REPORT

KINALI - MALKARA MOTORWAY PROJECT

Biodiversity Action Plan (BAP)

Submitted to:

ÇOK A.Ş.

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22519766_v1

November, 2025

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Record of Issue

Company	Client Contact	Version	Date Issued	Method of Delivery
ÇOK A.Ş. Lenders	Gülden Baydar	v0	24.11.2025	e-mail
ÇOK A.Ş. Lenders	Gülden Baydar	v1	13.01.2026	e-mail

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WSP Türkiye	WSP Danışmanlık ve Mühendislik Ltd. Şti.
Kınalı-Balıkesir Motorway	324 km long Kınalı – Tekirdağ – Çanakkale – Savaştepe Motorway
BAP	Biodiversity Action Plan
BMP	Biodiversity Management Plan
BOMP	Biodiversity Offset Management Plan
CH	Critical Habitat
CR	Critically Endangered
E&S	Environmental and Social
EHS	Environmental Health and Safety
EN	Endangered
EPC Contractor	Engineering, Procurement and Construction Contractor
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
EU	European Union
EUNIS	European University Information Systems Organisation
IBA	Important Bird and Biodiversity Area
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
Km	Kilometre
LESA	Lender Environmental and Social Advisor
LSA	Local Study Area
PCH	Potential Critical Habitat
PS	Performance Standard
RSA	Regional Study Area
SEP	Stakeholder Engagement Plan
VU	Vulnerable

1.0 INTRODUCTION

1.1 Background

Çanakkale Otoyol ve Köprü İnşaat Yatırım ve İşletme A.Ş. (herein after 'ÇOK A.Ş') is proposing to develop the Kınalı - Malkara Motorway ('the Project') within Tekirdağ Province in the north-western part of Türkiye.

The Project will be realized with build-operate-transfer ("BOT") model. the engineering, procurement, and construction ("EPC") contractor for the main design and construction works of the Project. EPC contractor will perform the works with several subcontractors on different sections of the Project. At this stage of the Project, for operations and maintenance of the Motorway, there are two options; ÇOK A.Ş. will appoint a contractor in due course (referred to herein as the "Operation and Maintenance ("O&M") Contractor") or ÇOK A.Ş. will operate the Project by itself.

The 105.3 km Kınalı - Malkara Motorway Project is a part of the 324 km long Kınalı – Tekirdağ – Çanakkale – Savaştepe Motorway (herein after "Kınalı-Balıkesir Motorway"). The provinces and districts the Kinali – Malkara Project will pass through between 0+000 km and 105+300 km are detailed below:

- İstanbul Province, Silivri District (0+000 km - 17+700 km)
- Tekirdağ Province, Marmaraereğlisi District (17+700 km - 25+200 km)
- Tekirdağ Province, Çorlu District (25+200 km - 43+600 km)
- Tekirdağ Province, Süleymanpaşa District (43+600 km - 95+600 km)
- Tekirdağ Province, Malkara District (95+600 km - 105+272 km)

For the 105.3 km Kınalı - Malkara Motorway Project an ESIA Report identifying the environmental and social impacts of the Project, was prepared in 2024 to comply with the requirements of the Turkish national law/regulations, the International Finance Corporation ("IFC") Performance Standards ("PSs") and Guidelines, Equator Principles 4 (2020), and applicable European Union ("EU") Directives.

Prior to construction, EPC Contractor will provide further detail around each of the plans and procedures defined within this BAP to ensure adequate management and monitoring of biodiversity aspects.

1.1.1 Project History

Based on the Turkish Government's "Vision 2023", the Turkish Ministry of Transport, General Directorate of Highways (KGM) has set national goals for strengthening of the motorway network.

As the overall promoter and initiator of the Project, KGM tendered the Project under a BOT contract model with a 16-year 2 2-month and 12-day concession period. ÇOK A.Ş. is the Turkish-based company (SPV) created by the Consortium for implementing the Project.

In November 2016, an EIA Study was completed for the entire 324 km long motorway in conformance with Turkish EIA regulatory requirements. On 23 November 2016, the EIA named Kınalı-Tekirdağ-Çanakkale-Savaştepe 1st and 2nd Section Motorway was approved by the Ministry of Environment Urbanization and Climate Change (MoEUCC).

As a part of Kınalı-Balıkesir Motorway Project, for Malkara-Çanakkale Motorway, including the 1915 Çanakkale Bridge, ESIA study carried out for the construction and operation phase in line with the national environmental and social legislation including international conventions and treaties and the related international standards by third party company. The ESIA report was finalized in March 2018.

The construction phase of the Malkara-Çanakkale Motorway began in March 2018 and was completed on March 18th, 2022. The motorway, including the 1915Çanakkale Bridge, officially opened to traffic on March 19th, 2022.After completion of the Malkara-Çanakkale part of the proposed Kınalı-Balıkesir Motorway Project, in 2022, WSP Türkiye was retained to carry out ESIA study for Kınalı-Malkara Motorway Project in line with the national environmental and social legislation and international standards. The Scoping Report, previously prepared by WSP Türkiye in April 2023, has identified gaps in the existing national EIA Report and included actions that need to be undertaken in order to close these gaps and reach a full ESIA compliant with the requirement of the IFIs.

1.1.2 Project Owner and Contractor

The Kınalı-Malkara Motorway Project owner is the Republic of Türkiye Ministry of Transport and Infrastructure (MoTI), General Directorate of Highways (KGM). ÇOK A.Ş. is the SPV created by a consortium for implementing the Project. The Project will be realized with BOT model. The design lifetime of the Project has been planned as 100 years. The concession period of the Project has not yet been determined. A part of the 100-year Project life will be operated by ÇOK A.Ş within the scope of the BOT contract. The operation period will be clarified later in consultation with the MoTI and Undersecretariat of Treasury. An operation and maintenance programme will be developed and implemented by ÇOK A.Ş. as per the BOT Contract to assure that specified conditions are met upon the hand-back of the motorway to KGM at the end of the Concession Period.

The total duration of the Project's construction phase will be 45 months. This includes eight months allocated for pre-construction activities, 34 months for the actual construction, and an additional three months for testing and commissioning works.

Table 1: Project Parties

Parties	Responsible Party	Main Role & Responsibilities
Project Owner	General Directorate of Highways (KGM)	Assigning an “Appointed Company” for the Project under the BOT Contract Carrying Expropriation and Land acquisition processes Supervision of the Project Approval of the design of the Project
Special Purpose Vehicle	ÇOK A.Ş.	Borrower of the Project finance Contractor for Project execution Development of Project design Construction of the Project Operation of the Project
EPC Contractor	EPC	Development of Project design Conducting early work studies (pre-construction activities) Construction of the Project
ESIA Consultant (Independent national and international environmental and social consulting firm)	WSP Türkiye	Development of ESIA Report and other deliverables as specified in the relevant sections of this report

1.2 Purpose of the Biodiversity Action Plan

A Biodiversity Action Plan (BAP) is a strategic document describing the measures that will be undertaken to achieve the project's objectives on Biodiversity Conservation in relation to the IFC PS6 requirements. It describes the residual impacts and the composite of actions and a rationale for how the project's mitigation strategy will achieve net gain (or no net loss), the approach for how the mitigation hierarchy will be followed, and the roles and responsibilities for internal staff and external partners.

Its primary purpose is to ensure that biodiversity is protected and enhanced throughout the lifespan of a project by setting clear objectives, actions, and monitoring measures. This BAP has been developed in accordance with the commitments undertaken in the Environmental and Social Impact Assessment (ESIA), with Turkish legislative framework, and IFC General and Sector Specific EHS Guidelines. This BAP should be read in conjunction with the specific plans reported in the BAP.

Responsibilities for implementation of this BAP fall to either EPC Contractor or the Contractors (ref. Section 11.0). Where responsibilities fall to the Contractors these should be implemented via a dedicated Construction Environmental Management Plan (CEMP) as part of the Contractor's own EHS Management System (preferably accredited to ISO 14001:2004 or equivalent). Standards set by this report shall be consistently applied across the entire Project development; therefore EPC Contractor will actively seek to monitor, audit and assess the compliance of the Contractor(s) to ensure consistency with this BMP, and that corrective actions are taken when necessary to maintain environmental performance in line with International Standards.

1.2.1 Aims and Objectives

The objective of this Biodiversity Action Plan is to define the main steps that will be taken to ensure the offsetting of residual and unavoidable impacts resulting from the Project after the application of the mitigation measures on Natural Habitats (NH) and Critical Habitats (CH). Such impacts will be offset in accordance with IFC PS6 (IFC, 2019), with the aim of delivering No Net Loss (NNL) for Natural Habitats and Net Gain (NG) for Critical Habitats.

The BAP outlines activities intended to be undertaken during throughout the lifespan of the motorway, with each draft being applicable to the appropriate operational phase.

The specific objectives of the BAP are as follows:

1) Describe the critical and natural values affected by the project .
2) Outline a summary of the mitigation steps that shall be undertaken during project construction to avoid and minimise impacts to natural habitat, and to restore temporarily cleared areas.
3) Estimate the No Net Loss/Net Gain requirements for Natural Habitats and Critical habitats considering the effect of the avoidance mitigation and monitoring measures presented in the Biodiversity Management Plan (BMP).
4) Provide a Biodiversity Offset Strategy to create a framework to direct actions to offset the residual impacts of the Project after the first three steps of the mitigation hierarchy have been implemented.
5) Provide specific targets and identify preliminary offset measures.
6) Outline the monitoring activities that will be undertaken to track progress of the plan.
7) Identify roles and responsibilities for the continued updating and implementation of the Biodiversity Action Plan and the specific Offset Projects.

This BAP applies to both the construction and operation phases of the project. It provides guidance to the Contractor responsible for the Engineering Procurement and Construction (EPC) activities of the Project to address biodiversity issues in accordance with the above standards.

1.2.2 Timeframe

The BAP covers all mitigation/rehabilitation/monitoring activities anticipated before the beginning of construction and after the end of rehabilitation activities.

Wherever rehabilitation measures are anticipated, the Contractor's maintenance period shall extend for a minimum of five (5) years after completion of the rehabilitation activity. Any defects or other failures due to workmanship, shall be remedied by the Contractor during this period.

On completion of this initial five-year period, a review will be undertaken by the appointed ecologist to ensure that the management and maintenance that this BMP prescribes remains relevant and appropriate to the habitats as they develop and mature. Should the above review indicate that the BMP objectives are not being met, corrective actions will be identified, agreed and implemented so that the proposed development still achieves the fully functional biodiversity objectives of the approved application. The BMP itself will be updated, as necessary, for use in the following period.

This process of review/update periods will continue throughout a 10-year period at a frequency that ensures that the management and maintenance that it prescribes remains relevant and appropriate to the habitats as they continue to mature.

2.0 PROJECT DESCRIPTION

A summary of the Project description is provided in the following Sections. The detailed Project description is reported in Section 3 of the *Kinali Malkara Motorway Project - Environmental and Social Impact Assessment*.

The Kınalı-Tekirdağ-Çanakkale-Savaştepe Motorway (Kınalı-Balıkesir motorway) is one of the components of the broader Marmara Motorway Ring Project announced by the Turkish Government in 2015, which includes İstanbul-İzmir Motorway, the Northern Marmara Motorway, and the Kınalı-Tekirdağ-Çanakkale-Savaştepe Motorway.

The total length of the Kınalı-Balıkesir Motorway is 324.441 km (Figure 1), and the Kınalı-Balıkesir Motorway has obtained National Environmental Impact Assessment ("EIA") Positive Decision from MoEUCC on 23.11.2016.

As shown in Figure 2, the Project covers the section of the Kınalı-Balıkesir Motorway starting at the Silivri Prison Interchange area of the existing O-3 İstanbul – Edirne Motorway at KM 0+000 and ending at 105+300 for a total of 105.300 km.

To date, the construction of "Malkara – Çanakkale Section", including the 1915Çanakkale Bridge of the Motorway has been completed and is currently in operation (shown in green in Figure 1). "Çanakkale-Savaştepe Section" (shown in red in the Figure 1) of the Kınalı-Balıkesir Motorway have not been constructed yet. The Project (105.3 km "Kınalı-Malkara Motorway" shown in blue in the Figure 1) is subject to the ESIA Report and it is in the pre-construction phase.

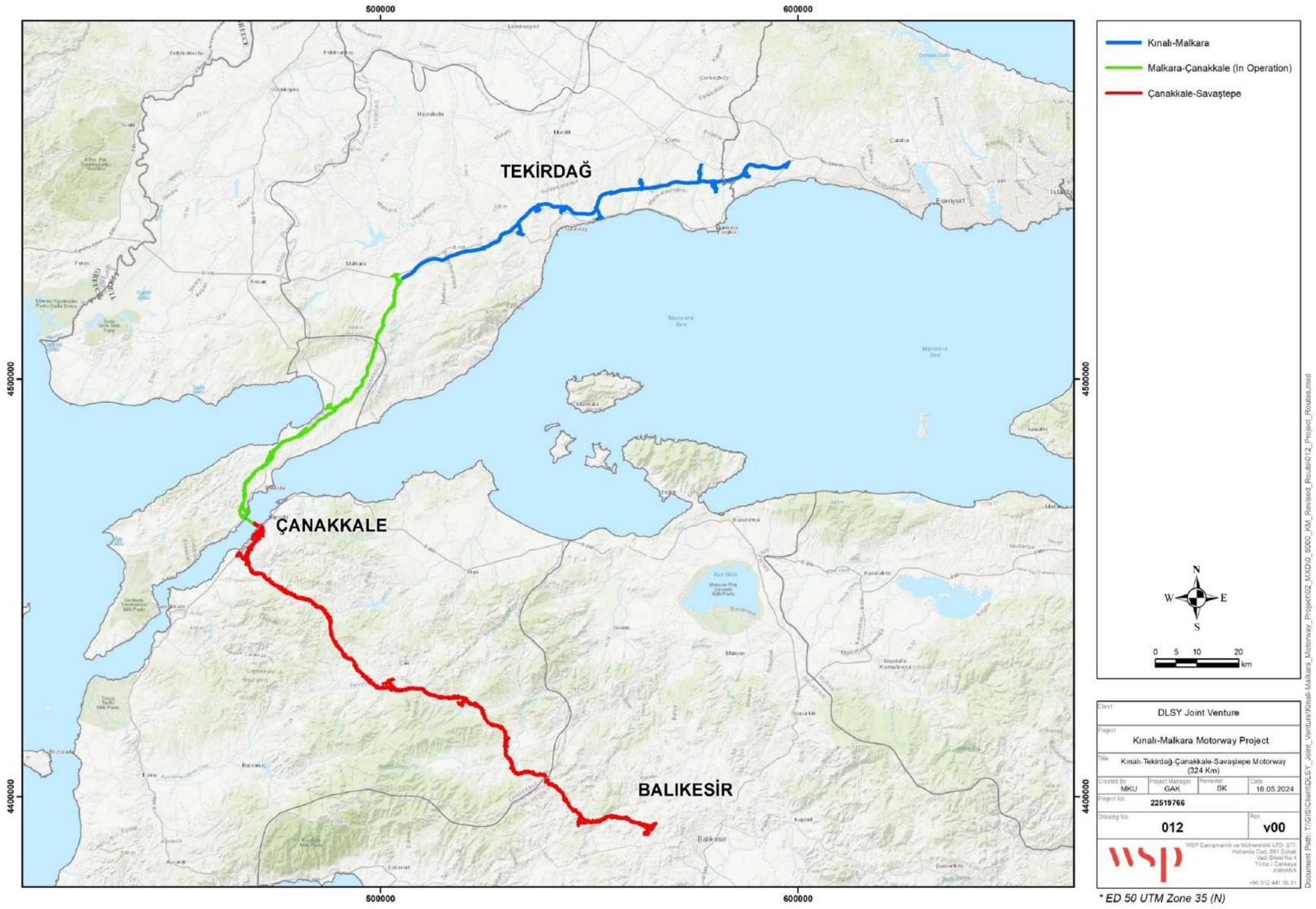

Figure 1: Overview of the Kınalı-Balıkesir Motorway

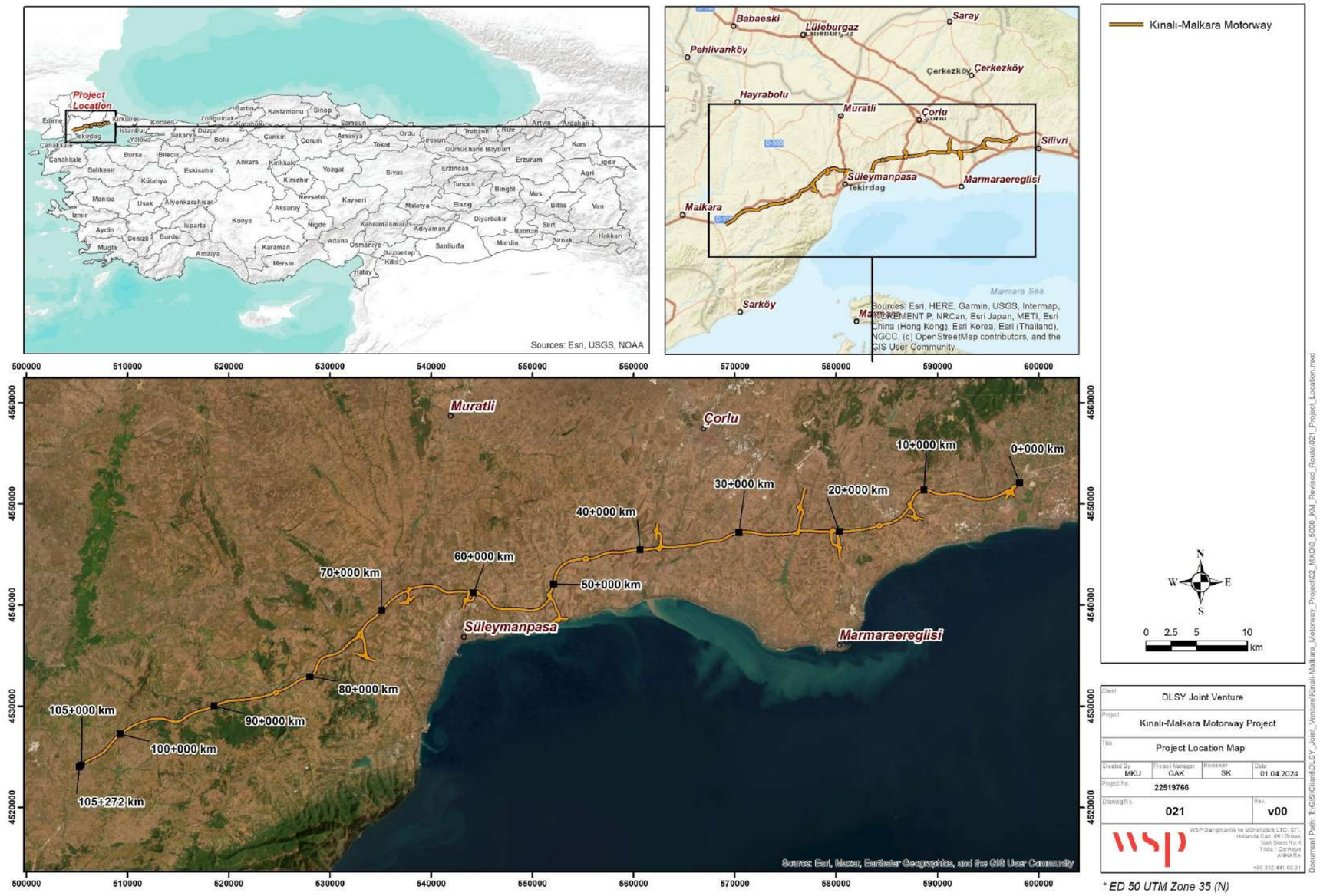

Figure 2: Kınalı-Malkara Motorway Route

2.1 Project Location

As reported in Section 1.1, the 105.3 km Kınalı-Malkara Motorway Project will start from Silivri District of İstanbul Province and will pass through Çerkezköy, Ergene, Çorlu, Muratlı and Süleymanpaşa districts of Tekirdağ Province. General layout of the Project is presented in Figure 3. The provinces and districts that Project will pass through between 0+000 km and 105+300 km are given in detail below.

- İstanbul Province, Silivri District (0+000 km - 17+700 km)
- Tekirdağ Province, Marmaraereğlisi District (17+700 km - 25+200 km)
- Tekirdağ Province, Çorlu District (25+200 km - 43+600 km)
- Tekirdağ Province, Süleymanpaşa District (43+600 km - 95+600 km)
- Tekirdağ Province, Malkara District (95+600 km - 105+272 km)

Figure 3: General Layout of the Project

2.2 Project engineering and components

The Project route is planned as 2x3 lanes. Most of the interchange ramps in the Project will be double lanes. The access roads of the Project are as 2x2 lanes.

Information about the overpasses, underpasses, culverts, and interchanges in the scope of Kınalı-Malkara Motorway Project is presented in Table 2. No viaducts or tunnels will be constructed for the Project.

Table 2: Number of Overpasses, Underpasses, Culverts, and Interchanges along the Sections of the Motorway

Type of Structures		Number of Structures
Overpass		60
Underpasses	**Portal Underpass**	28
	Girder Underpass	13
Culvert		218
Interchange		10

Three motorway service facilities will be constructed for the Project. The kilometer details of the service facilities are presented in the table below.

Table 3: Motorway Service Facilities

Name	Kilometer
MSF1	16+000
MSF2	45+500
MSF3	83+750

The main temporary associated facilities used only during the Project construction phase are the followings:

- 1 Camp Site
- 2 Sub-construction Sites
- 15 Storage Areas
- 5 Borrow Pits
- 6 Quarries
- 3 Concrete Batching Plants
- 2 Asphalt Plants
- 2 Mechanical Plants
- 2 Precast Plants

Table 4: Detailed information of Quarries and Borrow Pits

Facility Name	Province	District	Neighbourhood	Km	Distance from the Route (km)	App. Area (m^2)	Capacity (ton)	Status (Existing/New)	Operated by Client
Borrow Pits									
Borrow Pit-1 (Çanta)	İstanbul	Silivri	Çanta	5+250	9.50	19.88	6,000,000	New	Yes
Borrow Pit-2 (Türkgücü)	Tekirdağ	Çorlu	Türkgücü	30+320	1.85	29.88	7,500,000	New	Yes
Borrow Pit-3 (İnecik Kuzey)	Tekirdağ	S.Paşa	İnecik	85+100	4.30	19.98	6,000,000	New	Yes
Borrow Pit-4 (İnecik Güney)	Tekirdağ	S.Paşa	İnecik	85+100	1.80	19.87	6,000,000	New	Yes
Borrow Pit-5 (Mahramlar)	Tekirdağ	S.Paşa	Mahramlı	91+390	1.00	29.72	7,500,000	New	Yes
Quarries									
Danamandıra Limestone Quarry	İstanbul	Silivri	Danamandıra	5+250	36.00	62.05	9,000,000	Yes	Yes
Muratlı Basalt Quarry	Tekirdağ	Muratlı	Muradiye	60+500	16.50	7.00	1,500,000	Yes	Yes
68+000 Basalt Quarry*	Tekirdağ	S.Paşa	Yağcı	68+000	1.10	TBD	TBD	-	-
Osmanlı Basalt Quarry	Tekirdağ	S.Paşa	Osmanlı	68+000	4.40	14.51	4,000,000	Yes	Yes
Tepeköy Limestone Quarry	Tekirdağ	Malkara	Tepeköy	83+500	61.30	24.86	4,000,000	Existing - capacity increase	No
Dereköy Basalt / Limestone Quarry	Tekirdağ	Malkara	Dereköy	96+740	1.00	20.30	TBD	Existing – capacity increase	No

*TBD based on capacity assessment.

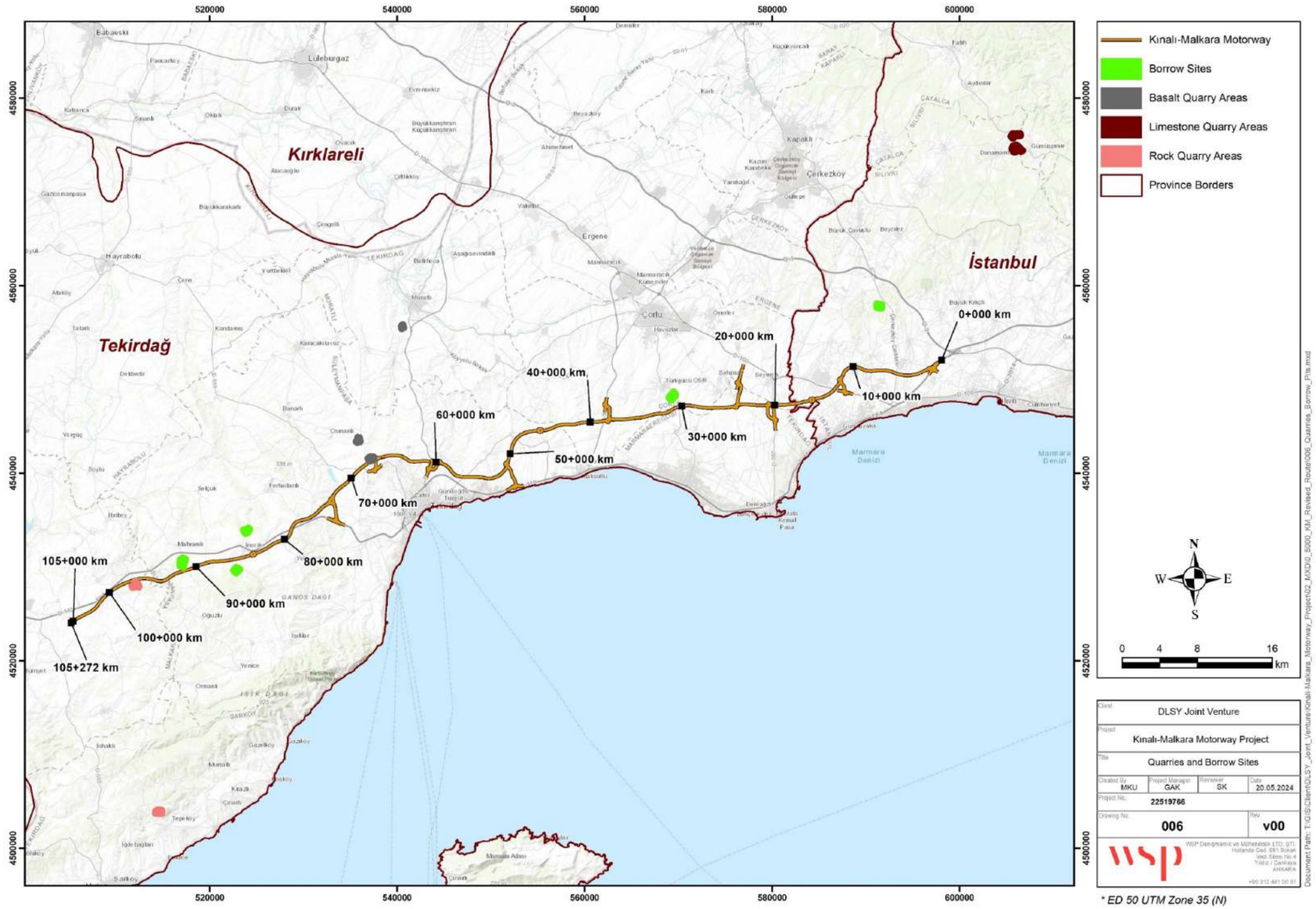

Figure 4: Quarries and Borrow Pits

To reach the motorway alignment locations from existing local/national roads, access roads will be required during construction. Some of the access roads already exist. However, at this stage of the Project, the access roads to be used to provide transportation to all Project associated facilities and components are not clearly defined yet. The locations and layout of these temporary access roads will be developed in consultation with the local authorities. The length of the temporary access roads is not known yet.

