BIOINSIGHT & ECOA

CRITICAL HABITAT ASSESSMENT

AYSHA I WIND POWER PLANT

Aysha, Ethiopia

May 2026

AMEA POWER
Africa • Middle-East • Asia

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Acronyms

Acronym	Definition
AfDB	African Development Bank
BMP	Biodiversity Management Plan
CHA	Critical Habitat Assessment
EAAA	Ecologically Appropriate Area of Analysis
EPC	Engineering, Procurement and Construction
ESIA	Environmental and Social Impact Assessment
IBA	Important Bird Area
PAO	Project's Area of Influence
VP	Vantage Point
WPP	Wind Power Plant

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1. INTRODUCTION

1.1. BACKGROUND

The project involves the development of a large-scale wind power plant (WPP) to generate renewable electricity from wind energy. The preliminary design includes the installation of 57 wind turbines, each with a rated power of 5.5 MW, totaling a generation capacity of approximately 300 MW. Each turbine will have a hub height of 121 meters, a rotor diameter of 158 meters, and a total tip height of around 200 meters.

A field-based baseline biodiversity assessment was requested by Amea Power to complement the ESIA that was developed in 2020 with more up-to-date data collected using methodologies according to international standards. All the necessary permits to collect data were obtained by TS Environment.

1.2. STAKEHOLDERS INVOLVED

Amea Power is the project developer responsible for developing the Aysha I WPP project. It is a Dubai-based developer, owner and operator of renewable energy projects across Africa, the Middle East and other emerging markets.

An International Financial Institution (IFI) will provide a loan as the project lender to develop, construct and operate the WPP. The acceptance of the lender in funding the Aysha I WPP is dependent on the Environmental and Social Impact Assessment (ESIA), namely the use of internationally validated methods and criteria to conduct the biodiversity baseline assessment on the project site, its results, the identification of potential impacts and proposed measures to mitigate or offset them.

Eco Consult, located in Jordan, is currently developing the ESIA for the Aysha I WPP project. It is the company that requested the biodiversity baseline assessment to be integrated in the ESIA, which will later be submitted to the lender.

Bioinsight & Ecoa (Group BE) is the environmental consultancy responsible for coordinating the biodiversity baseline study, supervising the fieldwork conduct, and developing the Biodiversity Management Plan. GROUP BE was tasked with coordinating the collection of biodiversity through surveys directed at communities of birds, bats, terrestrial mammals, reptiles, amphibians and flora that use the project site during their life cycle.

TS Environment is an environmental consulting company located in Ethiopia. It is tasked with conducting field-based biodiversity baseline studies.

Lastly, local communities and environmental organizations were involved in the project development to ensure it respects the local needs and the national legislation regarding environmental conservation. Local communities were additionally assessed for the presence of species of local relevance (e.g. cultural, hunting).

1.3. OBJECTIVES AND SCOPE

This report features the Critical Habitat Assessment (CHA) conducted for the Aysha I WPP project. The project has been developed in line with the IFC's Performance Standard 6 (PS6) and the EBRD's Performance Requirement 6, and the corresponding Guidance Notes.

This CHA aims to:

- Identify Critical Habitat qualifying species or habitats, Priority Biodiversity Features and Natural Habitat associated with the project;
- Highlight future actions for the Project where applicable, including identification and filing of data gaps and the need for additional field surveys as well as outline details to be included in other plans related to the project.

Data collected during the Biodiversity Baseline Assessment were used to inform the CHA.

1.4. LIMITATIONS

Perhaps the biggest limitation to properly assessing CH is the lack of studies dedicated to mapping home range size and population density. This forces reliance on estimates from the literature conducted for similar species or under different conditions, particularly when estimating the EAAA. For example, for species like Soemmerring's gazelle and scissor-tailed kite, home range sizes were inferred from ecologically similar species (e.g., Dorcas gazelle, common kestrel), which may not accurately reflect their true ecological requirements in Aysha. Some species (e.g., white-backed vulture) rely on decades-old global population data (e.g., IUCN 1992), which may no longer be valid due to rapid declines.

Additionally, Ethiopia lacks Red List evaluations and publicly available regional/national systematic conservation planning reports, limiting the assessment of CH criteria for regional species and ecosystems.

2. FRAMEWORK TO ASSESS CRITICAL HABITATS

2.1. INTERNATIONAL FINANCE CORPORATION (IFC) PERFORMANCE STANDARD (PS) 6

Habitat destruction is recognized as a major threat to the maintenance of biodiversity and ecosystem services. To assess the quantification of impacts to biodiversity and the determination of their significance, IFC PS 6 requires that habitats be classified into three different categories: *modified habitats*, *natural habitats*, or *critical habitats*.

In practice, natural and modified habitats exist on a continuum that ranges from largely untouched, pristine natural habitats to intensively managed, modified habitats. Determination is made based on the level of *human-induced disturbance* – for example, presence of invasive species, level of pollution, extent of habitat fragmentation, viability of existing naturally occurring species assemblages, resemblance of existing ecosystem functionality and structure to historical conditions, degree of other types of habitat degradation – and the *biodiversity values* of the site – for example, threatened species, ecosystems, and ecological processes necessary for maintaining nearby critical habitats.

2.1.1. Modified Habitat

A modified habitat is an area that has been altered by human activities but still retains some ecological value and can support biodiversity.

In areas of modified habitat, developers should exercise care to minimize any conversion or degradation. Depending on the scale of the project, the following measures should be considered:

1. Enhance Habitat: Identify and implement opportunities to enhance the habitat;
2. Protect and Conserve Biodiversity: Integrate biodiversity protection and conservation measures as part of the project operations.

2.1.2. Natural Habitat

A natural habitat is an ecological area inhabited by a distinct set of native flora and fauna, developed through natural processes over time.

Developers should avoid significantly converting or degrading natural habitats unless all the following aspects are demonstrated:

- No other viable alternatives exist within the region for development of the project on modified habitat;
- Consultation has established the views of stakeholders, including Affected Communities, with respect to the extent of conversion and degradation;
- Any conversion or degradation is mitigated according to the mitigation hierarchy.

Mitigation measures should be designed to achieve no net loss of biodiversity where feasible, and can include the following actions:

- Avoiding impacts on biodiversity through the identification and protection of client-managed areas targeted for the implementation of conservation enhancement measures;
- Implementing measures to minimize habitat fragmentation, such as biological corridors;
- Restoring habitats during operations and/or after operations;
- Implementing biodiversity offsets to compensate significant residual impacts.

2.1.3. Habitat Map

The project site has been extensively modified by human activities, namely the presence of nomad pastoralists that occupy the area seasonally to provide water and vegetation for cattle. Therefore, a finer level of detail was necessary to distinguish heavily modified habitats from natural habitats which, despite having some anthropogenic disturbance, still retain most of its historic functions. For this reason, it is more accurate to classify natural habitat as semi-natural habitat, even though the report makes a distinction between natural and modified habitat to maintain concept simplicity. The following criteria were used to classify natural habitats:

1. Areas absent from invasive species (i.e. *Neltuma juliflora*);
2. Areas with mainly vegetation typical of arid ecosystems;
3. Areas were native, non-synanthropic wildlife was frequently observed;
4. Areas not occupied permanently by human settlements or infrastructure.

With these four criteria in mind, the following map of modified and natural habitats was created for the project's AoI encompassing the physical footprint of non-project activities (Figure 1).

