minimum of 750 Egyptian vultures in the two main regions of Uzbekistan (OSME). Current (2021) assessment of global population is between 12,400 and 36,000 mature individuals, roughly equating to 18,600-54,000 individuals.	
Criteria 1	Threshold for triggering Criteria 1 is between 93 and 270 birds. The Project AoI does not support suitable breeding habitat that would regularly support significant proportions of the global or national population and the nearest known breeding pairs to the wind farm is within Sarygamysh Lake, which is approximately 60km south-east of the WF Project AoI (at its closest point). Egyptian Vulture migrating along the broad	



Distribution of breeding records of Egyptian Vulture in Uzbekistan (UzRDB)

	front Central Asia / East Africa and Central Asia / South Asia flyways are likely to cross the Project AoI but not in significant concentrations. Thresholds for Criteria 1 are not met, and no further assessment required.	
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.	
Criteria 3	Egyptian Vulture migrating along the broad front Central Asia / East Africa and Central Asia / South Asia flyways are likely to cross the Project AoI but not in significant concentrations. There are no known important staging sites for this species along the Project AoI and birds are associated with airspace within a very broad migration front. Thresholds for Criteria 3 are not met, and no further assessment required.	

Saker Falcon / Falco cherrug

	IUCN – Endangered	UzRDB – Near-threatened	Not possible to determine EAAA for this globally widespread species.
Notes	Not recorded in the WF in Winter, Spring, Summer or Autumn. No data for the OHTL. Approximately 70 breeding pairs in Uzbekistan however breeding habitat is not present within the Project AoI (e.g. cliff faces, chinks). Estimated global population of between 12,200 and 29,800 individuals. Migration through the AoI is likely.		
Criteria 1	Threshold for triggering Criteria 1 is between 61 and 149 birds. The Project AoI does not support suitable breeding habitat that would regularly support significant proportions of the global (or national) population and the nearest known breeding pairs to the wind farm is within Sarygamysh Lake, which is approximately 60km south-east of the Project AoI (at its closest point). Saker Falcon migrating along the broad front Central Asia / East Africa and Central Asia / South Asia flyways are likely to cross the Project AoI but not in significant concentrations. Thresholds for Criteria 1 are not met, and no further assessment required.		
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.		
Criteria 3	Saker Falcon migrating along the broad front Central Asia / East Africa and Central Asia / South Asia flyways are likely to cross the Project AoI but not in significant concentrations. There are no known important staging sites for this species along the Project AoI and birds are associated with airspace within a very broad migration front. Thresholds for Criteria 3 are not met, and no further assessment required.		

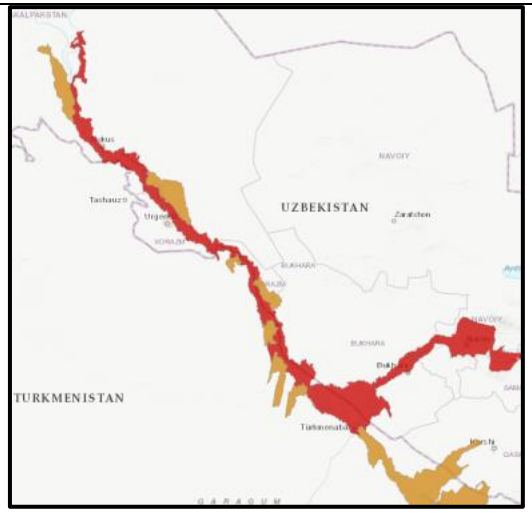
Pike Asp / Aspiolucius esocinus

	IUCN – Endangered	UzRDB – Endangered
Notes	Previously recorded within the Amu Darya river basin however latest IUCN assessment shows that they are likely extirpated from areas of this river catchment in Uzbekistan.	
Criteria 1	Project AoI does not directly overlap suitable habitats for this species apart from the single crossing of the Amu Darya at Nukus, from where this species is likely extirpated. Thresholds for determination of Critical Habitat under Criteria 1 are not met, and no further assessment required.	
Criteria 2	Likely near-endemic (Uzbekistan / Turkmenistan) and range-restricted however apart from single river crossing at Nukus suitable habitat for this species does not overlap with the Project AoI. Species is now likely extirpated from previous range within Uzbekistan. Thresholds not met.	
Criteria 3	Criteria is not relevant to a resident fish species.	

Global range of Pike Asp (IUCN)

Chu Sharpray / Capoetobrama kuschakewitschi

	IUCN – Endangered	UzRDB – Vulnerable (2): Declining
Notes	Following strong declines in the 20th Century, the species seems now to be restricted to the Amu Darya River drainage where it seems to be rare but still widespread (UzRDB).	
Criteria 1	Project AoI does not directly overlap suitable habitats for this species apart from the single crossing of the Amu Darya at Nukus. from where, according to latest 2020 IUCN assessment this species is likely extirpated. Thresholds for determination of Critical Habitat under Criteria 1 are not met, and no further assessment required.	
Criteria 2	Near-endemic (Uzbekistan / Turkmenistan) and range-restricted species however apart from single river crossing at Nukus suitable habitat for this species does not overlap with the Project AoI. Species is now likely extirpated from previous range around Nukus. Thresholds not met.	
Criteria 3	Criteria is not relevant to a resident fish species.	



Global range of Chi Sharpray (IUCN)

Steppe Eagle / Aquila nipalensis

	IUCN – Endangered	UzRDB – Near-threatened (2): Declining	
Notes	A migratory species through Uzbekistan and this species breeds within the Ustyurt Plateau with a breeding population of up to 15 pairs. Species has previously over-wintered within the Amu Darya river corridor. 404 individuals recorded migrating through the wind farm in Winter / Spring 2023 and a total of 31 recorded flights in Spring (mostly from the resident breeding pair). 261 birds recorded on autumn migration (up to the end of October) through the wind farm, including four flocks of birds recorded on 14/10/23 totaling 162 individuals the majority of which were flying between 350m and 600m. Data not available for the OHTL but likely migrating birds will cross the OHTL AoI during spring and autumn migration. Total global population is 50,000 to 75,000 individuals.		
Criteria 1	A single breeding pair of Steppe Eagle were recorded within the WF AoI in 2023. This nest failed. Three additional nests were also recorded however these are all abandoned / damaged. Breeding Steppe Eagle within the EAAA (Ustyurt Plateau of Uzbekistan) are likely to be up to a maximum of 15 breeding pairs and breeding numbers and success are very dependent on rodent populations. The threshold for triggering Criteria 1 would be between 250 and 375 birds within the EAAA for the populations to be in excess of 0.5% of the global population. The WF AoI is only supporting a single pair and the wider EAAA up to a maximum of 15 breeding pairs. Thresholds for Critical Habitat determination for breeding Steppe Eagle are not met. This species was not recorded as a 'resident' bird within the AoI during the wintering period and as such thresholds for CH would not be met for wintering populations. This is a migratory species and is therefore unlikely to occur in significant concentrations within the AoIs during the core wintering period, although migratory movement of this species was recorded in early March. In the case of Steppe Eagle migrating through the Project AoI they are not regularly		 ***EAAA for breeding Steppe Eagle (Ustyurt Plateau in Uzbekistan)***

