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Hacıhıdırlar Wind Power Plant (WPP) Project

Critical Habitat Assessment (CHA)

June 2024

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Issue and Revision Record

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A	May 2024	Esra Demirhan Melisa M. Turan	Gizem A. Gurler	Neslihan Ayvaz	Draft CHA
B	June 2024	Esra Demirhan Melisa M. Turan	Gizem A. Gurler	Neslihan Ayvaz	Final CHA

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Definitions and Abbreviations

Abbreviation	Definition
AoA	Area of Analysis
AoI	Area of Influence
AZE	Alliance for Zero Extinction
BAP	Biodiversity Action Plan
BMMP	Biodiversity Management and Monitoring Plan
CHA	Critical Habitat Assessment
CITES	Convention for the International Trade in Endangered Species of Wild Fauna and Flora
CR	Critically Endangered
CRM	Collusion Risk Model
DD	Data Deficient
EAAA	Ecologically Appropriate Area of Analysis
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EN	Endangered
EOO	Extent of Occurrence
ESIA	Environmental and Social Impact Assessment
EU	European Union
EUNIS	European Nature Information System
GN	Guidance Notes
IAoI	Indirect Area of Influence
IBA	Important Bird Area
IFC	International Finance Cooperation
IUCN	International Union for Conservation of Nature
JPM	J.P. Morgan
KBA	Key Biodiversity Area
LC	Least Concern
NT	Near Threatened
PBF	Priority Biodiversity Features
PR	Performance Requirement
PS	Performance Standard
RAMSAR	Convention on Wetlands of International Importance Especially as Waterfowl Habitat
VP	Vintage Point
VU	Vulnerable
WPP	Wind Power Plant

Executive summary

CHA for Hacıhıdırlar WPP Project has been undertaken in line with IFC PS6 and corresponding GN to identify areas which are considered as critical habitats and critical habitats triggering species. The CHA presents the screening of biodiversity features and threatened wildlife, and plant species identified.

This report aims to identify Critical Habitat-qualifying biodiversity associated with the Project; Natural and Modified Habitat and identify the recommended next steps for the Project, including identification of data gaps and the need for additional field surveys. Thus, based on these aims literature searches, desktop and field studies were conducted, nationally and internationally recognized areas were considered within EAAA. In line with PS6 and corresponding GN, the critical habitats, critical habitat triggered species and important biodiversity features were determined considering that the critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to CR and/or EN species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes within EAAA.

Due to a combination of uncertainties with the Project specific data and global and/or regional availability of relevant literature for some species, a high-level assessment was accomplished for the present CHA. This CHA study should be considered preliminary, as extensive additional baseline surveys have been scheduled in 2024 for flora, fauna, birds, bats and invertebrate species to enhance the baseline by addressing data quality and quantity. The CHA is expected to undergo significant revision after the data gaps have been bridged following the baseline collection.

In light of the assessment, three habitats were determined as priority biodiversity feature. Additionally, one bird species, 6 plant species, 7 mammal species, one reptile species and two invertebrate species were identified as PBF for a total of 20 PBF triggers.

1 Introduction

1.1 Project Background

Enerjisa Üretim Santralleri Anonim Şirketi has been awarded to invest in the Aydın Connection Region on 30 May 2019 within the scope of “Renewable Energy Resource Areas (YEKA) Regulation” and “ Allocation of Wind Energy Based Renewable Energy Resource Areas (YEKA) and Total Connection Capacities” for Aydın Connection Region. Upon this award, a “YEKA Use Rights Agreement” was signed between Enerjisa Üretim Santralleri Anonim Şirketi and Ministry of Energy and Natural Resources (MoENR) on 09 March 2020. Subsequently, the "YEKA Use Rights Agreement" signed by Enerjisa Üretim Santralleri Anonim Şirketi for the Aydın Connection Region was transferred to Enerjisa Enerji Üretim Anonim Şirketi (“Enerjisa Üretim” or “the Project Company”) with the transfer agreements signed on 03 June 2021.

Hacıhıdırlar WPP Project (“the Project”) with 15 turbines and 63 MWm/ 63 MWe total installed power, is planned to be established by Enerjisa Üretim in Aydın Province, Karacasu District, Karacaören and Ataköy Neighbourhoods: Denizli Province, Sarayköy and Babadağ District, Kıranyer, Yeşilyurt and Hisar Neighbourhoods. The Project components consist of 15 turbines, a switchyard, Project roads (i.e., access and site roads) and an energy transmission line (ETL) as a Project associate facility. The Project is part of a nine-project wind energy investment package initiated by Enerjisa Üretim which has a 750 MW total installed power from a total of 180 wind turbines located in Aegean and Marmara Regions of western Turkey; aiming to evaluate and utilize the wind energy potential of the region and contribute to the national strategy and regional economy.

1.2 Scope of the Study

This report includes CHA for Hacıhıdırlar WPP Project, that has been undertaken in line with IFC PS6 and corresponding GN to identify areas which are considered as critical habitats.

PS6 makes several stipulations for Critical Habitat, including achievement of a net gain for Critical Habitat-qualifying biodiversity. A net gain is required for all Critical Habitat features potentially affected by the Project. Where significant residual adverse effects are not predicted, additional conservation actions supported by qualitative evidence and expert opinion may be sufficient to substantiate a net gain. If, however, after the application of feasible preventive and restorative actions in the first steps of the mitigation hierarchy (avoid, mitigate, restore), there is a potentially significant residual impact on a Critical Habitat qualifying feature then ecological compensation (offset) is required with measurable conservation outcomes at an appropriate geographical scale. In Natural Habitat, no net loss, where possible, is required. A robust project specific ESIA baseline is vital, followed by an iterative and thorough application of the mitigation hierarchy to ensure that impacts are avoided, minimized and restored as far as feasible, reducing the significance of any residual impacts and the requirement for offsetting.

This report is a living document and hence, should be updated to reflect increased understanding of Project program and design throughout construction and operation (until agreed otherwise by Project Lenders) and should also be informed by new information as it becomes available (e.g., as obtained from ongoing/pre-construction surveys or as received from pertinent stakeholders).

2 Approach

In accordance with IFC PS6, habitats are divided into modified, natural and critical habitats. Critical habitats can be either modified or natural habitats supporting high biodiversity value, including:

- Habitat of significant importance to CR and/or EN species (IUCN Red List)
- Habitat of significant importance to endemic and/or restricted-range species
- Habitat supporting globally significant concentrations of migratory species and/or congregatory species
- Highly threatened and/or unique ecosystems
- Areas associated with key evolutionary processes

PS6 guides how to best identify three classes of area based on vegetation condition ('quality' or 'state'), and significance for biodiversity (see. Table 2-1). PS6 uses the term 'habitat' to refer to these areas, rather than the actual vegetation within them. These three area classed are (i) Modified Habitat; (ii) Natural Habitat; and (iii) Critical Habitat (with Critical Habitat a subset of Modified and Natural Habitat).

Habitat condition is classified as either Natural or Modified based on the extent of human modification of the ecosystem. Monoculture plantations, agricultural areas and urban areas are usually classed as Modified. Both Natural and Modified Habitats may contain globally important biodiversity values, thereby qualifying as Critical Habitat.

Table 2-1 Habitat Classes

Areas Identified in PS6		Condition of the Area	
		Natural	Modified
High Biodiversity Values	Present	Critical Habitat	Critical Habitat
	Absent	Natural Habitat	Modified Habitat

Since habitat destruction is recognized as a major threat to the maintenance of biodiversity and to assess likely significance of impacts, IFC PS6 requires the following depending on habitat status:

Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition.

Modified habitats may include areas managed for agriculture, forest plantations, reclaimed coastal zones, and reclaimed wetlands.

PS6 applies to those areas of modified habitat that include significant biodiversity value, as determined by the risks and impacts identification process required in PS1. The client should minimize impacts on such biodiversity and implement mitigation measures as appropriate.

Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.

The client will not significantly convert or degrade natural habitats, unless all of the following are demonstrated:

- No other viable alternatives within the region exist 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; and
- Any conversion or degradation is mitigated according to the mitigation hierarchy.

In areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible. Appropriate actions include:

- Avoiding impacts on biodiversity through the identification and protection of set asides,
- Implementing measures to minimize habitat fragmentation, such as biological corridors;
- Restoring habitats during operations and/or after operations; and
- Implementing biodiversity offsets

Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to CR and/or EN species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.

- In areas of critical habitat, the client will not implement any project activities unless all of the following are demonstrated.
- No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical;
- The project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values;
- The project does not lead to a net reduction in the global and/or national/regional population of any CR or EN species over a reasonable period of time; and
- A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program.

In such cases where a client is able to meet the requirements defined above, the project's mitigation strategy will be described in a BAP and will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.

2.1 Applicable Guidelines and Standards

2.1.1 National Requirements

The primary framework of the Turkish legislation for environmental legislation is the Environmental Law (Law No: 2872). National laws and regulations regarding protection of the habitats and species are listed in Table 2-2.

