REPUBLIC OF TURKEY
MINISTRY OF TRANSPORT
AND INFRASTRUCTURE

AYGM
Altyapı Yatırımları Genel Müdürlüğü

ÇINAR®
ENGINEERING
CONSULTANCY INC.

FİLYOS PORT AND INDUSTRIAL ZONE RAILWAY CONNECTION PROJECT

CRITICAL HABITAT ASSESSMENT / BIODIVERSITY MANAGEMENT PLAN

CNR-ZNG-CHA-BMP-002
Final

Official Use Only

Bağlıca Mah. Çambayırı Cad. Çınar Plaza No:66/5 06790 Etimesgut / ANKARA

Tel: +90 312 472 38 39 Fax: +90 312 472 39 33

Web: cinarmuhendislik.com

E-mail: cinar@cinarmuhendislik.com

Project Owner	**T. C. Ministry of Transport and Infrastructure** **General Directorate of Infrastructure Investments**
Address	**Hakkı Turayliç Cad. No: 5 06338 Emek / Çankaya / ANKARA**
Telephone and Fax Numbers	**+90 (312) 203 10 00**
Project Title	**Filyos Port and Industrial Zone Railway Connection Project**
Project Location	**Zonguldak Province, Çaycuma District**
Consultant	**Çınar Engineering Consultancy Inc.**
Address	**Bağlıca Mah. Çambayırı Cad.** **Çınar Plaza No: 66/5** **06790 Etimesgut / ANKARA**
Telephone and Fax Numbers	**Phone: +90 (312) 472 38 39** **Fax: +90 (312) 472 39 33**
Report Submission Date	**25.12.2025**

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS & DEFINITIONS

AoI	Area of Influence
BMP	Biodiversity Management Plan
CBD	Convention on Biological Diversity
CHA	Critical Habitat Assessment
CR	Critically Endangered
DGII	General Directorate of Infrastructure Investments
EN	Endangered
EOO	Extent of Occurrence
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	The World Bank Environmental and Social Standard
GN	Guidance Note
IAS	Invasive Alien Species
IUCN	International Union for Conservation of Nature
IVMP	Integrated Vegetation Management Plan
PIU	Project Implementation Unit
RoW	Right of Way
SEP	Stakeholder Engagement Plan
SSC	Species Survival Commission
VU	Vulnerable

APPENDICES

APPENDIX-1: TENTATIVE TABLE OF CONTENTS FOR THE INTEGRATED VEGETATION MANAGEMENT PLAN (IVMP)
APPENDIX-2: MONITORING AND EVALUATION PROGRAM
APPENDIX-3: INVASIVE ALIEN SPECIES PROCEDURE

1 INTRODUCTION

The Biodiversity Management Plan (BMP) for Filyos Port and Industrial Zone Railway Connection Project has been developed to provide a clear outline of actions and methods required to mitigate likely impacts of the Project on biodiversity. This BMP therefore:

- Covers identified biodiversity value and potential Project-related impacts.
- Incorporates the requirements of the ESIA findings, Turkish environmental legislation and international standards.
- Assigns responsibilities for the implementation of this BMP.
- Details site-specific control measures to be adopted to manage impacts on natural habitats and species of high conservation concern along the Project route.

The General Directorate of Infrastructure Investments (DGII) is committed to adopt an adaptive management approach in implementation of this BMP, meet requirements of applicable laws and Project standards, and make updates to the strategies developed in this document as necessary.

1.1 Scope

This BMP covers planned construction and operation activities of the Project and is applicable to DGII staff, contractors and sub-contractors. Contractors are required to ensure that all BMP requirements are adopted within their own management plans.

1.1.1 Biodiversity Values

Biodiversity values that are subject to mitigation measures and management strategies within the scope of this BMP are listed in Table 1.

Table 1: Biodiversity Values of the Study Corridor

Critical Habitat	Natural Habitats	Flora Species of High Conservation Concern	Fauna Species of High Conservation Concern
Bird Paradise (Kuş Cenneti) Sand beaches above the driftline	Permanent mesotrophic lakes, ponds and pools Permanent non-tidal, fast, turbulent watercourses Reedbeds normally without free-standing water Temporary running waters Meso- and eutrophic Quercus, Carpinus, Fraxinus, Acer, Tilia, Ulmus and related woodland	*Centaurea kilaea* *Pancratium maritimum*	*Falco vespertinus*

1.1.2 Potential Impacts on Biodiversity Values

Potential impacts on biodiversity due to planned Project activities include:

- Habitat loss (loss of feeding, nesting, breeding areas) and degradation
- Habitat fragmentation
- Barrier effect and restricted fauna movement
- Animal mortality (due to collision, electrocution, wire strikes and rail entrapment)
- Light, noise and vibration disturbances
- Air, soil and water pollution

- Soil erosion
- Changes to local hydrology
- Fire hazards
- Introduction of invasive alien species

1.2 Objectives

The main objective of the BMP is to develop strategies to manage impacts on biodiversity, minimizing losses and disturbance to habitats and species, as well as to the ability of wildlife to traverse habitat corridors. Biodiversity management objectives for the Project are detailed in Table 2.

Table 2: Biodiversity Management Objectives

Objective	Target	Performance Indicator
Critic Habitat Prevention	No project-related activities will be performed in the Critical Habitat Area Migrating bird species monitoring will be conducted	No reported incidents of activity within the critical habitat Monitoring reports on the species' populations and statuses of habitat
Minimize extent of vegetation clearance in natural habitats	No vegetation clearance will be undertaken outside the Project footprint.	No reported incidents of vegetation clearance outside the Project footprint. Monitoring reports on the integrity natural habitats.
Minimize impacts of habitat fragmentation	Interaction between the newly formed railway green corridor and natural habitats will be allowed to create a habitat continuum. Significant locations for wildlife crossings will be identified, and appropriate methods to prevent animal crossings will be implemented.	Integrated Vegetation Management Plan prepared and implemented. Wildlife crossings designed and located at areas crucial to animal passage. Different methods implemented so that animals do not enter the RoW.
Minimize injury or mortality of fauna species	On-site speed limits will be enforced and the Project personnel will receive necessary trainings.	Reported incidents on fauna injuries or death due to Project activities. On-site traffic management in place.
Raise awareness among internal and external stakeholders on biodiversity and conservation priorities	Trainings/meetings will be organized to inform internal and external stakeholders within the scope of the Stakeholder Engagement Plan (SEP).	Reports on trainings, information disclosure meetings and attendants. SEP being implemented and updated as necessary.
Relocation of *Testudo graeca*	The tortoise will be re-located, when it will be observed in the construction area.	Reported on re-location of fauna species.
Implement the Biodiversity Monitoring and Evaluation Program	Sustainable management of biodiversity. Resources allocation and expert input will be provided so that statutes	Program implemented. Periodically monitoring reports prepared and results evaluated

Objective	Target	Performance Indicator
	of habitats and species will be monitored throughout all phases of the project. Based on monitoring results, habitat and species-specific management strategies will be developed as necessary.	

