



ANKARA-IZMIR HIGH SPEED RAILWAY PROJECT

**Environmental and Social Impact Assessment
(ESIA)**

Non-technical Summary (NTS)

Ankara-Izmir YHT Yapımı İş Ortaklığı

31 August 2021

Table of Contents

ABBREVIATIONS	3
1. Background.....	5
1.1. Project Status.....	7
1.2. Status of Land Acquisition.....	8
1.3. E&S Studies.....	11
2. Project Description	13
2.1. Project Route	13
2.2. Contractor's Scope of Work	15
2.3. Permanent Project Facilities	17
2.4. Temporary Project Facilities.....	18
2.5. Workforce Requirements	20
2.6. Project Schedule.....	20
2.7. Project Alternatives	21
3. Assessment and Management of Potential E&S Impacts	22
3.1. Land Use and Geology	24
3.2. Noise and Vibration.....	26
3.3. Air Quality and GHG Emissions	28
3.4. Water and Wastewater Management.....	30
3.5. Waste Management	31
3.6. Biodiversity.....	32
3.7. Socio-economy	44
3.8. Labour and Working Conditions.....	48
3.9. Community Health and Safety	49
3.10. Cultural Heritage	52
3.11. Cumulative Impact Assessment	55
3.12. Human Rights Impact Assessment (HRIA)	58
4. Environmental and Social Management System (ESMS)	60
5. Stakeholder Engagement.....	64
5.1. Project Stakeholders.....	64
5.2. Stakeholder Engagement Activities to Date	64
5.3. Stakeholder Engagement Plan	65
5.4. Grievance Mechanism	67
5.5. Contact Information for the Stakeholders.....	68

ABBREVIATIONS

Abbreviation	Definition
AIHSR	Ankara-Izmir High Speed Railway
AFAD	Disaster and Emergency Management Presidency
AYGM	Directorate General of Infrastructure Investments
BAP	Biodiversity Action Plan
BOQ	Bill of Quantities
CHMP	Cultural Heritage Management Plan
CHS	Community Health and Safety
CIA	Cumulative Impact Assessment
CLOs	Community Liaison Officers
CoGE	Chamber of Geological Engineers of Turkey
Contractor	Ankara-Izmir HSR Construction Joint Venture
dBA	Decibels A
DSI	State Hydraulic Works
E&S	Environmental and Social
EBRD	IFC/European Bank for Reconstruction and Development
ECA	Export Credit Agency
EIA	Environmental Impact Assessment
EMC	Electromagnetic Compatibility
Employer	Directorate General of Infrastructure Investments (AYGM)
EN	Endangered
EP	Equator Principles
EPRP	Emergency Preparedness and Response Plan
ESAP	E&S Action Plan
ESIA	Environmental and Social Impact Assessment
ESMMFP	Environmental and Social Management and Monitoring Framework Plan
ESMS	Environmental and Social Management System
ETLs	Energy Transmission Lines
EU	European Union
FC	Financial Close
GBVH	Gender-Based Violence and Harassment
GEM	GEM Sustainability Services and Consultancy Inc.
GHG	Greenhouse Gas Emissions
GIIP	Good International Industry Practices
H&S	Health and Safety
HR	Human Resources
HRIA	Human Rights Impact Assessment
HSR	High Speed Railway
IAPCR	Turkish Industrial Air Pollution Control Regulation
ICAO	Civil Aviation Organization

Abbreviation	Definition
IESC	Independent E&S Consultant
IFC	International Finance Corporation
ILO	International Labour Organization
JV	Joint Venture
KBA	Key Biodiversity Area
KGM	General Directorate of Highways
Lenders	Credit Suisse and Standard Chartered Bank
MoEU	Ministry of Environment and Urbanization
MoTI	Republic of Turkey Ministry of Transportation and Infrastructure
MTA	Mineral Research and Exploration Institute
NSRs	Noise Sensitive Receptors
NTS	Non-technical Summary
OECD	Organisation for Economic Co-operation and Development
OHS	Occupational Health and Safety
OIC	Organisation of Islamic Cooperation
Operator	State Railways of the Republic of Turkey (TCDD)
PAPs	Project Affected Persons
PASs	Project Affected Settlements
PDF	Project Description File
PDoEU	Provincial Directorate of Environment and Urbanisation
Project Standards	Project E&S Standards
PMT	Plant Mix Base
PPE	Personal Protective Equipment
PSs	Performance Standards
RAMEN	Regulation on the Assessment and Management of Environmental Noise
RAP	Resettlement Action Plan
REGIO	REGIO Cultural Heritage Management Consultancy
SCADA	Supervisory Control and Data Acquisition
SEP	Stakeholder Engagement Plan
SHA	Sexual Harassment and Abuse
SIA	Social Impact Assessment
Social Team	Qualified Social Experts
TCDD	State Railways of the Republic of Turkey
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNGPs	United Nations Guiding Principles on Business and Human Rights
VECs	Valued Environmental and Social Components
VU	Vulnerable
WBG	World Bank Group

1. Background

Ankara-Izmir High Speed Railway (HSR) Project (hereinafter referred to as the **Ankara-Izmir HSR Project** or **AIHSR Project**) is a key national transportation project of the **Directorate General of Infrastructure Investments (AYGM¹ or the Project Owner or the Employer)** of the **Republic of Turkey Ministry of Transportation and Infrastructure (MoTI)**, connecting Ankara, the capital city of Turkey, to Izmir, the third largest city (by population).

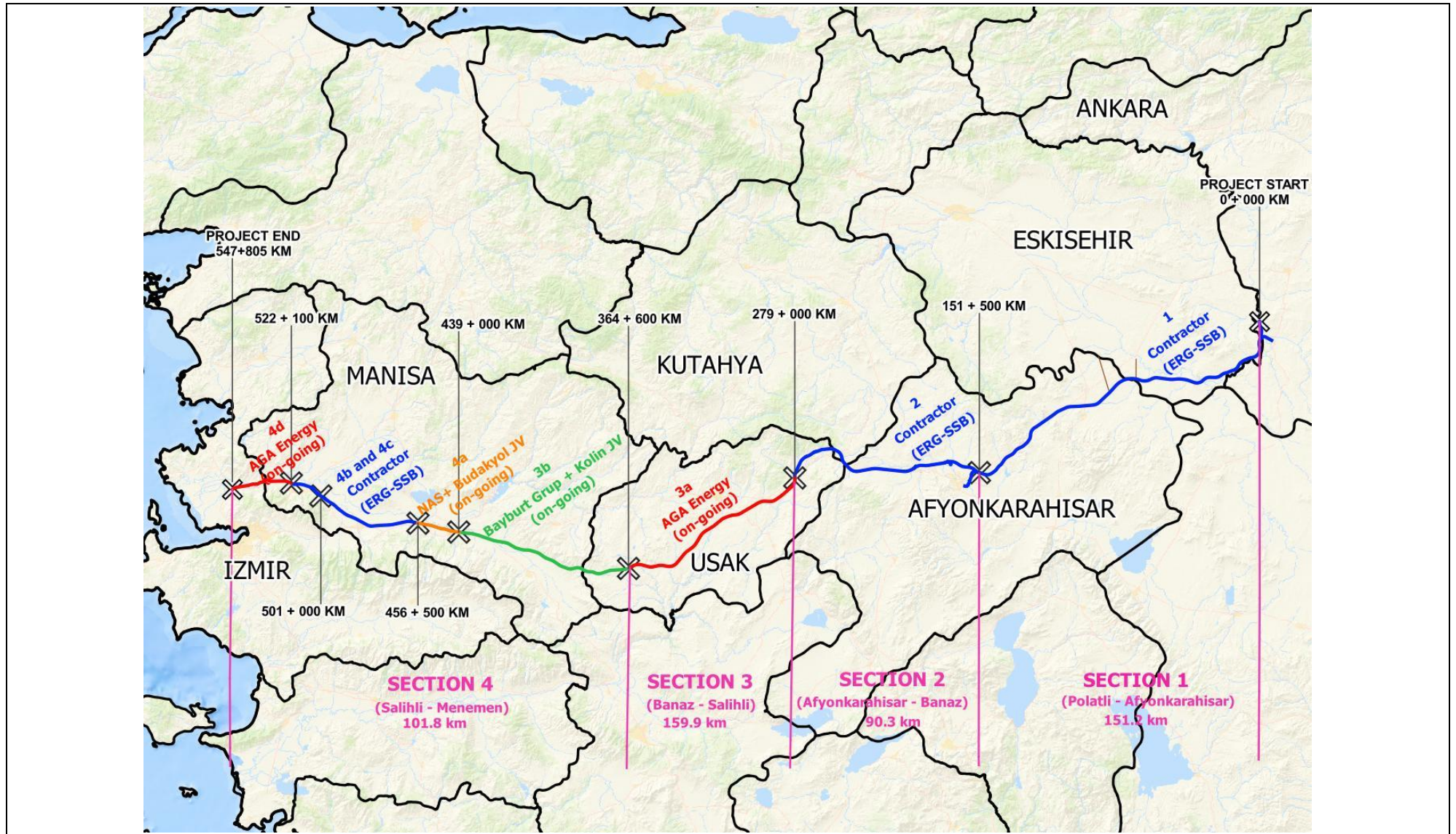
Ankara-Izmir HSR Construction Joint Venture (Contractor), is a joint venture (JV) of three sister companies, namely ERG International UK Ltd., ERG Insaat Ticaret ve Sanayi A.S. (ERG Construction) and SSB Sauerwein&Schaefer Bau AG (SSB) (**ERG Group Partnership or Ankara-Izmir YHT Yapimi Is Ortakligi or ERG JV**). The Contractor has been awarded the tender of the AYGM for the construction (includes infrastructure, superstructure, electrification and signalling, structural works) of the Ankara-Izmir HSR through a Conditions of Contract for Construction (FIDIC Red Book 1999 1st Edition) + Finance model ("Construction Contract"). The investment cost of the Project is 2.16 billion Euro.

The entire HSR route from Ankara (Polatli district) to Izmir (Menemen district) has a total length of 503.2 km and consists of four (4) sections. There are also additional lines in the Project that will connect Ankara-Izmir HSR to other HSRs or conventional railways. As presented in the below table, external to the Construction Contract of the ERG JV, there are multiple other parties performing ongoing infrastructure works in Section 3a, Section 3b, Section 4a and Section 4d (as defined in the table) under different contracts procured by the State Railways of the Republic of Turkey (TCDD) at different times. Following the completion of infrastructure works by other contractors, those sections will be handed over to the Contractor (ERG JV) by the Employer for the execution of superstructure, electrification, signalisation and buildings/facilities works along the full HSR alignment.

Section	Sub-section	Start KM	End KM	Total Length of the Section (km)	Length of Sub-sections (km)	Responsibility		
						Infrastructure	Superstructure, Electrification, Signalisation, Buildings, Facilities	
Section 1	-	Polatli-Afyon	0+000.000	151+500.000	151.2	151.2	Contractor (ERG JV)	Contractor (ERG JV)
Section 2	(2a)	Afyon-Hatipler Passage	151+500.000	230+370.612	90.3	78.8	Contractor (ERG JV)	Contractor (ERG JV)
	(2b)	Hatipler-Passage	267+156.053	278+632.464		11.5	Contractor (ERG JV)	Contractor (ERG JV)
Section 3	(3a)	Banaz-Esme	279+000.000	364+600.000	159.9	85.6	AGA Energy (infrastructure works on-going)	Contractor (ERG JV)
	(3b)	Esme-Salihli	364+600.000	438+918.726		74.3	Bayburt Grup + Kolin JV ² (infrastructure-works on-going)	Contractor (ERG JV)
Section 4	(4a)	Salihli-Manisa	439+000.000	456+500.000	101.8	17.5	NAS+ Budakyol JV (infrastructure-works on-going)	Contractor (ERG JV)
	(4b)		456+500.000	501+000.000		44.5	Contractor (ERG JV)	Contractor (ERG JV)
	(4c)	Manisa North Passage	501+000.000	514+983.302		14.0	Contractor (ERG JV)	Contractor (ERG JV)
	(4d)	Manisa-Menemen	522+100.000	547+805.481		25.8	AGA Energy (infrastructure works on-going)	Contractor (ERG JV)
Total					503.2	503.2		

¹ Former Directorate General of Railways, Harbors and Airports Construction (DLH) has been reorganised under the name of Directorate General of Infrastructure Investments – AYGM as of 1 November 2011.

² The JV was originally structured as Cengiz İnş. San. ve Tic. A.S., Kolin Ins.Tur. San. ve Tic. A.S., Ovgun Yapi San. ve Tic. A.S., Kalyon Ins. San. ve Tic. A.S., and Bayburt Grup İnş. Nak. Mad. İth. İhr. San. ve Tic. A.S. and reported to be transferred to Bayburt Grup and Kolin JV in the course of the Project.

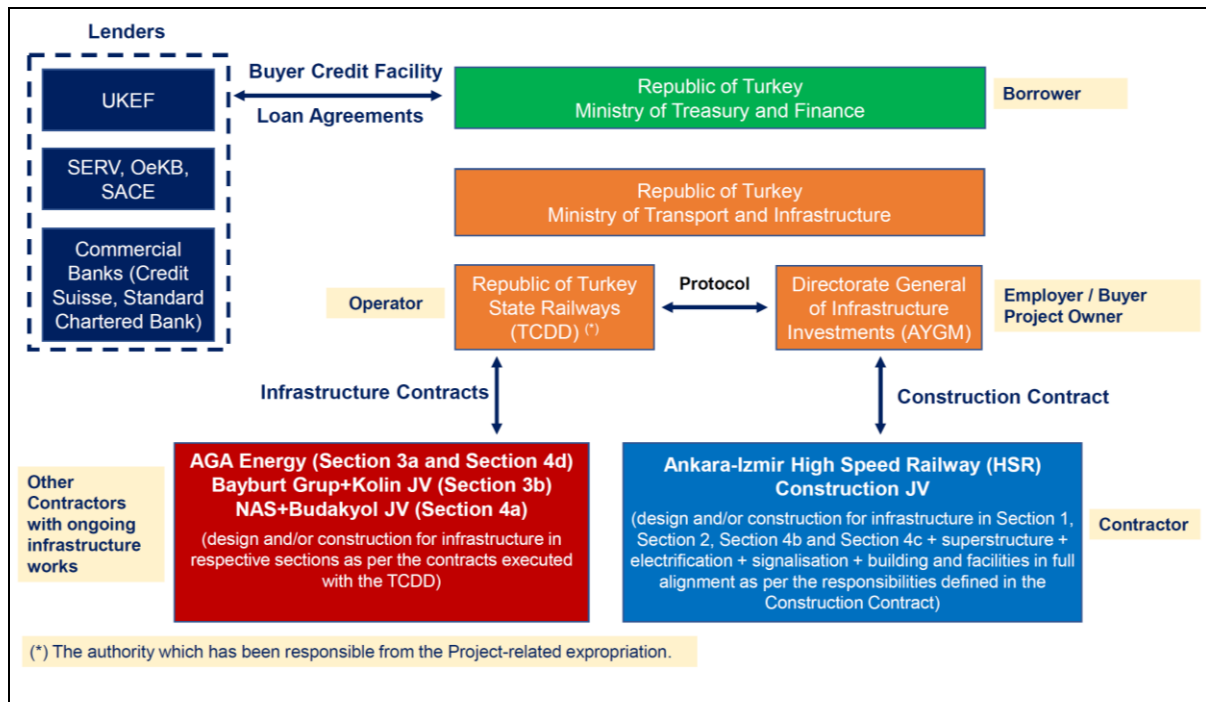


Project Layout and Division of Project Sections as per Responsible Parties for Infrastructure Works (ERG JV and Other Contractors)

Under the Construction Contract, the Republic of Turkey – Ministry of Treasury and Finance is the Borrower and the Directorate General of Infrastructure Investments (AYGM) of the Ministry of Transport and Infrastructure is the Employer and the Project Owner. The Construction Contract includes a Project financing mechanism in which the Contractor also arranges the financing for the Project, through its relationships with international financing institutions. This said, the Contractor is not a party to the loan agreement. Other contractors with ongoing infrastructure works in Section 3a, Section 3b, Section 4a and Section 4d are operating in line with the requirements of the national legislation under the existing contracts executed with the TCDD.

Once the construction of the Ankara-Izmir HSR is completed, for the operation phase, the railway will be commissioned in phases and with all relevant components and infrastructure, it will be transferred by the AYGM to the TCDD (hereinafter referred to as the Operator), which is an affiliated state entity of the MoTI.

The FIDIC contract model of the Project is presented in a simplified version as below:



The funding for the Project is supported by a Buyer Credit Facility from UK Export Finance (the official Export Credit Agency (ECA) of the United Kingdom) with some reinsurance from SERV, OeKB and SACE. The commercial banks providing the loans are Credit Suisse and Standard Chartered Bank ("Lenders").

1.1. Project Status

The construction works of Section 1 and Section 2 initially started between 2012 and 2016. Afterwards, in 2018, the construction (infrastructure) works of the contractors in these sections were suspended. As of Q2 2021, the construction works in Section 3a (Banaz-Esme), Section 3b (Esme-Salihli), Section 4a (initial part of Salihli-Manisa between KM 439+000 and 456+500) and Section 4b (Manisa-Menemen section between KM 522+100 and 547+805) are still in progress under the responsibility of other contractors previously contracted by the TCDD.

The overall progress of the physical works in the sections at which the remaining infrastructure works will be completed by the Contractor is summarised below based on the data compiled by the Contractor as of December 2020³:

- Section 1 (Polatli-Afyonkarahisar) – 65.2% (Excavation Progress – 68.7%)
- Section 2 (Afyonkarahisar-Banaz) – 31.8% (Excavation Progress – 70.0%)
- Section 3 (Banaz-Salihli)
 - Section 3a (Banaz-Esme) – 27.4% (Excavation Progress – 49.6%)
 - Section 3b (Esme-Salihli) – 27.4% (Excavation Progress – 78.8%)
- Section 4 (Salihli-Menemen) (Excavation Progress – 9.0%)
 - Section 4a-4b-4c (Salihli-Manisa) – 5.2%
 - Section 4d (Manisa-Menemen) – 30.0%

In June 2020, a Ministry Circular was issued for the Project by the MoTI, requiring all the relevant governmental institutions, including the central and local organisations of the TCDD, provincial governorates as well as contractors and subcontractors serving the Project, to prioritise the Project-related works and procedures as such all relevant processes (e.g. Environmental Impact Assessment, permitting, etc.) are adequately undertaken without any interruption.

The Construction Contract has been executed between the Contractor and the AYGM on 23 November 2020. The commencement of the Construction Contract depends on, inter alia, the Financial Close (FC). The Loan Period continues for circa 14 years following issue of the Taking Over Certificate by the Employer.

As per the Construction Contract, total duration for the completion of works is 42 months. The liability of the Contractor extends until 2 years (defects liability period) after provisional acceptance of the Project by the Project Owner (Employer). The Construction Contract is a unit price contract based on FIDIC Conditions of Contract for Construction (Red Book-1999). This Contract as signed has no unit item for environmental and social (E&S) requirements and any changes to the scope of works arising from E&S requirements are the responsibility of the Employer.

1.2. Status of Land Acquisition

Majority of the land acquisition within the Project expropriation corridor has been completed by the State Railways of the Republic of Turkey (TCDD) in line with the Expropriation Law (Law No. 2942, 1983). At locations where land acquisition has been completed, infrastructure works were initiated by previous contractors as per the contracts awarded by the TCDD.

Remaining expropriation works along the HSR route, which will be conducted/finalised by the governmental agency responsible from Project-related expropriation works in line with the Expropriation Law (responsibilities for future expropriation works will be clarified between AYGM and TCDD), are summarised below:

Further land acquisition might be required for the construction camp sites, quarries, energy transmission lines (ETLs), excavated material storage sites, alternative quarries, etc. should they be located partially or fully outside the boundaries of the expropriation corridor. As of Q2 2021, the Contractor is at the stage of evaluating and selecting the Project facilities to be used during the construction phase.

³ The infrastructure works by other contractors have been progressing at Section 3a, Section 3b, Section 4a, and Section 4d at the time this data was compiled (December 2020). Official data reflecting the latest status of physical works was not available to the Contractor at the time of compilation of the ESIA Report. Thus, the level of physical works is at a more advanced level as of Q2 2021. Based on the analysis of satellite image and the site observations of the Contractor, it is estimated that the land disturbance has taken place at a level of around 80% in Section 3a. Further verification of Employer is required for the identification of current progress levels at each Project subsection.

Section	Location	KM Chainage	Status of Expropriation Works
Section 1	Ankara-Konya HSR Connection Line	7+800; 0+000-6+683.120	Expropriation plans will be prepared once design works for this part proceeds.
	Bayat Relocation	108+740-120+520	Expropriation plans will be reconsidered/reprepared (if required) due to route relocation, once the route modification is approved by the related authorities.
Section 2	Hatipler Relocation	267+156.053- 278+632.464	Expropriation plans will be reprepared due to route relocation once the route modification is approved by the related authorities.
Section 3	Koyunbeli	311+678-313+159	Legal procedures as per the Expropriation Law (Law No: 2942, 1983) are ongoing.
	Yavi	313+061-314+395	
Section 4	Salihli-Manisa (4b)		Legal procedures as per the Expropriation Law (Law No: 2942, 1983) are ongoing.
	Asagicobanisa	491+597.42-494+893.46	
	Karaoglanli	490+331.80-491+600.00	
	Yukaricobanisa	494+200-501+056.27	Expropriation plans have been prepared but expropriation works have not started.
	Manisa North Passage (4c)		
	Yukaricobanisa	494+200-501+056.27	
	Sehitler	KM 506+331-507+916	
	2. Anafartalar	507+916-508+170	
	Kuslubahce	508+170-508+624	
	Horozkoy	508+624-514+607	
Manisa-Menemen (4d)		(*) Expropriation works have been ceased by the authorities.	
Uzunburun (*)	530+162-531+517		
Samar(**)	531+517-533+200		
Telekler(**)	533+200-536+200		
Suleymanli(**)	536+200-539+100	(**) Expropriation plans have not been prepared to date.	
Degirmendere (*)	539+100-542+091		

The Project-related land acquisition conducted by the related governmental authority in line with the requirements of the Expropriation Law (Law No. 2942, 1983) has caused/will cause physical and economic displacement in the settlements affected from Project-related land acquisition. A Resettlement Action Plan (RAP) covering both physical and economic displacement impacts of the Project for the full alignment in line with the requirements of IFC PS5 on Land Acquisition and Involuntary Resettlement has been developed in parallel to the ESIA process. An overview of the land acquisition data for the full alignment that is the basis of the RAP is presented below:

- The expropriation corridor for the HSR has a minimum width of 30 meters along the HSR alignment. The width of the expropriation corridor is extended up to 100 m based on the design of excavation and fill areas, footprint of the stations, etc.
- Within the expropriation corridor of the HSR, there are 11,326 parcels in 207 settlements affected from Project-related land acquisition. Approximately %76 (8,647 parcels) of these parcels is privately-owned, which are assumed to be utilised mainly for agricultural purposes.
- The area of affected parcels within the expropriation corridor of the HSR sums up to 3,556.5 ha, of which approximately 63% (2,247.45 ha) is privately-owned.
- The number of private owners/shareholders of the parcels affected from Project-related land acquisition is 14,421.
- Besides the parcels used for agricultural purposes, there are 421 pasture parcels (3.7%) and 88 forest parcels (0.8%) affected/to be affected from the Project within the Project expropriation corridor.
- Based on the expropriation data of the authorities and/or analysis of satellite imagery, a total of 210 residential buildings along the full Project alignment. Among the affected residential buildings, 68 have been demolished (32%) and 142 are present (68%) according to the most recent satellite imagery and information obtained through the RAP surveys of February and May 2021.
- Based on the expropriation data of the authorities, 43 commercial buildings (18 demolished and 25 present) have been for the full Project alignment.

Indicative Information on Number and Area of Affected Parcels, Number of PAPs (Owners/Shareholders) and Number of Affected Buildings within the Expropriation Corridor

Section	Sub-section	Start KM	End KM	Total Length of the Section (km)	Responsibility		A. Number of Settlements (Villages/ Neighbourhood) Affected from Project-related Land Acquisition	B. Number of Parcels							C. Area of Parcels (ha)						D. Number of PAPs (Owners/ Shareholders)	E. Number of Residential Buildings				
					Infrastructure	Superstructure, Electrification, Signalisation, Buildings, Facilities		Private	Treasury	Pasture	Forest	Public Legal Entity	Litigious (not related with Project)	Total	Private	Treasury	Pasture	Forest	Public Legal Entity	Litigious (not related with Project)		Total	Demolished	Present	Total	
Distribution in terms of Number and Area																										
Section 1	-	Polatli-Afyon	0+000.000	151+500.000	151.2	Contractor (ERG-SSB)	Contractor	47	2119	287	157	21	380	3	2967	574.7	158.7	486.3	46.1	42.6	0.3	1308.7	3370	36	2	38
Section 2	(2a)	Afyon-Hatipler Passage	151+500.000	230+370.612	90.3	Contractor (ERG-SSB)	Contractor	43	2123	201	178	2	233	0	2737	395.2	58.9	59.0	7.1	39.5	0.0	559.6	4286	13	1	14
	(2b)	Hatipler-Passage	267+156.053	278+632.464		Contractor (ERG-SSB)	Contractor	4																		
Section 3	(3a)	Banaz-Esme	279+000.000	364+600.000	159.9	AGA Energy	Contractor	31	1669	304	54	22	10	3	2062	500.2	55.0	56.1	21.8	0.5	6.6	640.2	2319	10	46	56
	(3b)	Esme-Salihli	364+600.000	438+918.726		Bayburt Grup + Kolin JV	Contractor	40	907	226	29	43	77	0	1282	306.7	36.4	39.5	128.4	8.8	0.0	519.7	1094			
Section 4	(4a)	Salihli-Manisa	439+000.000	456+500.000	101.8	NAS+ Budakyol JV	Contractor	9	1308	17	2	0	245	0	1572	353.5	4.3	2.2	0.0	39.0	0.0	399.0	1162	7	11	18
	(4b)		456+500.000	501+000.000		Contractor (ERG-SSB)	Contractor	15															1308	4	28	32
	(4c)	Manisa North Passage	501+000.000	514+983.302		Contractor (ERG-SSB)	Contractor	5	278	5	0	0	79	1	363	100.3	1.3	0.0	0.0	7.0	0.2	108.9	503	0	37	37
	(4d)	Manisa-Menemen	522+100.000	547+805.481		AGA Energy	Contractor	13	243	57	1	0	42	0	343	16.9	1.8	0.1	0.0	1.6	0.0	20.5	379	0	15	15
Total					503.2			207	8647	1097	421	88	1066	7	11326	2247.4	316.4	643.2	203.3	139.1	7.1	3556.5	14421	70	140	210
Distribution in terms of Percentages																										
Section 1	-	Polatli-Afyon	0+000.000	151+500.000	151.2	Contractor (ERG-SSB)	Contractor	47	18.7	2.5	1.4	0.2	3.4	0.0	26.2	16.2	4.5	13.7	1.3	1.2	0.0	36.8	23.4	17.1	1.0	18.1
Section 2	(2a)	Afyon-Hatipler Passage	151+500.000	230+370.612	90.3	Contractor (ERG-SSB)	Contractor	43	18.7	1.8	1.6	0.0	2.1	0.0	24.2	11.1	1.7	1.7	0.2	1.1	0.0	15.7	29.7	6.2	0.5	6.7
	(2b)	Hatipler-Passage	267+156.053	278+632.464		Contractor (ERG-SSB)	Contractor	4																		
Section 3	(3a)	Banaz-Esme	279+000.000	364+600.000	159.9	AGA Energy	Contractor	31	14.7	2.7	0.5	0.2	0.1	0.0	18.2	14.1	1.5	1.6	0.6	0.0	0.2	18.0	16.1	4.8	21.9	26.7
	(3b)	Esme-Salihli	364+600.000	438+918.726		Bayburt Grup + Kolin JV	Contractor	38	8.0	2.0	0.3	0.4	0.7	0.0	11.3	8.6	1.0	1.1	3.6	0.2	0.0	14.6	7.6			
Section 4	(4a)	Salihli-Manisa	439+000.000	456+500.000	101.8	NAS+ Budakyol JV	Contractor	9	11.5	0.2	0.0	0.0	2.2	0.0	13.9	9.9	0.1	0.1	0.0	1.1	0.0	11.2	8.1	3.3	5.2	8.6
	(4b)		456+500.000	501+000.000		Contractor (ERG-SSB)	Contractor	15															9.1	1.9	13.3	15.2
	(4c)	Manisa North Passage	501+000.000	514+983.302		Contractor (ERG-SSB)	Contractor	5	2.5	0.0	0.0	0.0	0.7	0.0	3.2	2.8	0.0	0.0	0.0	0.2	0.0	3.1	3.5	0.0	17.6	17.6
	(4d)	Manisa-Menemen	522+100.000	547+805.481		AGA Energy	Contractor	14	2.1	0.5	0.0	0.0	0.4	0.0	3.0	0.5	0.1	0.0	0.0	0.0	0.0	0.6	2.6	0.0	7.1	7.1
Total					503.2			206	76.3	9.7	3.7	0.8	9.4	0.1	100.0	63.2	8.9	18.1	5.7	3.9	0.2	100.0	100.0	33.3	66.7	100.0

(*) The buildings may include structures that are used for non-residential purposes (e.g. Depot, animal shelter, cottage, etc.). Further surveys will be conducted to identify the actual use of the buildings. The number of exact number of residential buildings (used permanently or seasonally) will further be updated as necessary based on the survey findings.

