

1. INTRODUCTION

In accordance with the Law on Implementation of Some of the Investments and Services in the Framework of Build, Operate and Transfer Model (Law No: 3996), the Turkish Ministry of Transport, Maritime Affairs and Communications (MoTMAC), General Directorate of Highways (“KGM” or “the Administration”), has tendered for contracts in May 2016 for the overall North Marmara Motorway Project (including European and Asian sections), which starts at Kinali toll plaza near Alipasa neighborhood in Silivri district of Istanbul province, crosses the city of Kocaeli and ends at Akyazi Trans European Motorway (TEM) toll plaza in Akyazi district of Sakarya province, where the sea crossing is provided by the existing Yavuz Sultan Selim (Istanbul’s Third Bosphorus) Bridge and its associated motorways that are operational since August 2016. As a result of this tender, KGM has commissioned two different special purpose vehicles (SPV) for the implementation of the European and Asian sections of the North Marmara Motorway Project under the related Build, Operate and Transfer (BOT) contracts. In this regard, Avrupa Otoyolu Yatirim ve Isletme A.S. (Avrupa OYIAS) has been awarded with a BOT Contract for the implementation of the European part (European sections: Kinali-Yassioren, Yassioren-Odayeri and Habibler-Hasdal sections) of the Project and KMO Anadolu Otoyol Isletme A.S. (Anadolu OIAS) has been awarded with a BOT Contract for the implementation of the Asian part (Asian sections: Kurtkoy-Liman; Liman-Izmit and Izmit-Akyazi sections) of the Project. These two entities together form the Marmara Otoyolu Joint Venture (MOJV) and referred as Project Sponsors in the scope of the Environmental and Social Impact Assessment (ESIA) studies.

This Environmental and Social Action Plan (ESAP) has been prepared by ENCON Environmental Consultancy Co. (“the Independent Environmental and Social Consultant (IESC)” or “ENCON”) for the Asian part (Asian sections: Kurtkoy-Liman; Liman-Izmit; and Izmit-Akyazi) of the North Marmara Motorway Project (“the Asian part of the Project”). The European part of the Project is subject to a separate ESIA Report and ESAP.

ENCON has prepared this ESAP in order to set out the actions that are needed to be implemented by Project Sponsors to ensure that the Project meets IFC Performance Standards during prior to financial close, construction and operation phases.

2. PROJECT PROGRESS

The North Marmara Motorway is a project that has been tendered out in the framework of BOT model. As the winning bidder, the companies forming MOJV seeks finance from financial institutions/potential lenders, who would require international environmental and social standards and guidelines to be adopted in the implementation of the Project. In consideration of Equator Principles, World Bank policies and IFC’s Sustainability Framework, the Project is evaluated to be likely to include activities and components that are to be effectively managed to avoid or minimize significant environmental and social impacts. In this respect, the North Marmara Motorway Project would be classified as a Category A Project, for which the borrower is responsible for preparing an Environmental Impact Assessment (EIA) Report/full-scale ESIA. Similarly the EU’s EIA Directive and the Turkish EIA Regulation, which has been harmonized with EU’s EIA Directive also define the motorway construction projects as Annex I activities, for which an EIA is required. Thus, to meet the environmental and social requirements of the

potential lenders, who would require international environmental and social standards and guidelines to be adopted in the implementation of the Projects that are to be financed by them, a full-scale ESIA process has been started for the Project in November 2016.

According to internationally accepted and applied impact assessment procedures, the ESIA process started with the initial screening and scoping phases. Findings of the screening and scoping studies were documented in the Scoping Report dated December 2016. The primary aim of the Scoping Report has been the identification of the environmental and social issues and impacts that are likely to be important and delineation of the scope of the ESIA Report to be prepared.

Following the scoping phase, other key processes including examination of alternatives; stakeholder identification (focusing on those directly affected) and engagement; gathering of environmental and social baseline data by means of desk-based and field studies; impact identification, prediction, and analysis; generation of mitigation or management measures and actions; evaluation of significance of impacts and residual impacts; and documentation of the assessment process, were conducted in accordance with the requirements of the relevant Turkish laws and regulations, Equator Principles and IFC's Sustainability Framework and the findings of the entire process have been compiled in this ESIA Report, which has been prepared for the Asian sections of the overall North Marmara Motorway Project.

In scope of ESIA studies; the end of March 2017 was accepted as a "design freeze" date and project specific information/data and other documentation was incorporated into ESIA Report. Owing to the nature of the Project, it was observed that there have been changes in project design components. These include changes in number and location of project engineering structures, number of service areas, cut and fill volumes, quarries and storage sites along the route. In addition, Project Sponsors have obtained production permits for new quarries and identified new storage sites for excess material storage.

This report summarizes the current status of project construction works, the changes in project components and also provides information on current permitting status. Detailed information on Project design and other issues are presented in ESIA Report. It should be noted that information presented below are based on most up to date information (as of October 2017) provided by the Project Sponsors and will be prone to similar changes inevitably as the project proceeds.

Project expropriation, land use permitting issues, land preparation and construction works have already been started in all sections and progressing at different paces and different locations. According to Project Progress Report prepared by the Project Sponsors (dated August 2017); 33% of the earthworks, cut and fill, 10 % of the cement works regarding main engineering structures such as viaducts, 28 % of the small engineering structures such as culverts and 12% of tunnel excavation works have been completed. Table 1 provides a summary regarding the status of project construction works as detailed in the Progress Report prepared by Project Sponsors.

Table 1. Summary of Current Status of Project Construction Works (as of August 2017)

Activity/Task	Motorway Section	Details
Earthworks	Section 4	<ul style="list-style-type: none"> Earthworks are being continued at Liman Access Road and main motorway route
	Section 5	<ul style="list-style-type: none"> Cut and fill works are being continued between KM 156+500-158+000. Soil stripping and other land preparation works are initiated between KM 174+500-175+000. Cut and fill works are initiated between KM 177+000-178+000. Drainage works are being continued between KM 161+500-164+000.
	Section 6	<ul style="list-style-type: none"> Fill works are being continued at exit of tunnel T5. Land preparation works and excavation is initiated between KM 200+300-201+000. Cut and fill works has been initiated between 216+500-217+700.
Engineering Structures	Section 4	<ul style="list-style-type: none"> Bored pile construction is being continued for viaduct V01. In this scope construction of 250 piles was completed. Excavation works for viaduct V07 are being continued. Construction of foundations of 2 legs has been completed. Construction of culverts and underpasses are being continued.
	Section 5	<ul style="list-style-type: none"> Foundations for 20 viaduct legs have been completed for viaduct V02. Elevation works are being continued. Foundations for 15 viaduct legs of viaduct V03 have been completed. Bored pile constructions for viaduct V06 are being continued. Construction of culverts and underpasses are being continued.
	Section 6	<ul style="list-style-type: none"> Construction of 355 bored piles for viaduct V06 has been completed. Foundation excavations are being continued for viaduct V10. Construction of bored piles has been initiated for viaduct V11. Construction of culverts and underpasses are being continued.
Tunnels	Section 5	<ul style="list-style-type: none"> Excavation and excavation support works are being continued for upper and lower parts of tunnels T1 and T2. Excavation and excavation support works for entrance of tunnel T3 and exit of tunnel T4 has been initiated.
	Section 6	<ul style="list-style-type: none"> Excavation and excavation support works for entrance of tunnel T5 has been continued.
Superstructures	Section 4	<ul style="list-style-type: none"> Construction of superstructures has been initiated at Liman Access Road – Demirciler Organized Industrial District area.

2.1. Status of Environmental Permits and Licenses

The North Marmara Motorway Project has been exempted from the requirements of the Turkish EIA Regulation with the EIA Exemption Letter was provided by the MoEU thus no “EIA Positive Certificate” is required for the Project. Status of main environmental permits and/or licenses that would be required for the Project are listed in Table 2.

Table 2. Status of Main Environmental Permits and/or Licenses that would be Required (as of October 2017)

Project Phase	Permit/License/Approval/Agreement	Status of Permitting (Completed (C)/On-going (ONG) Not Started (NS)/ Not Applicable (NA))		
		Section 1	Section 2	Section 7
Land Preparation and Construction				
Land Use	Forestry permit	C	C	ONG
	Permit for the use of pasturelands	ONG	ONG	ONG
	Permit for the use of agricultural lands for non-agricultural purposes	ONG	ONG	ONG
	Land use agreements with state authorities for state-owned lands	ONG	ONG	ONG
Construction and Camp Sites	Crossing permits/approvals for railroads, rivers, roads, canals, power supply lines, natural gas pipelines, etc.	ONG	ONG	ONG
	Workplace notification for Camp Sites	-	-	-
	Utility permits for the temporary connection to existing utilities (telecom, electricity, etc.)	ONG	ONG	ONG
	Fuel storage permit	NA	NA	NA
	Permits for service roads	C	C	C
	Provisional operation certificate/environmental permit for the operation of concrete plants	ONG	ONG	C
Water/Wastewater Management	Provisional operation certificate/environmental permit for the operation of package wastewater treatment plants	ONG	ONG	ONG
	Wastewater treatment plant identity	C	C	ONG
	Groundwater Utilization Permit	NA	C	NS
Waste Management	Permit for temporary waste storage areas	ONG	NS	NS
	Storage permit for the access amount raised by the cut	NS	NS	NS
	Waste management plan approval	NS	NS	NS
	Agreements with licensed waste management/disposal companies	ONG	ONG	ONG
Quarry Operation	Raw material production/quarry operation license	NS	C	ONG
	Permission to use long vehicles	NS	NS	NS
Blasting and Explosives Management	Blasting permit	C	C	-
	Permit for storage of explosives	ONG	ONG	ONG
Others	Private security permit	C	C	ONG
Operation				
Water/Wastewater Management	Provisional operation certificate/environmental permit for the operation of package wastewater treatment plants at the service areas or connection quality control certificate and/or wastewater channel connection document	Not Applicable at this stage.		
Others	Certificate for starting up and operating of a workplace			
	Private security permit			

¹Completed for the Motorway.