1.3 Roles and Responsibilities

Implementation of strategies and mitigation measures set forth in this BMP is under the responsibility of DGII. The Project Implementation Unit (PIU) of the DGII, and the Environmental and Social Management team within, is responsible for actions related to biodiversity values and conservation measures addressed in the Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP) and BMP. Contractors and sub-contractors, who will be undertaking the Project activities during land preparation, construction and operation phases will be appointing their own qualified personnel to manage biodiversity related issues.

The main responsibilities in implementation of the BMP are as the following:

- Ensuring compliance with Project standards
- Implementing biodiversity conservation measures and management controls
- Monitoring implementation success of the BMP
- Identifying adverse impacts on habitats and species, and taking additional measures as necessary

In conducting biodiversity studies, besides the DGII and contractor/sub-contractor staff, external experts will also be appointed. Biodiversity experts are responsible for conducting additional field surveys, evaluating results and addressing necessary measures within the scope of the BMP, developing strategies for implementation of the Biodiversity Monitoring and Evaluation Program, and reporting all of these studies to DGII and contractors/sub-contractors.

2 LEGISLATIVE FRAMEWORK

The legislative framework for Filyos Port and Industrial Zone Railway Connection Project was developed to cover not only the Turkish Environmental and Social Legislation, but also the Labor Law and Regulations, the World Bank Environmental and Social Standards (ESSs) and Environmental Health and Safety Guidelines. In line with the institutional and legal framework set for the Project, national legislation and international standards pertaining to biodiversity studies are presented in this section.

2.1 National Legislation

The Environmental Law No. 2872 aims at protection of the natural environment in line with the sustainable development principles. Its framework was extended with Law 5491 entering into force on April 26, 2006 amending the Environmental Law, to cover fundamental principles of biodiversity conservation. Article 6 of the Law states the importance of protecting biodiversity, and introduces penal sanctions against damage to the environment, including the destruction of biological diversity, when detected through inspection and audits. The regulations issued on the basis of the Environment Law specify rules on the prevention of pollution and on environmental impact assessment. The laws and regulations for conservation of habitats and species in Türkiye and national strategy documents prepared to implement statutory biodiversity conservation principles, which have been set forth by the related law and regulations are presented in Table 3.

Table 3: National Legislation

Turkish Laws and Regulation	National Strategy Documents
▪ Law on National Parks ▪ Forestry Law ▪ Law for the Protection of Cultural and Natural Assets ▪ Terrestrial Hunting Law ▪ Law on Fisheries ▪ Law for the Protection of Animals ▪ Pasture Law ▪ Regulation on Conservation of Wetlands ▪ Regulation on Fisheries ▪ Regulation on Protection of Wildlife and Wildlife Development Areas	▪ National Biological Diversity Strategy and Action Plan ▪ National Environmental Action Plan ▪ National Plan for In-Situ Conservation of Plant Genetic Diversity ▪ National Agenda 21 Programme ▪ National Wetland Strategy ▪ Turkish National Forestry Programme ▪ National Science and Technology Policies 2003-2023 Strategy Document ▪ Turkish National Action Programme Against Desertification ▪ National Environmental Strategy ▪ National Rural Development Strategy ▪ National Biological Diversity Strategy and Action Plan

The National Biological Diversity Strategy and Action Plan, whose most recent update was completed in 2007, is a response to the obligation to prepare a national strategy for the purpose of guiding the implementation of the Convention on Biological Diversity (CBD). The aim of this Strategy is to identify and assess Türkiye's biological diversity in brief, to determine a generally agreed strategy for conservation and to propose the actions required for achieving the goals of Biodiversity Conservation in Türkiye. The Strategy defines the current legal responsibilities concerning biological diversity, underlines the importance of international cooperation intended for policy-making and the importance of the necessary research conditions to develop ecosystem management, and includes a definition and assessment of Türkiye's biological diversity and the strategies and priority action plans towards the goals.

2.2 International Standards

The World Bank Environmental and Social Standard (ESS) 6

The main objective of ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources is conservation and protection of biodiversity and living natural resources in reaching sustainable development. It is important to maintain ecological functions of habitats and the biodiversity they support. Biodiversity often underpins ecosystem services as well. Therefore, impacts on biodiversity can adversely impact ecosystem services as well. The World Bank addresses requirements related to ecosystem services in ESS1: Assessment and Management of Environmental and Social Risks and Impacts. The main objectives set out in ESS6 are as the following:

- To protect and conserve biodiversity and habitats.
- To apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity.
- To promote the sustainable management of living natural resources.
- To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.

ESS6 requires that biodiversity-related risks and impacts as such; ecosystems affected, species affected, ecosystems services affected, protection status, site ownership and control, baseline threats, and potential project-related risks and impacts, are described in the environmental and social impact assessment.

3 CRITICAL HABITAT ASSESSMENT

3.1 Critical Habitat Concept

As stated by ESS6, habitats constitute “a terrestrial, freshwater or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment”. To meet ESS6 requirements, clients would have different obligations for different kinds of habitats. This enables to provide a better understanding of specific species and habitat requirements and establish meaningful management units to define a mitigation strategy. These habitat types are; modified, natural and critical, which can be a subset of natural or modified habitats. These habitat types refer to the biodiversity value of a given area, as determined by species, ecosystems and ecological processes, and are required to be identified within a project’s area of influence (AoI) to define habitat-specific ESS6 requirements accordingly.

Modified habitats, in the most general sense, are those that have been subject to some form of alteration, often resulting in agricultural land. Despite the fact that some modified habitats might lose all of their natural characteristics, it is still required to minimize further impacts. Natural habitats are composed of plant and/or animal species that are mostly of native origin, where human activity has not been significant enough to modify ecological functions and species composition within. In areas of natural habitat mitigation measures are required to be designed to achieve no net loss of biodiversity.