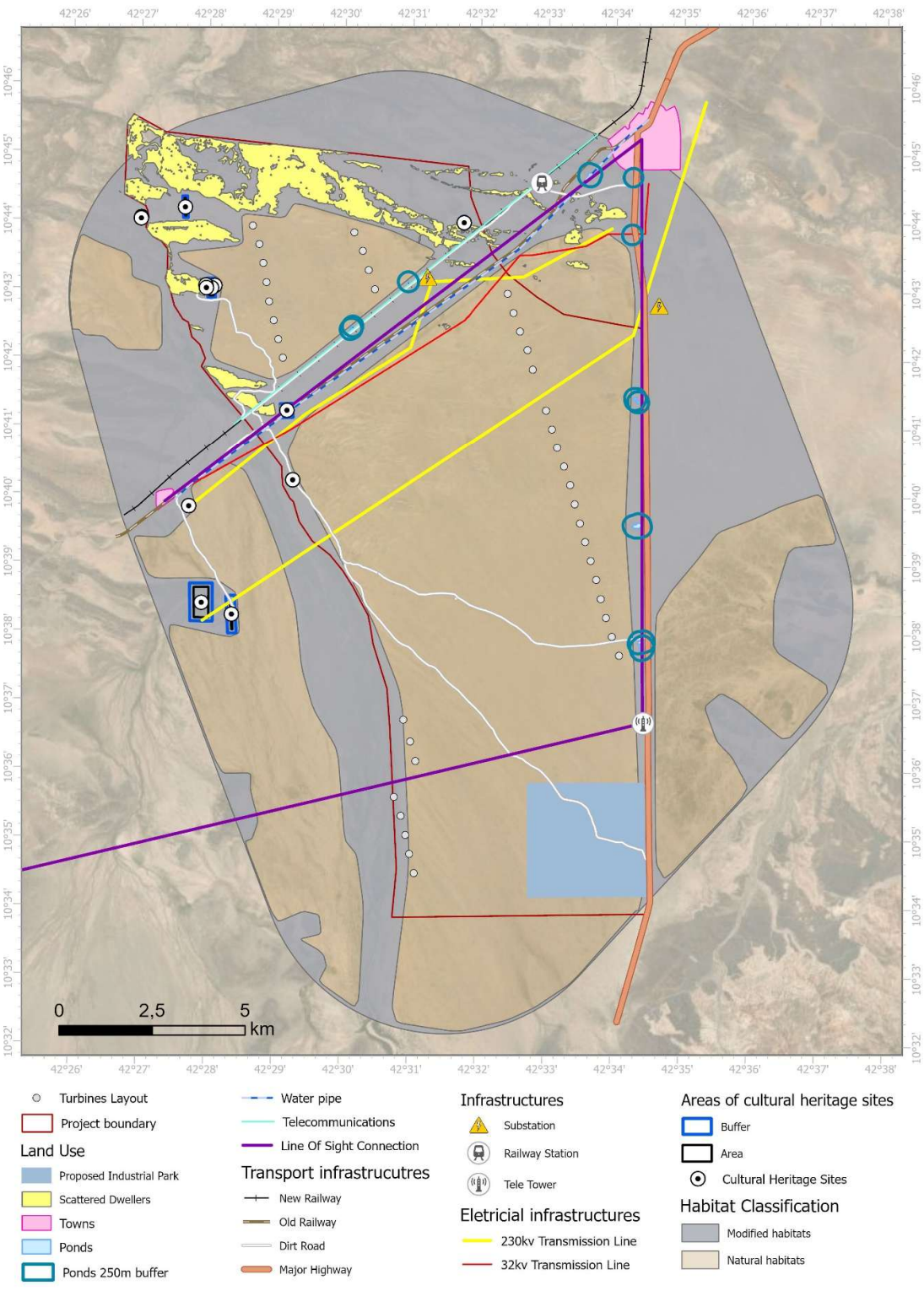

Figure 1. Modified and natural habitats within the project's Area of Influence

Table 1. Area of modified and natural habitat within the project boundary and the AoI

Area (ha)	Project boundary	Project AoI (physical footprint of non-project activities)
Modified habitat	4415.39	16485.49
Natural habitat	13423.37	22027.50

2.1.4. Critical Habitat

IFC Performance Standard (PS) 6 defines Critical Habitat (CH) as any habitat with high biodiversity conservation significance, characterized by the presence of Critically Endangered (CR) or Endangered (EN) species, restricted-range or endemic species, globally significant congregations of species, or unique ecosystems with important evolutionary processes. In contrast with critical habitats, sensitive habitats are those that are particularly vulnerable to negative impacts from either natural or anthropogenic disturbances.

Critical Habitats are a subset of either modified or natural habitats supporting high biodiversity values, including:

- Habitat of significant importance to critically endangered and/or endangered species (classified in the Red List according to criteria developed by the International Union for Conservation of Nature (IUCN));
- 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.

In areas of critical habitat, developers should not implement project activities unless the following conditions are met:

1. No measurable adverse impacts: There are no measurable adverse impacts on the ability of the critical habitat to support established populations of endangered species or on the functions of the critical habitat.

2. No reduction in population: There is no reduction in the population of recognized critically endangered or endangered species.

3. Mitigation of lesser impacts: Lesser impacts are mitigated as per the guidelines for natural habitats.

2.2. EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT (EBRD) PERFORMANCE REQUIREMENT (PR) 6

The EBRD PR6 sets objectives to protect and conserve biodiversity using a precautionary approach. It uses 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 PR6 also builds on the requirements to preserve important areas of natural habitats defined as "Priority Biodiversity Features" (PBF), with a criterion-based qualitative approach also used to determine their significance.

2.2.1. Priority Biodiversity Feature

A priority biodiversity feature is a species, habitat or ecosystem that is either threatened with extinction or targeted for conservation actions. Many of these features are listed in international legislation aimed at protecting them.

Planned developments with the potential to generate significant negative impacts on a priority biodiversity feature (or critical habitat) must show there is no technically and economically feasible alternatives to the current project. When impacts are expected on critical habitats, the project must additionally show that no other viable alternatives for development exist in habitats with lesser biodiversity value.

The mitigation plan should follow a hierarchy of actions:

1. Avoidance: action taken to fully prevent impacts, such as relocating a project or changing its spatial layout to prevent impacts in specific locations;
2. Minimization: action taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided;
3. Restoration: action taken to assist in the recovery of a feature that has been degraded, damaged or destroyed, ensuring no net loss of biodiversity;
4. Offset: When impacts cannot be mitigated within the project area of influence, measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development and persisting after appropriate avoidance, minimization and restoration measures have been taken.

The criteria to define a critical habitat is a stricter version of the criteria to define a priority biodiversity feature and is similar to the criteria used by the IFC.

2.3. ASSESSMENT METHODS

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

- Initial Screening – which involves consulting with stakeholders and/or an initial literature review, *e.g.* Important Bird Areas in Ethiopia; Red Data Book of Plants and Animals; IUCN Red List of Threatened Species; and World Database of Key Biodiversity Areas.

- A baseline biodiversity assessment, which includes the collection of field data to confirm the information obtained during the literature review and accurately estimate impacts on biodiversity and ecosystems;

- Critical habitat determination:

    - Determination of an Ecologically Appropriate Area of Analysis (EAAA);

- Assessment of Critical Habitat criteria.

2.3.1. Literature Review

A literature review was performed to understand the baseline conditions of the project and collect information for the CHA. Primary sources of project-related information included scientific articles, reports and books related to the site, and online resources including but not limited to:

- Field data collection and verification of available information e.g. habitat mapping, flora and fauna surveys;
- Online databases such as GBIF and iNaturalist;
- IUCN Red List of Threatened Species;
- BirdLife International Important Bird and Biodiversity Areas (IBAs);
- World Database of Key Biodiversity Areas.

2.3.2. Biodiversity Baseline Studies

After scoping the biodiversity values that will be included in the ESIA and potentially carried out through the CHA, and consulting with stakeholders and experts, a field-based assessment is necessary to confirm the presence and abundance of these biodiversity values in the baseline study area.

Considering the impacts caused by wind power plants, more emphasis was placed on surveys targeted at birds and bats.

2.3.2.1. Birds

Baseline assessment of bird biodiversity followed the Scottish Natural Heritage guidelines, which are internationally accepted as a standard to conduct bird surveys for onshore WPPs (Scottish Natural Heritage 2017). The objective of this assessment is to obtain a detailed analysis about how bird species use the project site, and how they might be impacted by the project, particularly soaring birds that are at greater risk of collision with wind turbines and the associated OHTLs.

Vantage point (VP) surveys were chosen as the best method to assess bird diversity and flight activity over the project site. In addition to species, number of individuals and behaviors observed, the flight pattern was recorded for priority species (see below) to develop collision risk models. VP surveys were conducted for one year, for a minimum of 36 hours each season, thus double the amount of effort recommended by Good International Industry Practices (Scottish Natural Heritage 2017). Each VP was surveyed once every week and for a maximum of three hours/day by two or three surveyors. Eleven VPs were established to cover the entire turbine layout planned for the project at the time. However, a new project layout reduced total coverage to 77% of the total risk volume. Nonetheless, the VP design covered a representative area of the species present at the project site.