1.3. E&S Studies

A national Environmental Impact Assessment (EIA) study was carried out for the Project back in 2005 and the EIA Positive Decision was secured in March 2006.

In December 2020, to meet the environmental and social (E&S) requirements of the Lenders, **GEM Sustainability Services and Consultancy Inc. (GEM)** has been appointed by the Contractor to carry out an E&S Impact Assessment (ESIA) study for the construction and operation phases of the Project in line with the national environmental, health and safety (EHS) legislation including international conventions and treaties and the following international standards:

- Equator Principles (EP) 4 (2020)
- The Organisation for Economic Co-operation and Development (OECD) Common Approaches (2016)
- UK Export Finance Environmental, Social and Human Rights Policy
- International Finance Corporation (IFC) Performance Standards (PSs) (2012)
- IFC/European Bank for Reconstruction and Development (EBRD) Worker's Accommodation: Processes and Standards (2009)
- World Bank Group (WBG) General EHS Guidelines (2007)
- WBG EHS Guidelines on Railways (2007)
- WBG EHS Guidelines for Construction Materials Extraction (2007)

In line with the international E&S standards, the Project is considered as "Category A" and the ESIA study for the Project has been designed to include the following deliverables:

- Gap Analysis and Scoping Report
- ESIA Disclosure Package including:
 - ESIA Report
 - This Non-Technical Summary (NTS)
 - Stakeholder Engagement Plan (SEP)
 - Project E&S Management and Monitoring Framework Plan (ESMMFP) (establishing the roles and responsibilities of the Employer (AYGM), Operator (TCDD) and the Contractor for the management of construction and operation phase E&S topics, to be agreed between the Employer/Operator and the Contractor)

The ESIA Disclosure Package is reviewed, and the E&S Action Plan (ESAP) is prepared by the Independent E&S Consultant (IESC) acting on behalf of the Lenders'.

The ESIA Disclosure Package will be disclosed to public by the Contractor (on behalf of the Employer) and the Lenders for 30 days. As per the relevant requirements of the international standards, this ESMMFP, NTS and SEP will also be disclosed in Turkish language by using appropriate disclosure methods.

The ESIA Report has been prepared by GEM based on the outcomes of the Gap Analysis and Scoping Study (finalised in early February 2021) and built upon the existing technical Project documentation (reflecting the latest status of approved Project design) provided by the Contractor, information relevant to the Project in the publicly available resources, outcomes of the consultations conducted with the key stakeholders, findings of the baseline field surveys carried out by qualified specialists (between January to March 2021) and assessment of potential Project impacts and/or risks in accordance with internationally accepted methodologies as part of the ESIA process. The ESIA Report assesses both the construction and operation phase E&S impacts. This said, the mitigation of the potential impacts will be under the responsibility and control of the Employer/Operator as further clarified in the ESMMFP.

The comprehensive E&S baseline study included in the ESIA design to cover the full railway alignment including the quarries⁴ is summarised below:

E&S Subject	Baseline Data Collected as part of the ESIA				Total
	Section 1	Section 2	Section 3	Section 4	
Air Quality (# of measurement locations)	7	5	1	9	22
Noise (# of measurement locations)	4	6	5	11	26
Socio-economy (# of surveys*)	CLQs:43 HHQs:91	CLQs:43 HHQs: 73	CLQs:13 HHQs: 26	CLQs:29 HHQs: 39	CLQs:128 HHQs:229
Water Quality (# of measurement locations)	8	4	3	5	20
Biodiversity (Scope of field walkover survey)	HSR Quarries	HSR Quarries	Quarries	HSR Quarries	
Cultural Heritage (Scope of field walkover survey)	HSR Quarries	HSR Quarries	Quarries	HSR (excluding 4d) Quarries	

As part of the ESIA study, a Stakeholder Engagement Plan (SEP) and a Cultural Heritage Management Plan (CHMP) have been prepared in line with Project Standards.

A Biodiversity Management/Action Plan (BMP/BAP) in line with the requirements of IFC PS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources will be developed after finalisation of spring biodiversity field survey to be carried out in late May/June 2021, in addition to field surveys completed as part of the ESIA study.

It should be noted that, the infrastructure works in Section 3a, Section 3b, Section 4a, and Section 4d are currently ongoing in line with the applicable national legislation by three different contractors assigned by the TCDD as indicated previously. The ESIA Report covers these sections to the extent information is available/applicable. Field/walkover surveys and assessments, in addition to the studies conducted as part of the ESIA as summarised above and detailed in the respective ESIA chapters, will be conducted once authorisation of access to these sections is in place after the sites are handed over by the Employer to the Contractor.

To this end, an **E&S Audit**⁵ will be carried out in line with IFC Performance Standards (2012) at the time these sections of the Project will be handed over to the Contractor (ERG JV) for the superstructure works. Following this audit, a **Management and Corrective Action Plan** will be developed and implemented for these sections of the Project.

Under the financing arrangement, it is the Employer's responsibility to comply with the national laws and regulations; permits and standards; IFC PSs, relevant WBG EHS Guidelines requirements; loan agreement commitments; ESIA requirements; and to ensure that all contractors providing any type of services to the Employer duly follow these requirements throughout the duration of the Contract.

The roles of the Employer/Operator and the Contractor in meeting E&S requirements are intertwined and must be worked out at the Project level. The Employer/Operator remains ultimately responsible to Lenders for ensuring E&S requirements are met throughout construction and operation phases of the Project,, with the responsibilities of the Contractor for the construction phase defined in the Construction Contract.

⁴ As already recognised in the ESIA Report, following design freeze during Scoping Phase, any new facilities (e.g. quarries, subcontractor camp sites, etc.) to be included within the Project will require identification of potential site-specific E&S impacts and management measures (e.g. including field surveys to be conducted for biodiversity, cultural heritage prior to entry into such new areas). The ESMMFP and the subject-specific management plans to be developed and implemented will be applicable to all Project facilities.

⁵ Such an E&S Audit would be devised and implemented in line with the objectives of IFC GN30. Accordingly, the E&S Audit would identify through desktop study and field surveys outstanding/ongoing/retrospective issues, impacts, risks and/or grievances in Section 3 and Sections 4a and 4d and define the management measures or corrective actions required to be implemented.

As per the national legislation, the Employer (as the Project Owner) and the Operator, have in place inherent E&S responsibilities for the Project such as:

- Completion of national EIA process for the railway route (finalised) and the EIA process of any associated facilities.
- To acquire permits and licenses of associated facilities.
- To conduct the remaining expropriation process as per the Expropriation Law and make all the expropriation payments.
- To undertake any additional works including any re-alignment, as required.
- To operate the Project in line with all applicable national environmental, health and safety legislation and commitments as detailed in the national EIA Report.

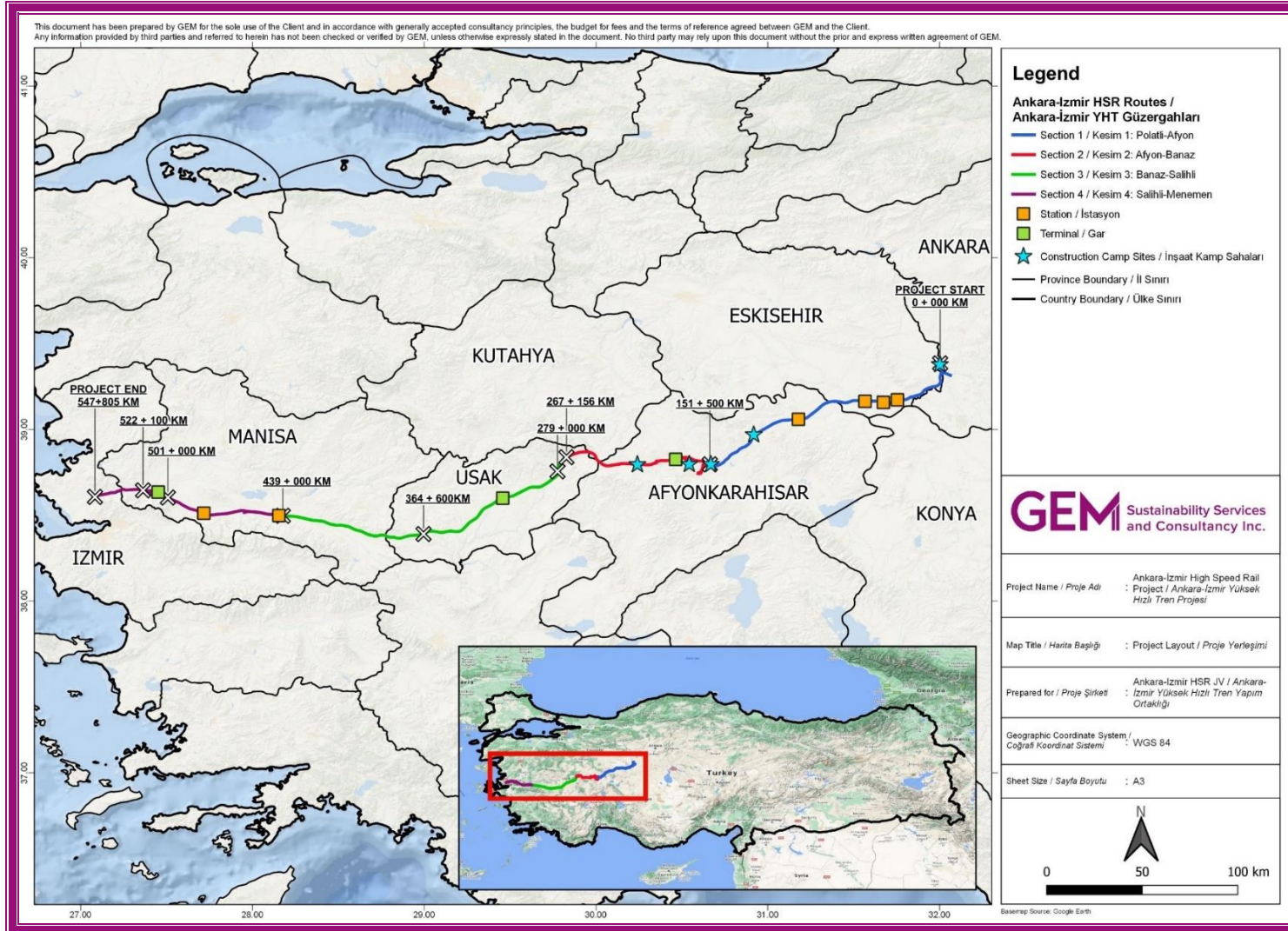
To ensure that the obligations of the Employer/Operator and the Contractor are clear, a stand-alone Project Environmental and Social Management and Monitoring Framework (ESMMFP) has been prepared for the construction and operation phases building upon the ESIA study. The Project ESMMFP reflects, inter alia, the responsibilities of the Employer/Operator and the Contractor based on the foregoing contractual framework. Based on the ESMMFP, subject-specific E&S management/actions plans, and procedures will be developed and implemented for the management of specific E&S impacts and/or risks throughout the Project construction and operation phases.

2. Project Description

2.1. Project Route

The route of the Ankara-Izmir HSR Project crosses seven (7) provinces, namely Ankara, Eskisehir, Afyonkarahisar, Kutahya, Usak, Manisa and Izmir. The route in Section 1 is running mainly through a rural setting, whilst in certain sections, it passes close to villages/neighbourhoods (in Section 2 and Section 3) and urban areas (in Section 4 near Manisa). The provinces and districts crossed by the Project route are listed below:

Section	Province	District	Number of Settlement affected by Project-related Land Acquisition
Section 1	Ankara	Polatli	47
	Eskisehir	Gunyuzu	
		Sivrihisar	
	Afyonkarahisar	Emirdag	
		Bayat	
	Iscehisar		
Section 2	Afyonkarahisar	Merkez	47
		Sinanpasa	
	Kutahya	Dumlupinar	
Section 3	Usak	Banaz	71
		Merkez	
		Ulubey	
		Esmе	
	Manisa	Alasehir	
		Kula	
		Salihli	
Section 4	Manisa	Salihli	42
		Ahmetli	
		Sehzadeler	
		Turgutlu	
	Yunusemre		
Izmir	Menemen		
Total			207



Ankara- Izmir HSR Route

2.2. Contractor's Scope of Work

As per the Construction Contract, the scope of works of the Contractor cover the following (see the following Matrix for Company's scope of work with respect to design and construction in each section of the Project):

- Completion of the incomplete infrastructure works in Section 1, Section 2 and Section 4 including tunnels, bridges, viaducts and culverts.
- 100% of the superstructure, electrification and signalling works over the full railway alignment from Section 1 to Section 4.

Section No.	Sections	Infrastructure	Superstructure	Electrification	Signalisation	Building & Facilities	
Section 1	Polatli – Afyon	C	D + C	D + C	D + C	D + C	
Section 2	Afyon – Hatipler Passage	C	D + C	D + C	D + C		
	Hatipler Passage	D + C	D + C	D + C	D + C		
	Hatipler Passage – Banaz	–	D + C	D + C	D + C		
Section 3	Banaz – Usak	–	D + C	D + C	D + C		
	Usak – Esme	–	D + C	D + C	D + C		
	Esme – Salihli	–	D + C	D + C	D + C		
Section 4	Salihli Passage	D + C	D + C	D + C	D + C		
	Salihli – Manisa (*)	D + C	D + C	D + C	D + C		
	Manisa Passage	D + C	D + C	D + C	D + C		
	Manisa – Menemen	–	D + C	D + C	D + C		
	Menemen – Alsancak Port Connection	Available Izban Line will be used, and improvements requested by the Authority will be done by the contractor with the offered Bill of Quantities (BOQ) rate					
D: Design; C: Construction – : Not included in the scope							
Superstructure Electrification Signalisation Buildings	Design + Construction						
Infrastructure Works	Construction	Design + Construction	Not included	Design + Construction	Not included		

External to the Construction Contract of the ERG JV, there are multiple other parties performing ongoing infrastructure works in Section 3a, Section 3b, Section 4a and Section 4d under different contracts procured by the TCDD at different times, as given in the Executive Summary and summarised below:

- AGA Energy in Section 3a (KM 279+000.000-364+600.000) and Section 4d (KM 522+100.000 and 547+805.481)
- Bayburt Grup and Kolin JV in Section 3b (KM 364+600.000 and 438+918.726)
- NAS and Budakyol JV in Section 4a (KM 439+000.000 and KM KM 456+500.000)

Besides the HSR, the Project components include the engineering structures comprising viaducts, tunnels, culverts, underpasses, overpasses and bridges, electrification and telecommunication infrastructures, railway stations and sidings, excavated material storage areas as well as temporary facilities including the construction camp sites, quarries and material borrow sites, and concrete plants.



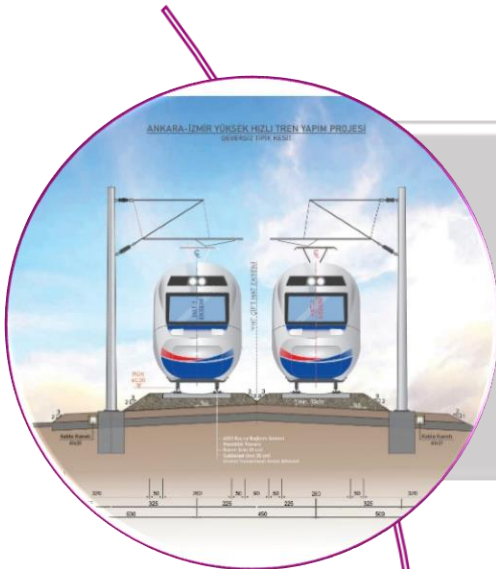
Scope of Construction Works

Once the construction of the Ankara-Izmir HSR is completed, the railway will be commissioned in phases and with all relevant components and infrastructure, it will be transferred by the AYGM to the TCDD, which is an affiliated state entity of the MoTI.

As per the Construction Contract, the Warranty Period (Defect Liability Period) is 2 years starting from the date of Provisional Acceptance. Periodical maintenance works will be performed by the Contractor for 1 year period following the Provision Acceptance.

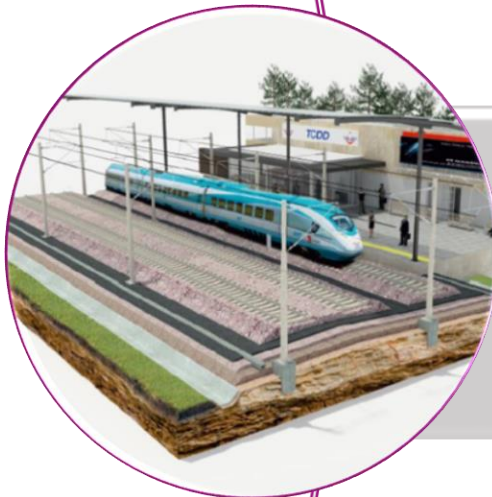
The operational life of the systems to be established during the construction will be minimum 30 years. Detailed planning of the operation and maintenance activities will be done by the Employer/Operator in due course.

2.3. Permanent Project Facilities



High Speed Railway

Main HSR: 503.2 km
 Connection Lines: 19.2 km
 Project Speed: 250 km/hr
 Power: Electricity-driven
 Width of Platform: 14.5 m
 Superstructure: Ballasted and unballasted



Stations

Emirdag (KM 93)
 Salihli (KM 440)
 Turgutlu (KM 479)

Gars

Afyon (KM 169)
 Usak (KM 313)
 Manisa (KM 506)



Engineering Structures to be built by Contractor

Tunnels (x26)	Overpasses (x96)
Viaducts (x31)	Underpasses (x174)
Bridges (x61)	Culverts (x429)

Electrification System

Signalisation and Telecommunications

Main Control Centre

2.4. Temporary Project Facilities

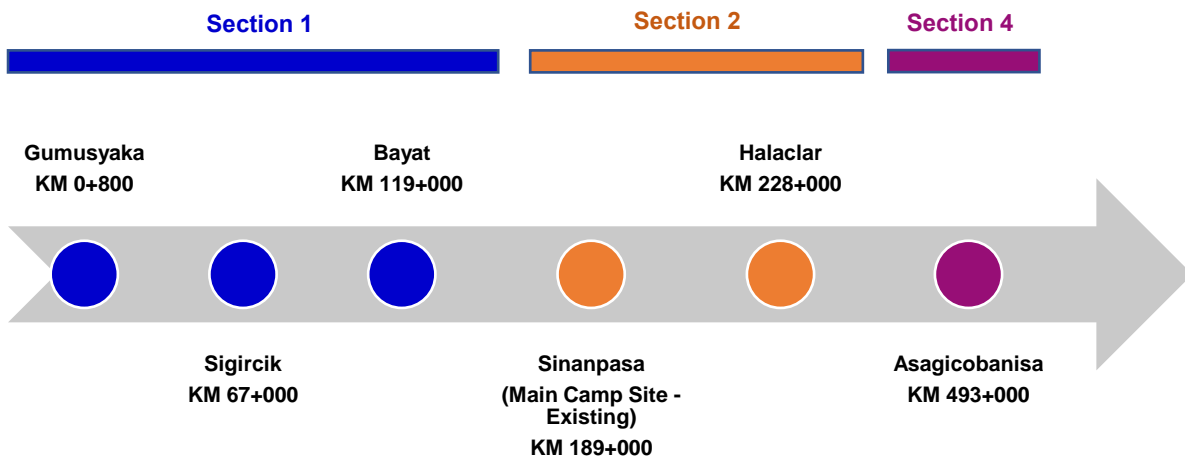
The main temporary facilities to be used by the Contractor and subcontractors during the construction phase include the construction camp sites of the Contractor and subcontractors and the quarries and material borrow sites. There will also be concrete plants to be operated along the route. Relevant facilities will be dismantled, and sites will be rehabilitated following the completion of the construction phase activities at the temporary Project facility sites.

Prior to start of operations at each facility, the Contractor will review/verify the validity of any previous/existing decision (e.g. EIA decision as per the national EIA Regulation), permit, licenses, etc. and where required by legislation, relevant decisions, permits and licenses required for the use/operation of the temporary facilities (construction camp sites, quarries and material borrow sites, concrete plants, etc.) will be obtained from the related authorities.

The other contractors with ongoing infrastructure works in Section 3a, Section 3b, Section 4a, and Section 4d use temporary facilities including construction camp sites, quarries and borrow sites, concrete plants, etc. The works at these facilities are being conducted as per the requirements of the applicable national legislation. The information on the temporary facilities used by other contractors is maintained by the Employer.

Construction Camp Sites of the Contractor

The construction camp sites planned to be used by the Contractor are shown below. Construction camp sites will include administrative offices, dormitories, social facilities, cafeteria and dining halls, infirmary, water supply, waste, and wastewater management facilities. There will be also technical facilities such as concrete plants, stock sites, workshops, storage areas and depots, as necessary. Access to construction camp sites will be provided through security gates and barriers supervised by security personnel of the Project.



Construction Camp Sites of the Contractor

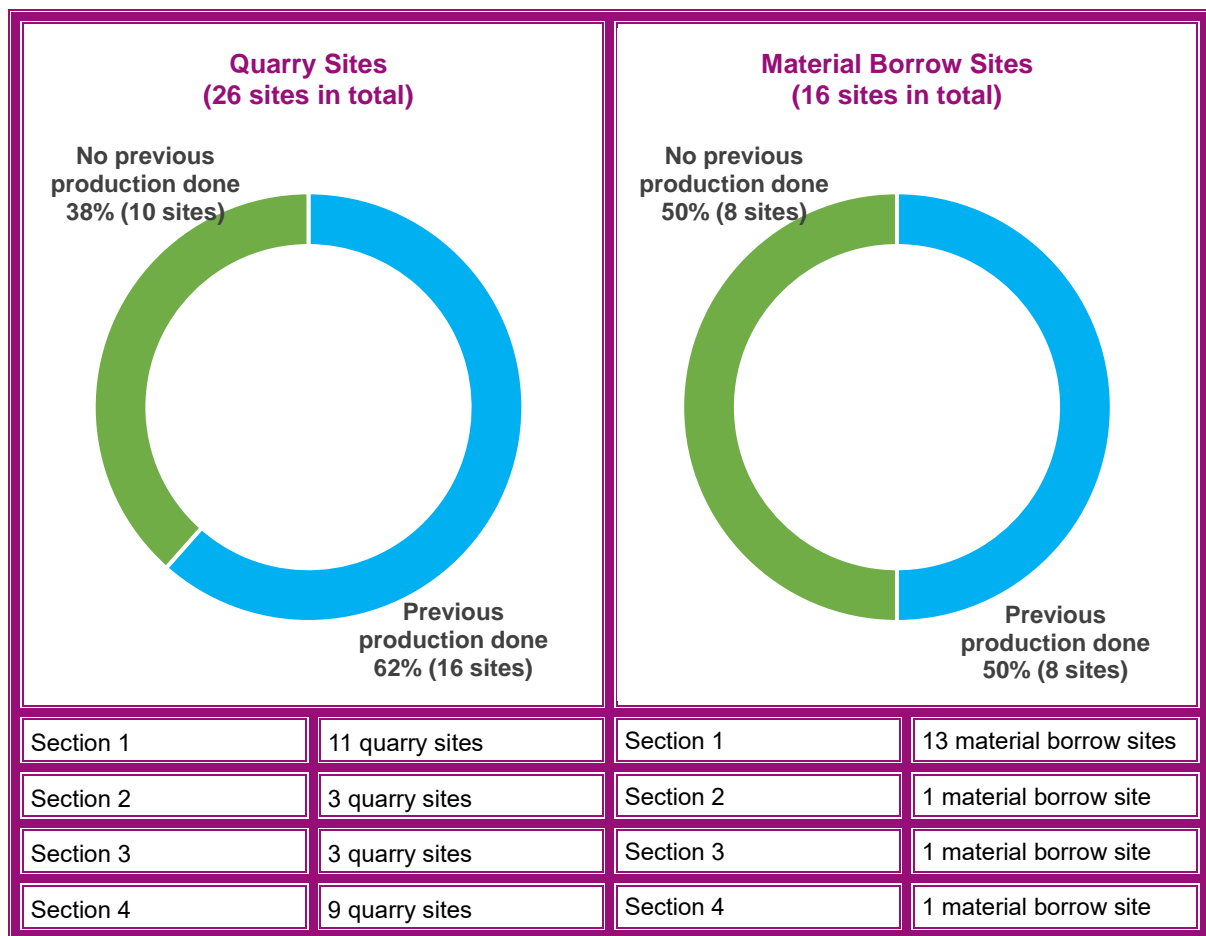
Location of subcontractor construction camp sites (main and lower tier) will further be identified upon selection of subcontractors.

Quarries and Material Borrow Sites of the Contractor

Quarries (basalt, andesite, and limestone) and material borrow sites will be used during the construction phase of the Project to extract the materials required for the construction activities. The quarries are selected based on ongoing/planned material tests and results of license applications considering the following criteria:

- Previous use by other contractors within the scope of the past construction works conducted for the Project (as such these quarries have existing licenses)
- Previous use by other state institutions (such as General Directorate of State Highways, General Directorate of State Hydraulic works, etc.) as such they are licensed quarries (as such these quarries have existing licenses)
- Proximity to the railway route and planned construction sites minimising the haul distances.

There are a total of 26 quarries and 16 material borrow sites considered for use by the Contractor as per the current design, as summarised in the below charts. The Contractor is also in the process of evaluating alternative quarry sites that may be required/used during the Project construction works. Final sites to be used during the construction phase will be selected following the completion of the ongoing material testing process and confirmation of the reserve status at each site (in terms of quantity and quality). Permitting process for the quarry and material borrow sites to be used in the scope of the Project will be completed on behalf of the Employer prior to site entry and start of operations at the quarry and material borrow sites by the Contractor.