2.3 Project Phases

2.3.1 Project construction activities

Construction work will begin with the clearing of the terrain within the area defined by the project design boundaries. This work involves removing vegetation and structures from the area. The following activities involve earthworks, including cut-and-fill sections, excavation, and embankment, for which graders, dozers, concrete skippers, rollers, and other similar machinery will be used. This will be followed by the construction of culverts, drainage systems and larger structures. Once these works are complete, the finishing works and paving of the constructed road will begin, including the application of a cold-mix layer, a bituminous base coarse, a binder coarse and a wearing coarse. The final steps are the installation of ancillary equipment (e.g. fencing, lighting and road markings) and the landscaping of the roadside area.

Access roads are already in place along the project routes. However, some extension works may be required.

A total of 3,300 personnel is expected to be employed during the construction phase.

2.3.2 Project operation

The expected project's lifespan is 100 years. The project's concession period has not yet been determined. Part of the project's 100-year lifespan will be operated by ÇOK A.Ş within the scope of the BOT contract. This period will be clarified later, in consultation with the Ministry of Transport and Infrastructure (MoTI) and the Undersecretariat of Treasury. ÇOK A.Ş. will develop and implement a maintenance programme as per the BOT Contract to ensure that the specified conditions are met when the motorway is handed back to KGM at the end of the BOT concession period.

It is expected that the average number of workers employed will range between 300 and 400 full-time equivalents throughout the years, including all contractors during the operation phase.

3.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

This section of the BAP reports the policy, legal and institutional framework that is relevant to the Project.

The Project is expected to achieve whichever is more stringent amongst national standards and IFC Performance Standards (including EU Regulatory framework). The Section below summarises the key policies applicable to this project.

3.1 Reference Policies and Standards

The regulatory framework for this project is detailed in Section 2 of the ESHIA, providing a comprehensive overview of the applicable standards and requirements.

Those relevant to this Biodiversity Action Plan are listed below.

3.1.1 National Legislation

Türkiye Environmental Law requires a project proponent to undertake an Environmental Impact Assessment where it is evaluated that the project has the potential to cause significant environmental or social impacts.

Significant laws and regulations concerning the main national legislation on biodiversity and environmental protection include the following:

- Animal Protection Law No. 5199, dated June 24, 2004
- Cultural and Natural Assets Protection Law No. 2863 July 23, 1983
- Environment Law No. 2872, dated August 9, 1983. “Protection of the environment”
- Environment Law No. 5491, dated April 26, 2006. “Conservation of biological diversity and sanctions”
- Forestry Law No. 6831, dated August 31, 1956
- Land Games (Hunting) Law No. 4915, dated July 1, 2003
- National Biological Diversity Strategy and Action Plan (NBSAP) (2007-2018-2028). “Definition and assess of the biological diversity for a protection strategy in Türkiye”
- National Environmental Action Plan (1998)
- National Plan on In-situ Conservation of Plant Genetic Diversity (1998)
- National Agenda 21 Program (2001)
- National Wetland Strategy (2003)
- National Science and Technology Policies 2003-2023 Strategy Certificate (2004)
- National Action Program of Türkiye to Combat Desertification (2005)
- National Environment Strategy (2006)
- National Parks Law No. 2873, dated August 9, 1983
- Regulation for the Protection of Wetlands No. 28962, dated April 04,2014
- Regulation on Implementation of Convention on International Trade in Endangered Species of Wild Fauna and Flora No. 24623, dated December 27, 2001
- Regulation on Removal, Production and Export of Natural Flower Bulbs No. 28358, dated July 19, 2012

- Regulation on Wildlife Conservation and Wildlife Development Area No. 25637, November 8, 2004
- Statutory Decree on Establishment of Environmental Protection Agency for Special Areas No. 383, dated October 19, 1989
- Regulation on Environmental Impact Assessment (EIA), No. 31907 dated July 29, 2022
- Nature Conservation Law (Draft)

3.1.2 Lender Requirements

The IFC Standards establish environmental and social standards that must be met by projects financed by the International Finance Corporation. The IFC standards cover various aspects, including labor conditions, resource efficiency, pollution prevention, and biodiversity conservation. Specifically, IFC Performance Standard 6 (PS6), “Biodiversity Conservation and Sustainable Management of Living Natural Resources” emphasizes the need to protect biodiversity and ecosystem services, conserve natural habitats, and promote the sustainable use of natural resources. By implementing these requirements, the IFC aims to ensure that projects contribute positively to sustainable development while managing environmental and social risks effectively.

4.0 BIODIVERSITY BASELINE ASSESSMENT

4.1 Baseline methodology

The description of the biodiversity baseline methodology is provided in section 5 and section 6 of the client’s ESIA. These included both desktop and field studies conducted in June 2022 (terrestrial fauna, flora and freshwater fish) and January 2023 (freshwater fish). These will be complemented by additional studies planned for the spring 2026.

For any early works / pre-construction activities to be undertaken before the completion of the additional field surveys, the biodiversity management and mitigation measures to be implemented are to be reviewed by the Project’s Biodiversity Specialist and LESA’s Biodiversity Specialist to ensure they are sufficient.

4.2 Geographic Scope / Regional Context

The geographic scope of this BAP shall focus on the local region in which the motorway shall pass, taking into account the wider region in which it is located and the biodiversity values supported therein.

Two study areas were identified for the preparation of the ESIA: a Local Study Area and Regional Study Area which are described in the sections below.

4.2.1 Local Study Area (LSA)

The Local Study Areas (LSA) was identified for terrestrial and freshwater habitats to include all the Project components, including associated facilities, both permanent (motorway) and temporary (camp sites, storage areas, borrow pits, limestone quarries, concrete plants, sub-construction sites), as well as the expected Area of Influence of the Project (i.e., the area beyond which no detectable effects on biodiversity are expected).

The LSA is part of the wider RSA and, since there are no clear physical boundaries, it was designed as a 500 m buffer around the planned route of the motorway, the footprint of all associated facilities (borrow pits, limestone quarries, camp sites, storage areas, sub-construction sites, concrete plants) and all access roads to associated facilities. The designed LSA extends for approximately 208 km within Tekirdağ Province in the north-western part of Türkiye. The LSA is located at elevations between 19 m and 675 m above sea level.

The overall Project LSA is illustrated in Figure 5, while Annex 1 reports maps with the footprint of the project route and associated facilities.

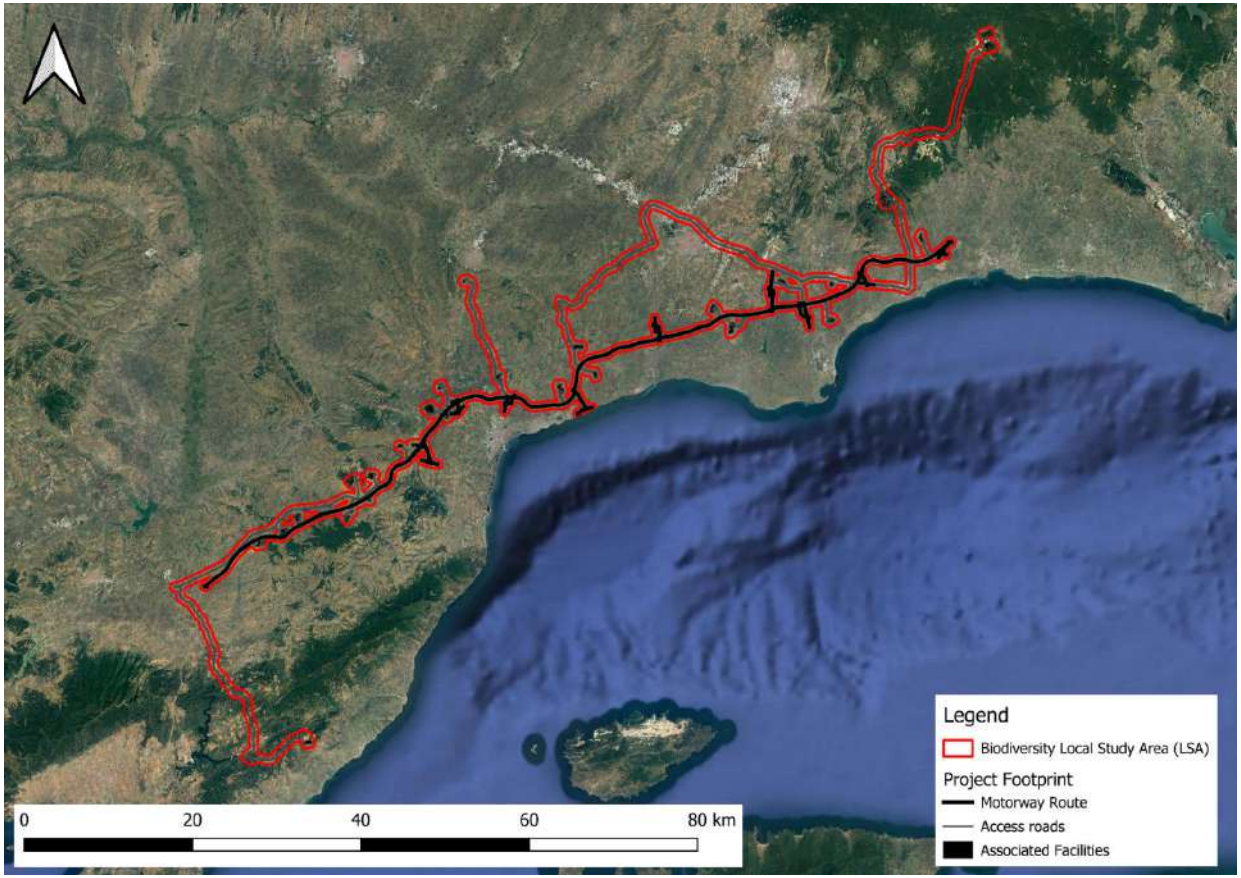

Figure 5: Biodiversity Local Study Area (LSA)

4.2.2 Regional Study Area (RSA)

The biodiversity Regional Study Area (RSA) is a broad area containing a geographically distinct assemblage of species, natural communities, and environmental conditions. The RSA is defined to assess, based on literature review, the species and habitats potentially occurring within and in the vicinity of the Project Area of Influence (AoI).

For this Project a terrestrial RSA and a freshwater RSA have been identified based on bio-geographic characteristics (Figure 6):

- a terrestrial RSA corresponding to the **"PA0404 - Balkan mixed forests"** terrestrial ecoregion which is part of the broader "Temperate Broadleaf & Mixed Forests" category (Olson *et al.*, 2001[1]);
- a freshwater RSA corresponding to two main river basins, the **Meriç-Ergene Basin and Marmara Basin**, which are part of the "**423 - Thrace**" freshwater ecoregion, and a major sub-basin, the Karaçay Sub-basin, which fells within the "**418 - Dniester - Lower Danube**" freshwater ecoregion (Freshwater Ecoregions of the World - http://www.feow.org/[2]).

[1] Olson, David M., *et al*. "Terrestrial Ecoregions of the World: A New Map of Life on Earth. A new global map of terrestrial ecoregions provides an innovative tool for conserving biodiversity." BioScience 51.11 (2001): 933-938.

[2] Abell, Robin, *et al*. "Freshwater ecoregions of the world: a new map of biogeographic units for freshwater biodiversity conservation." BioScience 58.5 (2008): 403-414.

Figure 6: Biodiversity Regional Study Areas (RSA)

4.3 Ecological Setting / Key Findings

4.3.1 General Overview

The project is located within the broader Balkan mixed forests ecoregion (PA0404), that spans large parts of southeastern Europe, including areas of Bulgaria, Romania, Serbia, Greece, and Albania. It contains a rich variety of habitats, from lowland oak and beech forests to higher-elevation pine and spruce stands. This diversity of landscapes and climates supports a wide range of plants and animals, making it one of the most biologically rich regions in Europe. The forests are home to iconic species such as brown bears, wolves, and wildcats, as well as many bird, reptile, and amphibian species that depend on the region's complex mix of woodland and open habitats.

Today, the ecoregion supports the greatest concentration of threatened mammal species in Europe. The biodiversity of the Balkan mixed forests has great ecological, cultural, and economic value. The forests regulate water flows, prevent soil erosion, store carbon, and support rural communities that rely on forest resources. However, they face growing pressure from deforestation, overgrazing, infrastructure expansion, and agricultural conversion. Fragmentation and unsustainable logging threaten many species and reduce the ability of ecosystems to recover. These threats underpin the need for clear management guidelines to prevent further loss of natural habitat, and also create opportunities, particularly in forest restoration in priority areas that are essential to maintain biodiversity across the landscape (i.e. connectivity) and the ecological services they provide to both wildlife and people across the Balkans.

4.3.2 Terrestrial Habitats

The project undertook terrestrial habitat mapping as part of ESIA process. Habitat types were identified and mapped in the entire Local Study Area (LSA) at a fine scale (1:10.000) according to EUNIS classification based on satellite image and literature information, including Corine Land Cover.

Terrestrial habitats present within the LSA are presented in Table *5*.

Table 5 EUNIS habitat types present in the Local Study Area

EUNIS Habitat Type	Total LSA	
	ha	%
Natural Habitats		
C2.3 - Permanent non-tidal, smooth-flowing watercourses	125.62	<1
C2.5 - Temporary running waters	192.61	<1
E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows	1,213.34	3.32
E3.2 - Mediterranean short humid grassland	269.87	<1
G1.1 - Riparian and gallery woodland, with dominant *Alnus, Betula, Populus* or *Salix*	87.20	<1
G1.7 - Thermophilous deciduous woodland	2,770.30	7.58
G4 - Mixed deciduous and coniferous woodland	187.64	<1
G5.2 - Small broadleaved deciduous anthropogenic woodlands	613.13	1.68
G5.7 - Coppice and early-stage plantations	507.72	1.39
Subtotal	*5,967.43*	*16.34*
Modified Habitats		
I1.1 - Intensive unmixed crops	24,461.39	66.97

EUNIS Habitat Type	Total LSA	
	ha	%
I1.3 - Arable land with unmixed crops grown by low-intensity agricultural methods	1,084.65	2.97
J1.7 - High density temporary residential units	442.94	1.21
J2.1 - Scattered residential buildings	1,144.37	3.13
J2.3 - Rural industrial and commercial sites still in active use	453.46	1.24
J3 - Extractive industrial sites	290.04	<1
J4.2 - Road networks	112.28	<1
J5 - Highly artificial man-made waters and associated structures	2.2	<0.1
X10 - Mosaic landscapes with a woodland element (bocages)	2,564.79	7.02
Subtotal	*30,556.12*	*83.66*
Total	***36,523.55***	***100***

The habitat map of the LSA according to EUNIS habitat classification system is available in Figure 7 and illustrated in more detail in Figure 8 to Figure 12.

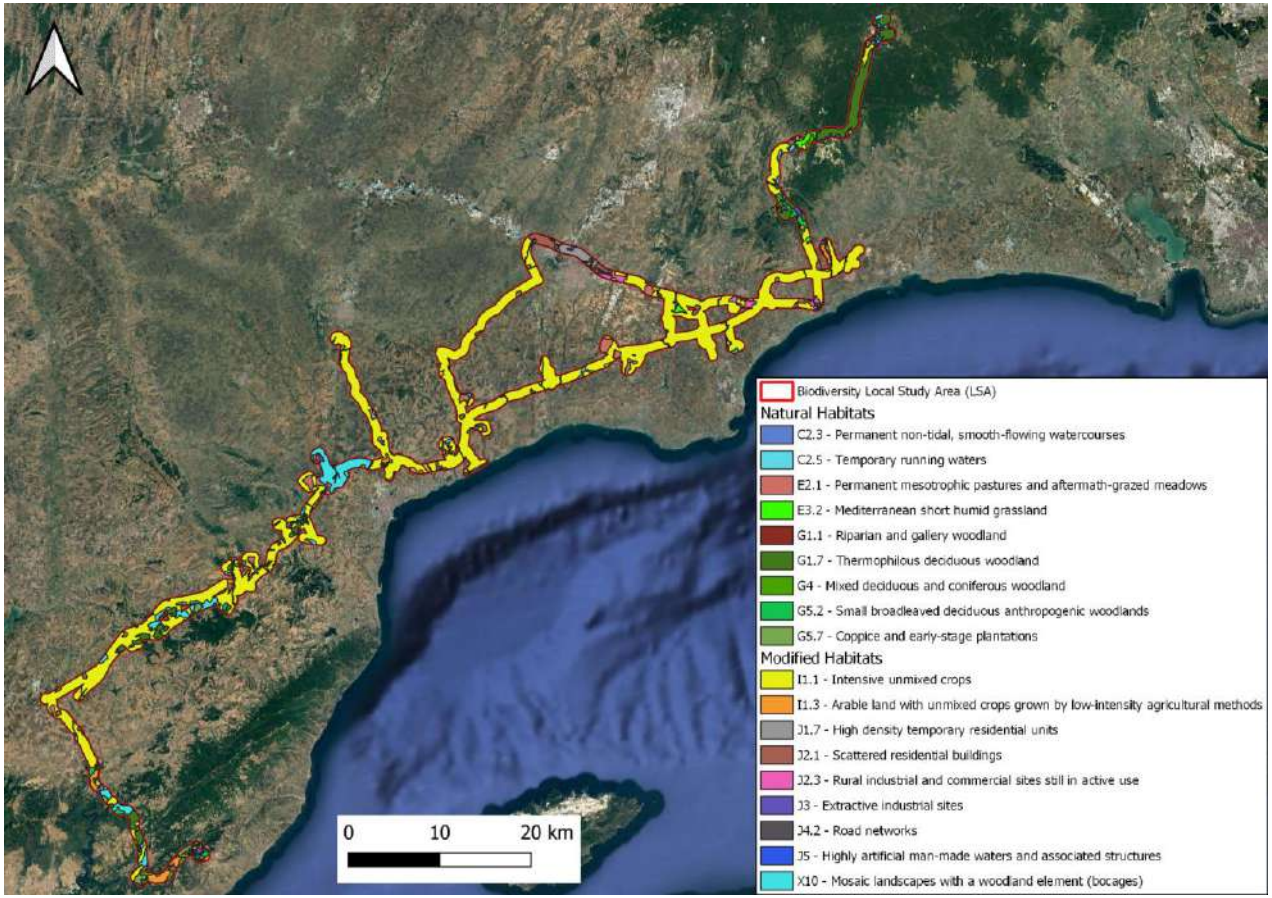

Figure 7: EUNIS habitat map of the Biodiversity Local Study Area (general view)

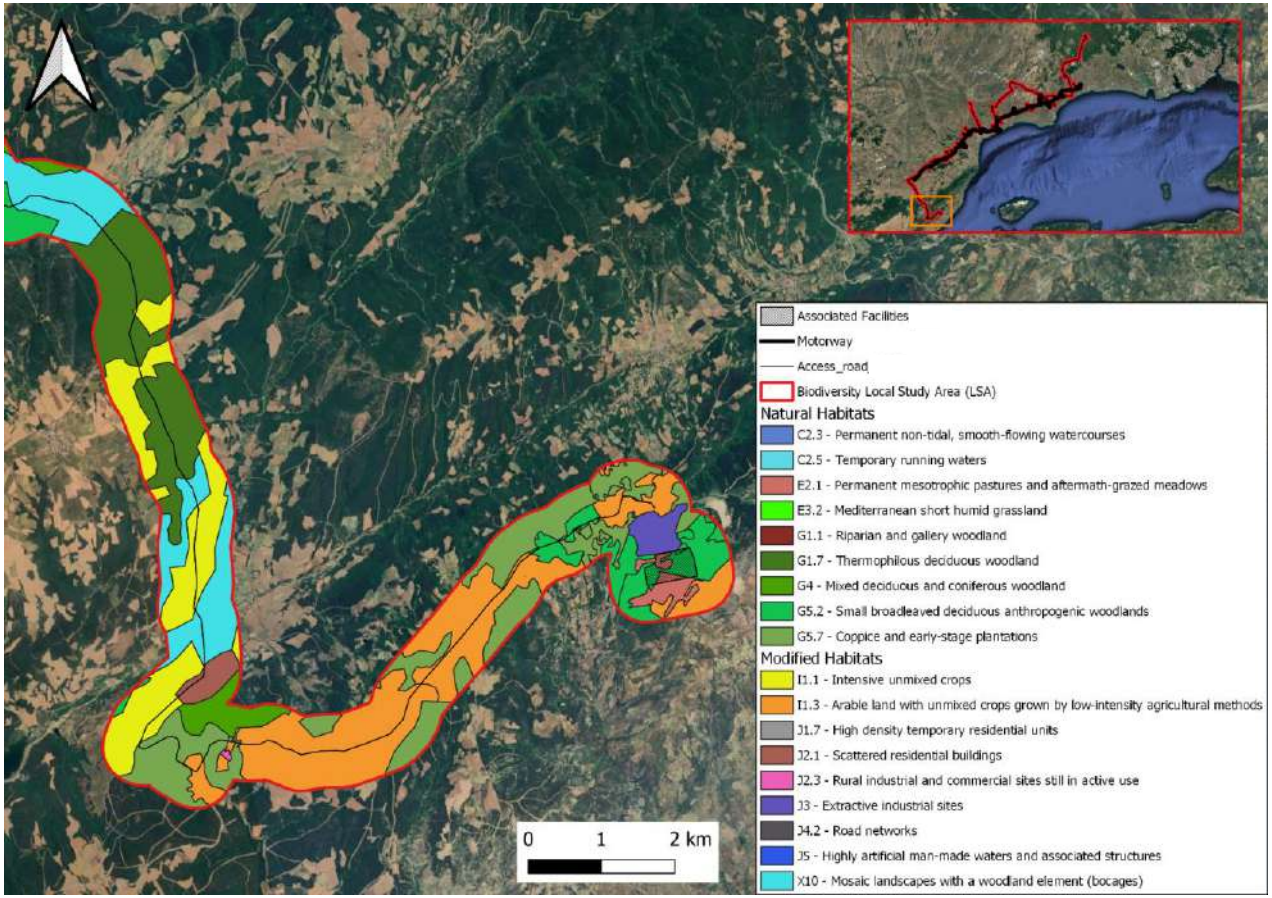

Figure 8: EUNIS habitat map of the Biodiversity Local Study Area (south-western section view)

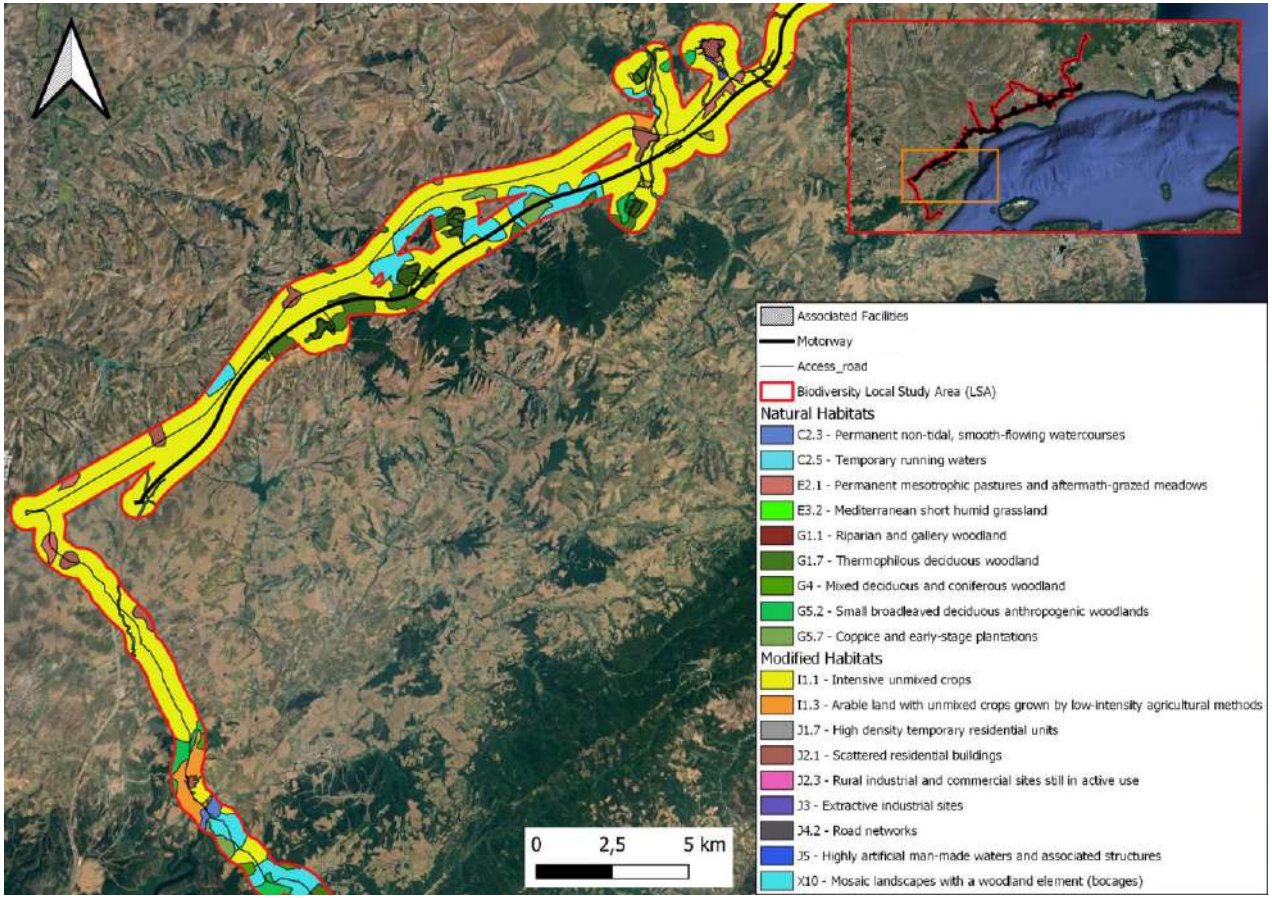

Figure 9: EUNIS habitat map of the Biodiversity Local Study Area (south-western section view)

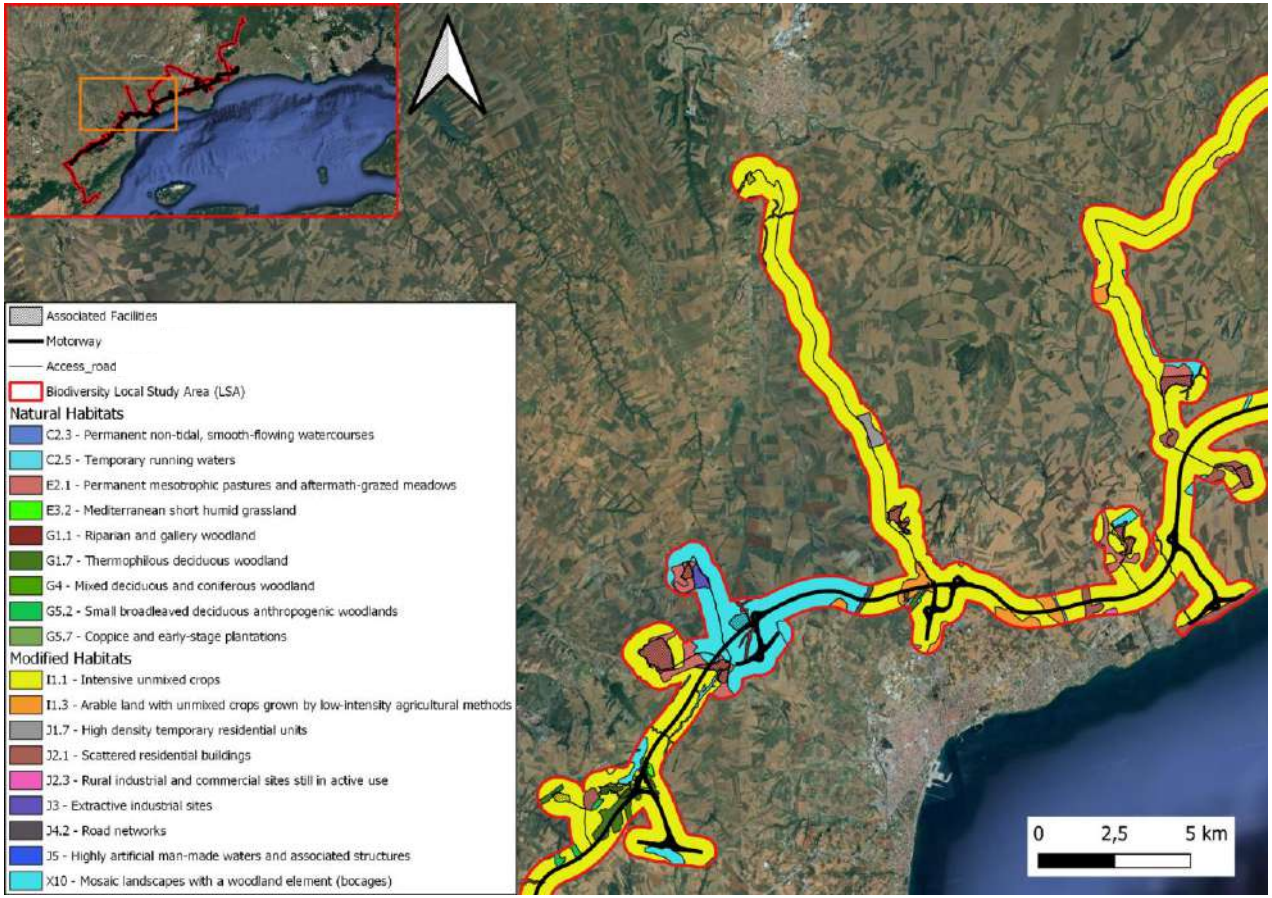

Figure 10: EUNIS habitat map of the Biodiversity Local Study Area (central section view)