In addition to permitting status described above, progress on water use permits is of concern. In this regard, groundwater is not used in Section 4. Water is supplied to the camp site being means of municipal water supply systems and carried by tankers. In case of further need, groundwater usage permits will be taken.

Groundwater usage permits have been taken for water supply to concrete plant and the camp site. In this regard, 2 groundwater wells are being used in Section 5. In addition application for 2 groundwater wells was made to General Directorate of State Hydraulic Works.

Groundwater is not being used in Section 6. Water is supplied by means of tankers and groundwater permit applications will be made when necessary.

Summary of information regarding water supply is provided in Table 3.

Table 3. Information on Water Supply

	Motorway Section		
	Section 4	Section 5	Section 6
Water Supply	Central Camp Site: Municipal Water Supply/ISU Construction Sites : Water supply by means of tankers	4 groundwater wells: K1 : Concrete Plant K2 : Central Camp Site K3 : Tunnel Camp Site K4 : Concrete Plant	Water supply by means of tankers Alternative water supply sources such as groundwater and municipal water supply are being evaluated. In this regard negotiations with the General Directorate of State Hydraulic Works and SASKI are being continued.
Groundwater Well Usage	-	Permits for K1 and K2 are taken. Applications have been made for K3 and K4 on 14.08.2017.	-
Groundwater Well Location	-	K1 Kutluca neighborhood/Korfez/Kocaeli K2 Kutluca neighborhood/Korfez/Kocaeli K3 Kabaoglu neighborhood/Izmit/Kocaeli K4 Toylar neighborhood/Derince/Kocaeli	-
Water Demand	-	K1 34500 ton/year K2 35500 ton/year Hydrogeological survey reports are not yet prepared for K3 and K4.	-
Amount of Water Permitted	-	K1 34,56 ton/day ; 10368 ton/year K2 25,92 ton/day ; 9331,20 ton/year	-

2.2. Project Components

2.2.1. Camp Sites and Plants

During the construction works, temporary construction facilities/sites will be needed. These facilities and sites include construction camp sites, quarries, plants and service roads. Following the completion of construction activities, temporary facilities will be decommissioned and the sites will be rehabilitated. Table 4 provides a list of the camp sites and plants to be used in the scope of the Project.

Table 4. List of Camp Sites and Plants (as of October 2017)

Location	Description of the Site/Plant	Area/ Capacity Information
Section 4		
4+900	Asphalt Plant	350 ton/hr
	Mechanical Plant	500 ton/hr
	Crusher	400 ton/hr
7+000	Concrete Plant	90 m ³ /hr
147+500	Concrete Plant	90 m ³ /hr
	Crusher	400 ton/hr
4+500	Demirciler Construction Campsite	29 ha
Section 5		
164+900	Crusher	600 ton/hr
165+100	Asphalt Plant	320 ton/hr
165+700	Concrete Plant	90 m ³ /hr
177+450	Concrete Plant-	105 m ³ /hr
183+000	Concrete Plant-	105 m ³ /hr
165+000	Sevindikli Construction Campsite	6 ha
Section 6		
189	Concrete Plant	120 m ³ /hr
198	Concrete Plant	135 m ³ /hr
226	Concrete Plant	135 m ³ /hr
	Crusher	5000 ton/shift
225+500	Taskisigi Construction Campsite	8,8 ha

2.2.2. Quarries/Borrow Sites

During the construction works, temporary construction facilities/sites will be needed. These facilities and sites include construction camp sites, quarries, plants and service roads. Following the completion of construction activities, temporary facilities will be decommissioned and the sites will be rehabilitated.

Table 5 provides a list of the quarries/material borrow sites for which production permits are taken and to be used in the scope of the Project.

Table 5. List of Quarries/Material Borrow Sites (as of October 2017)

Location			Description of the Site/Plant	Area/Capacity Information
Province	District	Nearest Neighborhood		
Kocaeli	Korfez	Kutluca (Kiyirlar)	Kutluca Limestone Quarry	28,94 ha
Sakarya	Adapazari	Taskisigi	Taskisigi Limestone Quarry 1-2	16,8 ha
Sakarya	Adapazari	Taskisigi	Taskisigi Limestone Quarry-4	39,12 ha
Sakarya	Yagbasan	Hendek	Yagbasan Sandstone Borrow Site	42,89 ha
Sakarya	Merkez	Kislakoy	Limestone Quarry (DSI Area)	7,2 ha

2.2.3. Storage Sites

Storage sites will be used for the disposal and storage of excess excavated materials. List of storage sites identified to be used so far for the Asian sections along with their areas and storage capacities is presented in Table 6.

Table 6. List of Storage Sites Planned to be Used (as of October 2017)

Location	Location			Description of the Site	Area (ha)	Storage Capacity (m ³)
	Province	District	Nearest Neighborhood			
Section 4						
150+500-151+000	Kocaeli	Dilovasi	Demirciler	Storage Site-401, 402, 403 and 404	29,3	1.804.851,13
Liman Access Road 5+500	Kocaeli	Dilovasi	Demirciler	Storage Site	8,5	846.199,44
Section 4 Total					37,8	2.651.050,57
Section 5						
151+500	Kocaeli	Korfez	Kutluca	Storage Site-501	13,5	649.852,51
Section 5 Total					13,5	649.852,51
Section 6						
209+000	Kocaeli	Izmit	Suleymaniye	Storage Site-601	11,7	1.115.351,04
201+000-202+000	Kocaeli	Izmit	Bayraktar	Storage Site-602	16,9	1.089.553,28
Section 5 Total					28,6	2.204.904,32

2.2.4. Engineering Structures

The Asian part of the North Marmara Motorway Project will have components distributed in three sections between Kurnakoy neighborhood in Pendik district of Istanbul, which is located in the southeast of Pasakoy interchange (the ending point of Section 3) and Akyazi TEM interchange in Akyazi district of Sakarya.

Main engineering structures in the North Marmara Motorway Project includes the viaducts, tunnels, overpasses and underpasses, culverts, etc. Table 7 provides a summary of the total number of engineering structures for Asian sections according to current design of the Project.

Table 7. Summary Table for Engineering Structures (as of October 2017)

Type of Structure	Section 4	Section 5	Section 6	Total
Interchange	9	4	11	24
Viaduct	5	4	3	12
Bridge	11	2	73	86
Tunnel	0	4	1	5
Underpass	28	11	19	58
Overpass	16	11	35	62
Culvert	162	60	162	384

Section 4: Kurtkoy-Liman

Viaducts and tunnels to be constructed in Section 4 of the Motorway are listed in Table 8.

Table 8. Viaducts and Tunnels in Section 4

Code	Length (m)	Location on the Route (Motorway KM)		Explanation
		Start Location	End Location	
Viaducts				
V-01	481	129+983	130+463	Topographical conditions
V-07	854	150+500; 8+950	150+500; 9+804	Topographical conditions – Liman Access Road
V-08	382	0+526	0+908	Connection to TEM Interchange
V-09	293	1+109	1+402	Connection to TEM Interchange
V-13	255	144+670	144+925	Topographical conditions

Interchanges to be constructed in Section 4 of the Motorway are listed in Table 9.

Table 9. Interchanges in Section 4

Code	Interchanges	Location on the Route (Motorway KM)
KAV-01 and KAV-02	Formula-1 and 2 Interchange	137+260
KAV-03 and KAV-04	Balcik-1 and 2 Interchange	142+245
KAV-05	Liman Interchange	150+500
KAV-06	Mermerciler OSB Interchange	150+500; 2+675
KAV-07	Demirciler OSB Interchange	150+500; 7+258
KAV-08	D-100 Gebze Interchange	150+500; 10+204
KAV-09	TEM Gebze Interchange	150+500; 11+570

Bridges to be constructed in Section 4 of the Motorway are listed in Table 10.