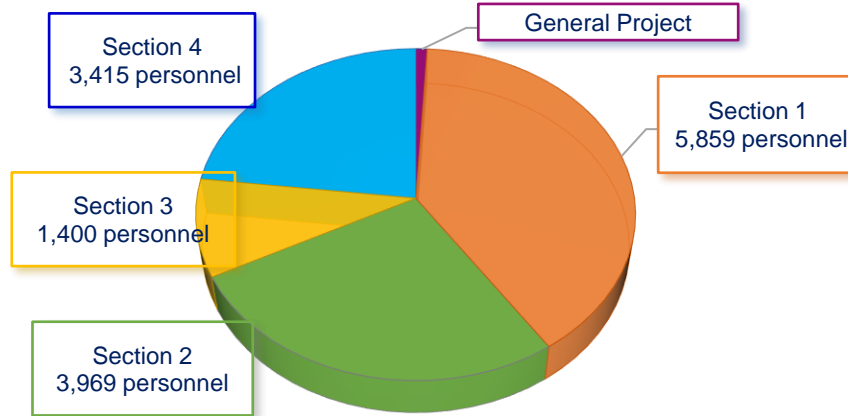
Quarries and Material Borrow Sites Planned to be Used by the Contractor

The quarries will be operated by the Contractor during the construction phase of the Project by using open-pit mining method. Blasting operations will be conducted at the quarries, as required. The quarries (except the andesite quarries) will be equipped with crushers, concrete plants, and plant mix base (PMT) facilities.

Following the completion of construction phase, quarries and material borrow sites will be either closed and rehabilitated in line with the requirements of the Construction Contract (including the environmental and health and safety requirements), and the relevant legislation or transferred to related authorities for future use as per their requirements.

2.5. Workforce Requirements

At the peak construction phase, the total number of personnel to be employed by the Contractor is estimated as 14,778. The breakdown of workforce requirement per Project section is depicted below. The General Project Management will be based in the existing Sinanpasa Camp Site located at KM 190+000 (Afyonkarahisar, Sinanpasa, Ayvali). The workforce is estimated to be composed of non-qualified (67%), semi-qualified (8%) and qualified (25%) personnel. Daily and monthly working hours of the workforce during the construction phase will be regulated in line with the Turkish Labour Law (Law No. 4857, 2003).



Construction Workforce of the Contractor

Other contractors with ongoing infrastructure works in Section 3a, Section 3b, Section 4a, and Section 4d employ direct and contracted personnel required to complete the works in accordance with their existing contracts with the TCDD.

Detailed planning of the operation and maintenance workforce (direct and contracted) requirements of the Project will be done by the AYGM and TCDD in due course.

2.6. Project Schedule

The Construction Contract for the Project has been executed between the Contractor and the AYGM on 23 November 2020. The Construction Contract will be effective after the date of Financial Close, which is foreseen as 31 May 2021. The Loan Period for the Project continues for circa 14 years following issue of the Taking Over Certificate by the Employer.

The completion dates for the infrastructure, superstructure, electrification and signalisation works to be conducted by the Contractor as per the Construction Contract executed with the Employer are as below:

- Section 1 (Polatli-Afyon): November 2023 – in 30 months (900 days) following the Financial Close date
- Section 2 (Afyon Banaz): November 2023 – in 30 months (900 days) following the Financial Close date
- Section 3 (Banaz-Salihli): November 2024 – in 42 months (1,260 days) following the Financial Close date
- Section 4 (Salihli-Menemen): November 2023 – in 30 months (900 days) following the Financial Close date

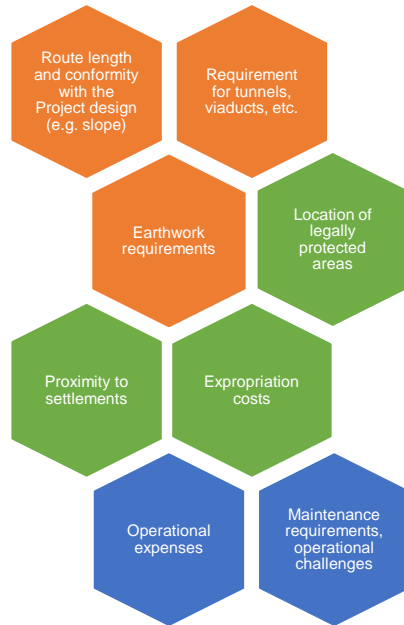
The liability of the Contractor extends until 2 years (defects liability period) after provisional acceptance of the Project by the Employer.

Once commissioned, the HSR with all relevant components and infrastructure will be transferred by the AYGM (Employer) to the TCDD (Operator) for operation.

The Employer has information on the schedule of the ongoing infrastructure works by other contractors.

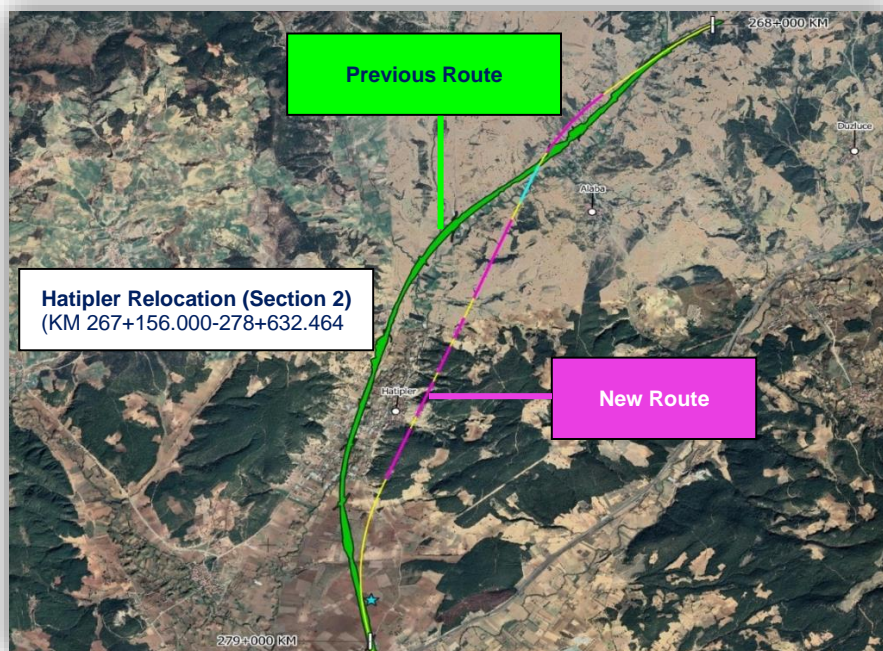
2.7. Project Alternatives

The technical field surveys and route selection studies for the Ankara-Izmir HSR Project were conducted by the TCDD Survey and Project Department. The main criteria considered in the assessment of the route alternatives and the key Project modifications conducted to date are summarised below. As part of the ESIA, alternative quarries and material borrow sites that are under evaluation by the Contractor have also been considered.



Main Criteria Considered in Route Selection

- Route relocation studies have been conducted at the following areas:
 - Bayat Relocation in Section 1 due to proximity to existing motorway
 - Hatipler Relocation in Section 2 due to impact on buildings/structures including greenhouses, high excavation volumes, poor soil quality in terms of geotechnical properties
 - Esme-Salihli in Section 3 to incorporate the findings of the feasibility studies targeting reduced operating costs and adapting modification in the project standards
- The following quarries and borrow sites have been eliminated based on the ESIA studies:
 - 26 – Basri (Basalt) Quarry due to proximity to a legally protected area
 - 97 – Bayat 2 Quarry due to overlapping status with a non-registered archaeological site
 - 138 – Demirccevre Borrow Site due to overlapping status with a privately-owned parcel (with 13 private shareholders) located within the zoning plan boundaries of the city.
 - 239 – A- 3229556 (Asagi Cobanisa) Quarry due to overlapping status with a non-registered archaeological site

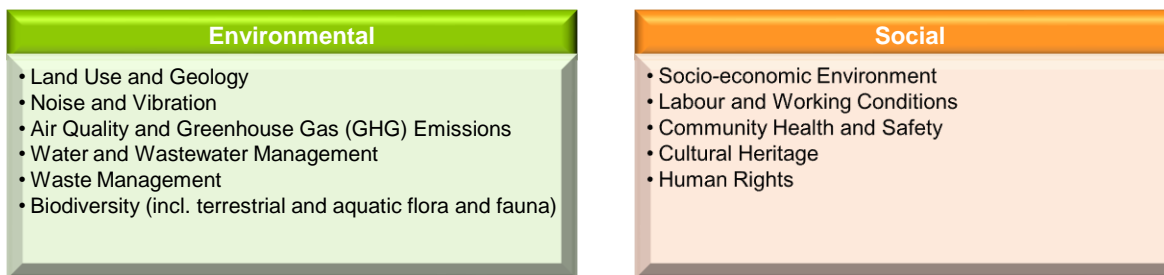


3. Assessment and Management of Potential E&S Impacts

The methodology for the assessment of potential E&S impacts of the Project – as detailed in ESIA Report – Chapter 4 - is based on relevant international guidance documents on E&S impact assessment. Significance of impacts have been determined based on the sensitivity of the receptor/resource and the overall magnitude of the Project's impact on that specific receptor/resource. The magnitude of the impact has been determined using quantitative or, where this is not practicable, qualitative methods based mainly on professional judgement by taking the geographical extent, magnitude, reversibility, duration and frequency of the impact into account. Beneficial and adverse, direct and indirect impacts have been considered.

As required by IFC PS1, the ESIA process for the Project has been based on recent E&S baseline data collected as part of the ESIA studies and presented in the respective chapters of the ESIA Report.

The ESIA of the Project assessed the potential impacts of the construction phase on the following E&S components/aspects:



Based on the outcomes of the impact assessment, measures and management plans/programs that would avoid, minimise, mitigate, and as a last resort, offset and/or compensate any potential residual adverse impacts have been developed in line with the mitigation hierarchy.

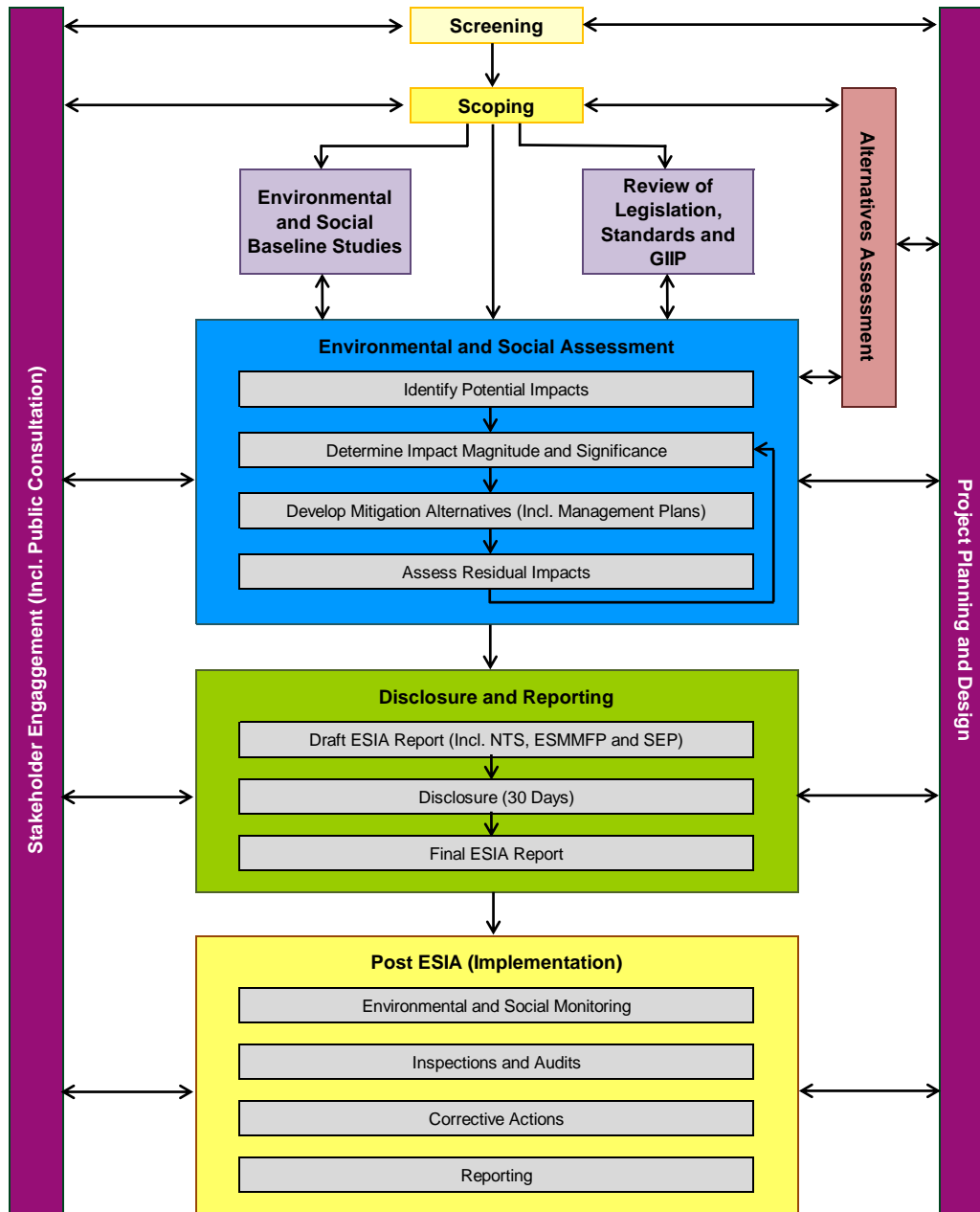
Significance of the residual impacts that remain after the implementation of the proposed management measures has also been assessed as part of the ESIA.

In line with IFC's definition of AoI, the overall ESIA study area for the Project, consisting sub-study areas for specific E&S impacts, has been determined wide enough to cover the Project AoI, over which E&S impacts could reasonably occur either on their own or in combination with other projects/developments. For the railway, a linear study corridor has been defined. For other separate Project facilities (quarries, borrow sites, etc.) outside the linear study corridor, specific study areas have been defined around the facility boundaries. For each E&S subject (e.g. biodiversity, socio-economy, cultural heritage noise, air quality, water quality), specific study areas and AoIs have been identified as summarised below and detailed in respective chapters of the ESIA Report.

In line with IFC's Good Practice Handbook entitled "Cumulative Impact Assessment (CIA) and Management: Guidance for the Private Sector in Emerging Markets", a CIA study has also been conducted as part of the ESIA process to assess the potential cumulative E&S impacts of the Project on the Valued Environmental and Social Components (VECs), together with other existing and reasonably foreseeable future Projects.

The potential Project risks and impacts stemming from the associated facilities located within and outside the expropriation corridor have been included in the ESIA study to the extent information was available. Any new facilities (e.g. quarries) to be included within the Project will require identification and assessment of potential site-specific E&S impacts and as necessary, implementation of sites-specific management measures such as field surveys to be conducted by qualified experts for biodiversity and cultural heritage prior to entry into such new areas.

The ESIA process and the approach to the assessment of E&S impacts followed for the Project is illustrated below. As of Q3 2021, the Project is at the disclosure phase, as shown in the green box.



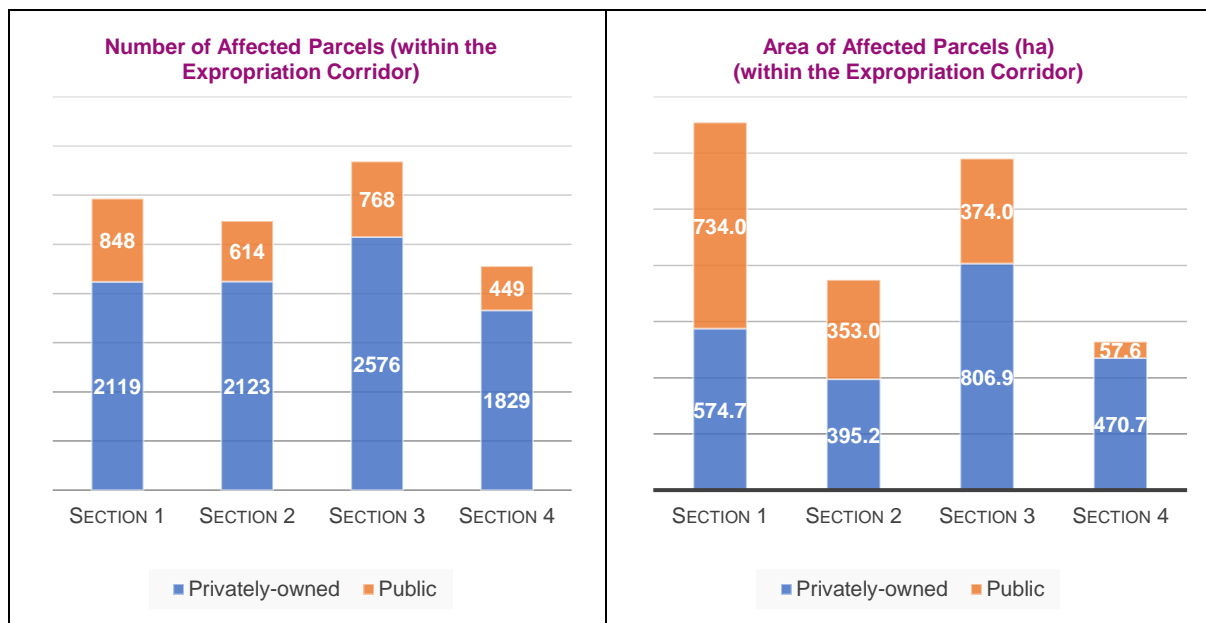
ESIA Process

3.1. Land Use and Geology

Based on the expropriation plans prepared for the Project and approved by the TCDD, the land use/ownership characteristics of the parcels affected/to be affected within the expropriation corridor⁶ are classified as below:

- Privately owned lands
- Treasury lands
- Lands owned by legal entities
- State-owned pasture lands
- State-owned forest lands

Total area within the expropriation corridor of the Project sums up to 3,556.50 ha. Approximately 63% (2,247.45 ha) of the land (in terms of area) and %76 (8,647 parcels) of the parcels (in terms of parcel numbers) acquired/will be acquired within the expropriation corridor of the Project is classified as agricultural land in terms of affected area. The following charts summarise the number and area of the affected private and public (including treasury, pasture, forest, etc.) parcels within the Project expropriation corridor:



In addition to the parcels within the expropriation corridor, land corresponding to the operation areas of the quarries and material borrow sites, as well as other facilities located outside the expropriation corridor, will also be affected from the Project. The total license area of the quarries and material borrow sites considered for use in the current design sums up to 1,794.9 ha (the operation permit area for each site, where the material extraction activities will be conducted, will potentially be smaller than the license area). Approximately 40% (708.9 ha) of this area corresponds to pasture lands and 27% (495.6 ha) corresponds to forest lands, whilst the remaining corresponds to agricultural and other land use types.

Construction of the railway and its components will result in changes in the land use characteristics along the expropriation corridor of the Project and at the footprint of offsite facilities such as quarries, material borrow sites, camp sites, excavated material storage sites, above ground facilities of the electricity transmission infrastructure etc. should they be located outside the expropriation corridor. Land take will result in permanent modification of agricultural lands, pastures, forests, etc. along the railway corridor. Tunnels and viaducts included in the Project design for crossing areas with topographical and geotechnical challenges, help avoiding/minimising impacts on land use at their footprint, whilst contributing to the management of social and biodiversity impacts of the land fragmentation.

⁶ The expropriation corridor for the HSR has a minimum width of 30 meters along the HSR alignment. The width of the expropriation is extended up to 100 m based on the design of excavation and fill areas, footprint of the stations, etc.

The affected areas at the temporary construction sites will be rehabilitated as per the requirements of the authorities following the completion of the activities at each site. In case of direct or indirect damage to adjacent state or privately owned lands as a result of Project-related activities, the Contractor will ensure that necessary corrective measures are taken as per the requirements of the related authorities and in consultation with the owners of the affected parcels.

Further impacts on land might take place for additional camp sites, quarries, energy transmission lines (ETLs), excavated material storage sites, alternative quarries should they be located partially or fully outside the boundaries of the expropriation corridor.

At lands that have not been affected by the previous infrastructure activities (expropriation corridor, quarry and borrow sites, camp sites, etc.), vegetation will be cleared and topsoil will be stripped off at sufficient depth prior to start of infrastructure works within the Project expropriation corridor and at the footprint of facilities located outside the expropriation corridor (e.g. quarries, material borrow sites, construction camp sites, etc.). The depth of topsoil varies between 5 cm to 50 cm along the route per different land use types such as agricultural, pasture or forest depending on the local soil properties. The average depth of the topsoil across the Project is assumed as 30 cm. Topsoil management measures will be applied for the conservation of the vegetative properties of the topsoil to be stripped off and stored temporarily at designated topsoil storage sites (along the railway route and at the facility locations).

The other contractors continuing infrastructure works in Section 3a, Section 3b, Section 4a, and Section 4d also use quarries and borrow sites. The land use permitting processes, management of topsoil and land use impacts including rehabilitation works are being managed by other contractors as per the applicable national legislation and the requirements of the existing contracts with t.

In order to prevent/minimise soil erosion, exposed work areas will be immediately rehabilitated following the completion of construction works. To prevent contamination of surface water and manage surface runoff water, drainage systems and sediment control measures will also be implemented as part of the Erosion Control and Management Plan to be developed for the Project. Project-specific Hazardous Materials Management Plan will be developed and implemented against the risk of soil contamination due to accidental spills and leakages during the construction phase.

Geological analyses were conducted, and geotechnical reports have been prepared by various engineering companies contracted in the previous phases of the Project. Project-specific geological, geotechnical hydrogeological surveys and assessments are/will be conducted by the Contractor (through competent/certified professionals) to identify site-specific conditions and risks (including risks pertaining to the locations/structures where construction activities were previously conducted, seismic risks, etc.) and incorporate required measures into the design of the railway route and engineering structures as per the requirements of the Construction Contract, TCDD/AYGM specifications and applicable standards. The design of the viaduct, bridge, overpass and tunnels will be in accordance with the highest Eurocodes, the American Association of State Highway and Transportation Officials (AASHTO) and Turkish standards using a 2,475-year return period.

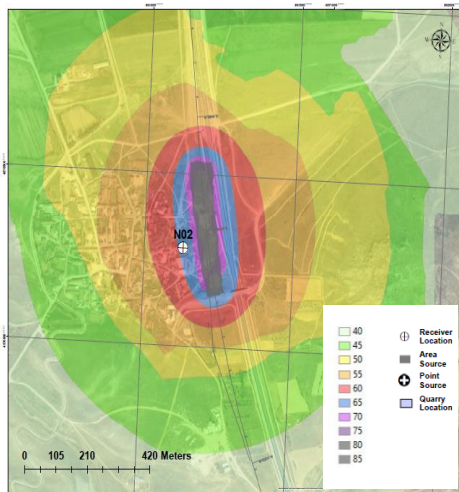
The surveys to be conducted in Eskisehir Province - Sivrihisar area will focus on, inter alia, sinkhole formation potential. Specific measures for the management of the risks associated with geological/geotechnical risks of sinkhole formation will be developed as necessary in collaboration with – following the start of the Construction Contract – the related governmental and non-governmental institutions (e.g. AYGM, State of Hydraulic Works – DSI, Mineral Research and Exploration Institute – MTA, Disaster and Emergency Management Presidency – AFAD, Chamber of Geophysical Engineers of Turkey, Chamber of Geological Engineers of Turkey – CoGE, related universities, etc.). The engagement results and proposed mitigation measures will be shared with AYGM. Subject to approval of AYGM, measures including relocation of the line will be evaluated and the Project will be constructed in accordance with those approved design measures.

For Section 3a, Section 3b, Section 4a, and Section 4d, preparation of the geological and geotechnical surveys have been under the responsibility of other contractors that will conduct and complete the ongoing infrastructure works in these sections consistent with the requirements of the applicable national legislation and their existing contracts with the TCDD. The existing geological and geotechnical survey results for these sections will be requested (through the Employer) during the site hand over and the documentation along with the site-specific measures implemented during the infrastructure works will reviewed/updated through any necessary study by the Contractor.

The operation activities of the Project are not anticipated to cause any additional impact on the existing land use characteristics or soils under normal operation conditions. In case of a need for additional operation and maintenance (O&M) buildings or facilities, there would be land use changes at the footprint of such buildings and facilities to be constructed. The measures to be taken in case of an unexpected accident that may affect lands and soils will be defined in the Emergency Preparedness and Action Plan (EPRP) to be developed and implemented for the operation phase of the Project.

3.2. Noise and Vibration

The construction of the infrastructure and superstructure will result in generation of noise due to operation of relevant construction machinery and equipment at the construction sites along the railway route and at the quarry and material borrow sites to be used in the scope of the Project. The impact of construction noise on the receptors located in the impact area of the noise generating activities has been modelled by using an internationally accepted software (CadnaA 2019 and IMMI 2016 Premium). To provide input to the noise assessments, baseline environmental noise levels were measured for 48 hours at 26 residential noise sensitive receptors (NSRs) in line with relevant international standards. For reference, approximately 50% of the NSRs have background noise levels above 55 dBA (daytime guideline value set by international standards) and 75% of the NSRs have background noise levels exceeding 45 dBA (nighttime guideline value set by international standards)



Example noise modeling study output for Yenice neighbourhood (KM 0+000)

According to the construction noise modeling study results, daytime limits of the Turkish Regulation on the Assessment and Management of Environmental Noise (RAMEN) will be met at all receptors (39 receptors represented by 26 NSRs) included in the assessments. Daytime limits of the WBG standards are met at one third of the receptors (13 receptors) included in the assessments, whilst the exceedance are anticipated to result in significant impact in 8% of the receptors (3 receptors) during the day. Single shifts are foreseen to be used throughout the Project. However, additional shifts would be organised based on need. In case of nighttime shift, additional measures would be needed to avoid/limit exceedance of national and international standards. This said, the construction phase noise will be temporary and removed upon completion of activities at respective work sites. The linear nature of the Project necessitating mobility of the equipment and vehicles along the route will provide that the route construction activities will only result in short-term impacts on the NSRs/receptors located in the proximity of the HSR route.

In case evening and night time shifts are decided to be organised, number of construction machinery and equipment operating at locations close to the NSRs and other potential noise receptors, where the RAMEN limits are exceeded and/or where the WBG exceedances are moderate and high according to the modelling results, are required to be optimised to ensure compliance with Project Standards and/or night time work is to be avoided at locations close to (approx. 500 m) the NSRs and potential noise receptors, to the extent feasible.

Vibration levels anticipated to be generated by blasting operations and vibration due to construction machinery and equipment have been calculated and assessed as part of the ESIA study. According to the calculation results, the vibration impact on receptors will be negligible for all quarries (26 quarries) considered in the assessments except for the Caltidere 2 Quarry. For blasting activities, safe distance has been determined as 200 meters for basalt resources and 220 meters for limestone resources. Any blasting activity with given blasting pattern is safe further away 220 meters and would have no impact on the nearby receptors. If blasting activities are to be carried out at a location closer than 220 meters to a receptor/settlement, blasting pattern and explosive quantities will be optimised. Sensitivity of nearby settlements/ buildings (within approximately 250 m) against vibration will be evaluated prior to blasting operations. According to the results of the calculations, the vibration impact of the construction equipment and machinery is below the limits at the location of the vibration receptors considered in the study.

Noise and vibration impact caused by the ongoing infrastructure and quarry operation activities of other contractors in Section 3a, Section 3b, Section 4a, and Section 4d are managed in line with the requirements of applicable Turkish legislation.

Project-specific Noise and Vibration Management Plan will be implemented by the Contractor and the subcontractors (through contractual requirements) during the construction phase. All Project personnel including direct and contracted workers will be trained on the implementation of Noise and Vibration Management Plan. Noise monitoring will be carried out quarterly as per the Noise and Vibration Management Plan throughout the construction phase.