	using terrestrial habitat within the AoI as stop-over or foraging habitats and are moving through on a regular broad-front migration flyway and as such it is not possible to determine an EAAA and CH determination cannot be made. Further information and assessment of migrating Steppe Eagle is discussed against Criteria 3 below.	
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.	
Criteria 3	Steppe Eagle is a migratory bird in Uzbekistan however birds recorded at the WF AoI were observed transiting the airspace and not utilizing terrestrial habitat (e.g. stop-over, hunting) and this behavior is likely to be observed along the OHTL AoI (with the possible exception of the wooded area on the banks of the Amu Darya at Nukus). In a recent briefing note prepared by EBRD it is stated that 'CHA would not be conducted with respect to the airspace where there is no associated important terrestrial area and no intersection with the project footprint (including vertical structures such as turbines and overhead lines), which will often by the case for long-distance migrants using the airspace between continents or countries at higher elevations. In this scenario it would be difficult or impossible to delineate the airspace EAAA at this large scale, recalling that "critical habitat boundaries should be equivalent in scale to areas mapped for practical site-based conservation management activities "(PS6 GN59). Without an EAAA, the CH thresholds cannot be applied. It is also important to note that the location of a project within a recognized bird migratory 'corridor' does not automatically generate high collision risk, nor trigger a CH determination, because most bird migration activity occurs in a diffuse "broad front" pattern. The migratory / congregatory species criterion described in the CHA section of IFC PS6 and EBRD PR6 is intended to trigger a CH determination only in areas that host continentally significant concentrations of migration activity.' In the case of Steppe Eagle migrating through the Project AoI they are not regularly using terrestrial habitat within the AoI as stop-over or foraging habitats and are moving through on a regular broad-front migration flyway and as such it is not possible to determine an EAAA and CH determination cannot be made. It is therefore concluded that CH for migrating Steppe Eagle is not present within the Project AoI.	

Uzbekistan Toadhead Agama / Phrynocephalus rossikowi

	IUCN – Endangered	UzRDB – Endangered (1)
Notes	This species is largely confined to the Uzbekistan-Turkmenistan border region, where its distribution follows the lower Amu Darya River (Sindaco and Jeremčenko 2008). There have been no records from the interior of Uzbekistan from more than 10 years (2016, IUCN Red List). It should be noted that as a result of recent studies and numerous field trips in recent years, specialists of the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan have not found a single individual of Uzbekistan Toadhead Agama, even in places where it was previously observed which confirms that unfortunately this species is probably extinct on the territory of Uzbekistan (*2023 OHTL Reptile Report*).	
Criteria 1	Project AoI does not overlap with EAAA for this species and Project AoI does not support habitats suitable for this species and as such not assessed under Criteria 1. Species is likely extinct in Uzbekistan.	
Criteria 2	This species is endemic to Central Asia (Uzbekistan / Turkmenistan) and is range restricted (AOO likely ＜500km^2). The Project AoI does not overlap with EAAA for this species and the Project AoI does not support habitats suitable for this species and as such not assessed under Criteria 2. Species is likely extinct in Uzbekistan.	
Criteria 3	Criteria is not relevant to a resident species.	

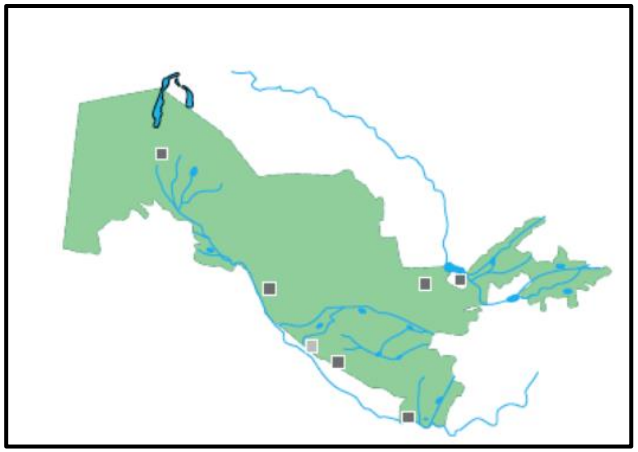
EAAA for Uzbekistan Toadhead Agama

Central Asian Tortoise / Testudo horsfieldii

	IUCN – Vulnerable	UzRDB – Vulnerable (2): Declining	Not possible to determine EAAA for this regionally widespread species and the Project AoI has been used.
Notes	Resident species found throughout desert habitats within Uzbekistan. It inhabits fixed sand, clay deserts; and climbs into the mountains up to 1,300 m. above sea level, occasionally comes in low grass steppe valleys and farmland. In most parts of its in-country range population sizes do not exceed 1.5 individuals / ha; on local piedmont plains and remnant mountains average populations are approximately 11.7 individuals / ha; in the foothills of pebble-gravelly loam plain - an average of 7.63 individuals / ha ar found. There are small local areas (with optimal habitats) populations can be as large as 45.9 – 67.3 individuals / ha. The population of Central Asian Tortoise within the WF AoI was between 0.17 and 0.3 individuals / ha, which is considered to be at low density. The population of Central Asian Tortoise along the OHTL AoI was, at its highest (Section 3), 5.4 individuals / ha, which is still considered to be at low density when compared to other parts of the Kyzyl-Kum .		
Criteria 1	Global population estimates for Central Asian Tortoise are not listed by the IUCN however based on population surveys conducted between 1991 and 1999 in the Kyzyl-Kum desert in Central Uzbekistan the national population was estimated at about 15-20 million individuals (Mitropolski and Kashkarov, 2000 and Bozhansky and Polinova 2000). The WF AoI is 950km^2 (95,000ha) and the OHTL AoI is 40km^2 (4,000ha). Based on recorded population densities (and using the highest density with the OHTL AoI) the population within the Project AoIs is likely to be no greater than 50,100 individuals. This would represent 0.3% of the national population. It is therefore considered that the Project AoI (and EAAA for this species) does not support a significant proportion of this globally Vulnerable species and Criteria 1 is not triggered and no further assessment is required.		
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.		
Criteria 3	Criteria is not relevant to a resident species.		