Critical habitats are those that are of high biodiversity value. Both natural and modified habitats may contain high biodiversity values qualifying as critical habitat. While habitat types are defined by the degree of human-induced modification, this is not necessarily an indicator of the biodiversity value of a habitat as per ESS6.

Critical habitat criteria as put forward by ESS6 that forms the basis of critical habitat assessment are as follows:

Criterion 1: Critically Endangered (CR) and/or Endangered (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

ESS6 requires the Borrower (clients) not to implement any project activities in areas of critical habitat unless all of the following are demonstrated:

- No other viable alternatives within the region exist for development of the project in habitats of lesser biodiversity value;
- All due process required under international obligations or national law that is a prerequisite to a country granting approval for project activities in or adjacent to a critical habitat has been complied with;
- The potential adverse impacts, or likelihood of such, on the habitat will not lead to measurable net reduction or negative change in those biodiversity values for which the critical habitat was designated;
- The project is not anticipated to lead to a net reduction in the population of any Critically Endangered, Endangered, or restricted-range species, over a reasonable time period;

- The project will not involve significant conversion or significant degradation of critical habitats. In circumstances where the project involves new or renewed forestry or agricultural plantations, it will not convert or degrade any critical habitat;
- The project's mitigation strategy will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated; and
- A robust and appropriately designed, long-term biodiversity monitoring and evaluation program aimed at assessing the status of critical habitat is integrated into the Borrower's management program.

It should also be noted that Critical Habitat Assessment is independent of a project's potential impacts on biodiversity value within its AoI or an extended area. The outcome of the Critical Habitat Assessment does not indicate a particular impact associated with project activities or requirement for a mitigation measure. Rather it provides a thorough analysis of the existing biodiversity value in a given area and informs the applicability of ESS6 requirements. For the project-related impacts a mitigation hierarchy is to be applied and measures are required to be defined for different phases of a project.

3.2 Critical Habitat Methodology

In order to identify the statuses of species that have been identified based on literature data and assessed through expert judgement, besides the IUCN Red List of Threatened Species utilized to determine endangered and critically endangered species, other criteria were also used in critical habitat assessment, wherever applicable. In determining "highly threatened and unique ecosystems", IUCN Red List categories for ecosystems were used as the main reference.

Since international, even European biodiversity assessment do not always cover Turkish habitats and species, experts' judgment was often consulted to interpret data and draw conclusions on the current statuses of biodiversity components. Local expert judgment was also referred to due to the fact that there are no officially established or widely accepted national evaluations on threat and conservation statuses of habitats and species in Türkiye.

Criterion 1: Critical (CR) and/or Endangered (EN) Species

Species threatened with global extinction and listed as Critically Endangered (CR) and Endangered (EN) on the IIUCN Red List are considered as part of Criterion 1. Critically Endangered species face an extremely high risk of extinction, while Endangered species face a very high risk of extinction in the wild.

Quantitative data on potential critical habitat triggering species' populations were assessed based on the Guidance Note (GN) 6 (2019) thresholds, which not only consider global conservation priorities but also nationally or regionally significant concentrations of species. Accordingly;

(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 Vulnerable species, the loss of which would result in the change of the IUCN Red List status to EN and meet these thresholds;

(c) as appropriate, areas containing important concentrations of a nationally or regionally listed EN or CR species, trigger designation of critical habitat.

In determining CR and EN species at the Biodiversity Study Area, the IUCN Red List of Threatened Species, European Red Lists, and the only IUCN correspondence in Türkiye; the Red Data Book of Turkish Plants have been utilized as the main references. Regional statuses of species, supported by expert judgment on species' current population trends in Türkiye, have also been assessed.

Criterion 2: Endemic and/or Restricted-Range Species

The updated version of the GN 6 (2019) defines the term endemic as restricted-range, which refers to a limited extent of occurrence (EOO) as such:

- For terrestrial vertebrates and plants, a restricted-range species is defined as those species which have an EOO less than 50,000 km^2.
- For marine systems, restricted-range species are provisionally being considered those with an EOO of less than 100,000 km^2.
- For coastal, riverine and other aquatic species in habitats that do not exceed 200 km width at any point, restricted-range is defined as having a global range less than or equal to 500 km linear geographic span.

An area can be designated as critical habitat, if it holds ≥10 percent of the global population size and ≥10 reproductive units of an endemic and/or restricted-range species. Terrestrial and freshwater species identified at the Biodiversity Study Area were assessed with respect to their EOOs and population sizes, based on the IUCN Red List, IUCN European assessments, and expert judgment.

Criterion 3: Migratory or Congregatory Species

Migratory species are defined as any species of which a significant proportion of its members cyclically and predictably move from one geographical area to another (including within the same ecosystem). Congregatory species are those, whose individuals gather in large groups on a cycle or otherwise regular and/or predictable basis according to ESS6. The thresholds are as the following:

(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.

The significant groups of migratory and congregatory species that are potential critical habitat triggers in the area are birds. Phase 2 surveys were performed to clarify and assess the migratory and congregatory species. Therefore, a "Critical Habitat" was defined and given in Figure 1.

Criterion 4: Highly Threatened or Unique Ecosystems

To identify highly threatened or unique ecosystems, World Bank requires the Client to use the IUCN Red List of Ecosystems (RLE) where formal assessments have been performed, and if not to use assessments using systematic methods at the national/regional level, carried out by government bodies, recognized institutions and/or other relevant qualified organizations. The thresholds are:

(a) areas representing ≥5 percent 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.

Amasra Coasts KBA has no legal protection status, and there are no national/regional strategy documents, management plans, or action plans prepared for the area. In order to appoint an IUCN protected area management category to the KBA within the scope of the ESIA process, existing information on the biodiversity value of the area and land use characteristics were utilized.

There are ongoing fishing, mining, agriculture, husbandry and port activities within the KBA boundaries. Therefore, while existing species and habitats in the area require conservation measures to be taken, it is expected that activities area managed in a way that does not produce a substantial impact on these ecosystems. Although there is no management objective set for Amasra Coasts KBA, based on all available data, it has been assessed to be a Category VI protected area. The main objective in Category VI is sustainable use of natural resources in reaching nature conservation targets. Management units in protected areas of this category may be required to develop new tools to enable such synergy. If the KBA is considered for an official protected area status within the scope of a management plan, the process should be undertaken with the engagement of all interested stakeholders.