During the operation phase of the Project, noise and vibration will be generated as a result of the HSR operations, intermittently affecting the receptors located along the Project route parallel to the HSR operation hours. On the other hand, as the road traffic load is anticipated to decrease because of the shift of passengers from motorways to HSR operations, the noise impact on the receptors caused by the road vehicles is anticipated to reduce.

For the assessment of the noise to be generated during the operation of the Project, a Worst-case Noise Modelling Study has been conducted by a specialist company (Frekans Acoustics & Environmental Laboratory) in 2021 as part of the ESIA in order to determine the potential impact corridor and the NSRs for the operation phase according to SRM II international document (which is the Dutch national railway noise calculation method). In consideration of the noise guideline values of the WBG General EHS Guidelines, for the determination of the potential impact corridor, the distance at which noise sourced from railway is diminished to the 40dBA level has been selected as the threshold with a conservative approach.

The study concluded that the maximum potential impact corridor for the operation phase of the Project is 1,250 meters from both sides of the railway axis (in total 2,500 meters corridor). As such, according to the worst-case scenario, a potential receptor which would be affected by environmental noise can be located at a maximum distance of 1,250 meters from the railway. The maximum potential impact corridor of 2,500 m produced by the noise model has been applicable to the full Project alignment in line with the worst-case approach. The width of the impact corridor would reduce according to the topographical factors along the route, Project design and final operational scenario of the railway (for reference, daily trip number of the the Ankara-Istanbul HSR, which is currently in operation, is 10 (5+5) (<https://www.tcdtasimacilik.gov.tr/yht/ankara-istanbul-ankara-yuksekk-hizli-tren/>)).



Within the maximum potential impact corridor for the worst-case operational noise, a total of 78 NSRs have been identified. To refine the results based on the latest status of the design and establish the basis of the detailed planning of the mitigation measures (e.g. noise barrier locations, geometry, dimensions, etc.) in consideration of point-specific environmental noise values to be predicted, a Realistic Noise Modelling Study will be carried out prior to finalisation of design/start of construction. Based on the outcomes of the Realistic Noise Modelling Study, mitigation measures, which may be a combination of berms⁷ and wall systems, will be designed and implemented to ensure that operation phase environmental noise levels fulfil the Project Standards at the NSRs. Compliance with the Project Standards will be monitored throughout the operation phase of the Project and where necessary, corrective actions will be planned and implemented. The structural mitigation measures (e.g. noise barriers) will be considered in the finalisation of the design in order to incorporate the areal and construction-related requirements of the foundations and fundamental elements of such structures to avoid difficulties during the installation. The noise mitigation measures committed within the national EIA Report (based on the noise calculations conducted according to the Dutch Calculation Method) will also be taken into consideration in the detailed planning of the mitigation measures.

As part of the ESIA study, the vibration assessment for the operation phase of the Project has been conducted according to applicable international guidelines (i.e. the Federal Transit Administration of the United States). Based on the vibration assessment conducted as per FTA Guidelines, out of the 78 receptors identified in the Worst-case Noise Modelling Study, 37 have been evaluated to be within the critical distance for vibration impacts and sensitive for vibration impacts of the HSR operations. Prior to finalisation of design/start of construction, a detailed Vibration Modelling Study will be carried out based on the latest status of the design and establish the basis of the detailed planning of the mitigation measures that would include elastic rail pads, base plate pads, under ballast mat and combinations depending on the exposure amount at specific receptor locations. A detailed vibration exposure analysis will be carried out to detail the mitigation measures to be implemented on infrastructure design. In addition, as per the national EIA Report, compliance with the regulatory vibration limits shall be verified following the commissioning of the Project and necessary management measures are committed to be implemented by the Operator in case of exceedance of the regulatory limits.

During the construction phase, the Contractor will apply the subballast liner and sub travers liners, which help mitigate noise and vibration effects of HSR operations, in line with the technical specifications of the TCDD.

⁷ Noise barriers constructed from natural earthen materials such as soil, stone, rock, rubble, etc. in a natural, unsupported condition are termed, noise berms.

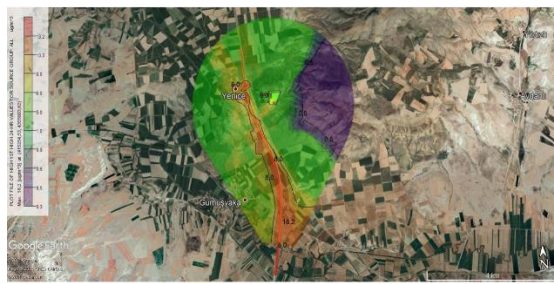
Project-specific Noise and Vibration Management Plan will be updated for the operation phase based on the operation phase modelling study outcomes and implemented throughout the Project.

Project-specific SEP will be implemented during the operation phase (including trial operations) to address any noise and/or vibration related grievance and plan/take corrective actions.

3.3. Air Quality and GHG Emissions

The impact on air quality of the receptors located along the Project route and in the vicinity of the quarries and material borrow sites will be mainly caused by the earthworks to be carried out within the Project expropriation corridor and material extraction and production works to be conducted at the quarry and material borrow sites and concrete plants. The exhaust emissions from the construction equipment and vehicles will also make contribution to Project-related air emissions in the vicinity of each receptor. Because of the linear nature of the Project and the fact that the construction equipment and vehicles will be mobile along the route, impacts associated with the exhaust emissions are estimated to be insignificant.

Dust generation due to infrastructures works will be a concern mainly at route parts, where infrastructure works have not been started/conducted in the previous Project phases, noting that the infrastructure (excavation and fill) works have already been partly completed in Section 1 and Section 2, except the Hatipler Passage (KM 267+156-278+632) and Ankara-Konya HSR Connection Line (7+800; 0+000-6+683.120). The impact of dust (PM10 and PM 2.5) generation due to route construction and material extraction activities on the receptors located in the impact area of the dust generating activities has been modelled by using an internationally accepted software (AERMOD View – Gaussian Plume Air Dispersion Model). To provide input to the air quality assessments, baseline PM10 and PM 2.5 concentrations were measured by an accredited laboratory at 22 receptors (residential/rural). For reference, PM10 concentrations measured at all receptors⁸ are well below the limit value defined in the Regulation on the Control of Industrial Air Pollution Control (IAPCR) and the guideline value defined in the WBG General EHS Guidelines (50 µg/m³ for 24 hours). Similarly, PM2.5 concentrations measured at all receptors are well below the guideline value defined in the WBG General EHS Guidelines (25 µg/m³ for 24 hours).



Example daily dust (PM10 and PM2.5) dispersion map for Yenice neighbourhood (KM 0+000)

According to the construction dust modeling study results, Project Standards set by the national IAPCR and international standards will be potentially exceeded in 6 of the 22 settlements considered in the assessments. The impact of route construction activities will be short-term and temporary, limited to the duration of works at respective parts of the route because of the linear nature of the Project. At quarry and material borrow sites, the impact will continue intermittently throughout the operation of these facilities within the scope of the Project. During the days of unfavourable meteorological conditions (e.g. extreme wind conditions, stagnant air flow conditions) preventing emission distribution, construction and material extraction works will be suspended temporarily and/or production amounts will be reduced (e.g. amount of material extracted at the quarries/borrow sites) at residential receptors with high impact magnitude. Dust suppression methods such as water spraying will be applied at dust generating areas (e.g. quarry access roads) especially during dry weather conditions. Water spraying frequency will be increased during dry periods and upon receipt of valid dust-related complaints from the nearby communities, as necessary.

Dust and gaseous emissions caused by the ongoing infrastructure and quarry operation activities of other contractors in Section 3a, Section 3b, Section 4a, and Section 4d are managed in line with the requirements of applicable Turkish legislation.

⁸ The maximum PM₁₀ and PM_{2.5} concentrations measured at Afyonkarahisar, Sinanpasa, Guney village (around KM 202+285) were 18 µg/m³ and 7 µg/m³, respectively.

Project-specific Air Quality and GHG Management Plan will be implemented by the Contractor and subcontractors (through contractual requirements) during the construction phase. All Project personnel including direct and contracted workers will be trained on the implementation of Air Quality and GHG Management Plan. Through the trainings, construction vehicles/equipment will be prevented from idling and running unnecessarily and speed limits will be enforced for the Project vehicles that will transport construction materials/equipment along the existing main access road.

As part of the air quality assessments, Project's contribution to the climate of the region has been assessed for construction and operation phases considering the amount of GHG emissions which has been calculated in line with the Greenhouse Gas Protocol, as required by EP4.

Based on the calculations, the Project is anticipated to generate total GHG emissions (Scope 1 and Scope 2) of 1,019,554 tons CO₂-e (291,301.2 tons CO₂-e per year) during the construction phase. The majority of these emissions are associated with the land clearing (68%), which is followed by the emissions from mobile (23%) and stationary (4%) combustion sources, electricity use (4%) and blasting (1%).

The GHG emissions due to operation of the HSR are calculated based on the official annual passenger number forecasts of the Project. For the first year of operations (6 million passengers per year) the GHG emissions are calculated as 40,498 tons CO₂-e/year and for the year 2052 (14.1 million passengers per year) as 95,436 tons CO₂-e/year.

According to EP4, the Clients/Project owners are required to report publicly on an annual basis on GHG emission levels (combined Scope 1 and Scope 2 emissions) and GHG efficiency ratio, as appropriate, during the operational phase for Projects emitting over 100,000 tons of CO₂-e annually. Furthermore, the Clients will be encouraged to report publicly on Projects emitting over 25,000 tons.

Additionally, a no-HSR scenario was assessed taking into account the total GHG emissions that would result based on alternative means of transportation (conventional train, air transportation and road transportation by bus and private car). The "avoided emissions" as a result of the use of Ankara-Izmir HSR were quantified in comparison to the estimated amount of GHG emissions from the use of a combination of alternative transportation modes along Ankara-Izmir route. It is estimated that the level of avoidance will be approximately 230,000 tons CO₂-e/year in the first year of operation and 547,000 tons CO₂-e/year in year 2052.

Climate Change Risk Assessment for the physical risks of the operation phase of the Project as per EP4 is also conducted. The AIHSR Project is not reliant on a resource that could be impacted by climate change, like water or changes to land use. Based on the current climate conditions, wildfires (acute risk) and flooding (acute risk) are considered as the potential physical risks at the Project location. Along the Project route, there are designated flood zones which are accepted as geographically at-risk areas (chronic risk).

Flood Management Plans have been prepared by the Ministry of Agriculture and Forestry – Directorate General of Water Management for the four (4) basins the Project is crossing through, namely Sakarya, Akarcay, Buyuk Menderes and Gediz Basins. At the basin level, flood risk assessments have been carried out considering numerous factors including potential climate change impacts as well.

Amongst the provinces crossed by the Project, Afyonkarahisar is more vulnerable to climate change in terms of flood incidents. The number of flood incidents in Afyonkarahisar in 1950–2019 period is reported as 130, corresponding to 1.9% of the total number of flood incidents in Turkey in the same period.

The potential impacts on the Project that could stem from the identified potential physical risks are damage to assets, loss of operation, delays for customers, increased operating costs, and impact on the surrounding business, environment, and communities. The Project design includes engineering structures (e.g. viaducts, culverts, bridges, tunnels) and these structures will be designed as per the Technical Specifications of AYGM for Infrastructure Works and other applicable standards including flood risks. To this end, the potential physical climate impacts are not considered to affect the operation of the Project.

The Employer/Operator will develop and implement an Emergency Preparedness and Response Plan (EPRP) for the operation phase with special measures - e.g. crews, equipment- considered for the tunnels, bridges and viaducts to provide easy access to the HSR route, as required by the national EIA Report as well as fire safety measures including monitoring of right-of-way vegetation according to fire risk, planting and management of fire-resistant species within, and adjacent to, rights-of-way, as recommended by the GIIP.

3.4. Water and Wastewater Management

The Project route passes through Sakarya, Akarcay, Buyuk Menderes and Gediz river basins. Sakarya River and Gediz River are the major surface water resources in the vicinity of the Project route. The Project crosses rivers and creeks at several locations by means of relevant engineering structures (e.g. viaducts, culverts, and bridges, as appropriate) such that the continuity of the water flow is ensured. At KM 130+263-130+423, Seydiler Pond (irrigation) is crossed by a viaduct (DSI Goldet-2 Viaduct). There are also perennial surface water resources in the vicinity of the quarries, construction camp sites and stations (e.g. Karacali Creek is running along the license boundary of Cikrikci Quarry (Manisa, Turgutlu); Gediz River flowing at a distance of 50 m to the Degirmendere Quarry (Izmir, Menemen); Sakarya River tributary flowing at a distance of 600 m to Sigircik Construction Camp Site (Eskisehir, Sivrihisar); Bucak Creek crossed by Bayat-1 Bridge at the Emirdag Station site; Akarcay Creek crossed by Aksu Bridge at the Afyon Gar site; and Alasehir Creek crossed by Bridge-1 at the Salihli Station site). The perennial and other seasonal surface water resources in the vicinity of Project facilities will be considered by the Contractor during the siting of the Project facilities and management measures (e.g. minimisation of Project's water use and wastewater discharges, discharge of treated wastewaters in line with relevant permits and Project Standards maintaining defined distances between the surface water resource and work sites, construction of surface water runoff interception/diversion structures,) for the protection of the quality of the resources will be developed and implemented during the construction phase. For the characterisation of the baseline water quality of the major surface water resources along the railway route, a water quality sampling and measurement program was conducted as part of the ESIA study. To this end, water samples were collected and analysed by an accredited laboratory at 20 locations crossed by the HSR route or located in the vicinity of the Project facilities (e.g. construction camp site) along the full Project alignment.

Excavation depths along the HSR route will vary depending on the topographical and hydrogeological conditions. The current level of groundwater table will be further identified based on the drilling program to be implemented by the Contractor. At locations where the excavation works will reach the groundwater level, the Contractor will take necessary design and construction measures (e.g. soil improvement, use of geotextiles and geomembranes, measures against subsidence).

During tunnel boring/excavations, there is potential for groundwater intrusion depending on the groundwater level at the planned tunnel locations, which will be managed through relevant drainage measures in line with good international industry practices (GIIPs). As per the Technical Specifications of AYGM for Infrastructure Works, required facilities (e.g. drainage and diversion ditches, water collection sumps/ponds, cofferdams, channels) will be designed and constructed by the Contractor to ensure control and diversion of the surface runoff flowing into and accumulating at the work sites.

During the construction phase, water will be used for domestic purposes by the Project personnel at the work and accommodation sites, and for concrete production and dust suppression at concrete plants, asphalt plant, crushing facilities, quarries and their access roads. A Project-specific Water and Wastewater Management Plan will be developed and implemented by the Contractor and the subcontractors (through contractual requirements) to minimise water use and wastewater generation. Sedimentation ponds will be constructed at concrete plants to settle the wastewater and recirculate it to the process to minimise fresh water use and avoid wastewater discharge into the environment.

Domestic wastewater to be generated by the Project workforce will be treated at the package domestic wastewater treatment plants to be installed at the construction camp sites or collected in non-leaking septic tanks for further disposal. The permitting requirements (i.e. environmental permit) for treated domestic wastewater discharges will be fulfilled in line with the applicable national legislation.

Water use and wastewater management by other contractors with ongoing infrastructure works in Section 3a, Section 3b, Section 4a, and Section 4d is conducted in line with the requirements of applicable Turkish legislation.

During the operation phase, water will be used for domestic purposes by the passengers using the HSR services and the stations/gars and Project personnel working at the HSR operation, stations/gars, and other O&M facilities. Water use by the passengers and the Project personnel will result in domestic wastewater generation within the HSRs and at those facilities. Detailed planning of the HSR operations, O&M works and the workforce requirements (direct and contracted) at each operational facility and the water supply sources as well as the wastewater management methods (e.g. wastewater treatment plant/unit, connection to sewerage in line with the permits to be obtained from related authorities) at each operational facility will be done by the Employer and the Operator in due course based on their applicable standards/requirements and specifications.

Wastewater to be generated due to maintenance, refurbishment and cleaning operations to be conducted for the trains and equipment may contain residues from transported materials, paint, oil and grease, and other contaminants and require pH adjustment due to use of caustic or acidic solutions used for different purposes. Types of materials to be used in such operations will be determined by the Employer and the Operator during the construction phase based on their applicable standards/requirements and specifications. Wastewater management methods appropriate for the characteristics of the wastewater to be produced will be determined and implemented by the Employer and the Operator to ensure that management of wastewaters during the operation phase will be in line with the Project Standards. The operation phase Water and Wastewater Management Plan will be developed and implemented by the Employer/Operator.

All chemical/hazardous material storage tanks, waste oil barrels and liquid waste tanks/containers to be used in the Project will be provided with secondary containment as per the international standards, keeping absorbent pads or materials next to storage areas. Hazardous materials will be managed (e.g. stored in designated areas as per Safety Data Sheet requirements, provision of spill kits, absorbent pads/sands for management of accidental spillages etc.) in line with the Hazardous Materials Management Plan to be developed and implemented. Potential accidental spills of hazardous materials (such as fuel, oils, lubricants and cement may cause impact on groundwater quality) that could not be avoided will be managed through the implementation of the Emergency Preparedness and Response Plan (EPRP).

Training on the implementation of the Project-specific Water and Wastewater Management Plan, Waste Management Plan, Hazardous Materials Management Plan, EPRP will be provided to all direct and contracted Project personnel as part of the induction (refresher trainings will be planned, as required).

3.5. Waste Management

The types of waste anticipated to be generated during the land preparation, construction and operation phases of the Project are listed below:

- Municipal solid wastes (non-hazardous) including the packaging (recyclable) wastes (not contaminated with hazardous substances) and COVID-19 related wastes
- Excavation, construction and demolition⁹ waste (during construction phase only)
- Hazardous and special waste including but not limited to waste oils, waste tires, contaminated packaging material, used batteries and accumulators, metal waste contaminated with hazardous materials, and medical waste.
- Treatment/septic tank sludge (non-hazardous)

The waste generated during the construction phase will be managed in line with the mitigation hierarchy and as per the requirements of the national legislation and WBG General EHS Guidelines in order to avoid/minimise potential impacts on the environment and community health and safety.

The Contractor will develop and implement a Project-specific Waste Management Plan for the land preparation and construction activities. Training on the implementation of the Project-specific Waste Management Plan will be provided to all direct and contracted Project personnel as part of the induction (refresher trainings will be planned, as required).

Waste segregation and storage at temporary waste storage areas will be managed according to the standards specified by the related regulations and GIIP. As such, temporary waste storage areas with adequate capacity will be provided at each camp, facility, and work sites. The permitting requirements (i.e. Industrial Waste Management Plans, annual waste declarations, temporary waste storage permit) will be fulfilled in line with the applicable national legislation.

⁹ The building demolition works during the construction phase will be conducted in line with the requirements of the Regulation on Waste Management, Regulation on the Control of Excavation Soil, Construction and Demolition Waste, the Regulation on Health and Safety Measures in Working with Asbestos, Regulation on the Assessment and Management of Air Quality and Regulation on Assessment and Management of Environmental Noise. To this end, specific requirements defined for the demolition works, including occupational health and safety measures to be taken for the protection of employee health and safety, measures against dust and noise generation, management of hazardous demolition wastes will be fulfilled.

Constituting a major part of the construction related waste generation, the excavated materials will be reused in the filling operations to the extent feasible. The remaining portion, which is not suitable for reuse in fill operations, will be disposed of at excavated material storage sites within the expropriation corridor of the railway. If proper storage sites cannot be designated within the expropriation corridor, the Contractor will identify parcels, for which usage rights will be obtained from the respective right holders as per the requirements of the applicable legislation.

Masks, gloves and other personal hygiene material wastes generated at the offices, dormitories and work sites will be collected separately and managed as per the MoEU Circular entitled 'COVID-19 Measures for the Waste Management of Single Use Masks, Gloves and Other Personal Hygiene Materials'.

Regular monitoring of the waste management practices of the direct and contracted Project employees will be conducted by means of document review (e.g. permits, waste reuse/recycling/disposal agreements) and visual checks at the work sites.

Management of hazardous and non-hazardous waste generated by the ongoing infrastructure activities of other contractors in Section 3a, Section 3b, Section 4a, and Section 4d is conducted in line with the requirements of applicable Turkish legislation.

During the operation phase of the Project, non-hazardous municipal solid waste will be generated mainly within the high-speed trains and at the Operator's offices, HSR control centre (in Izmir), other operational facilities including stations/gars, operation and maintenance facilities of the Operator. These municipal solid wastes will include recyclable wastes to be produced at the retail facilities, common passenger areas, etc. that will be located at the stations/gars. Hazardous and special wastes (e.g. waste oil, lubricants, waste metals/steel/concrete from rail maintenance/potential upgrade works) will also be produced during the operation phase at the maintenance sites and facilities and other operational facilities as relevant. These wastes typically include solids from mechanical cleaning of rail cars; paint chips and sandblast grit; waste paint; spent solvent and solvent sludges (from painting and cleaning); sludge from cleaning and wastewater treatment; waste oil, hydraulic and other fluids; waste metals/steel/concrete from rail maintenance/potential upgrade works; spent locomotive and signal batteries; and spent brake shoes. Hazardous wastes may also be generated/released in case of accidents, which will be responded through the Emergency Preparedness and Response Plan (EPRP). The hazardous and non-hazardous wastes produced during the operation phase will be managed in line with the Project Standards, fulfilling the requirements of national legislation relating to management of wastes. The operation phase Waste Management Plan will be developed and implemented by the Employer/Operator.

3.6. Biodiversity

The baseline biodiversity features of the Project Area including habitat and vegetation composition, terrestrial flora/fauna and aquatic species have been assessed in Q1 2021 by the following academicians to form the initial biodiversity baseline dataset:

- Flora – Prof. Dr. Hayri Duman
- Fauna – Prof. Dr. Mustafa Sözen
- Avifauna – Prof. Dr. Zafer Ayaş
- Aquatic – Prof. Dr. Aydın Akbulut

The biodiversity study area for terrestrial flora/fauna and aquatic species have been selected to encompass the railway alignment (within a 500 m corridor) and its vicinity and the quarry locations.

The width of the platform carrying the two HSR lines is 14.5 m and the direct Project footprint within which land clearance, earthworks, ground disturbing activities and superstructure works will be carried out is within the expropriation corridor which is 30 to 100 m corridor along the railway alignment. Therefore, the direct impacts on habitats and vegetation and flora/fauna elements will take place within 100 m corridor at maximum.

During the Scoping Phase of the ESIA Study, the biodiversity experts have identified the field survey locations considering the different habitat types expected along the railway alignment, location of the quarries and the proximity to/overlap with protected areas. For the terrestrial field surveys, 34 survey locations representing 12 different EUNIS habitats have been selected. For the aquatic field surveys, 24 survey locations were identified representative of water crossings (rivers/streams/creeks) along the railway alignment. The railway passes through four (4) river basins. The survey locations are grouped as follows:

- R – Locations on the railway alignment (22 stations in total)
- Q – Locations at the quarries (12 stations in total)
- F – Locations at the aquatic ecosystems (24 stations in total)

Legally Protected and Internationally Recognised Areas

The railway alignment passes through and nearby several legally protected areas and Key Biodiversity Areas (KBAs) as shown in the following maps.

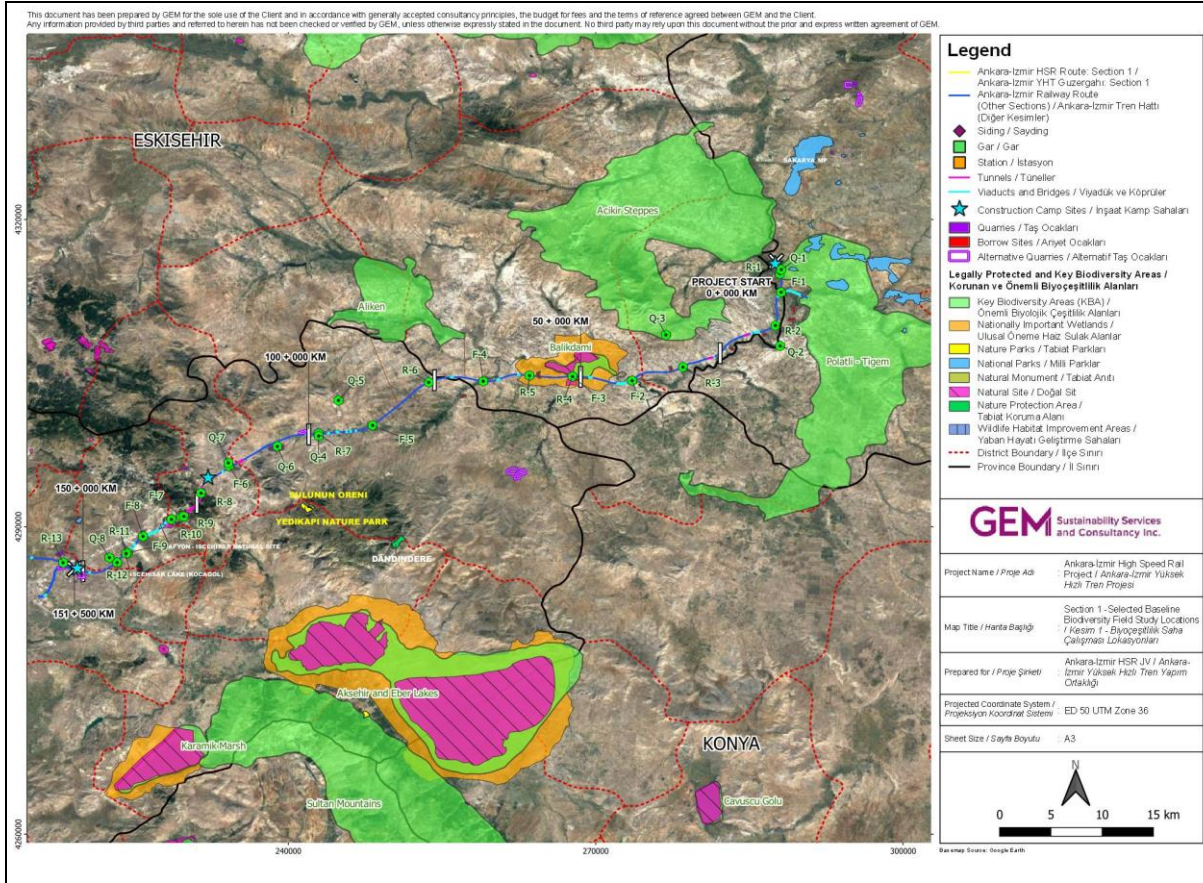
The legally protected areas overlapping with the railway alignment and the quarries are listed below:

- Balıkdami Nationally Important Wetland (Section 1) – Overlap with railway alignment for approximately 15 km between KM 45+250 – KM 59+800
- Balıkdami Natural Site (Section 1) – Overlap with railway alignment for approximately 1 km between KM 51+100 – KM 51+700
- Afyon-Iscehisar Natural Site (Section 1) – Overlap with railway alignment for approximately 0.5 km between KM 131+600 – KM 131+900
- Baskomutan Historical National Park-3 (Section 2) – Overlap with railway alignment for approximately 6 km between KM 217+900 – KM 223+800
- Spil Mountain National Park (Section 4) – Overlap with four (4) quarries located between KM 497+600 – KM 539+500

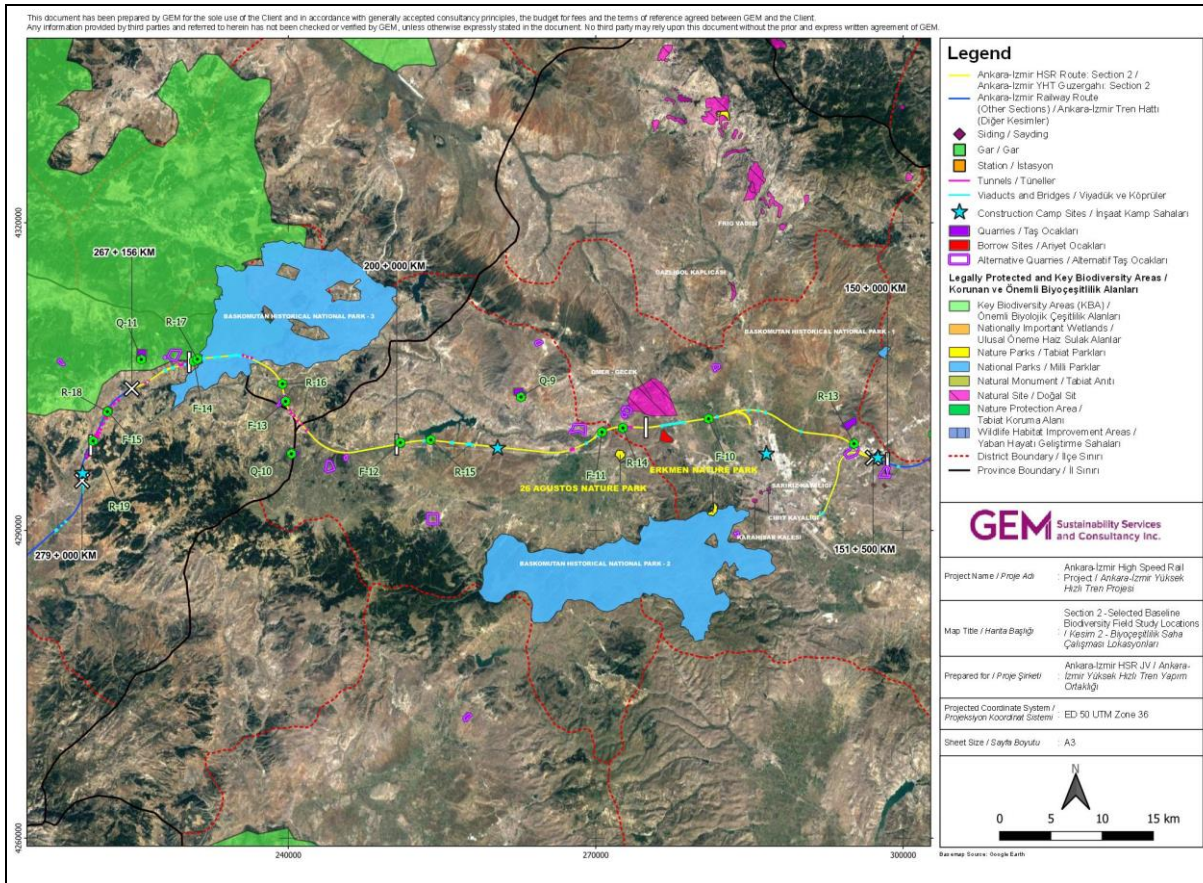
Official authorization letters will be secured from relevant conservation authorities before entry into legally protected areas. Any mitigation measure to be stipulated by the authorities will be implemented on site during construction works.