Lesser White-fronted Goose / Anser erythropus

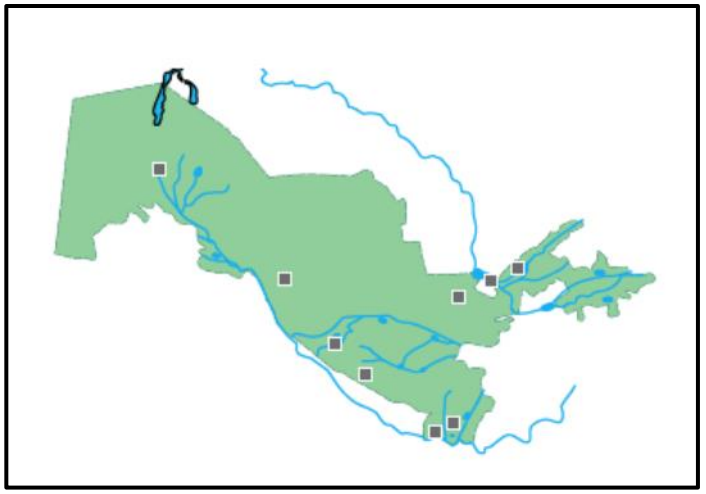
	IUCN – Vulnerable	UzRDB – Vulnerable (2): Naturally Rare
Notes	Wintering and passage species within Uzbekistan within plainland water reservoirs of the Amu Darya and Syr Darya river basins including Lake Dengizkul. Wintering is irregular and populations fluctuate between 200 and 2,000 individuals. Global population is estimated between 16,000 and 27,000 individuals.	
Criteria 1	Likely to migrate through the Project AoI during periods of migration however it is certain that the Project AoI will not support significant concentrations of this globally Vulnerable species; the loss of which would result in a change in its conservation status. EAAA not determined due to size of global range. Criteria 1 is not triggered, and no further assessment required.	
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.	
Criteria 3	Lesser White-fronted Goose are likely to cross the Project AoI but not in significant concentrations. There are no known important staging sites for this species within the Project AoI and birds are associated with airspace within a very broad migration front. Thresholds for Criteria 3 are not met, and no further assessment required.	



Lesser White-fronted Goose range in Uzbekistan (UzRDB)

Greater Spotted Eagle / Clanga clanga

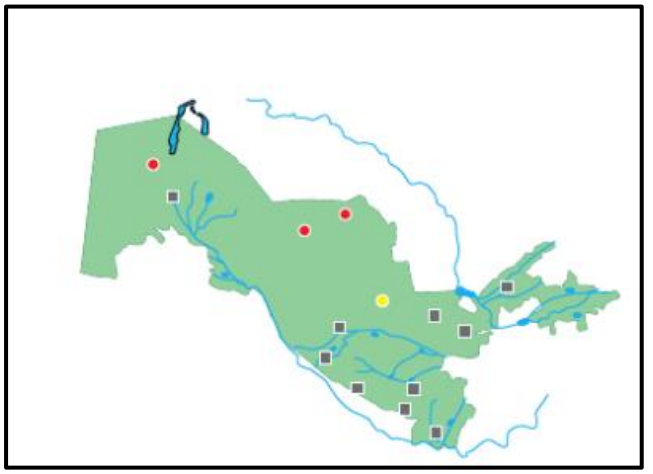
	IUCN – Vulnerable	UzRDB – Vulnerable (2): Naturally rare
Notes	A non-breeding species and only occurs in low numbers on migration. Three individuals recorded at the WF in winter/spring migration. Not recorded in the Summer or Autumn. Migrates through Uzbekistan, and the Project AoI, in low numbers annually.	
Criteria 1	A non-breeding species and only occurs in low numbers on migration. Global population between 3,900-10,000 individuals and it is therefore very unlikely that the Project AoI will support important concentrations of this species; the loss of which would result in a change in their global conservation status.	
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.	

Criteria 3	See Steppe Eagle. A migratory bird following a broad-front flyway with no association with important areas of terrestrial habitat. EAAA cannot be determined and as such this species cannot be assessed under this Criteria.	

Range of Greater Spotted Eagle in Uzbekistan (UzRDB)

Eastern Imperial Eagle / Aquila heliaca

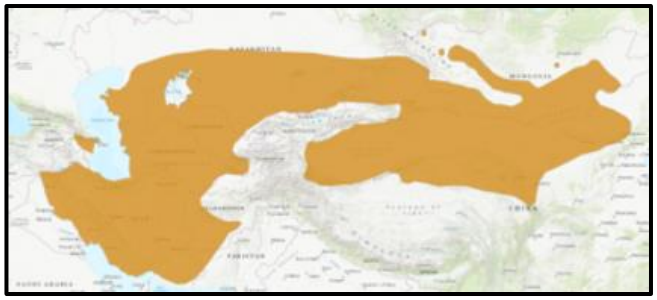
	IUCN – Vulnerable	UzRDB – Vulnerable (2): Declining
Notes	Breeding and migratory species within Uzbekistan. Breeding in very low density has been previously recorded within the Ustyurt Plateau and the Kyzylkum Desert. Migratory populations are also considered to be low (UzRDB). 10 individuals recorded in winter, 1 in spring, none in the summer and 8 on the autumn migration WF surveys. Data not available for the OHTL.	
Criteria 1	Global population 2,500 – 9,999 individuals and therefore very unlikely the Project AoI would regularly (e.g. breeding) support significant concentrations of this globally vulnerable species; the loss of which would result in a change in its global conservation status.	
Criteria 2	This species is not an endemic or range-restricted and as such Criteria 2 is not relevant to this species.	
Criteria 3	See Steppe Eagle. A migratory bird following a broad-front flyway with no association with important areas of terrestrial habitat. EAAA cannot be determined and as such this species cannot be assessed under this Criteria.	



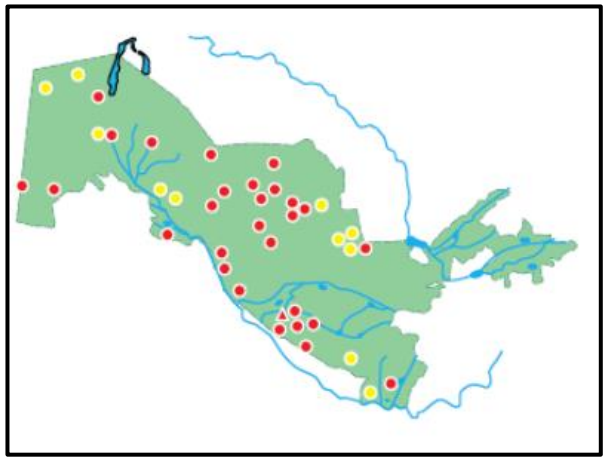
Range of Eastern Imperial Eagle in Uzbekistan (UzRDB)

Goitered Gazelle / Gazella subgutturosa

	IUCN – Vulnerable	UzRDB – Vulnerable (2): Declining
Notes	Large global range within estimated population of 42,000 to 49,000 mature individuals. Widely distributed throughout Uzbekistan with an estimated national population of 4,000 individuals. Sporadic and infrequently recorded within the WF AoI from surveys and camera trapping. Peak count of three individuals. Considered to be rare along the OHTL AoI and recorded in low numbers where encountered.
Criteria 1	In Uzbekistan it is widely distributed with a national population of approximately 4,000 mature individuals which is approximately 10% of global population. EAAA has not been determined, due to large global range and international / national conservation status however where Project AoI overlaps known range of this species it is highly unlikely that this would account for important concentrations of a globally Vulnerable species; the loss of which would result in a change to global conservation status. Criteria 1 is not triggered, and no further assessment required.
Criteria 2	Goitered Gazelle is not endemic to Uzbekistan, nor is it considered to be range restricted. Criteria 2 is not triggered, and no further assessment required.
Criteria 3	This species is not considered to be migratory or congregatory and as such this criteria is not relevant.