Considering the size of Amasra Coasts KBA, as recognized by the IUCN, different zones in larger protected areas can have their own categories. Accordingly, the two 1st Degree Natural Protected Areas; Güzelcehisar and Bartin Creek, in line with the adoption of the IUCN categories by the Turkish Protected Area System, these two legally protected areas that are outside the Biodiversity Study Area but in the KBA are considered as Category Ia: Strict nature reserves.

Amasra Coasts KBA, with the exception of the two legally designated 1st Degree Natural Protection Areas (Güzelcehisar and Bartın Creek) within its boundaries, does not meet the critical habitat criteria. In the western part of the KBA, where the Biodiversity AoI is located, the habitat types presented and these habitats have been assessed under Criterion 4 in terms of potential critical habitat triggers. Based on this assessment, no habitat type within the Biodiversity AoI was identified as triggering Criterion 4 according to the European Red List or national priority habitat classifications.

Criterion 5: Key Evolutionary Processes

Evolutionary processes are defined as structural attributes of a region, such as its topography, geology, soil, temperature, and vegetation and combinations of these variables can influence evolutionary processes that give rise to regional configurations of species and ecological properties. The significance of structural attributes in a landscape that may influence evolutionary processes are required to be determined on a case-by-case basis, and determination of habitat that triggers this criterion will rely on scientific knowledge.

Examples to spatial features associated with evolutionary processes can be listed as; landscapes with high spatial heterogeneity, ecotones, edaphic interfaces, connectivity between habitats, and sites of demonstrated importance to climate change adaptation either for species or ecosystems.

The Biodiversity AoI is not associated with key evolutionary processes. Neither it hosts flora and/or fauna species that have distinct evolutionary histories with populations that show proven phylogenetic divergence from other species' other known populations.

3.3 Critical Habitat Triggering Biodiversity Features

Criterion 1: Critical (CR) and/or Endangered (EN) Species and Criterion 2: Endemic and/or Restricted-Range Species

CR, EN, VU and endemic species that were identified during the site surveys and are also presumed present based on literature data were assessed against the IUCN Red List, European Red Lists, and The Red Data Book of Turkish Plants, in terms of their global and regional threat statuses. To reach an understanding on the current statuses of species in the area, expert judgement was also consulted. Endangered and endemic species that are potential critical habitat triggers are presented in Table 4.

Table 4. Potential Critical Habitat Triggering Taxa as per Criterion 1 and 2

Biodiversity Feature	IUCN Red List Category	Endemic / Restricted-Range
Plants		
Centaurea kilaea	EN	Regional Endemic
Pancratium maritimum	EN	-
Birds		
Falco vespertinus	VU	-
IUCN Category: **EN: Endangered** **VU: Vulnerable** **NT: Near Threatened**		

One of the potential critical habitat triggering species is Endangered *Centaurea kilaea* is native to coastal dune habitats along the Black Sea coasts of the Thrace and Western Black Sea regions of Türkiye. Population identified within the Phase 1 studies consists of about 5,000 individuals and was quite healthy. It represents about 5-10% of the entire Turkish population. Therefore, according to Phase 1 Biodiversity AoI, which supports more than 0.5% of the species' global population, has been identified as a critical habitat for the species.

Pancratium maritimum is the only Pancratium species that naturally grows in Türkiye. It is a perennial Mediterranean plant, which is found along the coasts of the Mediterranean, the Atlantic Ocean, the Black Sea and the Caspian Sea. In Türkiye, it is found naturally at dune habitats of Kirklareli, Istanbul, Bolu, Bartin, Sinop, Samsun, Giresun, Trabzon, Antalya, Mersin and Adana provinces (Demir & Çelikel, 2017). It also had a population of about 5,000 individuals at the Phase 1 Biodiversity AoI, which represents about 1-2% of its known population in Turkiye. Considering its wide range, *Pancratium maritimum* does not meet Critical Habitat Assessment Criterion 1 threshold values.Although the Testudo graeca species is classified as Vulnerable by the IUCN, it has a wide distribution throughout Türkiye. As it has a widespread distribution in Türkiye, the species does not meet the Critical Habitat Criterion and the population of this specie within the Biodiversity Study Area is not large enough that if lost would not cause its IUCN Red List category to change. However, in order to ensure the species' survival and continuity, necessary mitigation measures, as explained in the below section, will be taken.

Streptopelia turtur does not use the area for breeding, wintering or feeding purposes but use Filyos Kus Cenneti, that is 0.15 km to the project area, as breeding. As the Biodiversity Study Area does not sustain regular or cyclical population of *Streptopelia turtur*, this specie do not meet thresholds for Criterion 1. The railway line will not pass through the Filyos Kus Cenneti (Bird Paradise) and no project-related activities will be performed in this area to avoid impacts on species and habitats.

Red-footed Falcon (*Falco vespertinus*)—listed as a passage migrant in Türkiye—was evaluated under Criterion 3. This species only uses stopover sites for a few days to replenish fuel reserves during migration and does not occur in numbers that represent ≥ 1 percent of the global population at any point in its life cycle, nor does the Biodiversity Study Area sustain ≥ 10 percent of a population during periods of environmental stress. Consequently, The Filyos Project footprint does not meet Critical Habitat Criteria 3.

Lutra lutra (Eurasian Otter), which is one of the KBA-listed species for Amasra Coasts KBA, was historically associated with the creeks and coastal areas of the site. However, due to intensive construction activities, degradation of riparian vegetation, and increased human disturbance, no individuals were recorded during the current surveys. Based on field observations and interviews with local stakeholders, there is no evidence that an otter population continues to regularly feed along the creek within the Biodiversity Study Area. Consequently, under the ESS6 criteria, the species does not currently trigger critical habitat within the surveyed area.

Myotis capaccinii (Long-fingered Bat) was also not detected during the surveys despite targeted sampling. There were no nesting areas for this bat specie in the project route but included to the baseline from literature. Therefore, it has been evaluated that this bat specie will not be affected by the planned railway and it does not have population within the Biodiversity Study Area is not large enough that if lost would not cause their IUCN Red List categories to change. Therefore, this species does not trigger critical habitat under Criterion 1.

Nyctalus lasiopterus (Greater Noctule Bat), another species listed for Amasra Coasts KBA, was recorded using the area during the surveys. Its presence highlights the importance of the KBA for foraging and potential roosting opportunities for this rare bat species, which has been considered particularly in the assessment due to its KBA status.