Table 2-2: National Legislation on Biodiversity

Legislation (Official Gazette Date/Number - Last Revision Date)	National Strategy Documents
Law on National Parks (11.08.1983/18132 - 09.07.2018) Terrestrial Hunting Law (11.07.2003/25165 - 28.10.2020) Law on Animal Protection (01.07.2004/25509 - 13.12.2010) Regulation on the Protection of Wetlands (04.04.2014/28962 - 23.06.2022) Regulation for Implementing the Convention on International Trade in EN Species of Wild Fauna and Flora (27.12.2001/24623 - 20.07.2019) Regulation on Protection of Wildlife and Wildlife Development Areas (08.11.2004/25637) Law on Protection of Cultural and Natural Assets (23.07.1983/18113 - 15.06.2022) Regulation on Collection, Protection and Usage of Plant Genetic Resources (19.07.2012/28358) Law on Fisheries (04.04.1971/ 13799 - 17.02.2021) The Environmental Protection Agency for Special Areas (08.07.2011/ 27988) Environment Law (11.08.1983 / 18132 - 15.06.2022) Forestry Law (08.09.1956 / 9402 - 25.12.2021) Law on Pasture (28.02.1998 / 23272 - 18.01.2019) Law on Coastal Areas Management (17.04.1990 / 20495 - 28.10.2020)	National Plan on on-site Protection of Plant Genetic Diversity (1998) National Environmental Action Plan (1999) National Forestry Program (2004) Climate Change Action Plan (2012) Turkish National Action Plan against Desertification (2015) National Rural Development Strategy (2015) National Biological Diversity Strategy and Action Plan (2019)

2.1.2 International Requirements

International agreements, conventions, and protocols regarding protection of the habitats and species are listed below:

- The Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention) (1981)
- The Convention on the Conservation of European Wildlife and Natural Habitats (BERN) (1984)
- United Nations Framework Convention on Climate Change (1994)
- RAMSAR (1994)
- The UN Convention on Biological Diversity (1997) and Cartagena Protocol on Biosafety (2004)
- Kyoto Protocol (2009)
- The Convention on International Trade in EN Species of Wild Fauna and Flora (CITES) (1996)
- Paris Agreement (2016)

2.1.3 Project Standards

The Project, which will be realized using the planned financing provided by a group of development finance institutions and commercial lenders, jointly “Project Lenders” and with partial coverage by the German ECA Euler Hermes Aktiengesellschaft (“EH”). The Project Company intends to develop the Project in alignment with the policy and requirements of the Lenders (i.e., EP IV, IFC and EBRD standards).

The international lender standards concerning biodiversity for the Project are represented by the IFC PS6 and related GN6, EBRD PR6 and GN6 as well as Equator principles IV (EP IV).

The impact assessment and CHA are carried out in accordance with the following international requirements:

- IFC PSs on Environmental and Social Sustainability,
- EBRD's Environmental and Social Policy and PRs
- IUCN Red List of Threatened Species
- The Birds Directive (2009/147/EC)
- The Habitats Directive (92/43/EEC10)
- Post-construction Bird and Bat Fatality Monitoring for Onshore Wind Energy Facilities in Emerging Market Countries - Good Practice Handbook (2023)

The IFC PS6 objectives can be listed as:

- To protect and conserve biodiversity,
- To maintain the benefits from ecosystem services,
- To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.

Similarly, the EBRD PR6 objectives are as defined below:

- Protect and conserve biodiversity using a precautionary approach,
- Adopt the mitigation hierarchy in the design and implementation of projects with the aim of achieving no net loss, and where appropriate, a net gain of biodiversity,
- Maintain ecosystem services, and
- Promote good international practice in the sustainable management and use of living natural resources.

2.2 Data Collection

The baseline collection methodology of this Draft ESIA relies primarily on desktop components which are detailed below and the data from field surveys conducted as part of National EIA. The Consultant conducted a brief site reconnaissance visit as well.

2.2.1 Desktop Study

A desktop review of the study area comprises the major component of the present Biodiversity assessment. The desktop component was performed perusing the following:

- National EIA report (Flora and Fauna section)
- Relevant publicly available peer-reviewed literature
- White and grey literature
- Public biodiversity databases
  - eBird[1],
  - European Breeding Bird Atlas[2]
  - iNaturalist[3],
  - Tramem[4],
  - Trakel[5],

[1] URL: Ebird.org. Last accessed: 2 January 2024.
[2] URL: ebba2.info, Last accessed: 2 January 2024.
[3] URL: Inaturalist.org. Last accessed: 2 January 2024.
[4] URL: Tramem.org. Last accessed: 2 January 2024.
[5] URL: Trakel.org. Last accessed: 2 January 2024.

  - Trakus[6],
  - Movebank[7],
  - Global Invasive species database[8],
  - Bizimbitkiler[9]
- Satellite imagery and maps
- Opinions of local biodiversity experts (formal / informal)
- Internationally recognized areas
  - KBAs
  - IBAs
- IUCN Red List
- Nationally threatened species
- BERN convention and appendices
- EU Habitats Directive
  - Annex I habitats
  - Annex II/IV species

Baseline information on terrestrial and aquatic ecology has been collected through ecological surveys conducted within the scope of the National EIA study. Accordingly, the timings of the field studies carried out are given below;

- National EIA Appendix 18 Report on Honeybees and Beekeeping, field surveys were conducted on 19 March 2022.
- National EIA Appendix 24 Report on Flora and Fauna, field surveys were conducted three times, on April and May 2022 for flora; and between 6 May and 10 May 2022 for fauna.
- National EIA Appendix 25 Report on Bats, field surveys were conducted on 6-7 August 2021, 20-21 August 2021, and 1-2 September 2021, for 6 day/nights.
- National EIA Appendix 26 Report on Ornithology, field surveys were conducted August – November 2021 and March – May 2022.

2.2.2 Field Surveys

Given the limited timescale, it was not possible to undertake the biodiversity baseline surveys during appropriate season before the completion of the CHA study. It was possible to conduct a brief site visit (less than one day) which can be described as a reconnaissance visit.

On 1 November 2023, the Project area was partially visited by one biodiversity consultant of Mott MacDonald. Brief point counts for birds and transect walks for flora and terrestrial fauna were conducted.

Due to the seasonality (autumn) of the day, the visit only provided an opportunity for general observations about habitat characteristics, especially for birds and bats.

If some features were not observed by consultant during this visit, it does not necessarily indicate such features are not present and/or abundant.

[6] URL: Trakus.org. Last accessed: 2 January 2024.
[7] URL: movebank.org. Last accessed: 2 January 2024.
[8] URL: iucngisd.org. Last accessed: 2 January 2024.
[9] URL: Bizimbitkiler.org.tr. Last accessed: 2 January 2024.

2.3 Identification of Ecologically Appropriate Area of Analysis

The Project consists of 15 turbines and their pads, the site and access roads, the switchyard area and the entire length of the ETL and pylons. Although the ETL and pylons are owned and operated by TEIAS, the standards of Project Lenders include these structures, along with the site roads and access roads, in impact assessments and subsequent adaptive management and monitoring programmes.

The investigation into the region's ecology was carried out to define an EAAA, to determine the presence of features that may qualify for Critical Habitat. The EAAA was identified at a scale IAoI of the Project area, considering large-scale ecological processes. This approach ensures that all potential risks within the Project footprint and surrounding vicinity are taken into consideration.

The EAAA was defined using a combination of water catchments, topographic information, and legally protected areas and/or internationally recognized areas of high biodiversity value information. Species with a very specific distribution and ecological requirements were taken into account in defining the EAAA.

For the purposes of this CHA, the EAAA for flora and terrestrial fauna (amphibians, reptiles and non-bat mammals) was designated as the wider Akdag-Denizli KBA borders. Further information regarding the KBA designation is provided under Section 3.1. The EAAA for flora and fauna encompasses an area of 1343 km^2. The EAAA for flora and terrestrial fauna is shown on **Figure 2-1**. For EAAA for birds and bats, since the Project is not on a known major migratory route, the EAAA was based on the KBA borders again, but extended further to encompass the entire mountain ridge and the surrounding lowlands. The EAAA for birds and bats encompasses an area of 2092 km^2 and is shown on **Figure 2-2**.

Within the EAAA, an AoI of the Project on biodiversity values was designated. For flora species, since the main expected impact source is ground preparation during construction phase, and secondary impacts of habitat degradation during operation, the AoI was designated as extending 2 km from the Project footprint. A similar approach was taken for terrestrial fauna species (amphibians, reptiles, and non-bat mammals) however since these species are more mobile, the AoI was designated as extending 5 km from all Project components. For avifauna (birds and bats), which are highly mobile and migratory, and can utilize much larger territories, the extent of impact needs to be studied in a wider area. The primary expected impact source is due to interactions with moving and electrified Project components. Therefore, an AoI of 15 km was adopted. This AoI also ensures coverage of Project roads which are secondary sources of impact for avifauna. Project AoI for all taxa is shown on Figure 2-3.