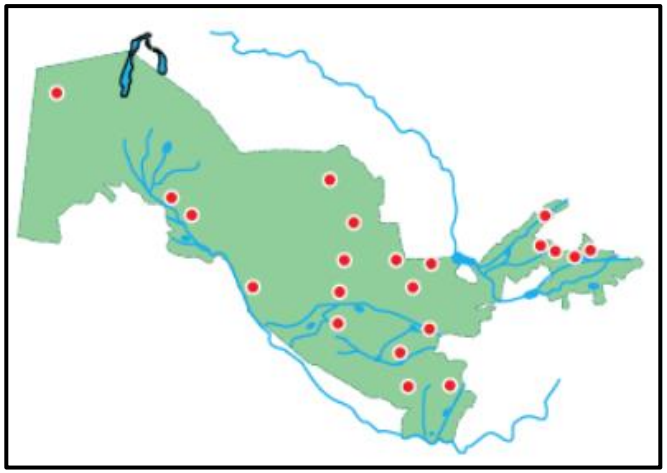
Global range of Goitered Gazelle (IUCN)



Distribution of Goitered Gazelle in Uzbekistan (UzRDB)

Marbled Polecat / Vormela peregusna

	IUCN – Vulnerable	UzRDB – Vulnerable (2): Declining
Notes	Large global range however global population is unknown and it is considered by the IUCN to be 'rare' throughout its range.	

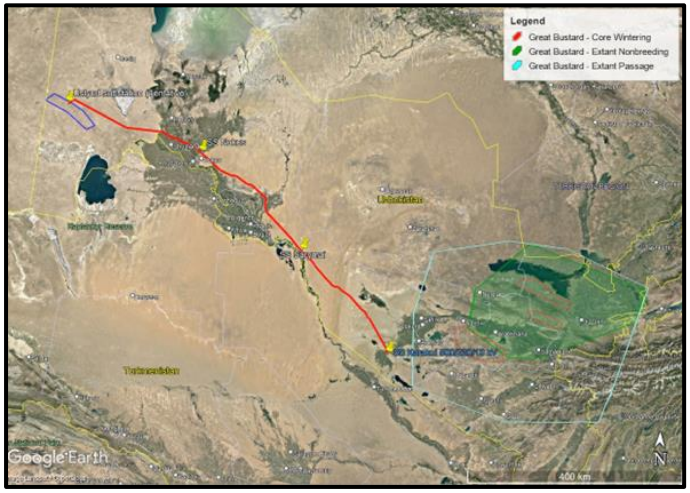
	A single Marbled Polecat burrow has been recorded within the WF AoI and considered to be widespread but rare within the OHTL AoI.	 ***Global range of Marbled Polecat (IUCN)***
Criteria 1	In Uzbekistan it is widely distributed with a national population of approximately 5,000 mature individuals. EAAA has not been determined due to large global range and international and national conservation status however where Project AoI overlaps known range of this species it is highly unlikely that this would account for important concentrations of a globally Vulnerable species; the loss of which would result in a change to global conservation status. Criteria 1 is not triggered, and no further assessment required.	
Criteria 2	Marbled Polecat is not endemic to Uzbekistan, nor is it considered to be range restricted. Criteria 2 is not triggered, and no further assessment required.	 **Distribution of Marbled Polecat in Uzbekistan (UzRDB)**
Criteria 3	This species is not considered to be migratory or congregatory and as such this criteria is not relevant.	

European Turtle-dove / Streptopelia turtur

	IUCN – Vulnerable	UzRDB – Vulnerable (2): Declining	EAAA for this species has not been determined
Notes	Large global range and global population estimated between 12.8 and 47.6 million individuals. Not recorded during the WF surveys.		
Criteria 1	Widely distributed species with large global population. Not recorded as a breeding species in the WF AoI and no survey information available for the OHTL AoI, although breeding is likely within the OHTL AoI. Likely to occur within the Project AoI during periods of migration however it is certain that the Project AoI will not		

	support significant concentrations of this globally Vulnerable species; the loss of which would result in a change in its conservation status. EAAA not determined due to size of global range. Criteria 1 is not triggered, and no further assessment required.	
Criteria 2	European Turtle-dove is not endemic to Uzbekistan, nor is it considered to be range restricted. Criteria 2 is not triggered, and no further assessment required.	
Criteria 3	This species is migratory and is likely to occur across a broad migration front encompassing the East Asia / East Africa and Central Asia / South Asia flyways, however European Turtle-dove are not known to be congregatory species (by the definition of the criteria for critical habitat) nor are they reliant on stop-over sites in the same way that other migratory/congregatory species are. Unlikely to occur within the Project AoI in globally significant numbers. Criteria 3 is not triggered, and no further assessment required.	

Great Bustard / Otis tarda

	IUCN – Endangered (IUCN 2023 Update)	UzRDB – Critically Endangered	
Notes	Formerly a breeding species within Uzbekistan but now extirpated. Current status is as an irregularly wintering species and usually in colder winters only. Three known core wintering sites within the Jizzakh region of Uzbekistan, the closest of which is approximately 200 km east-north- east of the OHTL terminus at Karakul. Included in Screening due to IUCN Endangered status and National Conservation Status (Critically Endangered). Global Population 43,847 – 56,695 individuals. Central Asian Population considered to be 1,000 – 1,500 individuals. No recorded during the WF surveys. OHTL data is not available however Project AoI is well outside of known core wintering areas (see figure).		
Criteria 1	This species has not been recorded in Project AoI and it is considered near-certain, based on habitat suitability within the AoI and known wintering ranges that this		

