DATE
13 November 2024
(Revised 23 April 2025)

REFERENCE
0753033 Almaty Railroad
Bypass Supplementary ESIA

MEMO

TO	AIIB & IFC
FROM	ERM
DATE	13 November 2024 (Revised 23 April 2025)
REFERENCE	0753033 Almaty Railroad Bypass Supplementary ESIA
SUBJECT	Critical Habitat Likelihood Assessment Memorandum

1. INTRODUCTION

1.1 PROJECT CONTEXT

ERM understands that KTZ has commenced construction works in November 2023. It is estimated that a total of 284 land plots covering an estimated area of 1056 hectares is required for permanent land acquisition. Of this, 167 land plots amounting to 728 hectares are privately-owned while the remaining are state land.

The ground clearance and earthworks have been ongoing from Q2 2024 across three sections of the route (east, west and central parts) and are expected to be completed by the end of the year (2024). The installation and commissioning of the railway infrastructure and associated facilities is planned for 2025. The overall construction duration is estimated to be two years.
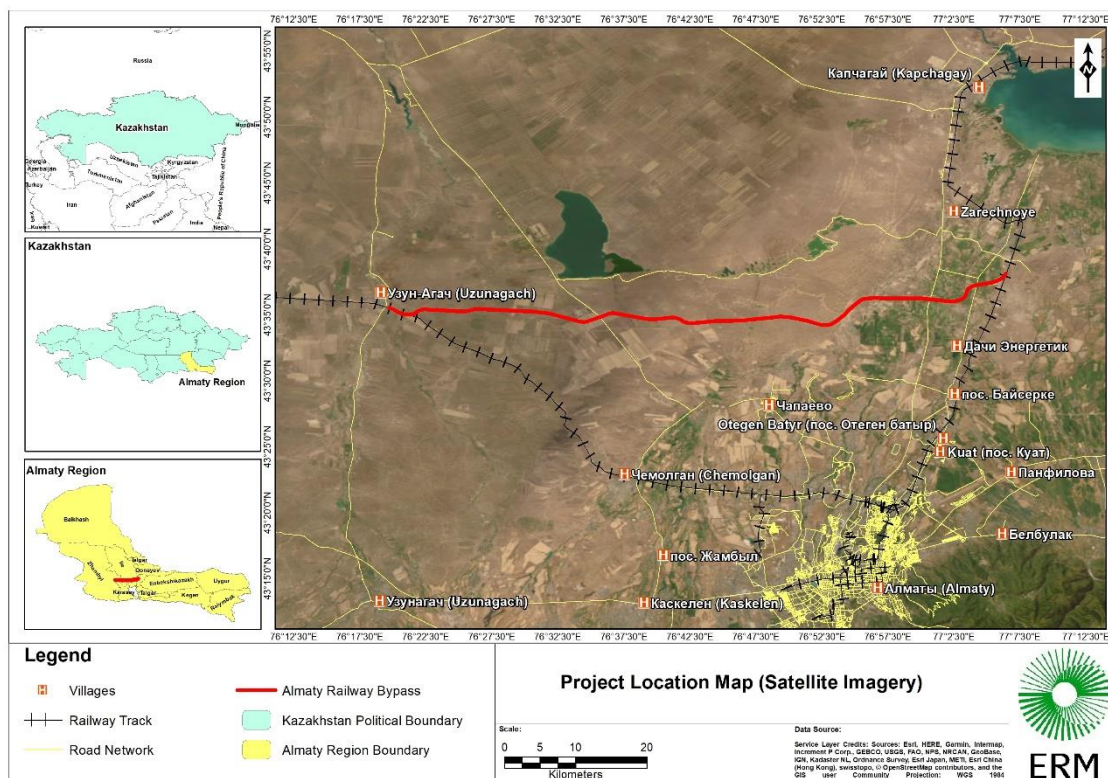

Project Location Map (Satellite Imagery)

![ERM logo]

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FIGURE 1-1: PROJECT LOCATION MAP

2.   APPROACH AND METHODOLOGY

2.1   APPROACH

The CHA of the railway alignment has been undertaken in two phases:

- Phase I: screening of the site to determine any ecological sensitivities that could trigger the critical habitat assessment thresholds as per IFC PS 6; and

- Phase II: site visits and consultation with experts, complementing the critical habitat assessment.

2.1.1 PHASE I: PRELIMINARY SCREENING

2.1.1.1 DESK BASED ASSESSMENT

A list of species of conservation significance was obtained from the Integrated Biodiversity Assessment Tool (IBAT) to identify threatened species likely to occur within or near the Project Area. Critical habitat criteria have been used as defined in PS6 Guidance Note 6 (GN6) (Refer **Table 2-4**).

TABLE 2-1: LIST OF SOURCES

S. N.	Source	Purpose
1.	Integrated Biodiversity Assessment Tool (IBAT) for Business	The IBAT tool screens a potential location for ecological sensitivity and provides a list of species occurring in a 50 km radius. The tool also highlights potential critical habitat triggers by determining proximity to migration pathways, legally protected areas and key biodiversity areas.
2.	IUCN Red List for Threatened Species Online Version [2024-1]	The IUCN Red List provides a list of threatened species by classifying them as Least Concern (LC) to Critically Endangered (CR), through an understanding of their global distribution, population numbers, and trends in population decline and stresses on the species. As part of the classification, the global distribution and habitat preference of the species is given.
3.	Peer-reviewed secondary - literature	Online peer-reviewed secondary literature for the project area landscape were used to understand the presence/absence of priority species and determine habitats of conservation importance.
4.	Bird Life Data Zone	BirdLife International maintains a database of Important Bird and Biodiversity Areas (IBBAs) that provides a list of species found in these designated areas, measures of sensitivity of these habitats and identifies migratory, congregatory and threatened species in the area.
5.	e-Bird, iNaturalist, GBIF and FishBase	These online citizen science portals were used to understand the presence/absence of priority species.

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2.1.1.2 DELINEATING THE AREA OF INFLUENCE

The Project's Area of Influence is an established Right of Way (RoW) of 160m (80m on either side), and an additional 500m on either side of the RoW. Thereby the total AOI is 580m on either side of the track bed (1160m considering both sides).

2.1.1.3 DELINEATING AN EAAA

For the purposes of this assessment, ERM used the IFC PS6 Guidance Note (IFC, 2019) to define an area of assessment for the Project. Under the IFC PS6, an Ecologically Appropriate Area of Analysis (EAAA) is an area that delineates the extent to which a proposed action or project directly impacts the surrounding biodiversity. The presence of species of conservation significance (e.g. threatened species) influences the size and location of an EAAA. Key factors that assist in delineating EAAAs include the distribution of species or ecosystems (within and sometimes extending beyond the project's AOI based on habitat contiguity) and the ecological patterns, processes, features, and functions that are necessary for maintaining them. These boundaries may include landscape or geological features.

Habitat characterization facilitated the identification of various habitats with potential to support species of conservation significance. It also considered habitat connectivity and the presence of wildlife corridors in the landscape. Furthermore, the screening of species of conservation significance guided the likelihood of these species being present, particularly those identified as potential critical habitat candidates.

In the context of the project and presence of important biodiversity values, the EAAA has been defined separately for:

- **Aquatic, Migratory and congregatory species**: The Sorbulak Lake System Important Bird Area (IBA) and natural wetland habitat along the alignment have been included. The Sorbulak Lake System lies approximately 5km north of the alignment. The railway passes through the southern portion of an IBA for around 4km. Based on site observations and analysis of Google Earth imagery, it was concluded that for the IBA there are no interactions between the project and the lake systems. Small water bodies south of the alignment were found to be dry and lacked the necessary habitat to support large numbers of migratory or congregatory species that may potentially move from the lake system. The lake system at the northern section of the EAAA supports ≥1% of the global populations of the species for which the Sorbulak Lake Systems KBA/IBA is designated for. The EAAA contains limited suitable habitat along the project alignment, which may occasionally support limited or accidental individuals. As the project is not located in the habitat type within the CH that is associated with migratory waterbirds, it is not expected to have any significant residual impacts on these CH values. Although the project (including the OHTL) is not in CH for these species, given they may be passing through the airspace of the OHTL, the project will implement related mitigation measures including

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the bird diverters and insulation to avoid and minimize impacts on bird species that are at risk of collision and electrocution.

- **Terrestrial mammalian fauna**: Field observations and consultations with local subject matter experts indicate that large mammal movements, such as those of ungulates, are highly unlikely in this region. Species that may potentially use the larger habitat and be present at the project site include Red fox (*Vulpes vulpes*) [LC (IUCN v2024-1)], Corsac fox (*Vulpes corsac*) [LC (IUCN v2024-1)], Yellow ground squirrel (*Spermophilus fulvus*) [LC (IUCN v2024-1)], Red-cheeked ground squirrel (*Spermophilus erythrogenys*) [LC (IUCN v2024-1)], and various rodents such as the Great gerbil (*Rhombomys opimus*) [LC (IUCN v2024-1)]. These species are categorized as Least Concern and have wide distributions. The project's AoI encompasses mainly of modified agricultural land and pastureland, that constitute contiguous and widespread habitat within the larger landscape.

- **Central Asian Tortoise**: This species prefers sandy habitats with abundant herbaceous vegetation over dense loamy and rocky soils and is mostly found in loess piedmont plains and adyrs, particularly in habitats with ephemeral and ephemeral-wormwood plant communities[1]. The project's AoI contains semi-desert sand dune habitats, where consultations revealed that Central Asian tortoises were encountered during excavation and construction due to their tendency to burrow in sandy or loamy soils for hibernation or shelter. As a result, this continuous habitat, extending beyond the project AoI, has been considered part of the EAAA for this species.

- **Tulip species**: Species distributed in this region include *Ixiolirion tataricum*, *Rhinopetelum karelinii*, *Tulipa buhseana*, and the endemic *Tulipa behmiana*. These species are wide-ranging across Kazakhstan and are typically found in desert, semi-desert, and steppe habitats with sandy and clay patches. Given their widespread distribution and the extensive preferred habitat in the region, the semi-desert landscape extending beyond the AoI and the project AoI has been included as part of the EAAA for these species.

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[1] Bondarenko, D. A., & Duisebaeva, T. N. (2011). Central Asian Cherepacha, Agrionemys horsfieldii (Gray, 1844), in Kazakhstan (Distribution, range zoning, population density). Main Center of Hygiene and Epidemiology of the Federal Medical and Biological Agency, Russia; Institute of Zoology of the Ministry of Education and Science of the Republic of Kazakhstan.
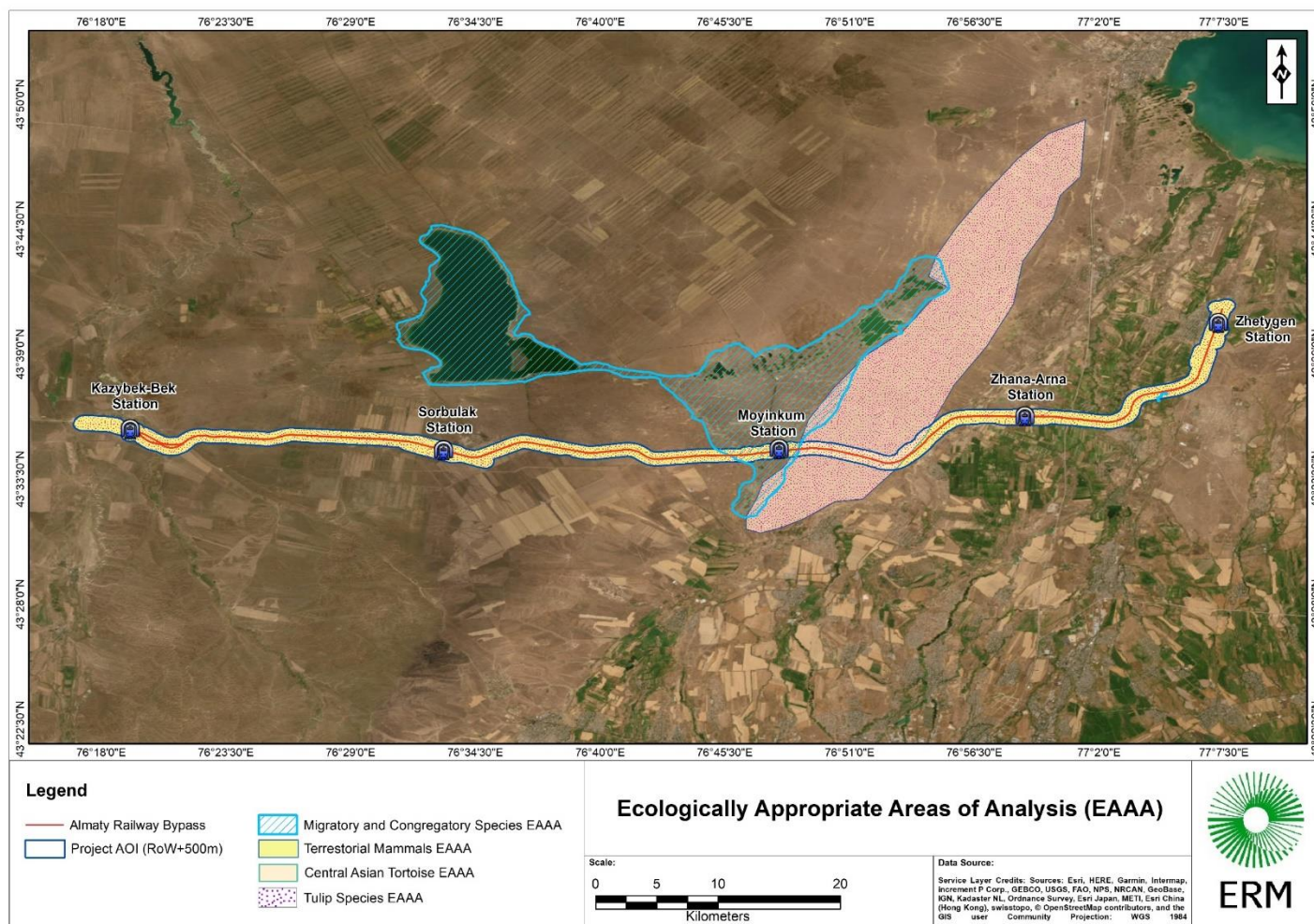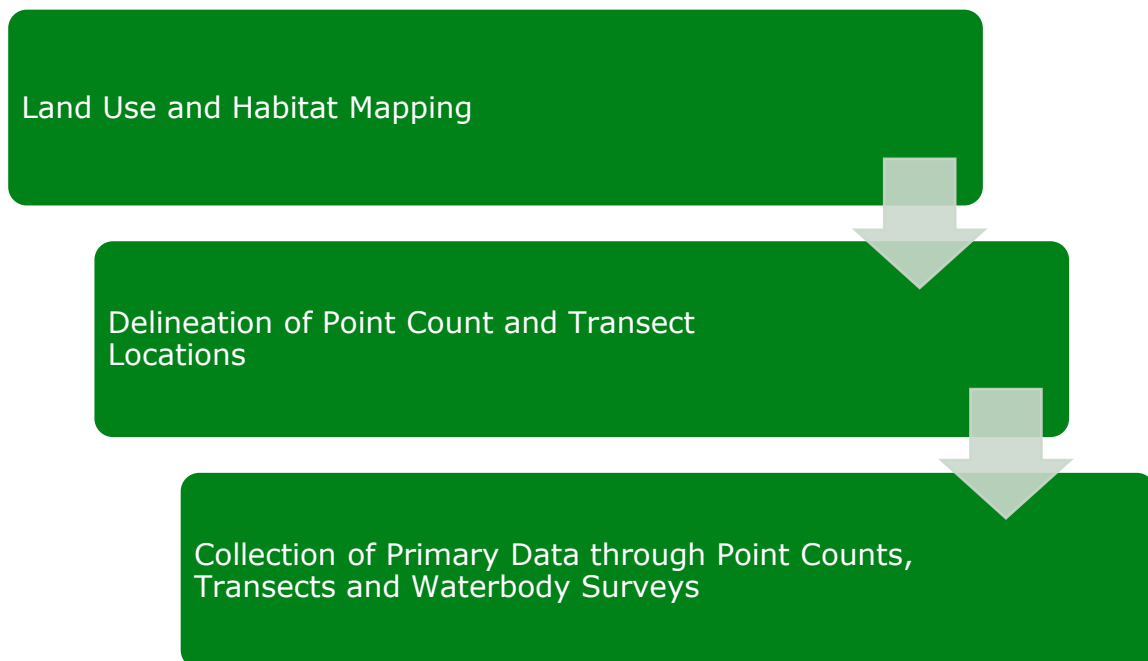
Ecologically Appropriate Areas of Analysis (EAAA)

Legend

— Almaty Railway Bypass
☐ Project AOI (RoW+500m)
▨ Migratory and Congregatory Species EAAA
▨ Terrestorial Mammals EAAA
▨ Central Asian Tortoise EAAA
▨ Tulip Species EAAA

Scale:
0   5   10   20
Kilometers

Data Source:
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS user Community Projection: WGS 1984

FIGURE 2-1: ECOLOGICALLY APPROPRIATE AREA OF ANALYSIS (EAAA)

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2.1.2 PHASE 2: PRIMARY SURVEYS AND CRITICAL HABITAT CANDIDATE ASSESSMENT

ERM undertook a site assessment between 23rd – 28th September 2024, as part of Phase II. The assessment consisted of a reconnaissance of the project AoI to understand the type of habitat, the vegetation type of these habitats and any unique geographical features. The site assessment also included visiting Key Biodiversity Areas in proximity to the railway alignment *viz*. Sorbulak Lake Complex.