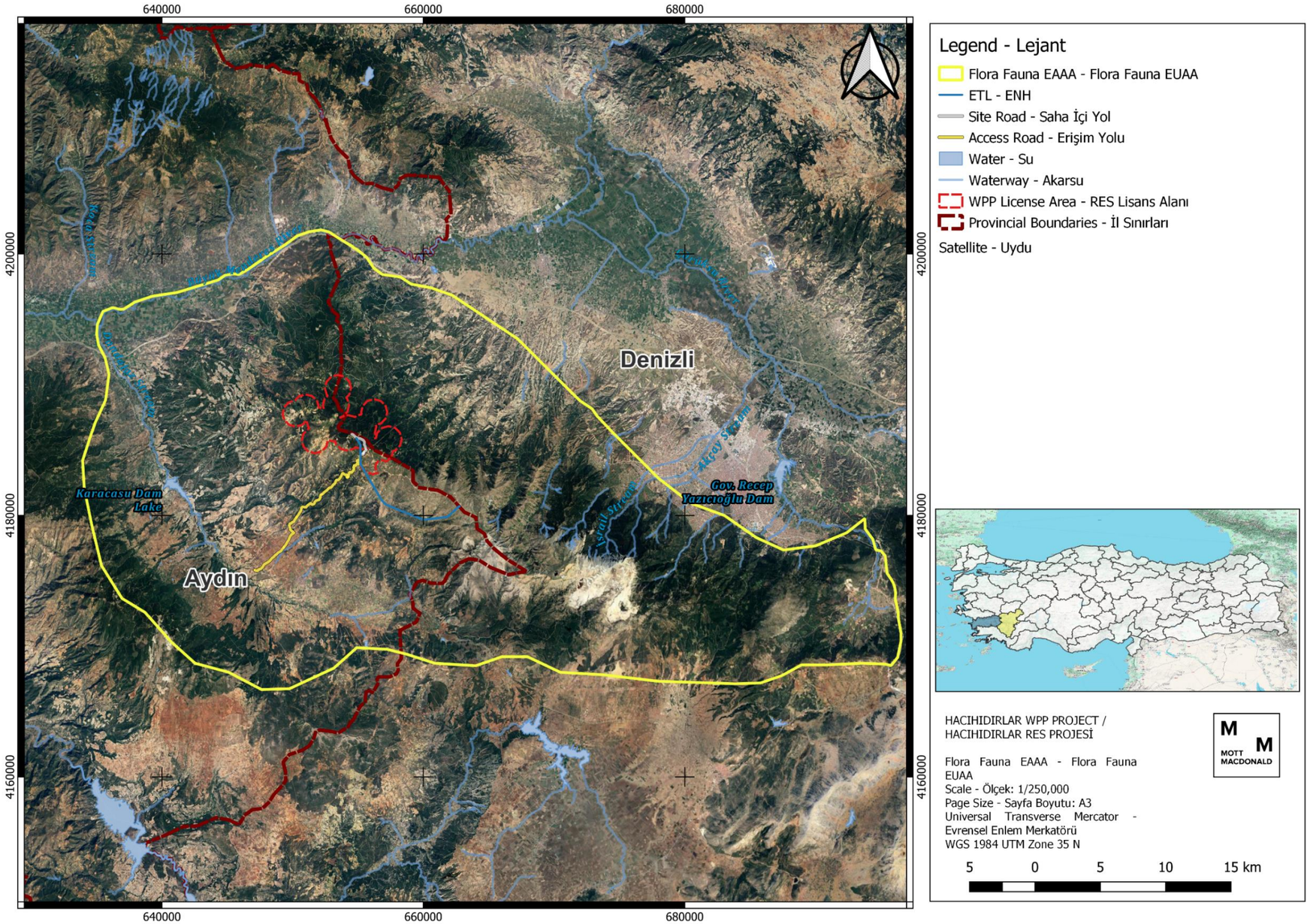

Figure 2-1: EAAA for Flora and Terrestrial Fauna for the Project

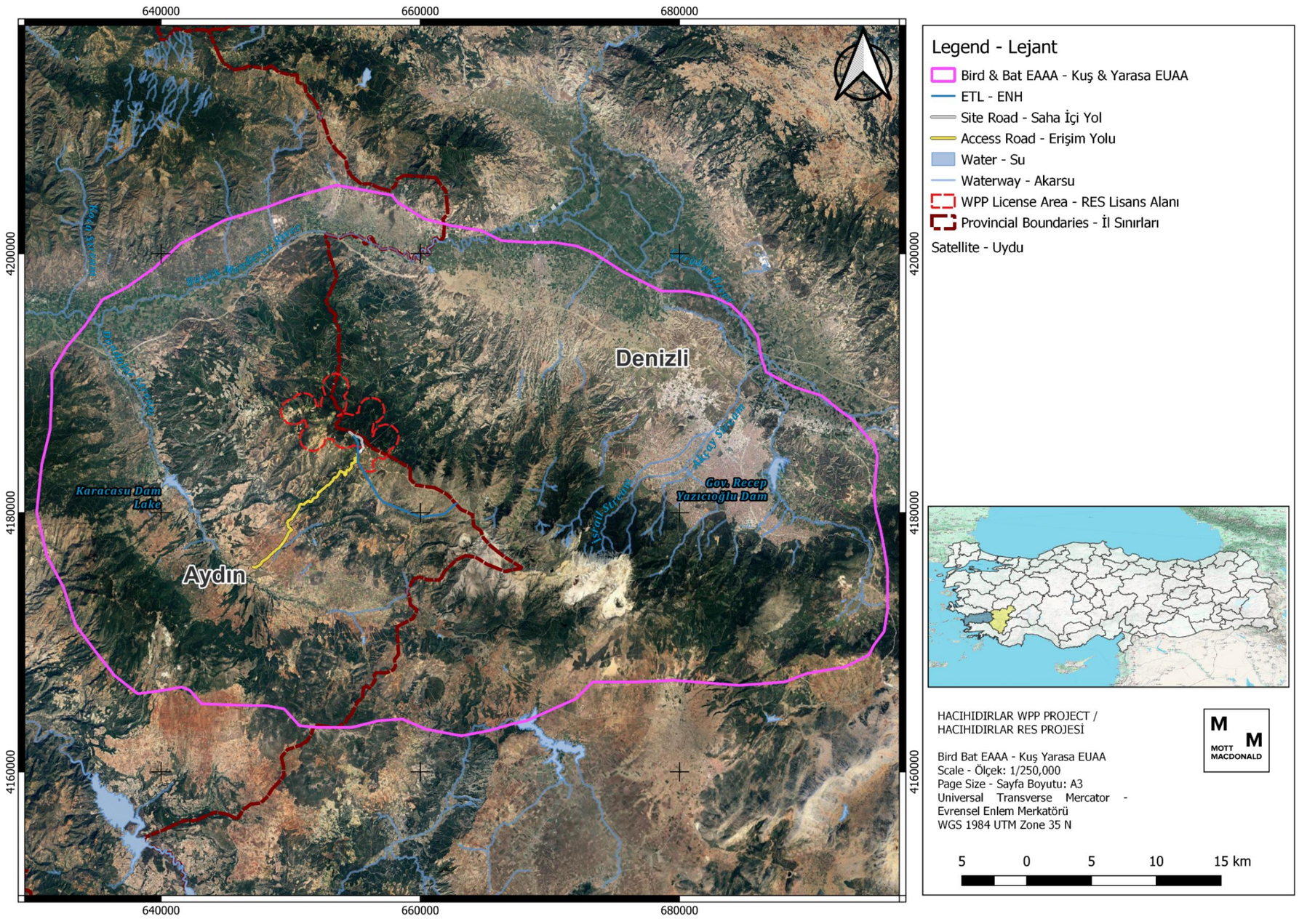

Figure 2-2: EAAA for Birds and Bats for the Project

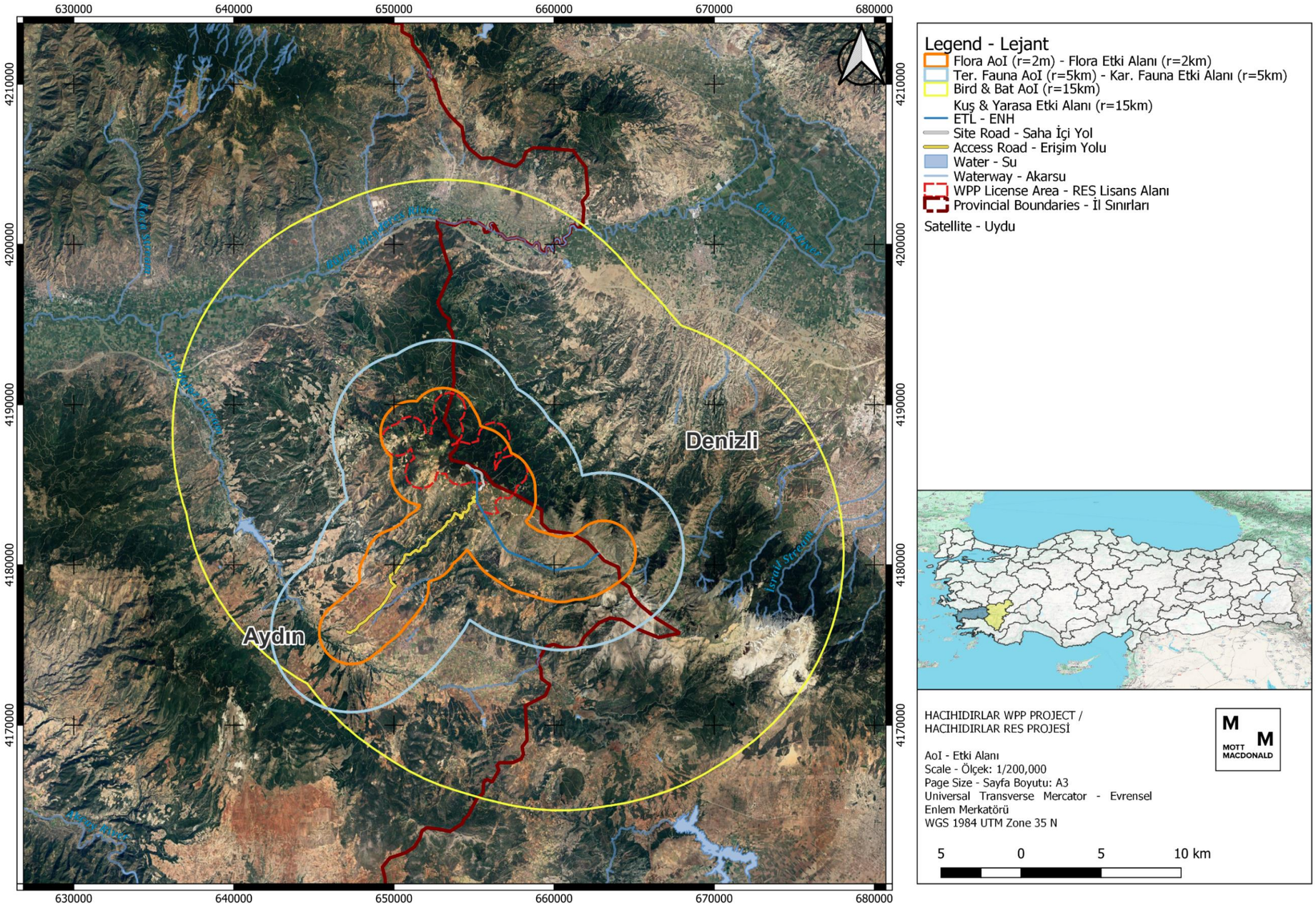

Figure 2-3: AoI for different biological taxa for the Project

2.4 Limitations and Assumptions

The consultant undertakes the CHA study given the following important caveats and limitations:

1. **Field survey duration**: A very limited field survey was undertaken which can be described better as a field reconnaissance survey that lasted a day. Given the limited timescale, it was not possible to undertake the biodiversity baseline surveys for appropriate duration or effort before the completion of the CHA. The visit was partial due to the following reasons,
    - Access and site roads are only partially accessible by all terrain vehicle,
    - No time was available to cover the site on foot.
2. **Field survey season**: The season (autumn) of the reconnaissance survey was not very conducive to studying the biodiversity features of the Project. Only a general impression of the habitat characteristics was obtained.
3. **Field survey coverage:** Only a limited portion of the Project area was able to be accessed. The entirety of the Project was not visited due to lack of vehicle accessible roads and lack of time to cover the area on foot.
4. **Desktop analysis:** The desktop component relies heavily on National EIA field studies at the Project area. However, the National EIA biodiversity surveys have deficiencies in meeting lender methodology and standards. One of the most significant deficiencies was pertaining to the Vantage Point surveys and Collision Risk Model**.** Additionally, Bat Activity Index is not available.
5. **CHA:** Due to time constraints of the assessment process and the quality/quantity of the field data available from the National EIA study, only a high-level CHA can be conducted. Present CHA relies mainly on (1) Desktop components and (2) National EIA surveys which are only considered preliminary.
6. **Field surveys proposed:** Surveys for baseline collection in 2024 were scheduled by the Project company and will be used to update the present CHA study.