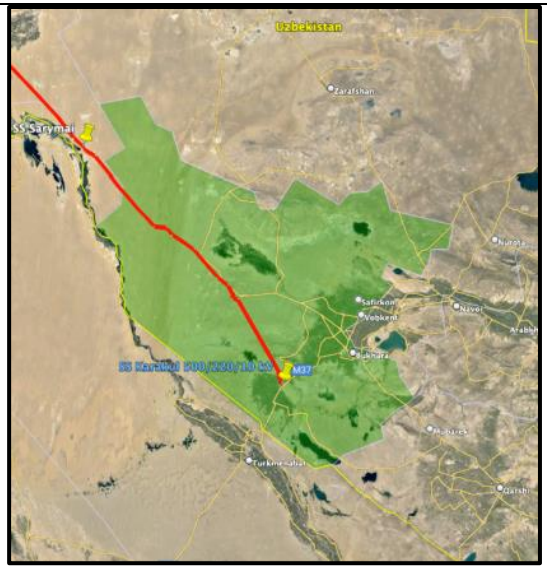
Core wintering areas of Great Bustard in Uzbekistan

	species will not regularly occur in populations in excess of 0.5% of the Central Asian Population (5 birds). Long-term monitoring will be completed within the WF and on the OHTL route and if wintering grounds are shown to have moved and the Project AoI is regularly supporting greater than 5 individual birds then it is likely that the thresholds for Critical Habitat would be met.	
Criteria 2	Great Bustard is not an endemic nor is it range-restricted and as such this Criteria is not relevant.	
Criteria 3	Great Bustard are a congregatory and migratory species, however the known core wintering areas for this species in Uzbekistan are well outside of the Project AoI. It is near-certain that the Project AoI is not of importance for wintering populations of this species. In addition, it is unlikely that migratory flocks would occur within / over the Project AoI. The thresholds for determination of CH are not met, although if longer term monitoring shows a movement in wintering grounds to overlap with the Project AoI it is likely thresholds could be met..	

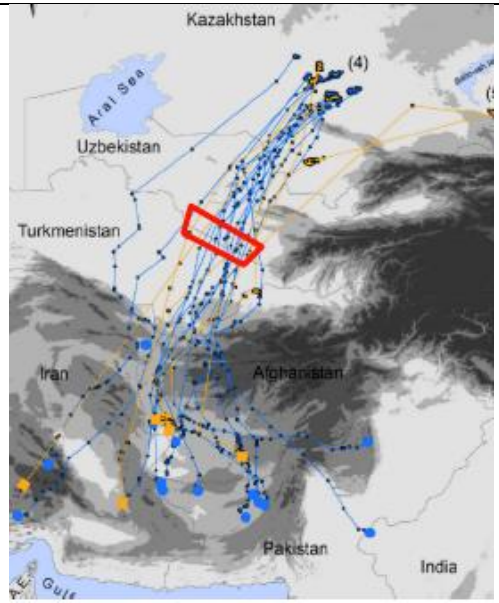
MacQueen's Bustard / Chlamydotis macqueenii

	IUCN – Vulnerable	***UzRDB – Vulnerable (2): Declining***	
Notes	Accurately establishing the global population is extremely challenging. The population is expected to fall within the population band for 50,000-99,999 individuals, which is assumed to equate to c.33,000-67,000 mature individuals. The breeding population in Kazakhstan has been estimated at c.49,000 individuals (IUCN). Previous nesting population in Uzbekistan between 1960–80-s estimated between 1,500 to 3,000 individuals; however during migration up to 20,000 individuals were recorded. According to the UzRDB in-country populations and breeding range has decreased during the last decades (sic 1990's to 2010's). Recent (2016) estimates of the breeding population within the south-eastern area of the Kyzylkum Desert (Bukhara Region) were approximately 2,000 breeding pairs[4] and this was updated in 2021 to approximately 2,350 breeding females[5]. It is also considered that approximately 10% of the total Uzbekistan breeding population over-winters in the southern part of the Kyzylkum		

[4] Koshkin et al. 2016
[5] Dolman et al. 2021

	Desert (Bukhara Region)[6]. Many of the papers reviewed to inform the CHA indicate a likely 9.4% annual decline in MacQueen's Bustard across its range, mainly due to unsustainable wintering mortality from hunting. In addition to unsustainable winter hunting MacQueen's Bustard, mortality at OHTLs has been recorded across its range including within Uzbekistan (Bukhara Region, 2010[7]). Satellite tracking data from three distinct populations of birds breeding outside of Uzbekistan; Central Kazakhstan and in the Xinjiang and Gansu areas of China / Mongolia shows that those populations regularly migrate through central Uzbekistan. It is also assumed that birds breeding in Central Uzbekistan (across the Kyzylkum Desert and Bukhara Regions) will also migrate along this route to similar wintering sites. Low numbers recorded in the WF during surveys however no evidence of breeding noted. Low numbers also recorded on the OHTL surveys including color-ringed birds which are assumed to be from captive breeding and release programmes.	 ***EAAA for breeding MacQueen's Bustard (Bukhara Region of the Kyzylkum Desert***
Criteria 1	Establishing accurate assessments of international and national populations of this species are difficult, especially when taking into consideration the significant amount of current captive breeding and release programmes, including at least two known breeding centers in Central Uzbekistan (EBBCC and ECCH). The International Fund for Houbara Conservation (IFHC) has released more than 10,400 captive bred MacQueen's Bustard in Uzbekistan since 2015 and approximately 10 times the estimated global population in total over their range (624,827 birds have been released in 15 countries over an unknown period of time). The threshold for triggering CH under Criteria 1 for IUCN Vulnerable species is for the EAAA to support significant concentrations of a species; the loss of which would result in a change in the species' conservation status. The Uzbekistan breeding population is estimated to be approximately 4,000 individuals which is in excess of 10% of the estimated global population (lower estimate of 33,000 mature individuals) however the Project is clearly unlikely to result in a loss of the whole of	

[6] Alision 2010
[7] Lasch, 2010

	the Uzbekistan breeding population of MacQueen's Bustard. In addition to the breeding population it is likely that a significant proportion of the remaining global population will migrate through the Project AoI, including the large population that breeds in Kazakhstan and other smaller breeding populations in NW China / Mongolia Plateau and it is therefore considered that the EAAA will support significant concentrations of the global population of MacQueen's Bustard, especially during spring and autumn migration periods. It is however unlikely that the Project would, in isolation, cause losses that would result in the elevation of the global conservation status of this species. That said in combination with other threats to this species including other OHTLs along migration routes as well as unsustainable hunting within breeding, migrating and wintering areas, it is possible that sustained population declines will persist resulting in an elevation of global conservation status to Endangered or even Critically Endangered and as such the thresholds for CH are not met. Should the conservation status of MacQueen's Bustard ever change to Endangered or Critically Endangered it is almost certain that CH would be triggered.	 ***One of the major migration route for MacQueen's Bustard through Central Uzbekistan[3] (overlap between migratory paths and OHTL in shown in red)***
Criteria 2	MacQueen's Bustard is not an endemic nor is it range-restricted and as such this Criteria is not relevant.	
Criteria 3	See Criteria 1 for information regarding migration routes through Central / Southern Uzbekistan. Known migration routes bisect the Project AoI and EAAA and this migration route is likely to be used by the large Kazakhstan breeding population and populations from NW China / Mongolia Plateau as well as the birds breeding within Uzbekistan. EAAA is therefore likely to support significant proportions of the global population of MacQueen's Bustard (well in excess of ≥1%) during migration. In addition the OHTL is likely to occupy airspace that is used by migrating MacQueen's Bustard and this species exhibits very poor avoidance of such structures. It is therefore concluded that the thresholds for determination of CH under Criteria 3 are met.	