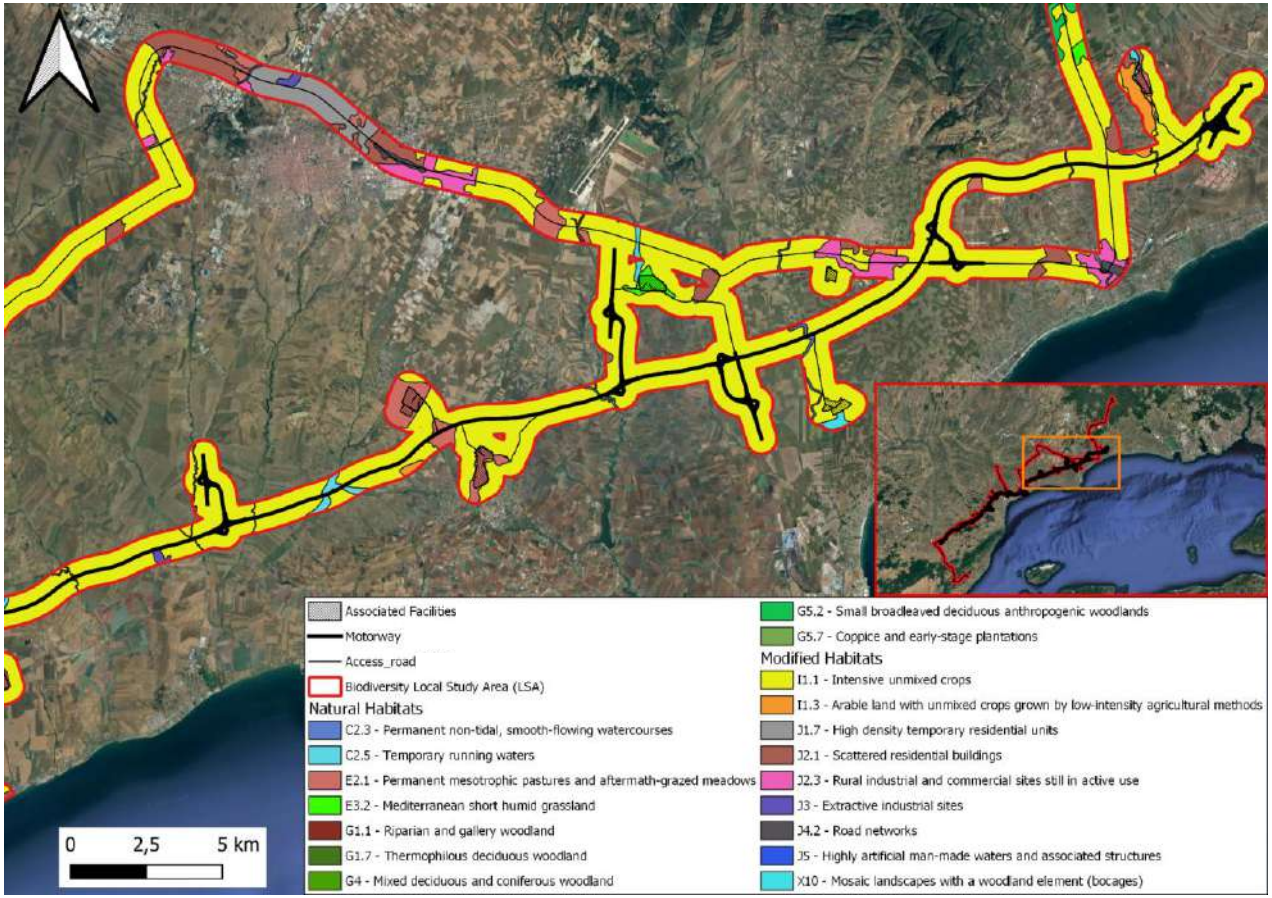

Figure 11: EUNIS habitat map of the Biodiversity Local Study Area (central-north section view)

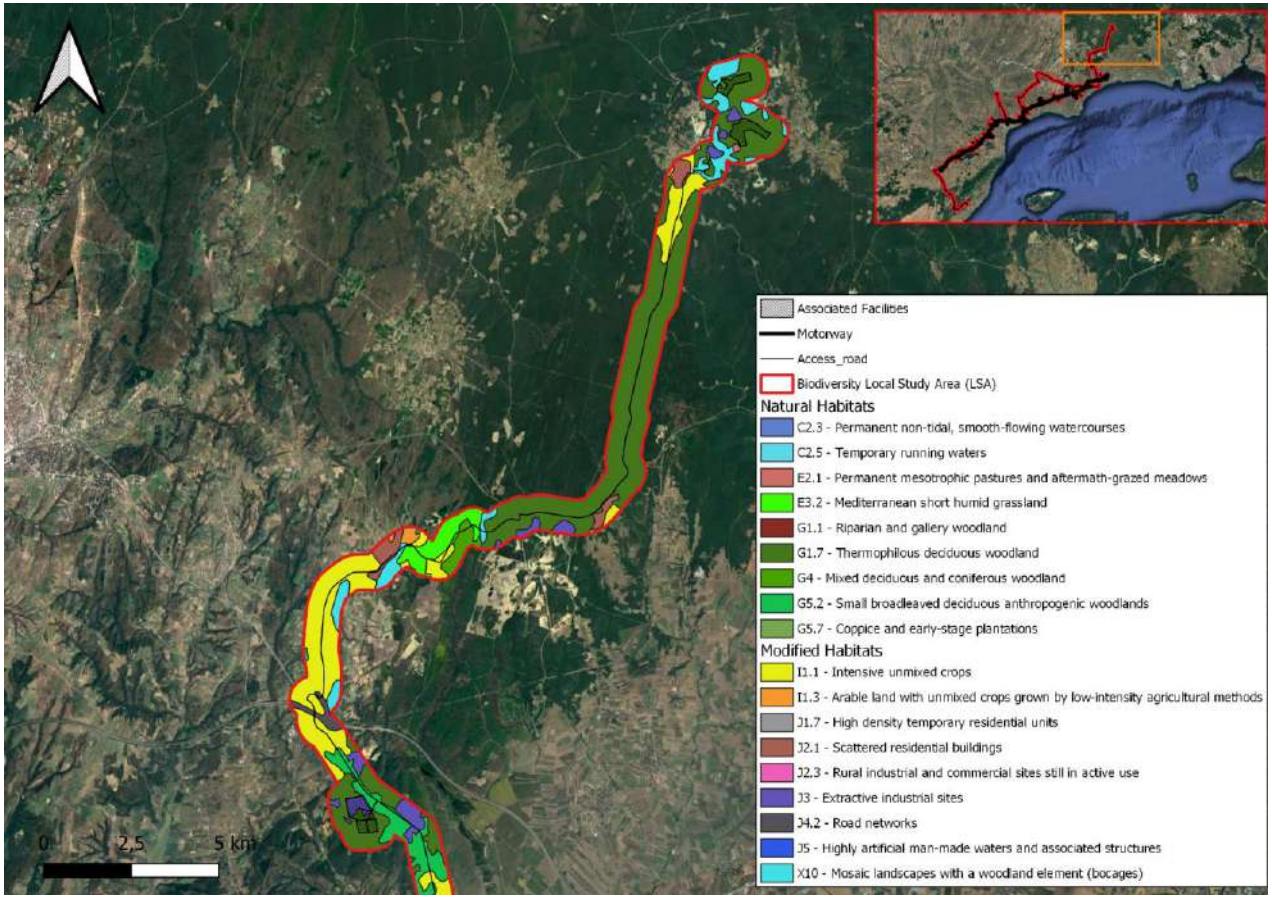

Figure 12: EUNIS habitat map of the Biodiversity Local Study Area (north-eastern section view)

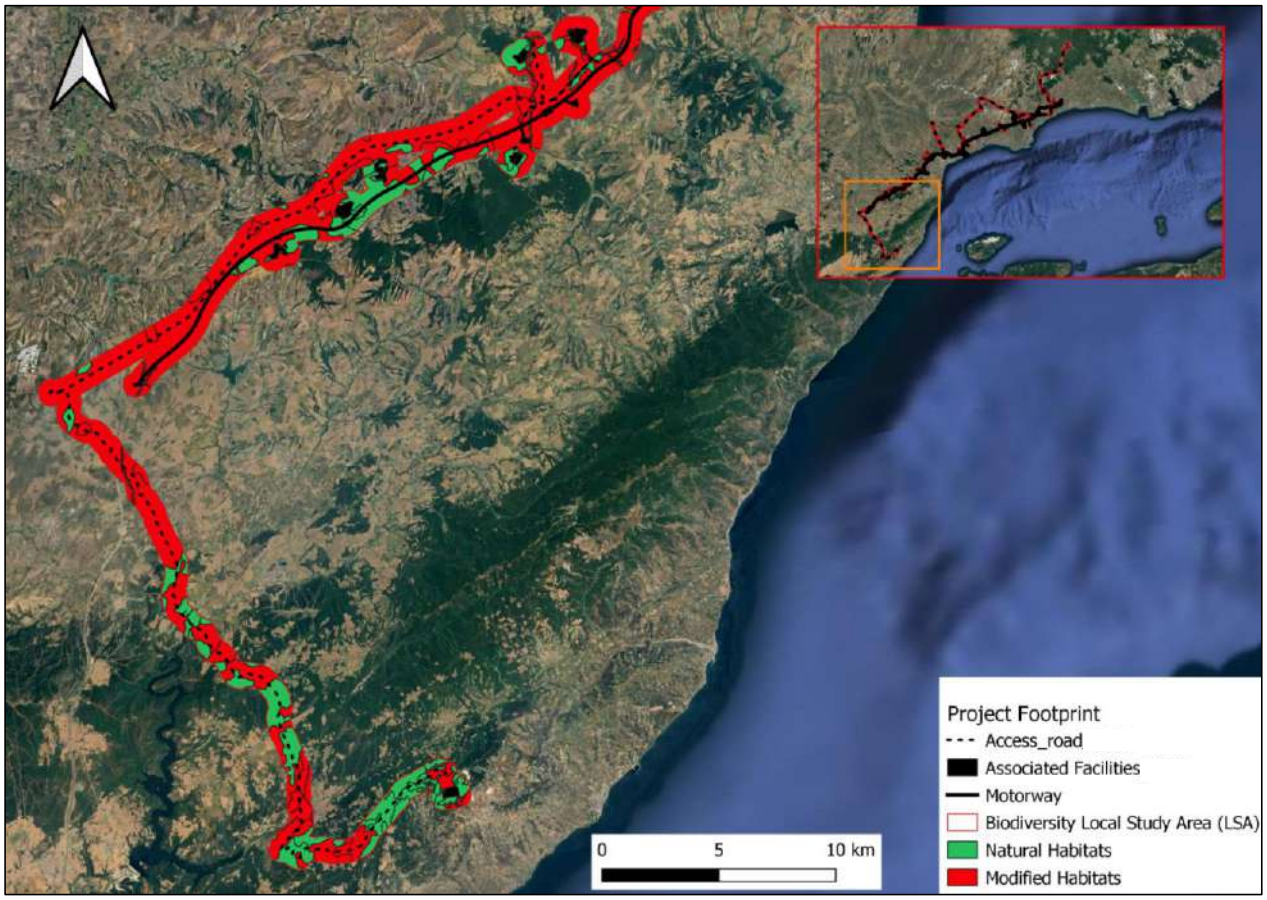

Figure 13: Distinction between Natural and Modified Habitats inside the Biodiversity LSA (south-western section view)

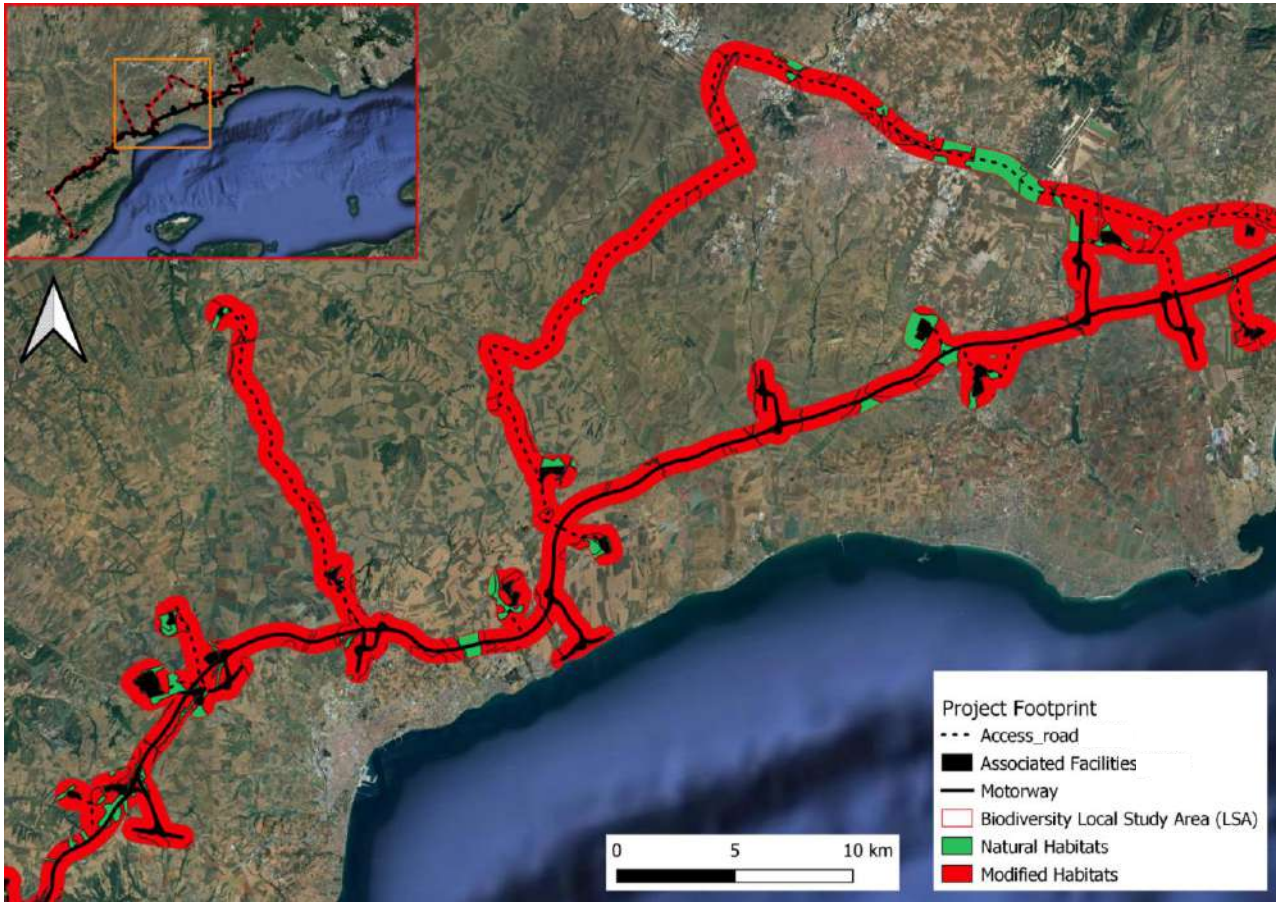

Figure 14: Distinction bewteen Natural and Modified Habitats inside the Biodiversity LSA (central section view)

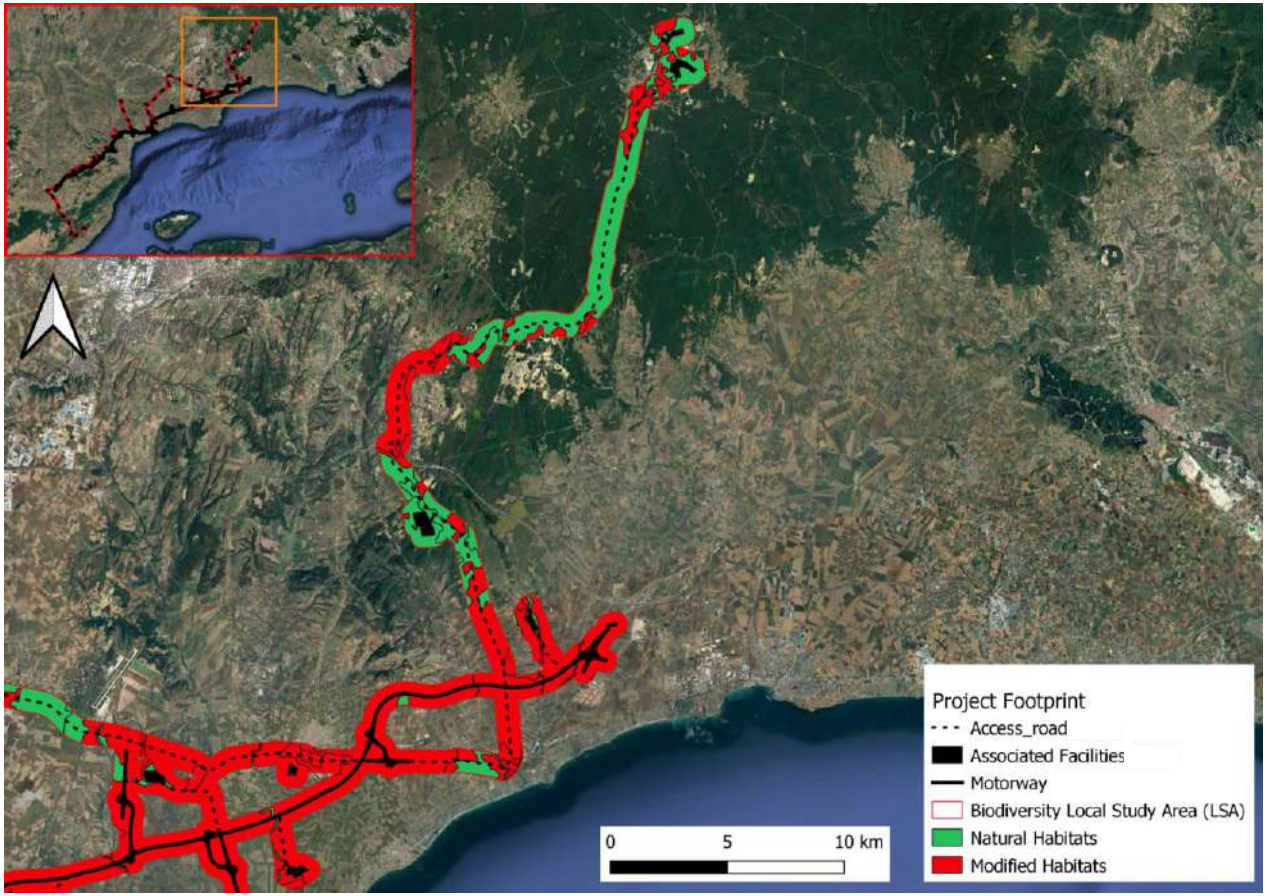

Figure 15: Distinction between Natural and Modified Habitats inside the Biodiversity LSA (north-eastern section view)

4.3.3 Terrestrial Flora

The terrestrial flora species within the Local Study Area (LSA) were identified through a literature review and a field survey conducted in June 2022. The survey benefited significantly from the expertise of Prof. Hayri Duman, whose prior work in the region enhanced the reliability of the findings despite limited fieldwork duration and sampling points.

The LSA lies within the “PA0404 - Balkan mixed forests” ecoregion, part of the broader “Temperate Broadleaf & Mixed Forests” category. Phytogeographically, it belongs to the Central European, Illyrian, and Euxinian provinces of the Circumboreal Region. The vegetation is characterized by mixed oak forests, primarily dominated by *Quercus frainetto*, with interspersed pine, silver fir (*Abies alba*), Norway spruce (*Picea abies*), shrublands, and grasslands. The region supports high biodiversity, including numerous endemic plant species.

A total of 41 species were directly observed during the field survey. Among them, *Cirsium baytopae* was identified as both threatened and regionally endemic. Its conservation status was assessed using national sources and updated by Prof. Duman according to IUCN 2001 criteria.

The complete list of species is available in Appendix D of the ESIA.

4.3.4 Terrestrial Fauna

The terrestrial fauna species within the LSA were identified through literature review and field surveys conducted in June 2022. The involvement of Prof. Şafak Bulut, a regional expert, significantly improved the reliability of the findings through a cost-effective and targeted methodology.

A total of 294 vertebrate species were identified as present or potentially present, including: 9 amphibians, 29 reptiles, 58 mammals (including 21 bat species), and 198 birds.

Only 34 species were directly observed during the field surveys.

Among the fauna species identified as present or potentially present within the LSA three bird species (*Aquila nipalensis*, *Neophron percnopterus*, *Falco cherrug)* and one mammal species (*Spermophilus citellus*) are classified as Endangered (EN). Four bird species (*Aquila heliacal*, *Clanga clanga*, *Streptopelia turtur* and *Falco vespertinus*), five mammal species (*Miniopterus schreibersii, Myomimus roachi*, *Myotis capaccinii, Rhinolophus mehelyi* and *Vormela peregusna*) and one reptile species (*Testudo graeca*) are classified as Vulnerable (VU). One potentially present mammal species (*Nannospalax leucodon*) is classified as Data Deficient (DD).

Among the fauna species present or potentially present within the LSA, one alien reptile species (*Podarcis siculus*) and two alien bird species (*Phasianus colchicus* and *Alexandrinus krameri*) were identified.

Finally, for the terrestrial fauna component no endemic or/and restricted range species were identified.

4.3.5 Freshwater species.

Freshwater fauna species within the Local Study Area (LSA) were identified through literature review and field surveys conducted in June 2022 and January 2023. The expertise of Prof. Aydın Akbulut significantly enhanced the reliability of the findings, thanks to his tailored methodology and prior experience in the region.

A total of 62 fish species were identified as present or potentially present. Of these, five species were sampled during electrofishing. Species of conservation interest include *Acipenser gueldenstaedtii*, *Acipenser stellatus*, and *Anguilla anguilla* (all classified as Critically Endangered by the IUCN). *Chondrostoma vardarense* is Near Threatened, and *Vimba melanops* is Data Deficient. Alien species include *Gambusia holbrooki, Cyprinus carpio, Morone saxatilis*, and *Salmo trutta*.

Fish presence was confirmed at only four out of sixteen surveyed stations. Many streams were dry or had low water flow during the surveys, indicating their seasonal nature. Water quality was poor at several stations due to pollution from agricultural, industrial, and domestic sources, particularly near treatment plants.

The most abundant species observed was *Carassius gibelio* (approx. 280 individuals), followed by *Cobitis strumicae, Gambusia holbrooki, Squalius orpheus, Alburnoides bipunctatus, Gobio bulgaricus, Alburnus alburnus*, and *Petroleuciscus borysthenicus*.

The complete list of species is available in Appendix D of the ESIA.

4.3.6 Legally Protected Areas and Key Biodiversity Areas

4.3.6.1 Terkos Basin (Terkos Havzasi) Key Biodiversity Area (KBA)

In the north-eastern portion, the LSA falls within the boundaries of the legally protected area **Terkos Basin KBA[3], IBA[4] and IPA[5]** (Figure 16). The Terkos Basin KBA, IBA and IPA is located in the north of the Çatalca Peninsula, mostly within the Istanbul province, at an elevation between 0 - 490 m and it includes the Terkos Lake. This KBA hosts a rich vegetation with forests, heaths, freshwater ecosystems and dunes. Also, where forest vegetation is widespread, it is home to the largest coppice forests in Türkiye. On the dry hills and southern slopes there are heaths within the forested areas. The pristine nature of the Terkos Lake has resulted in an extremely rich wetland system with well-preserved habitats and rare plant species. Moreover, Lake Danamandıra, located in the central region of the KBA, is one of the rare acidic wetlands within the heath and coppice area.

This site qualifies as a Key Biodiversity Area of international significance that meets the thresholds for the red-breasted goose (*Branta ruficollis).* This species also meets the criteria for critical habitat, hence the mitigation strategy for the KBA shall be aligned with the species description below.

The Key threats to biodiversity at the Terkos Basin Key Biodiversity Area (KBA) include dam construction and water diversion projects that have altered hydrology and water quality, leading to habitat degradation and species decline. Large-scale afforestation of sand dunes and grasslands with non-native species has destroyed natural habitats and threatens globally threatened and rare plants. Additional pressures such as illegal hunting, housing developments, and gravel extraction are further fragmenting habitats and intensifying biodiversity loss. Actions to address some to these issues may potentially form part of an offset project to compensate for impact of the road construction. Further investigations can be undertaken during the stakeholder engagement phase of the BOMP.

The Danamandıra Limestone Quarry, from which approximately half the limestone required for the project will be sourced, is currently located within KBA area.

[3] Key Biodiversity Area – Source: https://www.keybiodiversityareas.org/

[4] Important Birds and Biodiversity Area – Source: https://datazone.birdlife.org/country

[5] Important Plant Areas – Source: https://www.plantlifeipa.org/home

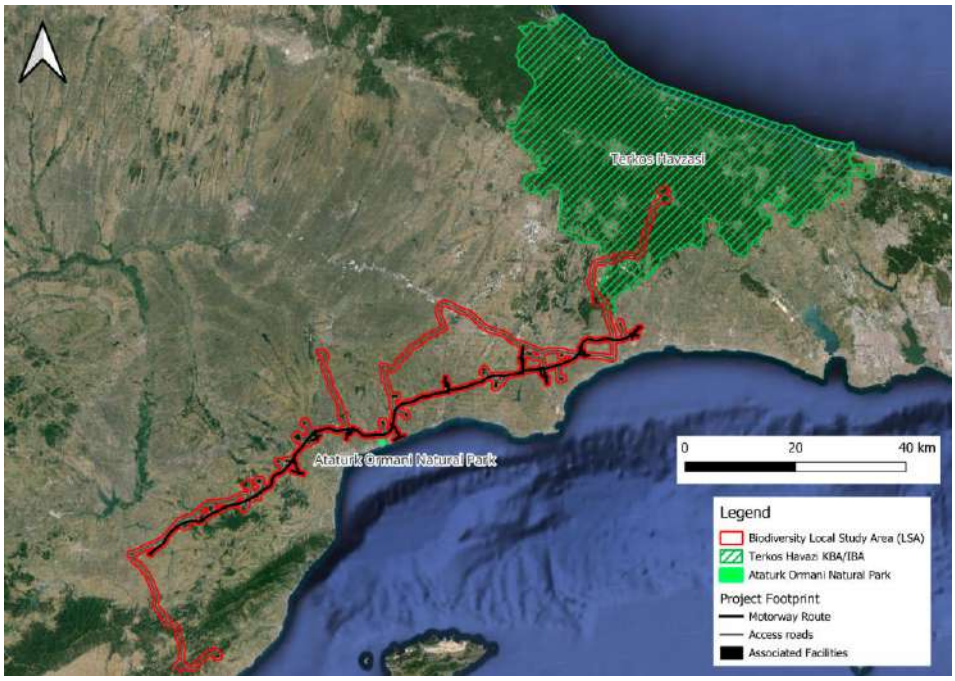

Figure 16: Protected areas and Internationally Recognized Areas of importance for biodiversity in the vicinity of the LSA

4.4 Critical Habitat Assessment and Species of Conservation Concern

The identification and effective management of critical habitat is integral to fulfilling both the conservation objectives of this Biodiversity Action Plan (BAP) and international standards, including IFC Performance Standard 6. Critical habitat encompasses areas of significant importance to globally or nationally threatened biodiversity, endemic species, and ecosystems, which if lost, could not be replaced. In the context of the proposed motorway development in Turkey, this chapter provides a summary of the findings of the Critical Habitat Assessment detailed in the ESIA (chapter 6.2.4).