The internationally recognised areas overlapping with the railway alignment and the quarries are listed below:

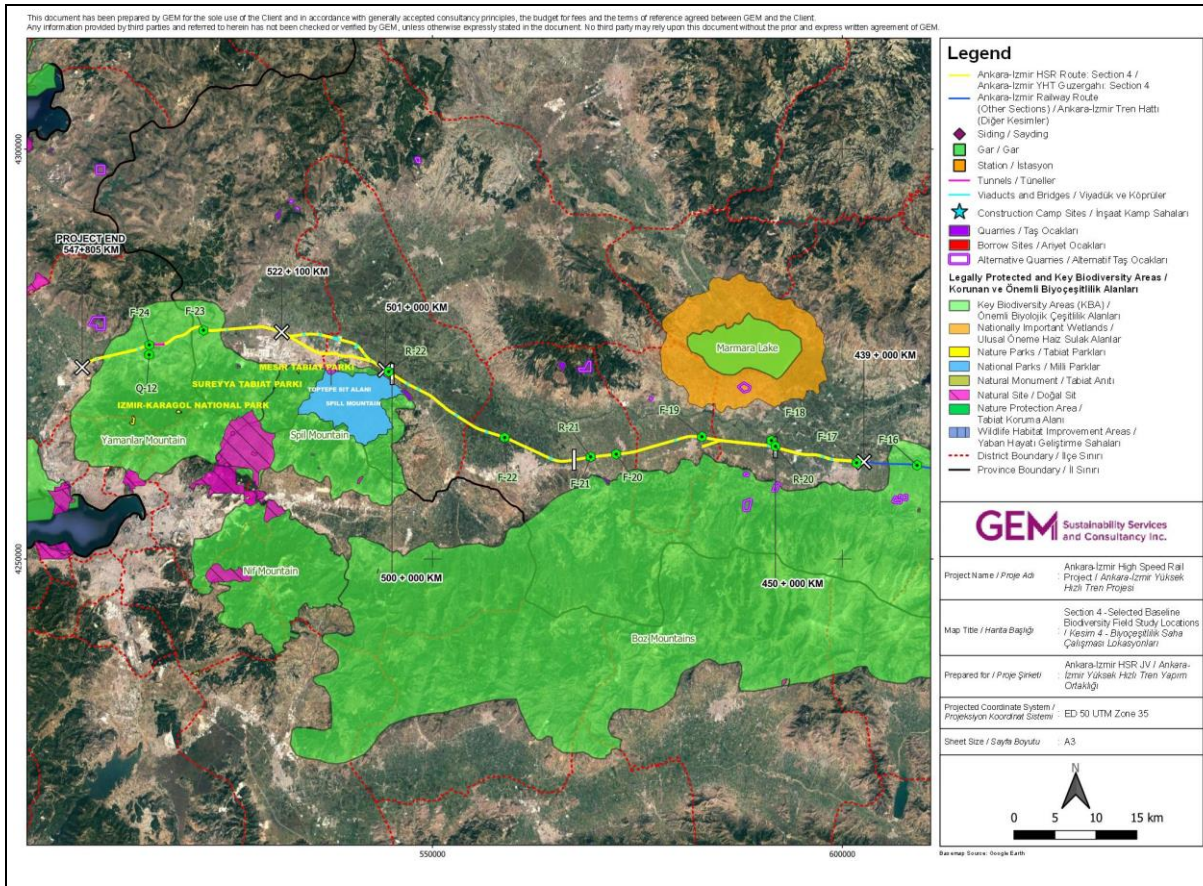
- Polatli-Tigem KBA (Section 1) – Overlap with railway alignment for approximately 2.5 km between KM 1+350 – KM 3+800 and overlap with one (1) quarry located at KM 2+050
- Balıkdami KBA-IBA (Section 1) – Overlap with railway alignment for approximately 3.5 km between KM 48+550 – KM 51+900
- Acikir Steppes KBA (Section 1) – Overlap with one (1) quarry located at KM 31+200
- Murat Mountain KBA-IBA (Section 2) – Overlap with railway alignment for approximately 5 km between KM 219+550 – KM 224+550 and overlap with one (1) quarry located at KM 231+000
- Yamanlar Mountain KBA (Section 4) – Overlap with railway alignment for approximately 15.5 km between KM 529+300 – KM 544+700
- Boz Mountains KBA (Section 3) – Overlap with one (1) quarry located at KM 472+000
- Spil Mountain KBA (Section 4) – Overlap with three (3) quarries located between KM 499+000 – KM 539+500



Section 1 – Selected Baseline Biodiversity Field Study Locations



Section 2 – Selected Baseline Biodiversity Field Study Locations



Section 4 – Selected Baseline Biodiversity Field Study Locations

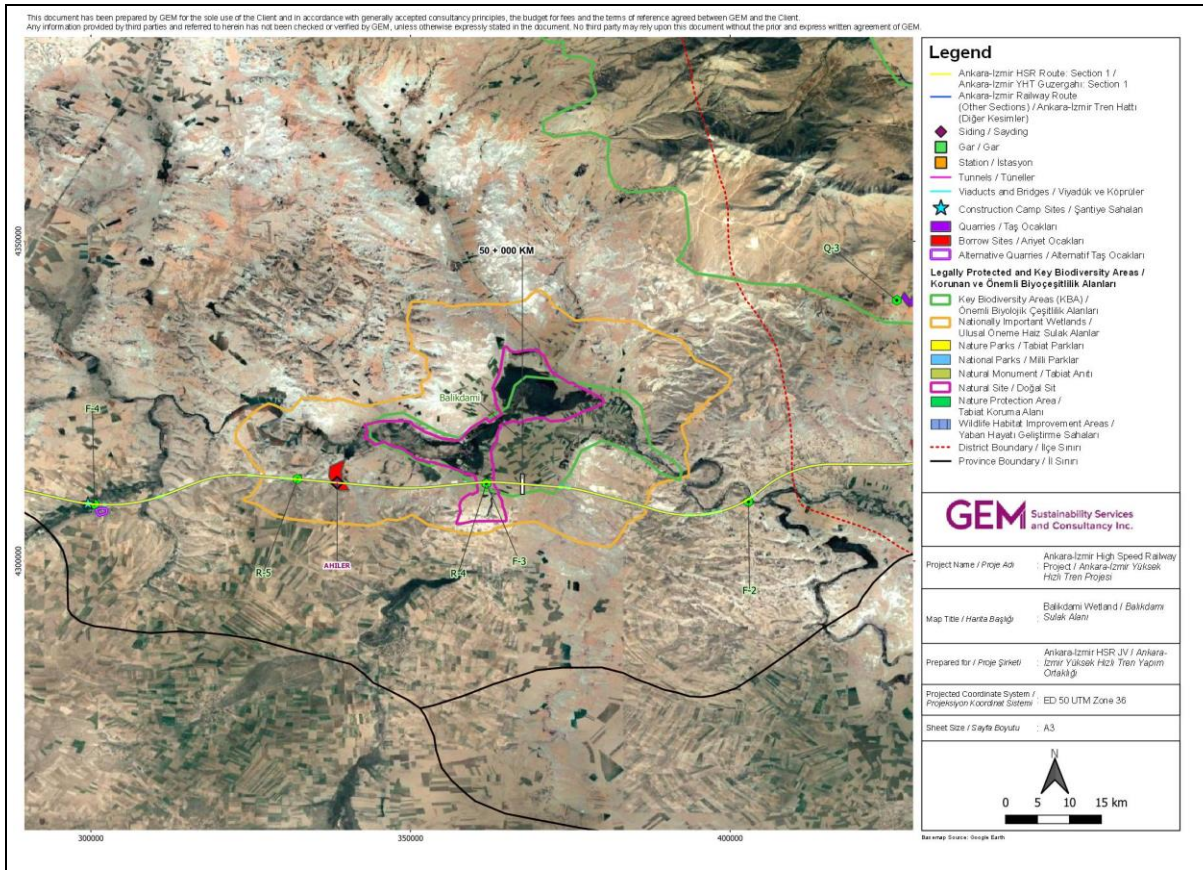
Amongst the overlapping legally protected areas, Balıkdami Nationally Important Wetland in Section 1 was registered in February 2019. A Management Plan was prepared for this wetland in June 2019; however, it was not publicly available at the time of compilation of the ESIA Report. In Turkey, there are in total 86 wetlands at the time of compilation of the ESIA Report: 14 Ramsar sites, 59 Nationally Important Wetlands and 13 Locally Important Wetlands.

Balıkdami Nationally Important Wetland (Section 1)

Item	Balıkdami Nationally Important Wetland (Section 1)
Protection Status	Nationally Important Wetland (in Turkish: Ulusal Önemli Haiz Sulak Alan)
Registry Date	07.02.2019
Total Registered Area	14,147.00 ha
Wetland Area	1,047.00 ha
Location	Eskisehir Province, Sivrihisar District, Sakarya Basin
Management Plan	In place – dated 26.06.2019
Ecosystem Services	Provisioning – water supply, grazing and fishing; Regulating – flood control, pollution control, regulating the water regime (water storage, groundwater recharge); Cultural Services – recreation and tourism (nature observation – birds, plants and butterflies; aquaculture fishing, land hunting); Supporting Services – not applicable

Source: Ministry of Agriculture and Forestry, Directorate General of Nature Protection and Natural Parks, National Wetland Inventory Management Information System (<https://saybis.tarimorman.gov.tr/>).

The railway alignment passing through Balıkdami Nationally Important Wetland, Balıkdami Natural Site and Balıkdami KBA in Section 1 is shown below. As can be seen, the railway alignment passes through the southern tip of the registered area (14,147.00 ha) avoiding the lake section.



Railway Alignment through Balıkdami Nationally Important Wetland, Balıkdami Natural Site and KBA in Section 1

Habitats

The Project Area is defined by 13 natural habitats and eight (8) modified habitats. An important part of the HSR route consists of dry and irrigated agricultural fields. For this reason, the natural habitats along the railway alignment are not continuous and observed intermittently. It should be noted that the construction activities along the railway alignment have already been started in the past by other contractors.

For the full railway alignment in Section 1, Section 2, Section 3, and Section 4, the habitat distribution within the 200 m corridor is calculated. The 200 m corridor along the rail alignment includes all permanent Project components to be built plus the temporary ones such as worker camp sites, material storage areas, waste storage areas.

- Approximately 23% by area of the full alignment is represented by natural habitats and 77% by modified habitats. Amongst the natural habitats, the dominant ones are with 13% EUNIS Habitat E1.2 (Perennial calcareous grassland and basic steppes) and 7% EUNIS Habitat E1.00 (Gypsum steppes).
- In Section 1, within the 200 m corridor, 46% by area is represented by natural habitats and 54% by modified habitats. Amongst the natural habitats in Section 1, the dominant ones are with 27% EUNIS Habitat E1.00 (Gypsum steppes) and 15% EUNIS Habitat E1.2 (Perennial calcareous grassland and basic steppes).
- In Section 2, within the 200 m corridor, 34% by area is represented by natural habitats and 66% by modified habitats. Amongst the natural habitats in Section 2, the dominant ones are 19% EUNIS Habitat E1.2 (Perennial calcareous grassland and basic steppes) and 11% EUNIS Habitat G3.5 (Pinus nigra woodland).
- In Section 3, within the 200 m corridor, 21% by area is represented by natural habitats and 79% by modified habitats. Amongst the natural habitats in Section 3, the dominant ones are 7% EUNIS Habitat E1.2 (Perennial calcareous grassland and basic steppes) and 6% EUNIS Habitat F5.2 (Maquis).

- In Section 4, within the 200 m corridor, 15% by area is represented by natural habitats and 85% by modified habitats. The majority natural habitat in Section 4 is EUNIS Habitat E1.2 (Perennial calcareous grassland and basic steppes).



**Gypsum Steppe Habitat
KM 13+400-KM 76+700**

Amongst the natural habitats, the Gypsum Steppe habitat observed at KM 13+400-KM 76+700 in Section 1 is considered as a sensitive habitat as it includes the majority of the endemic flora species (six local endemic and six regional endemic) directly observed at the Project Area. It is listed as a priority habitat under Annex I of the EU Habitats Directive.



**General View of the Quarry Q12 at
KM 539+000.00 (Maquis Habitat)**

Another sensitive natural habitat is the Maquis habitat observed at quarry location Q12 in Section 4 falling within the boundaries of Yamanlar Mountain KBA. One (1) local endemic species (*Verbascum antinori*) and one (1) regional endemic species (*Centaurea polyclada*) were observed at this area.



**General View of the Quarry Area at
KM 105+000.00 (Juniper Forest)**

The natural habitat "Coniferous woodland dominated by *Juniperus*" is observed at the direct Project footprint only at quarry location Q6 in Section 1. This habitat is listed in Annex I of the EU Habitats Directive.

Flora Species

The flora field surveys were carried out within 250 m on each side of the railway axis (within a corridor of 500 m) encompassing areas that will be directly affected by the Project activities. For the quarries, an area of 500 m x 500 m was studied.

The railway alignment between Ankara-Banaz falls within Irano-Turanian floristic region and Salihli-Menemen within Mediterranean floristic region. As a result of the field surveys, through direct observation, 313 flora species have been identified falling under 65 different families. Amongst these, the flora species of conservation importance are grouped as:

- Six (6) Local endemic species: *Glaucium secmenii*, *Alyssum niveum*, *Cephalaria aytachii*, *Verbascum gypsicola*, *Marrubium zeydanlii*, *Acantholimon gemicianum*.
- Nine (9) Regional endemic species: *Scabiosa hololeuca*, *Paronychia dudleyi*, *Achillea ketenoglui*, *Centaurea polyclada*, *Verbascum antinori*, *Scutellaria yildirimlii*, *Sideritis gulendamii*, *Salvia aytachii*, *Thymus leucostomus* var. *argilleceus*.
- 28 Widespread endemic species: *Alyssum pateri* subsp. *pateri*, *Gypsophila eriocalyx*, *Gypsophila sphaeocephala* var. *cappadocica*, *Rhamnus thymifolius*, *Genista aucheri*, *Astragalus acicularis*, *Astragalus lydius*, *Astragalus vulneraria*, *Astragalus oxytropifolius*, *Bupleurum sulphureum*, *Inula anatolica*, *Helichrysum noeanum*, *Helichrysum arenarium* subsp. *aucheri*, *Anthemis pauciloba* var. *pauciloba*, *Ptilostemon afer* subsp. *eburneus*, *Jurinea pontica*, *Cousinia stapfiana*, *Cirsium sipyleum*, *Campanula argaea*, *Campanula lyrata* subsp. *lyrata*, *Verbascum vulcanicum*, *Stachys cretica* subsp. *smyrnaea*, *Nepeta congesta* var. *congesta*, *Salvia cadmica*, *Salvia cryptantha*, *Salvia wiedemanni*, *Satureja wiedemanni*, *Phlomis armeniaca*.
- One (1) not endemic but rare species: *Noaea minuta*.

Terrestrial Fauna Species

The terrestrial fauna studies were carried out at 34 survey locations:

- R – Locations on the railway alignment (22 stations in total)
- Q – Locations at the quarries (12 stations in total)

At each location, the area was surveyed at least 45 minutes to determine the presence of fauna groups at the survey station. The faunal composition at the Project Area and its vicinity have been identified through direct observation, animal traces, animal tracks, burrows, animal droppings, food remains, animal calls etc. Previous field experiences at the vicinity of the Project Area and literature data were also used to identify fauna species presumed to be present at the Project Area.

Avifauna Species

The avifauna studies were carried out at all the 58 survey locations:

- R – Locations on the railway alignment (22 stations in total)
- Q – Locations at the quarries (12 stations in total)
- F – Locations at the aquatic ecosystems (24 stations in total)

In total, 126 avifauna species are presumed to be present at the Project Area. The presence of each avifauna species at the 58 stations have been further grouped as direct observation or presumed presence based on literature-habitat preference. Amongst the presumed present species, Egyptian Vulture is categorised as Endangered (EN) as per the IUCN and Turtle Dove as Vulnerable (VU).

Amongst the 58 survey stations, ten (10) have been considered as important areas for bird species due to potential use of the sites as feeding, breeding and sheltering grounds.

Aquatic Species

The aquatic biodiversity studies were carried out at 24 survey locations. The railway alignment passes through four (4) river basins.

As part of the aquatic biodiversity studies, algae, zooplanktons, benthic organisms, and fish species were identified at the Project Area through sampling activities (using plankton scoop, dredging with standard bottom scoop for benthic organisms, electro shocker for fish species).

None of the algae, zooplankton, and benthic species identified at the Project Area are endemic or rare or require special protection measures.

In total 23 endemic fish species have been listed amongst which ten (10) have been directly observed within the scope of the ESIA study. The rest are either presumed to be present or have been observed in past field studies of the experts.

Species of Conservation Importance

The "Species of Conservation Importance" have been identified through screening the conservation status of the terrestrial flora/fauna and aquatic species identified at the Project Area and its vicinity. The species falling under at least one of the below categories are considered as "Species of Conservation Importance":

- Local and regional endemic¹⁰ flora species
- Not endemic but rare flora species
- Endemic terrestrial fauna species

¹⁰ Endemic – "restricted to a particular area: used to describe a species or organism that is confined to a particular geographical region, for example, an island or river basin." There are three categories of endemism: wide-spread endemic, regional endemic and local endemic. Regional endemic species show distribution in a specific region of a country (e.g. Mediterranean Region in Turkey).

- Endemic fish species
- Fauna species falling under Annex II and/or Annex IV of the EU Habitats Directive¹¹
- Fauna species identified to have nests within the Project Area
- Bird species falling under Annex I of the EU Birds Directive¹²
- Species falling under “threatened categories” (VU – Vulnerable or EN – Endangered or CR – Critically Endangered) under the IUCN Red List (Global or National)
- KBA qualifying species

The species screened as per the above criteria are given in the ESIA Report. It should be noted that explicit reference is provided for species that have been “directly observed” during the field surveys and those that have been listed as “presumed to be present” based solely on literature data/habitat preference.

Invasive Alien Species

The Convention on Biological Biodiversity defines invasive species (IAS) as alien species which threaten ecosystems, habitats, or other species by causing economic or environmental damages via its establishment and invasion. Non-native species that pose a risk of spreading quickly can create significant environmental and socio-economic impacts (for example, crop pests, disease vectors, new predators). Invasive plants are often called weeds, whilst invasive animals are commonly referred to as pests. Invasive species can also include Living Modified Organisms (Genetically Modified Organisms), which do not naturally occur anywhere.

IAS are the most common threat to amphibians, reptiles, and mammals on the IUCN Red List; they may lead to changes in the structure and composition of ecosystems detrimentally affecting ecosystem services, human economy and wellbeing. IAS are such a problem that Aichi Biodiversity Target 9 and one clause of UN Sustainable Development Goal 15 – Life on Land specifically address the issue.

The movement of people and goods around the world increases the opportunity for introduction of IAS. Turkey is home to 14 of the worst alien species, which are listed in the 100 of the World’s Worst Invasive Alien Species, published by the IUCN. The 14 of the worst alien species found in Turkey are as follows¹³: Eastern American mosquito fish (*Gambusia holbrooki*), Warty Comb Jelly or Sea Walnut (*Mnemiopsis leidyi*), Veined Rapa Whelk (*Rapana venosa*), The Prussian carp or silver Prussian Carp (*Carassius gibelio*), Zebra Mussel (*Dreissena polymorpha*), Water Hyacinth (*Eichornia crassipes*), Killer Algae (*Caulerpa taxifolia*), Rainbow Trout (*Oncorhynchus mykiss*), The Crucian Carp (*Carassius Carassius*), Mozambique tilapia (*Oreochromis mossambicus*), Nutria (*Myocastor coypus*), Red-eared Slider (*Trachemyscripta elegans*), Ship Rat (*Rattus Rattus*) and African Sharptooth Catfish (*Clarias gariepinus*).

The Global Register of Introduced and Invasive Species (GRIIS) platform includes approximately 700 entries for species in Turkey and categorises the origin of the species as alien, native/alien or cryprogenic/uncertain. It should be noted that not all species entered to GRIIS have been verified. This said, the academicians that undertook the 2021 baseline field surveys have not reported presence of any IAS within the Project Area apart from the directly observed three (3) introduced/invasive fish species: Prussian Carp (*Carassius gibelio*), Eastern American mosquito fish¹⁴ (*Gambusia holbrooki*), and Topmouth gudgeon (*Pseudorasbora parva*).

The potential pathways for introduction of IAS that could be relevant to the Project include movement of goods and habitat restoration and landscaping activities. IAS have an adverse effect on biological diversity, ecosystem functioning, socio-economic values and/or human health in invaded regions. Taking into account that along the

¹¹ **EU Habitats Directive Annex II species** (about 900): core areas of their habitat are designated as Sites of Community importance (SCIs) and included in the Natura 2000 network. These sites must be managed in accordance with the ecological needs of the species.

EU Habitats Directive Annex IV species (over 400, including many Annex II species): a strict protection regime must be applied across their entire natural range within the EU, both within and outside Natura 2000 sites.

¹² **EU Birds Directive Annex 1**: 194 species and sub-species are particularly threatened. Member States must designate Special Protection Areas (SPAs) for their survival and all migratory bird species.

¹³ Addressing of Invasive Alien Species Threats in Terrestrial Areas and Inland Waters in Turkey (TERIAS) Project (<http://teriasturk.org/invasive-alien-species/>).

¹⁴ It is one of the target species under the TERIAS Project: <http://teriasturk.org/eastern-american-mosquito-fish/>.

HSR alignment there are agricultural and pasture lands and also natural habitats, the invasive flora species which are widespread in Turkey and could be observed along the Project route¹⁵ are Black Locust (*Robinia pseudoacacia*) and Tree of Heaven/Chinese sumac (*Ailanthus altissima*).

The presence of IAS will be monitored during construction and rehabilitation works and measures will be in place (including appropriate eradication program if spread of IAS is observed) to mitigate potential impacts on habitats and species.

Ecosystem Services

Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organised into four types: (i) provisioning services, which are the products people obtain from ecosystems (such as food, timber, medicines, fiber, and fresh water); (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes (such as climate regulation, disease control, erosion prevention, water flow regulation, and protection from natural hazards); (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems (such as recreation, spiritual values, and aesthetic enjoyment); and (iv) supporting services, which are the natural processes that maintain the other services (such as primary production, nutrient and water cycles).

Related to the AIHSR Project the following ecosystem services are identified:

Provisioning Services:

- Agricultural areas and fruit orchards provide food to and support livelihood of the local people.
- Wetlands and water bodies provide feeding and breeding grounds for fauna elements (birds, amphibians and mammals) and the flora species at these areas also provide feeding ground for cattle and sheep.
- Gypsum steppe habitats are the richest in terms of flora diversity. They also play crucial role for grazing activities.
- Running and still water bodies provide water for agricultural activities, for animals and also regulate the water regime in the region.

Regulating Services:

- The vegetative cover and forests are carbon sinks.
- The vegetative cover help control erosion and subsequent potential flooding.
- The vegetative cover reduces sediment transport to water bodies and transport rainwater to underground through infiltration.

Supporting Services:

- The natural habitats support continuity and sustainability of species of conservation importance including endemic flora and fauna species.

Chapter 11 of the ESIA Report on Socio-economy presents how the local populations benefit from the ecosystem services. The Project passes through 7 provinces and there are in total 207 Project Affected Settlements (PASs).

The permanent and temporary land use requirements of the Project (e.g. agricultural lands, pasture lands, forest lands) are described in Chapter 5 of the ESIA Report on Land Use and Geology.

As given in Chapter 11 of the ESIA Report, the total area within the expropriation corridor of the Project sums up to 3,556.50 ha. Approximately 63% (2,247.45 ha) of the land (in terms of area) and %76 (8,647 parcels) of the parcels (in terms of parcel numbers) acquired/will be acquired within the expropriation corridor of the Project is classified as privately-owned, which are assumed to be utilised mainly for agricultural purposes. The details of the settlements along the HSR alignment with affected agricultural lands, pasture lands and forest parcels within the expropriation corridor are given in Chapter 11.

¹⁵ Türkiye'deki En Tehlikeli İstilaç Yabancı Türler ve Türkiye'deki Zehirli Denizel Yabancı Türler Raporu, Ekim 2018, 2. Basım (URL: https://www.istilacilar.org/PDF/IAS_TR_b_edit_v4_updated.pdf).

The vineyards (EUNIS Habitat FB.4) and evergreen orchards and groves (EUNIS Habitat G2.9) are present in Section 4 of the HSR. As previously indicated, agricultural areas are distributed (EUNIS I1.2) along the HSR alignment, spread between the natural habitats.

For the management of economic displacement impacts of the Project-related land acquisition, RAP, including the livelihood restoration measures, will be implemented in line with IFC PS5.

The household surveys conducted with the Projected Affected People (PAPs) revealed the following information on use of ecosystem services:

- The PAPs benefit from the forest to take the following products: cone, mushrooms, wood, herbs, daisy, and thyme.
- The most produced agricultural products in the PASs are wheat, barley, corn, sugar beet, feed crops, poppy, and grape.
- Fishing has not been reported by any of the PAPs amongst livelihood activities.
- In nine (9) PASs, beehive-owner households were identified.