[3] Combreau et al. 2011 – this migratory route is used by birds breeding in Central Uzbekistan, Central Kazakhstan, NE Kazakhstan and also in NW China and the Mongolian Plateau

Urial / Ovis vignei

	IUCN – Vulnerable	UzRDB – Critically Endangered (1)
Notes	Locally distributed subspecies (*Ovis vignei arkal*), which occurs in the southern part of the Ustyurt Plateau, mainly, in Kazakhly – Kaplankyr, the Lake Dry, the Sarygamysh Depression and the eastern chinks of the South Ustyurt. It inhabits chinks and deep precipices. Current national population is estimated at 150 individuals, whilst the global population (of all sub-species) is considered by the IUCN to be 18,000 individuals. Total population size of *O. vignei arkal* is not known. EAAA based on IUCN range for *O. vignei arkal* within NW Uzbekistan as well as SW Kazakhstan and NW Turkmenistan. Not recorded within the WF site (surveys and camera traps) and habitats within the WF and OHTL AoI are unsuitable for this species.	
Criteria 1	IUCN VU species and whilst the EAAA overlaps with the Project AoI the Project AoI does not support habitats suitable for this species (e.g. chinks and deep precipices). National population is 150 individuals which is less than 1% of total global population and as such the EAAA does not support a significant concentration the global population of an IUCN Vulnerable species. Whilst this species is listed on the UzRDB as CR, the selection criteria for in-country conservation status are not aligned with the IUCN. Irrespective of this the habitats within the Project AoI are not suitable for this species and therefore their presence within the AoI (WF) is unlikely. Figures are not available regarding population sizes of known sub-species however even if the project was to result in the loss of the national population it is very unlikely that this would result in elevation of the species' global conservation status. Loss of this species is however not predicted as no suitable habitats within the Project AoI. Criteria 1 is not triggered, and no further assessment required.	
Criteria 2	Urial is not endemic to Uzbekistan, nor is it considered to be range restricted. Criteria 2 is not triggered, and no further assessment required.	
Criteria 3	This species is not considered to be migratory or congregatory and as such this criteria is not relevant.	

EAAA for Arial, subspecies O. vignei arkal (according to range from IUCN Red List)

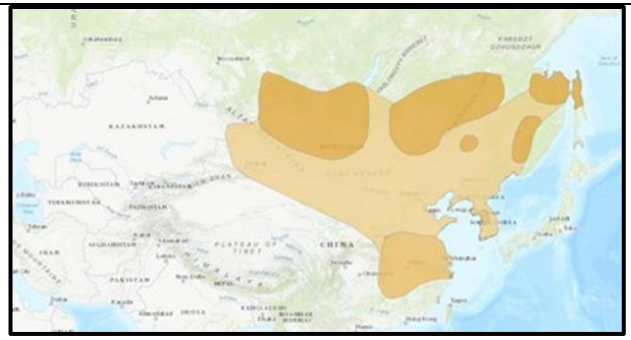
Aral Barbel / Luciobarbus brachycephalus

	IUCN – Vulnerable	UzRDB – Endangered (1)
Notes	According to the IUCN Red List, it is now extinct within the Aral Sea due to salinity. According to the UzRDB it is now locally distributed in the basin of lower and mid-stream of the Amu Darya and has been previously recorded from the Aral Sea and Syr Darya, Zeravshan and Kashk Darya river basins. It inhabits deeper parts of the rivers (2 to 4m) with sandy and stony bottoms as well as muddy streams and occasionally stagnant waters. Populations have sharply declined in recent years due to damming of rivers and increased salinity of the Aral Sea. Global population estimate is not available.	
Criteria 1	Project AoI (OHTL) crosses the Amu Darya in Nukus where this species could possibly occur. Riverine habitat is not being affected and as such Project will not result in loss of an IUCN VU species which would result in an increase in its global conservation status. Whilst this species is listed on the UzRDB as CR, the selection criteria for in-country conservation status are not aligned with the IUCN and as such assessment under Criterion 1 (c) is not possible. Criteria 1 is not triggered, and no further assessment required.	
Criteria 2	Previously endemic to the Aral Sea, where it is now extinct. Known global range according to the IUCN is far in excess of threshold for endemic / range-restricted species. Criteria 2 is not triggered, and no further assessment required.	
Criteria 3	This species is not considered to be migratory or congregatory and as such this criteria is not relevant.	

Global Range of Aral Barbel (IUCN Red List)

Swan Goose / Anser cygnoid

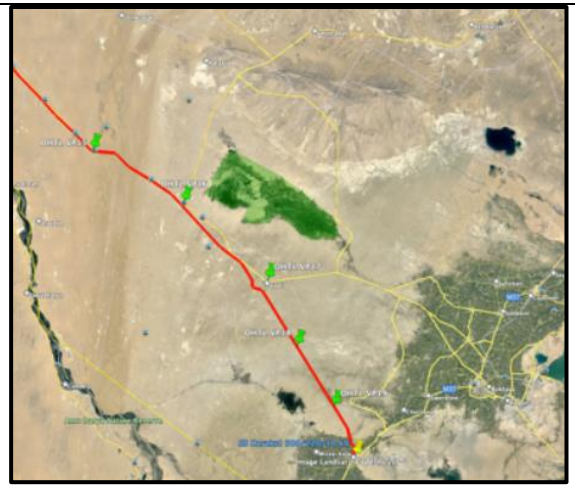
	IUCN – Vulnerable	UzRDB – Not Listed	
Notes	Not recorded on WF surveys completed to date. No information available for OHTL surveys. Considered to be a rare vagrant in Uzbekistan, however as species was included in the IBAT PS6 report it has been subject to CH screening.		

	Global population is approximately 60,000-90,000 individuals (IUCN Red List).	
Criteria 1	IUCN VU species but Project AoI is certain to not support globally important (≥10% global population) concentrations, the loss of which would result in the change of IUCN Red List status to CR or EN as this species is a rare vagrant to Uzbekistan. Criteria 1 is not triggered, and no further assessment required.	
Criteria 2	Swan Goose is not endemic to Uzbekistan, nor is it considered to be range restricted. Criteria 2 is not triggered, and no further assessment required.	
Criteria 3	Swan Goose is a migratory and congregatory species however it is a rare vagrant to Uzbekistan and is therefore certain to not occur in concentrations of global significance. Criteria 3 is not triggered, and no further assessment required.	