Specialized nest surveys were conducted in May, and opportunistically in June, coinciding with the breeding season of most bird species. These surveys aimed to identify any breeding behavior taking place in the project area of influence and clarify how some species use the project site.

2.3.2.2. Bats

For bats, walking transect surveys were conducted once every month to observe and record flying bats in the project area. Transects were distributed through the different habitats that characterize the project area to increase the observed diversity of bats. Additionally, static bat detectors were placed in three meteorological masts, three near the ground and two at rotor-swept height. These detectors recorded ultrasounds at least ten days each month to identify the bat species that flew over the project area.

2.3.2.3. Other Fauna

Surveys were conducted for other species, namely terrestrial mammals, amphibians and reptiles.

Herpetofauna surveys were conducted by employing visual encounter transect surveys and pitfall trapping using drift fences. Both methods were employed in eight areas covering different habitats identified in the project site during a preliminary survey. Transect length was roughly 1 km long. Surveys lasted around one hour and were conducted between 08:00—13:00, and again between 16:30—20:30. Nocturnal surveys were conducted for amphibians near water sources and nocturnal reptiles.

Drift fences and pitfall traps were deployed along each transect line to function as passive capture devices (Error! Reference source not found.). An exception was made during the summer season due to material vandalism by local nomad pastoralists, which forced the survey team to reduce the number of trap lines to three. To compensate, an additional new transect was surveyed during this season to increase sampling effort.

Mammal surveys were conducted by employing visual encounter transect surveys. Eight transect lines with lengths ranging from 2–4 km were randomly laid within each habitat. Along transects, observations were conducted in the morning (06:00–11:00) and afternoon (14:00–17:00). Surveys were conducted once every season, totaling four campaigns of mammal surveys.

Data was additionally collected from opportunistic observations at the project site.

There were no surveys targeted at small mammals because the scoping research did not reveal any endangered species whose distribution overlaps with the project area. Invertebrates were also not sampled due to the lack of resources and available information to identify the observed species. Security concerns were also a factor, as the methodologies used to sample these groups generally require the use of technology or instruments that are susceptible to vandalism by local communities.

2.3.3. Screening of Biodiversity Values

The first step of the Critical Habitat Assessment consists in a screening of biodiversity values that may qualify under IFC Performance Standard 6 (PS6) and EBRD Performance Requirement 6 (PR6). In this context, the screening is carried out within a broad study area encompassing the Project's Area of Influence (AoI) and the surrounding landscape. This study area was defined in a way to be sufficiently large to capture the main ecological patterns relevant for the Project, including migratory pathways, foraging ranges, habitat connectivity and known conservation features.

Within this study area, species and ecosystems of conservation concern were identified based on:

- A desk-based review of available information (scientific literature, IUCN Red List, BirdLife Important Bird and Biodiversity Areas, Key Biodiversity Areas and other relevant sources);
- Consultation with stakeholders and experts; and
- The results obtained from the dedicated biodiversity baseline surveys for birds, bats, terrestrial mammals, reptiles, amphibians and flora.

Each biodiversity value identified in this way was then evaluated against the IFC/EBRD criteria to determine whether it should be screened in for further assessment in the CHA. Only those species or ecosystems that show a reasonable likelihood of regular occurrence and potential to meet Critical Habitat thresholds are retained for the next step. Values with negligible likelihood of occurrence, very occasional records, or clearly insufficient numbers are screened out at this stage and are not assessed further in the CHA.

For the biodiversity values that are screened in, a specific Ecologically Appropriate Area of Analysis (EAAA) is subsequently defined (Section 2.3.4). In this sense, the screening stage and the EAAA definition constitute a two-step process, ensuring that Critical Habitat determination is undertaken at an ecologically meaningful scale, as required by IFC PS6 Guidance Note 6.

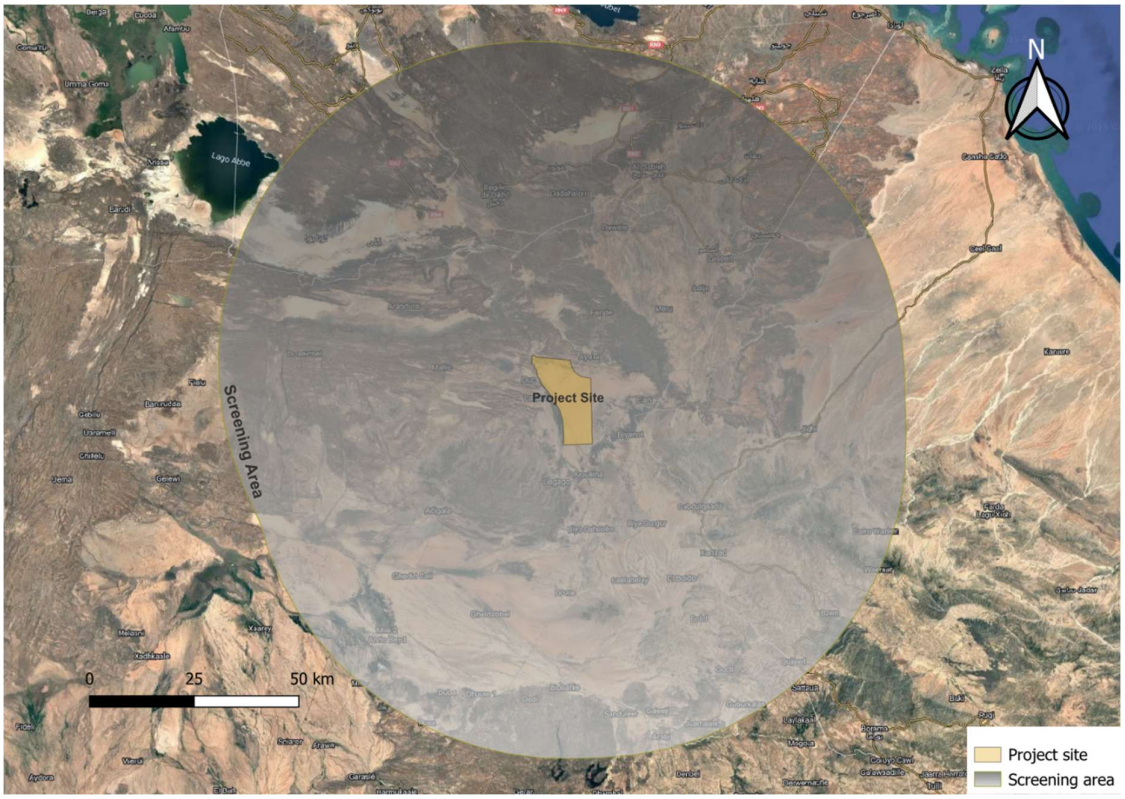

Figure 2. Map of the screening area to assess biodiversity values

2.3.4. Ecologically Appropriate Area of Analysis

For all biodiversity values that were screened in the previous section, an Ecologically Appropriate Area of Analysis (EAAA) was defined in accordance with IFC PS6 Guidance Note 6, particularly paragraph GN59. The EAAA is understood as the spatial unit where the Critical Habitat criteria and their quantitative thresholds are applied, and therefore it should reflect the ecological reality of each species or ecosystem. It is important to note that the EAAA is not the same as the initial study area or AoI; instead, it represents the ecologically meaningful landscape extent needed to assess whether a biodiversity value may qualify as Critical Habitat. The boundaries of each EAAA were established by considering several aspects, namely:

- The known or inferred distribution of the species or ecosystem in the wider landscape;
- Ecological processes relevant for their persistence (for example breeding, roosting, migration, recruitment or congregation);
- The degree of habitat connectivity and the presence of key landscape features; and
- The observations obtained during the biodiversity baseline surveys.

Depending on the ecological characteristics of each taxon, distinct but still practical approaches were adopted. For wide-ranging species such as large raptors and vultures, the EAAA required a broader spatial extent to encompass their typical movement patterns. For species with more restricted home ranges, like gazelles, the EAAA could be delineated in a more localized manner. In line with IFC PS6 guidance note, which recognizes that each Priority Biodiversity Value may have its own EAAA or that EAAAs may overlap partially or entirely where they share common habitat, screened in values with similar ecological requirements and overlapping distributions were assigned to the same common EAAA.