4.4.1 Criteria 1: Critically Endangered and Endangered Species

Among the flora and fauna species identified as present or potentially present within the LSA, a list of potential critical habitat qualifying species was prepared. It included all the species classified as Vulnerable (VU), Endangered (EN), or Critically Endangered (CR) at a global or national level according to IUCN Red List of Threatened Species[6]. This list is presented in the ESIA and BMP and was prepared to offer a broader overview on the sensitive species.

The CHA screened this long-list as against the thresholds for qualification against the thresholds described in Guidance Note 72 of the PS6 guidelines. Two species were identified as meeting these thresholds. These are listed in the table below.

[6] The International Union for the Conservation of Nature Red List of Threatened Species – Source: https://www.iucnredlist.org/

Table 6. Flora and fauna species potentially triggering Critical Habitat according to Criterion 1 (IFC, 2019)

Taxon	Species	Common name	Habitat affiliation	Identified Locations (if any)
Flora	*Cirsium baytopae*	-	G1.7, G5.2 and G5.7	Yes (see Figure 17)
Mammal	*Spermophilus citellus*	European Souslik	E2.1 and E3.2	No

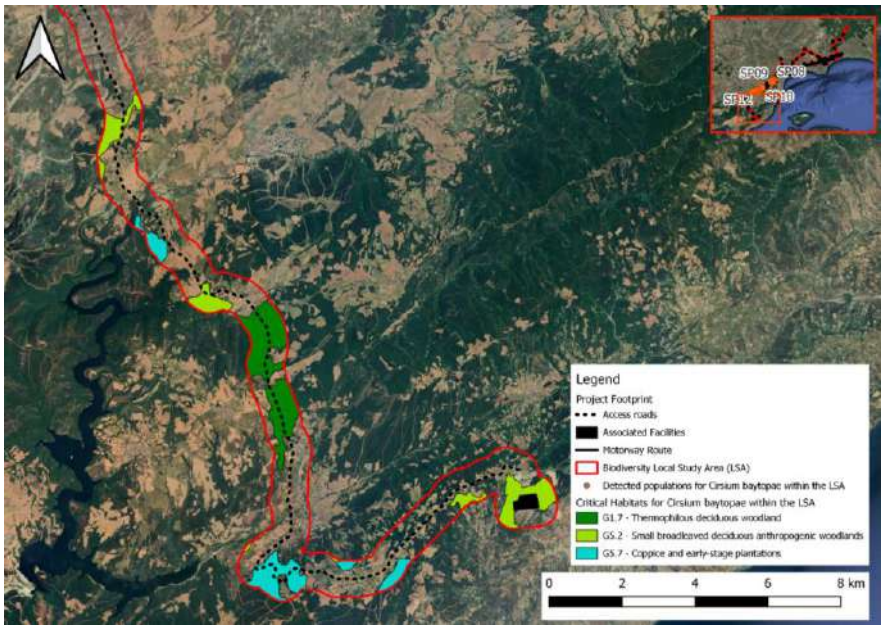

Figure 17: Distribution of the Critical Habitats for *Cyrsium baytopae* within the Project LSA (south-western section view)

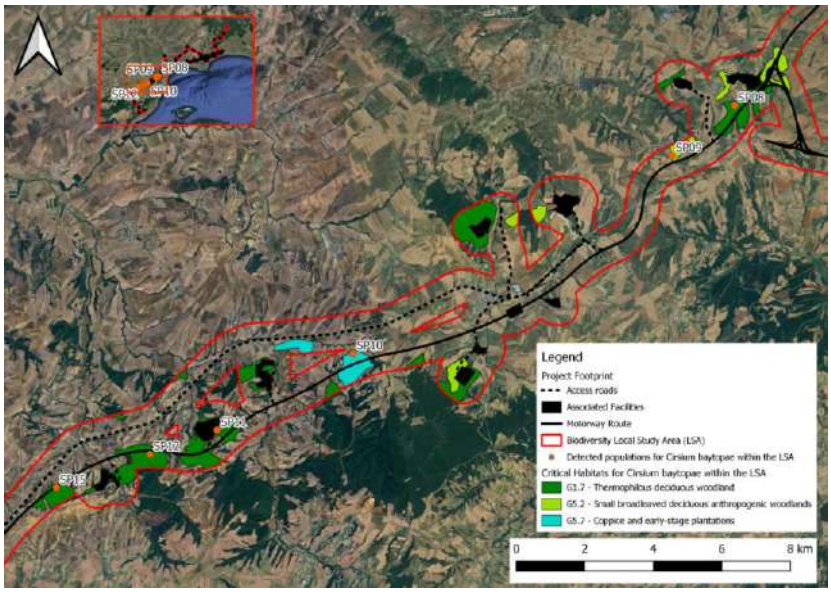

Figure 18: Distribution of the Critical Habitats for *Cyrsium baytopae* within the Project LSA (central section view)

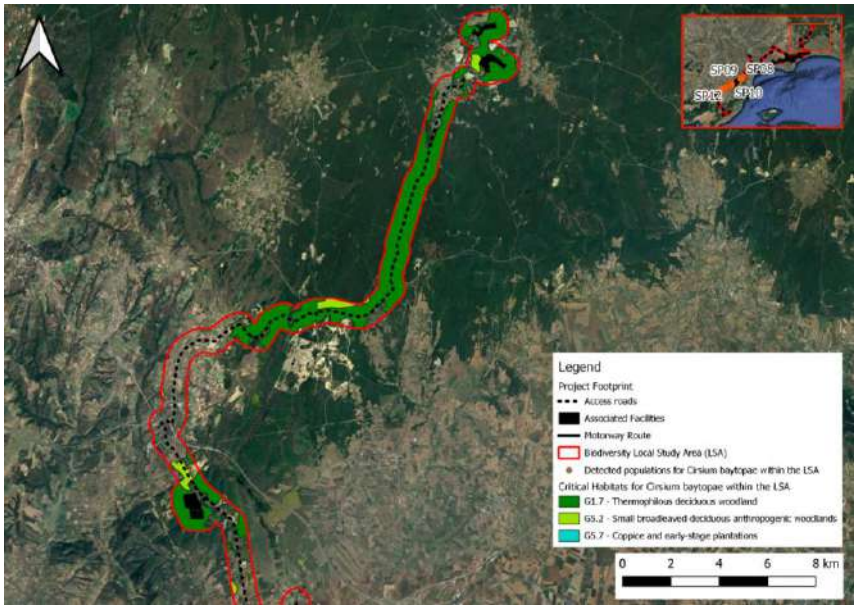

Figure 19: Distribution of the Critical Habitats for *Cyrsium baytopae* within the Project LSA (north-eastern section view)

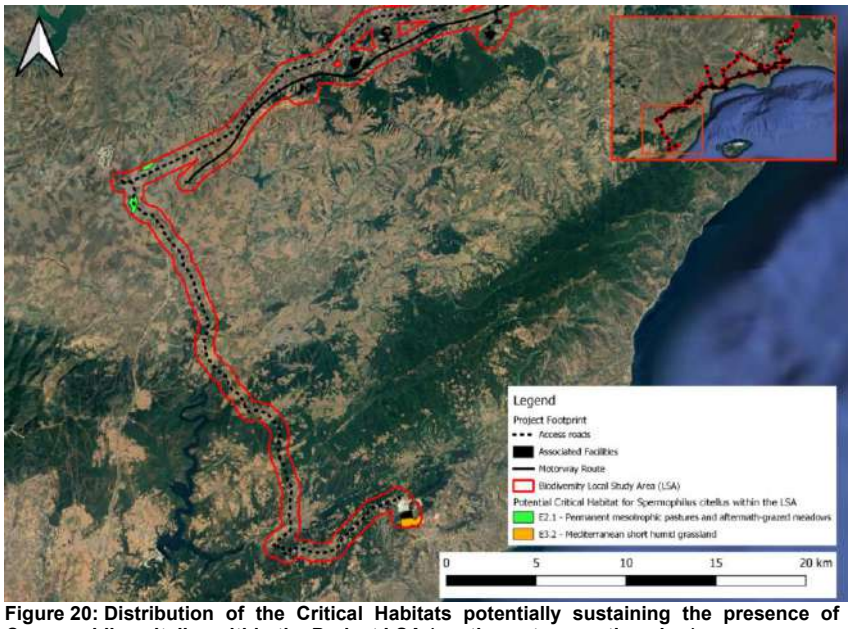

Figure 20: Distribution of the Critical Habitats potentially sustaining the presence of *Spermophilus citellus* within the Project LSA (south-western section view)

4.4.2 Criteria 2 Endemic and Range Restricted Species

The presence of endemic or restricted-range species was assessed against the thresholds described in GN74[7].

As a result, one species was identified as triggering CH based on this criterion: *Cirsium baytopae* (EN, Restricted Range). This species also triggered Criteria 1 and has been observed during field studies.

4.4.3 Criteria 3 Migratory and Congregatory species

Migratory and Congregatory species candidates were screened against the criteria in GN78.

As a result of the screening, two bird species, the Red-breasted Goose (*Branta ruficollis*) and the Common Pochard (*Aythya ferina*), are potentially triggering Critical Habitat according to Criterion 3. Further site assessments are necessary to confirm estimated population numbers in the LSA.

[7] EOO less than 50,000 km^2 for terrestrial vertebrates and plants; global range of less than or equal to 500 km linear geographic span for coastal, riverine, and other aquatic species that do not exceed 200 km width at any point

Table 7. Fauna species potentially triggering Critical Habitat according to Criterion 3a (IFC, 2019)

Species	Common name	IUCN Red List	KBA	Habitat Affiliation	Identified Locations (if any)
Aythya ferina	Common Pochard	VU	Wintering (Büyükçekmece Lake and Meriç Delta)	Permanent non-tidal, smooth-flowing watercourses	Not observed
Branta ruficollis	Red-breasted Goose	VU	Wintering (Terkos Basin, Büyükçekmece Lake, Saros Bay)	Permanent non-tidal, smooth-flowing watercourses	Not observed

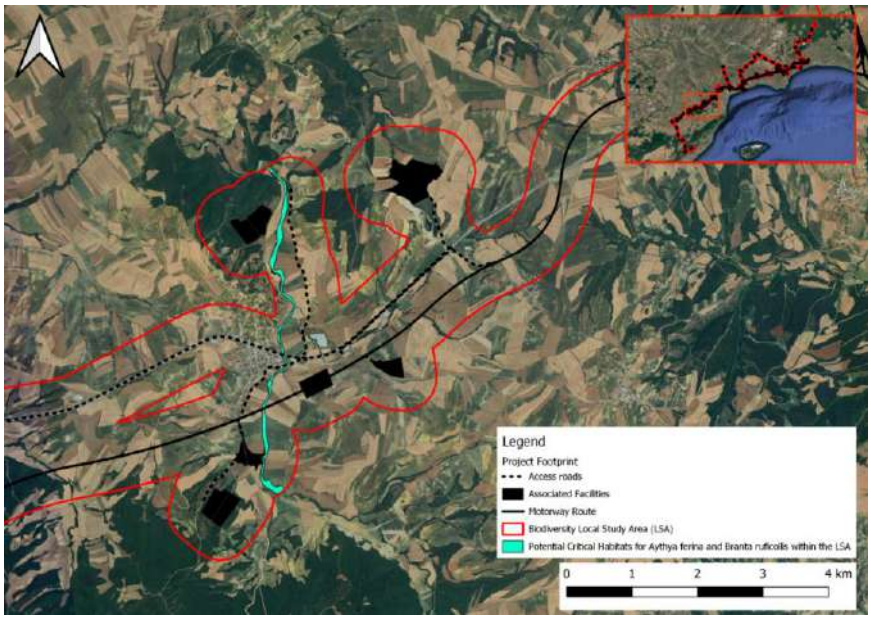

Figure 21: Distribution of the Critical Habitats potentially sustaining the presence of *Aythya ferina* and *Branta ruficollis* within the Project LSA (south-western section view)

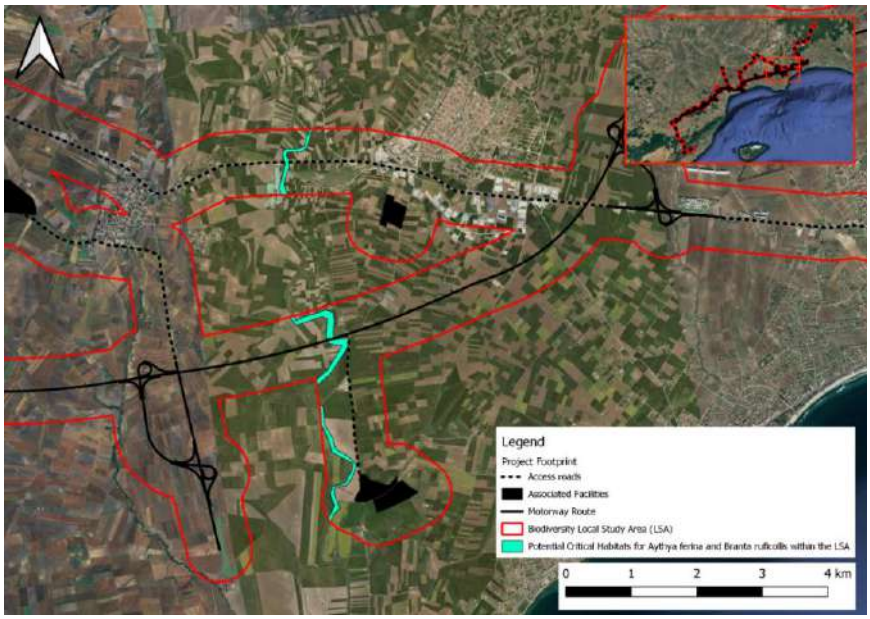

Figure 22: Distribution of the Critical Habitats potentially sustaining the presence of Aythya ferina and Branta ruficollis within the Project LSA (north-eastern section view)

4.4.4 Criteria 4 Highly Threatened or Unique Ecosystems

No Critical Habitat is expected to be present in the LSA according to this criterion.

4.4.5 Criteria 5 Evolutionary Processes

No Critical Habitat is expected to be present in the LSA according to this criterion

4.4.6 Summary of Flora and Fauna species Triggering Critical Habitats

The table below summarizes the species of flora and fauna identified as Critical Habitats (CHs) and the IFC criteria for which they were considered. Species that could trigger CH but that are considered only potentially present based on literature information and/or species for which insufficient data are available are identified as triggering “Potential Critical Habitat”. Where the critical habitat has been confirmed in at least one occasion it is identified as “Critical habitat”.

In the last column of the table below, for each species the EUNIS codes of the most suitable habitats possibly hosting the species’ presence are specified. Mapping of the critical habitats potentially sustaining the presence of triggering species and specific information on the ecological requirements are provided for each species triggering CH in detail in the paragraphs below.

Table 8: Flora and fauna species identified as triggering Critical Habitats

Taxon	Species	Common name	IUCN Red List	Local IUCN	Endemic/RR	Lit./ Obs.	IFC criteria	Habitat suitability
Flora	*Cirsium baytopae*	-	-	EN	Endemic/RR	O	Criterion 1a & 2a	G1.7, G5.2, G5.7
Bird	*Aythya ferina*	Common Pochard	VU	-	-	L	Criterion 3a	C2.3
	Branta ruficollis	Red-breasted Goose	VU	-	-	L	Criterion 3a	C2.3
Mammal	*Spermophilus citellus*	European Souslik	EN	-	-	L	Criterion 1a	E2.1, E3.2

Since among the species identified as triggering Critical Habitat *Cirsium baytopae* is the only one which was observed during the field activities, Critical Habitat is confirmed only for this species. The final status for the other three potential critical habitat species shall be determined following additional fieldwork in spring 2026.

5.0 SUMMARY OF PROJECT IMPACTS

The potential impact factors on biodiversity during the construction and operation phases are summarized in the following Table.

Table 9: Summary of the Project impact factors in the construction and operation phases

Phase	Actvity leading to Impact
Construction	Vegetation and topsoil removal
	Activities determining changes in local hydrology and water quality
	Increase in vehicular traffic
	Emission of waste, pollutants, dust and particulate matter
	Emission of noise and vibrations
	Emission of light from the construction yard
	Introduction and spreading of alien species
Operation	Presence of new buildings/infrastructures
	Activities determining changes in local hydrology and water quality
	Highspeed motorway traffic
	Emission of noise and vibration

Phase	Actvity leading to Impact
	Emission of light
	Introduction and spreading of alien species

6.0 APPLICATION OF THE MITIGATION HEIRARCHY

The mitigation hierarchy (avoidance, minimization, restoration/rehabilitation, offset/compensation) is a core principle in biodiversity management and underpins the development of effective Biodiversity Action Plans, including for linear infrastructure projects such as motorways. In accordance with IFC Performance Standard 6, the mitigation hierarchy entails a sequential approach, comprising four key steps designed to minimise negative impacts on biodiversity and ecosystem services. Demonstration of the application of the MH is a core requirement for project compliance prior to consideration of offsetting measures.

The sections below provide the key mitigation measures that have been undertaken or exist as a project commitment.

6.1 Mitigation measures / Mitigation Plan

6.1.1 Pre-Construction: Supplementary Studies and Construction Planning

Table 10 details the supplementary studies identified aiming to collect data to enable avoidance or minimization of impacts on the biodiversity (BIO) components, to be implemented before the beginning of the construction phase.

According to survey results and micro-siting of project facilities the CHA, the quantification of impacts, the BMP, and the BAP will be revised to integrate/extend minimization actions/offsets to achieve no-net loss for natural habitats/net-gain for critical habitats

Table 10: Actions to be implemented before the construction phase

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
BIO01	**Additional studies** ■ Field Surveys to verify the accuracy of the EUNIS habitat mapping for natural and critical habitat. These surveys will also assess habitat conditions to inform a more detailed quantification of critical and natural habitat and, therefore, the type and extent of species-specific mitigation/offsets required. ■ Field Surveys targeting flora and fauna species, mainly directed investigate in more detail *taxa* in NH and MH; a particular effort will be made to investigate: (1) the Danamandira Limestone Quarry (KM 5+250) and access routes, falling inside the Terkos Basin Important Bird Area (IBA); (2) the Derekoy Basalt/Limestone Quarry (KM 96+740) and other Associated Facilities and access routes falling in natural woodland habitats.		Supplementary Survey Plan in February*	Development of a Supplementary Survey Plan for the additional surveys Recruitment of the required resources Field surveys to be performed at all identified locations*	Project E&S Manager Biodiversity specialist(s)	Not started
BIO02	**Micro-siting of project facilities (Detailed Design)** ■ Wherever possible, prioritize the location of project facilities (in particular, temporary facilities), and quarries, in modified habitat or in natural habitat with higher degradation. ■ Minimize the footprint of individual facilities. ■ Utilize the existing roads to the maximum extent possible.	IFC PS6, par.17	During the detailed engineering design	Hectares of NH not impacted by Project footprint with respect to the previous alternative	Project Manager (Chief Engineer, HSE Manager, E&S Manager)	On-going

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
BIO03	**Review of the Critical Habitat Assessment, IA, and Biodiversity Management Plan** Revision of CHA, of the quantification of impacts on direct habitat loss, of BMP to integrate/extend minimization actions. Verify the quantity of natural and critical habitat that will be lost because of the Project.	Supplementary Survey Plan in February*	After survey results (Surveys in Spring 2026) No later than 1 year post Financial Close	CHA, BMP revision according to survey results	Project E&S Manager Biodiversity specialist(s)	Not started
BIO04	**Biodiversity Action Plan** A Biodiversity Action Plan setting out actions to mitigate/compensate impacts and to conserve/enhance biodiversity with appropriate management actions/offset measures will be prepared and implemented. The BAP will set defined objectives and prioritize activities, and it will establish key performance indicators (KPIs) to track implementation progress and effectiveness. The BAP will undergo a stakeholder engagement process throughout its development and implementation.	IFC PS6, par. 18 (and par. 7, 15)	First desktop version (framework) before Financial close	BAP completed and circulated to all stakeholders and contractors Updates of BAP versions with significant changing conditions (identification of new CH species, monitoring results, stakeholder engagement, etc.) Stakeholder identification	Project E&S Manager Biodiversity specialist(s)	On-going

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
				and engagement		
BIO05	**Biodiversity Offset Management Plan** A BOMP providing details on the required offset measures to achieve a net gain outcome for impacts to biodiversity values will be prepared according to BAP. The BOMP will undergo a stakeholder engagement process throughout its development and implementation.	IFC PS6, par 19	After BAP approval and stakeholder engagement	Stakeholder engagement Development of the BOMP	Project E&S Manager Biodiversity specialist(s)	Not started

* Field surveys to be carried out as soon as possible according to species phenologies.

6.1.2 Construction Phase

Table 11 details the mitigation measures/actions identified for the biodiversity (BIO) components during the construction phase. For each measure/action identified, the table shows:

- Item: the identification code of the mitigation measure/actions (ID);
- Measure/Actions: description of the mitigation measure/actions;
- Source document: is the reference to one or more applicable standard (i.e. National Regulation and Permits, EU Regulations/Directives, IFC PS/Guidelines, or other GIIP);
- Timeline and frequency: frequency/timing of the measure/action;
- KPI (Key performance indicator): quantitative compliance indicator or qualitative acceptance criteria that can be used to verify the actual effectiveness of the mitigation measure/actions;
- Responsibility: resource responsible for implementing the measures/actions;
- Status: progress of the measures/actions.

The aim of the “mitigation hierarchy” (avoidance, minimization, rehabilitation/restoration, offset) is applied for the selection of the measures to limit as far as possible negative impacts to the environment.

This process is intended to be an adaptive management system, so that the mitigation and management approach will be adjusted based on any new knowledge that may emerge from the monitoring programme reported in the following section.

Should non-conformities or unexpected residual impacts due to the Project be identified on site, the biodiversity specialists will assess the situation and, if necessary, propose modifications and integrations to the mitigation and monitoring measures included in this BMP. The proposed changes will be evaluated and approved according to the Project responsibility matrix.

Reference was made to IFC PS6 to identify the minimization measures below.

Table 11: Mitigation measures/actions for the construction phase

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
BIO06	**Pre-construction surveys prior to site clearance** Before commencing site preparation activities (vegetation clearance and topsoil removal): ■ Biodiversity specialist(s)will perform pre-construction surveys in the areas to be cleared. The survey will focus on *Cirsium baytopae* and *any protected or critically endangered species.* If found, refer to. If found, refer to BIO07. ■ Prior to site clearance, Biodiversity specialist(s)t will perform pre-construction surveys on fauna species with limited mobility that cannot move ahead of construction (e.g. reptiles and amphibians). ■ Wherever possible, the felling of significant/mature trees will be avoided and connectivity between areas of forest habitats will be maintained. ■ No large trees will be felled without a pre-felling check for nests, bat roosts, and other functional habitat features by a Biodiversity Specialist. ■ Depending on the construction schedule, a specific pre-construction survey will be performed to identify any active bat roost potentially present within the project footprint. If fauna species are encountered during the above listed surveys, the following measures will be implemented:	IFC PS6, par. 14	Before the beginning of site preparation (vegetation clearing and topsoil removal)	Zero construction works without pre-construction surveys are finalised. Zero mature trees to be felled until inspection is complete, and/or species are translocated.	Project E&S Manager Biodiversity specialist(s)	Not Started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	■ Fauna species with limited mobility will be collected by the ecologist and translocated to nearby undisturbed but similar sites. ■ If denning sites for mobile species are observed, the project will encourage the autonomous relocation of the mammals primarily through ramping up disturbance activities over the course of at least one week to. ■ Active bird nests shall not be damaged. Should the presence of active bird nests be observed, the best efforts will be made to reschedule disturbing activities/tree cutting to wait for the natural fledging before proceeding with the vegetation clearing. ■ Should active nests of PCH and CH bird species be observed they will be protected, and no activities will be performed in a radius of 100 m until fledging. ■ If permanent or temporary roost are observed in the areas to be cleared the Project will take action to allow the bats to leave on their own at sundown but keep them from returning at sun set (e.g., remove or obstruct the roost, close the roost entrance entrance). This will only be done only if no dependent young are present (e.g., maternity roosts are typically present between May through August). ■ If sensitive fauna is present in an area within 100 m from blasting areas, blasting will be prohibited until nesting and/or maternity season is over and until the individuals can be safely removed and/or the roost closed as indicated in the bullet point above.					