During site assessment consultations were carried out with subject matter experts from Association for the Conservation of Biodiversity in Kazakhstan (ACBK), governmental agencies (Regional Committee of Wildlife and Forestry) and independent researchers to understand the distribution and behaviour of the species identified in the region.

The approach for the critical habitat assessment study is as follows:

Land Use and Habitat Mapping

Delineation of Point Count and Transect Locations

Collection of Primary Data through Point Counts, Transects and Waterbody Surveys

Note: All the above steps are supported by the available secondary data sources for the region

The approach is further detailed in the following bullets:

- A land use map was prepared to understand site sensitivities with respect to the presence of various habitats to identify the locations for point count locations and transects for primary data collection.

- Based on the land use map the Point Counts and Transect Locations were chosen for the generation of Primary Data Collection

- Additional data collected were analysed to assess the species under potential risk.

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2.1.2.1 METHODOLOGY

Habitat Surveys

The various habitats within the study area were identified using Google Earth Pro to determine the types and extent of habitats in the AoI of the project site. These habitats were marked and visited during the site reconnaissance to identify their quality and level of disturbance at these habitat locations.

Additionally, the natural habitats that were previously identified and mapped by IFC were visited and validated through field observations.

Waterbody Survey

All waterbodies within the AoI and additionally Sorbulak Lake System were surveyed during the early morning and evening hours to monitor bird activity. These visits aimed to establish a comprehensive baseline of waterbird populations in the AoI. Special attention was given to recording migratory species. In addition, presence of amphibians along the shaded ledges of water bodies were recorded.
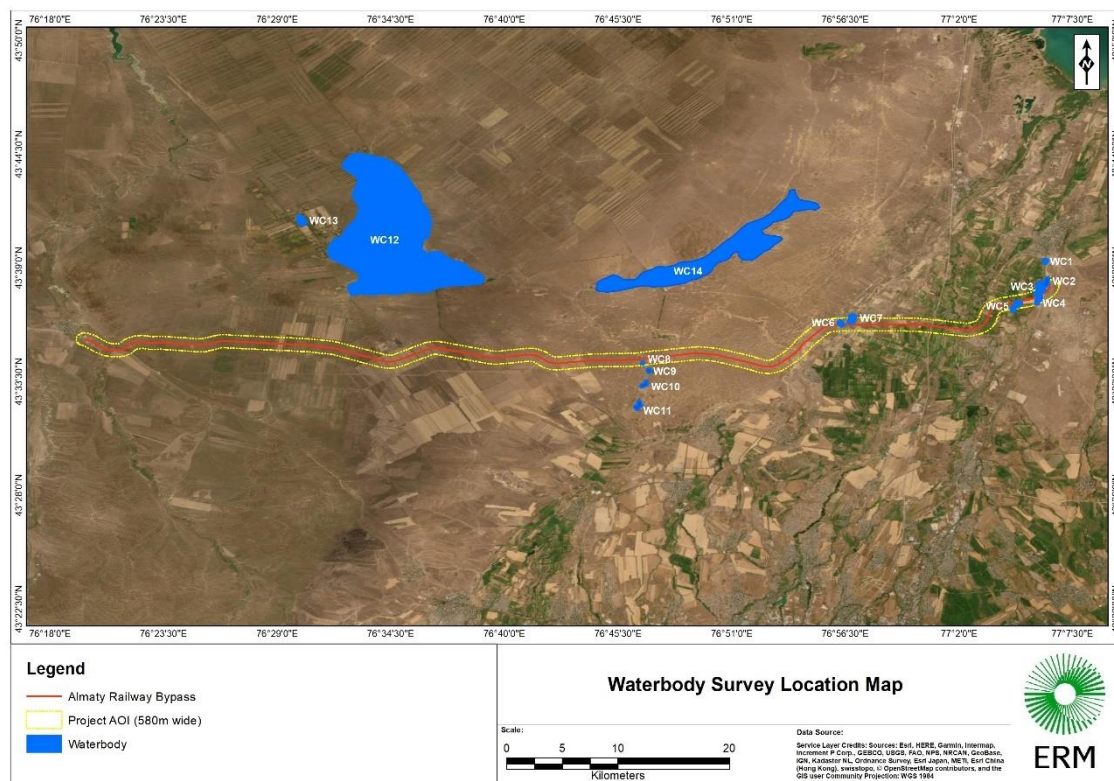
FIGURE 2-2: WATERBODY SURVEY LOCATIONS

Point Count Survey

Points along the railway alignment were marked using GIS approximately 7km apart. Point counts were also conducted to cover various habitat types including agriculture land, semi-desert and steppe/pastureland. The point survey included approaching the potential site and recording all birds in a 15-minute period.

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Observers walked for approximately 500m in the direction of suitable habitat and recorded the flora, birds and mammals. An additional 10 minutes were spent to record reptiles.
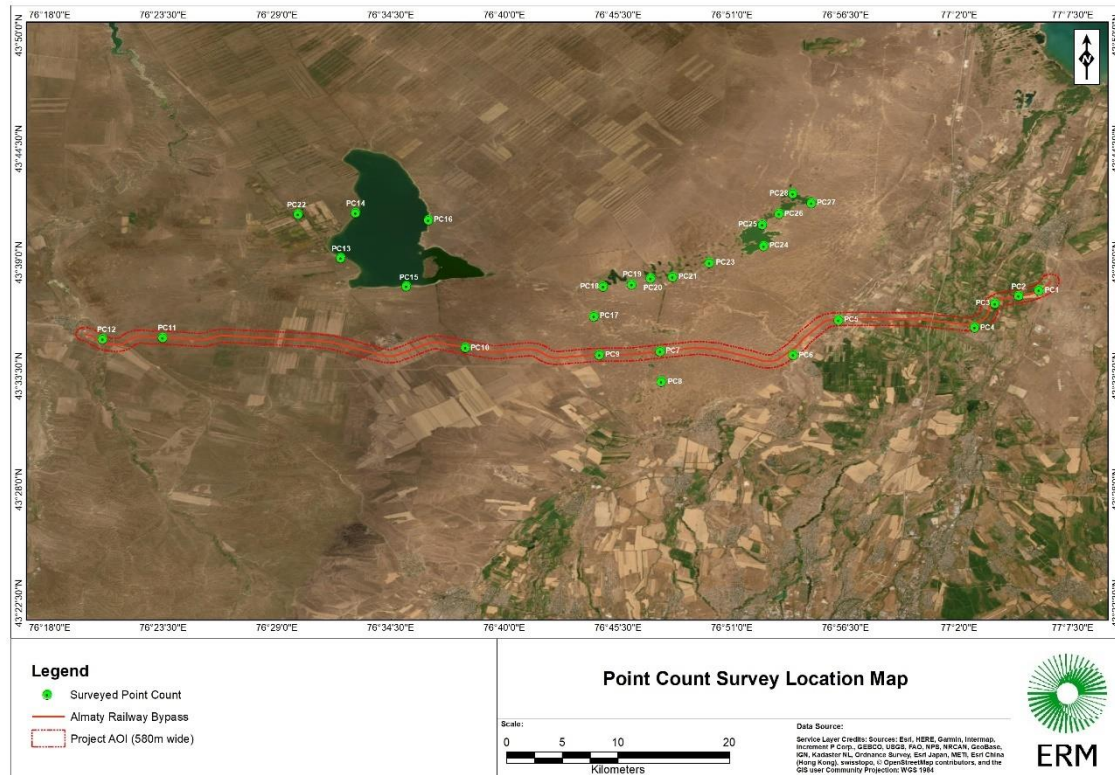

FIGURE 2-3: POINT COUNT LOCATIONS

Line Transect

Faunal diversity was also recorded through line transects[2]. Six transects of length 1 km were surveyed covering major habitats/land use found within the study area. Transects focused on recording the activities of birds, in identifying sites of ecological significance to birds, such as sites of feeding, breeding, and nesting, and roosting. The surveys were undertaken between 0630-1030 hrs and 1500-1830 hrs. The details of transects and their locations are given in **Table 2-2**.

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[2] A transect survey for birds is a systematic method used to estimate the abundance and distribution of bird species within a specific area. This technique involves selecting a linear path, or transect, across the habitat of interest, which is then walked or traversed by observers who record all birds seen or heard within a predetermined distance from the transect line. The transect survey allows for the collection of standardized data, making it possible to compare bird populations across different areas and time periods. The data gathered from transect surveys provide valuable insights into species diversity, population trends, and habitat preferences, informing mitigation measures.

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TABLE 2-2: DETAILS OF LINE TRANSECTS/SURVEY ROUTES

Transect #	Date of survey	Start Point		End Point		Habitat Type
		Latitude	**Longitude**	**Latitude**	**Longitude**	
LT1	27 November 2024	43°37'11.52"N	77° 4'42.94"E	43°37'29.15"N	77° 4'55.62"E	Riverine habitat with reed beds
LT2	27 November 2024	43°35'48.30"N	77° 2'46.26"E	43°36'2.09"N	77° 2'50.84"E	Agriculture land and scrub
LT3	27 November 2024	43°34'46.93"N	76°49'35.48"E	43°35'17.63"N	76°49'47.16"E	Semi-desert habitat
LT4	28 November 2024	43°34'33.03"N	76°52'20.91"E	43°33'59.88"N	76°52'17.20"E	Semi-desert habitat
LT5	28 November 2024	43°32'57.12"N	76°46'52.48"E	43°33'33.60"N	76°47'12.91"E	Mosaic of semi-desert and steppe/pastureland habitat
LT 6	28 November 2024	43°34'53.96"N	76°38'9.23"E	43°35'13.52"N	76°38'44.55"E	Steppe/pastureland habitat
LT 7	28 November 2024	43°34'29.88"N	76°46'37.65"E	43°34'46.36"N	76°48'28.43"E	Degraded steppe/pastureland habitat

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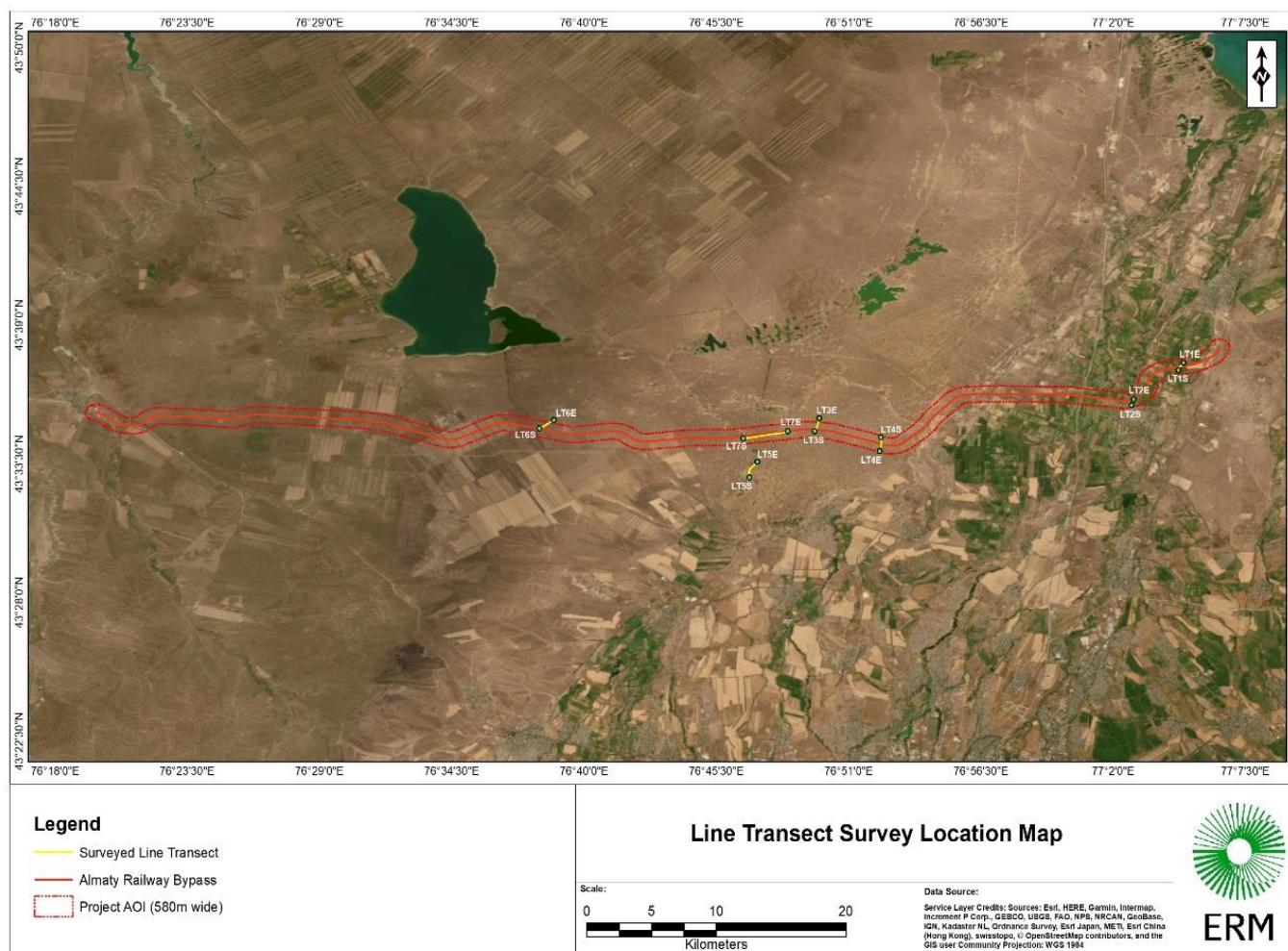
FIGURE 2-4: LINE TRANSECT SURVEY LOCATIONS

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Stakeholder Consultations

Consultations were conducted with the officials of the Regional Committee of Wildlife and Forestry, as well as with subject matter experts (SMEs) from the Association for the Conservation of Biodiversity in Kazakhstan (ACBK)[3] and BirdLife International. The ACBK focus on conserving Kazakhstan's biodiversity, promoting its sustainable use, and engaging the public on its importance. Key activities include implementing wildlife conservation projects, improving research, advocating for policy improvements, and expanding conservation networks nationwide.

TABLE 2-3: DETAILS OF STAKEHOLDERS CONSULTED

S.N.	Name	Designation/Specialisation
1.	Dr. Sergey Sklyarenko	Head of the Centre for Conservation Biology of ACBK, Science Director of ACBK
2.	Mr. Ulan	Head of Forestry Department, Regional Committee of Wildlife and Forestry
3.	Mr. Abat	Official at the Regional Committee of Wildlife and Forestry
4.	Ms. Semik Umbetbayer	EIA Consultant (Intergra) of the Project, Regional Committee of Wildlife and Forestry

Species with conservation significance, were assessed with respect to the Critical Habitat Quantitative Thresholds, to identify critical habitat triggers, based on IFC Performance Standard 6 (2012) and the associated Guidance Note (2018) on Biodiversity Conservation and Sustainable Management of Living Natural Resources.