The mitigation measures to be implemented as part of biodiversity conservation and livelihood restoration will mitigate potential Project impacts on ecosystem services.

Preliminary Critical Habitat Assessment

A preliminary Critical Habitat Assessment is discussed below based on available data to date that include the result of one field campaign. A final and more comprehensive Critical Habitat Assessment will be prepared as a separate document, including also the results of the second field campaign, to confirm the presence and distribution of Critical Habitats and Natural Habitats within the study areas according to IFC PS6 and relevant Guidance Note 6 (June 2019).

IFC Guidance Note 6 (GN54, June 2019) highlights that the Projects located within internationally and/or nationally recognised areas of high biodiversity value such as KBAs may require a critical habitat assessment.

IFC PS6 defines critical habitats as areas with high biodiversity value, including:

1. habitat of significant importance to Critically Endangered and/or Endangered species (Criterion 1);
2. habitat of significant importance to endemic and/or restricted-range species (Criterion 2);
3. habitat supporting globally significant concentrations of migratory species and/or congregatory species (Criterion 3);
4. highly threatened and/or unique ecosystems (Criterion 4); and/or
5. areas associated with key evolutionary processes (Criterion 5).

Numerical thresholds have been defined for the first four critical habitat criteria. For Criterion 5, there are no numerical thresholds. Best available scientific information and expert opinion should be used to guide decision-making with respect to the relative “criticality” of a habitat in these cases.

In light of the findings of the biodiversity baseline studies conducted at the Project Area and its vicinity, a preliminary critical habitat assessment is conducted as detailed in the ESIA Report using numerical thresholds identified as per IFC PS6 Guidance Note (June 2019) to identify the biodiversity elements to potentially trigger CH.

A summary of the CH-qualifying species within the Project Area is presented in the ESIA Report. It should be noted that the presence of species that qualify for CH in the Project Area does not necessarily mean that the Project will impact them. The overall impacts on the species can range from negligible to temporary to those that are significant depending on the specific circumstances.

The CH designated biodiversity features are summarised below:

Critical Natural Habitats

- Section 1 – Gypsum Steppe (at KM 13+400 – KM 76+700)

- Section 1 – Juniper Woodland (at Quarry Location Q6)
- Section 1 – Balikdami Nationally Important Wetland (within Gypsum Steppe Habitat at KM 45+250 – KM 59+800)

Species

- Section 1 – CH qualifying flora species directly observed at Gypsum Steppe Habitat (13 flora species)
- Section 3 – Potential CH trigger flora species (6 flora species presumed present)
- Section 4 – CH qualifying flora species present within Maquis habitat (at Quarry Q12 located within Yamanlar Mountain KBA) (1 flora species directly observed)
- Section 1 – Potential CH trigger avifauna species (presumed present within the Project Area) (1 avifauna species)
- Potential CH trigger fish species (1 fish species directly observed, 3 fish species previously recorded by the experts and 8 fish species presumed present as per literature information)

It should be noted that the construction activities at Section 1 took place between 2012-2018. Direct impacts at the Project footprint took place, construction of some of the permanent engineering structures had started in the past. As of Q3 2021, the construction activities at Section 3 of the rail alignment are ongoing by other contractors.

The ESIA Report provides a review of CH designated biodiversity features as per IFC PS6:

- Clause 17 – the Project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values
- Clause 18 – the Project is designed to achieve net gains of biodiversity values for which the critical habitat was designated

In line with IFC PS6, a Project Biodiversity Action Plan (BAP) will be designed to achieve net gain of biodiversity values for which the CH is designated. Through implementation of BAP, the Project will achieve no net loss, and if possible, net gain of CH qualifying biodiversity features and demonstrate this through robust monitoring using metrics and adaptive management approach.

Biodiversity Management Strategy

The biodiversity management strategy of the Project is to be built upon considering the following key aspects:

- **Scale of the Project** – the HSR alignment extends through two phytogeographical regions, namely Mediterranean and Irano-Turanian. Therefore, habitat and species diversity changes along the alignment.
- **Linear nature of the Project** – the rail projects share several characteristics with roads and with power lines when the trains are electric. Railways have lower traffic intensity, but trains usually have much higher speeds than road vehicles, and the electric structures in railways are typically lower than in most power lines.
- **Brownfield nature of the Project** – retrospective impacts dating back to 2012-2018 period along the alignment due to suspended infrastructure works, ongoing construction works as of Q3 2021 within Section 3, Section 4a, and Section 4d by previously selected contractors.
- **Existing and Reasonably Foreseeable Projects in the vicinity of Ankara-Izmir HSR** – Ankara-Afyon-Izmir conventional train line is in operation and extends along Ankara-Izmir HSR Project alignment. The feasibility and sustainability of any biodiversity conservation effort should take into account the existing and reasonably foreseeable future developments in the vicinity of Ankara-Izmir HSR Project such as Ankara-Izmir Motorway, Afyonkarahisar-Antalya-Alanya Motorway, and Kisladag Gold Mine (within Section 3 of Ankara-Izmir HSR) to name a few.
- **Overlap with KBAs** – there are in total 305 KBAs in Turkey and the rail alignment overlaps with buffer zones of 5 KBAs as summarized above.

- **Overlap with Balikdami Nationally Important Wetland** – in Turkey, there are in total 86 wetlands at the time of compilation of this ESIA Report: 14 Ramsar sites, 59 Nationally Important Wetlands and 13 Locally Important Wetlands¹⁶. This wetland was registered in February 2019 and a Management Plan was prepared for this wetland in June 2019. The rail alignment crosses the southern tip of the registered wetland area and avoids the lake section.

The Project BMP will establish the roles and responsibilities, mitigation measures, monitoring, training, review, and auditing process.

The Project BAP will define habitat- and species-specific actions to achieve no net loss and net gain targets for CH designated biodiversity features. The success of BAP implementation and achieving net gain outcomes lies upon establishing a robust biodiversity monitoring and reporting mechanism including specific metrics to benchmark overall performance.

The key elements to consider for the successful implementation of Project BAP are:

- **Development of Specific Quantifiable Performance Metrics for Net Gain** – the metrics to be used should ideally assess both quantity and quality of biodiversity features. Net gain efforts are long-term and require intervention as necessary to achieve the targets.
- **Availability of Potential Offset Areas** – to implement net gain measures, suitable offset areas might be required outside the expropriation corridor. Such areas will be identified in liaison with the Project Owner and probably will be amongst the State-owned treasury lands. As net gain achievement is a long-term management concept, it is important to ensure that the offset location will not be used for any other purposes in the long run and will not be part of a land acquisition process for other potential developments in the vicinity.

A biodiversity monitoring and evaluation program will be established as part of BMP/BAP development to ensure achievement of PS6 requirements. Some key aspects of the monitoring approach are highlighted below:

- Biodiversity monitoring program should be developed for long-term to validate the accuracy of the predicted impacts and risks to biodiversity values posed by the Project and the predicted effectiveness of biodiversity management actions.
- Biodiversity monitoring should define performance thresholds or triggers for adapting mitigation and management so that the requirements of IFC PS6 can be achieved.
- Adaptive responses and measures to triggers should be defined, whilst acknowledging that the mitigation and management options may change over time due to knowledge gained through experience, changing conditions and new findings arising from the monitoring program or from independent sources.
- The monitoring program should be updated to integrate these findings and to continually improve on the existing management of biodiversity components. The results of the monitoring program should be reviewed regularly.
- If the outcome of the monitoring program indicate that the actions specified are not being implemented as planned, the reasons for failure need to be identified and rectified.
- Stakeholder engagement with recognized and credible conservation organizations and/or academic institutions on the measures and monitoring approach under the BMP/BAP.

¹⁶ Source: Ministry of Agriculture and Forestry, Directorate General of Nature Protection and National Parks (<https://www.tarimorman.gov.tr/DKMP/Menu/31/Sulak-Alanlar>)

3.7. Socio-economy

The ESIA studies for the identification, assessment, and management of the potential socio-economic impacts of the Project have been performed by a team of qualified social experts (“social team”) led by CE Management Consultancy and Trade Ltd. Co.

The land acquisition process The social study area of the Project includes the settlements affected from Project-related land acquisition along the railway route between Ankara (Polatli district) and Izmir (Menemen district) and the settlements located in the proximity of the associated/off-site construction facilities including quarries, material borrow sites, camp sites, etc (Project Affected Settlements – PASs). Number of settlements affected by Project-related land acquisition is provided below at section, province and district levels:

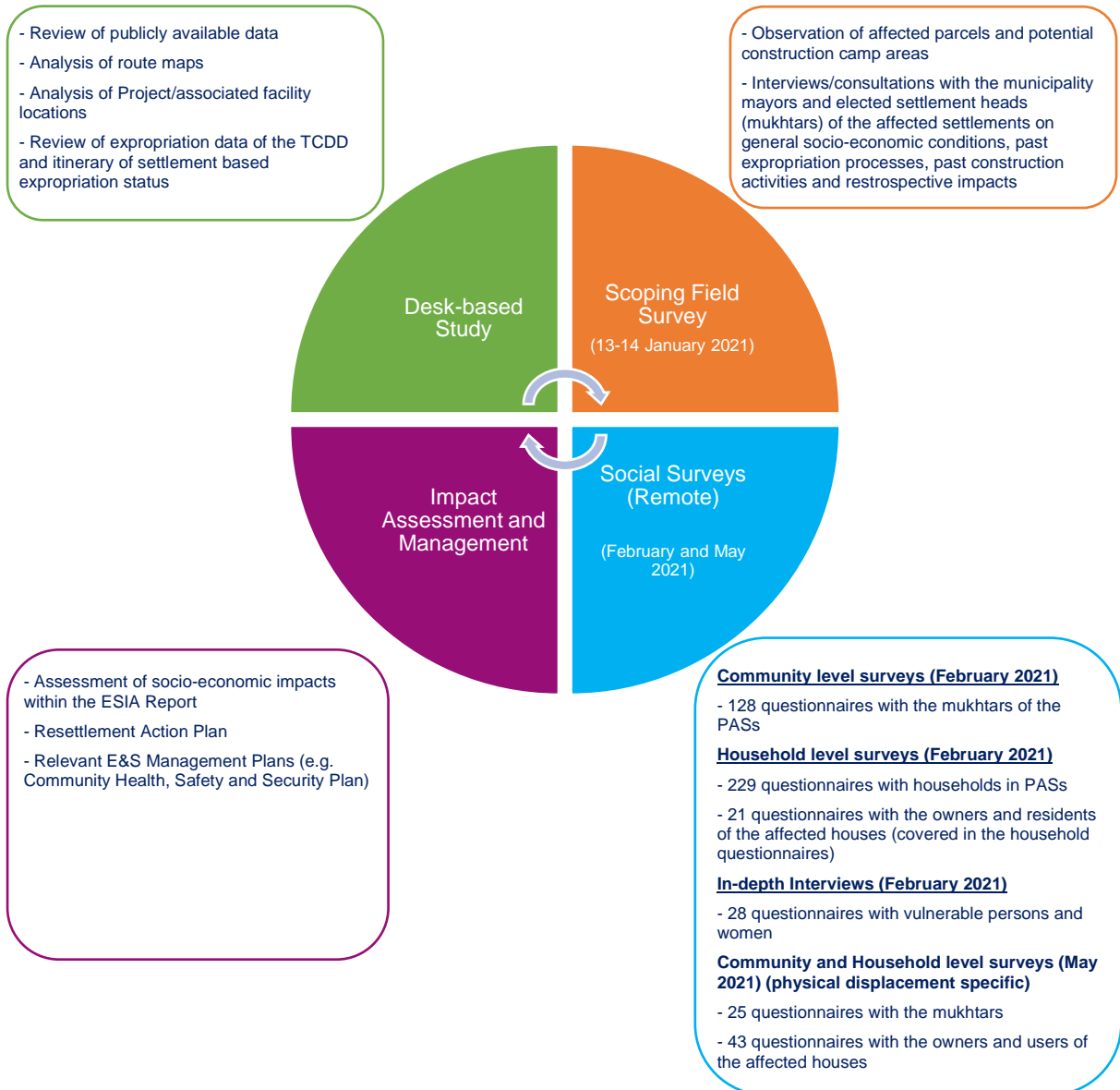
Section-based		Province-based		District-based			
Section	Number of PASs	Province	Number of PASs	District	Number of PASs		
Section 1	47	Ankara	4	Polatli	4		
		Eskisehir	12	Gunyuzu	4		
		Afyonkarahisar	66	Sivrihisar	8	Emirdag	16
				Bayat	6	Iscehisar	3
				Merkez	29		
Section 2	47	Kutahya	4	Sinanpasa	12		
				Dumlupinar	4		
				Usak	48		
Section 3	71	Manisa	67	Banaz	19		
				Merkez	10		
				Ulubey	7		
				Esme	12		
				Alasehir	18		
				Kula	3		
Section 4	42	Izmir	1	Salihli	19		
				Ahmetli	4		
				Turgutlu	9		
				Sehzadeler	6		
				Yunusemre	8		
				Menemen	6		
4 Sections – 207 PASs		7 Provinces – 207 PASs		21 Districts – 207 PASs			

A comprehensive (remote¹⁷) social survey program has been applied as part of the ESIA (in February and May 2021) in order to collect data/information on the socio-economic conditions of the settlements, retrospective land acquisition and construction impacts including impacts on assets (e.g. residential houses, commercial structures) and livelihoods of the local communities, and feedback/input on the grievance mechanisms to be established for the Project. The community level surveys of February 2021 targeted full census of the PASs and the household surveys were based on representative sampling technique. The community and household level surveys of May 2021 targeted full census of the affected houses in Section 1, 2, 4a, 4b and 4c.

The social surveys have set forth that some of the Project Affected Persons (PAPs) have already experienced construction phase impacts as construction works started and remained unfinished (in 2018) in the PASs in Section 1 and Section 2. Unfinished construction works have caused impacts on life conditions and resulted in access restrictions in some of the settlements (e.g. health and safety concerns due to construction traffic using the village roads, damage on village access roads due to suspension of construction works in 2018). Also, majority of the land acquisition required for the Project has been completed between 2012 and 2018 by the TCDD in line with the Expropriation Law (Law No. 2942, 1983). Since the construction works have started and reached a certain point in Section 1 and Section 2 and ongoing in Section 3, Section 4a and Section 4d, the experiences and opinions of the local people have been consulted to evaluate the impacts through a participatory impact assessment method.

The remaining expropriation works along the HSR route will be conducted/finalised by the governmental agency responsible from Project-related expropriation works in line with the Expropriation Law (Law No. 2942, 1983) (responsibilities for future expropriation works will be clarified between AYGM and TCDD) consistent with the Construction Contract.

¹⁷ Social surveys were conducted via telephone as per the IFC’s Interim Advices for IFC Clients on Safe Stakeholder Engagement in the Context of COVID-19 (2020).



The Project Owner has avoided economic and physical displacement to the extent possible during the route selection process in order to both mitigate socio-economic impacts of the Project and reduce expropriation related costs of the Project. This said, based on the land acquisition data and outcomes of the surveys, it has been identified that the Project has caused physical displacement due to affected residential houses and economic displacement mainly due to affected agricultural and pasture lands with some further limited impact on structures with potential commercial uses.

As per the current design, in 7 provinces and 21 districts, there are 207 settlements (villages/neighbourhoods) affected from Project-related land acquisition. Number of buildings (with demolished and present) affected/to be affected within the expropriation corridor is 210. Among the affected residential buildings, 68 have been demolished (32%) and 142 are present (68%) according to the expropriation data of the authorities, most recent satellite imagery and information obtained through the RAP surveys conducted in February and May 2021¹⁸

In addition, to the residential buildings, there buildings and structures with potential commercial use (e.g. greenhouses, dairy farms, etc.) affected/to be affected from the Project-related land acquisition. These structures are considered and compensated as part of the valuation process conducted as per the Expropriation Law of Turkey (Law. No. 2942, 1983). Where applicable, depreciation is deducted for the structures. According to the expropriation data of the authorities, most recent satellite imagery and information obtained through the RAP surveys conducted in February and May 2021, total number of affected buildings with potential commercial use is 43 (18 demolished and 25 present according to the most recent satellite imagery).

It should be noted that EPs have not been prepared yet or will be reprepared for certain parts of the HSR. Once the EPs and the subsequent SIRs are prepared, information on the number of affected parcels, buildings and PAPs will be updated in the post financial close period of the Project.

Local revisions are/can be done by the TCDD on the route during the site implementation stage to leave the buildings out of the construction corridor (to avoid physical displacement) even though they were initially located within the expropriation corridor of the Project. The RAP will be implemented for the management of impacts on physically and economically displaced persons/households in line with the objectives and requirements of IFC PS5.

Total area within the expropriation corridor of the Project sums up to 3,556.50 ha. Approximately 63% (2,247.45 ha) of the land (in terms of area) and %76 (8,647 parcels) of the parcels (in terms of parcel numbers) acquired/will be acquired within the expropriation corridor of the Project is classified as privately-owned, which are assumed to be utilised mainly for agricultural purposes. Besides agricultural parcels, there are 421 pasture parcels (3.7%) and 88 forest parcels (0.8%) affected/to be affected from the Project, which are limited when compared to privately-owned parcels.

The main income sources in the settlements affected from the Project-related land acquisition include agriculture, animal husbandry, retirement pension, wage, salary earning, self employment, rental income, social aid, seasonal agricultural working and bank interest. Measures have been developed in the ESIA report for the management of economic impacts due to impacts (e.g. land loss, fragmentation) on agricultural lands, pasture lands, forest lands, etc., access restricts, traffic related impacts, impacts on population and demographics, worker influx, impacts on infrastructure and services and vulnerable groups/persons. Engineering structures (overpasses, underpasses, culverts as described in the ESIA Report – Chapter 1) will be constructed to ensure that access of PAPs between fragmented parcels is not hindered/restricted. The RAP will be implemented to restore livelihoods of the PAPs affected from land loss and/or temporary access restrictions that will stem from the construction activities.

In settlements, where village/ neighbourhood roads remain affected/blocked and/or health and safety risks prevail due to uncompleted construction works previously conducted in the scope of the Ankara-Izmir HSR Project, repair and improvement works will be prioritised in the construction schedule by the Contractor if feasible under the scope of Contractor's works and where permitted by the related governmental authorities. Relevant measures will be incorporated to the Community Health, Safety and Security Management Plan to be developed and implemented by the Contractor.

¹⁸ An official list of affected/to be affected buildings by the Project has not been available at the time the ESIA Report was compiled.

The concerns and issues relevant to the ongoing infrastructure works being conducted by other contractors in Section 3a, Section 3b, Section 4a, and Section 4d in accordance with the requirements of the national legislation have been captured through the social surveys conducted with the settlement heads and households in these sections. Prior to start of superstructure works in Section 3a, 3b, 4a and 4d (at the time these sections of the Project will be handed over to the Contractor for the superstructure works), any outstanding/ongoing/ retrospective issues, impacts, risks and/or grievances in Sections 3a, 3b, 4a and 4d related to socio-economic impacts due to activities of other contractors that completed the infrastructures works in these sections will be assessed by an E&S Audit to be carried out by the Contractor.

During the operation phase, the Project will enhance connectivity and access to job and touristic opportunities in the region providing benefits for local employment in a variety of sectors (e.g. marble industry in Iscehisar district in Afyonkarahisar; education, logistics, tourism and real estate sectors in the cities crossed by the HSR). The cities and district centres with positive population growth, including Ankara, Afyonkarahisar (Emirdag, Iscehisar and Merkez districts), Manisa and Izmir (Menemen district and other districts to be connected to the HSR through the intercity rail line) will potentially continue the current urbanisation process in the next decades with receiving further migration. Also, there may be temporary population increases in the cities and districts connected with the HSR as the Project will potentially promote tourism in the region. This will result in the transformation of the existing land use types and further development of the service and real estate sectors. Besides the employment within the HSR operations and at the O&M facilities, local economy at the settlements located close to the station/gar sites (Afyonkarahisar, Usak, Manisa and Izmir provinces and Emirdag, Salihli ve Turgutlu districts) would benefit from the developing sectors. Especially, the city and district centres close to the stations and gars, are likely to be the centre of potential positive economic impacts, while there will be the risk of unplanned urbanisation and inadequacy of infrastructure services, which is to be taken into consideration and managed by the central and local administrations in the long term. For the operation phase, detailed planning of the O&M procurement requirements (goods, materials, and services) and supply mechanisms will be done by the Employer and the Operator in due course. The procurement needs for the HSR operations and the services to be provided at the stations/gars will result in long-term positive economic impacts.

The SEP and RAP will be implemented, together with the specialised measures to be developed for vulnerable groups, to mitigate Project's potential adverse impacts on them and enhance Project benefits. The list of vulnerable persons identified through the ESIA surveys is kept in the Project database, and will be updated as necessary throughout the Project.

Throughout the Project life, the SEP, including an External Grievance Mechanism as per IFC PS1, will be instrumental in managing all types of socio-economic impacts of the Project. During the construction phase, as part of SEP implementation, the Contractor will assist and collaborate with the Employer to communicate with the local authorities and village/neighbourhood mukhtar prior to entry to the Project site to ensure management of any grievances that could stem from the activities of the previous contractors. Any grievance, feedback or request received from the stakeholders regarding the retrospective social impacts due to suspended/incomplete construction activities will be recorded by the Contractor (if received) and conveyed to the Employer.

The implementation of the SEP throughout the operation phase of the Project will be under the responsibility of the Employer/Operator.

3.8. Labour and Working Conditions

The infrastructure and superstructure works of the Ankara-Izmir HSR Project requires involvement of a significant number of construction personnel under the organisation of the Contractor and subcontractors. It is anticipated that several lower tier subcontractors will be involved in the Project at different phases of the construction based in several construction camp sites. In addition to the work sites along the railway corridor and construction camp sites, the main Project work sites will include quarries, material borrow sites, concrete plants (if located outside the railway corridor and construction camp sites), excavated material storage sites (if located outside the railway corridor, and route of electrification infrastructure.

Working hours and shifts will be regulated in compliance with the requirements of the national Labour Law (Law No. 4857, 2003), as summarised below:

- The work week is foreseen to comprise 6 working days of 7.5 hours each for a total of 45 work hours per week, which is the legal minimum requirement for full-time labour employment as per the national Law.
- Employees will have one rest day per week as mandated by the Labour Law.
- Where needed and contingent on the employee's consent, overtime work will be regulated and compensated in accordance with the Labour Law, up to the legal upper limit of 11 hours per day.
- Single shifts are foreseen to be used throughout the project. However, additional shifts would be organised based on need, with the employees allocated to said additional shifts working within the legal limits.

The Contractor will develop and implement a Project-specific Human Resources (HR) Policy as well as Camp Site, Subcontractor and Labour Management Plans (covering the management of risks stemming from Project's supply chain) and Internal Grievance Mechanism in line with the requirements of IFC PS2. Through compliance with the requirements of the Labour Law (Law No. 4857, 2003) and implementation of the HR Policy and related management plans, the potential risks and/or impacts on Project personnel associated with labour and working conditions will be managed in line with the Project Standards.



The works to be undertaken as part of land preparation and construction phase of the Project involves general and job-specific hazards, which may cause OHS risks and impacts for Project's direct and contracted personnel.

The Contractor will develop and implement a Project-specific OHS Plan and specific OHS procedures for the management of Project-related OHS risks in line with the Project Standards. Through compliance with the requirements of the OHS Law (Law No. 6331, 2012) and implementation of the OHS Plan and procedures by the Contractor and subcontractors, the potential OHS risks and/or impacts on Project personnel associated with labour and working conditions will be managed in line with the Project Standards.

The OHS risks due to emergency situations will be managed through development and implementation of a Project-specific EPRP. COVID-19 pandemic related risks on Project personnel will be managed through a separate COVID-19 EPRP that will be prepared in line with the Interim Advice of IFC (May 2020) for IFC Clients on Developing a COVID-19 EPRP.

Due to the high number of potential lower-tier subcontractors to be involved in the Project, additional management, training and monitoring measures are anticipated to be required to ensure, to the extent possible, that the OHS performance of the Project subcontractors consistently fulfils the requirements of Project Standards. Especially, management of subcontractors through a well-established subcontractor management system is of utmost importance to cascade Contractor's OHS requirements to main and lower tier subcontractors (through contractual requirements covering implementation, training and monitoring aspects as well as establishment and application of an adequate penalty system addressing OHS incompliances) and avoid OHS incidents/accidents that may result in significant risks and impacts for Project's direct and contracted personnel.

For the operation phase of the Project, detailed planning of the operation and maintenance (O&M) workforce (direct and contracted) requirements of the Project will be done by the Employer and the Operator in due course. The Project facilities at which the workforce (direct and contracted) will be employed includes the high-speed trains, Operator's offices, HSR control centre (in Izmir), other operational facilities including stations/gars, operation and maintenance facilities of the Operator. The personnel of the affiliated enterprises of the Operator may also have Project-related responsibilities. The Project-related labour and working conditions at the Project facilities during the operation phase will be in line with the requirements of the Labour Law (Law No. 4857, 2003). The labour-related policies, plans and procedures to be implemented during the operation phase will be decided by the Operator.

The risks/hazards stemming from HSR operations and maintenance include train/worker accident risks and exposure to moving trains, exposure of crew members to continuous/repetitive noise and vibration during HSR operations, fatigue of drivers, signallers, maintenance works and other Project personnel critical for the safety of operations due to potential irregular work hours, night shifts, shift time starts, etc., electrical hazards for O&M personnel responsible from the Project-related power lines, exposure to electric and magnetic fields while working in proximity to electric power lines, and general physical hazards due to working in proximity to moving equipment, confined spaces, etc., chemical hazards due to use of solvent-based paints, cleaning solvents, etc. and biological hazards due to maintenance of rolling stock and railways. The operation phase OHS Plan and procedures will be developed and implemented by the Employer/Operator. The planning regarding the contractor and subcontractor personnel and the personnel of the affiliated enterprises of the Operator to be involved in the operation phase activities will further be done by the Employer/Operator.

The contractors for the ongoing infrastructure works of Sections 3a, 3b, 4a and 4d are contractually required to comply with the national legislation. Prior to start of superstructure works in Section 3a, 3b, 4a and 4d (at the time these sections of the Project will be handed over to the Contractor for the superstructure works), any outstanding/ongoing/ retrospective issues, impacts, risks and/or grievances in Sections 3a, 3b, 4a and 4d related to labour and working conditions of other contractors that completed the infrastructures works in these sections will be assessed by an E&S Audit to be carried out by the Contractor. Following this audit, a Management and Corrective Action Plan will be developed and implemented for these sections of the Project. The implementation responsibilities for the Management and Corrective Action Plan will be further clarified between the Employer and the Contractor.

3.9. Community Health and Safety

Potential Community Health and Safety (CHS) related issues that require management during the Project construction and operation phases include the traffic and pedestrian safety, infrastructure and equipment safety, community exposure to diseases, security personnel, safety of visitors. Blasting activities and explosive usage, worker influx, and hazardous materials management and safety may also pose risks on CHS. The CHS impacts and risks of the Project will be managed through the development and implementation of a Project-specific Community Health, Safety and Security Management Plan.

Intentional or unintentional entrance of visitors to hazardous Project sites may pose H&S risks to themselves as well as Project employees and nearby communities. Therefore, all visitors will receive visitor orientation upon their arrival at the Project sites to understand and be informed about the basic H&S rules, emergency procedures and site specific H&S implementations. The visitors will be escorted at all times and will only be allowed at predetermined safe zones. Upon receipt of the orientation training, as necessary depending on the Project sites to be visited, personal protective equipment (PPE) will be provided to the visitors. Additional induction and H&S trainings will be provided to persons, who will be at the Project sites for extended durations (e.g. auditors, service providers, etc.).