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	The presence of invasive alien species will also be registered (BIO18)					
BIO07	**Conservation of Flora species triggering CH** One flora species (*Cirsium baytopae*) was identified as triggering CH. The maps of the known locations of the populations of *C. baytopae* potentially impacted during construction are shown in Figure 23. Direct disturbance in areas where this species was identified will be avoided whenever feasible. If direct or indirect impacts occur, the following measures will be applied. Should 'Additional Field Surveys' (BIO01) and 'Pre-construction surveys' (BIO06), identify other stations of *C. baytopae,* or of any other protected flora species in the project footprint area, the following mitigation measures will be implemented also to newly identified stations.	IFC PS6, par. 15 IUCN 2013	Before the beginning of site preparation (vegetation clearing and topsoil removal) during the entire construction phase	Ha of surveyed areas before site vegetation clearing Zero construction works without pre-construction surveys are finalised	Project E&S Manager Biodiversity specialists	Not started
	<u>On-site Conservation</u> The conservation of the CH triggering species shall be guaranteed to the extent possible within the construction site. The individuals of CH species not directly impacted by the Project footprint located within 100 m from construction or operation areas will be actively protected from any indirect impact. The areas in which populations of CH species are present will be treated as "Exclusion zones" where soil and vegetation will be preserved, and access will not be allowed to the maximum possible		During the entire construction phase	N. of CH triggering species populations protected on-site, or translocated /N. observed CH triggering species populations	Project E&S Manager Biodiversity specialists	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	extent. These areas will be clearly identified both on maps and in the field by highly visible wooden sticks (50 cm high) planted into the ground and /or flagging tape, while a more permanent fencing should be provided in areas subject to higher risk of disturbance because it is situated closer to active sites or downhill from ground preparation.					
	Salvaging and Translocation Wherever on-site conservation is not feasible, specimens belonging to flora species identified as triggering CH or PCH, directly impacted by the Project shall be identified prior to construction and translocated to an alternative site. The identification and flagging of individuals to be translocated will take place preferably during the flowering season of the species, while the translocation of individuals shall be preferably performed during the dormant stage to minimize stresses to the plant. The data regarding date, location, source populations and number of individuals collected and translocated will be recorded. A detailed 'Flora Salvaging and Translocation Plan' will be prepared based on the construction schedule. Collection and translocation techniques and suitable translocation sites will also be identified within the Plan.		During the entire construction phase	Flora Salvaging and Translocation Plan in place Training in plant relocation conducted Periodic monitoring reports of the status of translocation sites for any signs of stress or disturbance	Project E&S Manager Biodiversity specialists	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	<u>Seed collection</u> Seed collection and conservation will be performed for the CH determining species, following the best practice indicated by the Millennium Seed Bank. Seeds collected will be separately stored using clearly identifiable codes and will be donated to the Ankara Seed Gene Bank and, if needed, germinated and used to create new populations. <u>Biodiversity Action Plan (BIO04)</u> A BAP will be developed providing details on mitigation for critical habitat triggered by *C. baytopae* (and other flora species observed during field surveys). A quantifiable approach will be used to demonstrate what rehabilitation or restoration of habitats are required to achieve a net gain. <u>Biodiversity Offset Management Plan (BOMP) (BIO05)</u> The BOMP will provide the details of how offsets will be implemented for any unavoidable loss of critical habitat triggered by *C. baytopae* (and other flora species observed during field surveys).			Records of seed collection. N. of seed samples over N. of observed population of CH triggering species BAP development BOMP development		On-going Not started
BIO08	**Conservation of Bird species triggering CH** Two Bird species (*Aythya ferina* and *Branta ruficollis*) were identified as potentially triggering CH.	IFC PS6, par. 15	Before the start of site vegetation clearance, during the	Work postponement if nests/signs of breeding activities of	Biodiversity specialist(s)	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	The presence of these species within the LSA was not confirmed during June 2022 surveys. However, they are reported as breeding in the Terkos Basin KBA located at 5 km east of the Project. Other bird species triggering CH could be identified as a result of BIO01 and BIO06. Should this be the case the following measures will be extended to these species. Direct and indirect impacts within 100 m and 300 m buffer could affected these species habitat if not properly mitigated and will be avoided whenever feasible. <u>Reschedule of activities and on-site protection</u> Nesting sites of *A. ferina* may be found in marshes, lakes and slow-flowing rivers (C2.3 and C2.5 in the LSA). Should the presence of nesting sites belonging to target species be confirmed, works shall be postponed in the area until the breeding cycle is completed (April-May for *A. ferina*). A species-specific buffer zone will be set up around the nest site following consultation with a qualified ecologist.		entire construction phase.	these species are observed in the area	Project E&S Manager Site Construction Manager	
BIO09	**Conservation of Mammal species triggering CH** One Mammal species (*Spermophilus citellus*) was identified as triggering CH. However, presence of this species within the LSA was not confirmed by June 2022 surveys. Direct and indirect impacts within 100 m and 300 m buffer could affect *S. citellus* habitat, if not properly mitigated.	IFC PS6 IUCN 2013	Before starting site vegetation clearance, during the entire construction phase	Salvaging and Translocation Plan in place Identification of translocation sites.	Project E&S Manager Biodiversity specialist	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	Salvaging and Translocation Where direct impacts on *S. citellus* habitat are unavoidable, pre-construction surveys will be performed by biodiversity experts to search for *S. citellus* individuals. Should the presence of *S. citellus* be confirmed, field efforts will be undertaken by experts in the habitat patches directly impacted by the project to capture individuals of *S. citellus* (e.g. using specific traps as the 'Donski trap'[8]) prior to construction, and to relocate specimens in appropriate sites previously identified. The sites identified will be agreed upon with the relevant Authorities and managed also beyond the translocation area. Other mammal species triggering CH could be identified as a result of BIO01 and BIO06. Should this be the case, the above measures, as well as additional specific measures, will be extended to these species.			Rates of survival, settlement, and reproduction of the released animals in the translocation sites.		
BIO10	**Footprint Creep Minimization** The mitigation measures listed below will be applied in the construction phase for the entire area disturbed by the Project to limit impacts on habitats and wildlife: ■ Clearly mark areas of land to be cleared and areas to be retained (No-Go areas shall be fenced), so that impacts do not extend any further than necessary into important habitats.	IFC PS6	Weekly checks during the entire construction phase	All No-Go areas restricted and marked Number on non-compliances observed	Site Construction Manager Employees	Not started

[8] Koshev, Y., Kachamakova, M., Arangelov, S., & Ragyov, D. (2019). Translocations of European ground squirrel (*Spermophilus citellus*) along altitudinal gradient in Bulgaria–an overview. *Nature Conservation*, *35*, 63.

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	▪ Vehicle movement will be restricted to the existing roads to avoid any unnecessary disturbance of natural vegetation.			during periodical verifications. Corrected actions implemented	Project E&S Manager	
BIO11	**Wildlife Management** The mitigation measures listed below will be applied in the construction phase for the entire area disturbed by the Project in order to limit impacts on wildlife: ▪ During construction activities, the formation of temporary puddles will be prevented, especially in spring and rainy periods. Shouldn't this be the case, the area around the water collection area shall be surrounded in a way to prevent animal entry. ▪ Pits and excavations will be filled in as soon as possible following works. ▪ Areas of high wildlife use will be indicated through appropriate signage along roads where high potential exists for vehicle/wildlife collision. ▪ Regular wildlife crossing points will be installed, whenever possible, to enable wildlife to cross excavations open for long period of times, and drainage channels.	IFC PS6, par. 6-7 Best practices	Design During all the construction phase	Periodic verifications of implementation and respect of procedures (N. of instances of non-compliance) Number of reported incidents due to off-road driving Number and location of carcasses observed within the	Project E&S Manager Construction Site Manager Environmental Site Manager All Employees Biodiversity specialist(s)	Implementation not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	■ Maintain and protect from footprint creeps vegetated buffers wherever possible along known wildlife corridors (i.e., watercourses). ■ Vehicle movement will be restricted as much as possible to the existing roads connecting the construction yard to the surrounding areas. Off-road driving will be prohibited to avoid any unnecessary habitat degradation and disturbance of wildlife species. ■ Speed limits (20 km/h) and animal crossing signs will be installed at the access of the construction yards and along internal roads, and speed limits will be enforced. ■ The use of construction vehicles at night should be minimized as much as possible to reduce the risk of vehicle collisions with fauna species. ■ Avoid the accumulation of stagnant water and organic waste within the construction site and on the roads, that could attract wildlife, especially amphibians. ■ As applicable considering employees H&S, plan to clear vegetation progressively and incrementally as needed, rather than through large-scale clearing in advance, to minimise injury of death to native fauna. ■ Feeding of wildlife or stray cats and dogs will be prohibited on-site. Fauna carcasses will be removed, and organic waste will be carefully managed and disposed in order to avoid attraction of wildlife or stray cats and dogs.			Project footprint Number of dead animals recovered in open holes and trenches.		

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	■ Should wildlife species be encountered, employees and contractors will wait until they move on by themselves or they will ask the assistance of the Biodiversity specialist for their safe removal and relocation in a suitable environment. ■ Should dead animals be found on/beside roads, the Environmental Site Manager will be notified immediately.					
BIO12	**Surface water management** The following specific measure will be applied: ■ The schedule of construction works that are expected to impact LSA streams, such as bridges and diversion channel, will be planned to ensure that, at the river crossings, works on the riverbed are limited to low water periods. ■ Culverts will be built and maintained along access road and internal roads in order to minimize the interference with local hydrology. ■ These bridges/culverts/channels will be implemented and installed in a way that will ensure the continuity of the water feature and will not constitute a barrier to fish movement. ■ Observations of fish species in isolated in-water work zones and diversion channel intake will be registered also with photographic documentation and communicated to the Environmental Site Manager (Contractor) responsible on site. Removal of fish	IFC PS6, par. 6-7 Best practices	During the entire construction phase	Number on non-compliances with these procedures	Chief Engineer Environmental Site Manager Project E&S Manager	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	species will be carried out only by the Biodiversity Specialist or specialized contractors. ■ Management of surface drainage and runoff from the construction yards will be performed to minimize sediment release into the natural watercourses and the accumulation of stagnant water. ■ Waste and hazardous materials will be adequately stored and kept away from waterbodies or drainage features to prevent any contamination. ■ Quarterly inspections of the water management facilities will be conducted and an inspection report prepared.					
BIO13	**Erosion Management** ■ Minimise ground disturbance at all locations and specifically at/near riparian zones. ■ The presence of erosion phenomena should be monitored monthly with particular attention to steep slopes, river crossings and areas cleared of vegetation. ■ Should erosion signs be noticed, additional site-specific mitigation measures (e.g., erosion control mat, additional engineering measures, additional culvert or channels for storm water, etc.) will be applied to stop the erosion and ensure soil protection and the development of natural vegetation. ■ In restoration works (BIO21) plants that are native to the region will be used for shielding, soil improvement	IFC PS6, par. 6-7 Best practices	During the entire construction phase	N. of action implemented / N. of reported erosion phenomena at steep slopes, river crossings and area cleared of vegetation, requiring the implementation of additional site-specific mitigation measures	Construction Site Manager Environmental Site Manager Environmental Engineer	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	and erosion control. Additional environmental engineering techniques will be applied to create stable slope and minimize the risk of erosion.					
BIO14	**Dust and pollutant emissions** ■ Speed limit for all vehicles will be implemented to minimize pollutant and dust emissions, and all trucks will be properly maintained. ■ Dust from material handling, such as trucks, processing equipment, storage piles, excavations will be minimized by using covers and/or control equipment (e.g. water mist cannon, bag house, etc.) and increasing the moisture content by water spraying. ■ Any unpaved access roads will be adequately compacted and periodically graded, maintained, and sprayed with water as needed, to minimize dust from vehicle movements. If water spraying is deemed insufficient, other means of surface treatment (e.g., hygroscopic media, such as calcium chloride, and soil natural–chemical binding agents) for unpaved access roads will be implemented". ■ Should topsoil and soil stockpiles be stored for a long period of time (more than 1 year), they will be planted with appropriate methods to avoid erosion from wind and rain, and to protect the organic matter content. ■ Excavations and blasting will be scheduled considering meteorological factors (e.g., precipitation,	IFC PS6, par. 6-7 Best practices	During the entire construction phase	Verification of full implementation of all emission (pollutants, dust) management actions within and around Project Sites (N. of instances of non-compliance)	Construction Site Manager Environmental Site Manager All Employees	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	temperature, wind direction and speed) to the extent practical.					
BIO15	**Noise and vibrations** ■ Care will be taken to select machines and equipment with low noise emissions. ■ Night works will be avoided (from 8 pm to 6 am at least or according to daylight duration), as far as practicable, to reduce impacts to nocturnal fauna species. ■ Rock blasting activities will be performed during daytime and at regular times to enhance local fauna habituation to noise and to avoid disturbance during critical hours for many species (dusk and dawn). ■ Blasting activities in the quarries inside the IBA will be interrupted during periods of importance for the passage of migratory bird species. ■ During regular operation and maintenance, keep selecting and using machines and equipment with low noise emissions (e.g. suitable mufflers on engine exhausts and compressor components; machines and equipment with low noise emissions).	IFC PS6, par. 6-7 Best practices	During the entire construction phase	Verification of full implementation of all noise mitigations within and around Project Sites (N. of instances of non-compliance)	Construction Site Manager Environmental Site Manager	
BIO16	**Waste Management** ■ Establish secure containment systems for both solid and liquid wastes, such as containers, sealed tanks, or treatment facilities, to prevent leakage and contamination.	IFC PS6, par. 6-7 Best practices	During the entire construction phase	Waste Management Plan (WMP) in place.	Project E&S Manager Environmental Site Manager	

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	■ Prioritize waste recycling and reuse to minimize the volume of waste generated. ■ Implement regular monitoring of waste disposal practices. ■ Do not abandon food waste to avoid attracting animals. ■ Utilize best practices in waste minimization to reduce overall waste production. ■ Ensure proper treatment of liquid waste through filtration, neutralization, or other appropriate technologies to avoid contamination of nearby water bodies. ■ Provide staff training and information on waste management procedures to ensure all workers are aware of the established protocols.			N. of instances of non-compliance with the WMP. N. of employees with verified training.	Construction Site Manager	
BIO17	**Equipment Maintenance** ■ Implement a regular maintenance schedule for all equipment to ensure optimal performance and prevent unexpected failures. ■ Monitor equipment performance continuously and perform diagnostic checks to identify potential issues before they become major problems. ■ Train staff in proper maintenance procedures to ensure that all personnel are equipped to handle equipment upkeep and repairs efficiently.	Engineering standards	During the entire construction phase	Document all maintenance activities. Number of reported incidents due to malfunctions in technical equipment.	Construction Site Manager Site Maintenance Technicians	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	■ Utilize high-quality spare parts to reduce the likelihood of malfunction and extend the lifespan of equipment. ■ Ensure timely servicing of critical equipment to minimize downtime and disruptions to operations. ■ Document all maintenance activities to track performance, repairs, and parts replacements for future reference and regulatory compliance. ■ Establish an emergency response plan for equipment breakdowns to ensure quick and effective action when a failure occurs. ■ Implement predictive maintenance technologies, such as sensors and data analytics, to anticipate equipment needs and reduce the risk of failure.					
BIO18	**Introduction, spreading and management of Invasive Alien Species** ■ Several non-native invasive species of flora are possibly present in the LSA. Prior to any enabling works site survey, mapping and/or demarcation will be required, and specific measures shall be provided within an appropriate IAS Management Plan. ■ Should spreading of invasive species be observed, an appropriate IAS eradication program will be developed and implemented. ■ Trucks coming from the outside of the Project area will be washed frequently in a controlled site, if necessary, where residues will be managed as waste.	IFC PS6, par. 21-23 Country regulation Best practices Global Invasive	During the entire construction phase	IAS Management Plan in place and enforced IAS inventory Abundance of invasive alien species in the construction yard.	Project E&S Manager Environmental Site Manager Biodiversity specialist(s) All employees	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	■ IAS will be managed and collected according to the specific procedures set for each species in the IAS Management Plan. The method used, as well as the ideal time for eradication, will strongly depend on the species involved. The biodiversity specialists will help to select the most appropriate technique. Prefer physical/mechanical and/or biological control. Chemical control due to its toxicity toward natura vegetation, micro and macro fauna, it only used as a last resort. Should herbicides be employed, prefer local and targeted applications on target species. Pesticides should always be used in a lawful manner, consistent with the product's label. ■ Document and monitor control methods implemented in infested area. ■ Manage the removed IAS plant material properly, as reported in IAS Management Plan, and dispose of the waste according to Country's regulations. Put plant material in thick, durable, black, or clear plastic bags tightly sealed to avoid seed dispersal and limit the risk of infestations. Place the bagged material in a sunny location for several days or weeks (depending on the temperature) to kill and decompose the plants. Use chipping only for woody plants that don't reproduce vegetatively. ■ Progressive restoration will be performed on temporary used areas, stockpiles and slopes with natural vegetation or native flora species, to control the spreading of invasive alien species.	Species Database		Records of clearing activities and description of the control methods implemented Records of waste disposal procedures.		

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	▪ Using of non-native flora species, and especially of species classified as Invasive Alien Species (IAS) must be avoided during rehabilitation/restoration works (BIO21). ▪ Train staff and contractors on how to identify and report invasive species.					
BIO19	**Training and awareness** ▪ Specialist training shall be provided to operators and key personnel involved in activities which involve land clearance, materials handling and transport activities which may impact flora, fauna and habitats (e.g., vegetation clearing, restoration activities). ▪ Awareness among employees and contractors working on site about the protected species/habitats potentially present in the area will be developed, to ensure constant monitoring and promote actions to be taken if wildlife is encountered. ▪ Specific training shall be provided to employees and contractors working on site regarding the invasive alien species potentially present within the Area of Influence of the Project, to provide them with the needed knowledge to identify IAS, take the appropriate control actions, and manage IAS waste (BIO18).	IFC PS1	Verified training sessions of all employees working at the sites before construction activities	N. of employees trained /N. of total employees	Project E&S Manager Environmental Site Manager	To be started
BIO20	**Rehabilitation of local morphology** All areas cleared during construction for temporary use (e.g. such temporary facilities, quarries, borrow sites,	IFC PS6, par. 7, 10, 15	During and at the end of the construction phase of each	Reporting (photographic documentation and GIS) of	Project E&S Manager	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	storage areas, etc.) will be restored, as soon as possible, with the goal of producing a stable vegetative cover to minimize erosion, dust and spreading of invasive alien species, and the aim of re-establish the original habitat. A Soil Management Plan will be prepared detailing at least the following aspects: ■ Topsoil (0 - -30cm) present under the motorway and facility footprint shall be stripped before construction to be used for restoration. ■ Subsoil (-30 - -50 cm) present under topsoil will be stripped after the topsoil removal. ■ Topsoil and subsoil will be stockpiled in designated areas in separate piles not more than 2 m high and 10 m large. ■ If the topsoil stockpiles are stored for a long period of time (more than 2 years) they shall be covered either with a geotextile or seeded with local species in order to avoid wind/rain erosion and protect the organic matter content. ■ Revegetation of stockpiles will be performed favouring fast growing and ground covering flora species able to minimize soil erosion. ■ Topsoil and subsoil stockpiles will be marked and labelled according to the date of stockpiling. ■ If the topsoil has been stockpiled for more than 2 years, before use in rehabilitation activities it will be		temporary facility	topsoil management according to recommendations N. of associated facilities restored according to recommendations (photographic documentation and GIS)	Site Construction Manager	

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	chemically tested for fertility and other agronomic characteristics. ■ Based on the tests results the topsoil will be conditioned through aeration, watering and addition of compost and/or manure and/or woodchips to ensure a medium favourable for seeding and planting. ■ Subsoil will be spread under topsoil to serve as a transition material and not mixed with topsoil.					
BIO21	**Terrestrial and freshwater habitat restoration** A Habitat Restoration Plan for the seeding, growing, monitoring of plants directed to the restoration of temporary associated facilities and the construction yard along the motorway will be prepared to ensure the restoration of native habitats. This Plan will include at least: ■ The definition of a list and of the appropriate mix of species, and respective quantities needed for the rehabilitation of the sites. ■ The identification of previous experiences in seeding and growing species of interests. ■ The definition of appropriate management measures. ■ The definition of a monitoring protocol (at least 5 years) to assess the results of the different activities and verify the presence of IAS. ■ The definition of corrective actions in case of plant failures or IAS spreading.	IFC PS6, par. 7, 10, 15	Habitat Restoration Plan to be issued during the construction phase Implementation of the Habitat Restoration Plan during the Project operation phase, after the end of the construction phase of each temporary facility	Development of the Habitat Restoration Plan N. of associated facilities restored according to recommendations (photographic documentation and GIS) Annual reports on the bio-restoration progress for	Project E&S Manager Biodiversity Specialist	Not started

Item	Mitigation Measures/Actions	Ref.	Timeline and frequency	KPI	Respons.	Status
	Wherever possible, habitat restoration will use locally collected seed mixes and saplings. Local sources (obtained from the closest practical distance) of indigenous saplings suitable for replanting programs will be identified in advance to facilitate restoration. Only plants/seeds that are characteristic (and possibly native) of the site will be used for habitat restoration.			temporary facilities		

In case construction works are carried out at night, BIO29 will apply.

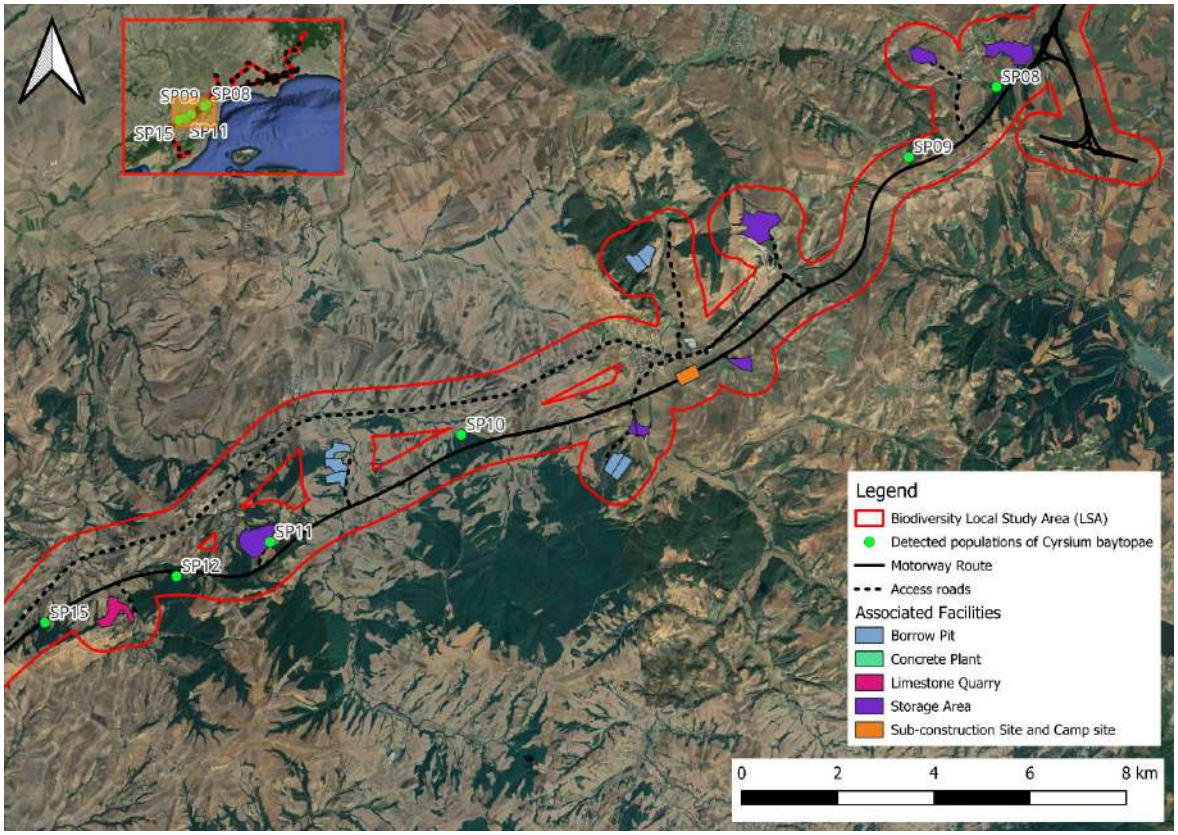

Figure 23: Locations of *Cirsium baytopae* populations in relation to Project Footprint during construction phase

6.1.3 Operational Phase (Post Construction)

Table 12 details the mitigation measures/actions identified for biodiversity (BIO) component to minimize impacts from the operation phase. During the operation phase several of the measures/actions previously identified will continue or will begin (e.g. restoration activities).

For each measure/action identified, the table shows:

- Item: the identification code of the mitigation measure/actions (ID.);
- Measures/Actions: description of the mitigation measures/ actions;
- Source document: is the reference to one or more applicable standard (i.e. National Regulation and Permits, EU Regulations/Directives, IFC PS/Guidelines, or other GIIP);
- Timeline and frequency: frequency/timing of the measure/action;
- KPI (Key performance indicator): quantitative compliance indicator or qualitative acceptance criteria that can be used to verify the actual effectiveness of the mitigation measure/actions;
- Responsibility: resource responsible for implementing the measures/actions;
- Status: progress of the measures/actions.

The aim of the “mitigation hierarchy” (avoidance, minimization, rehabilitation/restoration, offset) is applied for the selection of the measures to limit, as far as possible, negative impacts to the environment.

This process is intended as an adaptive management system, so that the mitigation and management approach will be adapted based on any new findings which could arise from the monitoring program reported in the following section.

Should non-conformities or unexpected residual impacts due to the Project be identified on site, the biodiversity specialists will evaluate the situation and, if needed, propose changes and integrations to the mitigation and monitoring activities included in the present BMP. The proposed changes will be evaluated and approved according to the Project responsibility matrix.

Reference was made to IFC PS6 to identify the minimization measures below.

Table 12: Mitigation measures/actions for the operation phase

Item	Mitigation Measures/Actions	Source doc.	Timeline and frequency	KPI	Responsib.	Status
BIO22	**Flora species triggering CH** One flora species (*Cirsium baytopae*) was identified as triggering CH. Indirect impacts due to the potential introduction/spreading of alien species caused by motorway vehicles and maintenance works could affect this species populations nearest to the expropriation corridor. Prevention of IAS introduction and spreading: ■ Using non-native flora species, especially if classified as IAS, during any maintenance works will be avoided. ■ IAS presence and spreading will be monitor twice a year during the vegetative season by an expert botanist. ■ Should IAS species be observed, control campaigns will be put in place to avoid their spreading.	IFC PS6, par. 21-23	During the entire operation phase	N. of effective IAS control campaigns/N. of *C. baytopae* stations where IAS are observed	Project E&S Manager Biodiversity specialist	Not started
BIO23	**Mammal species triggering CH** One Mammal species (*Spermophilus citellus*) was identified as triggering CH. The presence of this species within the LSA was not confirmed during June 2022 surveys. Indirect impacts (vehicular traffic) and direct impacts (e.g. maintenance works) could affect this species habitat if not properly mitigated.	IFC PS6, par. 6-7	During the entire operation phase	Roadkill rates in bordering contiguous fenced and unfenced sections N. of roadkills pre-installation and post-	Biodiversity specialist	Not started

Item	Mitigation Measures/Actions	Source doc.	Timeline and frequency	KPI	Responsib.	Status
	Roadkill minimization: ■ Roadkills and animal sighting along the motorway will be reported by maintenance workers.			installation of a new mitigation		
BIO24	**Bird management (CH species and general)** Barrier-like structures shall be used to reduce the proportion of birds flying in locations of high collision risk, such as in the vicinities of the IBA and major river crossings. Additional mitigation measures will be put in place if needed based on the results of the bird monitoring. If high-collision risk areas are confirmed by bird surveys carried out during construction, appropriate mitigation measures will be implemented in these locations before beginning of operation.	IFC PS6, par. 7	During the entire operation phase	Collision rates in bordering contiguous fenced and unfenced sections N. of collisions pre-installation and post-installation of a new mitigation	Biodiversity specialist(s)	Not started
BIO25	**Erosion Management** ■ Should sign of erosion be observed during Project operation, environmental engineering techniques will be used to stop erosion, ensure soil protection, and restore the natural vegetation (e.g. erosion control mats, live crib walls, rock mattresses, hydroseeding, afforestation with appropriate species, etc).	IFC PS6, par. 6-7	During the entire operation phase	N. of effective actions implemented / N. of reported erosion phenomena	Project E&S Manager Maintenance Manager	Not started
BIO26	**Wildlife Management** ■ Should results of periodic monitoring activities reveal that the motorway has a higher impact on wildlife than expected, additional mitigation measures will be planned and implemented in specific sections of the motorway (e.g. fencing, control speed limits, add	IFC PS6, par. 6-7, 15, 17	During the entire operation phase	Full implementation of all wildlife management actions along the motorway	Project E&S Manager Maintenance Manager and personnel	Not started

Item	Mitigation Measures/Actions	Source doc.	Timeline and frequency	KPI	Responsib.	Status
	additional animal crossing signs in specific sections, implement structures to facilitate wildlife crossing). ▪ During regular operation and maintenance, keep selecting and using machines and equipment with low noise emissions (e.g. suitable mufflers on engine exhausts and compressor components; machines and equipment with low noise emissions). ▪ Should fauna species be encountered employees and contractors will wait until they move on by themselves, or they will ask for the assistance of the Environmental technician for their safe removal and relocation in a suitable environment.					
BIO27	**Control and eradication of invasive alien species** ▪ Should spreading of invasive flora species be observed though periodic monitoring along the motorway, the eradication and control actions anticipate in the IAS Management Plan will be implemented. ▪ IAS will be managed and collected according to the specific procedures set for each species in the IAS Management Plan, and disposed of as waste, according to Country's regulations.	IFC PS6, par. 21-23	During the entire operation phase	N. of non-conformities to procedures on IAS management / N. of audits N. of effective IAS control campaigns/N. of stations where IAS are observed	Project E&S Manager Maintenance Manager and personnel	Not started
BIO28	**Awareness of maintenance personnel** Awareness among personnel and contractors working along the motorway for maintenance works about protected species/habitats potentially present in the area	IFC PS1	During the entire operation phase	No. of employees trained /N. of total employees	Project E&S Manager	Not started

Item	Mitigation Measures/Actions	Source doc.	Timeline and frequency	KPI	Responsib.	Status
	will be developed, to raise awareness on actions to be taken if wildlife is encountered.					
BIO29	**Management of light emissions** Implementation of "wildlife friendly" lighting solutions to reduce potential migratory bird attraction and impact on nocturnal birds, insects and bats. The motorway lighting type, direction and level will be planned to ensure a level of light required while minimizing the luminous level. Light reduction strategy: ▪ Limit artificial light to motorway sections where it is essential. Wherever possible, taking into account the safety of drivers, avoid or reduce lighting in ecologically sensitive areas such as: near ponds, lakes, rivers, areas of high conservation value; sites supporting particularly light-sensitive species of conservation significance ▪ Avoid the flood of light into natural habitats and limit the escape of light into surrounding areas of fauna habitat (i.e. using shields/deflectors). ▪ Ensure that artificial lighting is not directed upwards or laterally (i.e. should be directed towards the ground). ▪ Use lower (i.e. closer to the ground) rather than higher lighting installations. ▪ Use light intensities that are as low as possible without reducing safety or efficiency. The following types of lights should be avoided:	IFC PS6, par. 6-7	Planned in the design phase. Monitored in the operation phase	Implementation of all emission management actions within and around Project construction sites Periodic monitoring and audits and implementation of corrective actions	HSE Manager Chief Engineer Project E&S Manager	Design

Item	Mitigation Measures/Actions	Source doc.	Timeline and frequency	KPI	Responsib.	Status
	■ Mercury lamps (MBF): bluish-white lamps (attract insects and tolerant bat species). ■ High-pressure sodium lamps (SON): brighter pinkish-yellow lamps; used as road lighting.					