The criterion and thresholds for Critical Habitat Assessment have been provided in **Table 2-4.**

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[3] Kazakhstan - Association for the Conservation of Biodiversity of Kazakhstan (ACBK) - BirdLife International

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TABLE 2-4: QUANTITATIVE THRESHOLDS FOR CRITICAL HABITAT

Criterion	Thresholds
Criterion 1: Critically Endangered and Endangered Species Species threatened with global extinction and listed as CR and EN on the IUCN Red List of Threatened Species Species that are listed nationally/regionally as CR or EN in countries that have adhered to IUCN guidance in consultation with competent professionals.	(a) areas that support globally important concentrations of an IUCN Red-listed EN or CR species (0.5% of the global population AND 5 reproductive units of a CR or EN species). (b) Areas that support globally important concentrations of an IUCN Red-listed 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 at (a). (c) As appropriate, areas containing nationally/regionally important concentrations of an IUCN Red-listed EN or CR species.
Criterion 2: Endemic and Restricted-range Species The term endemic is defined as restricted range. Restricted range refers to a limited extent of occurrence (EOO): • For terrestrial vertebrates and plants, a restricted-range species is defined as those species that have an EOO less than 50,000 km2. • For marine systems, restricted-range species are provisionally being considered those with an EOO of less than 100,000 km2. • For coastal, riverine and other aquatic species in habitats that do not exceed 200 km width at any point (e.g., rivers), restricted range is defined as having a global range less than or equal to 500 km linear geographic span (i.e., the distance between occupied locations furthest apart).	(a) areas that regularly hold ≥10% of the global population size and ≥10 reproductive units of a species.
Criterion 3: Migratory and Congregatory Species 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).	(a) areas known to sustain, on a cyclical or otherwise regular basis, ≥1 percent of the global population of a migratory or congregatory species at any point of the species' lifecycle. (b) areas that predictably support ≥10 percent of the global population of a species during periods of environmental stress.

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Congregatory species are defined as species whose individuals gather in large groups on a cyclical or otherwise regular and/or predictable basis; examples include the following:	
Criterion 4: Highly threatened and/or unique ecosystems	(a) Areas representing ≥ 5 % of the global extent of an ecosystem type meeting the criteria for IUCN status of CR or EN. (b) Other areas, not yet assessed by IUCN, but determined to be of high priority for conservation by regional or national systematic conservation planning.
Criterion 5: Areas associated with key evolutionary processes	No set threshold

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3. HABITAT CHARACTERIZATION

3.1 NATURAL HABITAT

3.1.1 SEMI-DESERT

The semi-desert habitat along the railway alignment features a characteristic arid environment with sparse vegetation adapted to the region's dry conditions. This landscape supports a variety of flora, including drought-resistant grasses like *Stipa* and *Festuca*, along with xerophytic shrubs such as *Salsola arbuscula*, *Artemisia* spp., and *Calligonum* spp. Species that may potentially use this habitat and be present at the project site include Red fox (*Vulpes vulpes*) [LC (IUCN v2024-1)], Corsac fox (*Vulpes corsac*) [LC (IUCN v2024-1)], Yellow ground squirrel (*Spermophilus fulvus*) [LC (IUCN v2024-1)], Red-cheeked ground squirrel (*Spermophilus erythrogenys*) [LC (IUCN v2024-1)], and various rodents such as the Great gerbil (*Rhombomys opimus*) [LC (IUCN v2024-1)]. These species are categorized as Least Concern and have wide-ranging distributions.
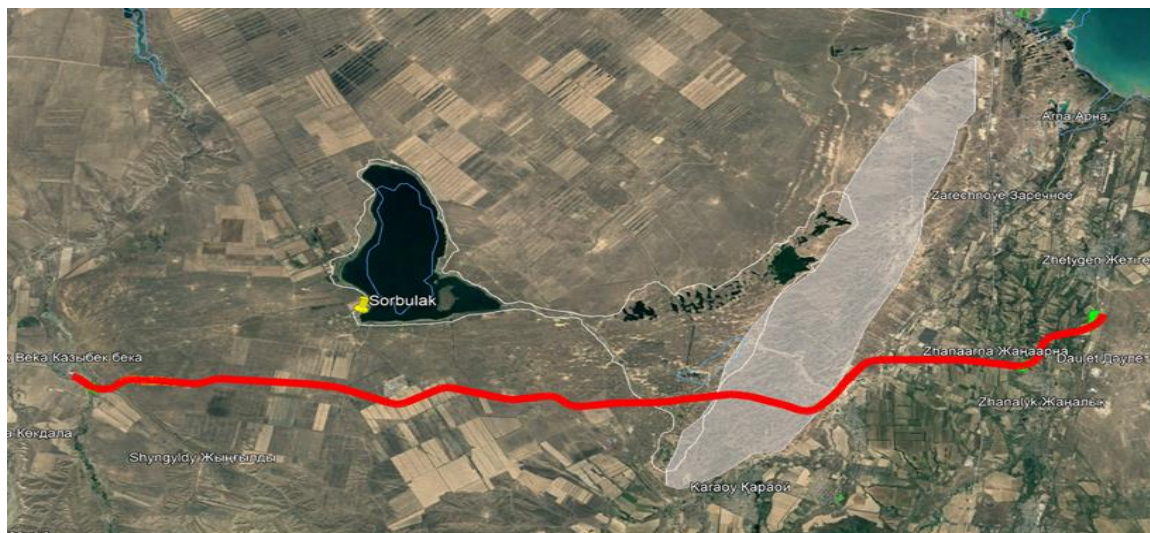
FIGURE 3-1: GOOGLE EARTH IMAGERY SHOWING THE SEMI-DESERT HABITAT WITH RESPECT TO THE PROJECT ALIGNMENT

3.1.2 RIPARIAN

The alignment intersects multiple rivers across various locations, with one section crossing a riverine habitat characterized by extensive reed beds (43°37'20.50"N, 77° 4'47.64"E). This habitat provides suitable breeding and roosting conditions for several passerine species, including Common chiffchaff (*Phylloscopus collybita*) [LC (IUCN v2024-1)], Coal Tit (*Periparus ater*) [LC (IUCN v2024-1)], Great Tit (*Parus major*) [LC (IUCN v2024-1)] as well as for wetland-associated species such as Common Coot (*Fulica atra*) [LC (IUCN v2024-1)], Common Moorhen (*Gallinula chloropus*) [LC (IUCN v2024-1)], Eurasian Bittern (*Botaurus stellaris*) [LC (IUCN v2024-1)], Little Grebe (*Tachybaptus ruficollis*) [LC (IUCN v2024-1)], Black-necked

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Grebe (*Podiceps nigricollis*) [LC (IUCN v2024-1)] etc. The surrounding vegetation primarily consists of Russian Olive (*Elaeagnus angustifolia*).
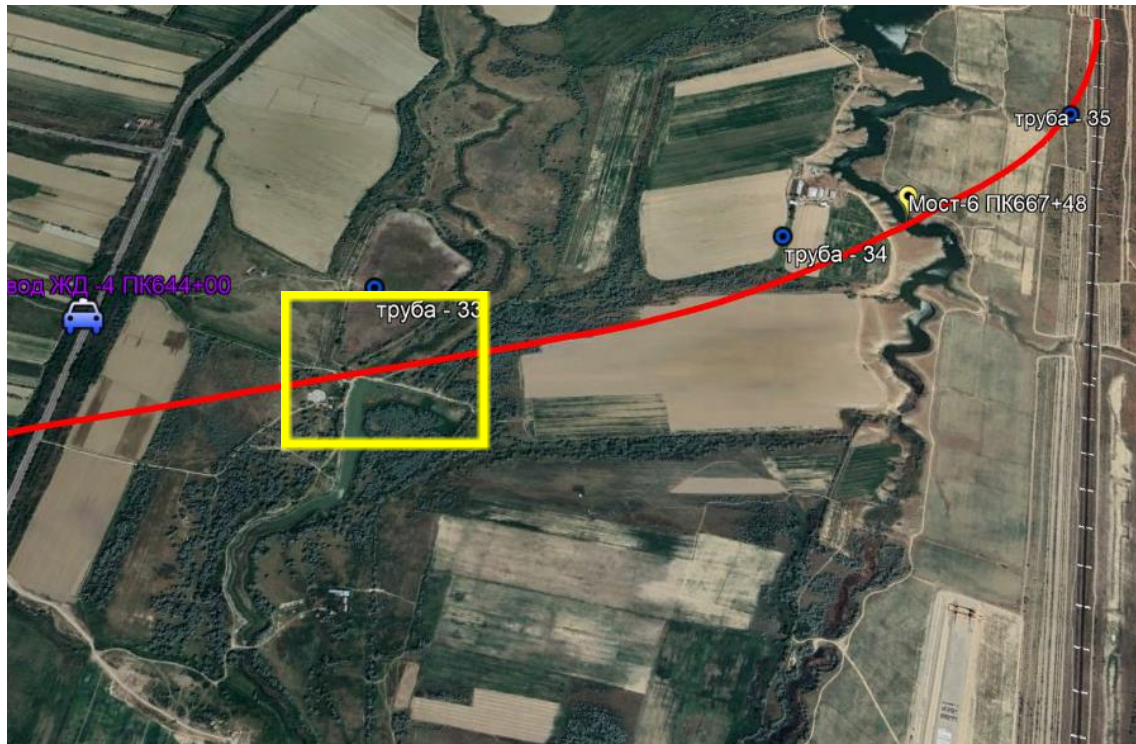

FIGURE 3-2: GOOGLE EARTH IMAGERY SHOWING THE RIVERINE HABITAT WITH RESPECT TO THE PROJECT ALIGNMENT

3.2 MODIFIED HABITAT

3.2.1 STEPPE GRASSLANDS/PASTURELANDS

A significant portion of the alignment traverses a mosaic of highly degraded and overgrazed areas, interspersed with some patches of relatively better condition steppe grasslands. These lands are extensively utilized as pasture for local livestock, including sheep, goats, and horses. The area is subject to considerable pressure from grazing, increasing the presence and spread of various invasive alien species. The dominant grass species observed within the AoI belong to the genera *Stipa* and *Festuca.*

3.2.2 AGRICULTURAL LAND

The project alignment passes through agriculture lands in various sections. The agriculture lands are not irrigated and commonly grow crops in the region include Wheat, Barley, Maize and Hay.

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Agriculture land

Riparian habitat

Steppe/Pastureland
Source: ERM Primary Survey

Semi-desert
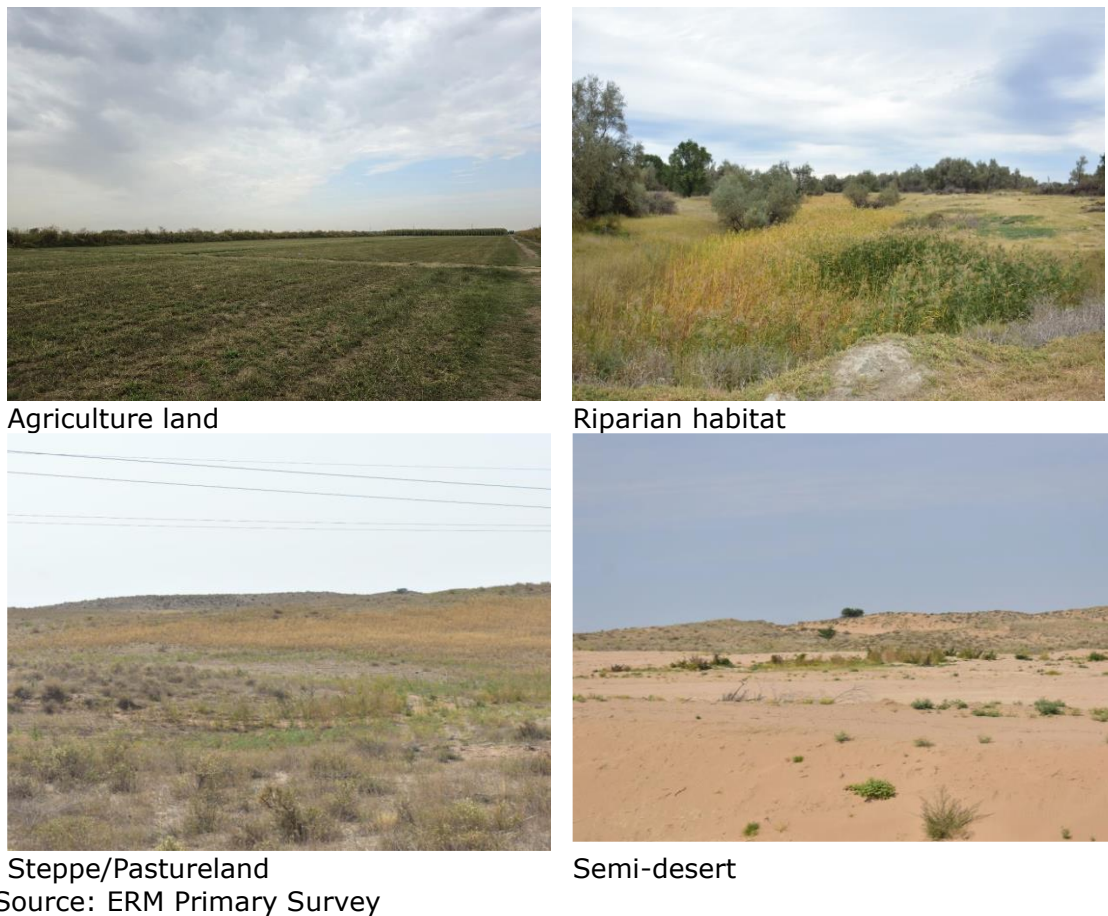
FIGURE 3-3: HABITAT TYPES PRESENT IN THE AOI

3.3 LEGALLY PROTECTED AND INTERNATIONALLY RECOGNIZED AREAS

A site of higher biodiversity conservation significance, the Sorbulak Lake System (the project passes through the IBA) is located within 10km of the project area. The lake system is a designated Important Bird Area (IBA).

3.3.1 SORBULAK LAKE SYSTEM

IBA Criteria: **A1** (Globally threatened species), **A4i** (holds, on a regular basis, 1% or more of a biogeographic population of a congregatory waterbird species) and **A4iii** (holds, on a regular basis, at least 20,000 waterbirds, or at least 10,000 pairs of seabird, of one or more species)

Distance from the Project: The project passes through the IBA in the southern part. The larger lake together with a cluster of smaller lakes lie approximately 5km north of the alignment.

Important Biodiversity Values: Approximately 300 species across 18 orders have been documented at the site. Among the most prevalent are Anseriformes, with 28 species, and Charadriiformes, with over 50 species. The site has supported some of the largest breeding colonies in southeastern Kazakhstan for species

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including the Black-headed Gull (*Chroicocephalus ridibundus*, LC) with 8,000 pairs, Gull-billed Tern (*Gelochelidon nilotica*, LC) with 2,500 pairs, Great Cormorant (*Phalacrocorax carbo*, LC) with 5,000 pairs, Collared Pratincole (*Glareola pratincola*, LC) with 140 pairs, and Black-winged Stilt (*Himantopus himantopus*, LC) with 70 pairs. The Common Shelduck (*Tadorna tadorna*, LC) and Ruddy Shelduck (*Tadorna ferruginea*, LC) breed along the coast, with up to 100 pairs or more, and post-breeding moult gatherings of *T. ferruginea* reaching up to 20,000 individuals. Large numbers of migrating wildfowl have been observed, including up to 50,000 Mallards (*Anas platyrhynchos*, LC), 35,000 Northern Pintails (*Anas acuta*, LC), 15,000 Red-crested Pochards (*Netta rufina*, LC), and 40,000 Eurasian Coots (*Fulica atra*, LC). During winter, Smew (*Mergellus albellus*, LC) numbers can reach 12,000, and mallard numbers can reach 20,000. Migrating passerines, including the Common Starling (*Sturnus vulgaris*, LC), Rosy Starling (*Pastor roseus*, LC), Barn Swallow (*Hirundo rustica*, LC), Eurasian Crag Martin (*Ptyonoprogne rupestris*, LC), and various Motacilla (Wagtail) species, concentrate in the shoreline vegetation, with numbers exceeding 50,000.