2.5 Critical Habitat Assessment Criteria

A high-level screening was undertaken to identify the likely occurrence of species and habitats that could trigger Critical Habitat using the IFC PS6 GN6 (IFC, 2019). These species included IUCN CR and EN species, restricted-range and migratory/ congregatory species that were identified with IUCN geographic ranges within the EAAA. Likelihood of occurrence was evaluated based on consultation with local biodiversity specialists, landcover mapping, habitat preferences of the species etc.

Critical Habitat Criteria are as follows and should form the basis of any CHA:

- Criterion 1: CR and/or EN species
- Criterion 2: Endemic or restricted-range species
- Criterion 3: Migratory or congregatory species
- Criterion 4: Highly threatened and/or unique ecosystems
- Criterion 5: Key evolutionary processes

Projects that are located within internationally and/or nationally recognized areas of high biodiversity value may require a CHA. Examples include the following:

- Areas that meet the criteria of the IUCN's Protected Area Categories Ia, Ib and II,
- KBAs, which encompass IBAs and KBAs,
- UNESCO Natural and Mixed World Heritage Sites,
- Sites that fit the designation criteria of the AZE

Quantitative thresholds for triggering Critical Habitat for Criteria 1-4 are described in Table 2-3.

Table 2-3: Quantitative thresholds for triggering Critical Habitat for Criteria 1-4

Criteria	Quantitative Thresholds
1. CR / EN Species	(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 in GN72(a). (c) As appropriate, areas containing important concentrations of a nationally or regionally listed EN or CR species.
2. Endemic / Restricted-range Species[10]	(a) Areas that regularly hold ⩾10% of the global population size AND ⩾10 reproductive units of a species.
3. Migratory / Congregatory Species	(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.
4. Highly Threatened / 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 1-3: Species Biodiversity Values

In evaluating Hacıhıdırlar WPP biodiversity values for criterion 1-3, species demonstrated to regularly occur on site (confirmed through survey or considered likely to be present) were screened against the relevant criteria listed in the table above. Taking into consideration factors such as habitat suitability, movements patterns, foraging and breeding habits within the EAAA were assessed for each species to identify potential critical habitat triggers. Since the population size data of the species in the Project area is in the form of relative abundance for the flora species, the population data was evaluated accordingly.

Relative abundance is calculated by local abundance / dominance method using Braun-Blanquette and Pavillard cover percentage scale. The scale is given below:

- Abundant species, weak cover percentage 1
- Abundant species or cover percentage more than 5% 2
- Cover percentage between 25% and 50% 3
- Cover percentage between 50% and 75% 4
- Cover percentage between 75% and 100% 5

For bat species, since both Bat Activity Index is unavailable from the Project area (or a nearby comparable project), and population (global and regional) data are very limited, it is not feasible to undertake CHA based on population sizes and predicted impact on populations. Therefore, all available information was gathered for the species which were observed or clearly indicated in literature for the area, and Priority Biodiversity Feature designations were made based on assigning 1 point each for the following criteria: (1) conservation status is VU or higher, (2)

[10] For terrestrial vertebrates and plants, restricted-range species are defined as those species that have an EOO less than 50,000 km^2

For coastal, riverine, and other aquatic species in habitats that do not exceed 200 km width at any point (for example, rivers), restricted range is defined as having a global range of less than or equal to 500km linear geographic span (i.e., the distance between occupied locations furthest apart).

collision risk is high (half point for medium) and (3) species is a mid or long-distance migrant. Species which scored 2 or 3 were included as Priority biodiversity feature.

Criterion 4: Highly Threatened / Unique Ecosystems

A desk study was undertaken to identify if a formal IUCN Red List of Ecosystems assessment has been performed in the EAAA. Where no formal IUCN assessment has been undertaken, a search for national/regional level assessments, which use systematic methods, is undertaken and identified. The presence of Annex I priority habitats designated in the EU Habitats Directive was also considered in line with EBRD PR6.

Criterion 5: Key Evolutionary Processes

The structural attributes of a region, such as its topography, geology, soil, temperature, and vegetation, as well as combinations of these variables, can influence the evolutionary processes that give rise to regional configurations of species and ecological properties such as genetically unique populations or subpopulations of plant and animal species. Maintaining these key evolutionary processes inherent in a landscape as well as the resulting species (or subpopulations of species) is important for the conservation of genetic diversity. By conserving species diversity within a landscape, the processes that drive speciation, as well as the genetic diversity within species, ensure the evolutionary flexibility in a system.

The determination of critical habitat for Key Evolutionary Processes is determined qualitatively on a case-by-case basis and heavily reliant on scientific knowledge (IFC, 2019); therefore, a literature review would need to be undertaken as part of a full CHA to assess if the EAAA includes sites where key evolutionary processes occur for biodiversity values.

Priority Biodiversity Features (PBF)

PBF have a high, but not the highest, degree of irreplaceability and/or vulnerability. Although a level below critical habitat in sensitivity, they still require careful consideration during project assessment and impact mitigation.

EBRD PR6 defines PBF as including:

- threatened habitats,
- VU species,
- significant biodiversity features identified by a broad set of stakeholders or governments (such as KBAs or IBAs), and
- ecological structure and functions needed to maintain the viability of PBF.

3 Baseline Conditions

3.1 Internationally Recognised and Nationally Protected Areas

Hacihidirlar WPP, including its roads, switchyard and ETL, is located within Akdag – Denizli KBA, code EGE026, which consists of mountain ranges, valleys, and a part of Buyuk Menderes River, including the many streams that originate in the mountains and feed into the river, *Pinus* forests and alpine grassland[11][12]. The list of trigger species focuses on flora but also includes amphibian and fish species. *Colchicum micaceum* and *Nephelochloa orientalis* were scoped in since the Project AoI contains suitable habitat, *Barbus pergamonensis* was scoped out since the Project AoI does not interact with streams, and *Rana tavansensis* is recognized as only occurring at a very small, defined area away from the Project AoI, but was kept in scope due to research gaps and its endemism and CR status as a precaution.

3.2 Habitats and Flora

The recorded habitats are listed in the Table 3-1 below, along with their wide distribution areas within the study area. The amount of habitat lost due to access road, site roads, turbine footprints and switchyard area are given between Table 3-6 .

Table 3-1: Habitat Types of the Project AoI

Broad habitat type	EUNIS Habitat Type	Extend within Project Footprint (ha)	Percentage (%)
Steppe	E4.4 Calcareous alpine and subalpine grassland	4660.43472	32.79%
Woodland	G1.A Meso- and eutrophic Quercus, Carpinus, Fraxinus, Acer, Tilia, Ulmus and related woodland (Galio-Carpinetum oak-hornbeam forests)	43.96298121	0.31%
	G3.5 *Pinus nigra* woodland	4773.759086	33.59%
	G3.7 *Pinus brutia* woodland	599.8854114	4.22%
Regularly or recently cultivated agricultural, horticultural and domestic habitats	I1.2 Mixed crops of market gardens and horticulture	28.8177751	0.20%
Constructed, industrial and other artificial habitats	J1.2 Residential buildings of villages and urban peripheries	28.81777516	0.20%

Table 3-2 Habitat Loss on Access Road

EUNIS	Area (ha)	Percentage (%)

[11] Key Biodiversity Areas Partnership (2024) Key Biodiversity Areas factsheet: Akdağ - Denizli. Extracted from the World Database of Key Biodiversity Areas. Developed by the Key Biodiversity Areas Partnership: BirdLife International, IUCN, American Bird Conservancy, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Re:wild, NatureServe, Rainforest Trust, Royal Society for the Protection of Birds, World Wildlife Fund and Wildlife Conservation Society. Downloaded from https://keybiodiversityareas.org/ on 03/01/2024.

[12] BirdLife Turkiye (2023) Accessed online, https://www.dogadernegi.org/akdag-denizli/ on 03/01/2024.