A literature search was conducted for each species, particularly for information on home range sizes and overlap of home ranges between different individuals. This information was used to define species-specific EAAAs. When no information was found about a species, an EAAA shared with another Priority Biodiversity Value was attributed as described previously (e.g. similar ecological requirements).

Once each EAAA was defined (Error! Reference source not found.), the IFC PS6 / EBRD PR6 Critical Habitat thresholds were applied exclusively within that spatial extent. This includes thresholds for globally important concentrations of CR/EN species, restricted-range species, and migratory or congregatory species, as well as assessments related to unique ecosystems and key evolutionary processes. By doing so, the CHA ensures that the determination is both ecologically robust and aligned with good international practice.

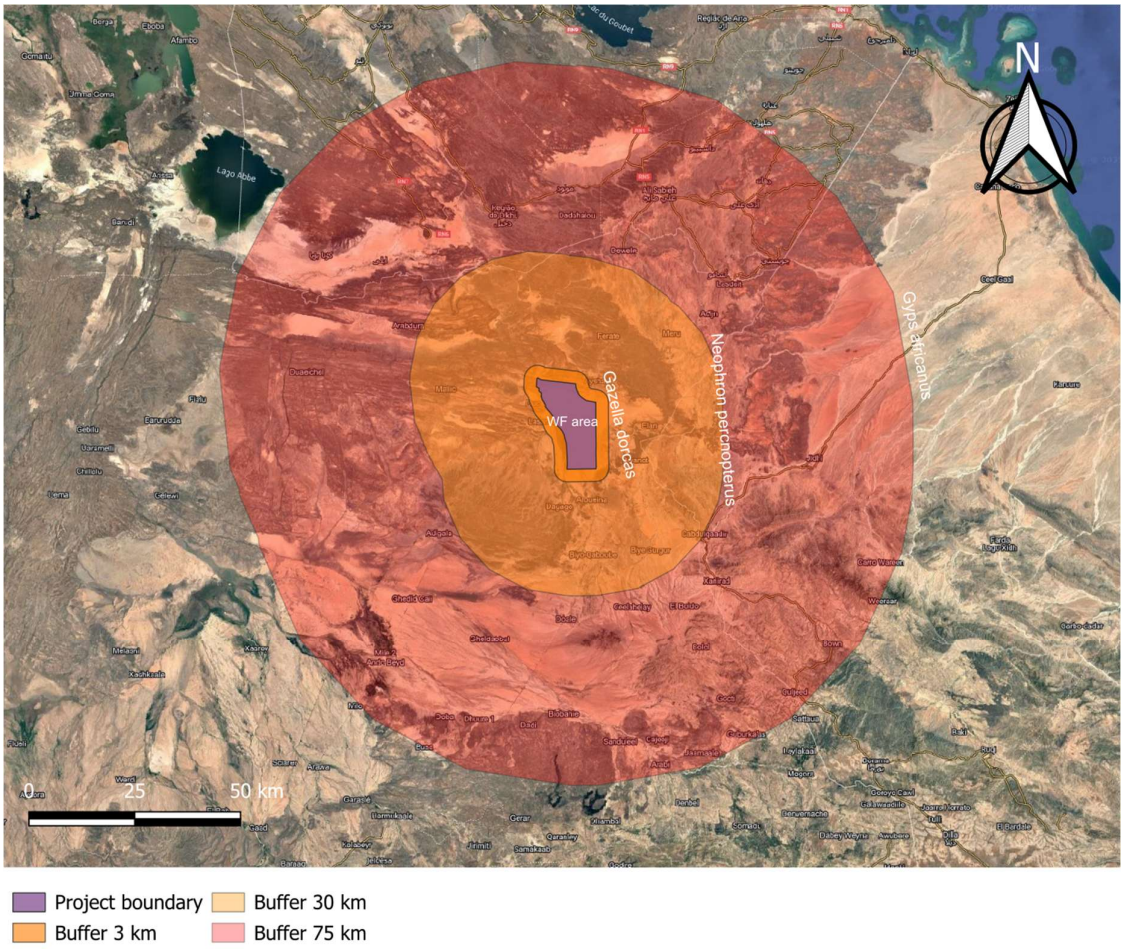

Figure 3. Ecologically Appropriate Areas of Analysis (EAAA) for the species assessed in this Critical Habitat Assessment. Separate EAAAs were defined for each species, which are described in Table 2.

Table 2. Ecologically Appropriate Areas of Analysis defined for species being assessed for Critical Habitat

EAAA	Area (ha)	Species
Buffer of 3 km around the project site	39 492	*Gazella dorcas*, *Nanger soemmerringii*, *Chelictinia riocourii*
Buffer of 30 km around the project site	480 517	*Neophron percnopterus*
Buffer of 75 km around the project site	2 212 971	*Gyps africanus*

2.3.5. Assessment against Critical Habitat 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 detailed above and summarized in Table 1 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 3. Critical Habitat Assessment Criteria as defined by the International Finance Corporation (IFC) and the European Bank for Reconstruction and Development.

Critical Habitat Criteria as defined by IFC PS 6	PS 6 Criterion Number	Critical Habitat Criteria as defined by EBRD PR 6	PR 6 Criterion Number
Critically Endangered (CR) and/or Endangered (EN) species	1	Habitats of significant importance to Endangered or Critically Endangered species	II
Endemic or restricted-range species	2	Habitats of significant importance to endemic or range restricted species	III
Migratory or congregatory species	3	Habitats supporting globally significant concentrations of migratory or congregatory species	IV
Highly threatened and/or unique ecosystems	4	Highly threatened and/or unique ecosystems	I
Key evolutionary processes	5	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

2.3.5.1. 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) or Endangered (EN) on the IUCN Red List. Species listed as Vulnerable at risk of being downgraded to Endangered because of the project can also trigger this criterion. The principal thresholds for triggering CH are:

1. The EAAA contains "globally important concentrations" of an IUCN CR or EN species, defined as at least 0.5% of the global population AND five or more reproductive units.
2. 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 1.
3. As appropriate, areas containing important concentrations of a nationally or regionally listed EN or CR species. In the case of Ethiopia this is not applied because there is no Red List or equivalent for biodiversity.

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

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

2.3.5.3. 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, according to GN 6, 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 concentrate 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).

Thresholds for these criteria used by both the IFC and the EBRD 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.

2.3.5.4. 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 used by the IFC and the EBRD 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 the IUCN but determined to be of high priority for conservation by regional or national systematic conservation planning.

2.3.5.5. 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 IFC PS 6 GN provides qualitative guidance for assessing projects against this criterion rather than quantitative thresholds. Therefore, assessment must rely on expert judgement.

2.3.5.6. 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.

Similarly to the previous criterion, the assessment for this criterion should be informed by survey data and expert judgement rather than quantitative thresholds.

2.3.6. Assessment Against Priority Biodiversity Feature Criteria

Priority Biodiversity Features can be regarded as a lower priority conservation level than Critical Habitats. In fact, opposite thresholds are shared between both categories in four criteria. Table 4 shows the criteria for defining PBFs, with examples of each feature taken from the EBRD PR 6 guidance note.

Table 4. Criteria and conditions for identifying priority biodiversity features

Criterion	Priority Biodiversity Feature
Priority ecosystems	
Threatened ecosystems a) Habitats listed in Annex 1 of EU Habitats Directive (EU member states 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 per cent of the global extent of an ecosystem type with IUCN status of CR or EN
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 (for example, Africa) 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 per cent of global population OR < 5 reproductive units of a CR or EN species c) EAAA supports VU species d) EAAA for regularly occurring nationally or regionally listed EN or CR species
Range-restricted species	(PR6 para. 12-ii) a) EAAA for regularly occurring range-restricted species
Migratory and congregatory species	(PR6 para. 12-ii) b) EAAA identified as per Birds Directive or recognised national or international process as important for migratory birds (especially wetlands)

As with Critical Habitat, the determination of PBF relied on background data, field data and expert opinion to obtain a qualitative assessment.