Table 10. Bridges in Section 4

Code	Bridges	Location on the Route (Motorway KM)
K01	Bridge	132+853
K31	Fatih Sultan Mehmet Avenue	136+987;0+069
K32	Istanbulpark Access Road, Istanbulpark-Akfirat Intersection	137+260; 0+245
K33	Gebze-OSB Interchange Arm-2	142+329; 0+541
K34	Balcik-1 Access Road Interchange Bridge	142+245;1+752
K35	Liman Interchange Arm-2	150+566+0+614
K36	Sanayi-1 Interchange Bridge	150+500; 2+674
K37	Liman Access Road D100 Interchange Bridge	150+500; 10+175
K38	TEM Interchange Arm-4	0+321
K39	TEM Interchange Arm-4	0+498
K40	TEM Interchange Arm-4	0+627

Underpasses and overpasses to be constructed in Section 4 of the Motorway to provide connection between settlements, agricultural field roads, forest roads or zoning roads are listed in Table 11 and Table 12, respectively.

Table 11. Underpasses in Section 4

Code	Dimensions	Location on the Route (Motorway KM)
A01	12x5,5	131+269,691
A02	12X5,5	132+285,971
A03	20x6,0	133+060
A04	7x5,5	135+720
A05	2x(13,5x6)	137+259,374
A06	2x(12,5x5,5)	140+460
A07	2x(12,5x6,5)	141+619,933
A08	15x6	142+163
A09	12x5,5	142+900,714
A10	15x6	144+210
A13	12x5,5	145+710,704
A14	12x5,5	146+039
A15	12x5,5	148+075
A16	15x6	150+418,717
A38	15X6	150+500; 0+728,228
A39	2x(13,5x6)	150+500; 1+841
A40	7x5,5	150+500; 0+740,96
A41	7x5,5	150+500; 0+951,761
A43	15x6	150+500; 0+542
A44	2x(14x5,5)	150+500; 0+722
A45	9x5,5	150+500; 6+581,358
A46	2x(13,5x6)	150+500; 7+258,019
A47	15x6	150+500; 11+164
A48	15x6	150+500; 11+476,402
A49	15x6	150+500; 11+570; 0+475
A50	15x6	150+500; 11+570
A67	13x5,5	135+536
A68	7x5,5	150+500;5+560

Table 12. Overpasses in Section 4

Code	Location on the Route (Motorway KM)
U01	134+070
U02	135+048
U03	138+440,215
U04	139+831,847
U05	141+084
U06	147+285
U07	149+688,649
U08	151+304,306
U51	0+345,749
U53	142+245; 1+367,421
U54	150+500; 1+973,502
U55	150+500; 3+520
U56	150+500; 10+709
U57	150+500; 11+008
U64	150+500; 0+947
U65	150+500; 5+696

Culverts of different dimensions to be constructed in Section 4 of the Motorway are listed in Table 13.

Table 13. Culverts in Section 4

Code	Location on the Route (Motorway KM)	Dimensions (mxm)	Description
M01	131+443	1(5x5)	Main Road
M02	131+650	1(7x5)	Main Road
M03	131+995	1(3x3)	Main Road
M04	132+189	1(3x3)	Main Road
M05	132+828	1(2x2)	Main Road
M06	133+350	1(2x2)	Main Road
M07	133+555	1(2.5x2.5)	Main Road
M08	135+636	1(9x5)	Main Road
M09	136+361	1(2x2)	Main Road
M417	136+621	1(1.5x1.5)	Main Road
M10	137+604	1(3x3)	Main Road
M11	137+965	1(2x2)	Main Road
M12	138+805	1(3x3)	Main Road
M13	139+572	1(4x4)	Main Road
M14	140+313	1(2.5x2)	Main Road
M15	140+567	1(2x2)	Main Road
M16	140+949	1(2x2)	Main Road
M17	141+532	1(12x5)	Main Road
M18	142+855	1(2x2)	Main Road
M19	143+277	1(3x3)	Main Road
M21	144+286	1(2x2)	Main Road
M23	146+168	1(10x5)	Main Road
M24	147+105	1(2x2)	Main Road
M25	148+053	1(2x2)	Main Road
M26	148+153	1(4x4)	Main Road
M27	148+358	1(10x5)	Main Road
M28	148+662	1(5x5)	Main Road
M29	149+747	1(2x2)	Main Road
M30	149+894	1(3x3)	Main Road
M31	150+216	1(3x3)	Main Road
-	0+370	Ø1000	131+269 Connection Road
M157	0+143	1(2.5x2)	132+286 Connection Road
M158	0+036	Ø1000	132+286 Connection Road
			132+286 Connection Road
M161	0+193	Ø1000	134+061 Connection Road
M168	0+329	1(2x2)	İstanbulpark Interchange Access Road
M167	0+490	1(3x3)	İstanbulpark Interchange Access Road
M165	0+948	1(2x2)	İstanbulpark Interchange Access Road
M164	1+097	1(3x3)	İstanbulpark Interchange Access Road
M163	1+222	1(2x2)	İstanbulpark Interchange Access Road
M162	1+492	1(2x2)	İstanbulpark Interchange Access Road
M173	0+171	1(2x2)	İstanbulpark-1 Interchange Arm -1
M172	0+237	1(2x2)	İstanbulpark-1 Interchange Arm -2
M174	0+146	1(3x3)	İstanbulpark-1 Interchange Arm-4
M170	0+160	1(2x2)	İstanbulroad-2 Interchange Arm -1
M166	0+210	1(2x2)	İstanbulroad-2 Interchange Arm -2
M169	0+254	1(3x3)	İstanbulroad-2 Interchange Arm -3
M171	0+274	1(3x3)	İstanbulroad-2 Interchange Arm-4
M176	0+139	Ø1000	138+440 Connection Road
M177	0+039	Ø1000	139+832
M183	0+336	1(2x2)	141+620
M182	0+502	1(2x2)	141+620
M181	0+628	1(2x2)	141+620
M178	0+963	1(3x3)	141+620
M179	1+110	1(2x2)	141+620
M180	1+497	1(5x5)	141+620
M188	0+395	1(2x2)	Gebze-OSB Access Road
M189	0+931	1(2.5x2)	Gebze-OSB Access Road
M190	1+171	1(3x3)	Gebze-OSB Access Road
M191	1+489	1(5x5)	Gebze-OSB Access Road
M192	2+902	1(4x4)	Gebze-OSB Access Road

Code	Location on the Route (Motorway KM)	Dimensions (mxm)	Description
-	0+083	1(5x5)	Balcik-1 Access Road
M194	0+584	1(2x2)	Balcik-1 Access Road
M195	0+648	1(2x2)	Balcik-1 Access Road
M197	1+029	1(5x5)	Balcik-1 Access Road
M199	1+482	1(2x2)	Balcik-1 Access Road
M206	1+679	1(2x2)	Balcik-1 Access Road
M210	0+688	1(2.5x2)	Balcik-2 State Road
M208	0+838	1(2x2)	Balcik-2 State Road
M204	1+015	1(2.5x2.5)	Balcik-2 State Road
M202	1+129	1(2x2)	Balcik-2 State Road
M186	0+386	1(2x2)	Gebze-OSB Access Road Interchange Arm-1
M212	1+179	1(2x2)	Gebze-OSB Access Road Interchange Arm -1
M185	0+904	1(3x3)	Gebze-OSB Access Road Interchange Arm -2
M184	0+394	1(2x2)	Gebze-OSB Access Road Interchange Arm -3
M187	0+571	1(3x3)	Gebze-OSB Access Road Interchange Arm -3
-	0+170	1(5x5)	Balcik-1 Interchange Arm-1
M196	0+305	Ø1500	0+741 Forest Road
M198	0+301	1(2.5x2)	1+367 Forest Road
-	0+085	1(2x2)	Balcik-2 Interchange Arm -1
M203	0+347	1(9x5)	Balcik-2 Interchange Arm -1
M205	0+267	1(2x2)	Balcik-2 Interchange Arm -2
M201	0+219	1(2x2)	Balcik-2 Interchange Arm -2
M209	0+096	1(9x5)	Balcik-2 Interchange Arm -4
-	0+283	1(2x2)	Balcik-2 Interchange Arm -4
-	0+149	1(9x5)	Balcik-2 Interchange Arm -5
M211	0+222	1(2.5x2)	Balcik-2 Interchange Arm -7
-	0+601	1(2x2)	Balcik-2 Interchange Arm -7
-	0+269	1(2x2)	Balcik-2 Interchange Arm -8
-	0+426	1(9x5)	Balcik-2 Interchange Arm-8
M213	0+095	Ø1000	147+285 Connection Road
M214	0+307	Ø1000	147+285 Connection Road
M215	0+277	Ø1000	149+689 Connection Road
M216	0+508	Ø1000	149+689 Connection Road
M222	0+433	1(2x2)	Liman Interchange Arm -1
M219	0+912	1(3x3)	Liman Interchange Arm -1
M217	1+211	1(2x2)	Liman Interchange Arm -1
M281	0+453	1(3x3)	Liman Interchange Arm -2
M221	0+901	1(2x2)	Liman Interchange Arm -2
-	1+267	1(2x2)	Liman Interchange Arm -2
M223	0+263	1(2x2)	Liman Interchange Arm -3
M279	0+440	1(2x2)	Liman Interchange Arm -3
M280	0+540	1(2x2)	Liman Interchange Arm -3
M218	0+261	1(2x2)	Liman Interchange Arm -4
M220	0+416	1(3x3)	Liman Interchange Arm-4
M282	0+256	Ø1000	151+304
-	0+279	-	41-77 State Road (İstanbul-Izmit Road)
-	0+527	-	41-77 State Road (İstanbul-Izmit Road)
-	1+098	-	41-77 State Road (İstanbul-Izmit Road)
M228	0+877	1(3x3)	Liman Interchange Access Road
M229	1+271	1(4x4)	Liman Interchange Access Road
M230	1+540	1(2x2)	Liman Interchange Access Road
M231	0+271	Ø1200	1+973 Connection Road
M233	2+129	1(3x3)	Liman Interchange Access Road
M234	2+222	1(4x4)	Liman Interchange Access Road
M235	2+360	Ø3200	Liman Interchange Access Road
M238	0+097	1(3x3)	Mermerciler-OSB Interchange Arm-1
M405	0+187	1(2x2)	Mermerciler-OSB Interchange Arm -1
M240	0+099	1(2x2)	Mermerciler-OSB Interchange Arm -3
M236	0+496	1(2x2)	Mermerciler-OSB Interchange Arm -3
M241	0+512	1(2x2)	Mermerciler-OSB Interchange Access Road
M242	0+655	Ø3000	Mermerciler-OSB Interchange Access Road
-	2+516	1(2x2)	Liman Interchange Access Road
M243	2+723	Ø2000	Liman Interchange Access Road
M244	2+901	1(3x3)	Liman Interchange Access Road