Although no species currently meet the quantitative thresholds for Critical Habitat as defined under IFC Performance Standard 6 and World Bank ESS6, the area nevertheless supports habitats and species of regional conservation importance. In line with the precautionary approach embedded in these standards, and recognising the site's role as a key stopover and feeding ground for migratory and waterbird species, the area has been identified as Critical Habitat for the purpose of this assessment. This designation ensures that the conservation of the habitats and associated species is prioritised, and that any activities in or around the area are managed to maintain or enhance the ecological values that underpin its significance. A Critical Habitat Map showing the locations of *Critically Endangered and Endangered species'* populations is presented in Figure 1.

The railway line will not pass through the Critical Habitat and no project-related activities will be performed in the Critical Habitat Area to avoid impacts on species and habitats.

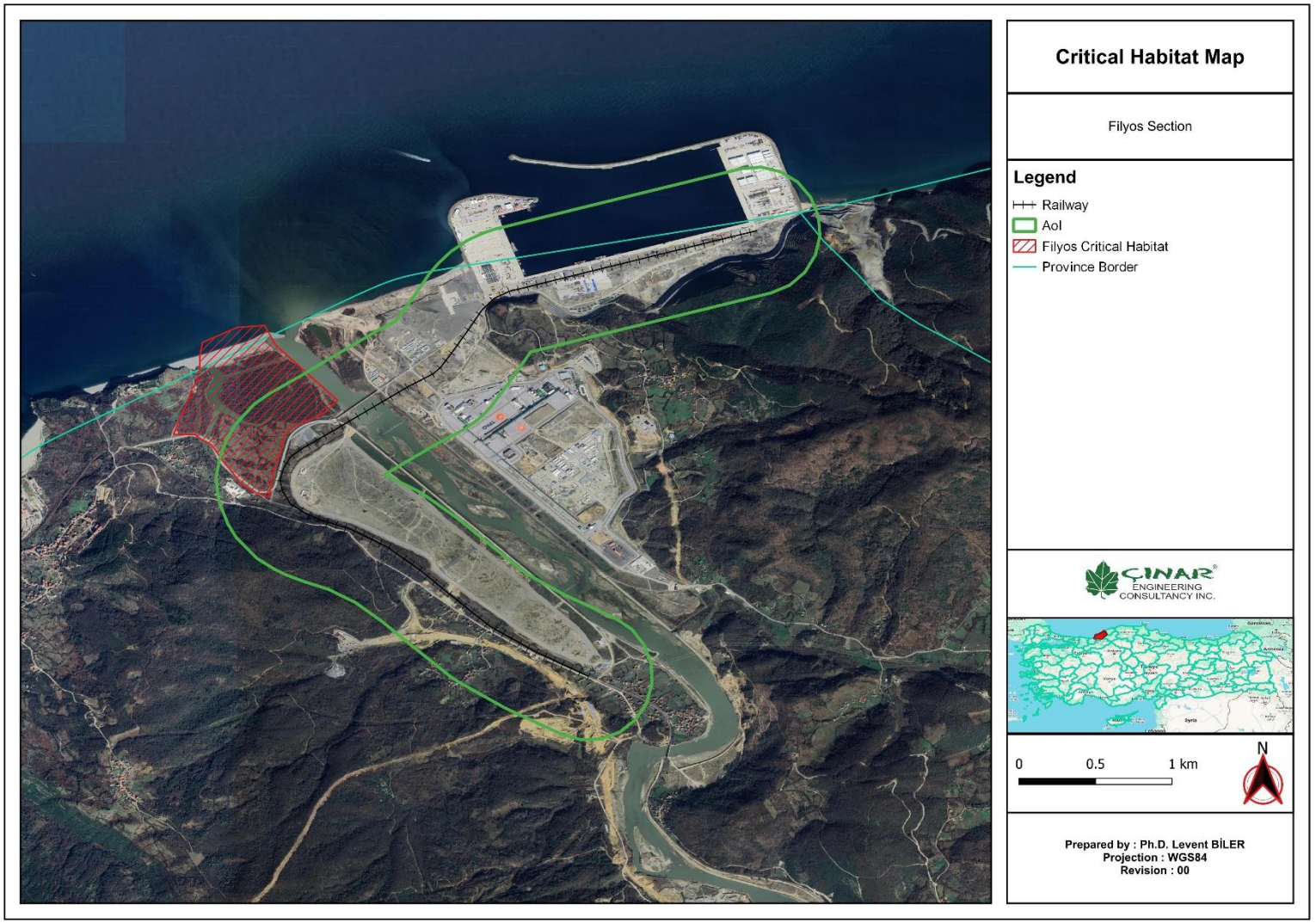

Figure 1. Critical Habitat Map

Criteria 3: Migratory or Congregatory Species

The Filyos Project footprint has been assessed against IFC Performance Standard 6 / World Bank ESS6 Critical Habitat criteria. Although migratory and congregatory species were recorded during surveys, the area does not meet the thresholds of Criterion 3. For example, the potential triggering species Red-footed Falcon (*Falco vespertinus*)—listed as a passage migrant in Türkiye—was evaluated under Criterion 3. This species only uses stopover sites for a few days to replenish fuel reserves during migration and does not occur in numbers that represent ≥ 1 percent of the global population at any point in its life cycle, nor does the Biodiversity Study Area sustain ≥ 10 percent of a population during periods of environmental stress. Similarly, other migratory species recorded during surveys are irregular and transient users of the area. Consequently, The Filyos Project footprint does not meet Critical Habitat Criteria 3.

By contrast, the Bird Paradise (Kuş Cenneti) wetland complex has been evaluated as Critical Habitat (see Figure 1). This area is known to support, on a cyclical and predictable basis, large aggregations of migratory and waterbird species, including species for which ≥ 1 percent of the global population may be present during certain parts of the annual cycle. For this reason, it has been designated as Critical Habitat under Criterion 3.

The Biodiversity Management Plan includes specific actions for migratory birds and outlines detailed monitoring during both the construction and operation phases. The railway line will not pass through the Critical Habitat and no project-related activities will be performed within the Critical Habitat area to avoid impacts on the species and habitats that underpin its importance.

Criterion 4: Highly Threatened or Unique Ecosystems

Coastal and terrestrial habitats identified in the Biodiversity AoI were first evaluated in terms of their corresponding EUNIS codes and Habitats Directive Annex I statuses. Then, those that are potential critical habitat triggers were assessed against the European Red List of Habitats. Considering the current statuses of habitats in Türkiye, and major threats they are facing, based on expert judgment, a national assessment in line with the Red List criteria (Janssen, 2016) was also made and presented in Table 5.