3. CRITICAL HABITAT ASSESSMENT

3.1. INTRODUCTION

The first stage of the CHA is to undertake a screening exercise where the species of conservation concern that have been recorded within the PAO or those considered to be potentially present are rapidly assessed against the thresholds for determination of critical habitat. CHA screening has been undertaken for all species confirmed or potentially present within the PAO that are of global conservation concern. Other than a Red List of Endemic Trees & Shrubs of Ethiopia and Eritrea (Vivero et al. 2005), there are no national or regional references listing the conservation status of Ethiopian species (i.e. a national or regional Red Book). Initial screening was broadly based on species that could trigger at least one of the CH criteria. This included ecosystems and species classified by the IUCN with a conservation status of Critically Endangered, Endangered, or Vulnerable, endemic or range-restricted species, and species that congregate periodically at the project site.

The following species have also been excluded from the CHA (Table 5). Despite being threatened, they were observed at the project site rarely (< 5 observations).

Table 5. Species excluded from the Critical Habitat Assessment after the initial screening

Order	Family	Species	Name	Red List	Reason for Exclusion
Accipitriformes	Accipitridae	*Necrosyrtes monachus*	Hooded Vulture	CR	Not observed
Accipitriformes	Accipitridae	*Gyps rueppelli*	Rueppell's Vulture	CR	Not observed
Accipitriformes	Accipitridae	*Trigonoceps occipitalis*	White-headed Vulture	CR	Not observed
Accipitriformes	Accipitridae	*Torgos tracheliotos*	Lappet-faced Vulture	EN	Not observed
Accipitriformes	Accipitridae	*Aquila rapax*	Tawny Eagle	VU	One individual observed in October 2024
Accipitriformes	Accipitridae	*Aquila nipalensis*	Steppe Eagle	EN	Not observed
Accipitriformes	Accipitridae	*Aquila heliaca*	Eastern Imperial Eagle	VU	Not observed
Accipitriformes	Accipitridae	*Terathopius ecaudatus*	Bateleur	EN	A single observation in October 2024
Accipitriformes	Sagittaridae	*Sagittarius serpentarius*	Secretarybird	EN	Not observed
Falconiformes	Falconidae	*Falco cherrug*	Saker Falcon	EN	Not observed
Pelecaniformes	Threskiornithidae	*Geronticus eremita*	Northern Bald Ibis	EN	Not observed
Passeriformes	Muscicapidae	*Oenanthe dubia*	Sombre Rockchat	DD	Two distinct observations in August 2025
Carnivora	Felidae	*Acinonyx jubatus*	Cheetah	VU	Observed far from the project site
Artiodactyla	Bovidae	*Dorcatragus megalotis*	Beira	VU	Observed far from the project site
Malpighiales	Euphorbiaceae	*Jatropha horizontalis*		VU	A single observation outside the project site

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 are described below. For each species, results of the biodiversity baseline assessment are shown against the relevant criteria that trigger CH.

3.2. CANDIDATE SPECIES TO TRIGGER CRITICAL HABITAT

Biodiversity studies recorded seven species with a threatened conservation status. Of these, two species, the tawny eagle (*Aquila rapax*, VU) and the bateleur (*Terathopius ecaudatus*, EN) had a single observation during biodiversity surveys. Therefore, they were excluded from further assessment.

All the species featured below trigger the criteria to be classified as Priority Biodiversity Features according to the EBRD. This means mitigation measures stemming from the biodiversity impact assessment need to follow the mitigation hierarchy and ensure no net loss of these species is caused by project impacts.

3.2.1. Dorcas Gazelle (*Gazella dorcas*)

The Dorcas gazelle (*Gazella dorcas*) is a medium-sized antelope native to the arid and semi-arid regions of North Africa and the Middle East. Known for its remarkable adaptability to harsh desert environments, this species inhabits a variety of habitats, including sandy and stony deserts, wadis, and coastal plains. The Dorcas gazelle is characterized by its slender build, long legs, and distinctive fawn-colored coat, which provides excellent camouflage in its natural surroundings. The species exhibits a high degree of behavioral plasticity, allowing it to survive in areas with limited water and vegetation. Historically, the Dorcas gazelle played a significant role in the ecosystems it inhabited, contributing to nutrient cycling and seed dispersal. However, its populations have declined significantly due to habitat loss, hunting pressure, and climate change, leading to its classification as Vulnerable on the IUCN Red List.

The Dorcas gazelle faces numerous threats that have contributed to its population decline. Habitat loss and degradation, primarily due to human activities such as agriculture, urban development, and overgrazing, have fragmented and reduced the quality of its natural habitats. Hunting and poaching remain significant pressures, as the species is often targeted for its meat and hide. Additionally, climate change exacerbates the challenges faced by the Dorcas gazelle, altering the availability of water and forage in its already marginal habitats. Conservation efforts for the Dorcas gazelle focus on protecting key habitats, enforcing anti-poaching measures, and promoting sustainable land use practices.

Figure 4. Dorcas gazelle. Photo by Chala Adugna

Dorcas gazelles can have home-ranges around 1500—2000 ha and its distribution appears to be influenced by water availability (Meliane et al. 2023). Based on this information, an EAAA of 3 km around the project site – which corresponds to 39 494 ha, 20x the size of Dorcas gazelle's home range, and matches the physical footprint of non-project activities – was defined to assess CH. In line with IFC PS6 guidance, the same EAAA was used for the two gazelle species, as they share similar habitat use and occur within the same ecological envelope around the Project. This approach ensures proportionality and avoids generating overly fragmented or artificial EAAAs for species that effectively occupy common habitat at this scale.

Due to the lack of updated population estimates, determining Critical Habitat (CH) thresholds for Dorcas gazelle is challenging. The most recent global estimate is 35,000–40,000 individuals for the sub-Saharan population (East and Estes 1999). The EAAA was defined as a 3 km buffer around the project site, covering 17 912 ha. Using an overlap factor of 1.5–2.5 individuals per home range, which is a reasonable estimate for ungulate species (Fieberg and Kochanny 2005), a population of 18–24 individuals within the project site, and 40–53 individuals across the EAAA, was estimated, which is consistent with baseline survey observations (assuming 2–3 observations per individual).

Assuming a worst-case scenario, the loss of this population (53 individuals) would not be sufficient to decrease the species' Vulnerable IUCN Red List status to Endangered under IFC PS6 Criterion 1b. The population estimated to be occupying the EAAA represents only 0.15% of the global population and does not approach the thresholds to downgrade its conservation

status under the IUCN Red List Categories and Criteria. Therefore, the project area does not qualify as Critical Habitat for Dorcas gazelle.

Nonetheless, this species qualifies as a Priority Biodiversity Feature under EBRD PR6 due to its global conservation status and must therefore be managed to achieve No Net Loss in accordance with the mitigation hierarchy.

Table 6. Critical Habitat Assessment for the Dorcas gazelle (*Gazella dorcas*)

CH criteria	Threshold	Assessment	CH
Criteria 1	175 individuals present in the EAAA	Total number of individuals observed during biodiversity studies was 46 individuals	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	Not applicable	Not applicable	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

3.2.2. Soemmerring's Gazelle (*Nanger soemmerringii*)

The Soemmerring's gazelle (*Nanger soemmerringii*) is a robust antelope species native to the Horn of Africa, with significant populations in Ethiopia, Somalia, and Djibouti. This species is well-adapted to arid and semi-arid environments, inhabiting a variety of habitats including grasslands, savannas, and bushlands. The Soemmerring's gazelle is distinguished by its sturdy build, reddish-brown coat, and prominent white underbelly. The species is known for its resilience and ability to thrive in harsh conditions with limited water availability. Historically, the Soemmerring's gazelle has played a crucial role in its ecosystems, contributing to nutrient cycling and seed dispersal. However, its population has declined sharply due to habitat loss, overgrazing, and hunting pressures, leading to its classification as Vulnerable on the IUCN Red List.

The Soemmerring's gazelle faces numerous threats that have contributed to its population decline. Habitat degradation and fragmentation, primarily due to agricultural expansion, livestock grazing, and human settlements, have severely impacted its natural habitats. Hunting and poaching for meat and hides have further exacerbated the decline. Additionally, climate change and recurrent droughts pose significant challenges, affecting the availability of food and water. Conservation efforts for the Soemmerring's gazelle focus on protecting key habitats, implementing anti-poaching measures, and promoting community-based conservation initiatives.