Code	Location on the Route (Motorway KM)	Dimensions (mxm)	Description
M245	3+157	Ø2000	Liman Interchange Access Road
M246	3+681	1(2x2)	Liman Interchange Access Road
M247	5+510	1(7x5)	Liman Interchange Access Road
M248	6+446	1(4x4)	Liman Interchange Access Road
M406	0+075	Ø1500	6+581 Connection Road L-1
M407	0+339	Ø1000	6+581 Connection Road -1
M419	0+460	Ø1000	6+581 Connection Road -1
M408	0+125	Ø1000	6+581 Connection Road -2
M250	7+075	Ø2100	Liman Interchange Access Road
M409	0+163	1(2x2)	Demirciler-OSB Interchange Arm -2
M254	0+365	1(2x2)	Demirciler-OSB Interchange Arm -3
M251	0+132	1(2x2)	Demirciler-OSB Interchange Arm -4
M252	0+417	1(2x2)	Demirciler-OSB Interchange Arm-4
M253	0+165	Ø2100	Demirciler-OSB Interchange Access Road
M410	0+472	1(2x2)	Demirciler-OSB Interchange Access Road
M256	0+816	1(3x2.5)	Demirciler-OSB Interchange Access Road
M257	1+407	Ø3000	Demirciler-OSB Interchange Access Road
M259	2+496	1(3x3)	Demirciler-OSB Interchange Access Road
M411	7+365	1(2x2)	Liman Interchange Access Road
M255	7+437	1(2x2)	Liman Interchange Access Road
M260	8+021	1(5x5)	Liman Interchange Access Road
M261	8+444	1(2x2)	Liman Interchange Access Road
M265	0+163	1(2x2)	D100- Gebze Arm -2
M268	0+361	1(2x2)	D100- Gebze Arm -2
M267	0+063	1(2x2)	D100- Gebze Arm -3
M262	0+357	1(2.5x2)	D100- Gebze Arm -5
M269	0+246	1(2x2)	D100-Gebze Arm-6
M263	1+220	1(2.5x2)	D100-Gebze Road
M264	1+851	1(2x2)	D100-Gebze Road
M266	10+276	1(2x2)	Liman Interchange Access Road
M270	10+531	1(3x3)	Liman Interchange Access Road
M271	11+077	1(2x2)	Liman Interchange Access Road
M272	11+439	1(2x2)	Liman Interchange Access Road
M273	0+313	1(2x2)	TEM- Gebze Interchange Arm -1
M278	0+608	1(3x3)	TEM- Gebze Interchange Arm -2
M277	1+102	1(3x3)	TEM- Gebze Interchange Arm -2
M275	0+161	1(3x2.5)	TEM-Gebze Interchange Arm-3
M276	0+448	1(2x2)	TEM-Gebze Interchange Arm-5

Section 5: Liman-Izmit

Viaducts and tunnels to be constructed in Section 5 of the Motorway are listed in Table 14.

Table 14. Tunnel and Viaducts in Section 5

Code	Length (m)	Location on the Route (Motorway KM)		Explanation
		Start Location	End Location	
Tunnels				
T-01	1.292	178+150	179+475	Passage through forestry
T-02	4.155	183+200	185+275	Passage through forestry
T-03	345	185+500	185+880	Passage through forestry
T-04	2.190	185+898	188+070	Passage through forestry
Viaducts				
V-02	717,20	159+554	160+293	Passage through forestry (ecological passage function)
V-03	852,26	164+959	165+808	Passage through forestry (ecological passage function)
V-04	762,20	171+841	172+603	Passage through valley
V-05	807,20	175+790	176+597	Passage through forestry (ecological passage function)

Interchanges to be constructed in Section 5 of the Motorway are listed in Table 15.

Table 15. Interchanges in Section 5

Code	Interchanges	Location on the Route (Motorway KM)
KAV-10 and KAV-11	Sevindikli-1 and 2 Interchange	169+380
KAV-12 and KAV-13	Toylar-1 and 2 Interchange	175+700

Bridges to be constructed in Section 5 of the Motorway are listed in Table 16.

Table 16. Bridges in Section 5

Code	Bridges	Location on the Route (Motorway KM)
K2	Ecological Bridge (40 m)	161+870
K77	Bridge on Sevindikli	0+609

Underpasses and overpasses to be constructed in Section 5 of the Motorway to provide connection between settlements, agricultural field roads or zoning roads are listed in Table 17 and Table 18, respectively.

Table 17. Underpasses in Section 5

Code	Dimensions	Location on the Route (Motorway KM)
A18	12x5	168+531
A19	2x(19x5,5)	168+225
A20	12x5,5	169+769
A51	20x5	0+254
A52	12x5,5	1+048
A64	12x5,5	1+666
A65	12x5,5	3+149
A66	12x5,5	4+825
A67	12x5,5	0+754
A68	12x5,5	0+343
A69	12x5,5	41+573

Table 18. Overpasses in Section 5

Code	Location on the Route (Motorway KM)
U9	153+550
U10	156+205
U11	157+743
U13	141+084
U14	162+645
U15	167+100
U16	172+860
U17	174+280
U18	175+707; 0+477
U59	177+000
U58	0+523

Culverts to be constructed in Section 5 of the Motorway are listed in Table 19.

Table 19. Culverts in Section 5

Code	Dimensions (m x m)	Location on the Route (Motorway KM)
M33	3x3	152+090.062
M34	3x3	152+429.630
M35	2x2	152+902.403
M36	2x2	153+277.459
M37	2x2	153+442.611
M38	4x4	155+323.339
M39	2x2	155+924.592
M40	3x3	156+892.998
M41	3x3	157+123.388
M42	2x2	158+451.669
M43	2x2.5	158+928.504
M44	3x3	159+368.160
M45	Ø2300	160+463.250
M46	3x3	160+843.170
M47	Ø2300	161+210.029
M48	Ø2300	161+409.862
M49	Ø2300	162+130.188
M50	Ø2300	162+308.103
M51	Ø2300	162+562.830
M52	3x3	163+096.933
M53	3x3	164+237.478
M54	3x3	166+557.610
M301	4x3	169+240.496
M302	2x2	171+196.673
M56	3x3	171+541.380
M57	2x2	172+970.126
M58	2x2	173+652.325
M59	3x3	174+625.593
M60	3x3	175+114.416
M61	2x2	175+543.485
M62	3x3	177+400.159
M63	3x3	178+006.604
M64	3x3	179+512.112
M65	3x3	179+652.210
M66	3x3	180+144.917
M67	3x3	180+322.597
M68	3x3	180+788.491
M69	4x4	180+951.580
M70	4x3	185+334.649
M71	3x3	185+812.836
M72	3x3	188+180.808
M283	3x3	1+973.220
M284	4x3	3+162.468
M285	2x2	3+644.165
M286	7x5	4+391.475
M287	9x5	5+432.473
M288	2x2	41+220.000
M289	3x3	0+535.809
M290	6x3	0+040.089
M291	2x2	0+139.800
M292	2x2	0+400.857
M293	2x2	0+664.286
M303	6x3	0+856.819
M294	3x3	0+121.134
M295	2x2	1+139.241
M296	2x2	0+540.155
M297	2x2	0+135.047
M298	2x2	0+450.716
M299	2x2	0+655.553
M300	2x2	0+903.191

Section 6: Izmit-Akyazi

Viaducts and tunnels to be constructed in Section 6 of the Motorway are listed in Table 20.