7.0 RESIDUAL IMPACTS

The following section documents the measurable residual impacts after the anticipated avoidance, minimization and restoration have been applied.

7.1 Natural Habitat

7.1.1 Summary of Direct Impacts to Natural Habitat Loss

The construction of the motorway and associated facilities is expected to initially affect an estimated area of **720.97 ha** of **natural habitat** within the LSA. The vast majority of this loss will be within the "temporary facilities" and will be restored to a similar natural condition once no longer required.

The Net Loss (after the restoration of temporary facilities), is estimated at **34.40 ha** (Table 13 – P.F.) (0.09% of the total LSA). Most of the permanent loss will affect woodlands and pastures, in particular "G1.7 - Thermophilous deciduous woodland" (19.28 ha), and "E.3.2 - Mediterranean short humid grassland" (4.79 ha).

Table 13: Net loss of Natural Habitats calculated within the LSA

Habitat	Total LSA	Total Net Loss	Net Loss (P.F.)	Net Loss (T.F.)
	ha	ha	ha	ha
C2.3 - Permanent non-tidal, smooth-flowing watercourses	125.62	0.70	0.34	0.39
C2.5 - Temporary running waters	192.61	5.42	2.51	2.91
E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows	1,213.34	372.13	2.69	369.44
E3.2 - Mediterranean short humid grassland	269.87	44.73	4.79	39.94
G1.1 - Riparian and gallery woodland, with dominant *Alnus, Betula, Populus* or *Salix*	87.20	4.55	1.82	2.73
G1.7 - Thermophilous deciduous woodland	2,770.30	247.53	19.28	228.25
G4 - Mixed deciduous and coniferous woodland	187.64	16.75	0.00	16.75
G5.2 - Small broadleaved deciduous anthropogenic woodlands	613.13	24.18	0.49	23.69
G5.7 - Coppice and early-stage plantations	507.72	4.98	2.48	2.50
Total	***5,967.43***	***720.97***	***34.40***	**686.57**

P.F.= Permanent Facilities (residual impact); T.F.= Temporary Facilities

Table 14: Summary of the residual impact on Natural Habitat and restoration performance target

Focal aspect	Expected impacts from motorway construction	Impact indicator	Current estimated net residual impact	Performance target(s)
IFC Natural habitat	Direct Habitat Loss	1. Area of natural habitat (ha)	1. **34.4 ha** including 19.2 ha of Thermophilous deciduous woodland (Table 13)	Full compensation of Natural Habitats ensuring that the area to be compensated or protected is at least 3 time* or larger than the areas potentially affected.
		2. Conditional value of impacted area (quality hectares)	2. To be determined (Assessment of the habitat quality of Thermophilous deciduous woodlands shall be undertaken prior to construction and a reassessment of the net residual impact undertaken during construction - BIO01).	

*This is preliminary conservative multiplier to be refined ones additional field surveys are carried out.

A summary table is provided below presents indicative habitat type and examples of associated management and restoration actions that may be applied. The actions listed are illustrative and non-exhaustive and are intended to provide a high-level overview. Detailed, site-specific and measurable management and restoration actions, methodologies and management actions will be further developed and presented within the full BAP.

Table 15: General Habitat Management Actions

No	Habitat	Total LSA ha	Net Loss (T.F.) ha	Habitat Management
1	C2.3 - Permanent non-tidal, smooth-flowing watercourses	125.62	0.39	Restoration activities will include re-establishing the natural flow regime of the aquatic habitat and creating a channel form that closely resembles its original morphology. Natural stone, woody debris, and bioengineering techniques will be used for bank and slope stabilization; temporary control measures such as silt fences or, where feasible, coir logs will be applied to prevent sediment transport. Native riparian species will be planted to support the re-establishment of the riparian zone, and water quality and vegetation establishment will be monitored. In this way, both erosion risk will be reduced, and the ecological function of the habitat will be restored. In addition, invasive plant species will be regularly monitored and removed.

Commented [GA1]: Arup Comment: Recommendation – Restoration actions to achieve the original 'natural condition' of these habitats requires additional attention in the BAP. At this framework stage this could include a table of habitat types and broad habitat management actions that will be implemented to restore the habitat and may include soil management, water management, pollution prevention and any active habitat management (e.g. seed dispersal etc.). The actions are expected to differ depending on the type of temporary use of these habitats, and therefore this should also be described. It is recommended that following the reassessment of habitat loss after the Spring 2026 surveys, these restoration activities are fully defined.

Commented [GA2R1]: Table included.

No	Habitat	Total LSA ha	Net Loss (T.F.) ha	Habitat Management
2	C2.5 - Temporary running waters	192.61	2.91	Restoration for these temporary running-water habitats will primarily involve re-establishing micro-drainage lines and redirecting surface flow back to its natural pathways. Soil compacted during construction activities will be loosened and covered with previously stockpiled topsoil. Since the habitat has a high natural regeneration capacity, the return of natural vegetation will be encouraged with minimal active intervention. On sloped areas, edge stabilization will be carried out using native herbaceous species, and the seasonal flow regime and vegetation development will be monitored regularly.
3	E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows	1,213.34	369.44	These extensive pasture areas will be restored by reapplying the topsoil that was stripped and stockpiled in accordance with BIO20. Soil compaction caused by construction activities will be relieved through mechanical methods, followed by seeding with a local pasture mix. Regular control of invasive alien species will be implemented, and temporary fencing or access restrictions will be used to prevent overgrazing. A monitoring program will be established to track vegetation cover, species composition, and soil stability.
4	E3.2 - Mediterranean short humid grassland	269.87	39.94	These extensive pasture areas will be restored by reapplying the topsoil that was stripped and stockpiled in accordance with BIO20. Local seed mixes will be applied. Biodegradable fiber mats will be used on sloped areas to prevent erosion. Following restoration, the seasonal development of vegetation, the presence of target species, and IAS control will be monitored regularly.
5	G1.1 - Riparian and gallery woodland, with dominant Alnus, Betula, Populus or Salix	87.2	2.73	In the restoration of this habitat, active planting will be carried out along the watercourse with species adapted to moist conditions and - wherever feasible - using local genotypes or material sourced from nearby reference stands. Engineering techniques will be applied for bank stabilization where necessary. Since maintaining soil moisture is critical, supplementary irrigation may be applied during the first summer period. Restoration areas will be protected from wildlife and human disturbance, and erosion conditions and invasive species pressure will be monitored and managed. The aim is to re-establish the linear structure of the gallery woodland and its ecological connectivity function.

No	Habitat	Total LSA ha	Net Loss (T.F.) ha	Habitat Management
6	G1.7 - Thermophilous deciduous woodland	2,770.30	228.25	The restoration of this thermophilous oak–hornbeam mixed habitat is a time-consuming process and may require active intervention. Topsoil will first be reapplied, followed by the planting of seedlings from local and genetically appropriate species. On sloped areas, seed broadcasting and seedling planting will be applied together to increase establishment success. IAS control is particularly important for this habitat; regular interventions will be carried out against invasive alien species. Restoration success will be monitored in terms of seedling survival rate, young shoot development, and the recovery of the structural forest form, and adaptive management will be implemented also by replacing any failed planting, encouraging microhabitats of different species, replanting areas clear from IAS with native species, etc.
7	G4 - Mixed deciduous and coniferous woodland	187.64	16.75	This habitat will be restored through mixed planting consisting of Pinus and Quercus species. Dominance by a single group will be avoided. To support natural regeneration, branches and woody material may be left in open areas to facilitate seed fall. Soil disturbance that may favour competitive pioneer species will be controlled. Depending on the slope, soil stabilization will be carried out using terracing and bioengineering techniques. Erosion indicators and the recovery of habitat structure will be monitored regularly.
8	G5.2 - Small broadleaved deciduous anthropogenic woodlands	613.13	23.69	In these habitats, active planting restoration will be considered. The habitat structure will be enhanced using local shrub and tree species. Control measures will be implemented against IAS species. After restoration, the structural development of the habitat, species diversity, and the condition of young shoots will be monitored.
9	G5.7 - Coppice and early-stage plantations	507.72	2.5	In this habitat, which has a high sprouting capacity, restoration will focus on supporting shrub formation and the development of young shoots. Strong sprout growth will be encouraged in oak and chestnut species. Temporary fencing or grazing control will be implemented to prevent damage to young shoots. Sprout density and health will be monitored annually.
Total		**5,967.43**	**686.57**	

7.2 Critical habitat

Four biodiversity features were identified as CH or potential CH triggers, as detailed in chapter 6.2.4 of the Biodiversity Baseline (March, 2025).

The project has determined areas of likely suitable habitat for these trigger species. The expected loss of each of these suitable habitats is shown for each species in Table 16. The location of areas impacted by the permanent and temporary facilities is illustrated in Figure 24 to Figure 33, calculated considering the motorway layout as a permanent impact on CH (**for a width of approximately 25 m**), while all associated facilities and the **12.5 m buffer (each side**) from the motorway borders as a temporary impact on CH, as previously reported.

All habitats associated with CH or potential CH triggers were assessed as “natural”, therefore the loss of this proxy habitat shall be compensated for as part of any programme for Natural Habitat restoration and offsetting. To achieve the Net Gain required for critical habitat triggers, other species conservation measures can be undertaken, as described in the following sections.

Table 16. Estimated Net Loss of Natural Habitats and habitats suitable for Critical Habitat qualifying species.

Triggering spp.	C.H. Status.	Habitat Suitability	Total LSA	Net Loss (P.F.)	Net Loss (T.F.)
			ha	ha	ha
C. baytopae	Confirmed	G1.7 - Thermophilous deciduous woodland	2,770.30	19.28	288.25
		G5.2 - Small broadleaved deciduous anthropogenic woodlands	613.13	0.49	23.69
		G5.7 - Coppice and early-stage plantations	507.98	2.48	2.50
A. ferina *B. ruficollis*	Potential	C2.3 - Permanent non-tidal, smooth-flowing watercourses	125.62	0.34	0.36
S. citellus	Potential	E2.1 - Permanent mesotrophic pastures and aftermath-grazed meadows	1,213.34	2.69	369.44
		E3.2 - Mediterranean short humid grassland	269.87	4.79	39.94
		Total CH	***5,699.16***	***30.07***	***664.18***

P.F.= Permanent Facilities (residual impact); T.F.= Temporary Facilities

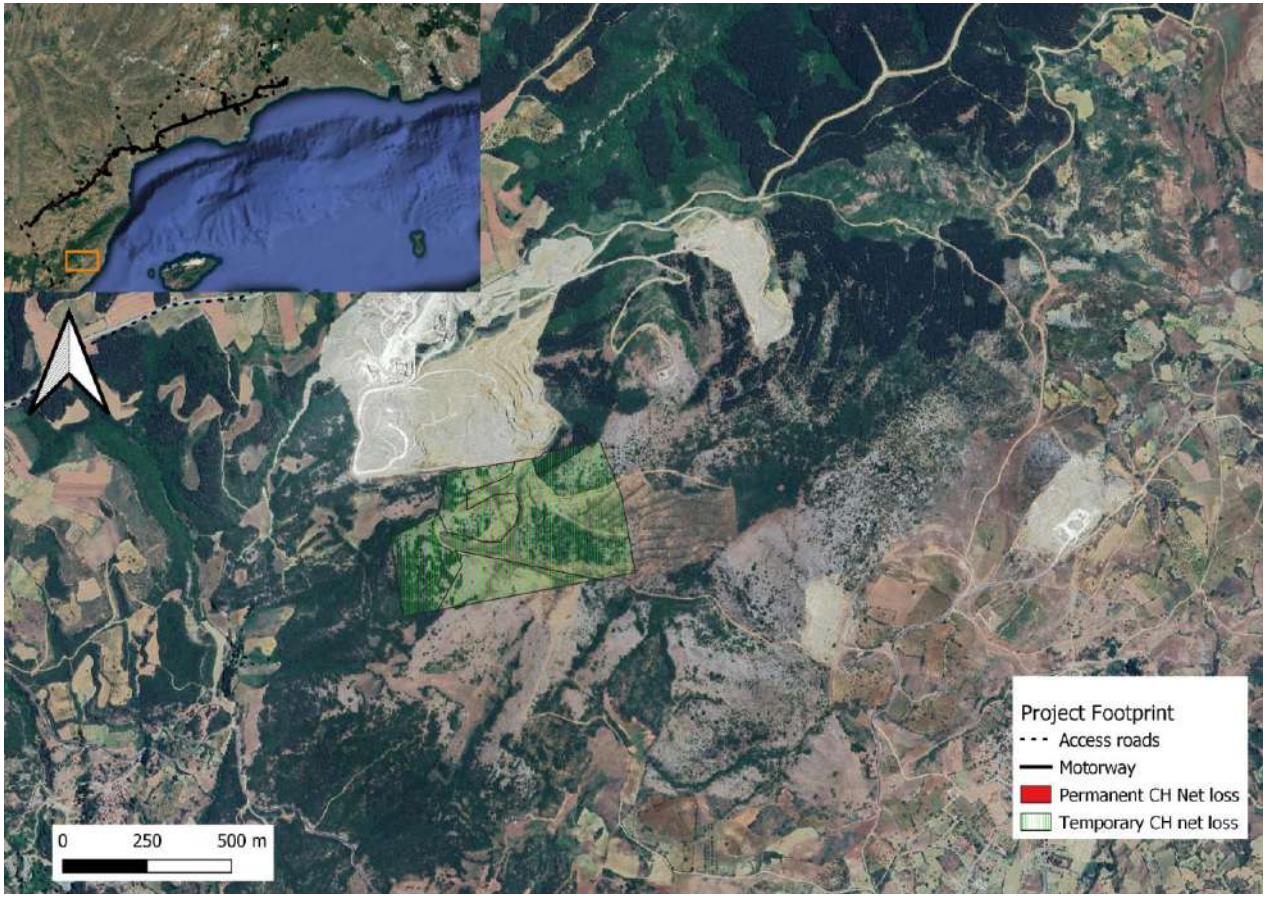

Figure 24: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 1 of 10)

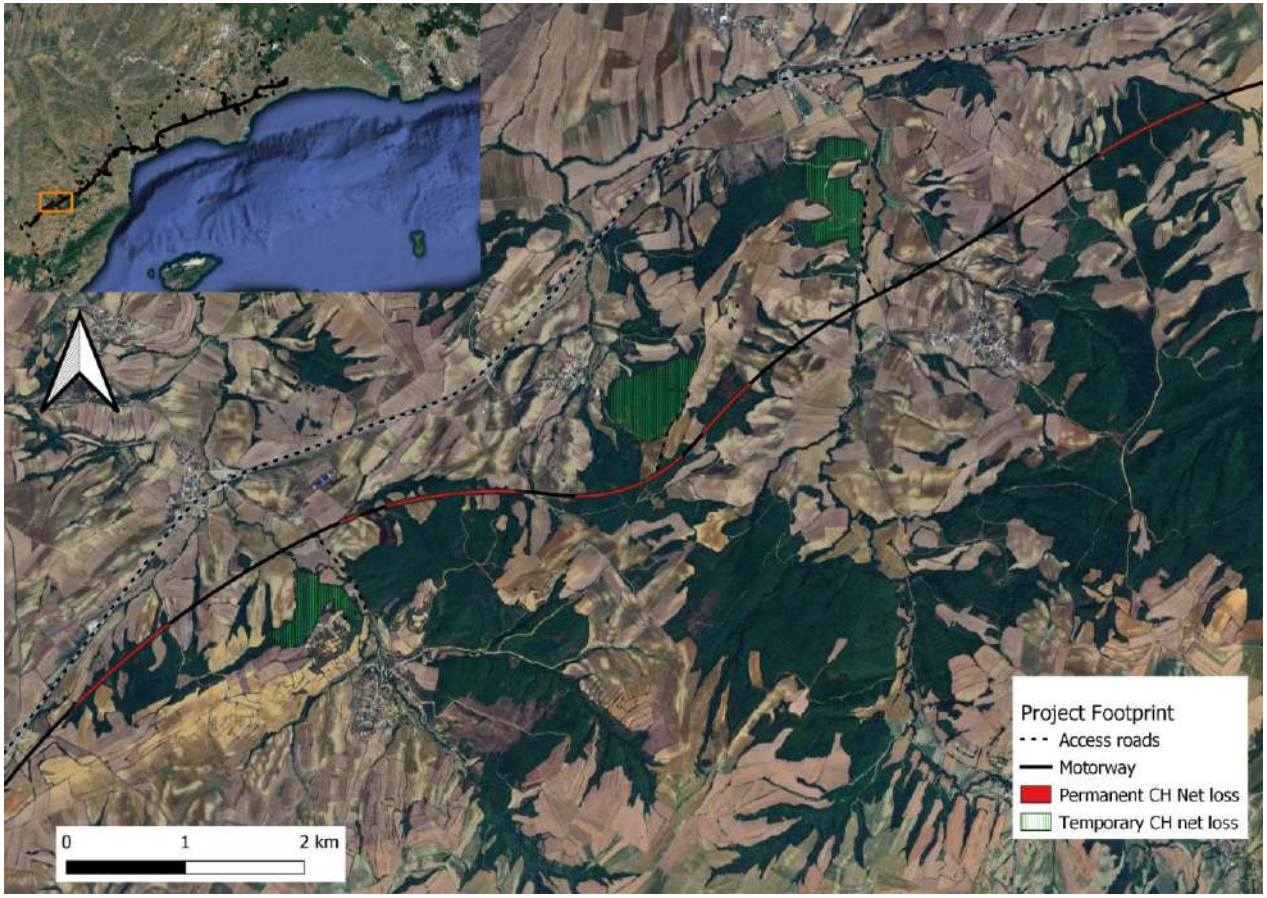

Figure 25: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 2 of 10)

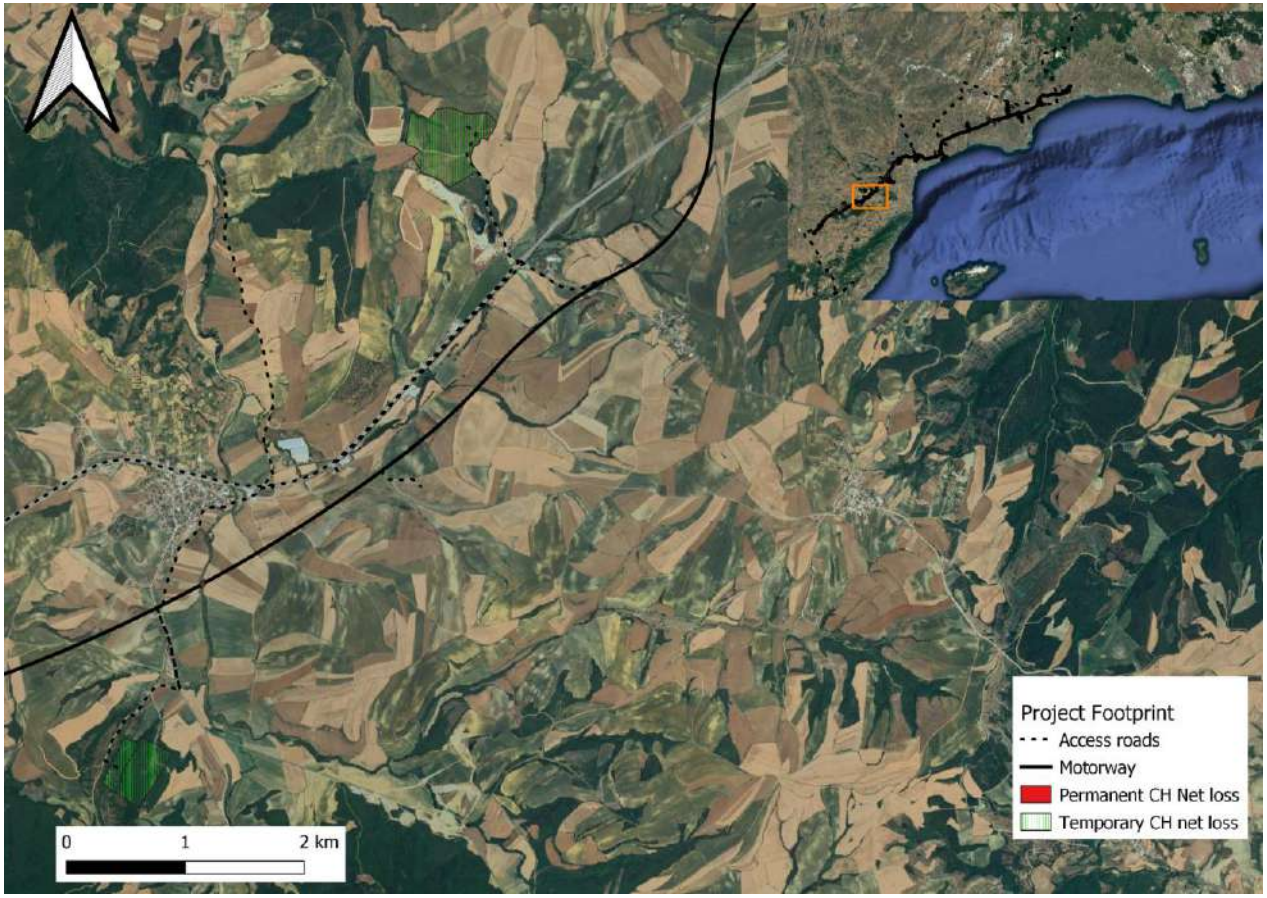

Figure 26: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 3 of 10)

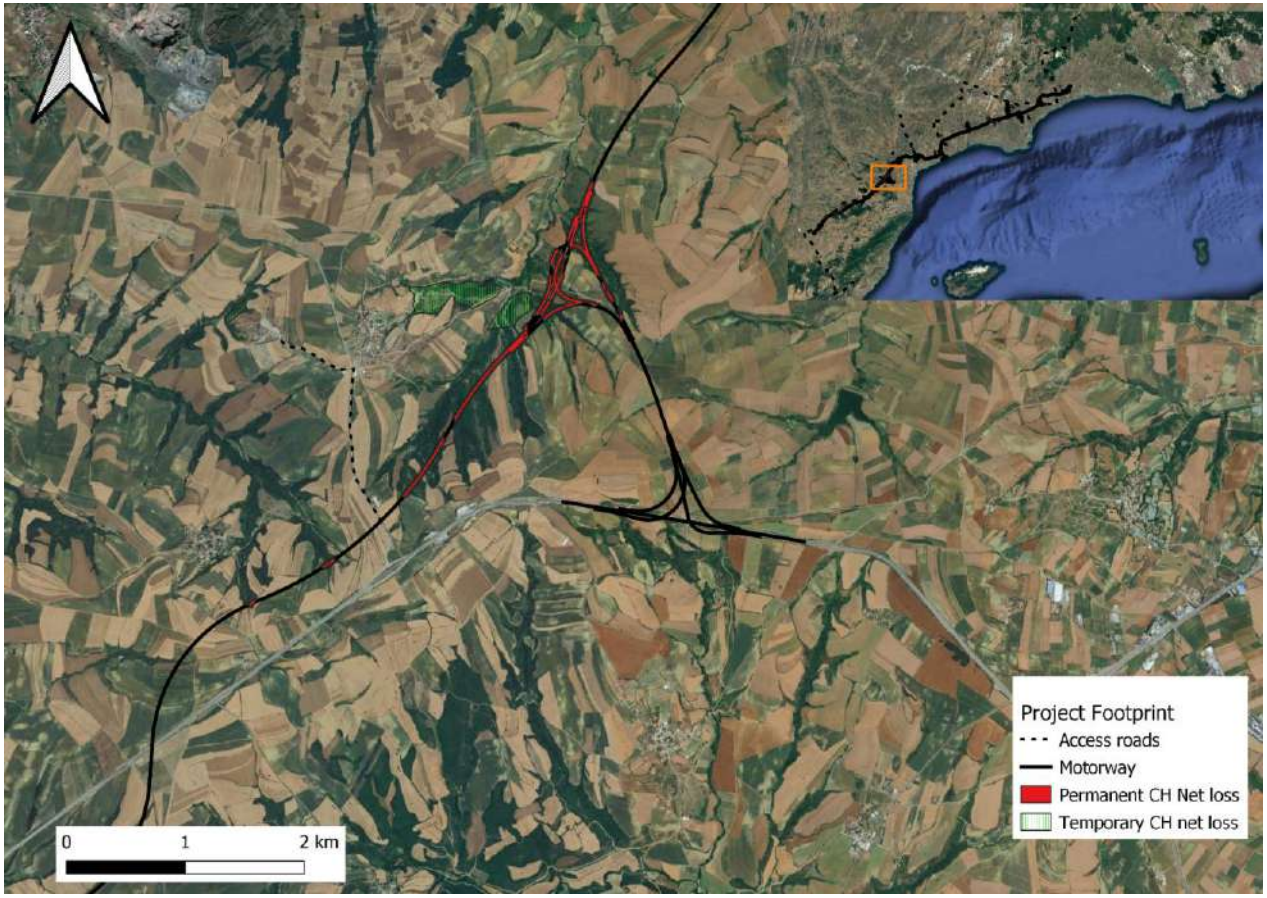

Figure 27: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 4 of 10)