E4.4 Calcareous alpine and subalpine grassland	0.6	0.0%
G3.5 *Pinus nigra* woodland	5.2	0.1%
I1.2 Mixed crops of market gardens and horticulture	8.6	0.2%
J1.2 Residential buildings of villages and urban peripheries	0.7	2.5%
Total	**15.2**	

Table 3-3 Habitat Loss on Site Roads

EUNIS	Area (ha)	Percentage
E4.4 Calcareous alpine and subalpine grassland	0.6	0.0%
G3.5 *Pinus nigra* woodland	0.5	0.0%
I1.2 Mixed crops of market gardens and horticulture	1.0	0.0%
J1.2 Residential buildings of villages and urban peripheries	0.0	0.0%
Total	**2.1**	

Table 3-4 Habitat Loss on Turbine Footprint

EUNIS	Area (ha)	Percentage
E4.4 Calcareous alpine and subalpine grassland	2.7	11.7%
G3.5 *Pinus nigra* Woodland	14.9	65.7%
G3.7 *Pinus brutia* woodland	1.1	4.7%
I1.2 Mixed crops of market gardens and horticulture	4.1	17.9%
Total	**22.7**	

Table 3-5 Habitat Loss on Switchyard Area

EUNIS	Area	Percentage
E4.4 Calcareous alpine and subalpine grassland	0.0	0.0%
G3.5 *Pinus nigra* Woodland	0.0	0.0%
G3.7 *Pinus brutia* woodland	0.0	0.0%
I1.2 Mixed crops of market gardens and horticulture	1.0	100%
Total	**1.0**	

Table 3-6: Habitat Loss on ETL

EUNIS	Area (ha)	Percentage
E4.4 Calcareous alpine and subalpine grassland	64.0	1.4%
G3.5 *Pinus nigra* Woodland	8.1	0.2%
I1.2 Mixed crops of market gardens and horticulture	14.7	0.4%
J1.2 Residential buildings of villages and urban peripheries	0.0	0.0%
Total	86.9	

A list of endemic species, based on all available information with their conservation status and whether they were encountered during field studies at the Project area is provided in National EIA. According to this study, a total of 164 plant taxa were identified. The full list of species is not presented in this document, endemic species which are determined both National EIA and Consultant's studies are listed with National Red List categories in Table 3-7. Given these species have not yet been evaluated by IUCN, national categories have been used.

Table 3-7: The endemic species in the Project AoI

Taxon		IUCN/National Red List Category*	L/O*
1	*Colchicum micaceum*	EN*	L
2	*Nephelochloa orientalis*	VU*	L
3	*Centaurea aphrodisea*	VU*	L
4	*Bolanthus minuartioides*	LC*	L
5	*Asyneuma michauxioides*	LC*	L
6	*Astragalus acmonotrichus*	LC*	L
7	*Astragalus angustiflorus subsp. anatolicus*	LC*	L
8	*Astragalus angustifolius subsp. longidens*	LC*	O
9	*Astragalus depressus var. tasheliensis*	LC*	L
10	*Astragalus mesogitanus*	LC*	L
11	*Colutea melanocalyx*	LC*	L
12	*Trigonella procumbens*	LC*	O
13	*Trigonella plicata*	LC*	O
14	*Hypericum avicullariifolium*	LC*	O
15	*Corydalis wendelboi subsp. wendelboi*	LC*	L
16	*Linaria corifolia*	LC*	O
17	*Ranunculus reuterianus*	LC*	L
18	*Muscari latifolium*	LC*	O
19	*Gagea bithynica*	LC	O
20	*Iris schachtii*	LC*	O
21	*Hyacinthella heldreichii*	LC*	O
22	*Cyanus reuterianus var. phrygia*	LC*	L
23	*Bromus cappadocicus subsp. sclerophyllus*	LC*	O
24	*Minuartia recurva*	VU	L
25	*Phlomis carica*	VU	L
26	*Erysimum caricum*	CR	L
Non-Endemic Rare Species			
27	*Tulipa orphanidea*	LC	O
28	*Tulipa sylvestris var. australis*	LC	O

*L:Literature, O:Observation

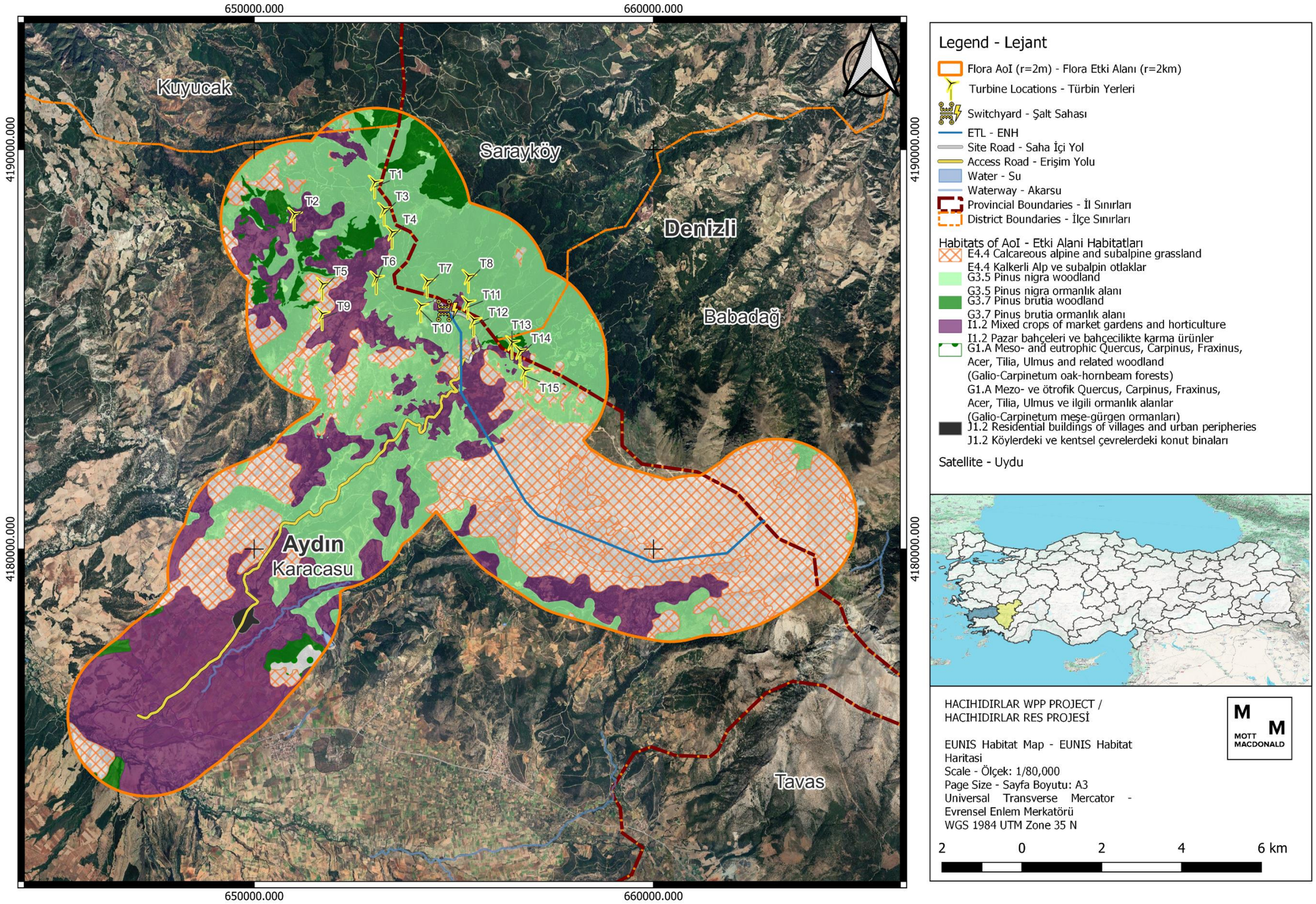

Figure 3-1 EUNIS Habitats of the Project AoI

3.3 Birds

Three groups of bird species are specifically important for the Project area: (1) large soaring migratory species (storks, pelicans, eagles, buzzards, sparrowhawks, falcons, harriers, kites), (2) large soaring resident species and (3) other species of conservation concern. Target species are provided on Table 3-8.

Table 3-8. List of significant bird species, conservation status

Common Name	Scientific Name	IUCN	National	Bird directive	BERN	L/O*
Levant Sparrowhawk	*Accipiter brevipes*	LC	VU	Annex I	Appendix II	L
Northern Goshawk	*Accipiter gentilis*	LC	NT	-	Appendix II	O
Eurasian Sparrowhawk	*Accipiter nisus*	LC	NT	-	Appendix II	O
Cinereous Vulture	*Aegypius monachus*	NT	EN	Annex I	Appendix II	L
Demoiselle Crane	*Anthropoides virgo*	LC	CR	-	Appendix III	L
Golden Eagle	*Aquila chrysaetos*	LC	-	Annex I	Appendix II	L
Bonelli's Eagle	*Aquila fasciata*	LC	EN	Annex I	Appendix II	L
Imperial Eagle	*Aquila heliaca*	VU	EN	Annex I	Appendix II	L
Steppe Eagle	*Aquila nipalensis*	EN	CR	-	Appendix II	L
Eurasian Eagle-Owl	*Bubo bubo*	LC	-	Annex I	Appendix II	L
Common Buzzard	*Buteo buteo*	LC	-	-	Appendix II	O
Rough-legged Hawk	*Buteo lagopus*	LC	-	-	Appendix II	L
Long-legged Buzzard	*Buteo rufinus*	LC	NT	Annex I	Appendix II	O
White Stork	*Ciconia ciconia*	LC	-	Annex I	Appendix II	L
Black Stork	*Ciconia nigra*	LC	-	Annex I	Appendix II	L
Short-toed Snake-Eagle	*Circaetus gallicus*	LC	VU	Annex I	Appendix II	O
Eurasian Marsh-Harrier	*Circus aeruginosus*	LC	NT	Annex I	Appendix II	L
Hen Harrier	*Circus cyaneus*	LC	DD	Annex I	Appendix II	O**
Pallid Harrier	*Circus macrourus*	NT	CR	Annex I	Appendix II	L
Montagu's Harrier	*Circus pygargus*	LC	EN	Annex I	Appendix II	L
Greater Spotted Eagle	*Clanga clanga*	VU	VU	Annex I	Appendix II	L
Lesser Spotted Eagle	*Clanga pomarina*	LC	EN	Annex I	Appendix II	O**
Lanner Falcon	*Falco biarmicus*	LC	VU	Annex I	Appendix II	L
Saker Falcon	*Falco cherrug*	EN	CR	Annex I	Appendix II	L
Merlin	*Falco columbarius*	LC	-	Annex I	Appendix II	L
Eleonora's Falcon	*Falco eleonorae*	LC	EN	Annex I	Appendix II	L
Lesser Kestrel	*Falco naumanni*	LC	VU	Annex I	Appendix II	L
Peregrine Falcon	*Falco peregrinus*	LC	VU	Annex I	Appendix II	O
Eurasian Hobby	*Falco subbuteo*	LC	-	-	Appendix II	O**
Eurasian Kestrel	*Falco tinnunculus*	LC	-	-	Appendix II	O**
Red-footed Falcon	*Falco vespertinus*	VU	-	Annex I	Appendix II	O**
Common Crane	*Grus grus*	LC	EN	Annex I	Appendix III	L
Bearded Vulture	*Gypaetus barbatus*	NT	EN	Annex I	Appendix II	L
Eurasian Griffon	*Gyps fulvus*	LC	EN	Annex I	Appendix II	L
White-tailed Eagle	*Haliaeetus albicilla*	LC	CR	Annex I	Appendix II	L
Booted Eagle	*Hieraaetus pennatus*	LC	VU	Annex I	Appendix II	O**
Black Kite	*Milvus migrans*	LC	EN	Annex I	Appendix II	L