Table 20. Tunnels and Viaducts in Section 6

Code	Length (m)	Location on the Route (Motorway KM)		Explanation
		Start Location	End Location	
Tunnels				
T-01	2.720	189+060	190+420	Topographical conditions, passage through forestry
Viaducts				
V-06	1.560	188+200	189+980	Topographical conditions, passage of greenhouses
V-10	680	191+300	191+980	Topographical conditions
V-11	420	198+720	199+140	Topographical conditions

Interchanges to be constructed in Section 67 of the Motorway are listed in Table 21.

Table 21. Interchanges in Section 6

Code	Interchanges	Location on the Route (km)
KAV-14 and KAV-15	Kandira-1 and 2 Interchange (Cayirkoy)	191+820
KAV-16	Izmit Access Road Interchange	194+800
KAV-17	OSB Interchange (on the Izmit Access Road)	194+800; 0+830
KAV-18	TEM Interchange (on the Izmit Access Road)	194+800; 4+140
KAV-19	Akmese Interchange	212+830
KAV-20	Kaynarca-Adapazari-Karaman Camili Interchange	223+810
KAV-21 and KAV-22	Karasu-1 and 2 Interchange	231+840
KAV-23 and KAV-24	Akyazi-1 and 2 Interchange	243+350

Bridges to be constructed in Section 6 of the Motorway are listed in Table 22.

Table 22. Bridges in Section 6

Code	Bridges	Location on the Route (Motorway KM)
K03	Railway Interection	194+790
K04	DSI Channel Passage	220+056
K05	DSI Channel Passage	220+789
	Bridge	221+610
K06	DSI Channel Passage	221+744
K07	Adapazari-Karaman Road	221+905
K08	DSI Channel Passage	222+284
K11	DSI Channel Passage	227+680
K12	DSI Channel Passage	228+433
K13	DSI Channel Passage	230+035
	Channel Passage	230+960
K14	DSI Channel Passage	232+049
K15	Sakarya River	232+628
K16	DSI Channel Passage	233+881
K17	DSI Channel Passage	234+189
K18	DSI Channel Passage	235+065
K19	DSI Channel Passage	235+982
K20	DSI Channel Passage	236+819
K21	DSI Channel Passage	237+795

Code	Bridges	Location on the Route (Motorway KM)
K22	DSI Channel Passage	237+976
K23	DSI Channel Passage	239+625
K24	DSI Channel Passage	240+474
K25	DSI Channel Passage	240+550
K26	DSI Channel Passage	241+387
K27	DSI Channel Passage	243+303
K28	DSI Channel Passage	245+349
K29	DSI Channel Passage	245+570
K30	DSI Channel Passage	247+666
	Channel Passage	250+724
	Channel Passage	0+295
K41	Kandira Access Road Cayirkoy Interchange Bridge	3+415
K42	Kandira Access Road Cayirkoy Interchange Arm-1 Bridge	0+638
K43	Cayirkoy Dam Spillway	0+776
K44	Cayirkoy Dam Spillway	0+146
K45	Cayirkoy Dam Spillway	0+360
K46	Cayirkoy Dam Spillway	0+322
	Izmit Access Road	0+550
K47	Izmit Access Road-DSI Channel Intersection	3+650
K48	Railway intersection	1+110
	Izmit Access Road Arm 2	0+256
K49	Railway intersection	0+250
	Izmit OSB Interchange Arm 1	0+170
	Izmit OSB Interchange Arm 2	0+082
	Izmit OSB Interchange Arm 2	0+302
	Izmit OSB Interchange Arm 3	0+140
	Izmit OSB Interchange Arm 4	0+160
	Izmit OSB Interchange	0+391
K50	Izmit Access Road TEM Intersection Interchange Bridge	4+105
K52	DSI Channel Passage	0+247
K53	DSI Channel Passage	0+608
K54	DSI Channel Passage	1+788
K55	DSI Channel Passage	3+119
K56	Kaynarca State Road-Interchange Intersection	0+210
K57	Kaynarca-Adapazari Access Road-Main Road Intersection	1+465
K58	Kaynarca-Adapazari Access Road Interchange Bridge	3+015
K59	Kaynarca State-Road-Main Road Intersection	224+900; 0+415
K60	DSI Channel Passage	0+146
K61	DSI Channel Passage	0+194
K62	Karasu Access Road-State Main Road Intersection	0+310
K63	Karasu Access Road-State Road Intersection	2+710
K64	DSI Channel Passage	0+690
K65	DSI Channel Passage	1+896
K66	DSI Channel Passage	2+571
K67	DSI Channel Passage	0+168
K68	DSI Channel Passage	0+196
K69	Akyazi Access Road-Main Road Intersection	0+215
K70	Akyazi Access Road-D-100 Intersection	1+395
K71	DSI Channel Passage	0+235
K72	DSI Channel Passage	1+870
K73	D-100 Main Road Intersection	1+530
K74	TEM Intersection	0+900
K75	Dinsiz Creek	1+395
K76	Dinsiz Creek	0+685

Underpasses and overpasses to be constructed in Section 6 of the Motorway are listed in Table 23 and Table 24, respectively.

Table 23. Underpasses in Section 6

Code	Dimensions	Location on the Route (Motorway KM)
A25	15x6	194+566
A26	12x6	195+065
A28	7x5,5	207+725
A29	12x5,5	211+156
A30	2x(12x6)	212+828
A31	12x5,5	213+856
A32	12x5,5	216+870
A33	7x5,5	219+565
A34	15x6	221+414
A36	12x5,5	228+786
A37	12x5,5	229+453
A55	15x5,5	0+910
A64	15x5,5	4+001
A57	12x5,5	0+103
A68	15x5,5	3+745
A60	7x5,5	1+022
A61	7x5,5	1+050
A62	7x5,5	2+288
A63	7x5,5	2+050

Table 24. Overpasses in Section 6

Code	Location on the Route (Motorway KM)
U63	193+842
U20	195+499
U21	196+272
U22	198+270
U23	199+618
U24	201+400
U25	202+563
U26	202+512
U27	206+900
U28	209+093
U29	215+436
U30	217+555
U31	218+485
U32	223+380
U66	224+900
U34	226+268
U35	228+189
U36	231+100
U37	232+136
U38	232+254
U39	233+632
U40	234+527
U41	235+820
U42	236+688
U43	237+463
U44	238+221
U45	238+700
U46	244+065
U47	246+734
U48	247+924
U49	249+150
U50	250+429
U60	2+758
U61	2+005
U62	1+091

Culverts to be constructed in Section 6 of the Motorway are listed in Table 25.

Table 25. Culverts in Section 6

Code	Location on the Route (Motorway KM)	Code	Location on the Route (Motorway KM)
M77	188 + 173,49	M306	3 + 267,66
M78	190 + 858,14	M307	3 + 530,44
M81	192 + 456,94	M308	3 + 669,64
	192 + 660,49	M313	0 + 612,26
M82	194 + 433,48	M396	0 + 088,02
M83	195 + 372,39	M393	0 + 265,74
M84	196 + 666,44	M397	0 + 197,41
	196 + 980,53	M392	0 + 235,26
M85	197 + 675,62	M316	0 + 641,00
M86	198 + 647,89	M318	0 + 145,96
M89	200 + 856,78	M394	0 + 697,23
M90	201 + 274,03	M395	0 + 804,09
M91	201 + 945,52		1 + 336,69
M92	202 + 193,82	M319	0 + 853,40
M93	202 + 892,54	M329	2 + 718,44
M94	203 + 903,03	M331	4 + 194,11
M95	204 + 288,43	M324	0 + 007,87
M96	204 + 645,05	M325	0 + 109,20
M97	204 + 758,25	M322	0 + 234,57
M98	205 + 265,16		0 + 121,75
M99	206 + 089,61	M323	0 + 288,74
M100	206 + 210,95	M333	0 + 229,91
M101	206 + 528,95	M334	0 + 495,55
M102	206 + 758,53	M335	0 + 198,51
M103	207 + 172,22	M336	0 + 388,69
M104	207 + 593,25	M337	1 + 090,01
M105	208 + 215,01	M338	0 + 186,50
M106	208 + 651,13	M339	0 + 124,02
M107	210 + 902,77		0 + 324,25
M108	211 + 057,82	M340	0 + 187,63
M109	211 + 525,78	M341	0 + 384,77
M110	212 + 486,41	M342	0 + 561,00
	212 + 791,06	M343	0 + 381,39
M111	212 + 932,91	M344	0 + 564,51
M112	213 + 268,43	M346	0 + 656,18
M113	213 + 781,56	M347	0 + 435,00
M114	214 + 895,39	M349	0 + 561,53
M115	215 + 146,03		1 + 036,92
M116	216 + 589,40	M354	2 + 342,52
	216 + 895,14	M355	2 + 765,36
	219 + 284,26	M356	0 + 138,51
M119	220 + 439,96	M357	0 + 216,65
M122	223 + 295,47	M358	0 + 196,43
M123	225 + 465,85	M359	0 + 184,52
M124	226 + 402,22	M360	0 + 560,76
M125	226 + 658,68	M361	1 + 924,78
M126	226 + 848,72	M362	0 + 207,61
M127	228 + 734,13	M363	0 + 199,32
M128	230 + 660,67	M364	2+983,90
M129	231 + 219,81	M365	0+083,82
M130	232 + 492,89	M366	0+244,94
M131	233 + 159,90	M367	0+322,62
M132	236 + 470,90	M368	0+186,01
M133	239 + 029,69	M369	0+142,54
M134	239 + 862,99		0 + 180,66
M135	240 + 766,22		0 + 374,81
M136	241 + 940,36	M371	0 + 041,99