Based on primary surveys and primary site visit observations, no direct interactions between the project and the lake system are anticipated, and no significant impacts are foreseen.
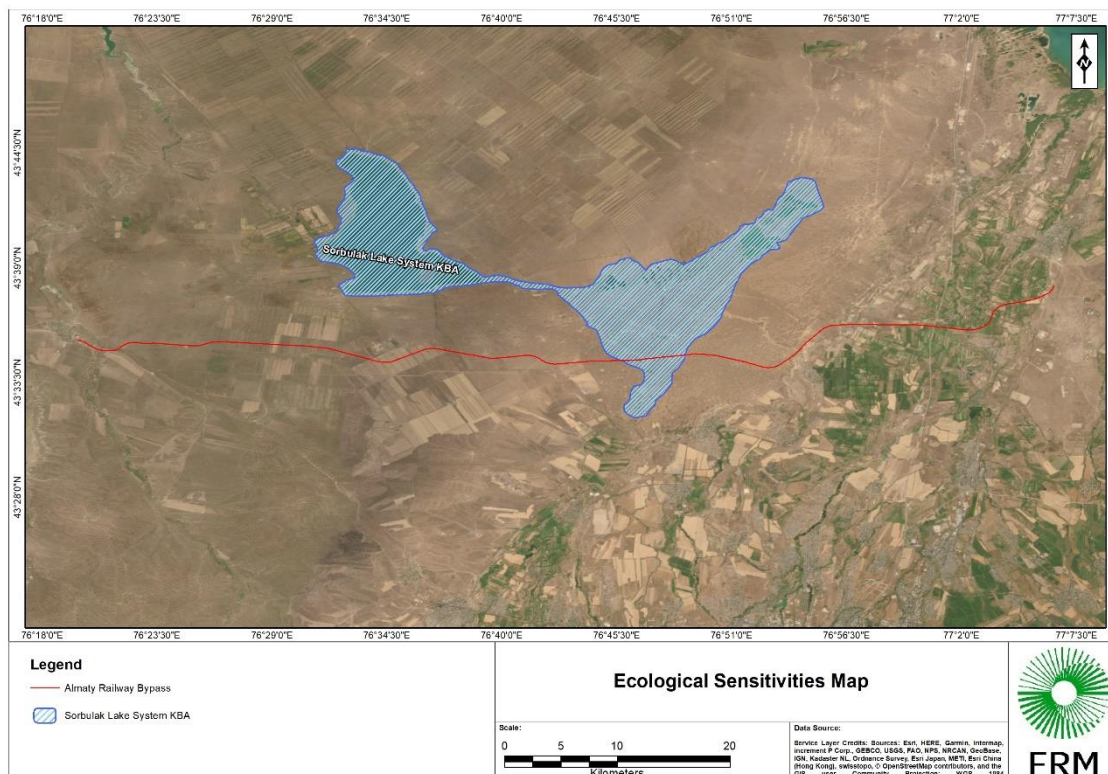
FIGURE 3-4: SORBULAK LAKE SYSTEM IBA WITH RESPECT TO THE PROJECT ALIGNMENT

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Congregation of Ruddy Shelduck at Sorbulak Lake

Congregation of Mallards and Common Coot

Congregation of Common Coot and Common Shelduck

Congregation of Black-headed Gull

Congreation of Tufted Duck

Sorbulak Lake

FIGURE 3-5: PHOTOGRAPHIC DOCUMENTATION OF AVIFAUNA OBSERVED ALONG THE SORBULAK IBA
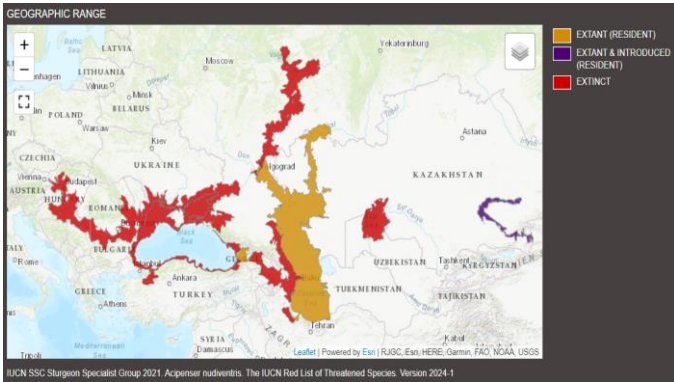
4.   CRITICAL HABITAT ASSESSMENT

Critical Habitat Criterion 1: Critically Endangered and/or Endangered Species

The Critically Endangered (CR) and Endangered (EN), as classified by IUCN, are species at high risk of extinction and thus have been given an elevated level of consideration under Criterion 1 in IFC PS6. A list of CR and EN species with potential of occurrence within 50km radius of the Project site was generated through IBAT. IBAT considers the historic distribution ranges of the species and presents an indicative list for further assessment. Additionally, VU species were also assessed. A total of two (2) critically endangered, eight (8) endangered and seventeen (17) vulnerable species were assessed.
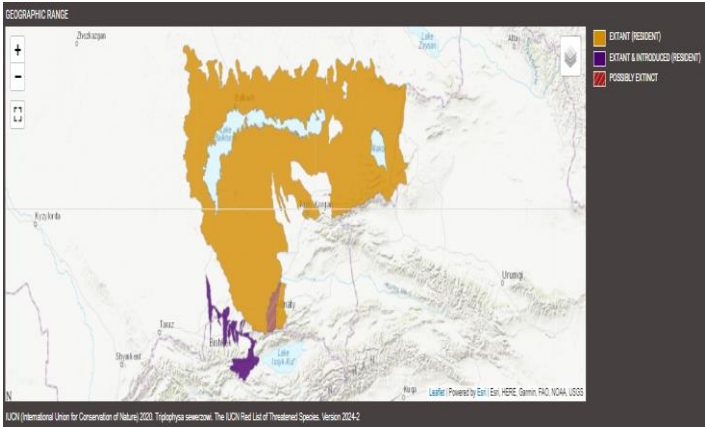
Subsequently, through a combination of desk-based assessments and primary surveys, the CR/EN/VU species were analyzed for potential critical habitat candidacy. This assessment incorporated updated knowledge on these species and their current distribution, aiming to ensure thorough consideration of their conservation status.

Based on the assessment, no species has been identified as a likely trigger for critical habitat within the EAAA under Criterion 1.

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TABLE 4-1: QUALITATIVE ASSESSMENT OF THE SPECIES OF CONSERVATION IMPORTANCE
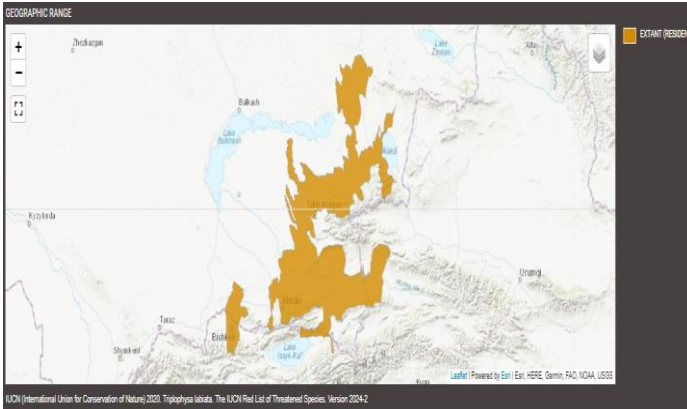
S.N.	Common and Scientific Name	IUCN Status (v2024-1)	Listed in the Red Data Book Kazakhstan	Distribution	CH Rationale
Fish					
1.	Ship Sturgeon (*Acipenser nudiventris*)	CR	Category I	GEOGRAPHIC RANGE. EXTANT (RESIDENT); EXTANT & INTRODUCED (RESIDENT); EXTINCT. IUCN SSC Sturgeon Specialist Group 2021. Acipenser nudiventris. The IUCN Red List of Threatened Species. Version 2024-1	The species spends part of its life in salt water, returning to fresh water to breed. The species' natural distribution includes the basins of Black, Azov, and Caspian Seas, as well as the Aral Sea and its tributaries. It was introduced and acclimatized in the Balkhash basin between 1933 and 1934. Currently, its distribution in Kazakhstan encompasses the Ural-Caspian and Balkhash-Alakol basins[4]. The construction of the Kapshagai hydroelectric power station resulted in the fragmentation of the Balkhash-Alakol population into two distinct groups: the Kapshagai population and the Balkhash population. Meanwhile, the Ural-Caspian population is experiencing a rapid decline[4]. The project aquatic EAAA falls outside the species' current distribution range and lacks its preferred habitat, and as

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[4] Barakbayev, T., Tsoi, V., Iskhakhov, G., Adayev, T., & Ussenova, M. (2020). Current state of Aral bastard sturgeon, *Acipenser nudiventris* Lovetsky, 1828 populations as a rare and endangered species distributed in native water bodies and domestication in artificial conditions. Caspian Journal of Environmental Sciences, 18(1), 57-69. https://doi.org/10.22124/cjes.2020.7555

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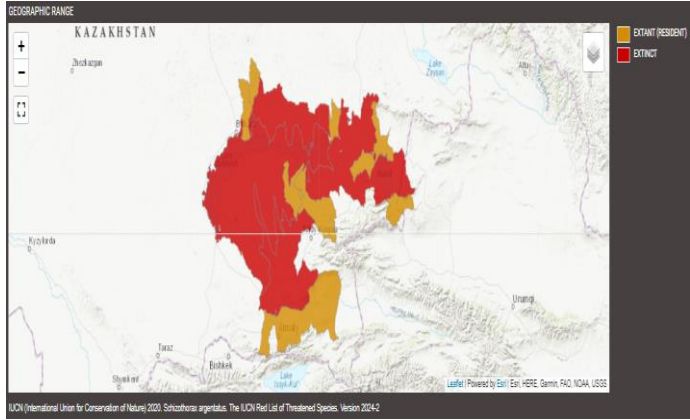|					
					such, the species has been **screened out** as a potential CH candidate
2.	Severtsov's Loach (*Triplophysa sewerzowi*)	VU	Not listed	GEOGRAPHIC RANGE — EXTANT (RESIDENT); EXTANT & INTRODUCED (RESIDENT); POSSIBLY EXTINCT. IUCN (International Union for Conservation of Nature) 2020. Triplophysa sewerzowi. The IUCN Red List of Threatened Species. Version 2024-2.	The species occupies select tributaries of the Ili River and smaller rivers in the basins of Lakes Balkhash and Alakol, with an area of occupancy (AOO) limited to approximately 200 km². It has been documented in eight populations, though one population (Kaskelen River) has been extirpated since 2000[5], and the Ili River population is now critically small and near extirpation. The project intersects the Kaskelen River at one location (43°36'15.31"N, 76°56'11.99"E); however, the species is no longer present within this river system. The distribution and population trends of the species are poorly understood, and without distribution and abundance estimates specific to the EAAA, assessment against quantitative thresholds is not feasible. Given the species' limited and endemic range, the aquatic EAAA cannot be conclusively ruled out as an area potentially supporting some population of this Vulnerable species. The project intersects the Malaya Almatinka River, where records, albeit infrequent, indicate the species' presence[6].
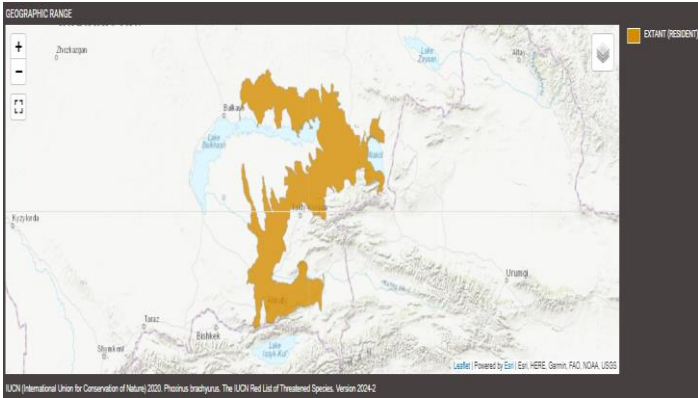
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[5] https://www.iucnredlist.org/species/156721428/156721452
[6] Mamilov, N. Sh., Khabibullin, F. Kh., Ibragimova, N. A., Mamilov, A. Sh., & Kostyuk, T. P. (2014). Urbanization impact on the rivers in the Almaty city. Journal of International Scientific Publications: Ecology and Safety, 8, 194. http://www.scientific-publications.net

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#	Species				
					However, with populations extirpated from nearby rivers and declining trends in the Ili River and considering that strongholds for the species are located in the Lake Balkhash and Lake Alakol basins[7], the potential loss of any EAAA population is unlikely to alter the species' IUCN Red List status to EN or CR and meet the thresholds under criteria 1a or c. Therefore, the species is **not considered** a candidate for Critical Habitat designation
3.	Plain Thicklip Loach (*Triplophysa labiate*)	VU	Not listed		This species is found throughout the rivers of the Balkhash and Alakol Lakes basin and in the tributaries of the Chu River. The species occurs in many more than 10 populations and is believed to be found in about 1,000 km of rivers. The estimated extent of occurrence (EOO) for this species is 202,062 km^2 and the area of occupancy (AOO) is 2,000 km^{28}. Given the species' range, the EAAA cannot be conclusively ruled out as an area potentially supporting some population of this Vulnerable species. The project intersects the Malaya Almatinka River, Kaskaleen River where records, albeit infrequent,

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[7] Mamilov, N., Sharakhmetov, S., Amirbekova, F., Bekkozhayeva, D., Sapargaliyeva, N., Kegenova, G., Tanybayeva, A., & Abilkasimov, K. (2022). Past, current and future of fish diversity in the Alakol Lakes (Central Asia: Kazakhstan). Diversity, 14(1), 11. This article belongs to the Special Issue Aquatic Biodiversity: Evolution, Taxonomy and Conservation. https://doi.org/10.3390/d14010011
[8] https://www.iucnredlist.org/species/156722567/156722639

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					indicate the species' presence[9]. However, the species is rare in these rivers and has declining trends in the region and considering that strongholds for the species are located in the Lake Balkhash and Lake Alakol basins[10], the potential loss of any aquatic EAAA population is unlikely to alter the species' IUCN Red List status to EN or CR and meet the thresholds under criteria 1a or c. Therefore, the species is **not considered** a candidate for Critical Habitat designation
4.	Seven River's Minnow (*Phoxinus brachyurus*)	VU	Not listed		Seven River's Minnow typically inhabits small, isolated lakes and springs with submerged plants, stagnant waters and sandy ground in the basin of the southern tributaries of Lakes Balkhash and Alakkol, especially in in the Ili River drainage. Here, the species is very locally distributed and seems not to inhabit more than 200 km^2 of small lakes and springs. The number of subpopulations is many more than 20. The area of occupancy (AOO) for this species is estimated at 400 km^2 and the extent of occurrence (EOO) is estimated at 206,981 km^2. The preferred habitat of the species is sparsely present in the aquatic EAAA

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[9] Mamilov, N. Sh., Khabibullin, F. Kh., Ibragimova, N. A., Mamilov, A. Sh., & Kostyuk, T. P. (2014). Urbanization impact on the rivers in the Almaty city. Journal of International Scientific Publications: Ecology and Safety, 8, 194. http://www.scientific-publications.net

[10] Mamilov, N., Sharakhmetov, S., Amirbekova, F., Bekkozhayeva, D., Sapargaliyeva, N., Kegenova, G., Tanybayeva, A., & Abilkasimov, K. (2022). Past, current and future of fish diversity in the Alakol Lakes (Central Asia: Kazakhstan). Diversity, 14(1), 11. This article belongs to the Special Issue Aquatic Biodiversity: Evolution, Taxonomy and Conservation. https://doi.org/10.3390/d14010011

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					and the potential loss of any EAAA population is unlikely to alter the species' IUCN Red List status to EN or CR and meet the thresholds under criteria 1a or c. Therefore, the species is **not considered** a candidate for Critical Habitat designation
5.	*Schizothorax argentatus*	VU	Category I	\n\nGEOGRAPHIC RANGE\n\nIUCN (International Union for Conservation of Nature) 2020. Schizothorax argentatus. The IUCN Red List of Threatened Species. Version 2024-2	The species is not distributed in the project aquatic EAAA, hence is **not considered** as a critical habitat candidate.