Common Name	Scientific Name	IUCN	National	Bird directive	BERN	L/O*
Red Kite	*Milvus milvus*	LC	DD	Annex I	Appendix II	L
Egyptian Vulture	*Neophron percnopterus*	EN	VU	Annex I	Appendix II	L
Osprey	*Pandion haliaetus*	LC	DD	Annex I	Appendix II	L
Dalmatian Pelican	*Pelecanus crispus*	NT	VU	Annex I	Appendix II	L
Great White Pelican	*Pelecanus onocrotalus*	LC	EN	Annex I	Appendix II	L
European Honey-buzzard	*Pernis apivorus*	LC	NT	Annex I	Appendix II	O**
European Turtle-Dove	*Streptopelia turtur*	VU	VU	Annex II B	Appendix III	O

*L: Literature, O: Observation, O**: Observation from VP studies of an adjacent WPP

3.4 Bats

Five species were recorded which are shown as O (Observed) in Table 3-9. In addition, the Consultant's expert has conducted acoustic monitoring at an adjacent WPP, and observed species are provided (O**).

Table 3-9: List of bat species for the Project area and conservation status.

Common Name	Scientific Name	Status	IUCN Global	IUCN EU	IUCN Med	BERN	EU Habitat Directive	Collision Risk	L/O*
Western Barbastelle	*Barbastella barbastellus*	Declining	NT	VU	NT	I, II	II, IV	Medium	L
Serotine	*Eptesicus serotinus*	Stable	LC	-	-	II	IV	Medium	O**
Savi's Pipistrelle	*Hypsugo savii*	Stable	LC	LC	LC	II	IV	High	O**
Schreiber's Bent-winged Bat	*Miniopterus schreibersii*	Declining	VU	-	-	I, II	II, IV	High	O**
Alcathoe Bat	*Myotis alcathoe*	Unknown	DD	-	-	II	IV	Low	L
Steppe Whiskered Bat	*Myotis aurascens*	Stable	LC	LC	LC	II	IV	Low	L
Bechstein's Myotis	*Myotis bechsteinii*	Declining	NT	VU	NT	I, II	II, IV	Low	L
Lesser Mouse-eared Myotis	*Myotis blythii*	Declining	LC	NT	NT	I, II	II, IV	Low	L
Long-fingered Bat	*Myotis capaccinii*	Declining	VU	VU	VU	I, II	II, IV	Low	L
Daubenton's Myotis	*Myotis daubentonii*	Stable	LC	-	-	II	IV	Low	L
Geoffroy's Bat	*Myotis emarginatus*	Stable	LC	LC	LC	I, II	II, IV	Low	L
Greater Mouse-eared Bat	*Myotis myotis*	Stable	LC	LC	LC	I, II	II, IV	Low	O**
Whiskered Myotis	*Myotis mystacinus*	Unknown	LC	LC	LC	II	IV	Low	L
Natterer's Bat	*Myotis nattereri*	Stable	LC	-	-	II	IV	Low	L
Giant Noctule	*Nyctalus lasiopterus*	Declining	VU	DD	NT	II	IV	High	O**
Lesser Noctule	*Nyctalus leisleri*	Unknown	LC	LC	LC	II	IV	High	L
Noctule	*Nyctalus noctula*	Unknown	LC	LC	LC	II	IV	High	O
Kuhl's Pipistrelle	*Pipistrellus kuhlii*	Unknown	LC	LC	LC	II	IV	High	O**
Nathusius' Pipistrelle	*Pipistrellus nathusii*	Unknown	LC	LC	LC	II	IV	High	L
Common Pipistrelle	*Pipistrellus pipistrellus*	Stable	LC	-	-	III	IV	High	O
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Unknown	LC	LC	LC	II	IV	High	L

Common Name	Scientific Name	Status	IUCN Global	IUCN EU	IUCN Med	BERN	EU Habitat Directive	Collision Risk	L/O*
Brown Long-eared Bat	*Plecotus auritus*	Stable	LC	-	-	II	IV	Low	L
Grey Long-eared Bat	*Plecotus austriacus*	Declining	NT	NT	-	II	IV	Low	L
Mediterranean Long-eared Bat	*Plecotus kolombatovici*	Declining	LC	NT	LC	II	IV	Low	L
Mountain Long-eared Bat	*Plecotus macrobullaris*	Declining	LC	NT	NT	II	IV	Low	L
Blasius's Horseshoe Bat	*Rhinolophus blasii*	Declining	LC	VU	NT	I, II	II, IV	Low	L
Mediterranean Horseshoe Bat	*Rhinolophus euryale*	Declining	NT	VU	VU	I, II	II, IV	Low	L
Greater Horseshoe Bat	*Rhinolophus ferrumequinum*	Declining	LC	NT	NT	I, II	II, IV	Low	L
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	Declining	LC	NT	NT	I, II	II, IV	Low	L
Mehely's Horseshoe Bat	*Rhinolophus mehelyi*	Declining	VU	VU	VU	I, II	II, IV	Low	L
European Free-tailed Bat	*Tadarida teniotis*	Unknown	LC	LC	LC	II	IV	High	O**
Particoloured Bat	*Vespertilio murinus*	Stable	LC	LC	-	II	IV	High	L

*L: Literature, O: Observation, O**: Acoustic study results at an adjacent WPP

3.5 Terrestrial fauna (non-bat mammals, reptiles, amphibians)

During the National EIA terrestrial fauna studies, 8 amphibian species, 31 reptile species and 31 non-bat mammals were either observed or were identified as relevant in desktop components. A list of significant species is provided in Table 3-10.

Table 3-10. List of significant terrestrial fauna for the Project area

Common Name	Scientific Name	IUCN	BERN	Habitats directive	L/O*
Anatolian Rock Lizard	*Anatololacerta oertzeni*	LC (endemic)	Appendix III	-	L
European Pond Turtle	*Emys orbicularis*	NT	Appendix I-II	Appendix I	L
Common Tortoise	*Testudo graeca*	VU	Appendix I-II	Appendix II-IV	O
Tavas Frog	*Rana tavansensis*	CR	-	-	L
Brandt's Hamster	*Mesocricetus brandti*	NT	-	-	L
Leopard	*Panthera pardus*	VU	Appendix I-II	-	L
Anatolian Ground Squirrel	*Spermophilus xanthoprymnus*	NT	-	-	L
Marbled polecat	*Vormela peregusna*	VU	Appendix I-II	Appendix II-IV	L

*L: Literature, O: Observation

3.6 Invertebrates

Bradyporus macrogaster, and *Poecilium kasnaki* were identified as potentially present in desktop studies and might necessitate further baseline information.

Bradyporus macrogaster (EN) inhabits steppe-like habitats dominated by xeric grasses and sparse scrub, in some areas like the Aegean coast of Anatolia it enters Mediterranean vegetation, such as sparse xerothermic oak forests or scrub or mesoxeric grass associations.

4 Critical Habitat Assessment

Evaluation against each criterion is carried out in table format which includes potential trigger species, their IUCN status, relation to the Project AoA, observation status in the AoA and summary of findings. Potential species were selected in line with the CHA Criteria from literature and survey findings. For Criterion 1 to 3, due to the limited information to estimate numbers of individuals of potentially qualifying species within the AoA, expert opinion has been applied to evaluate the importance of the identified potential Critical Habitat in terms of global populations. The EOO of species has been applied as a surrogate for local population data. This means that a precautionary approach was applied in the evaluation against PS6 thresholds. Global EOO information was obtained from the IUCN Red List Database which covers all of the potential Critical Habitat trigger species. In some cases, the presence of species in the AoA has been inferred based on habitat suitability and in cases where presence has been confirmed, the distribution within the species range and project AoA has been assumed. This results in a conservative Critical Habitat evaluation.

4.1 Criteria 1-3: Species Biodiversity Values

For Criterion 1, CR, EN and VU species were examined whether the Project area supports more than 0.5% globally important concentrations of these species or whether the Project could lead to a decrease in population of species categorized as VU. For this examination, both national and international categories of these species were considered. For Criterion 3, migratory species were examined whether the Project area sustains more than 1% of global population in a regular basis or whether the area supports more than 10% of the global population of the species during environmental stress period.

The global population, the EOO and the Project area were considered to estimate the global range of species in AoI to assign Critical Habitat trigger status of species based on Criterion 1 and 3. When the observed number of species was unknown or species information was obtained from literature; the global population, the EOO and the Project area were considered to estimate the global range of species in AoI to assign Critical Habitat trigger status of species based on Criterion 1 and 3.

For bat species, since both Bat Activity Index is unavailable from the Project area (or a nearby comparable project), and population (global and regional) data are very limited, it is not feasible to undertake CHA based on population sizes and predicted impact on populations. Therefore, all available information was gathered for the species which were observed or clearly indicated in literature for the area, and Priority Biodiversity Feature designations were made based on assigning one point each for the following criteria: (1) conservation status is VU or higher, (2) collision risk is high (half point for medium) and (3) species is a mid or long-distance migrant. Species which scored 2 or 3 were included as Priority Biodiversity Feature.

For plant species, since global population and population data within the AoI were not available, the Braun-Blanquet cover percentage scale data used by the flora expert in the National EIA process were used in the approach.