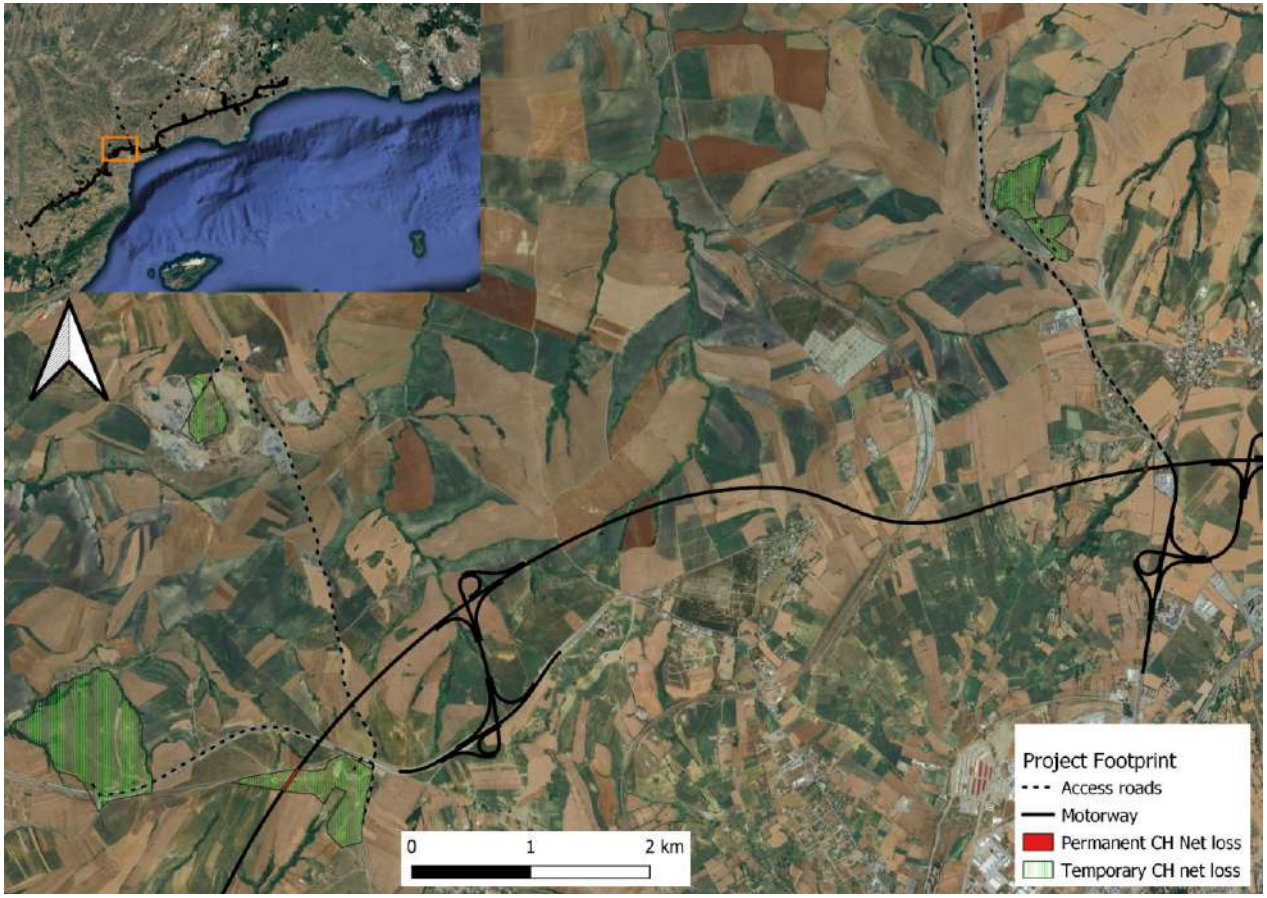

Figure 28: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 5 of 10)

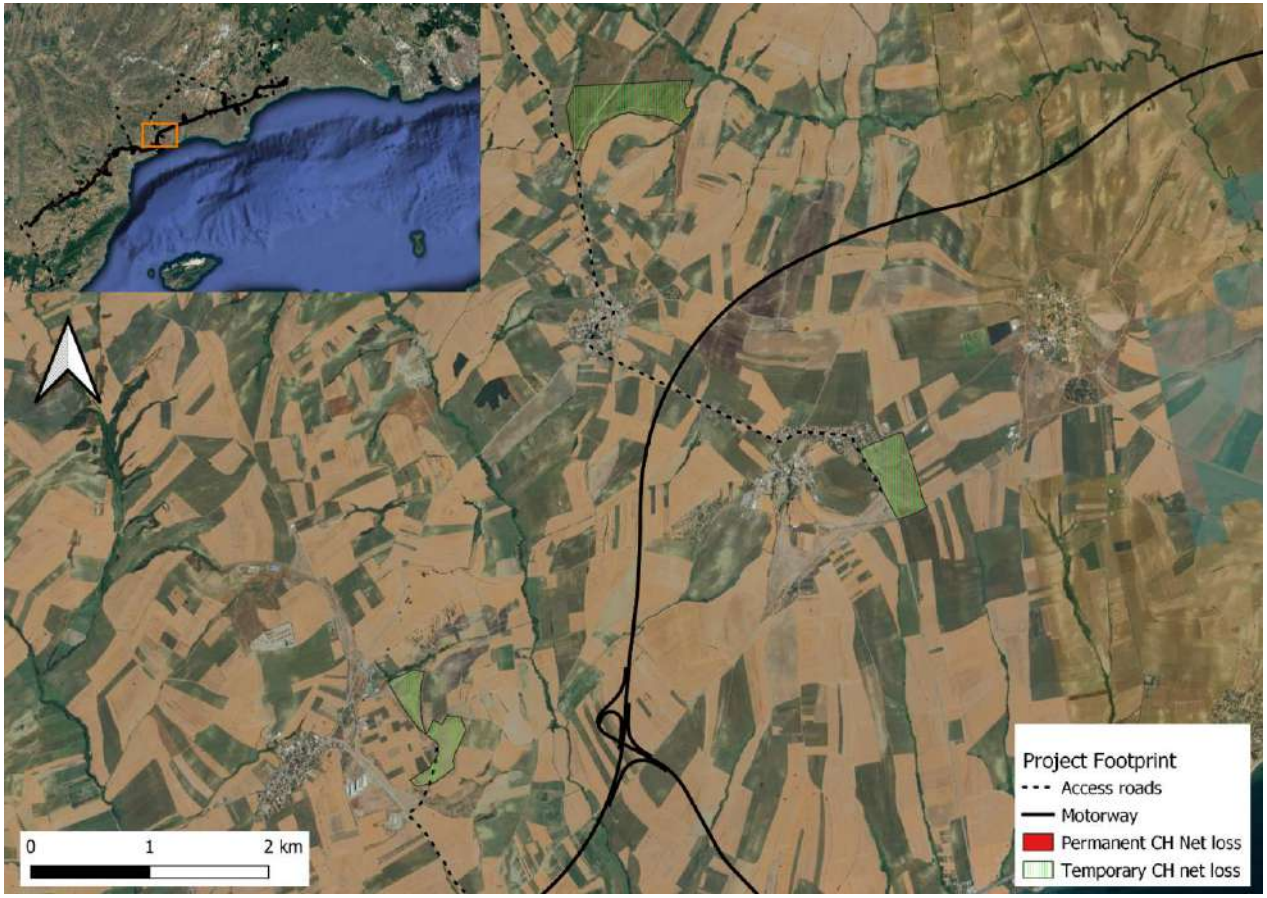

Figure 29: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 6 of 10)

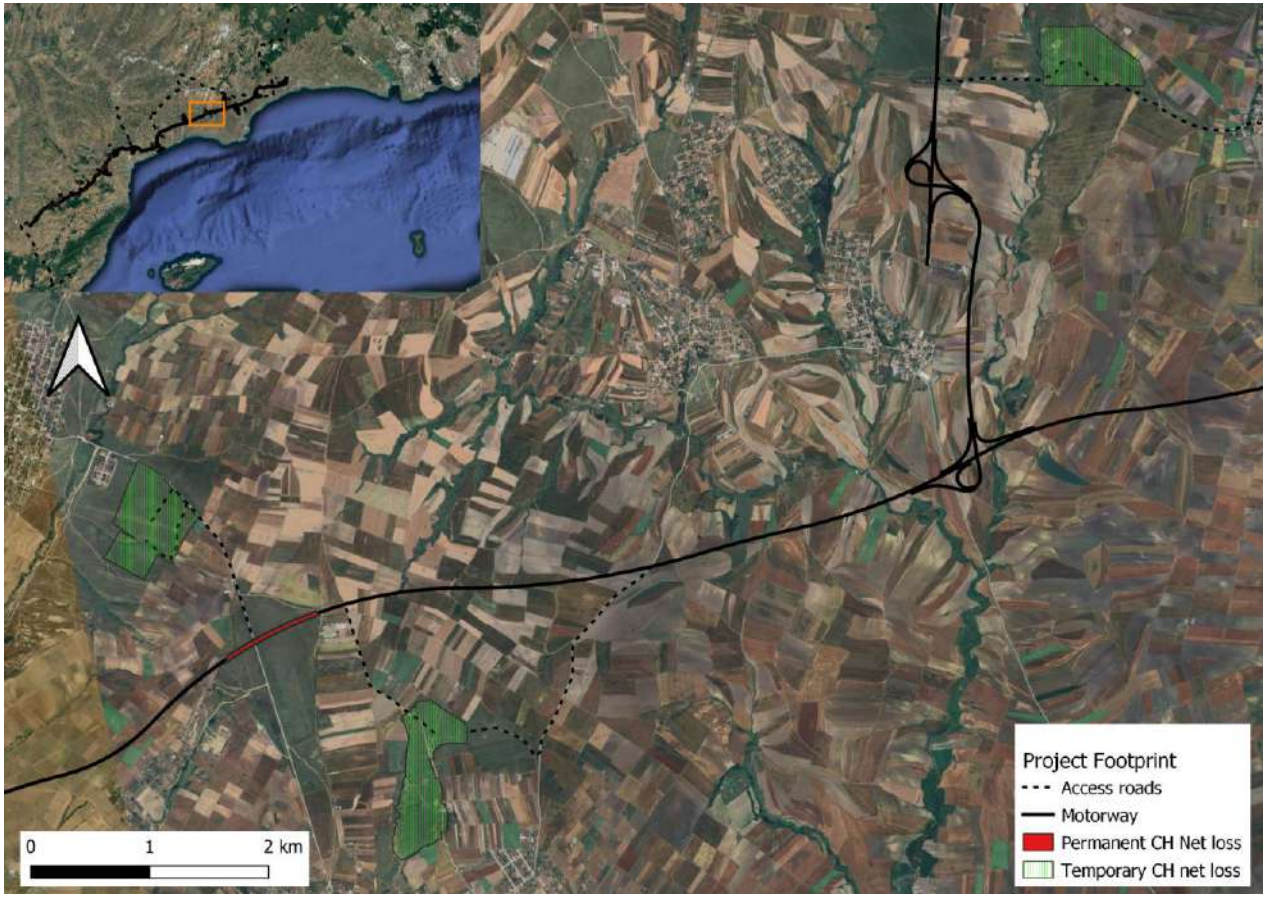

Figure 30: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 7 of 10)

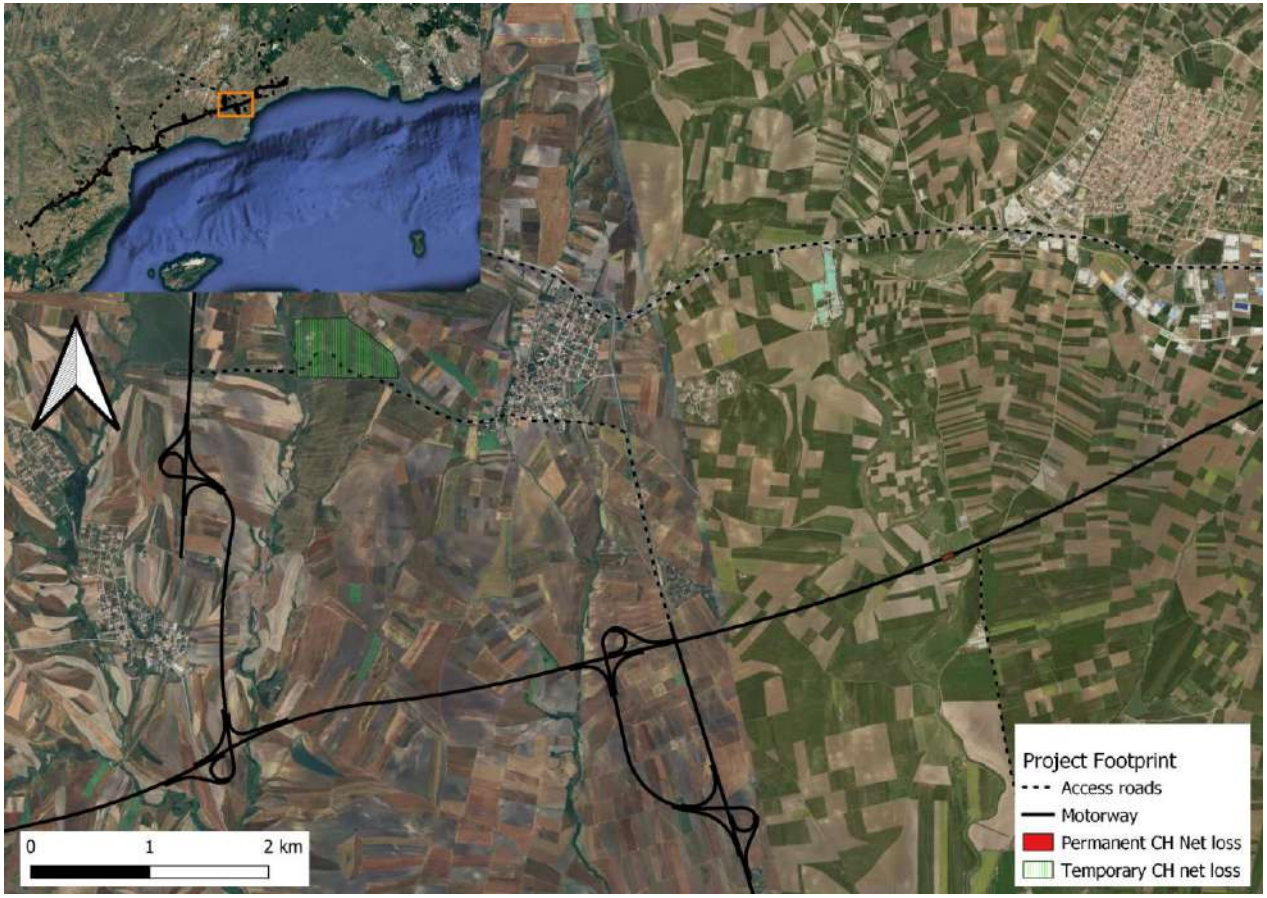

Figure 31: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 8 of 10)

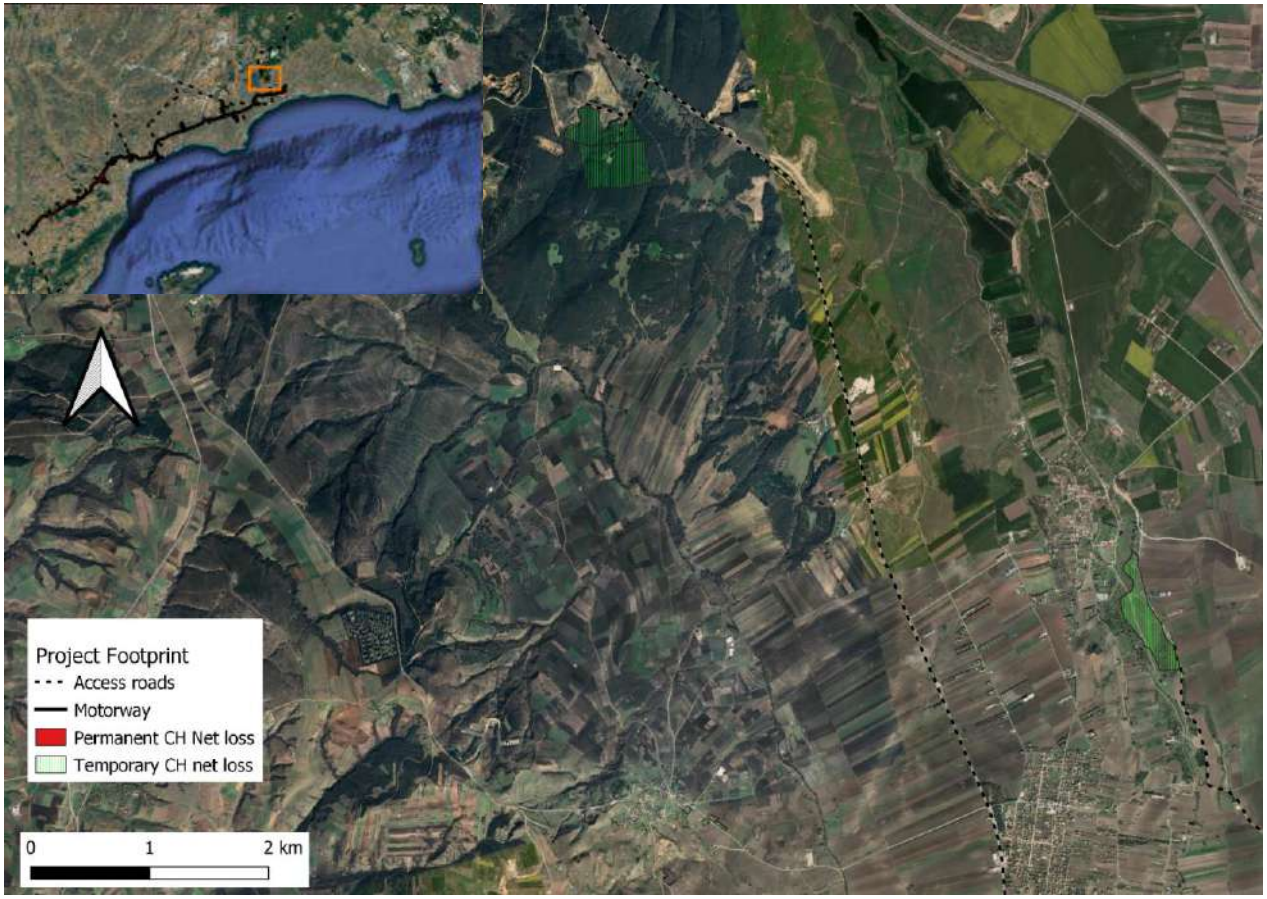

Figure 32: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 9 of 10)

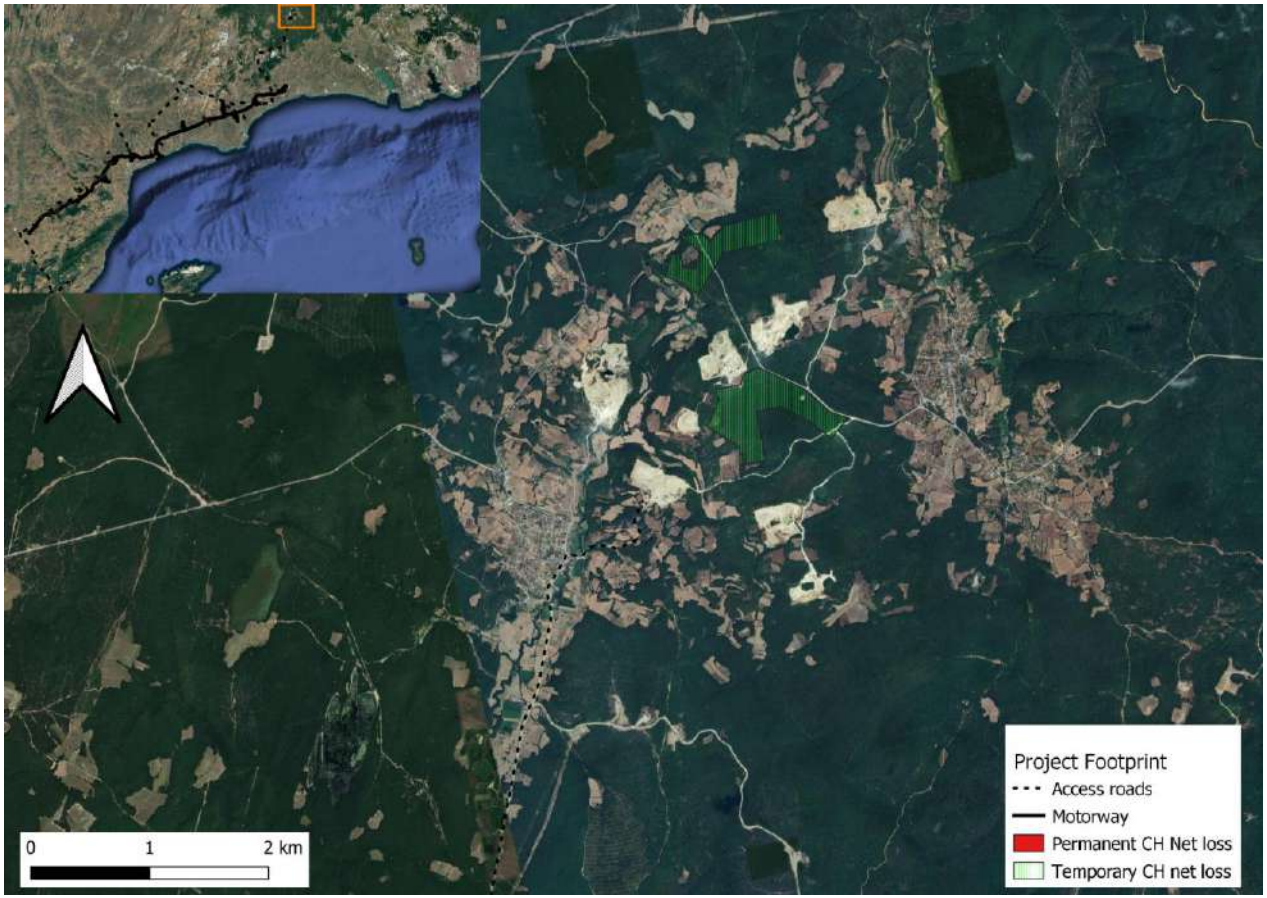

Figure 33: Net loss of Critical habitat and Potential Critical habitat due to the direct impact of permanent and temporary facilities (map 10 of 10)

7.2.1 *Cirsium baytopae* (C1a,2a)

Cirsium baytopae met the thresholds for CH under criteria C1a and 2a. It is assessed as endangered and range restricted to small area in Turkie. Forty-three (43) observations of this species were identified in 6 locations along the LSA in June of 2022. The removal and relocation of individual plants is considered a viable option for the species conservation, hence a protocol for this action will be necessary.

Table 17. Summary of the measurement approach and estimated residual impact on *C. baytopae*

Indicator	Potential impact description	Key mitigation actions	Anticipated residual impact	Activities to achieve Performance target: (Net Gain)
Area of suitable habitat impacted	Conversion of suitable habitat (G1.7, G5.2, G5.7) along the right of way	Design optimised to avoid suitable habitat as far as possible (BIO02)	22.25 ha	Residual losses shall be offset in line with the NH goal (Table 14)
Additional indicator: **Number of individuals mature plants**	Individual mature plants may be cleared along the RoW and within the quarry areas required for the motorway	Search and remove (April – June) prior to relocation. If not possible, the number of adult plants shall be recorded.	No residual impact is anticipated; however, the audit of the number of individual plants impacted shall inform the offset requirements	Net gain shall be achieved through the procurement and establishment of individual plants into roadside landscaping and identified restoration areas. The specific action to achieve this shall be documented in the Biodiversity Offset Management Plan

7.2.2 *Aythya ferina* (C3a - tbc)

The ecology of the common pochard (*Aythya ferina*) is described in detail within the projects biological baseline. A medium-sized diving duck in the family Anatidae (Figure 34), this social species forms large multispecies flocks, with other ducks, hence prefers larger areas of open water. It inhabits shallow and highly productive standing waters with abundant emergent and floating vegetation.

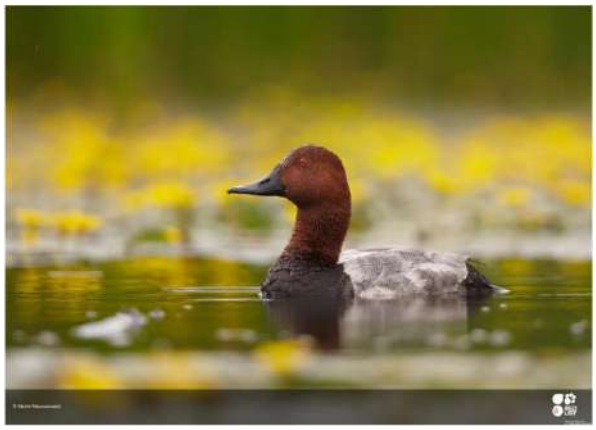

Figure 34: *Aythya ferina* (VU) (source: IUCN Red List, www.iucnredlist.org[9])

The presence of the species within the LSA has not been confirmed during June 2022 surveys. However, it is reported as breeding in the Terkos Basin KBA located at 5 km east of the Project (20 estimated breeding pairs). The overall European breeding population is estimated at 89,700-151,000 pairs (BirdLife International datazone), hence the project if only likely to threaten a very small proportion of the European population. Suitable habitat is generally lacking within the LSA, hence while this species may pass through the LSA (passage) it is not expected to be a reside within the LSA, in any significant numbers. Hence, the project is unlikely to lead to a measurable adverse impact on the global or national population.

Table 18. Summary of the measurement approach and estimated residual impact on *A. ferina*

Indicator	Potential impact description	Key mitigation actions	Anticipated residual impact	Activities to achieve Performance target: (Net Gain)
Area of suitable habitat impacted	Conversion of suitable habitat (C2.3 Permanent non-tidal, smooth-flowing watercourses) along the right of way	Design optimised to avoid suitable habitat as far as possible (BIO02). Additional care and supervision when crossing riparian habitats	0.34 ha	Residual losses shall be offset in line with the NH goal (Table 14)
Additional indicator: **Adult populations within the Terkos Basin Key Biodiversity Area**	Loss, degradation of supporting habitat within riparian areas along the motorway and within the KBA area (ie. riparian	If the presence of nesting site belonging to target bird species is confirmed, works shall be postponed in that area until the breeding cycle is completed (April-May	No impact anticipated	This species will benefit from measures to improve water or reduce nutrification of water bodies within the KBA area, support to existing wetland

[9] BirdLife International. 2021. Aythya ferina. The IUCN Red List of Threatened Species 2021: e.T22680358A205288455. https://dx.doi.org/10.2305/IUCN.UK.2021-3.RLTS.T22680358A205288455.en. Accessed on 31 March 2023.

Indicator	Potential impact description	Key mitigation actions	Anticipated residual impact	Activities to achieve Performance target: (Net Gain)
	and freshwater wetland areas)	for *A. farina.* A species-specific buffer zone will be set up around the nest site following consultation with a qualified ecologist (BIO08). Implementation of "wildlife friendly" lighting solutions to reduce potential migratory bird attraction and impact on nocturnal birds (minimization)		nature parks such as the Danamandıra Nature Park (41.299545° 28.221133°) and improved public awareness.

7.2.3 *Branta ruficollis* (C3a - tbc)

The ecology of the Red-breasted Goose (*Branta ruficollis*) is described in detail within the projects biological baseline. This relatively small goose belonging to the Anatidae family (Figure 35) breeds in the Artic tundra and migrates southwards, arriving on its wintering grounds in October-November. It is a gregarious species and tends to form large multispecies flocks during the winter.

Figure 35: *Branta ruficollis* (source: The European Environment Agency (EEA), https://eunis.eea.europa.eu)

The presence of the species within the LSA has not been confirmed during June 2022 surveys and does not breed in Turkiye. However, the species is reported as wintering in the Terkos Basin KBA located at 5 km east of the Project (90 estimated individuals). The overall number of mature adults of this species is estimated at 19,000 - 48,000 (BirdLife International datazone), hence the project is only likely to affect a very small proportion of the European population. Suitable habitat is generally lacking within the LSA, hence while this species may

pass through the LSA (passage) it is not expected to be a reside within the LSA, in any significant numbers. Therefore, the overall impact is expected to be negligible.

Table 19. Summary of the measurement approach and estimated residual impact on *B. ruficollis*

Indicator	Potential impact description	Key mitigation actions	Anticipated residual impact	Activities to achieve Performance target: (Net Gain)
Area of suitable habitat impacted	Conversion of suitable habitat C2.3 along the right of way	Design optimised to avoid suitable habitat as far as possible (BIO02)	0.34 ha	Residual losses shall be offset in line with the NH goal (Table 14)
Additional indicator: **Adult populations within the Terkos Basin Key Biodiversity Area**	Loss, degradation of supporting habitat within riparian areas along the motorwary and within the KBA area (ie. riparian and freshwater wetland areas)	Although this species is capable and likely to avoid work areas, the supervision of a a qualified ecologist during the undertaking of works near open water may be beneficial to ensure vagrant individuals are not accidently harmed. (BIO06) Implementation of “wildlife friendly” lighting solutions to reduce potential migratory bird attraction and impact on nocturnal birds (minimization)	No impact anticipated	In addition to measure described for the common pochard, this species would also benefit from measures to reduce the threat from hunting. Although hunted in large numbers within its breeding range, the extent of the threat within Türkiye is largely unquantified.