Figure 5. Soemmerring's gazelle. Photo by Chala Adugna

The Soemmerring's gazelle was evaluated within the same Terrestrial Mammal EAAA applied to the Dorcas gazelle, corresponding to a 3 km buffer surrounding the Project site. This EAAA represents the ecologically relevant area where both species were regularly observed during baseline surveys and where project-related impacts are most likely to occur. As recognized in IFC PS6 training materials, overlapping EAAAs may be used for biodiversity values that share common habitat or display similar ecological requirements. Because the two gazelle species use the same desert with a grassland/shrubland matrix and show broadly comparable spatial behavior, a shared EAAA is considered appropriate and avoids unnecessary duplication of spatial units.

The species' global population is estimated at 6,000—7,500 individuals (IUCN SSC Antelope Specialist Group 2016). In the absence of home range estimates for Soemmerring's gazelle, the home range size of Dorcas gazelles (1500–2000 ha) was used as a proxy. Considering the larger herd size of Soemmerring's gazelles observed at the project site, a larger overlap factor of 5—7 individuals was considered. This would place an estimate of 62—84 individuals in the project site, and 138—185 individuals in the EAAA, which is consistent with the total number of individuals observed considering 3—5 repeated observations of the same individual.

As a Vulnerable, resident species, Criterion 1b is applied to Soemmerring's gazelle, that is, population declines within the EAAA would reasonably be expected to change the species' global Red List status to Endangered to trigger CH. Available global data does not indicate the EAAA represents a proportion of the population significant enough for such a status change – it would

require the number of globally mature individuals to become fewer than 2,500 (criterion C of the IUCN Red List Categories and Criteria). Considering the EAAA has a maximum estimate of 185 individuals, even considering a worst-case scenario of total extinction of the population present in the EAAA, the species would not reach IUCN thresholds to be listed as Endangered. Furthermore, there are currently no conservation efforts targeted at the species, but indirect conservation efforts, such as hunting restrictions and the presence of protected areas in Ethiopia and Eritrea, have slowed down the species' decline (IUCN SSC Antelope Specialist Group 2016). As a result, and following IFC guidance that CH designation must rely strictly on species status and threshold conditions, the Soemmerring's gazelle does not trigger Critical Habitat in the EAAA.

Nonetheless, Soemmerring's gazelle qualifies as a Priority Biodiversity Feature under EBRD PR6 due to its global conservation status and must therefore be managed to achieve No Net Loss in accordance with the mitigation hierarchy.

Table 7. Critical Habitat Assessment for the Soemmerring's gazelle (*Nanger soemmerringii*)

CH criteria	Threshold	Assessment	CHA
Criteria 1	20 individuals present in the EAAA	Total number of individuals was larger than the threshold, with one observation of a herd of 48 individuals. However, local population declines are not expected to reduce conservation status from VU to EN.	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	Not applicable	Not applicable	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

3.2.3. White-backed Vulture (*Gyps africanus*)

The white-backed vulture is an Old World raptor that, like other vultures, feeds on animal carcasses. It is primarily a lowland species of open wooded savanna, particularly areas of acacia. Unlike other Old World vultures, it usually nests in loose colonies in tall trees but has also been recorded nesting on electricity pylons in South Africa. It is a gregarious species, often congregating at carcasses, in thermals and at roost sites.

The white-backed vulture is the most common vulture in the African continent. However, it is listed as a Critically Endangered species owing to a rapid and continuous decline in population numbers (nearly 90% in three generations according to IUCN estimates) throughout the continent. The main causes of this decline are unintentional poisoning, habitat loss and conversion to agro-pastoral systems, declines in wild ungulate populations, hunting for trade and collisions.

Figure 6. White-backed vultures (*Gyps africanus*) showing its white back. Photo By Charles J. Sharp - Own work, from Sharp Photography, sharpphotography.co.uk, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=150583009

Although not a significant threat compared with the other listed threats, collisions with power lines and wind turbines are a mortality risk factor for vulture species, including the white-backed vulture (Shema 2019). Therefore, wind energy developments and associated grid infrastructure need to be planned and operated carefully to avoid adding unnecessary mortality to already declining populations.

White-backed vultures are a wide-ranging species with home ranges that can go beyond 10 million ha in the wet non-breeding season (Zvidzai et al. 2022). Therefore, a buffer of 75 km around the project site was chosen, which corresponds to an area of 2 212 971 ha. This EAAA reflects the larger spatial scale at which these species forage, soar and disperse, and incorporates the area surveyed for nests and flight activity.

The latest population assessment made by the IUCN dates to 1992 and estimated a global population of 270,000 individuals in 1992. The most recent data on this species' population indicates it has declined extremely rapidly, with a median estimate of 4.1% decline per year (range 2.5-5.4%), equating to a decline of 81% (range: 63-89%) over three generations (39.7 years) (BirdLife International 2021 July 6). This places the current global population estimate at around 70,700 individuals according to these estimates.

Criterion 1a from the IFC states that "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)" can trigger Critical Habitat (IFC 2019). This means the EAAA should be estimated to contain 353 individuals of this species to trigger CH criteria.

This species was observed 10 times in the EAAA, all of them in the month of October (Table 8). Vultures were mainly seen in the VPs south of the train rail. The maximum number of individuals observed in a day was seven (October 8, 2024), while on other days two individuals were observed at most. All individuals were observed crossing the project site in flight. No carcasses or other potential food sources were observed during observations. This suggests the project site is not being used as a food source by the species. Instead, the observed vultures likely belonged to a small group of individuals that visited the EAAA temporarily, rather than a group of resident individuals.

No evidence of breeding or nesting sites were found in the EAAA during biodiversity baseline surveys, which included nest surveys. Furthermore, no evidence in the scientific literature was found that signals the EAAA as an important breeding or congregatory area for the species (BirdLife International 2021).

Table 8. Records of white-backed vulture during bird surveys

Date	Time	Vantage point	Individuals	Behavior
04/10/2024	15:43	VP09	2	Flying south
07/10/2024	08:55	VP03	2	Soaring to north
08/10/2024	17:35	VP05	5	Flying east
08/10/2024	17:37	VP05	2	Flying east
09/10/2024	09:51	VP04	1	Circled the area and flew north
10/10/2024	07:55	VP06	1	Soaring to south
10/10/2024	09:34	VP06	1	Flying north
15/10/2024	09:09	VP03	1	Circled the area
22/10/2024	07:03	VP04	1	Soaring
30/10/2024	09:52	VP06	1	Flying southwest

Considering the large home-range sizes of the species and an overlap factor of 3—4 individuals (Zvidzai et al. 2022), it is unlikely the EAAA is occupied by at least 353 individuals with a regular presence, and thus the white-backed vulture does not trigger CH thresholds.

Nonetheless, the species qualifies as a Priority Biodiversity Feature under EBRD PR6 due to its global conservation status and must therefore be managed to achieve No Net Loss in accordance with the mitigation hierarchy.

Table 9. Critical Habitat Assessment for the white-backed vulture (*Gyps africanus*)

CH criteria	Threshold	Assessment	CHA
Criteria 1	353 individuals present in the EAAA	Only 17 individuals were observed in the EAAA, far from the established threshold.	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	707 individuals present in the EAAA on a cyclical basis	17 individuals were observed in October in the EAAA, far from the established threshold.	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

3.2.4. Egyptian Vulture (*Neophron percnopterus*)

The Egyptian vulture is a species with a broad geographic distribution, spanning Europe, Asia, and Africa. It typically nests on rocky cliffs, crags, and outcrops, often utilizing ledges or caves, though it may occasionally choose large trees or even electricity pylons. This bird forages in both lowland and mountainous areas, preferring open and often arid landscapes, and is also known to scavenge around human settlements. Unlike many other vultures, its diet is diverse, including not only carrion but also tortoises, organic refuse, insects, eggs, young vertebrates, and even feces. While generally solitary, it can gather at feeding sites or form roosting groups of non-breeding individuals. Populations in northern regions undertake long-distance migrations, often crossing land routes and narrow passages like the Strait of Gibraltar or the Bosphorus and Dardanelles to reach Africa. The species shows strong fidelity to specific sites, particularly among males.