Table 4-1 Plant Species CHA based on Criteria 1 and 2

Species	IUCN Red List	National Threatened Status	EU Directive	BERN	Endemic / Restricted Range	Global Population	EOO	Evaluation	CH Trigger or Priority Biodiversity Feature	Lit./ Obs.
Centaurea aphrodisea	-	VU	-	-	Endemic/ RR	Unknown	Unknown	This species is not considered as critical habitat trigger species as it was not observed during field studies. Given that the EAAA contains suitable habitat conditions for this species to support, it qualifies under Criterion 1b and 2a as Priority Biodiversity Feature.	PBF	L
Colchicum micaceum		EN	-	-	Endemic	Unknown	Unknown	This species is not considered as critical habitat trigger species as it was not included in the field stuied of BIAS. However, as the species is endemic and has the potential to be found in the EAAA that contains suitable habitat conditions, it qualifies under Criterion 1c and 2a as Priority Biodiversity Feature.	PBF	L
Minuartia recurva	-	VU	-	-	Endemic/ RR	Unknown	Unknown	This species is not considered as critical habitat trigger species as it was not observed during field studies. Given that the EAAA contains suitable habitat conditions for this species to support, it qualifies under Criterion 1b and 2a as Priority Biodiversity Feature.	PBF	L
Nephelochloa orientalis	-	VU	-	-	Regional Endemic	Unknown	Unknown	This species is not considered as critical habitat trigger species as it was not included in the field stuied of BIAS. However, as the species is endemic and has the potential to be found in the EAAA that contains suitable habitat conditions, it qualifies under Criterion 1b and 2a as Priority Biodiversity Feature.	PBF	L
Phlomis carica	-	VU	-	-	Endemic/ RR	Unknown	Unknown	This species is not considered as critical habitat trigger species as it was not observed during field studies. Given that the EAAA contains suitable habitat conditions for this species to support, it qualifies under Criterion 1b and 2a as Priority Biodiversity Feature.	PBF	L
Erysimum caricum	-	CR	-	-	Endemic/ RR	Unknown	Unknown	This species is not considered as critical habitat trigger species as it was not observed during field studies. Given that the EAAA contains suitable habitat conditions for this species to support, it qualifies under Criterion 1c and 2a as Priority Biodiversity Feature.	PBF	L

Table 4-2: CHA for Bird Species depends on Criteria 1-3

Common Name	Scientific name	IUCN	Nat. Red List	Bird Directive	BERN	L/O	Global Population	Population Status	Estimated EOO (km^2)	Estimated birds/year	Cr 1,3 %Global Range in AoI	Evaluation	CH Trigger or Not
Northern Goshawk	*Accipiter gentilis*	LC	NT	-	Appendix II	O	1000000-2499999	Unknown	113000000	19	0.00	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout	Not trigger

												the year is 19. For Cr3, the Project EAAA should support 10000 individuals, so the species does not qualify for this criteria.	
Eurasian Sparrowhawk	*Accipiter nisus*	LC	NT	-	Appendix II	O	2000000-3200000	Stable	54400000	77	0.00	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 77. For Cr3, the Project EAAA should support 20000 individuals, so the species does not qualify for this criteria.	Not trigger
Common Buzzard	*Buteo buteo*	LC	-	-	Appendix II	O	2000000-3500000	Increasing	33500000	125	0.01	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 125. For Cr3, the Project EAAA should support 20000 individuals, so the species does not qualify for this criteria.	Not trigger
Long-legged Buzzard	*Buteo rufinus*	LC	NT	Annex I	Appendix II	O	100000-499999	Stable	32300000	7	0.01	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 7. For Cr3, the Project EAAA should support 1000 individuals, so the species does not qualify for this criteria.	Not trigger
Short-toed Snake-Eagle	*Circaetus gallicus*	LC	VU	Annex I	Appendix II	O	50000-99999	Stable	48800000	3	0.01	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 3. For Cr3, the Project EAAA should support 500 individuals, so the species does not qualify for this criteria.	Not trigger
Hen Harrier	*Circus cyaneus*	LC	DD	Annex I	Appendix II	O	330000-512000	Decreasing	34800000	20	0.01	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 20. For Cr3, the Project EAAA should support 3300 individuals, so the species does not qualify for this criteria.	Not trigger
Lesser Spotted Eagle	*Clanga pomarina*	LC	EN	Annex I	Appendix II	O	40000-60000	Stable	6550000	13	0.03	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 13. For Cr3, the Project EAAA should support 400 individuals, so the species does not qualify for this criteria.	Not trigger
Peregrine Falcon	*Falco peregrinus*	LC	VU	Annex I	Appendix II	O	100000-499999	Increasing	413000000	1	0.00	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 1. For Cr3, the Project EAAA should support 1000 individuals, so the species does not qualify for this criteria.	Not trigger
Eurasian Hobby	*Falco subbuteo*	LC	-	-	Appendix II	O	900000-1500000	Decreasing	49300000	39	0.00	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 39. For Cr3, the Project EAAA should support 9000 individuals, so the species does not qualify for this criteria.	Not trigger
Eurasian Kestrel	*Falco tinnunculus*	LC	-	-	Appendix II	O	4300000-6700000	Decreasing	106000000	85	0.00	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 85. For Cr3, the Project EAAA should support 43000 individuals, so the species does not qualify for this criteria.	Not trigger
Red-footed Falcon	*Falco vespertinus*	VU	-	Annex I	Appendix II	O	287500-400000	Decreasing	3360000	180	0.06	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 180. For Cr3, the Project EAAA should support 2875 individuals, so the species does not qualify for this criteria. PBF was not designated since the species was not directly observed in the National EIA, assessment will be revised after 2024 baseline.	Not trigger
Booted Eagle	*Hieraaetus pennatus*	LC	VU	Annex I	Appendix II	O	150000-195000	Stable	62000000	6	0.00	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 6. For Cr3, the Project EAAA should support 1500 individuals, so the species does not qualify for this criteria.	Not trigger
European Honey-buzzard	*Pernis apivorus*	LC	NT	Annex I	Appendix II	O	290000-430000	Stable	18200000	34	0.01	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 34. For Cr3, the Project EAAA should support 2900 individuals, so the species does not qualify for this criteria.	Not trigger
European Turtle-Dove	*Streptopelia turtur*	VU	VU	Annex II B	Appendix III	O	12800000-47600000	Decreasing	7080000	3783	0.03	The Project EAAA should support at least 1 percent of global population of species to have Critical Habitat trigger species based on Criteria 3. Estimated number of individuals supported throughout the year is 3783. For Cr3, the Project EAAA should support 128000 individuals, so the species does not qualify for this criteria. Since the species was recorded as breeding in the National EIA, PBF was designated due to its conservation status.	PBF

Table 4-3: CHA for Bat Species depends on Criteria 1-3

Common Name	Scientific Name	IUCN Global	IUCN Eu	IUCN Med	BERN	EU Habitat	L / O	Collision Risk	Migratory status	Population Status	Global Population	Estimated EOO (km2)	Cr 1,3 %Global Range in AoI	Score	CH Trigger or Not
Western Barbastelle	*Barbastella barbastellus*	NT	VU	NT	I, II	II, IV	L	Medium	Mostly sedentary	Declining	Unknown	12455378	-	0.5	Not trigger
Serotine	*Eptesicus serotinus*	LC	-	-	II	IV	O**	Medium	mostly sedentary	Stable	Unknown	Unknown	-	0	Not trigger
Savi's Pipistrelle	*Hypsugo savii*	LC	LC	LC	II	IV	O**	High	Probably migrant	Stable	Unknown	15658670	-	0	Not trigger

[13] Hutterer, Rainer & Ivanova, T. & Meyer-Cords, C.H. & Rodrigues, Luisa. (2005). Bat migration in europe. A review of banding data and literature. Federal Agency for Nature Conser Vation