Following the commissioning of the HSR, the development and implementation of the O&M safety programs and procedures in line with the applicable national and international safety standards for ensuring stability, integrity and reliability of the infrastructure and equipment across the full HSR lines and at the O&M facilities including the control centre, will be under the responsibility of the Operator.

The risk of trespassers on the HSR line will be avoided as the entire HSR will be fenced off as per the technical specifications of the Employer/Operator. The measures required to maintain integrity of the fencing across the route and the operational measures/procedures to be followed to prevent the pedestrian collision risks at the stations/gars throughout the operation phase will be identified and implemented by the Operator.

The Ankara-Izmir HSR Project does not include level crossings. Thus, the accident risks (with pedestrians and other road vehicles) posed by the presence of level crossings are avoided in the Project.

Traffic and Pedestrian Safety

- Project-specific Traffic Safety Management Procedure including both on-site and off-site traffic safety measures will be developed by the Contractor and implemented by the contractor and subcontractor personnel (through contractual requirements).
- The Contractor will avoid passage of construction traffic through the settlements, whenever use of alternative roads is feasible.
- Where passage through existing settlements is unavoidable, Contractor will take all necessary measures (e.g. speed limits, traffic signs, driver trainings) to prevent safety risks on local communities and will engage with community representatives to plan the traffic by taking the daily life of the communities into account (e.g. selection of routes, school transportation hours, market days, etc.) and inform the communities about the construction schedule, activities to be conducted and safety measures taken, through appropriate means such as phone calls with mukhtars, meetings and leaflets, notices, signs, etc. as part of Project SEP implementation.

Infrastructure and Equipment Safety

- The design and construction, including the infrastructure, superstructure, electrification, signalisation and structural works, will be conducted by the Contractor as per the General and Special Conditions and Technical Specifications (including the standards and regulations indicated) contained in the Construction Contract executed between the Contractor and the AYGM on 23 November 2020 (will be effective after the date of Financial Close). The supervision and control works will also be performed by the competent third parties/professionals in line with the Construction Contract.
- Damage on existing local infrastructure facilities (e.g. road, electricity, water, irrigation, etc.) overlapping with the Project components will be restored/compensated as per the requirements of applicable legislation.

Security Personnel

- The Contractor will obtain security services from a certified Private Security Contractor Firm or will provide with in-house security personnel (with required training).
- The Contractor will monitor the legal and special trainings provided to the private security officers and ensure that these officers receive periodical trainings on adequate use of force, appropriate conduct towards the Project employees and the local communities, gender sensitivities (including GBVH and SHA), cultural sensitivities (if required) and human rights in line with the requirements of national legislation as well as IFC PS 2 and PS 4.

Community Exposure to Diseases

- Project-specific EPRP and COVID-19 EPRP to be developed and implemented by the contractor and subcontractor personnel (through contractual requirements).
- Contractor will ensure that necessary medical checks for all direct and contracted employees are in place at the time of hiring, including medical checks for symptoms of COVID-19. These medical checks will be repeated as necessary.
- Adequate COVID-19 PPE will be provided and regular disinfection services will be conducted in accommodation facilities, offices and service buses.
- Isolation facilities/accommodation rooms will be provided by the Contractor in case of positive COVID-19 test results are received for the site employees.
- The Contractor will closely monitor potential diseases among the Project employees (direct and contracted) throughout the Project, also diseases among the nearby communities, and plan/take necessary actions accordingly.

Community Health and Safety Management During the Construction Phase

The design and construction of the infrastructure, superstructure, electrification, signalisation, telecommunication facilities, and the buildings and structures (including the Control Centre) required for the safe operation of the Project will be done by the Contractor as per the TCDD technical specifications and the requirements of the Construction Contract. The hazardous materials to be used in the O&M activities will be determined by the Employer/Operator. Development and implementation of the Hazardous Materials Management Plan (or similar) during the operation phase will be under the responsibility of the Operator. Transportation type (passenger and/or load including dangerous goods) will further be clarified between the Employer and the Contractor based on the ongoing discussions.

The security requirements and arrangements for the operation phase for the HSR services and at the O&M facilities including the stations/gars will be determined and managed by the Operator. The Project SEP will be implemented throughout the operation phase.

Regular maintenance of vegetation (growth of trees and plants) within railroad rights-of-way is necessary to avoid interference with HSR operations, track maintenance, and signals, as well as tracks and overhead power lines. Measures for the maintenance of vegetation during the operation phase are to be included in the O&M safety programs in line with the Operator's relevant procedures.

The risk of sinkhole occurrence in the wider area of Railway KM 56+250 and 63+250 (near Sigircik neighbourhood of Sivrisihisar district, Eskisehir province) has been identified and assessed within the ESIA Report. As such, the closest sinkhole to the Project route (identified as part of ESIA based on satellite images of 2021) is observed at a distance of approximately 4 km in the south of the Railway KM 60+745. The presence of sinkhole risk zones in the proximity of the area crossed by the planned HSR route may pose long-term risks on the safety of HSR operations. The measures to be taken by the Contractor to ensure the safety of the Project design and construction, including evaluation of route relocation alternatives subject to approval of the Employer, have been described under Land Use and Geology section of this NTS (Section 3.1). Based on the technical information to be collated by the Contractor on site-specific risks through geological, geotechnical and hydrogeological site investigations and assessments, and the collaborations that will take place between the Contractor and the Employer/Operator in the pre-construction and construction periods, development and implementation of the operational plans and procedures, including long-term geotechnical monitoring studies to be conducted by the Operator and/or their consultants, that will ensure stability and integrity of the infrastructure and safety of HSR operations, will be under the responsibility of the Employer/Operator.

The Project-specific EPRP (covering both on-site and off-site emergencies) will be developed and implemented. Measures/systems for collaboration with the local communities and other external parties including local governmental agencies, media, etc. will be developed, where necessary. During the construction phase, the Contractor will notify local communities by using appropriate tools (e.g. telephone call lists, vehicle mounted speakers) in case of emergencies arising from the Project work/construction sites may pose risk on them. The Employer/Operator will develop and implement the EPRP for the operation phase. The conventional railway lines running/to be built in parallel to the HSR in Section 4, where the route passes close to settlements in Manisa province and especially in locations where there is no access road for motor vehicles, will be used to access to the HSR line in case of emergencies.

Project-specific SEP will be implemented to address any risk and/or impact related to community health and safety and plan/take corrective actions in line with the Grievance Mechanism, where necessary. As part of the SEP, local communities will be informed about the construction sites, traffic restrictions to be applied for health and safety purposes and duration of such restrictions. The implementation of the SEP throughout the operation phase of the Project will be under the responsibility of the Employer/Operator.

3.10. Cultural Heritage

The ESIA studies for the identification, assessment, and management of the potential Project impacts on the tangible cultural heritage assets have been performed by REGIO Cultural Heritage Management Consultancy (“REGIO”) within the cultural heritage study area, which encompasses the following:

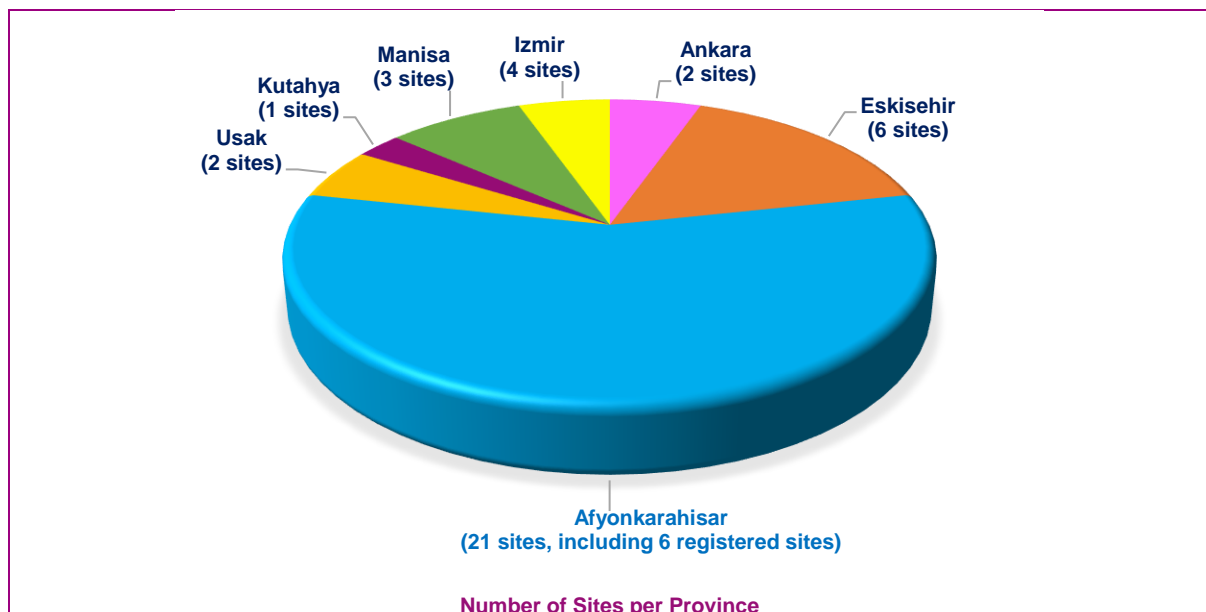
- Expropriation corridor of the HSR (including connection lines),
- Cultural heritage impact corridor, representing 50 meter-wide corridor at each side of the expropriation boundary (making a total of 100 m corridor beyond the expropriation corridor, referred to as 100 m impact corridor or impact corridor throughout the report),
- Outside the 100 m impact corridor covering the immediate surroundings, and
- Quarry locations including access roads.

The baseline conditions of the tangible cultural heritage elements within the study area have been characterised based on the findings of the desktop review and field surveys conducted as part of the ESIA. The field surveys (walkover and intensive surveys) were carried out by the team of qualified experts of REGIO between 13 January 2021 and 9 February 2021 within the cultural heritage study area of the Project along the expropriation corridor in Section 1, Section 2, Section 4a, Section 4b, and Section 4c and at the quarry sites located in all Sections.

The site types identified by the cultural heritage team include tumuli, flat settlements, pastoral settlements, slope settlements, hilltop settlement, necropolis, modern and old cemeteries, and others (e.g. historical site, grave stele, stone bridge, smelting furnace complex, watch tower, castle).

The number of registered and non-registered¹⁹ tangible cultural heritage sites visited by the cultural heritage team through ESIA surveys for the full alignment are summarised below:

Legal Registration Status	Location/Position of the Site/Asset					Total
	Within the Expropriation Corridor	Outside the Expropriation Corridor, within Impact Corridor	Outside Impact Corridor	Within the Quarry Site	Outside the Quarry Site	
Registered	3		4		1	8
Non-registered	14	7	3	5	2	31
Total						39



¹⁹ Includes sites in the process of registration, potential archaeological sites, archaeological sites, and other sites such as bridges, blockhouses, fountains, graves/cemeteries, etc.).



**Seydiler 3rd Degree Archaeological Site
(Flat Settlement)
within the Expropriation Corridor
(KM 131+650)**

(Afyonkarahisar, Iscehisar, Seydiler)

(Construction conducted at the site during
previous Project activities)



**Eyupoglu Mound
within the Expropriation Corridor
(KM 149+810)**

(Afyonkarahisar, Merkez, Susuz)



**Yunakbasi Mound
within the Expropriation Corridor
(Afyonkarahisar Connection Line)
(near KM 160+050)**

(Afyonkarahisar, Merkez, Beyazit)

(Construction conducted at the site during
previous Project activities)

Registered Cultural Heritage Sites within the Project Expropriation Corridor

According to desk-based research, there are no registered sites overlapping with the HSR route in Section 3 and Section 4 of the HSR route. As the closest sites, Palamuttepe 3. Degree Archaeological Site and Cardaktepe Tumulus in Section 4d are located at 150 m (KM 541+000) and 103 m (KM 545+970) distance to HSR route.

World Heritage List and World Heritage Tentative²⁰ List of UNESCO have also been considered as part of the ESIA study. Amongst the 18 sites inscribed on the World Heritage List of UNESCO (as of 1 March 2021) from Turkey, the closest site to the Project is the "Hieropolis-Pamukkale" in Denizli, which is located at a distance of 53 km to the south of the HSR route. Amongst the sites included in the World Heritage Tentative List of UNESCO, the closest sites to the Project are the "Mountainous Phrygia" in Afyonkarahisar, Kutahya and Eshisehir, which is located at a distance of 1.5 km to the north of the HSR route and "The Ancient City of Sardis and the Lydian Tumuli of Bin Tepe" in Manisa, which is located at a distance of 2 km to the south of the HSR route. As such, none of the internationally recognised cultural heritage sites is overlapping with the study area.

The Project will adopt a proactive management of the potential Project impacts, prioritising avoidance where this is possible. In case avoidance is not possible, relevant archaeology and cultural heritage management/mitigation measures will be taken in accordance with the national legislation, IFC PS 8 and other applicable standards.

Based on the outcomes of the ESIA studies, the following quarries have been eliminated by the Contractor:

- 97 – Bayat 2 Quarry (due to the non-registered Karatepe Slope Settlement/ Old Cemetery overlapping with the quarry site)
- 239 – A- 3229556 (Asagi Cobanisa) Quarry (due to Cobanisa Mithological Mountain/Cave overlapping with the quarry site; it should be noted that at this area, material extraction activities are already being conducted by third-party operators)

Also, license boundaries for the following quarries have been narrowed down to mitigate the predicted impacts on cultural heritage identified during the cultural heritage surveys:

- 18 – Yagmurbaba (due to non-registered Yagmurbaba Tumuli and Calli Baba Flat Settlement)
- 78 – Tabaklar (due to non-registered Tabaklar Smelting Furnace Complex)
- 82 – Emirinkoyu; (due to non-registered Emirinkoy Slope Settlement)

²⁰ A Tentative List is an inventory of those properties which each State Party intends to consider for nomination; <http://whc.unesco.org/en/tentativelists/>.

The Project will comply with the national legislative requirements, international conventions and agreements ratified by Turkey, and international standards applicable to the protection and management of cultural heritage. In line with Article 4 of the Law on Conservation of Cultural and Natural Properties (Law No. 2863, 1983), the responsible Museum Directorates²¹ or Regional Councils for the Conservation of Cultural Property²² will be notified about the archaeological sites and immovable cultural heritage assets, including registered and non-registered sites, identified within the study area, as given in the ESIA Report. To this end, the information collected through the field surveys (such as site-specific photos, site survey forms, site coordinates, digital data, expert notes, etc.) will be delivered to these institutions in order to initiate official decision processes relevant to these sites.

The community-level interviews, held with the settlement heads in 128 settlements along the route as part of the ESIA surveys, included questions on the traditional knowledge and practices and cultural spaces of the local communities associated with intangible cultural heritage including oral traditions and expressions, traditional food, performing art, skills to produce traditional handicrafts, traditional clothing, traditional knowledge in health and medicine (for human and animals), traditional agricultural and husbandry practices, traditional production techniques and other practices, cultural places, cemeteries, historical artefacts, etc. used by the locals in the forest, grasslands, public lands, etc.

The field walkover surveys conducted as part of the tangible cultural heritage studies within the cultural heritage study area of the Project have also served for the evaluation of potential intangible cultural heritage related to immovable (tangible) cultural assets such as historical or religious fountains, monuments, shrines, etc.

The Project does not propose to use the cultural heritage, including knowledge, innovations, or practices of local communities for commercial purposes (examples include, but are not limited to, commercialisation of traditional medicinal knowledge or other sacred or traditional technique for processing plants, fibers, or metals) or anticipated cause any adverse impact on the intangible cultural heritage elements of the local communities in the construction or operation phases. Within the scope of the community-level interviews held with the heads of the settlements surveyed as part of the ESIA studies, none of the settlement heads reported intangible cultural heritage elements that may be potentially affected or used by the Project. In furtherance, no intangible cultural heritage related immovable (tangible) cultural assets such as historical or religious fountains, monuments, shrines, etc., which may be adversely affected by the Project activities, has been identified within the cultural heritage study area.

Through the implementation of the SEP (including the External Grievance Mechanism) throughout the Project, consultations with the affected communities will continue and any issue/sensitivity that may be raised associated with the intangible cultural heritage of the local communities, including any elements or practices that are located outside the Project expropriation corridor and footprint, will be considered and managed in line with the applicable principles of IFC PS8 and UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage. The local communities, through the settlement heads, will be provided with up-to-date information on the Project and its components/facilities inside and outside the Project expropriation corridor as well as the schedule of the activities, potential temporary access restrictions, etc. on an ongoing basis in a timely, transparent, understandable and efficient manner through the implementation of the Project SEP.

The contractors for the ongoing infrastructure works of Sections 3a, 3b, 4a and 4d are contractually required to comply with the national legislation. Prior to start of superstructure works in Section 3a, 3b, 4a and 4d (at the time these sections of the Project will be handed over to the Contractor for the superstructure works), any outstanding/ongoing/ retrospective issues, impacts, risks and/or grievances in Sections 3a, 3b, 4a and 4d related to management of cultural heritage assets by other contractors (see Chapter 1 for the definition of other contractors) that completed the infrastructures works in these sections will be assessed by an E&S Audit to be carried out by the Contractor. For the E&S Audit, the relevant documentation related to cultural heritage management will be requested (through the Employer) during the site hand over and outstanding/ongoing/ retrospective issues, impacts, risks and/or grievances, if any, will be identified for incorporation to the Management and Corrective Action Plan.

A Project-specific Cultural Heritage Management Plan (CHMP), including the Chance Find Procedure, has been developed for the Project as part of the ESIA study. The CHMP will be implemented throughout the construction phase. The key measures to be taken through the implementation of the CHMP are listed below:

²¹ Anatolian Civilisation Museum, Eskisehir Museum, Afyonkarahisar Museum, Usak Museum, Kutahya Museum, Manisa Museum, Izmir Museum.

²² Ankara Regional Council No: 1, Eskisehir Regional Council, Kutahya Regional Council, and Izmir Regional Council No.2 for the Conservation of Cultural Property.

- Training on implementation of the CHMP, including the Chance Find Procedure, will be provided to all Contractor and subcontractor personnel as part of the induction training (to be given at the time of employment) and refreshments will be done through toolbox talks throughout the construction phase. If required, the Operator will also train the O&M personnel on the CHMP, including the Chance Find Procedure.
- Sites located close to the Project route and temporary facilities (e.g. construction camp sites, quarries, material borrow sites) will be protected, where appropriate, by providing temporary flagging/fencing and signage subject with approval from the cultural heritage authorities.
- Sufficient resources for the implementation of the CHMP will be provided. Archaeological monitoring and Chance Find Procedure will be implemented by qualified experts during the construction works, as necessary.
- Following the notifications (for the sites identified as part of ESIA or discovered during construction) to be made to the authorities in line with Article 4 of the Law on Conservation of Cultural and Natural Properties (No. 2863, 1983), physical intervention/construction will be avoided until the final official decisions of the Regional Councils are issued. Appropriate measure(s) will be taken in line with the official decisions of the cultural heritage authorities. Such measures may include documentation, application of remote sensing (e.g. geophysical survey) at areas where chance finds discovered to clarify the characteristics and location of the sites and inform design of targeted salvage strategies, excavation of test pits to verify the results of remote sensing at chance find areas, salvage excavation and recording, relocation of moveable cultural heritage asset where applicable etc.
- Site-specific measures will also be taken as necessary as described in the ESIA Report (e.g. maintaining buffer areas around the cultural heritage sites, relocation of artifacts to the museums, etc.).

3.11. Cumulative Impact Assessment

As part of the ESIA, a Cumulative Impact Assessment (CIA) study has been conducted in line with the IFC's Good Practice Handbook entitled "Cumulative Impact Assessment (CIA) and Management: Guidance for the Private Sector in Emerging Markets". The CIA Study Area has been determined as 50 km wide (25 km from each side of the Railway axis) to ensure that the area is sufficiently large to cover Project's direct impact area (together with the Project/associated facilities) and the borders of the selected Valued Environmental and Social Components (VECs) that may be affected by other projects/developments alongside the Ankara-Izmir HSR Project. The VECs focused on in the Project-level CIA study includes the following:

- Internationally Recognised Areas (e.g. KBAs)
- Legally Protected Areas (e.g. nationally important wetlands, natural sites, national parks)
- River Basins
- Socio-economic Conditions of the Settlements and Local Communities (e.g. Local Employment Procurement and Land Use Change/Livelihood)

Besides the Ankara-Izmir HSR Project, there are other existing and future transportation (e.g. conventional railways, motorways), energy (e.g. geothermal, biogas), mining, industrial, and water projects (e.g. dam, irrigation) in the region that may cause potential cumulative impacts on the VECs. A total of 40 projects and 21 VECs have been considered in the CIA.

As per the assessment conducted through this CIA study, it has been identified that river basins crossed by the HSR route (Sakarya, Akarcay, Buyuk Menderes and Gediz river basins) are the VECs for which cumulative impact potential exists. On the other hand, the type of Projects considered in the CIA are not anticipated to cause significant impacts on the river basins under normal operating conditions.

Other major transportation projects in the region, together with industrial projects, may result in adverse cumulative impacts on the key biodiversity areas (e.g. Polatli Tigem KBA, Acikir Steppes KBA, Yamanlar Mountain KBA) as well as agricultural and pasture lands affecting the land-based livelihoods of the local communities leading to a potential socio-economic transformation in the region. On the other hand, these projects, along with the Ankara – Izmir HSR Project, have the potential to attract further residential, industrial, and touristic developments causing potential cumulative impacts (including beneficial impacts) on the socio-economic characteristics of the district centres and villages/neighbourhoods located in the regions crossed by those projects. As a result of the enhanced connectivity to be provided between the cities through railways and motorways, job markets would expand at the regional level making a positive cumulative impact on the job opportunities and employment levels.

There are multiple projects crossing/located in the following districts:

- Polatli district (Ankara province)
- Sivrihisar district (Eskisehir province)
- Merkez and Sinanpasa districts (Afyonkarahisar province)
- Dumlupinar district (Kutahya province)
- Banaz, Merkez, Esme and Ulubey districts (Usak province)
- Salihli, Kula, Alasehir, Sehzadeler, Turgutlu and Yunusemre districts (Manisa province)
- Menemen district (Izmir province)

The transportation type of the Ankara-Izmir HSR will be further clarified between the Employer and the Contractor based on the ongoing discussions. If the route serves/supports transportation of loads, it is likely that the development triggers further development of the marble industry in the Iscehisar district of Afyonkarahisar province (near KM 140+000), which may lead to further industrial and residential land use supporting the enhancement of district economy.

In Afyonkarahisar province, the Afyon Kocatepe University has been providing education since November 1992. During the social surveys, it has been identified that the city population has been increasing with the number of university students increasing, causing development of the real estate sector. As the Project will enhance connectivity of the city with capital city Ankara and Izmir (the third largest city by population), the city may continue undergoing the current urbanisation process in the next decades, which would result in the transformation of the existing land use types and further development of the real estate sector. There is a gar planned to be established and operated in the Afyonkarahisar province, which will be connected to the city centre through intercity lines.

The stations/gars to be established in Emirdag district (Afyonkarahisar), Afyonkarahisar centre, Usak centre, Salihli district of Manisa province, Turgutlu district of Manisa province and Manisa centre will trigger residential and industrial development in the wider region. Local economy at the settlements located close to the station/gar sites would benefit from the developing service sectors. Thus, there will be new business and employment opportunities having the potential to provide benefits to the economy of those settlements.

The Project passes close to urban areas between Manisa and Izmir. It is likely that further residential, industrial and touristic development will be triggered by the Project in this region with the multiple effect of other infrastructure projects including the existing Istanbul-Izmir Motorway and the planned Ankara-Izmir Motorway.

The residential, industrial and touristic development supported by the Ankara-Izmir HSR together with other infrastructure projects planned in the region, will necessitate the strengthening and development of the municipal infrastructure services in the districts crossed by the HSR route. Therefore, municipal infrastructural investments may be planned and realised in the region in parallel to the HSR operation.

Ankara-Izmir HSR Project will result in considerable amount of transportation load shifting from motorways and/or airways to HSR, leading to reduction in overall fuel consumption and subsequent reduction in greenhouse gas (GHG) emissions. The Project is part of Turkey's Vision 2023 and constitutes the final stage of the current national HSR masterplan. Together with the operational Ankara-Eskisehir HSR (in operation since 2009), Ankara-Konya HSR (in operation since 2011), Eskisehir-Konya HSR (in operation since 2013), and Ankara-Istanbul HSR (with the extension of Ankara-Eskisehir line; in operation since 2014) and with the completion of the ongoing Bursa-Bilecik and Ankara-Sivas HSR, cumulatively, it is estimated that 880 thousand tons of carbon dioxide emissions will be avoided annually in Turkey by 2023 (*Source: Contractor, December 2020. Project Information Note*). For reference, Turkey's total GHG emissions (excluding the land use, land use change and forestry sector), were estimated to be 520.9 Mt of CO₂ equivalent (CO₂ eq.) in 2018 (*TurkStats, April 2020. Turkish Greenhouse Gas Inventory 1990-2018*). The Ankara-Izmir HSR, together with the existing HSRs and HSR projects that are to be put in operation in the next years will help support Turkey's ambitions to cut the GHG by 21% by the year 2030 as indicated in Turkey's Intended Nationally Determined Contribution (INDC). The shift to railway use for passenger and load transportation and realisation of the HSR projects are listed amongst the national policies for the transportation sector under the INDC.

For the management of cumulative impacts of projects/developments, it is important to underline that the responsibility of the management/mitigation of the cumulative impacts resulting from the actions of multiple stakeholders involves a collective responsibility which requires individual actions to eliminate or minimise the contribution of each action/development. As the Ankara-Izmir HSR Project will be one of the largest transportation in the region, Project-level mitigation and enhancement measures, as described in the respective sections of the ESIA Report, will be significant in contributing to the management of cumulative impacts and ensure resilience and sustainability of the identified VECs.

3.12. Human Rights Impact Assessment (HRIA)

As part of the ESIA, Human Rights Impact Assessment (HRIA) has been conducted using the Guidance Note on Implementation of Human Rights Assessments under the Equator Principles (EP) and in line with the United Nations Guiding Principles on Business and Human Rights (UNGPs) for the following group of Project stakeholders:

- Direct workers
- Contracted workers
- Affected community members

The following project-level human rights issues have been considered in the HRIA based on the potential project-related human rights risks common to infrastructure projects as reported within the Guidance Note on Implementation of Human Rights Assessments under the EP:



A stand-alone Human Rights Policy will be developed and implemented in the Project.

The Constitution of the Republic of Turkey is the fundamental legal document guaranteeing respect to human rights as stated in Article 2 of Chapter II of the Constitution: "The Republic of Turkey is a democratic, secular and social state governed by rule of law, within the notions of public peace, national solidarity and justice, respecting human rights, loyal to the nationalism of Atatürk, and based on the fundamental tenets set forth in the preamble." Relevant laws and regulations of Turkey (e.g. Labour Law, OHS Law, Social Insurance and General (Universal) Health Insurance Law, Law on Private Security Services, Law on the Protection of Personal Data, etc.) also covers provisions requiring observation on human rights.