7.2.4 *Spermophilus citellus* (C1a -tbc)

The European Souslik (*S. citellus*) is a medium-sized ground squirrel, the ecology of which is described in detail within the biological baseline.

Ecologically, the European Souslik is omnivorous, feeding on seeds, roots, shoots, flowers, and arthropods. Its survival is closely tied to habitat management, as extensive mowing and grazing practices ensure food availability, while habitat loss from agricultural expansion and pasture abandonment pose major threats. Such changes can lead to unsuitable tall-grass or scrubby environments. Despite these pressures, populations can persist in human-influenced landscapes like recreational parks when suitable grassland conditions are maintained. Within the Local Study Area (LSA), habitats such as permanent mesotrophic pastures and Mediterranean short humid grasslands were identified as potentially supporting this species. Field surveys

planned for spring (March–May) aim to verify its presence and assess habitat quality, which will inform conservation measures and offset strategies for *S. citellus*.

Figure 36: Adult *Spermophilus citellus* (source: Ramos-Lara et al., 2014)

The presence of the species within the LSA was not confirmed during June 2022 surveys. The gathering of information on the verification of critical habitats will be essential for the full understanding of impacts and for the identification of type and extent of required offsets for species triggering CH.

Table 20. Summary of the measurement approach and estimated residual impact on *S. citellus*

Indicator	Potential impact description	Key mitigation actions	Anticipated residual impact	Activities to achieve Performance target: (Net Gain)
Area of suitable habitat impacted	Direct and indirect impacts (e.g vegetation and topsoil removal and vehicular traffic) within 100 m and 300 m buffer could affected this species habitat (E2.1, E3.2) if not properly mitigated. However, further confirmation of species presence is required.	Design optimised to avoid suitable habitat as far as possible (BIO02). Pre-clearance surveys will be performed by biodiversity experts to identify and in case relocate the individuals of *S. citellus.* (BIO09) If the presence of *S. citellus* is confirmed, individuals in habitat patches directly impacted by the project will	7.5 ha	Residual losses shall be offset in line with the NH goal (i.e. full replacement of suitable natural habitat) (Table 14) This species may potentially benefit from the establishment of managed grasslands around facilities such as motorway service facilities, and other locations where managed, non-agricultural grasslands are established.

		be identified and captured by experts using specific traps (e.g. the Donski trap[10]) prior to construction and relocated to appropriate sites		Information boards and public educational materials can be established at motorway service facilities to create awareness about risks to species.

[10] Koshev, Y., Kachamakova, M., Arangelov, S., & Ragyov, D. (2019). Translocations of European ground squirrel (Spermophilus citellus) along altitudinal gradient in Bulgaria–an overview. *Nature Conservation*, *35*, 63.

8.0 BIODIVERSITY OFFSET STRATEGY

The projects mitigation measures presented in Chapters 6.0 and 7.0 include actions corresponding to the first three elements of the mitigation hierarchy: Avoidance, Minimization, Rehabilitation/Restoration. These actions are expected to mitigate all impacts; however, minor residual impacts to biodiversity are described in chapter 7.0. These residual losses amount are:

- Approximately 34.7 ha of natural habitat, the majority of which correspond to Thermophilous deciduous woodland.
- Potential, but yet, non-measurable impacts to CH trigger species, that cannot be relocated, deterred from site or protected during the construction phase. Specifically, this includes *C.baytopae*, *A.ferina, B.rulicollis* and *S.citellus*. Suitable habitats for *C.baytopae* and *S.citellus,* can be restored, hence these species may re-establish or be re-established within newly created habitats of this type.

The ecology of each habitat and species is described in detail within the Biodiversity Baseline and all features are likely to be responsive to restoration, enhancement or protection activities, hence can be offset through in-situ activities when correctly implemented over time. Effective monitoring will be required to determine the pre and post development changes.

The assessment of these losses highlighted the likely need for one or more biodiversity offsets to ensure the biodiversity no net loss/ net gain requirements prescribed by PS 6 (IFC, 2012) are strictly complied. Biodiversity offsets are measurable conservation outcomes that compensate for residual impacts of a development project after the first three steps of the mitigation hierarchy have been applied (BBOP 2013). Consequently, biodiversity offsets only need to be undertaken if avoidance, minimization, and rehabilitation cannot fully address adverse effects of a Project. Offset must be commensurate to the magnitude of the impacts and should adhere to the “Like-for-like or better” principle.

At this point in the project development it is too early to identify specific options for offsetting the residual impacts described above, however the biodiversity offset strategy describes the next actions that can be taken accordingly.

A Biodiversity Offset Strategy is necessary where offsets ***are proposed as part of the mitigation strategy***. The purpose of a Biodiversity Offset Strategy is to create a framework to direct actions to offset the residual effects of the Project after the first three steps of the mitigation hierarchy have been implemented. The Biodiversity Offset Strategy was created to accomplish the following specific aims:

- Evaluate the feasibility of offset actions, flagging irreversible impacts requiring project redesign.
- Identify practical and achievable measures for offsetting residual impacts identified, in accordance with legal and lender compliance requirements.
- Where specific options cannot be identified, provide guidance for further stakeholder consultation and evaluation

Two primary types of offsets are generally considered to compensate for significant residual impacts (IFC PS6, 2012; Word Bank 2016):

- **Restoration offsets**: these involve deliberate actions to restore/improve an ecosystem, habitat, or species population outside the footprint of the original development project. The aim is to enhance its status, biodiversity conservation, or value by remedying past damage to biodiversity (due to factors unrelated to the project); and

- **Protection or averted loss offsets**: these involve the intentional protection of an ecosystem, habitat, or species population outside the original project footprint. The area should already be in good condition or possess high biodiversity value but lack sufficient legal or on-the-ground protection, with a demonstrated threat of imminent or projected loss unrelated to the project. This may include protecting new areas where biodiversity is at risk; strengthening the management of exiting areas where the conservation objective is not being achieved under current conditions, or arresting threats leading directly to biodiversity loss by sources unrelated to the project (for example, prevention of hunting of endangered birds)t.

An *aggregated biodiversity offset* can also be considered to compensate for the residual impact of this project. This conservation tool compensates for biodiversity loss from multiple development projects by achieving an equivalent or greater gain in biodiversity elsewhere. The "aggregated" aspect refers to combining resources from multiple projects to achieve a larger conservation goal than what could be achievable through individual projects alone. Aggregated offsets address the cumulative impact of multiple projects, each with small, relatively minor impacts, and offer greater value through larger-scale activities. They can also be better aligned with regional and national strategic targets.

The preparation of a successful offset program is a complex iterative process, especially for large-scale linear projects that affect multiple areas of natural and critical habitats. Therefore, the activities that contribute to the preparation and implementation of an offset program are often organized in subsequent steps.

- **Step 1 - Biodiversity Action Plan (this plan):**

i) Finalise the calculation of residual impact after the implementation of preventative and restorative measures in accordance with the Mitigation Hierarchy and following the implementation of additional studies if required, and determine the offset targets;

ii) Definition of the potential offset options and associated sites including the feasible conservation actions that could be beneficial for the Critical Habitats and trigger species;

iii) Identification of the relevant stakeholders, including national and local government authorities, project-affected people, Public Non-Governmental Organizations, that should be consulted in the process of finalizing the offset design;

iv) Definition of roles and responsibilities for the BAP implementation;

- **Step 2 - Biodiversity Offset Management Plan:**

i) Refinement of the calculations of residual impacts and associated NNL/NG requirements, based on additional studies, if anticipated, and monitoring results (re-assessment of area and condition of actual permanent and temporary loss);

ii) Engagement of the relevant stakeholders (National and local government authorities, project-affected peoples, Public Non-Governmental Organizations, etc.) to assess the opportunities for offsets within the region;

iii) Initial proposal of the potential offset sites: assessment whether biodiversity loss resulting from residual impacts on CHs and triggering species can be compensated by, at the identified offset sites

iv) Implementation of a detailed ecological assessment of the selected potential offset sites;

v) Verification of the proposed offsets' compliance with applicable laws, regulations, guidelines, and policies regarding biodiversity offsets;

vi) Identification of the means to ensure the long-term sustainability of offset activities, including the implementation of legal protections;

vii) Definition of activities, roles, responsibilities, and budget estimates for the parties involved;

- **Step 3 - Biodiversity Offset Design:**

i) Detailed description of the specific offset objectives and implementation sites;

ii) Detailed description of offset activities and implementation arrangements, including the exact location and extent of areas involved, as well as the local stakeholders;

iii) Establishment of an effective process enabling the participation of communities to the biodiversity offset design and implementation;

iv) Identification of the funding mechanism supporting the offset according to the identified timescale.

- **Step 4 - Biodiversity Monitoring and Evaluation Program:**

i) Design and implementation of a monitoring system to evaluate offset activity effectiveness and to trigger the need for corrective actions, if required;
ii) Definition of specific monitoring methods and techniques, and monitoring schedules;
iii) Definition of Key Performance Indicators (KPIs) for Target Species and Target Habitats in the Offset Plans;
iv) Application of the adaptative management principles by modifying offset measures when monitoring shows that mitigation objectives are not being met or reports new findings.

The present document represents the “Step 1 - Prepare a Biodiversity Action Plan”.

8.1 Preliminary Definition of Offset Measures

This section outlines some preliminary proposal for offset measures that may be further elaborated during the construction phase of the project within a dedicate Biodiversity Offset Management Plan. Proposals below are based on assessments provided in the baseline and can be further guided by the reassessment of actual loss (condition and extent) of the habitats permanently impacted by the project following construction. It is expected that while natural habitat changes can be assessed, actual species impacts will take more time and need further assessment to be characterised.

Further stakeholder engagement, particularly with other associated infrastructure projects will be necessary to determine final offset targets, particularly as large, aggregated offsets are more effective both financially and in terms of cost.

8.1.1 Offset options for Natural habitat

It is anticipated that compensation for the loss of natural habitats will be implemented via a suitably designed offset. However, given the relatively small area involved and the fact that this motorway scheme is part a wider linked infrastructure development programme, some coordination of the offset targets should be considered with relevant government agencies involved in land and resource management in Türkiye.

Offset options for natural habitat include:

- Restoration: the direct replacement or re-establishment of similar habitats in other locations. Habitat restoration can be challenging, not least to identify a suitable area where restoration can be attempted. Suitable restoration areas should be:
  - Degraded or otherwise modified in the own right – natural habitats should not be converted for restoration purposes.
  - Equivalent in terms of climate, aspect, altitude, soil condition and other ecological aspects as the natural habitats being converted by the project.
  - Larger than the impacted area to compensate for the time lag between the timing of the loss (2026) and the time required for habitats to restore to pre-loss condition. In some cases, this can exceed 30 years or longer. In accounting terms, this is equivalent to annual percentage rate (APR) of the net loss; the longer the restoration takes, the larger the area should be to compensate for the loss.
  - Account for some level of uncertainty or failure.
- Avoided loss options:
  - Supporting the protection of “at risk” sites can qualify as an offset for project losses, provided the client can demonstrate that their intervention has resulted in a measurable risk decrease (or avoidance) in a location that is not threatened by the project. The area required for protection will depend on the extent to which the threat can be reduced. It is likely that the area over which losses shall be averted will be much larger than the impacted area itself. A visual review of regional data available from the Global Forest Watch suggests that the rate of forest loss in the Tekridag region is relatively low (Figure 37). Hence an averted loss offset may not be a suitable alternative for natural habitat.

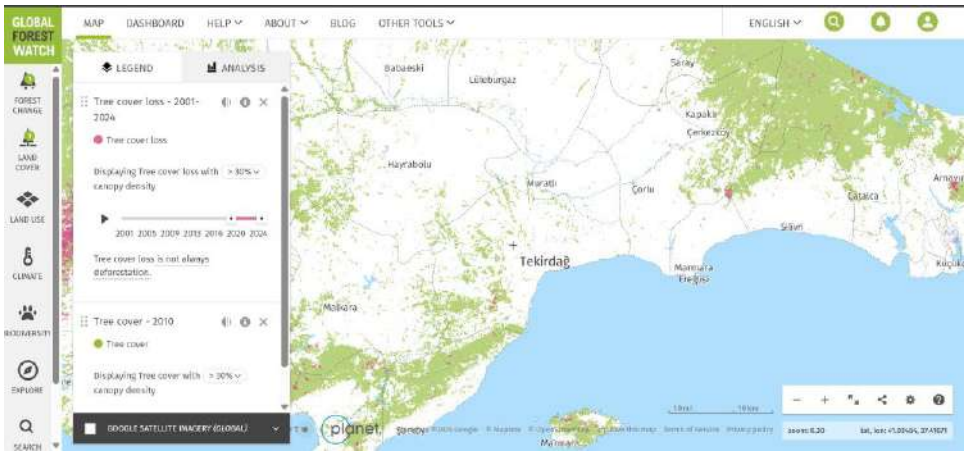

Figure 37. Screen-shot of forest loss (pink colour) and remaining forest estate (green colour) within the Northern Istabul and Terikdag regions of Türkiye (source: globalforestwatch.org). The map indicates that relatively little forest loss has occurred since 2020.

Thermophilous deciduous woodland is the single largest, and highest value natural habitat that is expected to be impacted by the motorway sections. This forest type is dominated by slow-growing oak (*Quercus spp*) and hornbeam (*Ostrya spp*) and therefore may be slow to re-establish. In light of these considerations, it is recommended that if a restoration approach is selected, it should be at least 3 times larger in than the area it is replacing.

Offset measures may be viable for other areas of natural habitats identified including;

- Permanent mesotrophic pastures (E.2.1)
- Mediterranean short humid grassland (E3.2)
- Coppice and early-stage plantation (E5.7)

These three habitat types, in addition to being natural, are semi-productive. Mediterranean short humid grassland and Permanent mesotrophic pastures, for example, support a range of plant species that provide high quality fodder that can be beneficial for grazing animals if appropriately managed. Landowners along the right of way may be encouraged or trained to establish habitats of this type alongside more intensively managed fields. Similarly, coppice and early-stage plantations are areas of managed natural habitat that uses coppicing as a silvicultural technique to enhance the economic benefits of forested areas. Training and supporting local landowners in the use of these nature-based solutions alongside intensive agricultural practises can lead to co-benefits for biodiversity and agriculture.

8.1.2 Potential offset measures for Critical Habitat trigger species

The projects residual impacts on critical habitat trigger species are more difficult to quantify that impacts to habitats. Nevertheless, some measures can be taken to re-establish populations or reduce threats accordingly.

8.1.2.1 Cirsium Baytopae

Pre-construction surveys prior to site clearance (BIO06) can identify individuals of this species and either protect (work around, fence), relocate or collect reproductive materials (seeds) of this species to be germinated and raised in alternative locations as necessary. Such actions shall largely avoid residual losses to this species.

The establishment of individuals of *C.baytopae* within any natural restoration areas (above), landscaped gardens around motorway facilities, and along motorway verges will also support the recovery of this species. The achieve this, the client should identify suitable nursey sites and contractor to collect seeds and germinate young plants for landscaping. If sufficient seed can be collected, it can also be added to the topsoil supply used for landscaping and be allowed to germinate naturally. Ongoing flora monitoring with restored areas can help to track the number of plants successfully established.

8.1.2.2 Aythya ferina and Branta ruficollius

The Common Pochard (*A. ferina*) and the Red-brested goose (*B. ruficollis*) are obligate migratory waterbirds that may winter in Turkish lakes and wetlands, particularly in coastal areas such as Turkos Basin KBA. Both species prefer open, slow-moving water with abundant emergent and floating vegetation. Habitat of this type is relatively sparse along the motorway route (<1% of the LSA), hence, they are unlikely to be encountered outside of the KBA. Aside from major waterways along the motorway route, this species is also at risk in areas adjacent to the Danamandıra Limestone Quarry which is providing a large proportion of the limestone required for construction.

Both species however can also benefit from similar conservation activities for example:

1. **Protect and restoration of shallow freshwater lakes used for wintering and stopovers**
    - Prioritise water-level management and vegetation control within the Turkos Basin KBA, to encourage feeding and roosting.
2. **Improve water quality protection measures (and as a direct consequence) aquatic food resources:**
    - Identify opportunities to strength national guidelines on road and motorway construction to ensure that requirements to prevent the runoff of water from road surfaces directly into surface water resources.
    - Control sources of nutrient pollution (agricultural runoff, sewage) so benthic invertebrates and macrophytes are abundant.
    - Strengthen controls on unregulated developments to ensure that urban expansion within the KBA does not further reduce water quality through, for example untreated sewerage wastes.
3. **Reduce hunting pressure and disturbance at key wintering sites**
    - Through existing government legislation, enforce hunting controls during wintering periods
    - Use information boards at the motorway facilities to raise awareness of the need to project vulnerable avian species including these waterbirds
    - Where feasible, create roosting islands within lakes within Turkos Basin KBA (Danamandıra nature Reserve), if necessary, closing access during peak use periods when flocks are at their largest.

8.1.2.3 Spermophilus citellus

As described in section 7.2.4, the European Souslik is a small ground squirrel that can be easily mistaken for a rodent and therefore maybe persecuted directly or through the destruction of natural dens on agricultural lands or in grazing meadows.

Direct action to create awareness about the ecological status of this species may be the most effective when combined with the mitigation measure of searching, and where possible capture and translocation of individuals from at risk locations along the motorway route. In addition, areas around the planned motorway facilities can be landscaped in a way that supports the establishment of populations of this species.

The recommended offset for this species therefore is to establish information boards within the motorway facilities. The information boards should be clear, visually engaging and informative. It should include information such as the species description, its preferred habitat, its conservation status and key threats. Lastly it should include suggestions about how the public can assist by supporting local conservation, keeping pets away from burrows.

8.1.3 Summary of potential offset measures

The following table highlights the preliminary list of actions that could be undertaken to offset the residual impact described in section 7.0. The proposed actions/offsets could ensure quantifiable No Net Loss for all natural habitats in addition to Net Gain for the Critical Habitat qualifying species.

Table 21: Summary of potential offset measures identified to support progress towards NNL/NG

Feature	Proposed offset measure	Proposed offset site
Natural habitat	Restoring Thermophilous deciduous woodland (approximately 60ha woodland)	Degraded areas located adjacent to existing woodlands in the southwest of the right of way.
	Supporting nature-based agricultural practices and silvicultural techniques	Farms and silvicultural areas within Tekiridag region
A. farina *B. ruficollis*	Protection and restoration of shallow freshwater lakes used for wintering and stopovers	Turkos Basin KBA (Danamandıra nature reserve)
	Improve water quality protection measures	Turkos Basin KBA National (via strengthened guidance)
	Reduce hunting pressure and disturbance at key wintering sites	Turkos Basin KBA Along the motorway (information boards at motorway facilities)
Spermophilius citellus	Create suitable grassland habitats around motorway facilities	Motorway facility sites
	Install information boards at Motorway facilities	Motorway facility sites

Through additional assessment and ongoing consultation with stakeholders, other offset opportunities may also be identified. Alternatively, the Project will investigate the possibility of supporting existing under-resourced conservation initiatives, currently ongoing in the vicinity of the Project.

8.1.4 Considerations for an aggregated offset

As reported in the project description, the 105.3 km Kınalı - Malkara Motorway Project is a part of the 324 km long Kınalı – Tekirdağ – Çanakkale – Savaştepe Motorway (herein after “Kınalı-Balıkesir Motorway”). Each of these sections will have impacts that are consistent with motorway construction, including residual habitat loss as estimated in section 7.0. Addressing these on a one-by-one basis, although useful may require greater resourcing to identify suitable areas, replicate stakeholder consultation and, even where measurable gains are achieved, these may not be aligned with broader objectives described in the Turkish Government National Biodiversity Action Plan (NBSAP) or within the ecosystem management goals of “vision 2023”, i.e. to focus on a holistic, integrated and sustainable approach to managing its natural resources.

Some of the offset measures described above, such as supporting farmers to adopt nature-based, biodiversity friendly management and silvicultural practices can have wide-ranging positive impacts on biodiversity, and collaboration with the appropriate agricultural agencies to obtain inter-ministerial collaboration can have greater influence than one project acting alone. Similarly, actions to improve water quality will not only benefit the avian species for whom they are intended in this BAP, but also aquatic species in addition to human health benefits. As an arm of government, the MoTI can directly support this process, for example, through strengthening and implementing greater controls over road drainage schemes to reduce the amount of micro-plastics (tyre

particles) dirt and other road-side waste from being washed directly into Turkish water courses where they become harmful to all species of aquatic life. Implementing direct measures across the country, as well as advocating for other government functions to control of harmful nutrient pollution from agricultural and industrial wastes will have significantly greater outcomes, even if not measurable within the narrow focus of the project reporting scheme.

9.0 STAKEHOLDER ENGAGEMENT

Stakeholder consultation is a key step in the development and implementation of an effective BAP. Contact with NGOs and communities that interact with biodiversity on a daily basis is a primary means of establishing priorities, conservation problems and the identification of relevant ongoing projects and ideas. It will include also institutional engagement and it will lead to the final presentation of the selected projects. Experts in conservation and offset development should be involved to help develop and validate the activities described here in. A standard engagement process should include:

1. Stakeholders' mapping: all relevant stakeholders will be considered, among them NGOs, local and professional associations, as well as the owners of land potentially subjected to an offset project and a stakeholder registry will be created as a base of work.
2. Definition of stakeholder strategy: the division of the considered stakeholders in different groups will allow the identification of a proper strategy, better fitting with the characteristics of every cluster.
3. NGO's consultation: the objective is to identify reliable and collaborative partners as well as the collection of bottom-up information on possible conservation issues. The result of these studies will be the identification of a Potential Partner List as a result of one-to-one meeting. This will be a list of NGOs, national authorities and local experts willing and able to collaborate in the definition and future implementation of Offset Projects identified. Potential NGOs are listed below:
    - Association for Supporting Ecological Living
    - Association for the Protection of Nature and Environment
    - Association of the Experts on Conservation and Restoration
    - Business Council for Sustainable Development Türkiye
    - Ecological Research Association
    - Environment Foundation of Türkiye
    - Turkish Environmental Protection Foundation
    - Nature Conservation Centre
    - The Research Association of Rural Environment and Forestry
    - The Sustainable Rural and Urban Development Association
    - Turkish Foundation on Environmetal Education
    - Turkish Nature Research Society
    - Turkish Society for the Protection of Nature
    - The Turkish Water Foundation- TWF
    - Sustainable Ecological Agriculture and The Environment Foundation

- Turkish Foundation for Combatting Soil Erosion, for Reforestation and Protection of Natural Habitats
- Uşak Environmental Volunteers Association
- Association of Environmental Protection and Greening Institution of Türkiye

4. Consultations with National and Regional authorities will be performed in this phase, ensuring the necessary institutional and legal feasibility, as well as constant communication with selected NGOs and local experts. The identified authorities include:
   - Ministry of Agriculture and Forestry – MAF (Tarım ve Orman Bakanlığı);
   - MAF, Denizli Regional Directorate of Forestry - Uşak Forest Management Directorate (Tarım ve Orman Bakanlığı, Denizli Orman Bölge Müdürlüğü- Uşak Orman İşletme Müdürlüğü)
   - Agricultural Economic and Policy Development Institute (Tarımsal Ekonomi ve Politika Geliştirme Enstitüsü - TEPGE);
   - MAF, General Directorate of Agricultural Reform (Tarım Reformu Genel Müdürlüğü);
   - MAF, General Directorate of Nature Protection and National Parks – GDNPNP (Doğa Koruma ve Milli Parklar Genel Müdürlüğü-DKMP);
   - MAF, General Directorate of Combatting Desertification and Erosion (Çölleşme ve Erozyonla Mücadele Genel Müdürlüğü);
   - Ulubey and Eşme District Directorate of Agriculture and Forestry (Ulubey ve Eşme İlçe Tarım ve Orman Müdürlüğü);
   - District governorships
   - Uşak Province Directorate of Agriculture and Forestry (Uşak ili Tarım ve Orman Müdürlüğü)
5. Consultation with institutional stakeholders both at regional and local level will be performed to discuss the feasibility and acceptance of the Offset Projects proposed and guarantee circular feedback, enabling to refine proposal as needed.

Relevant stakeholders will receive regular updates on Project progress, conservation issues, key decisions, and milestones through tailored stakeholder engagement methods.

A transparent and accessible grievance mechanism will be established to allow stakeholders to raise concerns or provide feedback at any stage of the engagement and implementation phases.

10.0 REVIEW AND REPORTING REQUIREMENTS

The correct implementation of offsets/actions reported in this Biodiversity Action Plan will be verified through periodical internal monitoring and third-party audits.

The findings of the monitoring programme will be evaluated every year with the Third-Party Auditors and the outcomes will be used to adapt the management of ongoing offset measures. Management interventions will need to be identified when there is a negative trend in the areas of natural habitat where offset measures are

planned to be implemented. The outcome of the evaluation and any management interventions required will be fed to the relevant managers and landowners.

Results of the monitoring will be reported to responsible parties to ensure that the Project activities comply with the national legislation and international standards. Depending on the monitoring results, the Biodiversity Action Plan will be reviewed and updated when necessary.

Evidence and results of the monitoring activities must be described in detail in appropriate monitoring reports. These monitoring reports must include the following minimum information/data (where relevant):

- localization of the monitoring activities (geographical coordinates in WGS84 system and elevation);
- map of the surveyed area;
- timing of the data collection (start date and end date);
- description of the applied methodology;
- KPI (Key performance indicator): regulatory limit value or qualitative acceptance criteria to comply with;
- the responsibility for implementing the specific monitoring activities (including reference to this Action Plan and reference to the appointment of third parties eventually contracted to perform part of the activity, e.g. external laboratories and consultants);
- conclusions on compliance vs. KPI, and eventual observations;
- implications and recommendations in respect to adaptive management;
- quality control procedures applied to ensure consistency and reliability of the analyses or results.

11.0 ROLES AND RESPONSIBILITIES

Responsibilities for implementation of this BAP are outlined in Table 22 and fall to either EPC Contractor or the Contractors. Where responsibilities fall to the Contractors these should be implemented via a dedicated Construction Environmental Management Plan (CEMP) as part of the Contractor's own EHS Management System (preferably accredited to ISO 14001:2004 or equivalent). EPC Contractor will actively seek to monitor, audit and assess the compliance of the Contractor(s) and ensure that corrective actions are taken when necessary to maintain environmental performance in line with International Standards.

Table 22: Main roles and responsibilities

Role	Responsibilities
Project Manager	■ Ensure that the offset measures defined in the Biodiversity Action Plan are implemented and continuously improved according to Project's policies, applicable local and international standards ■ Approval of the Biodiversity Action Plan and resources required for implementation. ■ Implementation of appropriate actions/budget to address non-conformities based on audit reports, performance monitoring reports. ■ Ensure, through regular evaluation, compliance with Company policies, applicable laws and regulations during the implementation of this Plan

Role	Responsibilities
Project E&S Manager	■ Support HSSE Office to implement this Plan ■ Fully responsible for meeting applicable environmental Project requirements, goals and objectives and operating in accordance with the Project ESMS policy ■ Fully responsible for organizing, managing and monitoring the environmental activities in the scope of the Project ■ Determine necessary resources for proper implementation of this Plan and submit these for review and approval by the Project Manager
Biodiversity Specialists	■ Prepare a Biodiversity Offset Strategy ■ Prepare a Biodiversity Offset Management Plan in compliance with the Project standards, commitments and IFC requirements. ■ Support the Client in the strategic decisions related to ESMS policy with particular regard for the BAP, Biodiversity Offset Strategy and related Biodiversity Offset Management Plan
Third party auditor	■ Periodically audit the organization for the Biodiversity Action Plan, Biodiversity Offset Strategy and Biodiversity Offset Management Plan implementation ■ Periodically reports to Lenders on the level of compliance with established concepts, principles, standards and requirements of Biodiversity Action Plan, Biodiversity Offset Strategy and Biodiversity Offset Management Plan

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