Common Name	Scientific Name	IUCN Global	IUCN Eu	IUCN Med	BERN	EU Habitat	L / O	Collision Risk	Migratory status	Populatio n Status	Global Populatio n	Estimated EOO (km2)	Cr 1,3 %Global Range in AoI	Score	CH Trigger or Not
Schreiber's Bent-winged Bat	*Miniopterus schreibersii*	VU	-	-	I, II	II, IV	O**	High	Mid and long range migrant	Declining	Unknown	19946710	-	0	Not trigger
Alcathoe Bat	*Myotis alcathoe*	DD	-	-	II	IV	L	Low	-	Unknown	Unknown	2860473	-	0	Not trigger
Steppe Whiskered Bat	*Myotis aurascens*	LC	LC	LC	I, II	IV	L	Low	-	Stable	Unknown	4766158	-	0	Not trigger
Bechstein's Myotis	*Myotis bechsteinii*	NT	VU	NT	I, II	II, IV	L	Low	mostly sedentary	Declining	Unknown	6640673	-	0	Not trigger
Lesser Mouse-eared Myotis	*Myotis blythii*	LC	NT	NT	I, II	II, IV	L	Low	mostly sedentary	Declining	Unknown	23471950	-	0	Not trigger
Long-fingered Bat	*Myotis capaccinii*	VU	VU	VU	I, II	II, IV	L	Low	Mid-range seasonal migrant	Declining	Unknown	5387022	-	2	**PBF**
Daubenton's Myotis	*Myotis daubentonii*	LC	-	-	II	IV	L	Low	Facultative migrant	Stable	Unknown	Unknown	-	1	Not trigger
Geoffroy's Bat	*Myotis emarginatus*	LC	LC	LC	II	II, IV	L	Low	mostly sedentary	Stable	Unknown	15654608	-	0	Not trigger
Greater Mouse-eared Bat	*Myotis myotis*	LC	LC	LC	II	II, IV	O**	Low	Mid-range migrant	Stable	Unknown	7071111	-	0	Not trigger
Whiskered Myotis	*Myotis mystacinus*	LC	LC	LC	II	IV	L	Low	mostly sedentary	Unknown	Unknown	13823224	-	0	Not trigger
Natterer's Bat	*Myotis nattereri*	LC	-	-	II	IV	L	Low	Facultative migrant	Stable	Unknown	16030693	-	1	Not trigger
Giant Noctule	*Nyctalus lasiopterus*	VU	DD	NT	III	IV	O**	High	Long distance migrant	Declining	0-9999	8955906	-	0	Not trigger
Lesser Noctule	*Nyctalus leisleri*	LC	LC	LC	II	IV	L	High	Long distance migrant	Unknown	Unknown	20171114	-	2	**PBF**
Noctule	*Nyctalus noctula*	LC	LC	LC	II	IV	O	High	Long distance migrant	Unknown	Unknown	24101079	-	2	**PBF**
Kuhl's Pipistrelle	*Pipistrellus kuhlii*	LC	LC	LC	I, II	IV	O**	High	Sedentary	Unknown	Unknown	51385949	-	0	Not trigger
Nathusius' Pipistrelle	*Pipistrellus nathusii*	LC	LC	LC	I, II	IV	L	High	Long distance migrant	Unknown	Unknown	11175990	-	2	**PBF**
Common Pipistrelle	*Pipistrellus pipistrellus*	LC	-	-	I, II	IV	O	High	Long distance migrant	Stable	Unknown	Unknown	-	2	**PBF**
Soprano Pipistrelle	*Pipistrellus pygmaeus*	LC	LC	LC	I, II	IV	L	High	Probably migrant	Unknown	Unknown	10673041	-	2	**PBF**
Brown Long-eared Bat	*Plecotus auritus*	LC	-	-	I, II	IV	L	Low	Sedentary	Stable	Unknown	12039091	-	0	Not trigger
Gray Long-eared Bat	*Plecotus austriacus*	NT	NT	0	II	IV	L	Low	Sedentary	Declining	Unknown	6047987	-	0	Not trigger
Mediterranean Long-eared Bat	*Plecotus kolombatovici*	LC	NT	LC	II	IV	L	Low	Sedentary	Declining	Unknown	Unknown	-	0	Not trigger
Mountain Long-eared Bat	*Plecotus macrobullaris*	LC	NT	NT	II	IV	L	Low	Sedentary	Declining	Unknown	4767971	-	0	Not trigger
Blasius's Horseshoe Bat	*Rhinolophus blasii*	LC	VU	NT	II	II, IV	L	Low	Mostly sedentary	Declining	Unknown	8849478	-	0	Not trigger
Mediterranean Horseshoe Bat	*Rhinolophus euryale*	NT	VU	VU	II	II, IV	L	Low	Sedentary	Declining	Unknown	10858126	-	0	Not trigger
Greater Horseshoe Bat	*Rhinolophus ferrumequinum*	LC	NT	NT	II	II, IV	L	Low	Mostly sedentary	Declining	Unknown	Unknown	-	0	Not trigger
Lesser Horseshoe Bat	*Rhinolophus hipposideros*	LC	NT	NT	II	II, IV	L	Low	Mostly sedentary	Declining	Unknown	22157273	-	0	Not trigger
Mehely's Horseshoe Bat	*Rhinolophus mehelyi*	VU	VU	VU	II	II, IV	L	Low	mostly sedentary	Declining	Unknown	18885688	-	1	Not trigger
European Free-tailed Bat	*Tadarida teniotis*	LC	LC	LC	II	IV	O**	High	probably sedentary	Unknown	Unknown	18885688	-	0	Not trigger
Particoloured Bat	*Vespertilio murinus*	LC	LC	-	II	IV	L	High	Long distance migrant	Stable	Unknown	25697109	-	2	**PBF**

Table 4-4: CHA for Terrestrial Fauna Species depends on Criteria 1-3

Common Name	Scientific Name	IUCN	BERN	Habitats directive	L/O	Global Population	Population Status	Estimated EOO (km2)	Cr 1,3 %Global Range in AoI	Evaluation	CH Trigger or Not
Common tortoise	*Testudo graeca*	VU	Appendix I-II	Appendix II-IV	O	Unknown	Unknown	Unknown	-	Due to the lack of information on the population status of the species, it is difficult to provide an assessment of whether the species critical habitat trigger or not. Since the IUCN category is VU, it has been evaluated as a priority biodiversity feature under Criterion 1b.	**PBF**
Tavas Frog	*Rana tavasensis*	CR	-	-	L	39-249	Decreasing	671	-	One of the two very limited known populations is identified at Çakıroluk, Denizli (25 km away from the Project footprint) which is within the EAAA but outside of the AoI. Based on	Not trigger

										the available information, the species range is highly restricted, and the habitats of the Project AoI (forest, agricultural areas and sparsely vegetated mountain habitats) do not overlap with the habitat preference of the species (prefers open areas with short-medium grass, found in circumscribed spring-fed brooks and puddles). The species is not expected to be found in the Project AoI based on this information.	

Table 4-5: CHA for Invertebrate Species depends on Criteria 1-3

Common Name	Scientific Name	IUCN	BERN	EU Habitat Directive	Literature/ Observation	Global Population	Population Status	Estimated EOO (km2)	%Global Range in AoI (≥0.5)	Evaluation	CH Trigger or Priority Biodiversity Feature
Big-Bellied Glandular Bush-Cricket	*Bradyporus macrogaster*	EN	-	-	L	Unknown	Decreasing	200000	-	Big-Bellied Glandular Bush-Cricket is found in forest, scrub and grassland habitats at altitudes ranging from 0 to 1,270 metres. The species inhabits steppe-like habitats dominated by xeric grasses and sparse scrub, in some areas like the Aegean coast of Anatolia it enters Mediterranean vegetation, such as sparse xerothermic oak forests or scrub or mesoxeric grass associations. The species prefers sparse vegetation cover areas in terms of forest and shrub areas. The Project AoI does not include these type of habitats. Thus, the species is not considered as critical habitat trigger species.	**Not Trigger**
-	*Poecilium kasnaki*	EN	-	-	L	Unknwon	Unknown	2923	-	The species is endemic to Turkey with a preference to forest habitats and recorded in Isparta and Burdur[14]. The project site is outside the distribution area of the species.	**Not Trigger**

[14] Sama, G., Jansson, N., Avcı, M., Sarıkaya, O., Coşkun, M., Kayış, T., and Özdikmen, H. 2011. Preliminary report on a survey of the saproxilic beetle fauna living on old hollow oaks (Qercus spp.) and oak wood in Turkey (Coleoptera: Cerambycidae). Munis Entomology & Zoology 6(2): 819-831.

4.2 Criteria 4: Highly Threatened / Unique Ecosystem Assessment

Based on EUNIS level 3, 12 habitat types were determined based on desk study and field observation (Table 4-6).

Table 4-6 Criterion 4- Highly Threatened / Unique Ecosystems Assessment

EUNIS Habitat Type	EU Habitat Directive Annex I	BERN	EAAA	CH/PBF
G3.5-Pinus nigra woodland	+	R4	The EAAA is the habitat within the AoI.	This habitat qualifies as **Priority Biodiversity Feature** (Criterion 1.i – ecosystems / habitats listed in terms of Resolution 4 of Bern Convention)
G1.7-Thermophilous deciduous woodland	+	R4	The EAAA is the habitat within the AoI.	This habitat qualifies as **Priority Biodiversity Feature** (Criterion 1.i – ecosystems / habitats listed in terms of Resolution 4 of Bern Convention)
G3.F-Highly artificial coniferous plantations	-			
G5.8-Recently felled areas	-			
G5.3-Small broadleaved evergreen anthropogenic woodlands	-			
E1.2-Perennial calcareous grassland and basic steppes	+	R4	The EAAA is the habitat within the AoI.	This habitat qualifies as **Priority Biodiversity Feature** (Criterion 1.i – ecosystems / habitats listed in terms of Resolution 4 of Bern Convention)
I1.2-Mixed crops of market gardens and horticulture	-			
J3.3-Recently abandoned above-ground spaces of extractive industrial sites	-			

4.3 Criterion 5: Key evolutionary processes

The Project is not substantially different from the surrounding landscape in terms of elevation or moisture gradients, or any other geological, ecological, or evolutionary factors that would suggest that the area is vital for sustaining unique or distinctive evolutionary processes. There is no isolation, spatial heterogeneity, and wealth of environmental gradients. Therefore, the Project does not trigger Criterion 5.

5 Conclusion

The present CHA results are presented below. Due to gaps in both white and grey literature, and Project specific baseline, it was evaluated that not enough data exists in order to safely conclude or rule out Critical Habitat triggers. The CHA is therefore preliminary and high level. The biodiversity values that were identified as sensitive are presented below as PBF triggers, with the recommendation that further baseline collection is carried out in 2024. According to the results of enhanced baseline, accurate identification of CH trigger species will be possible. As such, the present CHA study is expected to be significantly revised with robust, Project specific data. Based on the data available for the CHA, Critical Habitat trigger species were not identified, and PBF are listed in Table 5-1.

Table 5-1 PBF

Scientific Name / Habitat Type	IUCN	Source
Habitat		
G3.5-Pinus nigra woodland		
G1.7-Thermophilous deciduous woodland		
E1.2-Perennial calcareous grassland and basic steppes		
Invertebrates		
Bradyporus macrogaster	EN	Literature
Poecilium kasnaki	EN	Literature
Plant		
Centaurea aphrodisea	VU	Literature
Colchicum micaceum	EN	Literature
Minuartia recurva	VU	Literature
Nephelochloa orientalis	VU	Literature
Phlomis carica	VU	Literature
Erysimum caricum	CR	Literature
Mammals		
Myotis capaccinii	VU	Literature
Nyctalus leisleri	LC	Literature
Nyctalus noctula	LC	Observation
Pipistrellus nathusii	LC	Literature
Pipistrellus pipistrellus	LC	Observation
Pipistrellus pygmaeus	LC	Literature
Vespertilio murinus	LC	Literature
Bird		
Streptopelia turtur	VU	Observation
Reptile		
Testudo graeca	VU	Observation