Code	Location on the Route (Motorway KM)	Code	Location on the Route (Motorway KM)
M137	242 + 924,91	M374	0 + 096,09
M139	243 + 574,80	M375	0 + 210,69
	244 + 851,89	M376	0 + 093,66
M140	243 + 903,47	M377	0 + 296,32
M142	244 + 946,95	M378	0 + 302,56
M143	245 + 148,79	M379	0 + 276,26
M144	246 + 420,98	M380	0 + 182,46
M145	246 + 668,51	M381	0 + 454,72
M146	247 + 047,65	M382	0+139,85
M147	247 + 400,39	M383	0+468,46
M148	248 + 091,16	M384	0+216,77
M149	248 + 367,19	M385	0+351,73
M150	248 + 535,51	M386	0+420,33
M151	248 + 755,94	M387	0 + 291,71
M152	248 + 968,54	M388	0 + 596,72
M153	249 + 402,13	M389	0 + 809,26
M412	0 + 129,22	M390	1 + 378,97
M413	0 + 218,68	M391	1 + 478,98
M414	0 + 227,76	M401	0 + 121,55
M415	0 + 570,91	M400	0 + 853,49
M416	0 + 892,40	M418	0 + 306,35
M422	1 + 189,21		0 + 591,00
M303	1 + 738,48	M421	0 + 202,63
M304	2 + 950,47		0 + 132,23

2.2.5. Service Areas

In the scope of the North Marmara Motorway Project, service areas will be built on each side of the Motorway, opposing to each other. Connection between two sites will be provided by suitable road structures (e.g. culvert, overpass, etc.). Parking areas for passenger vehicles and heavy vehicles will be separated. Service areas to be constructed in the Asian part of the Motorway are listed in Table 26.

Table 26. Service Areas in Asian Part

Service Areas	Location on the Route (Motorway KM)
Section 4	
Type B Service Area	139+170
Type D Service Area	146+700
Type D Service Area	150+500; 4+500
Section 5	
Type B Service Area	163+650
Section 6	
Type D Service Area	198+000
Type B Service Area	218+000
Type D Service Area	240+000

2.3. Excavation and Fill Volumes

Excavations (cut) and embankment (fill) operations to be done to scope with the topographical conditions along the selected Motorway route will result in permanent changes in the topography throughout the entire alignment. Excavation and fill volumes estimated for each section of the Motorway is listed in Table 27.

Table 27. Excavation and Fill Volumes for the Asian Sections (as of October 2017)

Section	Excavation-Fill Balance			Management of Excavated Material	
	Excavation (m ³)	Fill (m ³)	Balance (Excavation-Fill) (m ³)	Amount to be Reused (%)	Amount to be Stored (%)
Section 4	24.800.552	18.949.593	5.850.959,40	70	30
Section 5	26.639.572	17.792.737	8.846.834,30	70	30
Section 6	24.271.543	16.079.954	8.191.588,85	50	50
Grand Total	75.711.667	52.822.284	22.889.383	63	37

3. ENVIRONMENTAL AND SOCIAL ACTION PLAN (ESAP) FOR THE NORTH MARMARA MOTORWAY PROJECT (ASIAN SECTIONS: KURTKOY-AKYAZI)

ESAP was prepared in order to set out the actions that are needed to be implemented by Project Sponsors to ensure that the Project meets IFC Performance Standards during prior to financial close, construction and operation phases. ESAP prepared for the Asian Sections (Kurtkoy-Liman; Liman-Izmit and Izmit-Akyazi sections) of the North Marmara Motorway Project is presented below:

**ENVIRONMENTAL AND SOCIAL ACTION PLAN (ESAP)
FOR THE NORTH MARMARA MOTORWAY PROJECT
(ASIAN SECTIONS: KURTKOY-AKYAZI)**

A. Prior to Financial Close

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
PS 1 Assessment and Management of Environmental and Social Risks and Impacts							
1.1.	Develop Project-specific Environmental and Social Management System (ESMS)	-PS 1	MOJV's own resources	-MOJV	2017 Q4	-Written Project-specific Environmental and Social Policy -Written Project-specific Environmental and Social Management Plan (including sub plans/procedures) -Permit/License Register	Done/on-going
1.2.	Establish and maintain a competent Organizational Structure	-PS 1	MOJV's own resources	-MOJV	2017 Q4	-Organizational structure with defined roles and responsibilities (including contractors' relevant departments/personnel)	Done
1.3.	Develop a Project-specific Emergency Preparedness and Response Plan (EPRP)	-PS 1	MOJV's own resources	-MOJV	2017 Q4	- Written Project-specific Emergency Preparedness and Response Plan for Construction Phase -Emergency personnel assignments done -Drills conducted -Trainings given for EPRP	Done
1.4.	Prepare Environmental, Health and Safety Risk Assessment	-PS 1	MOJV's own resources	-MOJV	2017 Q4	-Written Environmental, Health and Safety Risk Assessment	To be done
PS 2 Labor and Working Conditions							
2.1.	Develop a Human Resource Management Procedure under Project's Labor and Employment Policy for construction phase	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Written Labor and Employment Policy (under Environmental and Social Policy) and Human Resource Management Procedure	Done
PS 5 Land Acquisition and Involuntary Resettlement							
5.1.	Develop administrative and design measures to minimize impacts on land use/users of the lands	-Legislative -KGM's technical requirements -PS5 -Project-level needs -Volunteer	MOJV's own resources	-KGM -MOJV	2017 Q4	-Locations/length of viaducts and tunnels, culverts, underpasses, overpasses, side access roads, etc. planned to ensure access to lands (agricultural, pasture, etc.)	Done

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
PS 6	Biodiversity Conservation and Sustainable Management of Living Natural Resources						
6.1.	Conduct additional ecological field survey(s) at sensitive habitats identified in the ESIA Report	-PS6 -Project level needs	MOJV's own resources	-MOJV -Flora and Fauna Experts	2017 Q3	-Report on the additional Ecology Field Survey conducted by experts	Done
6.2.	Complete the legal permitting process for the legally protected areas (i.e. Ballıkayalar Nature Park) corresponding to the Project Area	-Legislative	MOJV's own resources	-KGM -MOJV	2017 Q3	-Approval letter/permit from the related state authorities	Done

B. Construction Phase

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
PS 1 Assessment and Management of Environmental and Social Risks and Impacts							
1.1.	Implement Project-specific Environmental and Social Management System (ESMS)	-PS 1	MOJV's own resources	-MOJV	2017 Q4	-Written Project-specific Environmental and Social Policy -Written Project-specific Environmental and Social Management Plan (including sub plans/procedures) -Management System Certificates (ISO 14001 and OHSAS 18001) obtained by Project sponsors -Permit/License Register	On-going
1.2.	Implement Project-specific Emergency Preparedness and Response Plan (EPRP)	-PS 1	MOJV's own resources	-MOJV	2017 Q4	- Written Project-specific Emergency Preparedness and Response Plan for Construction Phase -Emergency personnel assignments done -Drills conducted -Trainings given for EPRP	Done
1.3.	Implement Environmental and Social Monitoring Plan	-PS 1	MOJV's own resources	-MOJV	2017 Q4	-Assignment of Monitoring Consultant by lenders -Periodic ESMP Performance Review and Monitoring Reports	To be done
1.4.	Implement Stakeholder Engagement Plan (SEP)	-PS 1 -PS 5	MOJV's own resources	-MOJV	2017 Q4	- Written SEP and regular review -Disclosed ESIA documents -Stakeholder engagement database established -Records on the stakeholder engagement activities/events conducted -Presence/functionality of Project web-site/hotline -No unresolved complaints about insufficient information disclosure for stakeholders	On-going/To be done
1.5.	Implement external Grievance Mechanism in line with the SEP Implement Grievance Procedure	-PS 1	MOJV's own resources	-MOJV	2017 Q4	-Records on the grievance and comment forms available at locations/platforms (e.g. company web site) in line with the SEP -Grievance logs -Assignment of personnel(s) for the management of grievances -Separate mechanism established for workers' grievances	On-going
PS 2 Labor and Working Conditions							
2.1.	Implement Human Resource Management Procedure under Project's Labor and Employment Policy for construction phase	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Written Labor and Employment Policy (under Environmental and Social Policy) and Human Resource Management Procedure -Employment data for the Project -Records on stakeholder engagement activities done with the settlement headmen and local associations to inform them about	On-going