Global Range of Swan Goose (IUCN Red List)

Common Pochard / Aythya ferina

	IUCN – Vulnerable	UzRDB – Not Listed	EAAA for Common Pochard
Notes	Not recorded on WF surveys, data not available for OHTL, including surveyed waterbodies. Global Population 760,000 to 790,000 individuals.		
Criteria 1	IUCN VU species but Project AoI is certain to not support globally important (≥10% global population) concentrations, the loss of which would result in the change of IUCN Red List status to CR or EN. Criteria 1 is not triggered, and no further assessment required.		
Criteria 2	Common Pochard is not endemic to Uzbekistan, nor is it considered to be range restricted. Criteria 2 is not triggered, and no further assessment required.		
Criteria 3	Common Pochard is migratory and congregatory in wintering habitat. The Project AoI (e.g. areas likely to be directly impacted) does not support habitats which would support significant wintering populations. Karakyr Lake IBA potentially supports up to 4.5% of the global population (peak count 2000-2005 of 34,050 adults) during the winter season and as such the EAAA has been determined as the area of this IBA (*e.g.* core known wintering area). The		

	Project AoI does not overlap with the EAAA, and there are no waterbodies within the Project AoI. There are other waterbodies in the vicinity of the OHTL (to the south, south-west and west), including other IBAs, however these are not thought, based on site citations and available survey data, to support significant populations of wintering Common Pochard. It is likely that Common Pochard migrate over the route of the OHTL, due to the Project's position within the broad Central Asian / East Africa and Central Asia / South Asia flyways and due to the presence of suitable wintering habitat, including within the EAAA, however due to the distance between the Project and EAAA (9.5km at its closest point) and other waterbodies (more than 8km) it is very unlikely that migrating Common Pochard would occur in the affected airspace (due to the flight height of migratory wildfowl which is much greater than the height of the OHTL) in numbers that would represent a significant concentration of a global population and as such the airspace 'removed' by the OHTL is not considered to be Critical Habitat. Criteria 3 is not triggered, and no further assessment required, although additional information regarding migratory wildfowl, including Common Pochard, is provided below.	 ***EAAA for Common Pochard (shown in green)***

Szczerbak's Even-fingered Gecko / Alsophylax szczerbaki

	IUCN – Vulnerable	UzRDB – Endangered (1)	
Notes	Not recorded during surveys. In Uzbekistan only found on the southern bank of the Amu Darya and therefore certain to be absent from the OHTL AoI. Certain to be absent from WF as known range does not overlap. A synanthropic species solely reliant on derelict structures such as the ruins of ancient settlements and drainage canals, a habitat absent from the AoI.		
Criteria 1	IUCN VU species only and certain to not occur in Project AoI due to lack of suitable habitat and no overlap of range and AoI. It is therefore certain that the Project AoI will not support significant concentrations of this IUCN Vulnerable species, the loss of which would result in the change of IUCN Red List status to CR or EN. Criteria 1 is not triggered, and no further assessment required.		

Criteria 2	Range-restricted species however suitable habitats are not present within the AoI and range is restricted to habitats on the left bank of the Amu Darya (UzRDB) which is also likely to be a barrier to dispersal. Certain to not occur in Project AoI. Criteria 2 is not triggered, and no further assessment required.	 ***Global range of Szczerbak's Even-fingered Gecko (IUCN)***
Criteria 3	This is not a congregatory or migratory species and as such this criteria is not relevant.	

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

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

Table 9: Summary of assessment of habitats in the project site against Criterion IFC 4 / EBRD 1

Habitat – Type 8 Desert, sub-type 8.2 Temperate Desert (IUCN Habitats Classification) or Stoney (Gypsum) Desert (National Classification. Not listed in Annex I or included as a Priority Habitat.	
Definition	**Assessment**
Risk of significantly decreasing in area or quality	The proposed WF, OHTL and associated access roads and other infrastructure might decrease the extent and the quality of the habitat, given the wide distribution of this vegetation type, it is not currently considered to be at significant risk
Small spatial extent	The habitat is widespread
Containing unique assemblages of species including assemblages or concentrations of biome-restricted species (fine scale)	The vegetation type does not support unique assemblages or concentration of biome-restricted species
Red List of Threatened Ecosystems	**Assessment**
Reduction in geographic distribution	The ecosystem is expansive and is not believed to be facing any reduction in distribution
Restricted geographic distribution	The habitat is widespread
Environmental degradation	Wind farm development might lead to habitat degradation, but this will be limited to individual projects elements and is not believed to lead to large-scale degradation of the ecosystem
Disruption of biotic processes or interactions	No evidence

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

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

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

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

Given the very sparse vegetation, composed mainly of widespread desert plant species with limited evidence of local endemism, and the low density of animal species, it is very unlikely that any key

evolutionary processes could occur in the Project area. Therefore, the Project area does not qualify for Criterion v/5.

4.5 Determination of Critical Habitat

4.5.1 Criteria 1 / ii

Based on the results of the CH Screening Exercise it has been determined that thresholds for determination of Critical Habitat under Criterion 1 have been met for White-headed Duck only.

The EAAA for White-headed Duck supports significant proportions of the global population of this IUCN Endangered species. It is also likely that these wintering and migrating populations will cross the project AoI when moving between waterbodies as well as on migration. Whilst CH has been triggered it is considered very unlikely that the Project will result in significant impacts to this species due to natural avoidance behavior of waterfowl as well as their likely flight heights over the OHTL when undertaking movements between waterbodies or on longer migration flights. The closest waterbody to the OHTL which is known to support significant populations of this species (Karakyr Lake), is approximately 9 km north of the OHTL and other lakes are further away. It is therefore likely that any birds moving between lakes during passage and winter periods will be flying at altitudes significantly higher than the OHTL and as such the risk of collision is minimal. Any birds undertaking longer migration flights to more southerly wintering grounds or northerly breeding areas are again likely to be flying at altitudes higher than the proposed OHTL and the risk of collision is minimal.

4.5.2 Criteria 2 / iii

Site specific surveys did not record any species that are considered to be endemic or range-restricted and as such thresholds for Criteria 2 are not met. Some endemic / range-restricted fish species may be present within the Amu Darya however it is very unlikely that the part of the EAAA that overlaps with the Project AoI would support significant concentrations of these species such that thresholds for CH would be met.

Uzbekistan Toadhead Agama is another endemic/range-restricted species potentially present in the vicinity of the AoI however it is only known from the south bank of the Amu Darya (and potentially extinct in Uzbekistan) and is therefore considered to be absent from the AoI. In addition this species has very specific habitat requirements, none of which are found within the AoI.