Amphibian

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| 6. | Asian Frog (*Rana asiatica*) | VU | Category II | | The species is not distributed in the project EAAAs, hence is **not considered** as a critical habitat candidate. |

Insects

| 7. | Waved Pincertail (*Onychogomphus flexuosus*) | VU | Not listed | | The species is not distributed in the project EAAAs, hence is **not considered** as a critical habitat candidate. |

Birds

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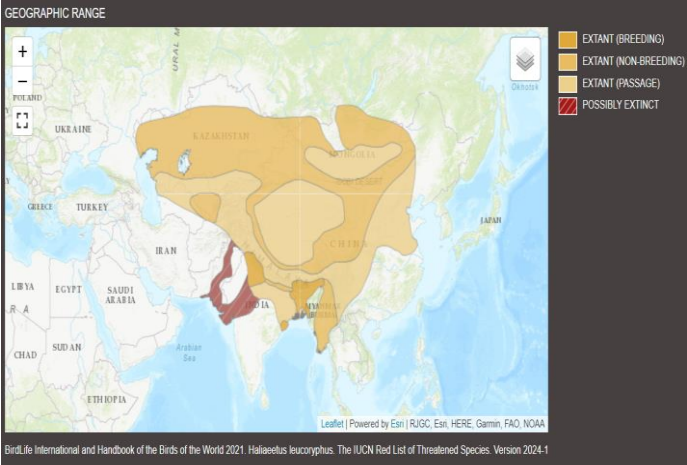
| 8. | White-headed Duck (*Oxyura leucocephala*) | EN | Category I | | The species has a patchy distribution from southwest Europe to Mongolia, with distinct breeding populations: resident populations in Spain and North Africa, a larger migratory population in the eastern Mediterranean and central Asia, and a small population in South Asia. The migratory Eastern population primarily breeds in northern Kazakhstan and southern Russia. Kazakhstan is a key stronghold for the species, with central Kazakhstan hosting about half of the global population during autumn migration[11]. The Sorbulak Lake system, has the White-headed Duck as a trigger species[12] and is regularly reported from the IBA[13]. However, the species has limited suitable habitat along the project alignment, which may occasionally support limited or accidental individuals. As the project is not located in the habitat type within the CH that is associated with migratory waterbirds, it is not expected to have any significant residual impacts on these CH values. Additionally, interactions or impacts from the project on the IBA are unlikely, and as such, the species is **not considered** as a critical habitat candidate. |
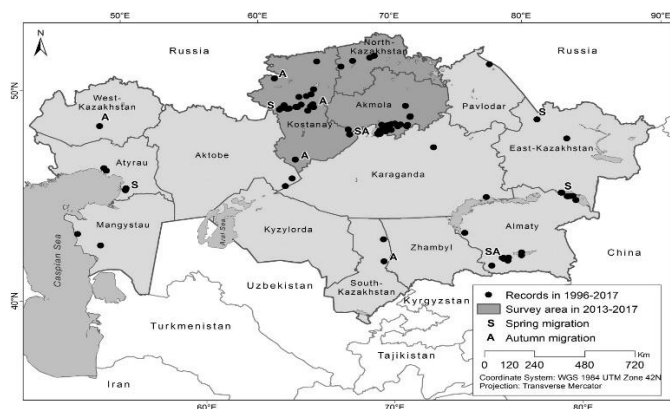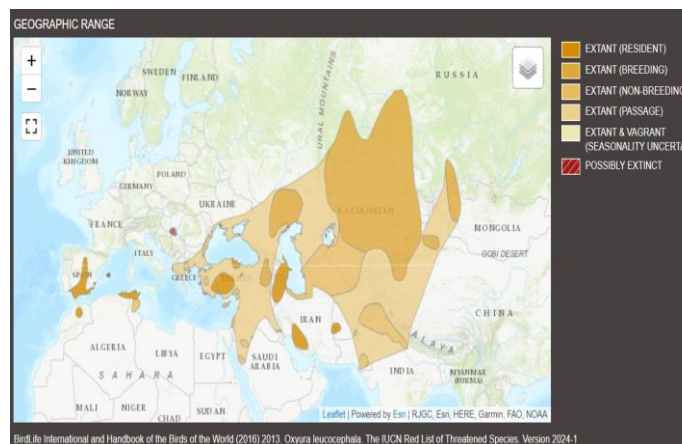
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[12] Sorbulak Lake System (Kazakhstan) - BirdLife IBA factsheet
[13] Bird List - Lake Sorbulak, Almaty oblysy, Kazakhstan - eBird Hotspot

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				Distribution of the White-headed Duck in Kazakhstan during 1996–2017 as compiled from the literature[11]	
9.	Palla's Fish Eagle (*Haliaeetus leucoryphus*)	EN	Category I		The species preferred habitat is wetlands, principally large lakes and rivers. The species breeds in northern India, Bangladesh and Myanmar, with very small numbers in Bhutan, and migrates to Kazakhstan, Russia and Mongolia in its non-breeding season (May to September). The species has a single record[14] from Sorbulak lake in 2015[15] and no further records are available in the public domain from the region in the following decade. The species does not have the preferred habitat in the defined EAAAs and as such, the species is **not considered** a CH candidate species.

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[11] Koshkina, A. I., Koshkin, A. V., Timoshenko, A. Y., Koshkin, A. A., & Schielzeth, H. (2019). A population survey of the endangered White-headed Duck *Oxyura leucocephala* in Kazakhstan shows an apparently increasing eastern population. Bird Conservation International, 29(2), 111-120. https://doi.org/10.1080/00063657.2019.1618239

[14] Andreenkov, O. V. (n.d.). Ecology and conservation of raptors in the Russian Far East. Retrieved from https://docs.sibecocenter.ru/programs/raptors/RC37/RC37_54-65_Andreenkov.pdf

[15] Bird List - Lake Sorbulak, Almaty oblysy, Kazakhstan - eBird Hotspot

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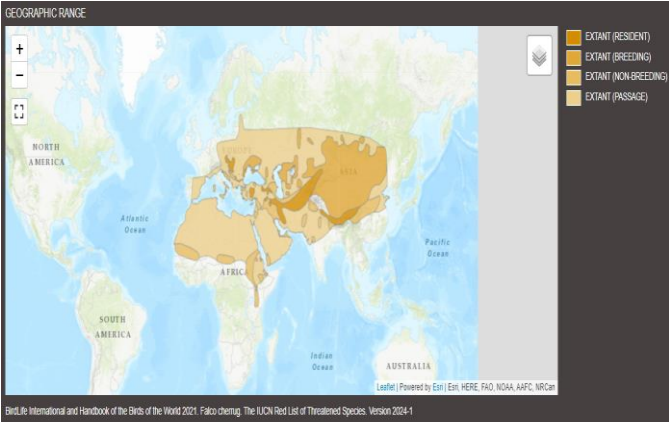
| 10. | Egyptian Vulture (*Neophron percnopterus*) | EN | Category III | | In Kazakhstan, the species is located at the northernmost limit of its range. Its nesting distribution is split into two distinct regions, separated by approximately 1,000 kilometers. These areas differ significantly in habitat, with one occurring in the desert plateaus of the Aral-Caspian region in the west, and the other in the semi-desert mountainous areas of the south and southeast of the country[17]. There is a single record of the species from Sorbulak lake in 2014[18] and no further records are available in the public domain. There is a possibility of sporadic occurrence of the species in the EAAAs, however, the species has a wide distribution and is unlikely that it will cross the Criterion 1 threshold, hence the species is **not considered** a CH candidate species. |
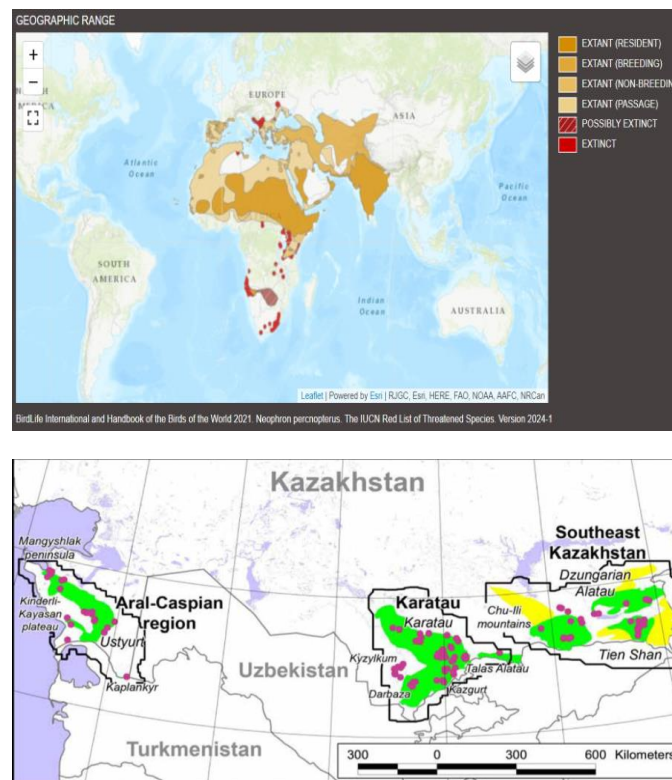
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[17] Karyakin, I. V., Nikolenko, E. G., Knizhov, K. I., Pulikova, G. I., Kaptyonkina, A. G., & Ongarbaev, N. K. (2023). Egyptian Vulture in Kazakhstan. Acta Zoologica Bulgarica, Supplement 17, 19-50. Proceedings of the Egyptian Vulture Conference, 8-9 November 2022. Published online December 4, 2023. https://www.acta-zoologica-bulgarica.eu/2023/Suppl_17_09
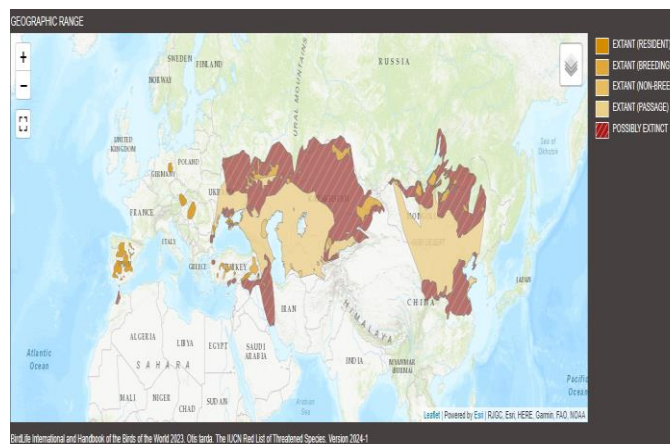
[18] Bird List - Lake Sorbulak, Almaty oblysy, Kazakhstan - eBird Hotspot

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				Distribution of the Egyptian Vulture (*Neophron percnopterus*) in Kazakhstan. Dots indicate summer records[16].	
11.	Saker Falcon (*Falco cherrug*)	EN	Category I	 GEOGRAPHIC RANGE EXTANT (RESIDENT) EXTANT (BREEDING) EXTANT (NON-BREEDING) EXTANT (PASSAGE) BirdLife International and Handbook of the Birds of the World 2021. Falco cherrug. The IUCN Red List of Threatened Species. Version 2024-1	The species has seen sharp population declines (90%)[19] in population throughout Kazakhstan mainly attributable to offtake for falconry (especially trapping of breeding birds) and habitat change resulting in prey loss. Historically, the species nested across Kazakhstan; however, current nesting populations are now limited to specific regions[20]. There are no recent records for breeding or wintering of these species in the EAAAs available and within the 50km radius of the project. Thus, Saker Falcon is **not considered** Critical Habitat candidate.

[16] Karyakin, I. V., Nikolenko, E. G., Knizhov, K. I., Pulikova, G. I., Kaptyonkina, A. G., & Ongarbaev, N. K. (2023). Egyptian Vulture in Kazakhstan. Acta Zoologica Bulgarica, Supplement 17, 19-50. Proceedings of the Egyptian Vulture Conference, 8-9 November 2022. Published online December 4, 2023. https://www.acta-zoologica-bulgarica.eu/2023/Suppl_17_09

[19] Launay, F. J. (n.d.). NDF Workshop Case Studies: Saker Falcon (Falco cherrug). IUCN/SSC Re-introduction Specialist Group, Chair; Environment Agency-Abu Dhabi. Retrieved from https://cites.org/sites/default/files/ndf_material/WG6-CS5.pdf

[20] Previously, it nested throughout Kazakhstan, but at present, nesting groups have been preserved only in Mangyshlak, in the lower reaches of the Irgiz and Turgay, the forest-steppe of northern Kazakhstan, the granite massifs of the Kazakh uplands, in the Balkhash region, and in the mountains of the south and southeast of Kazakhstan. On migration occurs everywhere, winters in the desert and semi-desert zone from the Caspian Sea to Balkhash, in the foothills of the Altai and Tien Shan, in small numbers in the Irtysh basin on the plain.

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12.	Great Bustard (*Otis tarda*)	EN	Category I		The species, originally associated with the Eurasian steppe, has adapted to agricultural landscapes[21]. The species was formerly abundant in the temperate grasslands which occur in the north and east of Kazakhstan, as well as in the foothills of the southern mountain ranges. The species population in Kazakhstan experienced a severe decline in the latter half of the 20th century, largely due to habitat loss from the Former Soviet Union's 'Virgin Lands' campaign. Between 1953 and 1961, 35 million hectares of Kazakh and Siberian grasslands were converted to arable farmland[22]. This habitat loss was further exacerbated by increased hunting pressures, enabled by improved infrastructure following agricultural expansion, and the intensified use of chemical pesticides[23]. The species now occupies a fraction of its former range, with optimistic estimates suggesting a maximum population of 300 individuals[24][25], while some sources

[21] It now occupies open, flat, or gently rolling terrains characterized by short sward height and a mosaic of low-intensity farmland, including cereals, vineyards, fodder crops, fallow fields, pastureland, and steppe grasslands

[22] amp J, MA Koshkin, TM Bragina, TE Katzner, EJ Milner-Gulland, D Schreiber, R Sheldon, A Shmalenko, I Smelansky, J Terraube & R Urazaliev. 2016. Persistent and novel threats to the biodiversity of Kazakhstan's steppes and semi-deserts. Biodiversity and Conservation 25: 2521–2541.

[23] Kessler A & AT Smith. 2014. The Status of the Great Bustard (Otis tarda tarda) in Central Asia: from the Caspian Sea to the Altai. Aquila 121: 115–132

[24] Alonso JC & C Palacín. 2010. The world status and population trends of the Great Bustard (Otis tarda): 2010 update. Chinese Birds 1: 141–147

[25] Wassink, A. 2016. The New Birds of Kazakhstan. Self-published, Texel, Netherlands

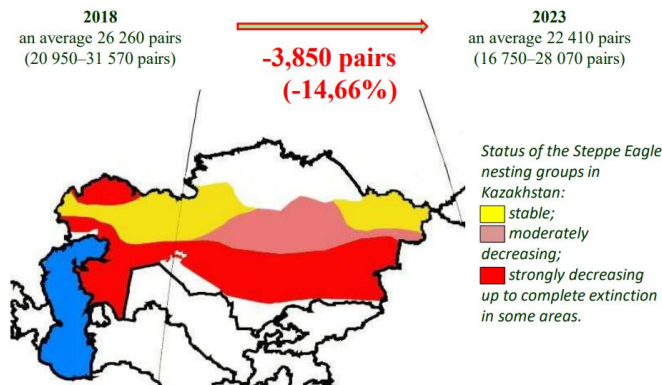|					
					estimate as few as 50 birds[26]. Breeding pairs of the species from south Kazakhstan are from Sheikh Khalifa Houbara Breeding Center which is ~550km from the Project site. There are no recent records of this species in the EAAAs available and within the 50km radius of the project. Thus, Great Bustard is therefore **not considered** Critical Habitat candidate.
13.	Steppe Eagle (*Aquila nipalensis*)	EN	Category V		The species population stronghold is in Kazakhstan, which is home to approximately 68.5-82.2% of its global population, with an estimated 20,950–31,570 breeding pairs as of 2018. However, a declining trend is evident across the three main populations in Kazakhstan: western, central, and eastern. *Western Population*: This population forms the species' core, with estimates dropping from 20,658 pairs in 2006 to 17,200 in recent years.Nest occupancy has steadily decreased in important regions like Aktobe (~1700km from the project footprint), where only 31% of nests were active in 2023. *Central Population*: The Karaganda region (~750km), an important area for the species, has seen a 27% decrease from 2007 to 2017. Annual losses of 200-500 individuals are recorded, indicating rapid decline.