Table 5. Potential Critical Habitats as per Criterion 4

Habitat Description	European Red List		National Assessment		Critical Habitat Status
	Category	Criterion	Category	Criterion	
B1.2 : Sand beaches above the driftline	EN	B1, B2	EN	B1	Critical Habitat
C1.2: Permanent mesotrophic lakes, ponds and pools	NT	CD1	LC	-	Potential Critical Habitat (CH Likely)
C2.2: Permanent non-tidal, fast, turbulent watercourses	VU	A1	NT	A1	Natural Habitat (Not CH)
C2.5: Temporary running waters	NT	CD1	LC	-	Potential Critical Habitat (CH Likely)
G1.A: Mediterranean-type riparian woodland / gallery woods	NT	CD1	LC	CD1	Natural Habitat (Not CH)

Sand beaches above the driftline has been assessed to be Endangered as per criteria B1 and B2 due to its extent of occurrence, extent of occupancy and reduction in its abiotic and/or biotic quality (Janssen, 2016), both at the European and Turkish scales.

The railway line will not pass through the Critical Habitat and no project-related activities will be performed in the Critical Habitat Area to avoid impacts on species and habitats.

Although other habitats that are potential critical habitat triggers do not meet Criterion 4 thresholds, they are still considered as priority habitats as natural habitats supporting significant assemblages of flora and fauna, as well as ecosystem functions.

4 MITIGATION MEASURES AND MANAGEMENT CONTROLS

In line with the provisions of ESS6, biodiversity impact assessment within the scope of the ESIA has been conducted following the mitigation hierarchy. The main objective of Project biodiversity studies is to develop and implement mitigation measures and actions in order to achieve no net loss in natural habitats and species of high conservation concern, and net gains in critical habitat. Potential impacts on critical habitats triggered by coastal biodiversity features identified within the scope of the Project will be avoided.

4.1 Critical Habitat

The Filyos Project footprint has been assessed against IFC Performance Standard 6 / World Bank ESS6 Critical Habitat criteria. Although migratory and congregatory species were recorded during surveys, the area does not meet the thresholds of Criterion 3. For example, the potential triggering species Red-footed Falcon (*Falco vespertinus*)—listed as a passage migrant in Türkiye—was evaluated under Criterion 3. This species only uses stopover sites for a few days to replenish fuel reserves during migration and does not occur in numbers that represent ≥ 1 percent of the global population at any point in its life cycle, nor does the Biodiversity Study Area sustain ≥ 10 percent of a population during periods of environmental stress. Similarly, other migratory species recorded during surveys are irregular and transient users of the area. Consequently, the Filyos Project footprint does not meet Critical Habitat Criteria 3.

By contrast, the Bird Paradise (Kuş Cenneti) wetland complex has been evaluated as Critical Habitat (see Figure 1). This area is known to support, on a cyclical and predictable basis, large aggregations of migratory and waterbird species, including species for which ≥ 1 percent of the global population may be present during certain parts of the annual cycle. For this reason it has been designated as Critical Habitat under Criterion 3. The railway line will not pass through the Critical Habitat and no project-related activities will be performed within the Critical Habitat area to avoid impacts on the species and habitats that underpin its importance. Therefore, there will be no direct impacts on critical habitat. The following general management controls will be implemented to ensure that the Bird Paradise is conserved:

- Train the Project personnel on the significance of the habitat and species' populations, appoint biodiversity experts to provide necessary information.
- Monitor critical habitat throughout construction and operation phases of the Project. If any Project-related impact is reported, take necessary measures under the supervision of experts (see Appendix 2).
- No project related activities will be performed in the defined Critical Habitat and necessary precautions (such as marking the critical habitat, fencing or any other as appropriate) will be taken in this respect. Storage of any project related waste and/or machinery in Critical Habitat will be avoided, such as fencing or storage of any Project related waste and machinery.
- Indirect impacts on the natural habitats will be avoided in line with the related environmental management plans (waste management plan, pollution prevention plan).
- The project personnel will be informed on the sensitivity of the habitats and the Directorate General of Infrastructure Investments (DGII) will train internal staff to be able to provide advice to contractors with input and advice, if required, and enable an informed overview of the biodiversity input from the contractors. Workers will be made aware of the ecological sensitivities of the areas and will be trained in mitigation for unforeseen events, including the presence of uncommon habitats and species. Health and safety recommendations regarding poisonous or otherwise dangerous plants or animals will also be provided by Biodiversity Specialists through toolbox talks and trainings.

Emergency numbers will be provided in case of attacks or injuries that may occur by wildlife.
- Monitor critical habitat throughout construction and operation phases of the Project. If any Project-related impact is reported, take necessary measures under the supervision of experts (see Appendix 2).

4.2 Natural Habitats & Flora and Fauna Species of High Conservation Concern

Management controls and measures to avoid and/or minimize impacts on biodiversity include:

- Reduce construction footprint in natural habitats and limit vegetation clearance, particularly at creek crossings and within riparian habitats. Plan construction works within water systems to be conducted in drier periods to avoid further impacts.
- Where possible, locate all construction facilities such as equipment storage, offices, access tracks, etc. within already cleared areas.
- Appoint flora and fauna experts while undertaking vegetation clearance in natural habitats.
- Plan for land clearance considering breeding and nesting periods of fauna of high conservation concern.
- Restrict clearing of trees with nests.
- Restore and rehabilitate natural habitats outside the construction corridor upon completion of construction works using native plant species.
- Design the railway to minimize plant growth in the track area, providing lateral barriers to plant migration.
- Conduct daily inspections prior to commencement of works to ensure fauna are relocated or otherwise leave the site.
- Facilitate fauna passage around the construction footprint.
- Enforce on-site speed limits.
- If any pits/trenches remain open after daily site works are completed, ensure they are securely covered by barriers or, if possible, fauna ramps to provide access to animals.
- Implement relocation techniques for each fauna of high conservation concern, as applicable, under expert supervision, prior to commencement of land preparation.
- Use appropriate methods to prevent animal entrance into the RoW, including fences, chemical repellents, lights and reflectors, and physical barriers such as trees and noise barriers.
- Regularly check and maintain fauna crossings and take additional measures as necessary.
- Ban all forms of hunting and poaching. Report any illegal activities to authorities.
- Keep a registry for fauna strike and mortality during construction and operation.
- Minimize impacts on water and soil quality through implementation of the related management plans; Waste Management Plan, Pollution Prevention Plan, Construction Impacts Management Plan.
- Manage emergencies including natural hazards, fire and spills through implementation of the Emergency Preparedness and Response Plan.
- Minimize noise and vibration-related nuisance to animals in line with the provisions of the Pollution Prevention Plan, Construction Impacts Management Plan.
- Implement dust suppression techniques in line with the Pollution Prevention Plan, Construction Impacts Management Plan.
- Use appropriate lighting in work areas and use protective guards while employing directional lighting.
- Train all Project personnel on significance of biodiversity in the area. Prepare protocols to be implemented when wild animals are encountered on the site.