The species is listed as Endangered by the IUCN due in large part to carcass poisoning. In India, diclofenac, a non-steroidal anti-inflammatory drug often given to cattle, has caused massive mortality to the species. In Spain, illegal poisoning of carcasses to control carnivore populations is the main threat to breeding populations. In other countries antibiotics have also been pointed out as a concern for nestlings. Other threats to the species include reduced food availability (especially in Africa), habitat loss to urbanization, electrocution and collisions with wind turbines.

Figure 7. Egyptian vulture (*Neophron percnopterus*) in the project site. Photo by Hailu Tilahun

Egyptian vultures have large home ranges, albeit smaller than white-backed vultures. They can cover 420 000—735 000 ha between nesting sites and rubbish dump sites and landfills (McGrady et al. 2018). Therefore, a buffer of 30 km around the project site was chosen, which corresponds to an area of 480 517 ha. This EAAA encompasses the expected daily foraging ranges of the species and includes the area where both flight activity and potential congregation sites were evaluated.

The latest IUCN assessment places the global population at 18,600-54,000 individuals. For the species to trigger Critical Habitat in the EAAA, it must contain at least 93 individuals and five breeding pairs – criteria 1a for Critical Habitat by the IFC. The total number of individuals observed was nine individuals in autumn/winter. No evidence of breeding or presence of nesting sites were observed in the EAAA during nest surveys. Dump sites and landfills that could lead vultures to congregate for feeding are also not present near the project site.

Contrary to the white-backed vulture, the Egyptian vulture was recorded regularly at the project site throughout the wintering period (Table 10). Most of the observations were made in the morning, in the central area of the project (VPs 04, 05 and 06). Only one or two individuals were observed at a time. On one occasion, two individuals were observed eating carrion, suggesting the project site might be a food source for the species.

Table 10. Records of Egyptian vulture during bird surveys

Date	Time	Vantage point	Individuals	Behavior
10/10/2024	06:53	VP06	2	Scavenging on cattle carcass
10/10/2024	06:59	VP06	1	Perched
29/10/2024	10:25	VP07	1	
12/11/2024	17:12	VP04	2	
02/12/2024	07:18	VP01	1	
10/12/2024	07:51	VP06	1	
10/12/2024	14:50	VP05	1	Flying southeast
21/01/2025	07:00	VP05	1	Flying east

A study by Buechley and Şekercioğlu (2019), which tracked Egyptian vultures in the Middle East and East Africa, showed there is an area southwest of the EAAA where multiple individuals congregate, which signals a core activity area for the species (Figure 8). It is thus likely This area is likely associated with food sources and/or breeding sites, which would suggest the individuals observed at the project site were visitors from this core area. This would explain the occasional but regular observations at the project site. Based on flight data from all observations identified in this area, it appears the EAAA for Egyptian Vulture is not located within a high activity area for the species.

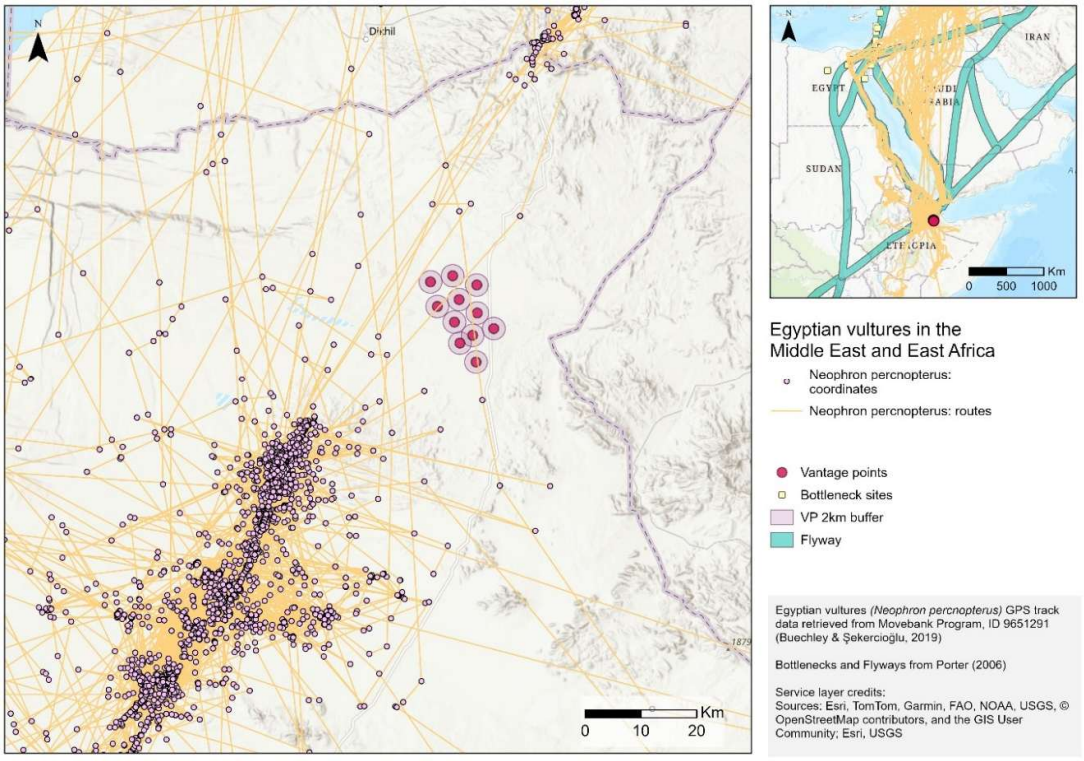

Figure 8. Egyptian vulture flight routes tracked by GPS. A congregation site for Egyptian vultures is evident southwest of the project site (marked by vantage points), and could be a critical habitat for the species. For more information and data check Buechley and Şekercioğlu (2019)

In conclusion, the EAAA is not occupied regularly by Egyptian vultures, and the total number of observations during biodiversity studies was not sufficient to trigger CH.

Nonetheless, the Egyptian vulture qualifies as a Priority Biodiversity Feature under EBRD PR6 due to its global conservation status and must therefore be managed to achieve No Net Loss in accordance with the mitigation hierarchy.

Table 11. Critical Habitat Assessment for the Egyptian vulture (*Neophron percnopterus*)

CH criteria	Threshold	Assessment	CHA
Criteria 1	93 individuals present in the EAAA	Only 10 individuals were observed in the EAAA, far from the established threshold.	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	186 individuals present in the EAAA on a cyclical basis	A total of 10 individuals were observed in autumn and winter. No signs of breeding were observed.	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

3.2.5. Scissor-tailed Kite (*Chelictinia riocourii*)

The scissor-tailed kite is found from southern Mauritania, Senegal and The Gambia in the west to South and North East Uganda and Kenya in the east. It is distributed across the breadth of the Afrotropics, but in a narrow band largely confined between the Senegal and the Horn of Africa. The species occupies arid savannah and semi-desert habitats from sea level up to 500 m. Most of the population is resident and breeds within the Sahel zone. Near the Horn of Africa there is a small resident population in northern Kenya and Uganda, while part of the population is migratory, moving south (albeit remaining in the northern hemisphere) in November after breeding, coinciding with the start of the dry season. It returns north when the rain begins in February and the overall extent of migration fluctuates annually. Breeding occurs from May to September in much of its range, but in Senegal it occurs from December to February and in Kenya from March to June or from August onwards. Its main prey comprises reptiles such as lizards and snakes, insects and spiders, and occasionally small rodents. It is gregarious and will gather in groups at the edge of grass fires to capture Orthoptera or near cattle herds to capture insects.