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
						the recruitment process and employment opportunities for the locals, in case needs of worker	
2.2.	Implement measures to ensure adequate working conditions during construction phase	-Legislative -PS2 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2017 Q4	-Adequate working conditions provided to Project personnel including contracted workers -No unresolved grievances from Project personnel related with accommodation conditions	On-going
2.3.	Implement Occupational Health and Safety Plan during construction and operation phases	-Legislative -PS2 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2017 Q4	-Written Project-specific Health and Safety Plan -Written HSE Training Program covering occupation health and safety aspects	On-going
2.4.	Implement HSE Training Plan	-PS2	MOJV's own resources	-MOJV	2017 Q4	- Written HSE Training Program -Training records	Done
2.5.	Implement Contractor Management Plan	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Written Contractor Management Plan -Training Records -Contracts to include environmental, health, safety and social requirements of MOJV	On-going
2.6.	Implement Protection and Safety Plan	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Written Protection and Safety Plan	On-going
2.7.	Implement regular checks by site HSE staff in accordance with the checklist on workers accommodation conditions quarterly	-IFC EHS Guidelines	MOJV's own resources	-MOJV	2017 Q4	-Written checklist on workers accommodation conditions to be prepared taking into account relevant IFC Workers Accommodation: Processes and Standards Guidance -Records of regular checks conducted by HSE staff and actions taken	To be done
2.8.	Implement maintenance and operational checks of fire safety equipments/systems annually	-Legislative -PS2 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2019 Q3	-Records of regular maintenance and checks -Fire drill reports	To be done
2.9.	Carry out a third party labor audit on an annual basis.	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Records regarding labour audit	To be done
2.10.	Carry out payroll checks quarterly.	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Records regarding labour audit - Payroll checks against issues such as sub-contractor wage rates, payment of benefits and timely payments	To be done
PS 3	Resource Efficiency and Pollution Prevention						
3.1.	Implement soil management and	-Legislative	MOJV's own	-KGM	2017 Q4	-Soil Management and Erosion Control Procedure to be developed	On-going

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
	erosion control measures Implement Soil Management Plan	-PS3 -Project-level needs -Volunteer	resources	-MOJV		-Top soil management and storage measures taken -Amount of materials to be extracted from quarries/material borrow sites and ratio of excavated materials reused/to be reused	
3.2.	Obtain permits from relevant authorities regarding storage sites for excavation soil.	-Legislative	MOJV's own resources	-MOJV	2017 Q4	-Permits taken regarding excavation soil storage areas. -Amount of excavation soil to be stored and capacity of designated storage sites.	On-going
3.3.	Rehabilitate road construction sites where the construction activities are completed	-Legislative -PS3 -Project-level needs -Volunteer -IFC EHS Guidelines	MOJV's own resources	-MOJV	2017 Q4	-Written Rehabilitation Plan for road construction and camp sites -Amount of top soil volumes (m ³) reinstated and reinstation locations	On-going
3.4.	Implement Quarry Management Procedure in the scope of the ESMP after the completion of operations at quarries and material borrow sites	-Legislative -PS3 -Project-level needs -Volunteer -IFC EHS Guidelines	MOJV's own resources	-MOJV	2017 Q4	-Raw material production/quarry operation licenses obtained -Quarry production and closure plans	On-going
3.5.	Implement Solid and Hazardous Waste Management Procedures and waste management measures Implement Waste Management Plan and under this plan implement the following: -Procedure for Management of Hazardous Waste and Storage Sites -Procedure for Management of Contaminated Soil -Procedure for Management of Waste Vegetable Oils -Procedure for Management of Recyclable Wastes and Storage Sites	-Legislative -PS3 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2017 Q4	-Temporary Waste Storage Areas (having the required features) established at work sites -Waste management/disposal agreements done with licensed service providers -Inventory of hazardous materials purchased/used/disposed of -Training and inspection records	On-going

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
	-Procedure for Separate Collection and Disposal of Municipal Wastes -Procedure for Management of Medical Wastes -Procedure for Management of Waste Tires -Procedure for Management of Waste Batteries and Accumulators -Procedure for Management of Excavation, Construction and Demolition Wastes						
3.6.	Implement Water Quality, Wastewater and Stormwater Management Procedure Implement Water and Wastewater Management Plan	-Legislative - PS 3 -IFC EHS Guidelines -KGM's technical requirements	MOJV's own resources	-MOJV	2017 Q4	-Environmental and Social Monitoring Plan applied (for water quality) -Permit for wastewater management and disposal - No unresolved grievances on the subjects of water quality deterioration and water resources management -Presence and functionality of drainage system -Water supply permits	On-going
3.7.	Implement Air Quality and Emissions Management Procedure and measures to reduce and control air emissions Implement Air Quality Control Plan	-Legislative -PS 3 -IFC EHS Guidelines -KGM's technical req.	MOJV's own resources	-MOJV	2017 Q4	-Environmental and Social Monitoring Plan applied (for air quality) -Permits/licenses taken/to be taken for emissions from associated plants and facilities -No unresolved grievances received in the subjects of air quality deterioration	On-going
3.8.	Implement Noise Management Procedure and measures to reduce and control noise generation Implement Noise Control Plan	-PS 1, PS 3 -IFC EHS Guidelines -Legislative -KGM's technical requirements	MOJV's own resources	-MOJV	2017 Q4	-Environmental and Social Monitoring Plan applied (for noise) -No unresolved grievances on the subjects of noise and vibration disturbances	On-going
3.9.	Take permits from related institutions prior to initiation of night time activities.	-Legislative	MOJV's own resources	-MOJV	2017 Q4	-Permits regarding night time activities.	On-going
3.10.	Apply landscaping projects to minimize visual impacts/disturbances along the Motorway route	-PS 3	MOJV's own resources	-MOJV	2017 Q4	-Landscaping Plan to be implemented -Landscaping activities conducted	On-going On-going

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
PS 4 Community Health, Safety and Security							
4.1.	Implement Community Health and Safety Plan	-Legislative -IFC EHS Guidelines -PS4 -Project-level needs	MOJV's own resources	-MOJV	2017 Q4	-Written Community Health and Safety Plan -No unresolved grievances related with community health and safety	On-going
4.2.	Implement Traffic Management Procedure and measures for construction traffic safety Implement Traffic Management Plan	-Legislative -IFC EHS Guidelines -PS4 -Project-level needs	MOJV's own resources	-MOJV	2017 Q4	-Written HSE Training Program covering construction traffic safety aspects (e.g. speed limits, specified routes, traffic signs, working hours, etc.) -Accident statistics due to Project-related construction traffic -No unresolved grievances related with construction traffic/safety	On-going
4.3.	Implement measures during blasting operations to ensure community health and safety	-Legislative -IFC EHS Guidelines -PS4 -Project-level needs	MOJV's own resources	-MOJV	2017 Q4	-Relevant permits obtained for blasting -Competency/training documents/certificates of experts who will conduct operations related with blasting -Records on blasting measures taken (access restrictions, signing, information, announcements, scheduling, etc.) -No unresolved grievances related with blasting operations	On-going
4.4.	Implement measures against airborne/communicable diseases	-Legislative -IFC EHS Guidelines -PS4	MOJV's own resources	-MOJV	2017 Q4	- Written HSE Training Program covering general hygienic rules to be followed by personnel -Presence of medical rooms and competent medical personnel at Camp Sites	On-going
4.5.	Implement measures for security personnel arrangements during construction phase	-Legislative -PS4	MOJV's own resources	-MOJV	2017 Q4	-Security Plan to be prepared -Permits to be obtained from authorities -Contractual agreements done with relevant contracting companies/employment data on security personnel -No unresolved grievances regarding the acts security personnel	On-going
4.6.	Conduct geological-geotechnical surveys for all sections	-Legislative -PS4	MOJV's own resources	-MOJV	2017 Q4	-Geological-Geotechnical Survey Reports	On-going
4.7.	Collaborate with local communities on education concerning traffic and pedestrian safety in settlements close	-IFC EHS Guidelines -Volunteer	MOJV's own resources	-MOJV	2017 Q4	-Written activity reports and records of activities	To be done