4.5.3 Criteria 3 / iv

Steppe Eagle, which is of elevated global conservation status (IUCN EN) is likely to occur within the AoI in excess of 1% of their respective global population. Criteria 3 / iv is for migratory and congregatory species and as discussed in the assessment methodology Critical Habitat can only be determined under this Criteria for sites that support populations in excess of their thresholds.

Sites must be of critical importance for this species and airspace is not considered to be of critical importance unless it is at bottleneck sites such as due to the presence of landscape features which 'funnel' flocks of soaring birds, or other important points along migration routes (e.g. sea crossing points). Sites are also considered important under this criterion where large aggregations of birds are present during key parts of their life cycle (e.g. stopover sites for roosting and feeding). In this latter context roosting sites

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

Using this approach, Critical Habitat would not be triggered with respect to the airspace where there is no associated important terrestrial area. Steppe Eagles (and other Migratory Soaring Birds (MSBs)) have not been regularly recorded on the ground and there is no suitable roosting habitat within the WF or in the OHTL corridor. Resting areas are not of regular significance to MSBs and would not be subject to site-based conservation management activities which would result in measurable conservation benefits. The survey data clearly shows that there is an absence of a linkage between the airspace above, and terrestrial habitats of, the Project site and as such is impossible to delineate the airspace EAAA, and without an EAAA, the Critical Habitat thresholds cannot be applied.

The migratory/congregatory species criterion described in the CHA section of IFC PS6 and EBRD PR6 is intended to trigger a CH determination only in areas that host continentally significant concentrations of migration activity. In many cases, these sites have already been designated as Important Bird Areas (IBAs) based on the KBA criteria and thresholds.

As has been shown in the CHA the utilized airspace is not linked to an important terrestrial area for migratory soaring birds and as such it is not considered to be Critical Habitat. Critical Habitat has however been determined for White-headed Duck and MacQueen's Bustard as they are likely to be utilizing airspace that is linked to important terrestrial habitats within the EAAA.

4.6 Priority Biodiversity Features

4.6.1 PBF Criterion 1: Threatened habitat

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

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

Species considered to be Priority Biodiversity Features are included in Table 10 along with a brief discussion as to why they are considered PBF species.

Table 10: Table of Identified PBF Species

Receptor	Conservation Status		Justification
	IUCN	UZBRB	
Central Asian Tortoise	VU	VU	Present across the AoI in low population density. Species is IUCN and UzRDB VU.
Marbled Polecat	VU	VU	Single hole of this species located within wind farm area and tracks recorded 3 times along the OHTL (southern end). Presence confirmed in very low density in AoI. IUCN and UzRDB VU species.
Honey Badger	LC	CR	Two active burrows within wind farm area and additional

			single burrow 1.3 km to the south and field signs along northern end of the OHTL. Likely between 4 and 8 individuals and possible nationally important population within the AoI. IUCN LC but UzRDB CR.
Caracal	LC	CR	No den sites identified however individuals recorded on the camera traps. Possibly up to three individuals present along the northern edge of the wind farm. IUCN LC but UzRDB CR.
Goitered Gazelle	VU	VU	Recorded sporadically on the camera traps and one individual seen as an incidental sighting in WF area, and tracks recorded along the OHTL (southern end). Population within AoI between 20 and 25 individuals. A nationally rare species that is both IUCN and UzRDB VU.
Steppe Eagle	EN	VU	435 individual flights recorded in the winter and spring survey seasons and 261 flights in the autumn. Confirmed as a nesting species within the AoI with one confirmed nest (unsuccessful attempt in 2023). IUCN EN and UzRDB VU
Pallas's Fish Eagle	EN	EN	Single bird seen on spring migration and just in airspace above the project. IUCN and UzRDB EN
Eastern Imperial Eagle	VU	VU:D	A total of 11 registered flights in winter and spring and 8 in the autumn. Likely migration above the AoI. IUCN and UzRDB VU
Greater-spotted Eagle	VU	VU:R	Three individual birds recorded in the winter bird season of birds migrating over the AoI. IUCN and UzRDB VU
Sociable Lapwing	CR	VU:R	Not recorded on surveys to date. Possible migration in Project AoI
Saker Falcon	EN	NT	Not recorded on surveys to date. Possible migration in Project AoI
Egyptian Vulture	EN	VU:D	Not recorded on surveys to date. Possible migration in Project AoI
Great Bustard	EN	CR	Not recorded on surveys to date. Possible migration in Project AoI
MacQueen's Bustard	VU	VU:D	Recorded in low numbers in WF and along OHTL. Likely migration through the Project AoI.
Common Pochard	VU	N/A	Not recorded on surveys to date. Possible migration in Project AoI
Lesser White-fronted Goose	VU	VU:R	Not recorded on surveys to date. Possible migration in Project AoI

Range Restricted Species

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

Migratory/Congregatory Species

Information pertaining to the importance of the Project site for migratory and congregatory species has been previously discussed and details of species which are considered PBFs that are considered migratory/congregatory are included in Table 10.

5. CONCLUSIONS

Critical Habitat has been triggered for White-headed Duck as a result of the EAAA supporting a significant proportion of the global population of this IUCN Endangered species and whilst the Project will not affect any areas of terrestrial habitats (e.g. lakes) it is considered likely that this species will regularly move across the Project AoI. Critical Habitat has also been determined for MacQueen's Bustard as a significant proportion of the global population of this species are likely to be utilizing the airspace occupied by the Project (OHTL).

There are also a number of other species that are considered to be PBF species.

The Project will therefore need to develop a Biodiversity Action Plan which will include all relevant species mitigation included within the ESIA to ensure No Net Loss to these valued ecological receptors as well as Net Gain for White-headed Duck. All mitigation and monitoring, included in the ESIA will also be included in the Biodiversity Action Plan which will include a robust Adaptive Management Strategy should the results of monitoring indicate a significant impact on species of conservation concern.

With appropriate mitigation it is highly unlikely that the Project will result in impacts on White-headed Duck and therefore, at this stage off-sets for this species may not be required. The BAP will however include potential off-set measures to be undertaken if any impacts are identified in order that the Project results in a Net Gain to this CH species. It is however likely that even with mitigations applied off-sets will be required to achieve Net Gain of MacQueen's Bustard as industry standard mitigations have been shown to be largely ineffective for this species and significant residual negative impacts will remain. Off-sets may also be required for other PBF species (of varying conservation status) such that No Net Loss of these species (e.g. Steppe Eagle) can be achieved.

The Biodiversity Action Plan will also include a robust Biodiversity Monitoring Evaluation Plan (BMEP) and this will include details of Post Construction Fatality Monitoring, which will be based on the latest EBRD Handbook for such post-construction studies.