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[26] BirdLife International. 2017a. *Otis tarda*. The IUCN Red List of Threatened Species 2017: 22691900A119044104. www.iucnredlist.org/details/22691900/0.
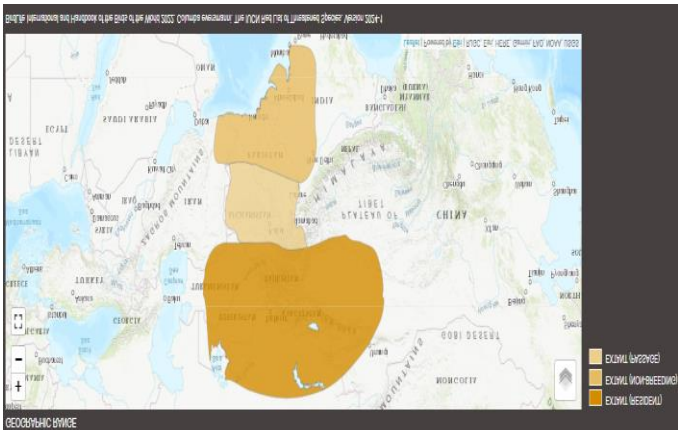
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The dynamics of the range of the steppe eagle over the past 50 years
- Disappeared on nesting
- The number decreased by 90% in 25 years
- The number decreased by 40% in 25 years
- The number has decreased by at least 20% in 25 years
- Number is stable
- Unknown trends
- No data on current distribution and abundance

Source: Karyakin I.V. Review of the Modern Population Status of the Steppe Eagle in the World and in Russia. (2013)

Population estimates in 2023

2018
an average 26 260 pairs
(20 950–31 570 pairs)

-3,850 pairs
(-14,66%)

2023
an average 22 410 pairs
(16 750–28 070 pairs)

Status of the Steppe Eagle nesting groups in Kazakhstan:
- *stable*;
- *moderately decreasing*;
- *strongly decreasing up to complete extinction in some areas.*
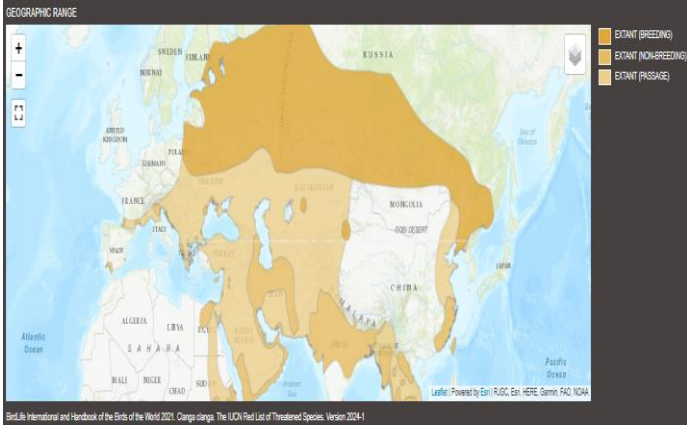
Eastern Population: This group has the lowest productivity, with numbers down to around 1,110–2,368 pairs in 2020. The productivity trend remains low, especially in peripheral habitats. The Altai region (~800km) and the mountains surrounding the region are the main strongholds.

In the southern and south-east Kazakhstan (where the project lies) there is a protracted depression in the rodent and small mammal populations due to which the populations have declined 90%. Between 6 to 10 individuals were observed every day in the project EAAAs every day. The global population estimate for the species is 50,000-75,000 individuals. The 0.5 % threshold population estimate ranges between 250 – 375 individuals. Based on primary surveys, stakeholder consultations, a wide distribution range and the presence of the project in a landscape with 90% of population decline it is unlikely that the species will trigger the quantitative thresholds defined in IFC PS 6 for critical habitat under Criteria 1a. Additionally, no literature is available to indicate congregatory colonies in the EAAAs. Primary survey and stakeholder consultation did not confirm any colony in the Project EAAA which are known at a regional/ national level. Hence the species is not considered under Criteria 3 as well.

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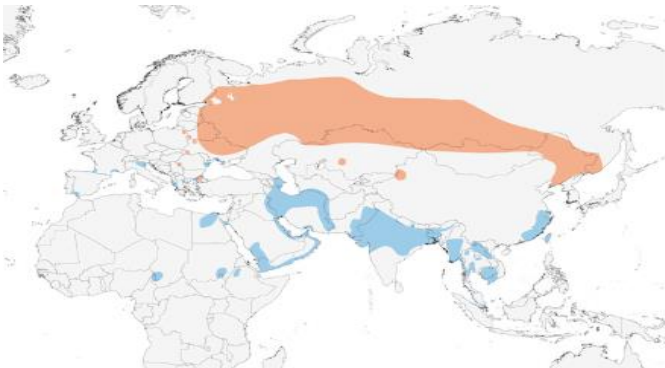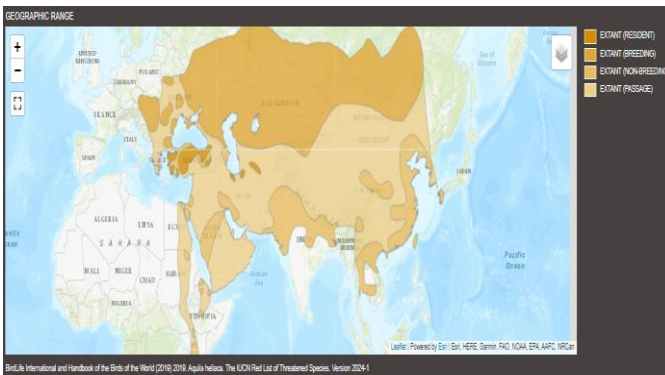
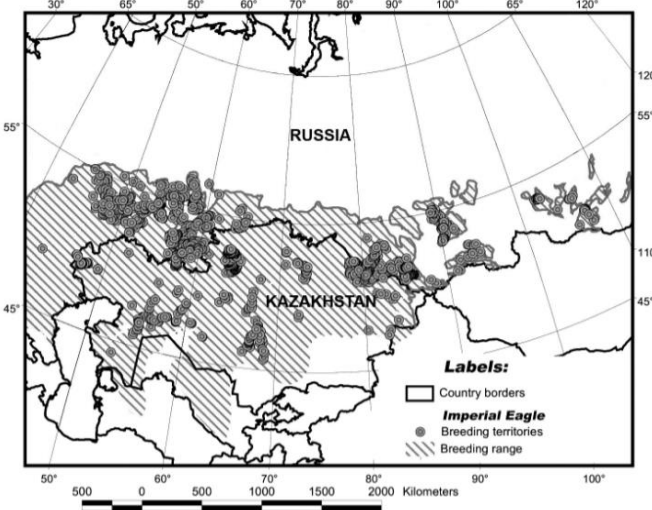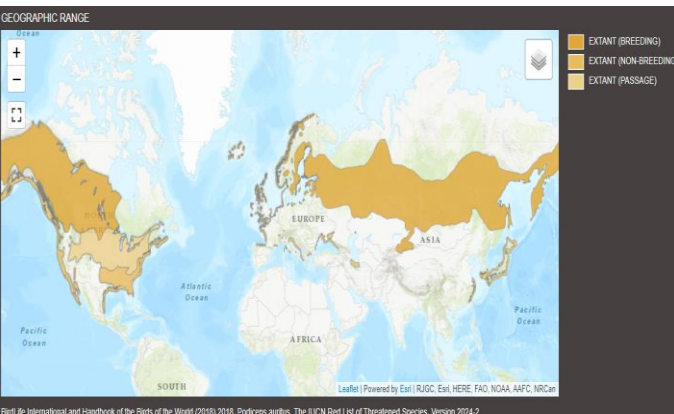|					
				Source: Pulikova, G. I., Kaptenkina, A. G., Smelyansky, I. E., Zinevich, L. S., Nikolenko, E. G., & Karyakin, I. V. (2023). The current status of the Steppe Eagle in Kazakhstan. Raptor Eagles and Their Protection, presented at the III International Scientific and Practical Conference "Eagles of the Palearctic: Study and Conservation	Thus, Steppe Eagle is **not considered** as a Critical Habitat candidate.
14.	Common Pochard (*Aythya ferina*)	VU	Not Listed		This species requires well-vegetated eutrophic to neutral swamps, marshes, lakes and slow-flowing rivers with areas of open water and abundant emergent fringing vegetation. The aquatic, migratory and congregatory EAAA only has one location covering a small area with such habitat (43°37'18.95"N, 77° 4'46.61"E). The species was not observed in the EAAA during primary surveys and there are no population, and abundance estimates of this species from the EAAA.Considering the widespread distribution of the species, the defined EAAA is not likely to hold more than 1% of the global population to trigger the quantitative thresholds defined Criteria 3a. Also, the range of the EAAA is less than 1% of the global range of the species. Additionally, the natural wetland habitat along the alignment present in the EAAA is not conducive to support globally important concentrations of this 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 under 1a or c.

					Thus, Common Pochard is **not considered** a Critical Habitat Candidate Species.
15.	Yellow-eyed Pigeon (*Columba eversmanni*)	VU	Category III		The Yellow-eyed Pigeon breeds and migrates through Southern and Southeastern Kazakhstan, ranging north to the lower reaches of the Syr Darya and Ili valleys, the Southern Balkhash region, and the Zaisan basins[27]. The species breeds in holes in trees, buildings, cliffs, earth banks, and potentially on power lines in steppe, semi-arid and desert areas, including around human settlement. The causes of the sharp population decline of the species are unknown, partially due to fragmentary migration data and a lack of information on their migration routes[27]. The species was not observed in the EAAAs during primary surveys and there are no records or population, and abundance estimates of this species from the EAAAs. In the absence of the abundance estimates of this species from the EAAAs, it is not possible to ascertain whether the species qualifies under any of the quantitative thresholds. Considering the widespread distribution of the species, the EAAAs cannot be considered as an area that support globally important

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[27] Oparina, O. S., Koshkin, M. A., & Oparin, M. L. (2023). Autumn migration of the rare, Yellow-eyed Pigeon (Columba eversmanni). Ardea, 112(1), Article a12. https://doi.org/10.5253/arde.2023.a12

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					concentrations of this 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 under 1a or c. The species is **not considered** a Critical Habitat Candidate Species.
16.	Greater Spotted Eagle (*Clanga clanga*)	VU	Not Listed		The species predominantly hunts and breeds in wetland habitats. The EAAA only has one location covering a small area with such habitat (43°37'18.95"N, 77° 4'46.61"E). The species has a single recent record from Sorbulak lake IBA[28] (~5km north of the project footprint) in the public domain. The species was not observed in the EAAAs during primary surveys and there are no population, and abundance estimates of this species from the EAAAs. In the absence of the abundance estimates of this species from the EAAAs, it is not possible to ascertain whether the species qualifies under any of the quantitative thresholds. Considering the widespread distribution of the species and the sparse preferred habitat of the species in the EAAAs, it cannot be considered as an area that supports globally important concentrations of this VU species, the loss of which would result in the change of the IUCN Red List status to EN or CR and meet the

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[28] Bird List - Lake Sorbulak--General Area; (IBA KZ097), Almaty oblysy, Kazakhstan - eBird Hotspot

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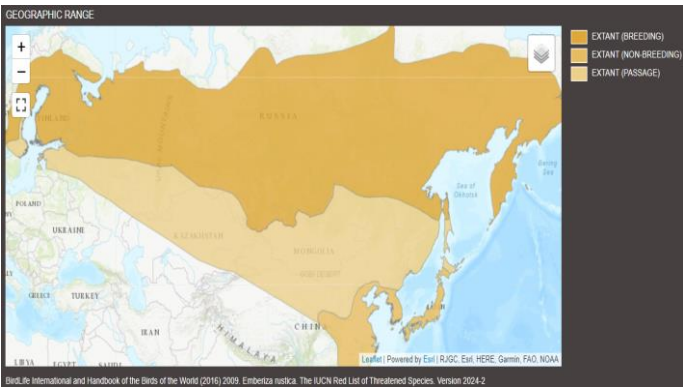| No.	Species				
				\n\nSource: Greater Spotted Eagle - Clanga clanga - Birds of the World	thresholds under 1a or c. Thus, Greater Spotted Eagle is **not considered** a Critical Habitat Candidate Species
17.	Eastern Imperial Eagle (*Aquila heliacal*)	VU	Category III		The Eastern Imperial Eagle's breeding range is substantial, with Russia and Kazakhstan hosting over half of the global population. Surveys estimate 3,000–3,800 pairs in Russia and 3,200–4,000 pairs in Kazakhstan, showing growth in western Kazakhstan from a single pair in 2006 to 34 pairs by 2015, all comprising young birds. While estimates suggest the global population could surpass 10,000 mature individuals, it is conservatively considered within 2,500–9,999 mature individuals, approximating a total of 3,500–15,000 individuals.\n\nIn Kazakhstan, the eagle's habitats are more varied than in Russia, spanning pine forests in steppe-forest, steppe, and semi-desert areas; deciduous forests on low mountains and riverside woodlands; and saxaul and oleaster forests near plateaus and river cliffs.

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#	Species				Comment
				 Source[29]	Tree scarcity influences the eagle's distribution across Kazakhstan's steppes and deserts, with primary habitats concentrated near the northern boundaries. Notably, such habitats are absent in the EAAAs. Considering the widespread distribution of the species, presence of strongholds outside the EAAAs and the sparse tree cover in the EAAAs, it cannot be considered as an area that supports globally important concentrations of this 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 under 1a or c. Thus, Greater Spotted Eagle is **not considered** a Critical Habitat Candidate Species
18.	Horned Grebe (*Podiceps auritus*)	VU	Not Listed		The species preferred habitats include small pools, marshes with patches of open water and secluded sections of larger lakes and rivers. The aquatic, migratory and congregatory EAAA only has one location covering a small area with such habitat (43°37'18.95"N, 77°4'46.61"E).

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[29] Karyakin, I. V., & Pazhenkov, A. S. (2016). Eastern Imperial Eagle in Russia and Kazakhstan: Population status and trends. ResearchGate. https://www.researchgate.net/publication/298558443_Eastern_Imperial_Eagle_in_Russia_and_Kazakhstan_Population_Status_and_Trends

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The species has a single recent record from Sorbulak lake IBA[30] (~5km north of the project footprint) in the public domain

The species was not observed in the EAAA during primary surveys and there are no population, and abundance estimates of this species from the EAAA. Considering the widespread distribution of the species, the defined EAAA is not likely to hold more than 1% of the global population to trigger the quantitative thresholds defined Criteria 3a.

Additionally, the natural wetland habitat present along the alignment in the EAAA is not conducive to support globally important concentrations of this 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 under 1a or c.

Thus, Horned Grebe is **not considered** a Critical Habitat Candidate Species.