- Implement the Biodiversity Monitoring and Evaluation Program (provided in Appendix-2) to assess success of mitigation measures and make management interventions, as necessary.
- Conduct the Invasive Alien Species (IAS) Management Procedure, which was prepared and given separately for control and management of IAS (see Appendix-3).
- Develop and implement an Integrated Vegetation Management Plan (IVMP) during the operation phase of the Project to ensure not only integrity of habitats and species but also fire control, safety, and visibility. A tentative Table of Contents for the Plan is presented in APPENDIX-1: TENTATIVE TABLE OF CONTENTS FOR THE INTEGRATED VEGETATION MANAGEMENT PLAN (IVMP), which is to be developed in line with the following main principles:
    - Limit the introduction and spread of invasive species
    - Promote and maintain a healthy native plant community
    - Implement the IVMP to benefit species associated with conservation efforts
    - Increase habitat connectivity
    - Manage the railway RoW as a movement corridor for wildlife
    - Raise awareness and knowledge on integrated vegetation management, including its benefits, activities and implementation among the Project personnel

5 TRAINING, REPORTING AND MONITORING

5.1 Training

DGII and Project contractor are responsible to ensure all Project personnel and sub-contractors are informed about the biodiversity values and conservation priorities. Project staff is also required to complete trainings, which will cover their roles and responsibilities in terms of BMP implementation, site-specific measures to be taken, and compliance with related environmental plans, Project standards, and protocols, based on their specific jobs. A general framework for a training on biodiversity is to include:

- General information on habitats and species of high conservation concern, and related visuals
- Project standards
- Management controls, procedures and protocols to implemented at the site
- Methods to be followed in responding incidents related to biodiversity features
- Reporting requirements

5.2 Reporting

Internal reporting requirements for biodiversity conservation principles and on-site implementation of management controls that are outlined in the BMP are to be specified by DGII, which contractors/sub-contractors will follow. The BMP is required to be updated with any additional set of data that become available throughout the course of the Project. Following the construction biodiversity surveys, not only necessary updates will be made within the scope of this BMP, but also significant flora and fauna assemblages throughout the Project construction sites and their specific monitoring requirements will be identified. External experts, who will be responsible for biodiversity studies within the scope of the Project, will report their assessments on implementation of mitigation measures, management controls and monitoring strategies, as well as their site-specific findings to DGII. Biodiversity management and monitoring results addressed in the BMP will be shared with all interested parties within the scope of the SEP. The Biodiversity Monitoring and Evaluation Program is given in Appendix-2.

5.3 Monitoring Issues

A Project-specific Biodiversity Monitoring and Evaluation Program developed to assess effectiveness management of impacts on biodiversity (see Appendix 2). Biodiversity features to be monitored through the Program will be identified during construction surveys, and biodiversity monitoring parameters will be determined and/or revised to reflect on the characteristics of the habitat and species composition in the area.

Biodiversity monitoring strategies will be developed in line with the Project standards and conservation objectives, and will cover land preparation, construction and operation phases of the Project. Based on monitoring results on the statuses of biodiversity features at different phases of the Project, additional measures will be taken as necessary. A general framework for periodical monitoring studies to be conducted throughout the Project, and biodiversity features to be monitored are as the following:

- Status of critical habitat
- Status of natural habitats and species of high conservation concern, implementation of related management controls
- Mitigation measures on restricting impacts on natural habitats to the construction corridor

- Effectiveness of wires and crossings used to prevent animal mortality
- Management of environmental issues, significance of impacts on biodiversity
- Presence of invasive alien species in the area
- Changes in populations of target fauna species identified through pre-construction surveys
- Status of post-construction restoration areas

Monitoring reports presenting outcomes for each monitoring period will be prepared by external experts and submitted to DGII. Management controls that are required to be developed based on monitoring results will be addressed within the scope of the BMP.

The specific Monitoring and Evaluation Program, which includes mitigation measures and respective monitoring program is provided in Appendix-2. The BMP will be updated during the construction phase as a results of monitoring surveys conducted, if needed.

APPENDIX-1: TENTATIVE TABLE OF CONTENTS FOR THE INTEGRATED VEGETATION MANAGEMENT PLAN (IVMP)

INTEGRATED VEGETATION MANAGEMENT PLAN (IVMP) FOR

FILYOS PORT AND INDUSTRIAL ZONE RAILWAY CONNECTION PROJECT

TABLE OF CONTENTS

APPENDIX-2: Monitoring and Evaluation Program

Ref	Phase	Topic	Sub-Topic	Location	Measure/Action	Responsible Party*	Timeline and Frequency	Verification Process	Compliance Indicator
MEP-01	Pre-Construction, Construction Phase and Operation	Biodiversity - General	Interaction with other plans	-	This BMP will be applied in conjunction with all other relevant management plans.	D, C, T	Before construction and during Construction and Operation Phases	Internal audit program and record	-
MEP-02	Pre-Construction and Construction Phase	Biodiversity - General	Training	-	The Directorate General of Infrastructure Investments (DGII) should train internal staff to be able to provide advice to contractors with input and advice, if required, and enable an informed overview of the biodiversity input from the contractors. Workers will be made aware of the ecological sensitivities of the areas and will be trained in mitigation for unforeseen events, including the presence of uncommon habitats and species. Health and safety recommendations regarding poisonous or otherwise dangerous plants or animals will also be provided by Biodiversity Specialists through toolbox talks and trainings. Emergency numbers will be provided in case of attacks or injuries that may occur by wildlife.	C (under the supervision of D) by B	Before construction and once for everyone who will start work	Field verification, monitoring reports, training records	Annual Biodiversity Report
MEP-03	Land preparation and construction	Habitat	Critical habitat	Bird Paradise	Monitoring of the Bird Paradise (Kuş Cenneti) critical habitat will be conducted twice a year (in May and September) during the construction phase, in line with the ESMP. The monitoring will focus on changes in habitat conditions and bird population status. Whether or not the habitat is impacted by the works will be determined through site observations carried out by an Ornithologist. If any	C (under the supervision of D) by B	Twice a year (in spring (May-July) and autumn (August-October) for 15 days/period) until the construction is completed	Field verification, monitoring reports	Biannual Biodiversity Report