The following key remedies, inter alia, will be implemented in the Project for the mitigation of human rights risks to direct and contracted works as well as the affected community members:

- Project-specific policies (e.g. HR Policy, H&S Policy, Environmental Policy, Social Policy), with principles applicable to the mitigation of human rights risks will be implemented.
- Project-specific E&S management plans (e.g. environmental management plans, OHS Plan, Labour Management Plan, Subcontractor Management Plan, Community Health and Safety Plan, etc.) with principles applicable to the mitigation of human rights risks will be implemented.
- The Project-specific SEP, including external and internal grievance mechanisms in line with the requirements of IFC PSs and EP4, developed as part of the ESIA will be implemented throughout the construction phase.
- Contractor and subcontractor personnel will be provided with training on the Project-specific policies and E&S management plans at the time of employment (refreshment training will be provided annually and as required).
- Trainings on Project's Social Policy and Contractor's Code of Conduct will cover, inter alia, Project's approach to prevention of gender-based violence and harassment (GBVH) and sexual harassment and abuse (SHA). Community Liaison Officers (CLOs) and Contractor's HR team will be specially trained on GBVH and SHA. In case GBVH or SHA is reported through the internal grievance mechanism, this will be investigated by trained investigators and responded in accordance with current GIIPs.
- The Contractor will develop and implement an internal audit system to check and monitor compliance of the Contractor and subcontractor and -to the extent possible and through feasible methods-primary suppliers' implementations, including human rights related aspects, with the Project-specific policies and E&S management plans.
- In consideration of the remedies to be implemented by the Contractor during the construction phase, the Employer/Operator will establish and implement necessary mechanisms for the management of human rights impacts and risks of the Project in line with the Project Standards throughout the operation phase.

4. Environmental and Social Management System (ESMS)

The Project E&S Management System (ESMS) has been developed as part of the ESIA process to provide a structured approach for the management of Project-specific E&S issues in line with the Project Standards set by applicable national legislation, and IFC Policy and Performance Standards (PSs) on E&S Sustainability (2012), Equator Principles (EP4) (2020), OECD Common Approaches (2016) and UKEF E&S and Human Rights Policy.

The Project ESMS intends to provide an appropriate approach to the management of E&S performance in line with the nature and scale of the Project.

The key elements of the Project ESMS are listed below:

- Project-specific Policy
- Identification of Risks and Impacts
- Management Programs
- Organisational Capacity and Competency
- Emergency Preparedness and Response
- Stakeholder Engagement
- External Communications, Grievance Mechanism and Ongoing Reporting to Affected Communities
- Monitoring and Review

The Project's strategy for the management of E&S risks and impacts is founded on a mitigation hierarchy favouring the avoidance of risks and impacts over minimisation, and compensation/offset where residual impacts remain, if technically and financially feasible.

Management programs consist of Project-specific policies and management/action plans/procedures targeting avoidance, minimisation or offset/compensation of the risks and impacts identified within the ESIA process. The management/mitigation measures described in the respective chapters of the ESIA Report, along with relevant monitoring/key performance indicators for successful implementation as well as the responsibilities of the Employer and the Contractor based on the foregoing contractual framework., have been incorporated within the stand-alone Project E&S Management and Monitoring Framework Plan (ESMMFP). Based on the ESMMFP, specific E&S management plans and procedures will be developed and implemented throughout the construction phase of the Project.

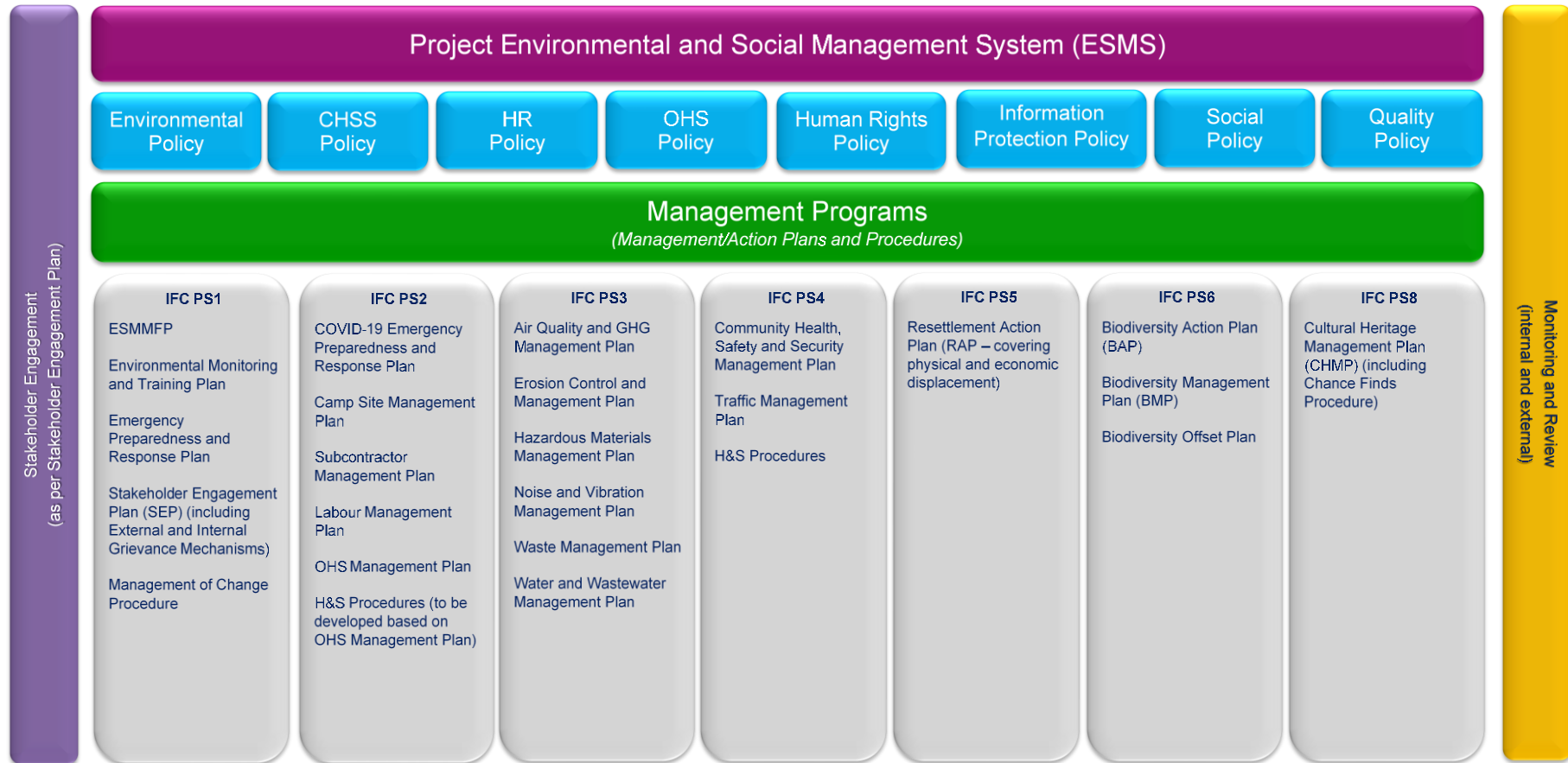
The Contractor will require all Project employees, both direct and contracted, to implement the applicable requirements of the ESMMFP and the specific E&S management plans and procedures to be developed for the Project.

Implementation of the following E&S management/action plans during the construction and as applicable, operation phases of the Project will be under the Employer's/Operator's responsibility:

- Biodiversity Action Plan (BAP)
- Cultural Heritage Management Plan (CHMP)
- Resettlement Action Plan (RAP) (covering both physical and economic displacement)
- Stakeholder Engagement Plan (SEP)

The infrastructure works ongoing under the responsibility of other contractors in Section 3a, Section 3b, Section 4a, and Section 4d as of Q2 2021 are in line with the applicable national legislation and contractual requirements of the TCDD.

The Project Policy and the specific E&S management plans to be developed and implemented based on the Project ESMMFP are summarised below.



© 2021 GEM Sürdürülebilirlik Hizmetleri ve Danışmanlık A.Ş. All Rights Reserved.

Project Policy and Management Programs under Project ESMS

During the operation phase, the Operator will have the full responsibility for the implementation of the ESMS and management of E&S risks and potential impacts of the O&M activities in line with the Project Standards. The Employer/Operator will develop subject-specific E&S management/actions plans and procedures for the operation phase based on the Project ESMMFP and their institutional regulations, guidelines, specifications, etc.

The Contractor takes seriously its responsibilities to comply with the national laws and regulations and implement appropriate E&S standards in all its projects including but not limited to the standards relevant to management of biodiversity and cultural heritage, community and occupational health and safety, labour and working conditions including accommodation, environmental management including topsoil, air emission, noise, vibration, etc., local employment and procurement, management and erosion control as well as traffic management. This extends to the responsibilities of the Contractor defined in the Contract and assisting, within the framework of the Contract, the Employer to meet its obligations to Lenders under the relevant financing arrangements relating to applicable E&S requirements. To this end, the Contractor also included operation phase impact assessment within the scope of the ESIA Report although the management of potential impacts will be under the responsibility of the Employer/Operator as clarified in the ESMMFP.

It is the Employer's and the Operator's responsibility to comply with the national laws and regulations; permits and standards; IFC PSs, relevant WBG EHS Guidelines requirements; loan agreement commitments; ESIA requirements; and to ensure that all contractors providing any type of services to the Employer duly follow these requirements throughout the duration of the loan agreements. The Employer/Operator remains ultimately responsible to Lenders for ensuring E&S requirements are met throughout construction and operation phases of the Project, with the responsibilities of the Contractor defined in the Construction Contract.

Consistent with the Contract, costs associated with the E&S management/action plans that are under the responsibility of the Employer/Operator and any costs associated with changes to scope of works (including re-alignment) arising from geological and/or geotechnical risks shall be borne by the Employer.

During the construction phase, the Senior Management Team of Ankara-Izmir HSR JV and the ESMS team under the JV ("Project ESMS Team") will assist and collaborate with the Employer (Project Owner) for effective implementation of the Project ESMS in line with the Project Standards. As per the national legislation, the Employer has in place inherent E&S responsibilities for the Project such as:

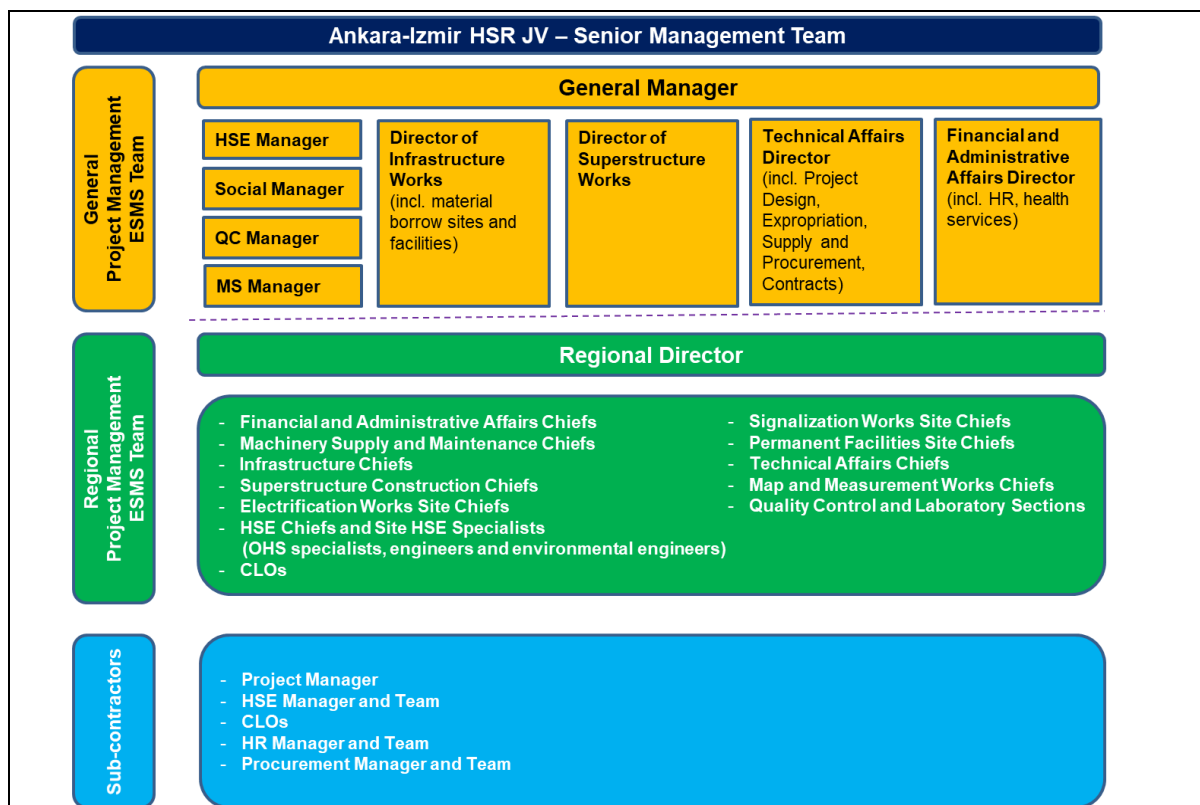
- Completion of national EIA process for the railway route (finalised) and the EIA process of any associated facilities
- To acquire permits and licenses of associated facilities
- To conduct the expropriation process as per the Expropriation Law (Law No. 2942, 1983) and make all the expropriation payments
- Undertake any additional works including any re-alignment, as required.

Under the JV, the Project ESMS Team, as illustrated below, will implement the Project ESMS, in line with the responsibilities defined in the Construction Contract of the Project.

The State Railways of the Republic of Turkey (TCDD) will be the Operator of the Project after the commissioning and transfer of the HSR with all relevant components and infrastructure by the AYGM. In consideration of the roles and responsibilities defined by the Contractor as relevant, the Operator will define the roles and responsibilities of the ESMS team for the operation phase.

The Operator will establish the Project ESMS Team for the operation phase under the organisation structure of the institution (<https://www.tcdd.gov.tr/kurumsal/organizasyon-semasi>).

As the Project is required to be carried out in compliance with the Project Standards, the Contractor will require the higher tier (main) subcontractors to establish their ESMS teams to ensure that Project activities under their responsibilities are carried out in line with the Project Standards during the construction phase. During the operation phase, the Operator will be responsible for ensuring compliance of the O&M activities to be conducted by the direct and contracted personnel with the Project Standards.



Ankara-Izmir HSR Project ESMS Team under the JV for the Construction Phase

For monitoring the ESMS performance during the construction phase, the Contractor, through the Project ESMS team, will carry out internal E&S monitoring activities (on behalf of the Employer) in alignment with the frequency of Lenders’ external E&S monitoring throughout the Project. This will include monitoring of subcontractor’s E&S performance by the Contractor’s ESMS team, as well.

Site audits/visual observations, interviews, questionnaires and surveys with internal and external stakeholders, document review, and measuring and testing tools will be used for monitoring Project’s ESMS performance, as appropriate.

The Employer/Operator will establish and implement the internal monitoring mechanism for the operation phase in line with the monitoring requirements of the Lenders. The environmental monitoring program for the operation phase will be determined by the Operator during the construction phase upon clarification of O&M facilities and activities.

The findings of the internal monitoring studies will be incorporated to periodical E&S Internal Monitoring Reports (quarterly during the construction phase and as per the frequencies to be set by the Lenders and the Employer/Operator during the operation phase) with inputs from relevant departments and contractors/subcontractors, as necessary. The Senior Management Team of the JV (during the construction phase) and the relevant executives under the Operator’s organisation (during the operation phase) will receive copies of the E&S Internal Monitoring Reports.

In addition to internal E&S monitoring activities to be conducted by the Contractor, the Lenders will also be conducting external monitoring for the E&S performance of the Project through their independent consultants at the frequencies to be determined.

Based on the outcomes of internal and external E&S monitoring activities, the ESMS will be reviewed by the Project ESMS team annually and additionally in cases, where assessed to be required in the event of important changes to Project E&S conditions and applicable legislation and standards.

As part of the adaptive management process, results of monitoring and review will be reflected in management program updates. Appropriate mechanisms (e.g. integration to contracts, training provided at the time of employment and refreshed periodically, posting at proper locations, etc.) will be established to ensure that all Project personnel are informed of and trained on the current versions of each management/action plan and procedures, as necessary.

5. Stakeholder Engagement

5.1. Project Stakeholders

In accordance with the definitions of international standards, stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively.

The stakeholders of the Ankara-Izmir HSR Project include:

- National governmental authorities (including ministries)
- Local governmental authorities (including governorates, district governorates)
- State economic enterprises and state companies
- Settlements/local communities including headmen of the villages/neighbourhoods, local respected individuals, PAPs
- Vulnerable and disadvantaged groups/persons
- Non-governmental organisations (NGOs)
- Academic/educational institutions
- Media (local and national)
- Local business and suppliers
- Other industrial projects
- Lenders
- Internal stakeholders including JV Companies, Contractor and subcontractors
- The other contractors continuing infrastructure works in Section 3a, Section 3b, Section 4a, and Section 4d

5.2. Stakeholder Engagement Activities to Date

The stakeholder engagement activities specific to the Project have started at the time of the national Environmental Impact Assessment (EIA) process and conducted by the Project Owner (DLH – back then) as per the requirements of the EIA Regulation in force. In July 2005, public participation meetings were held in seven provinces crossed by the planned HSR route in order to provide the stakeholders with necessary information about the Project and receive their questions and suggestions to be considered in the scoping phase of the national EIA process. In addition, official views were obtained to incorporate legal and institutional requirements of respective institutions to the Project. Throughout the expropriation process, engagement with the affected communities was provided by TCDD through official notifications and negotiation meetings held with the owners/shareholders of the parcels located within the expropriation corridor of the Project as per the requirements of the Expropriation Law (Law No. 2942, 1983).

Following the award of the Contractor by AYGM in November 2020 and start of Project ESIA process in line with Project Standards, engagement with Project stakeholders has reinvigorated through comprehensive social surveys conducted by the ESIA Consultant with support from the Contractor, as summarised below:

- The Senior Management Team and the Contractor Expropriation Expert has been engaging with the related authorities, including AYGM and TCDD, on the Project's E&S obligation under the export credit facility to be utilised to finance the construction of the Project, planning of future land acquisition processes to be conducted by the State as per the requirement of Expropriation Law (Law No. 2942, 1983) as well as actions required to be taken to inform the local communities about the Project schedule and planned activities. The Community Liaison Officer (CLO) appointed by the Contractor in February 2021 has also started engaging with the local communities through phone calls or face to face meetings to inform them about the current status of the Project and the studies and as part of the acquisition process of the parcels

corresponding to the planned locations of the temporary construction facilities (e.g. construction camp sites of the Contractor).

- In January 2021, the Contractor Expropriation Expert and the ESIA social team conducted a meeting with the TCDD – Department of Real Estate in order to inform the authority about the scope of the ESIA study, particularly social surveys, and obtain information on the previous and future Project-related expropriation processes.
- In February 2021, social surveys were conducted by the ESIA social team through remote surveys carried out with the elected heads (mukhtars) of the affected settlements (community level surveys) and households/persons affected/potentially affected from the Project-related land acquisition processes as well as the Project construction activities (household level surveys). To this end, a total of 128 community level questionnaires and 229 household level questionnaires were applied. Also, 28 (deep) interviews were conducted with the vulnerable persons and women living in the Project affected settlements.

5.3. Stakeholder Engagement Plan

A stand-alone SEP has been prepared as part of the ESIA process based on the comprehensive social surveys conducted by the ESIA team and information and documentation (e.g. official correspondence) received from the General Project Management Team on previous engagement activities.

The purpose of the SEP is to establish and maintain constructive dialogue between the Project and the local communities, other stakeholders and interested groups.

The Project SEP, inter alia:

- Identifies all stakeholders (individuals, groups, or entities) directly and/or indirectly affected by the Project or have a direct or indirect influence/impact on the Project.
- Defines mechanisms and tools for appropriate engagement with each stakeholder group throughout the Project in the form of a Stakeholder Engagement Program, with the ultimate aim of establishing and maintaining constructive relationship through public consultation and information disclosure.
- Establishes external and internal mechanisms that will ensure timely and appropriate implementation of actions for the management of grievances and feedback received.

The Stakeholder Engagement Program presented in the SEP includes the following information for each stakeholder group:

- Purpose of Engagement
- Documents/Materials to be used for Engagement
- Engagement Method
- Location
- Responsible Party
- Timetable for Implementation

Examples of the documentation and materials and engagement methods to be used as appropriate to the targeted stakeholder groups are presented below.

<p>Example documents and materials to be used for engagement (as appropriate to the respective stakeholder group)</p>	<p>Example engagement methods (as appropriate to the respective stakeholder group)</p>
<ul style="list-style-type: none"> • ESIA Disclosure Package • Specific documentation required by the authorities • Information packages including brochures, booklets, posters, flyers, maps summarising the key up-to-date Project information in a non-technical and comprehensible language/format • Non-technical presentations, Project maps etc. • Specially designed information materials, reports, etc. in consideration of the specific concerns or opportunities related to the Project • Information on the communication channels related to submittal of the grievances/feedback and their management • Grievance and feedback forms and relevant guidance documents • Periodical reporting to affected communities • Press releases • Visual materials/ advertisements related to Project • Periodical Post-financial Close E&S Monitoring Reports • Employee contracts, Code of Conduct, Training materials/presentations, Company bulletin boards, grievance and feedback forms and guidance documents for internal stakeholders 	<ul style="list-style-type: none"> • Face to face meetings (alternatively, remote engagement during COVID-19 pandemic) • Phone calls • Official letters to or e-mail correspondence with authorities • Grievances/feedback mechanism • Distribution of the hard copies of brochures, flyers, materials • Non-technical presentations • Focus group discussions/ separate informative meetings • Special engagement methods to be developed based on relevance and interest of stakeholders • Sharing visual materials/informative texts/advertisements to be published with local and national media agencies • Sharing relevant written documentation with the Project employees (at the time of hiring), Induction and orientation trainings (at the time of hiring), Toolbox trainings, Job-specific trainings, Periodical H&S Committee Meetings, etc. for internal stakeholders

In line with the international E&S standards, the Project is considered as “Category A”. The project and E&S impact information of Category A projects are published/disclosed on UKEF’s website at least 30 days prior to final commitment to grant support.

During the ESIA disclosure period, stakeholder engagement activities will be conducted in line with the SEP. The ESIA Disclosure Package will be published at the Project website (ankaraizmiryht.com) (on behalf of the Employer/Operator). As per the relevant requirements of the international standards, NTS and SEP will be disclosed in Turkish language by using appropriate disclosure methods. Hard copies of the NTS and SEP will be kept at the Project site for any stakeholder to review.

At post-ESIA phase, the SEP will be implemented throughout construction works. The ESMS Team of the Project will assist and collaborate with the Employer for implementation of this SEP and the Project grievance and feedback mechanism. Engagement with the Borrower and Buyer of the Buyer Credit Facility will be carried out by the Senior Management Team of the Contractor.

Other contractors with ongoing infrastructure works in Section 3a, Section3b, Section 4a, and Section 4d will be engaged with through the Employer as part of the E&S Audit be carried out in line with IFC Performance Standards (2012) at the time these sections of the Project will be handed over to the Contractor (ERG JV) for the superstructure works.

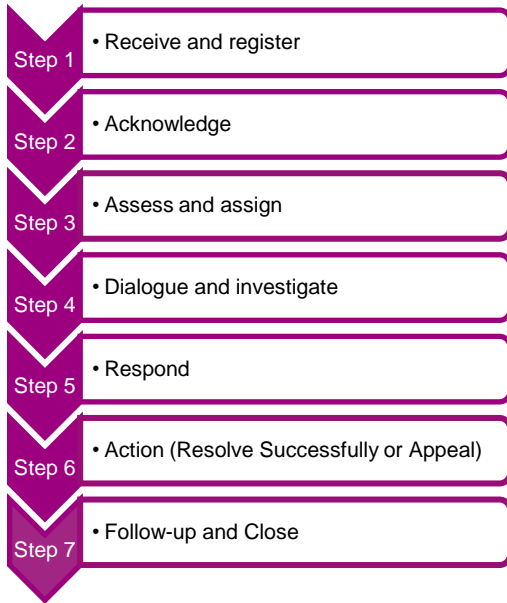
The implementation of the SEP throughout the operation phase of the Project will be under the responsibility of the Employer/Operator.

The Project activities and overall progress and the E&S performance, including SEP implementation and grievance/feedback management, will also be communicated to the stakeholders periodically throughout the construction phase in order to keep affected communities informed about the Project and the progress on a regular basis. The reporting to affected communities will be in Turkish, in an easily understandable, concise, and non-technical way.

The SEP will be periodically (at least annually) reviewed and updated, as necessary, during the course of the Project. Ongoing stakeholder engagement activities and their outcomes, as well as the key issues identified and managed through the internal and external grievance mechanisms will be reflected in the periodical SEP updates.

5.4. Grievance Mechanism

During the construction phase, internal and external grievance and feedback mechanisms have been developed for the Project as part of the SEP based on Contractor’s (through ERG Construction as one of the JV companies) established mechanisms being implemented within the scope of another large-scale motorway project in Turkey.



The internal and external grievance and feedback mechanisms will be implemented throughout the construction phase of the Project. Through these mechanisms, the external and internal concerns will be sought to be resolved promptly, using an understandable and transparent consultative process that is culturally appropriate, and at no cost and without retribution to the external or internal party that originated the issue or concern. Stakeholders will be provided with the option of submitting grievances and feedback anonymously.

The Project will target successful resolution/management of grievances within the timeframes defined in the SEP.

The judicial or administrative remedies will be applicable for the external and internal Project stakeholders as per the Constitution of the Republic of Turkey and relevant legislation.

The CLOs will inform the external stakeholders, including local communities, about Project’s grievance and feedback collection channels and grievance and feedback mechanism as part of the SEP implementation to encourage them to submit written complaints with reassurance that written submissions will not be used in any way to intimidate those submitting the complaints. The following channels will be used to collect grievances and feedback of external stakeholders:



As part of the implementation of internal grievance mechanism, all Project personnel, direct and contracted, will be informed about the internal grievance and feedback mechanism, including grievance and feedback collection channels, at the time of employment. Information of subcontractor personnel and effective implementation of the mechanism by Project subcontractors will be ensured by the Contractor through contractual requirements. Channels to be used to collect external grievances and feedback will be available for collection of internal grievance and feedback, as applicable.

In addition, grievance and feedback will also be collected;

- Verbally through Project directors, managers, chiefs, H&S specialists, CLOs, etc. and subcontractors (to be conveyed to the Contractor systematically)
- During monthly H&S committee meetings and other meetings with employees
- Through periodical employee satisfaction surveys

All grievances/feedback (written or verbal) will be registered electronically in the internal grievance and feedback database of the Project.

The related government agency is responsible for the execution of the Project-related expropriation process as per the applicable legislative requirements and making all the expropriation payments to the right holders. The grievances and objections with respect to the expropriation/land acquisition process to be executed by the Employer/Operator had been/will be inherently directed to and managed by the Employer/Operator as per the applicable legislation. During the construction phase, the Contractor, will record any grievance or feedback raised by the stakeholders regarding the expropriation/land acquisition process led by the Employer/Operator and convey these in writing to the Employer for management. As per the Expropriation Law (Law No. 2942, 1983), the state agency responsible from execution of expropriation process manages the requests and disagreements as per the relevant provisions of the Law.

During the operation phase, implementation of the SEP, including the internal and external grievance mechanisms will be under the responsibility of the Operator consistent with their internal/institutional procedures and mechanisms.

5.5. Contact Information for the Stakeholders

Project Owner/ Employer	T.C. Ulastirma ve Altyapi Bakanligi Altyapi Yatirimlari Genel Müdürlüğü Address: Hakkı Turalyic Cad. No:5 06338 Emek/Cankaya/Ankara E-mail: aygm.ozelkalem@uab.gov.tr Telephone: 0312 203 10 00
Project internet site	ankaraizmiryht.com
Contractor	Contact details of the General and Regional Project Management Office and Community Liaison Officers (CLOs) will be posted at the General and Regional Project Management Offices, subcontractor construction camp and work sites, and Project internet site and shared with the communities as part of SEP implementation.

(*) To be updated in due course as necessary.

GEM

www.gemtr.com