Figure 9. Scissor-tailed Kite *Chelictinia riocourii* pair, Ethiopia. Photo by Allan Drewitt © CC BY 2.0

According to Ferguson-Lees and Christie (2001), the species' global population ranges from 10,001 to 100,000 individuals. However, a continuous decline in the global population now places the current estimate suggests approximately 46,000 to 100,000 birds, equivalent to

30,000 to 67,000 mature individuals (BirdLife International, 2021). The species is provisionally suspected to be declining at a rate of 30-49% over three generations. There is very little information available on population trends further east in the species' breeding range or in its wintering range. Declines are thought to occur predominantly due to degradation of arid ecosystems and wetland forests resulting from expanding cultivation, woodcutting and overgrazing by livestock, alongside improved locust control measures and use of pesticides (Ferguson-Lees and Christie 2001). As these pressures from habitat destruction and degradation are ongoing and widespread throughout the Sahel (Walther 2016), it is suspected that the rates of decline will continue. Therefore, the species is currently classified as Vulnerable by the IUCN Red List.

No data is currently available about the scissor-tailed kite home range size. To define the EAAA, the home range size of an ecologically similar species present at the site was used as a proxy: the common kestrel (*Falco tinnunculus*), which has a home range size that can reach 1000 ha (Costantini and Dell'Omo 2020). Therefore, the CHA of the scissor-tailed kite was done within a 3 km EAAA buffer around the project site. It matches the EAAA of Dorcas and Soemmerring's gazelles and is consistent with recent CHAs for large wind developments supported by international financial institutions.

In the EAAA, the species was classified as a breeding migrant based on the biodiversity studies conducted. The first individuals were observed in May 2 and the last individuals on September 2, which points to a breeding season lasting four months in Aysha (Table 12). Additionally, eight active nests were observed in May. Four of these nests were observed in the same tree and two of them had one egg each.

Table 12. Observations of scissor-tailed kites (*Chelictinia riocourii*) during bird surveys

Month	Nº observations	Nº individuals	Maximum number of individuals observed
May	15	27	4
June	8	14	3
July	2	2	1
August	22	34	4
September	3	4	2

Under IFC PS6, Criterion 1a applies only to species listed as Critically Endangered or Endangered and therefore does not apply to the scissor-tailed kite, which is listed as Vulnerable. For Vulnerable species, Criterion 1b may be triggered only if the loss of the biodiversity value within the EAAA would reasonably be expected to change the species' global Red List status to Endangered.

In the EAAA, bird and nest surveys recorded a maximum of 97 individuals – 81 during bird surveys and eight breeding pairs during nest surveys – a value that represents only a small fraction of the species' global population. This number is far below the magnitude required for the loss of the EAAA to have any meaningful influence on the species' global conservation status. For this reason, Criterion 1 is not triggered for the scissor-tailed kite.

Nonetheless, the scissor-tailed kite qualifies as a Priority Biodiversity Feature under EBRD PR6 due to its global conservation status and must therefore be managed to achieve No Net Loss in accordance with the mitigation hierarchy.

Table 13. Critical Habitat Assessment for the scissor-tailed kite (*Chelictinia riocourii*)

CH criteria	Threshold	Assessment	CHA
Criteria 1	150 individuals present in the EAAA (1a) or decline of more than 20% of global population (1b)	Only 97 individuals were observed in the EAAA, far from the established threshold and global population estimates	No
Criteria 2	Not applicable	Not applicable	No
Criteria 3	300 individuals present in the EAAA on a cyclical basis	81 individuals and 8 breeding pairs were observed in spring and summer in the EAAA, not enough to trigger CHA.	No
Criteria 4	Not applicable	Not applicable	No
Criteria 5	Not applicable	Not applicable	No

3.3. CRITERIA 4: HIGHLY THREATENED AND/OR UNIQUE ECOSYSTEMS

The IUCN is developing a Red List of Ecosystems, following an approach similar to the Red List for Threatened Species, and where formal IUCN assessments have been performed should use the Red List of Ecosystems for evaluation of Criterion 4. In cases where assessment by IUCN has not been performed, the next criteria to be used is of areas determined to be of high priority for conservation by regional or national systematic conservation planning.

The area where the project will be developed and its immediate surroundings have not been considered for formal IUCN assessments and have not been identified as high priority for conservation by regional or national systematic conservation planning. The project site has five protected areas within its area of influence (see biodiversity baseline assessment for this information). The closest protected area is the Denbel-Ayisha-Adigala controlled hunting area (IUCN category IV), 30 km south of the project site. Ali Sabieh is the closest Key Important Area and is located 40 km northeast of the project site. Both areas do not contain rare, endangered, or unique ecosystems identified during surveys. Therefore, this criterion is not triggered for CH.

3.4. CRITERIA 5: KEY EVOLUTIONARY PROCESSES

Key evolutionary processes require validation by experts. Field surveyors have not identified key or unique evolutionary processes in the EAAA. The area is not considered sufficiently heterogeneous from similar and/or surrounding ecosystems to favor distinct evolutionary processes and promote potential environmental gradients. Therefore, the area is not deemed to trigger CH under Criterion 5.

3.5. PRIORITY BIODIVERSITY FEATURES (PBF) DETERMINATION

In addition to the Critical Habitat Assessment required under IFC PS6, the EBRD PR6 requires the identification of Priority Biodiversity Features (PBFs). These features do not rely on quantitative thresholds but are defined qualitatively under four criteria, including threatened species (CR, EN, VU), threatened ecosystems, and ecological functions that are vital to maintaining the viability of these features.

Based on the PBF criteria defined in PR6, all five species analyzed in detail in this assessment qualify as Priority Biodiversity Features due to their global conservation status (CR, EN or VU). Therefore, even though none of the species were found to trigger Critical Habitat within the

EAAA, they must still be managed according to the EBRD requirement of achieving No Net Loss (NNL) for PBFs.

This requirement will be addressed through the Biodiversity Impact Assessment and the Biodiversity Management Plan, which will outline specific avoidance, minimization and restoration measures tailored to each PBF.

As a result, the Project must ensure that impacts on Dorcas gazelle, Soemmerring's gazelle, white-backed vulture, Egyptian vulture and scissor-tailed kite are avoided or minimized to the extent possible, and that residual adverse effects are offset through appropriate restoration and conservation measures to demonstrate No Net Loss in accordance with PR6.

3.6. SUMMARY OF CRITICAL HABITAT ASSESSMENT

The next table summarizes the most relevant biotic features used to identify if the project site is planned for a CH.

Table 14. Summary of Critical Habitat Assessment

Criterion	Feature	Critical Habitat
Criterion 1: Critically Endangered (CR) and/or Endangered (EN) species	Five threatened species had a regular presence at the project site: • Dorcas Gazelle (*Gazella dorcas*) • Soemmerring's gazelle (*Nanger soemmerringii*) • White-backed Vulture (*Gyps africanus*) • Egyptian Vulture (*Neophron percnopterus*) • Scissor-tailed Kite (*Chelictinia riocourii*)	Soemmerring's gazelle was the only species whose abundance in the EAAA was close to the threshold for this criterion. Even so, potential population declines in the EAAA are not sufficient to drop the global population to a level that downgrades its threat classification from Vulnerable to Endangered. For this reason, experts have assessed the EAAA is not qualified to be a CH for the species.
Criterion 2: Endemic or restricted-range species	No species observed in the EAAA meet this criterion, i.e. no species has an EOO less than 50,000 square kilometers (km^2).	The area is not deemed to trigger Critical Habitat under Criterion 2.
Criterion 3: Migratory or congregatory species	The scissor-tailed kite is the only migratory species in the EAAA that can trigger this criterion, i.e. sustain, on a cyclical or otherwise regular basis, ≥ 1 percent of the global population at any point of the species' lifecycle.	Although eight pairs were observed breeding in the EAAA, these numbers are not sufficient to trigger Critical Habitat under Criterion 3.
Criterion 4: Highly threatened and/or unique ecosystems	The area has not been considered for formal IUCN assessments and has not been identified as high priority for conservation by regional or national systematic conservation planning.	The area is not deemed to trigger Critical Habitat under Criterion 4.
Criterion 5: Key evolutionary processes	The area is not considered heterogenous or distinct enough to favor key evolutionary processes.	The area is not deemed to trigger Critical Habitat under Criterion 5.

3.6.1. Priority Biodiversity Features Summary

Although none of the assessed species triggered Critical Habitat, all five species qualify as Priority Biodiversity Features under EBRD PR6 due to their threatened conservation status. Consequently, the Project must apply the mitigation hierarchy to ensure No Net Loss for these features. The forthcoming Biodiversity Management Plan will specify the measures designed to meet this requirement.

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