Ref	Phase	Topic	Sub-Topic	Location	Measure/Action	Responsible Party*	Timeline and Frequency	Verification Process	Compliance Indicator
					habitat impact is observed as a result of construction works, appropriate precautions will be implemented.				
MEP-04	Land preparation and construction	Habitat	Invasive alien species	Project area and AoI	Natural vegetation will be conserved to the best possible extent during land preparation, and native species will be used in restoration after completion of the construction phase. Vehicles and equipment entering the site will be checked for invasive alien species. If identified, necessary measures will be taken in line with the Project standards to eradicate the species. Instead of using herbicides, which would destroy the natural vegetation and enable introduction of invasive alien species, different vegetation management methods will be considered as appropriate spatially and temporally. During the land preparation and construction phase biodiversity monitoring studies, potential for presence of invasive alien species in the area will also be monitored. The Invasive Alien Species Procedure will be implemented. In this context, monitoring studies will be carried out and reported annually by a Botanist. In this context, if any invasive species is detected, the necessary measures for eradication will be recommended and the process will be carried out.	C (under the supervision of D) by B	Yearly once in vegetation period until construction is completed	Field verification, monitoring reports	Annual Biodiversity Report
MEP-05	Land preparation and construction	Fauna species of high conservation concern	*Testudo graeca* population	Project area and AoI	Fauna species of high conservation concern within the Project area and AoI, including the *Testudo graeca* population, will be monitored twice a year (in May and September) during the construction phase, in line with the ESMP. Monitoring will include site observations,	C (under the supervision of D) by B	May and September during construction phase monthly once	Field verification, monitoring reports	Biannual Biodiversity Report

Ref	Phase	Topic	Sub-Topic	Location	Measure/Action	Responsible Party*	Timeline and Frequency	Verification Process	Compliance Indicator
					identification of individuals and assessment of any disturbances caused by construction works. If any Testudo graeca individual is found within the construction area, it will be safely removed and relocated outside the working zone under expert supervision.				
MEP-06	Land preparation and construction	Use of machinery and equipment	Speed limits, Maintenance, AIS Check	Project area and AoI	Trainings will be organized for the Project personnel to inform them about the on-site speed limits and of importance of animal passages. Machinery and equipment that arrive in work areas will be checked for the presence of invasive alien species. All machinery and equipment will be subject to regular maintenance and will not be used out of purpose. Use of machinery and equipment will be limited to designated work areas. Impacts related to noise and vibration will be controlled in line with the Project standards.	C (under the supervision of D) by B	At the beginning of Construction and yearly once.	Field verification, monitoring reports	Annual Biodiversity Report
MEP-07	Land preparation and construction	Habitat	Natural habitats	Natural habitats within project area and AoI	Whether or not the habitat will be impacted by the works to be done will be determined through observation and reported once completed by a Botanist. In this context, if any habitat impact is observed as a result of construction, appropriate precautions will be taken.	C (under the supervision of D) by B	Twice a year (in spring (May) and autumn (September)) until the construction is completed	Field verification, monitoring reports	Biannual Biodiversity Report
MEP-08	Land preparation and construction	Indirect impacts (dust, air emissions, noise, waste, and impacts on water and soil quality)	Check of impacts	Project area and AoI	In order to control dust emissions, vegetation clearance will only be undertaken in pre-determined activity areas, and habitats will be rehabilitated upon completion of construction activities. All related dust suppression measures will be taken to ensure prevention of indirect impacts on biodiversity features. On-site speed limits will be enforced to avoid direct mortality of animals. There will be no direct discharge into water resources. Project-related wastes will be collected at	C (under the supervision of T) by B	During Construction Phase	Field verification, monitoring reports	Annual Biodiversity Report

Ref	Phase	Topic	Sub-Topic	Location	Measure/Action	Responsible Party*	Timeline and Frequency	Verification Process	Compliance Indicator
					designated waste storage areas and periodically removed from work areas. Hunting of fauna species will be prohibited. In case of illegal hunting activities, authorities will be notified. Solid wastes and wastewater that will result from land preparation and construction activities of the Project will be managed through implementation of the related management plans				
MEP-09	Operation	Habitat	Critical habitat	Bird Paradise	Following the construction, observation studies will be conducted twice a year (in spring and autumn for 15 days/period) to determine whether there has been any impact on the habitat by an Ornithologist. Following the one-year study, the need for ongoing monitoring of the areas will be re-assessed.	T by B	Twice a year (in spring and autumn) for one year in operation phase	Field verification, monitoring reports	Biannual Biodiversity Report
MEP-10	Operation	Habitat	Invasive alien species	Project area and AoI	Once the project is put into operation, annual invasive species monitoring will be carried out for one year to determine whether there are any impacts resulting from the project.	T by B	Once for one year in operation phase	Field verification, monitoring reports	Annual Biodiversity Report
MEP-11	Operation	Use of machinery and equipment	Speed limits, Maintenance, AIS Check	Project area and AoI	Use of chemicals for maintenance will be limited. Wastes will be recycled and disposed on a regular basis to prevent pollution of receiving environment due to operational activities. Noise barriers will be used to minimize impacts on animals. Measures to minimize risk of erosion will be taken within the scope of integrated vegetation management. Necessary measures will be taken to minimize risk of erosion during integrated vegetation management. To identify and respond to any hazard related to erosion, landslide, etc., verges and sloped will be checked periodically. Solid wastes, hazardous wastes, and wastewater that will result	T by B	Once for one year in operation phase	Field verification, monitoring reports	Annual Biodiversity Report

Ref	Phase	Topic	Sub-Topic	Location	Measure/Action	Responsible Party*	Timeline and Frequency	Verification Process	Compliance Indicator
					from operation activities will be managed through implementation of related management plans (Waste Management Plan, Water and Wastewater Management Plan, etc.).				
MEP-12	Operation	Restored habitats	Habitat Status	Project area and AoI	Listing of species and status of population.	T by B	Twice a year (in May and September) during the operation phase.	Field verification, monitoring reports	Annual Biodiversity Report

* D: DGII, C: Contractor, T: TCDD, B: Biodiversity Specialist (specific expert that will be needed)

APPENDIX-3: Invasive Alien Species Management Procedure