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[30] Bird List - Lake Sorbulak--General Area; (IBA KZ097), Almaty oblysy, Kazakhstan - eBird Hotspot

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| 19. | Rustic Bunting (*Emberiza rustica*) | VU | Not Listed | | The Rustic Bunting has a broad distribution across Eurasia, from Fennoscandia to the Kamchatka Peninsula, spanning about 170 degrees of longitude. Its estimated 218-million-hectare breeding range is predominantly in boreal forests, favoring wet coniferous areas with birch and willow along slow-flowing waters[31]. The species winters in East Asia, including Japan, the Korean Peninsula, and parts of mainland China north of the Tropic of Cancer. Migration generally follows an eastward forested path, turning south in Asia beyond Mongolia, with only a few individuals passing through Kazakhstan[32] and high migratory concentrations in the Russian Far East[33]. The preferred habitat of the species is not present in the EAAAs. The species was not observed in the EAAAs during primary surveys and there are no population, and abundance estimates of this species from the EAAAs. Given that Kazakhstan does not represent a significant range for the species and suitable habitat is lacking within the EAAAs, the Rustic Bunting is **not** |

BirdLife International and Handbook of the Birds of the World (2016) 2009. Emberiza rustica. The IUCN Red List of Threatened Species. Version 2024-2

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[31] Kretchmar, E. A. (2000) The Rustic Bunting Emberiza rustica on the mid-Anadyr River. Russ. J. Ornithol. 123: 14 – 24
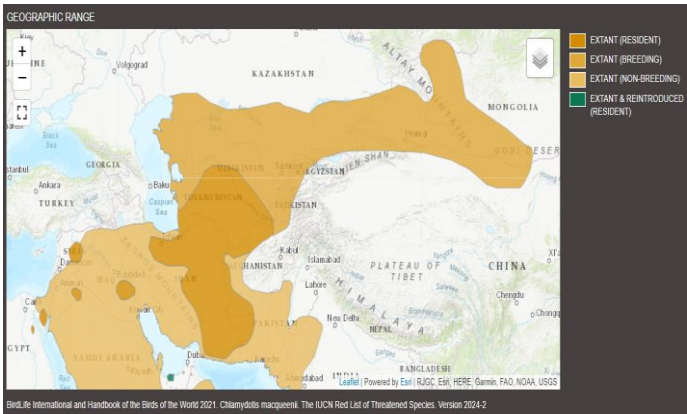
[32] Berezovikov, N. N. and Levinskiy, J. P. (2008) New information about the migration of Rustic Bunting Emberiza rustica from East and Southeast Kazakhstan. Russ. Ornithol. J. 416: 694 – 696 . (In Russian)

[33] Averin, A. A., Kalinin, A. J, Malikova, E. I., Osipov, P. E., Rybzova, T. A. and Strelzov, A. N. (2012) Fauna of Bastak Nature Reserve. Blagoveshchensk, Russia: BSPU Press. (In Russian)

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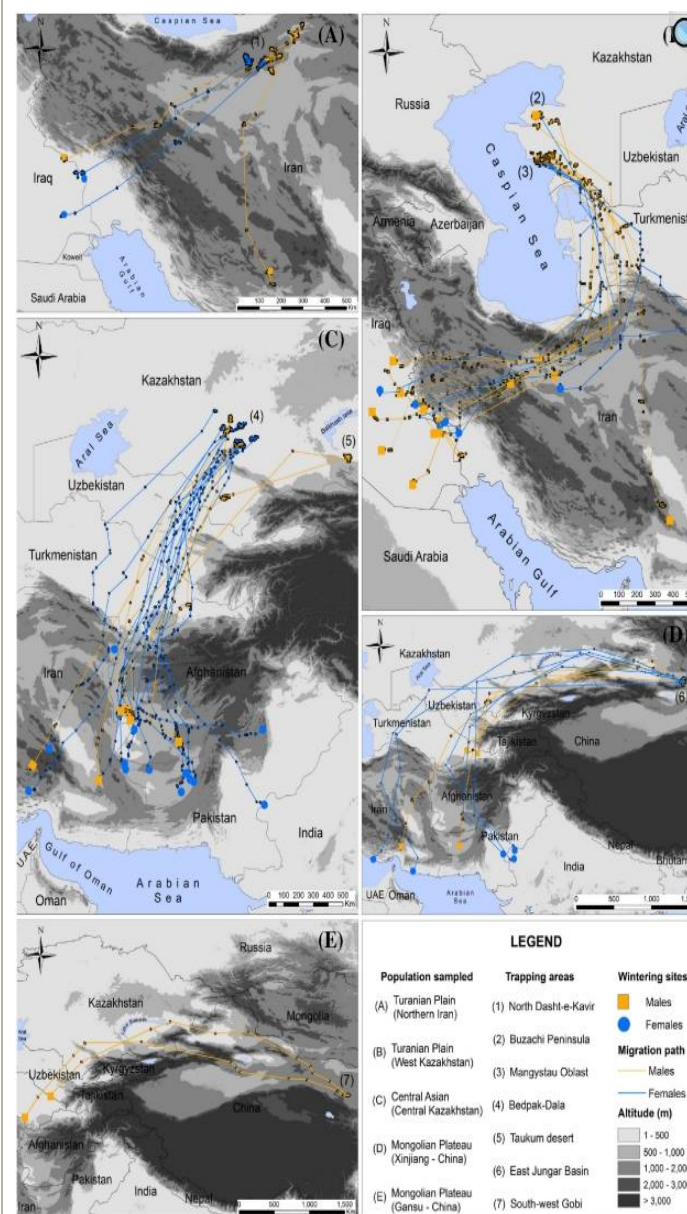|					
					considered a candidate species for Critical Habitat designation.
20.	European Turtle-dove (*Streptopelia turtur*)	VU	Not Listed		In Kazakhstan, the species is known to nest in desert habitats where trees or shrubs and nearby water sources are available. Suitable wintering habitats are defined by an ample food supply, accessible drinking water, and the presence of large trees or woodland patches. In the absence of one of these three key resources, the species typically utilizes the habitat only temporarily[34]. Observational data from Central Asia (Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan) indicate a moderate to strong decline in the species' population over the past two to four decades. Regional declines are particularly notable in eastern and southeastern Kazakhstan, where, for example, the species has become rare or even absent in the Manrak Mountains, a region where it was once common[35]. 10 individuals of the species were observed near the Sorbulak lake (~5km north of the species) during the primary surveys. However, the species was not observed in the EAAAs. Considering the widespread distribution of the species, presence of

[34] Convention on Migratory Species.2018. Single species action plan for the conservation of the European Turtle Dove (Streptopelia turtur) 2018-2028. UNEP/CMS Secretariat. Retrieved from https://www.cms.int/sites/default/files/document/cms_stc48_doc.18_annex2_rev.1_ssap-conservation-european-turtle-dove_e.pdf
[35] Wassink A and Oreel GJ (2008) Birds of Kazakhstan: new and interesting data. Dutch Birding 30(2): 93-100

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					strongholds outside the EAAAs and the sparse tree cover in the EAAAs, it cannot be considered as an area that supports globally important concentrations of this 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 under 1a or c. Thus, European Turtle-dove is **not considered** a Critical Habitat Candidate Species.
21.	Asian Houbara (*Chlamydotis macqueenii*)	VU	Not Listed		Since 1998, biannual surveys have been conducted in southern Kazakhstan, which supports over 50% of the global population of the species. This species inhabits open, arid, and sparsely vegetated steppe and semi-desert areas, favoring regions with scattered shrubby vegetation typically composed of xerophytic or halophytic plants. The EAAA contains suitable habitat for the species. Migration routes include the Balkash region (~250 km from the project footprint), where populations have remained stable[36]. Secondary literature[37] indicates that the species may utilize the broader landscape surrounding the project area during migration, and use of the EAAAs as a stopover cannot be ruled out. However, population and

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[36] Combreau, O., Riou, S., Judas, J., Lawrence, M., & Launay, F. (2005). A 10-year assessment of Asian Houbara Bustard populations: Trends in Kazakhstan reveal important regional differences. Oryx, 39(1), 34-41. https://doi.org/10.1017/S0030605305000063
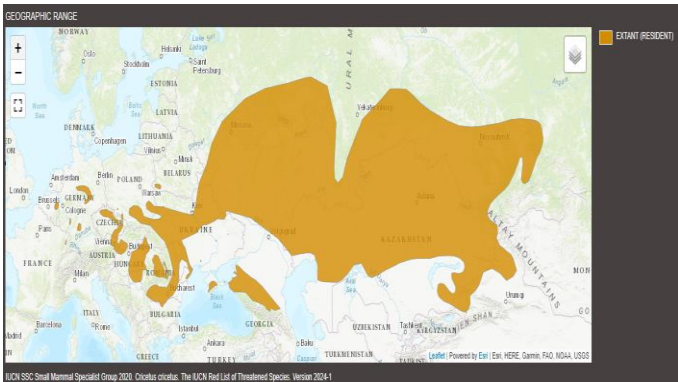
[37] Kemp, R., & Currie, J. (2011). Specialist services for women with recurrent miscarriage. Obstetrics, Gynaecology & Reproductive Medicine, 21(5), 127–131. https://doi.org/10.1016/j.ogrm.2011.02.002

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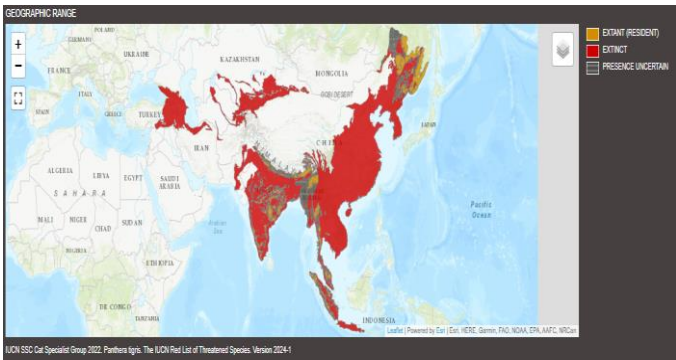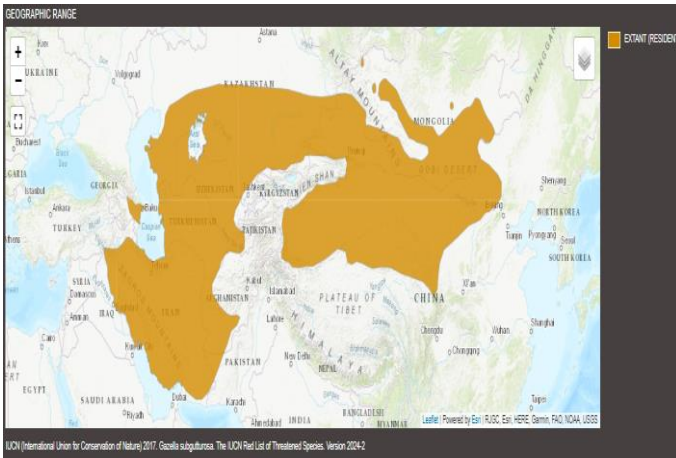0753033 Almaty Railroad
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abundance data specific to the EAAAs are lacking, making it impossible to assess the species against quantitative thresholds. Given its widespread distribution and no literature confirming the EAAAs as the larger habitat is not likely to support globally significant concentrations of this Vulnerable species, the loss of which would result in the change of the IUCN Red List status to EN or CR and meet the thresholds under 1a or c. Thus, Asian houbara is **not considered** a Critical Habitat Candidate Species.

				Migration routes of Asian houbara bustards captured during the breeding season and followed by satellite tracking[37].	

Mammals

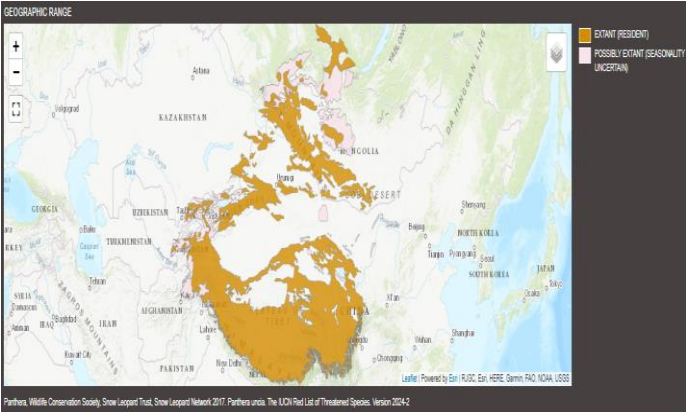| 22. | Common Hamster (*Cricetus cricetus*) | CR | Not Listed | GEOGRAPHIC RANGE — EXTANT (RESIDENT) — IUCN SSC Small Mammal Specialist Group 2020. Cricetus cricetus. The IUCN Red List of Threatened Species. Version 2024-1 | Originally adapted to fertile steppe and grassland, this species has successfully expanded into various anthropogenic habitats, including meadows, croplands (particularly cereal fields), field edges, road verges, and scrubby fallow areas on agricultural land. No population or abundance estimates for the species are available in the public domain from the region, and secondary literature on the species is limited for Kazakhstan. Primary consultations did not indicate the species' presence in the area. This lack of data prevents assessment against quantitative thresholds. Considering its wide distribution and presence in only seven fragmented areas in the eastern range, where it is common or abundant—two in Ukraine, one in the Caucasus, two in the Volga and Ural regions, and two in Siberia (all within Russia)[38]—it is unlikely that Criterion 1 thresholds will be met in the EAAAs. Therefore, this species is **not considered** a candidate for Critical Habitat designation. |

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[38] Cricetus cricetus (Common Hamster)

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| 23. | Tiger (*Panthera tigris*) | EN | Not Listed | | The species was declared extinct in Kazakhstan over 70 years ago[39]. In September 2024, two Amur Tigers have been translocated from Anna Paulowna Sanctuary, Netherlands, to the Ile-Balkhash Nature Reserve[40] (~330km from the Project footprint) in Kazakhstan.
The species has not been reported from the project EAAAs, hence is **not considered** as a critical habitat candidate. |
| 24. | Goitered Gazelle (*Gazella subgutturosa*) | VU | Category III | | This gazelle inhabits a wide range of semi-desert and desert habitats. It ascends into foothills and penetrates mountain valleys in Central Asia. It was confirmed during primary survey consultations with stakeholders that the species is not present in the EAAAx and the larger habitat. The species is generally found in the mountain habitat surrounding Almaty and are mostly restricted between the Altyn-Emel (~140km from Project footprint) and Ile-Balhash[41] (~330km) National Parks.
Therefore, this species is **not considered** a candidate for Critical Habitat designation. |

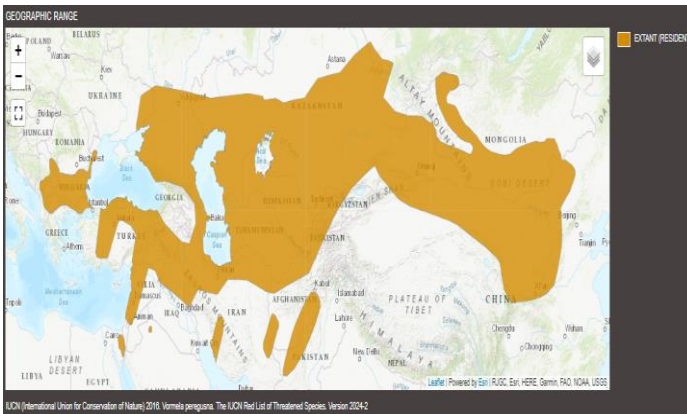[39] Panthera tigris (Tiger)
[40] World Wildlife Fund. 23 September 2024. Tigers return to Kazakhstan in historic reintroduction effort. https://tigers.panda.org/?15021391/Tigers-Return-to-Kazakhstan-in-Historic-Reintroduction-Effort
[41] Convention on Migratory Species. (2021, March 24). Protecting the Snow Leopard and Goitered Gazelle: Iconic species of Central Asia. UNEP/CMS Secretariat. Retrieved from https://www.cms.int/cami/en/news/protecting-snow-leopard-and-goitered-gazelle-iconic-species-central-asia

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| 25. | Snow Leopard (*Panthera uncia*) | VU | Not Listed | | The range of the Snow Leopard extends from the Himalaya in the south, across the Qinghai-Tibet Plateau and the mountains of Central Asia to the mountains of southern Siberia in the north. It occurs in the Altai, Sayan, Tien Shan, Kunlun, Pamir, Hindu Kush, Karakoram, and outer Himalayan ranges and in smaller isolated mountains in the Gobi region. The species preferred habitat is not present in the EAAAs. The species is generally found in the mountain habitat surrounding Almaty and are mostly restricted between the Altyn-Emel (~140km from Project footprint) and Ile-Balhash[42] (~330km) National Parks. Therefore, this species is **not considered** a candidate for Critical Habitat designation. |

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[42] Convention on Migratory Species. (2021, March 24). Protecting the Snow Leopard and Goitered Gazelle: Iconic species of Central Asia. UNEP/CMS Secretariat. Retrieved from https://www.cms.int/cami/en/news/protecting-snow-leopard-and-goitered-gazelle-iconic-species-central-asia

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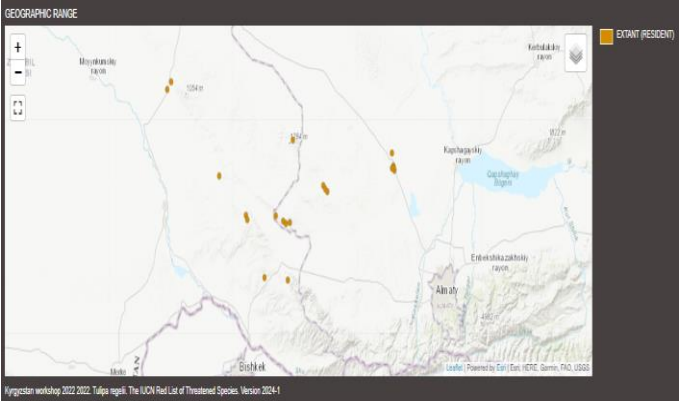| 26.	Marbled Polecat (*Vormela peregusna*)	VU	Category III		In Kazakhstan, there are 2 subspecies. One lives in the western part and the other inhabits the sands of the Aryskum and Muyunkum Deserts, the southern Lake Balkhash area, the Lake Alakol Basin and the foothills of the Zaili and Dzhungar Alatau mountains[43]. Given its widespread distribution and no literature confirming the EAAAs or the larger landscape as a stronghold. The EAAAs is not likely to support globally significant concentrations of this Vulnerable species, the loss of which would result in the change of the IUCN Red List status to EN or CR and meet the thresholds under 1a or c. Thus, Asian houbara is **not considered** a Critical Habitat Candidate Species.

Critical Habitat Criterion 2: Endemic or Restricted Range Species

Endemic or restricted range species are species that occur within a limited distribution and/or with specific habitat requirements. These species are at a heightened risk of extinction due to their habitat and range requirements and have an elevated level of consideration under Criterion 2 within IFC PS6. For terrestrial vertebrates and plants, a restricted-range species is defined as those species that have an Estimated Extent of Occurrence (EOO) less than 50,000 km^2. IBAT identified 3 restricted range species from the EAAA.
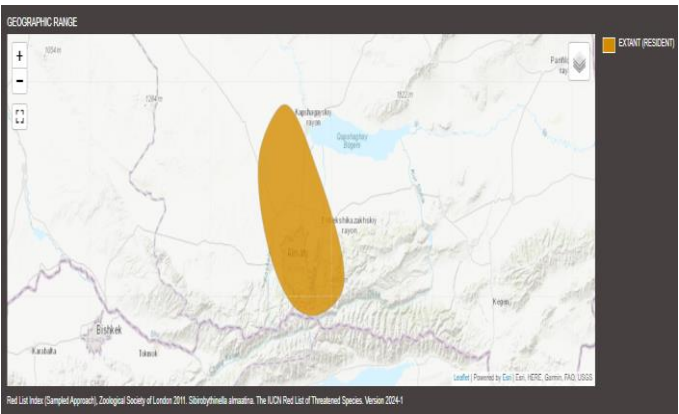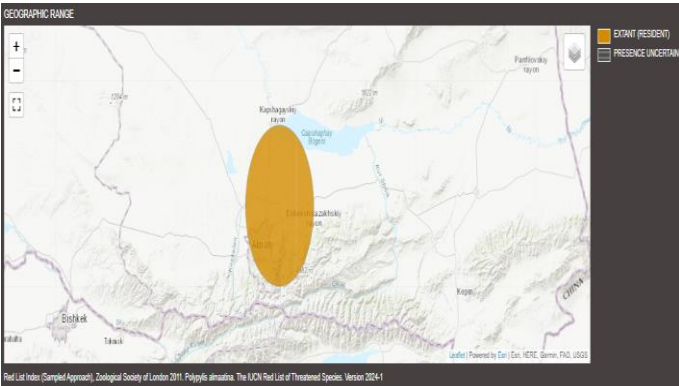
Based on the assessment, no species has been identified as a likely trigger for critical habitat within the EAAA under Criterion 2.

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[43] The Red List of Kazakhstan::: Marbled polecat (Vormela peregusna)

TABLE 4-2 QUALITATIVE ASSESSMENT OF RANGE RESTRICTED/ENDEMIC SPECIES

S.N.	Common and Scientific Name	IUCN Status (v2024-1)	Listed in the Red Data Book Kazakhstan	Distribution	CH Rationale
Range Restricted Tulip Species					
27.	*Tulipa regelii*	EN	Not Listed	 Kyrgyzstan workshop 2022 2022. Tulipa regelii. The IUCN Red List of Threatened Species. Version 2024-1	Its area of occupancy (AOO) is lower than 500 km², whilst its extent of occurrence (EOO) is lower than 20,000 km². This species is endemic to Kazakhstan, specifically the Zhambyl and Almaty provinces. It grows in the Tien Shan mountains northwest of Almaty, exclusively in Chu-Ili mountains (the eastern part of Almaty oblast and the western part of Zhambyl oblast)[44]. The preferred habitat of the species is rocky and detritus slopes and talus in the mid-upper zones of mountains (800 to 1100m above sea level). The project Tulip EAAA lies outside the EOO of the species and does not have the preferred habitat of the species. Thus, *Tulipa regelii* is **not considered** as a Critical Habitat candidate
Range Restricted Mollusks Species					

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[44] Tulipa regelii

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| 28. | *Sibirobythinella almaatina* | DD | Not Listed | | This species is known from around Almaty, Zailijskij Alatau, spring Belbulak and vicinities of Talgar in Kazakhstan. The species was recorded from a freshwater spring.
The preferred type locality of the species is not present in the EAAAs and therefore it is **not considered** as a critical habitat candidate. |
| 29. | *Polypylis almaatina* | DD | Not Listed | | This species occurs in Kazakhstan and Tajikistan. The type locality is a spring east of Almaty. There is no further habitat information available for this species. The preferred type locality of the species is not present in the EAAAs and therefore it is **not considered** as a critical habitat candidate. |

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Critical Habitat Criterion 3: Migratory and/or Congregatory Species

Migratory species spend a portion of their time in different locations throughout the world, depending on wintering and breeding habitat requirements. Whereas congregatory species are defined as species that meet globally significant numbers at a particular place at a certain time of year for feeding, breeding or resting. These species are at a heightened risk of extinction due to habitat and population requirements.

The review of secondary sources including IBAT was carried out to confirm the presence of migratory and/or congregatory species within the AoI and the EAAA. Consultations with government officials, subject matter experts, primary survey and secondary literature review confirmed the presence of some of the species provided by ebird and IBAT in the EAAA, namely, Mallard (*Anas platyrhynchos*, LC), Eurassian Coot (*Fulica atra*, LC), Great Crested Grebe (*Podiceps cristatus*, LC), Black-necked Grebe (*Podiceps nigricollis*, LC), Great Cormorant (*Phalacrocorax carbo*, LC), Grey Heron (*Ardea cinerea*, LC), Great White Egret (*Ardea alba*, LC) etc.

While the Sorbulak lake system at the northern section of the EAAA support ≥1% of the global populations of the species for which the Sorbulak Lake Systems KBA/IBA is designated for. The EAAA contains limited suitable habitat along the project alignment, which may occasionally support limited or accidental individuals not in sufficient numbers to cross the quantitative threshold of Criterion 3. As the project is not located in the habitat type within the CH that is associated with migratory waterbirds, it is not expected to have any significant residual impacts on these CH values. Although the project (including the OHTL) is not in CH for these species, given they may be passing through the airspace of the OHTL, the project will implement related mitigation measures.

Critical Habitat Criterion 4: Highly Threatened or Unique Ecosystems

Criterion 4 looks at habitats which are at risk of significantly decreasing in area or quality, with a small spatial extent and/or containing unique assemblages of species including assemblages or concentrations of biome-restricted species. The assessment of Criterion 4 was based on habitat types described in **section 3.**

The project's AoI primarily consists of modified agricultural land, pastureland, and patches of natural semi-desert habitat—forming part of a contiguous and widespread landscape—these habitats are unlikely to represent more than 5% of the global extent of semi-desert habitat. Therefore, threshold 4a would not be exceeded. While these areas have not been formally assessed by the IUCN, they are not considered to be of high priority for conservation, therefore are not likely critical habitat.

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Critical Habitat Criterion 5: Key Evolutionary Processes

IFC PS6 describes this Criterion trigger to be one of the following:

- Physical features of a landscape that might be associated with particular evolutionary processes (for example isolated areas, areas of high endemism, spatial heterogeneity, environmental gradients, edaphic interfaces, biological corridors or sites of demonstrated importance to climate change adaptation); and/or

- Subpopulations of species that are phylogenetically or morphogenetically distinct and may be of special conservation concern given their distinct evolutionary history. The latter includes evolutionarily significant units and evolutionarily distinct and globally endangered species

There are no physical features within the EAAA that are known to be associated with evolutionary processes. The natural semi-desert habitat part of the EAAA constitute a small portion of the contiguous and widespread habitat and has been impacted by anthropogenic activities like vehicular movement and livestock grazing. Furthermore, the species assessments did not identify any species subpopulations known to be phylogenetically or morphogenetically distinct to be relying on the habitat of the EAAA. The EAAA cannot be categorized to have any of the above-mentioned features. So based on the assessment, no physical features or species have been identified as likely triggering critical habitat within the EAAA under Criterion 5.

The assessment concludes that there are no critical habitat values in the defined EAAAs. The biodiversity values that have been subject to the critical habitat assessment are priority BD values to which PS6 Natural Habitat requirements will apply. Based on our screening and assessment, priority biodiversity values are the Common Hamster (IUCN Red List – Critically Endangered), Severtsov's Loach, Plain Thicklip Loach, Seven River's Minnow, Central Asian Tortoise, Asian Houbara, European turtle dove (all IUCN Red List – Vulnerable), and the endemic tulip species, Tulipa buhseana (IUCN Red List-Not Evaluated), migratory waterbirds like the White headed duck, Common Pochard and raptors like Palla's fish eagle, Steppe eagle, as well as the semi desert and riparian habitats.

5. NOTE ON CENTRAL ASIAN TORTOISE

The range of *Agrionemys horsfieldii* [VU (IUCN v2024-2)] (Central Asian tortoise) spans the northern deserts of Kazakhstan, primarily across plains where it is distributed unevenly. The species has dispersed from the Turan Lowland, bypassing the Tien Shan mountains, forming two primary range extensions. Within its range, *A. horsfieldii* shows distinct habitat preferences, avoiding dense loamy and rocky soils and instead favoring sandy landscapes with richer vegetation, which supports

its dietary and ecological needs. In these sandy regions, although present, its population density remains low at around 5 individuals per hectare[45].

Higher tortoise densities have been documented on loess piedmont plains and adyr foothills, which provide suitable ephemeral and ephemeral-wormwood vegetation communities. These areas support maximum densities, with a notable example recorded in the Arys massif of South Kazakhstan, where densities reached up to 29.3 individuals per hectare over the past two decades[45]. However, overall numbers and distribution have declined, with significant reductions attributed to heavy collection for zoological trade in the 1970s and 80s, during which over 1.86 million tortoises were captured between 1967 and 2001.

Despite the historical decline, absence of quantitative data for population estimates, range extent, and abundance within the EAAA complicates any definitive assessment under Critical Habitat criteria. Given its wide distribution, the presence of sandy landscapes in the EAAA with typically low population densities, the potential loss of any population within the EAAA is unlikely to alter the species' IUCN Red List status to EN or CR and meet the thresholds under criteria 1a or c. Therefore, the species is **not considered** a candidate for Critical Habitat.

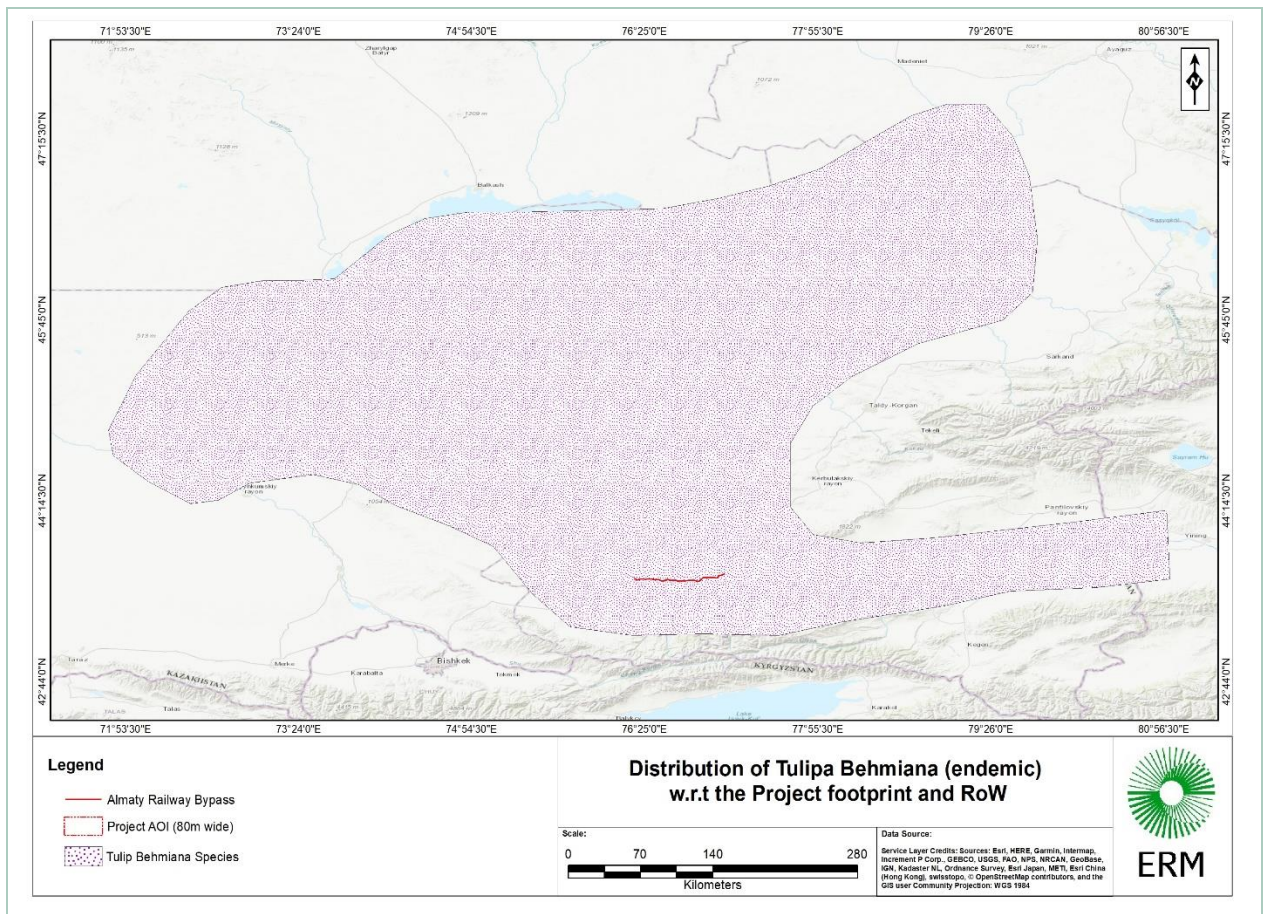# 6.   NOTE ON TULIP SPECIES, DISTRIBUTION AND ANY IMPACTS

Species distributed in this region include *Ixiolirion tataricum*, *Rhinopetelum karelinii*, *Tulipa buhseana,* and the endemic *Tulipa behmiana*. These species are wide-ranging across Kazakhstan and are typically found in desert, semi-desert, and steppe habitats with sandy and clay patches.

Given the wide distribution of *Ixiolirion tataricum*, *Rhinopetelum karelinii*, *Tulipa buhseana* across Central Asia and these species are **not considered** as critical habitat candidates.

The endemic *Tulipa behmiana* extent of occurrence based on the digitisation of the distribution map presented in **Figure 6-1** is around 184006 km^2 The project footprint and RoW overlaps 10.98 km^2 of the EOO of the species, which is ~0.00596%. Given the small overlap in EOO, it is highly unlikely that the species will meet the thresholds under criteria 2a and therefore the species is **not considered** a candidate for Critical Habitat candidate.

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[45] Bondarenko, D. A., & Duisebaeva, T. N. (2011). Central Asian Cherepacha, Agrionemys horsfieldii (Gray, 1844), in Kazakhstan (Distribution, range zoning, population density). Main Center of Hygiene and Epidemiology of the Federal Medical and Biological Agency, Russia; Institute of Zoology of the Ministry of Education and Science of the Republic of Kazakhstan.

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Phenology: Blooms from mid-April to mid-June and bears fruit in June-July	**Phenology**: Blooms from end-March to May beginning and bears fruit in May-June
Ecology: Steppes, deserts and semi-deserts, detritus slopes from foothills to the sub-alpine zones	**Ecology**: Steppes, deserts and semi-deserts, with sandy and clay patches, sometimes detritus soil

Distribution of *Tulipa buhseana*	Distribution of *Tulipa behmiana* (endemic)
Phenology: Blooms from end-March to April and bears fruit in end of May-June	**Phenology**: Blooms from end of the first decade of April to end of first decade of May and bears fruit in the end of May-June
Ecology: Sandy, clay deserts and fine stone plateau areas	**Ecology**: Sandy and stony-sandy deserts

DATE
13 November 2024
(Revised 23 April 2025)

REFERENCE
0753033 Almaty Railroad
Bypass Supplementary ESIA

Source: Field Guide- Tulips of Kazakhstan

FIGURE 6-1: DETAILS OF DIFFERENT TULIP SPECIES