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
	to camp sites and where sensitive receptors (such as school) are close to dense traffic.						
PS 5 Land Acquisition and Involuntary Resettlement							
5.1.	Implement administrative and design measures to minimize impacts on land use/users of the lands	-Legislative -KGM's technical requirements -PS5 -Project-level needs -Volunteer	MOJV's own resources	-KGM -MOJV	2017 Q4	-Locations/length of viaducts and tunnels, culverts, underpasses, overpasses, side access roads, etc. planned/constructed to ensure access to lands (agricultural, pasture, etc.) -No unresolved complaints about land access issues	On-going
5.2.	Implement measures to avoid any significant disruption to existing infrastructures and distribution of utility services	-Legislative -IFC EHS Guidelines	MOJV's own resources	-MOJV	2017 Q4	-Records on the measures taken to restore/maintain/improve affected infrastructure (e.g. roads) relocated/ maintained/improved	On-going
PS 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources							
6.1.	Collect and plant critical flora species identified in the ESIA Report at alternative habitats	-PS6 -Project level needs	MOJV's own resources	-MOJV -Flora Experts	2017 Q4	-Records/reports on collection and planting actions taken	On-going
6.2.	Implement measures to minimize impacts on terrestrial fauna species	-PS6 -Project level needs	MOJV's own resources	-MOJV -Fauna Experts	2017 Q4	-Bridges, viaducts and culverts designed/constructed for the needs of terrestrial fauna species	On-going
6.3.	Implement Afforestation Plan	-PS6 -Volunteer	MOJV's own resources	-MOJV -Related Ministry	2017 Q4	-Afforestation protocols made with the Ministry of Forestry and Water Affairs -As mentioned in the ESIA report and in Afforestation Plan (Annex 4) the number of trees to be removed will be 864.099 while the amount of plantation will be five times of this number. -Monitoring of afforestation activities conducted in line with Afforestation Plan and protocols made	Ongoing
PS 7 Indigenous Peoples							
7.1.	Not Applicable (NA)	NA	NA	NA	NA	NA	NA
PS 8 Cultural Heritage							
8.1.	Comply with the requirements of the Regional Board for Conservation of	-Legislative -PS8	MOJV's own resources	-KGM -MOJV	2017 Q3	-Records on avoidance or mitigation measures taken in accordance with the requirements of the authorities and national	On-going

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
	Cultural Heritage mentioned in their decisions/official views (i.e. additional research, test or salvage excavation) given for the Project in the scope of the Law No: 2863 with regard to the sites to be potentially affected					legislation -Approval letters/permits obtained from related state authorities regarding Project's compliance with national legislation and their specific requirements	
8.2.	Implement Cultural Heritage Management Plan and Chance Find Procedures and conduct archaeological monitoring at critical sites identified within the ESIA Report	-PS8	MOJV's own resources	-MOJV	2017 Q3	-Employment of Project archaeologist/cultural heritage expert throughout the construction phase -Records on sites/cases for which Chance Finds Procedure have been operated -Training records proving all workers are trained regarding Chance Find Procedure. -Regular inspection records ensuring the implementation of the relevant plans/procedures (i.e. Cultural Heritage Management Plan and Chance Find Procedure).	On-going

C. Operation Phase

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
PS 1 Assessment and Management of Environmental and Social Risks and Impacts							
1.1.	Implement Project-specific Environmental and Social Management System (ESMS)	-PS 1	MOJV's own resources	-MOJV	2019 Q3	-Written Project-specific Environmental and Social Policy -Written Project-specific Environmental and Social Management Plan (including sub plans/procedures) -Management System Certificates (ISO 14001 and OHSAS 18001) obtained by Project sponsors -Permit/License Register	To be done
1.2.	Develop and Implement Project-specific Emergency Preparedness and Response Plan (EPRP)	-PS 1	MOJV's own resources	-MOJV	2019 Q3	-Written Project-specific Emergency Preparedness and Response Plan for Operation Phase -Emergency personnel assignments done -Trainings given for EPRP	To be done
1.3.	Implement Environmental and Social Monitoring Plan	-PS 1	MOJV's own resources	-MOJV	2019 Q3	-Assignment of Monitoring Consultant by lenders -Periodic ESMP Performance Review and Monitoring Reports	To be done
1.4.	Implement Stakeholder Engagement Plan (SEP)	-PS 1 -PS 5	MOJV's own resources	-MOJV	2019 Q3	- Written SEP and regular review -Disclosed ESIA documents -Stakeholder engagement database established -Records on the stakeholder engagement activities/events conducted -Presence/functionality of Project web-site/hotline -No unresolved complaints about insufficient information disclosure for stakeholders	To be done
1.5.	Implement external Grievance Mechanism in line with the SEP Implement Grievance Procedure	-PS 1	MOJV's own resources	-MOJV	2019 Q3	-Records on the grievance and comment forms available at locations/platforms (e.g. company web site) in line with the SEP -Grievance logs -Assignment of personnel(s) for the management of grievances -Separate mechanism established for workers' grievances	To be done
PS 2 Labor and Working Conditions							
2.1.	Implement Human Resource Management Procedure under Project's Labor and Employment Policy	-PS2	MOJV's own resources	-MOJV	2019 Q3	-Written Labor and Employment Policy (under Environmental and Social Policy) and Human Resource Management Procedure	To be done

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
2.3.	Implement Occupational Health and Safety Plan during construction and operation phases	-Legislative -PS2 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2019 Q3	-Written Project-specific Health and Safety Plan -Written HSE Training Program covering occupation health and safety aspects	To be done
2.4.	Implement measures to ensure safety during the road maintenance or landscaping works	-Legislative -PS2 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2019 Q3	-Written Operation and Maintenance Plans/Procedures covering health and safety aspects for road maintenance and landscaping personnel	To be done
2.5.	Implement maintenance and operational checks of fire safety equipments/systems (especially in the tunnels)	-Legislative -PS2 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2019 Q3	-Records of regular maintenance and checks	To be done
2.6	Carry out a third party labor audit on an annual basis.	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Records regarding labour audit	To be done
2.7.	Carry out payroll checks quarterly.	-PS2	MOJV's own resources	-MOJV	2017 Q4	-Records regarding labour audit - Payroll checks against issues such as sub-contractor wage rates, payment of benefits and timely payments	To be done
PS 3 Resource Efficiency and Pollution Prevention							
3.1.	Implement Solid and Hazardous Waste Management Procedures and waste management measures Implement Waste Management Plan and under this plan implement the following: -Procedure for Management of Hazardous Waste and Storage Sites -Procedure for Management of Contaminated Soil -Procedure for Management of Waste Vegetable Oils -Procedure for Management of Recyclable Wastes and Storage Sites -Procedure for Separate Collection and Disposal of Municipal Wastes	-Legislative -PS3 -IFC EHS Guidelines	MOJV's own resources	-MOJV	2019 Q3	-Temporary Waste Storage Areas (having the required features) established at work sites -Waste management/disposal agreements done with licensed service providers -Inventory of hazardous materials purchased/used/disposed of	To be done

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
	-Procedure for Management of Medical Wastes -Procedure for Management of Waste Tires -Procedure for Management of Waste Batteries and Accumulators -Procedure for Management of Excavation, Construction and Demolition Wastes						
3.2.	Implement Water Quality, Wastewater and Stormwater Management Procedure Implement Water and Wastewater Management Plan	-Legislative - PS 3 -IFC EHS Guidelines -KGM's technical requirements	MOJV's own resources	-MOJV	2019 Q3	-Environmental and Social Monitoring Plan applied (for water quality) -Permit for wastewater management and disposal - No unresolved grievances on the subjects of water quality deterioration and water resources management -Presence and functionality of drainage system -Water supply permits	To be done
3.3.	Implement Air Quality and Emissions Management Procedure and measures to reduce and control air emissions Implement Air Quality Control Plan	-Legislative -PS 3 -IFC EHS Guidelines -KGM's technical req.	MOJV's own resources	-MOJV	2019 Q3	-Environmental and Social Monitoring Plan applied (for air quality) -Permits/licenses taken/to be taken for emissions from associated plants and facilities -No unresolved grievances received in the subjects of air quality deterioration	To be done
3.4.	Implement Noise Management Procedure and measures to reduce and control noise generation Noise measurements will be regularly conducted annually according to IFC standards at critical receptors determined by noise modeling report presented at ESIA. Noise measurements will be conducted at least for 48 hours which represent a week day and a week end during which the traffic load is high.	-PS 1, PS 3 -IFC EHS Guidelines -Legislative -KGM's technical requirements	MOJV's own resources	-MOJV	2019 Q3	-Environmental and Social Monitoring Plan applied (for noise) -No unresolved grievances on the subjects of noise and vibration disturbances	To be done

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
	<p>Noise measurement results will be submitted to the environmental consultant and the facility agent in 30 calendar days at the latest.</p> <p>In case that results of annual noise measurements at critical locations approach (2 Dba) to noise limits specified at IFC guidelines, the installation of the noise barriers will begin soon before subsequent noise measurement results and completed in a reasonable time. Timeline for installation of noise barriers may delay as the number of vehicle passes realized and the results of sound measurements are below the predicted values. Nevertheless, annual noise measurement activities at critical locations specified in the ESIA Report will continue. In case the measurements are not conducted, the locations, installation time and the total number of noise barriers determined as per the most up-to-date noise modeling will be valid.</p> <p>Noise modeling studies and the critical receptors determined in the model will be revised based on increase in predicted annual number of vehicle passes, design changes or other mitigation measures applicable at critical locations. Noise modeling will be conducted based on the annual</p>						

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
	hourly average vehicle passes. Assumed number of vehicle passes together with the revised model will be submitted to the review of environmental consultant and to the approval of facility agent. Implement Noise Control Plan						
3.5.	Apply landscaping projects to minimize visual impacts/disturbances along the Motorway route	-PS 3	MOJV's own resources	-MOJV	2019 Q3	-Landscaping Plan to be implemented	To be done
					2019 Q3	-Landscaping activities conducted	To be done
PS 4 Community Health, Safety and Security							
4.1	Implement Community Health and Safety Plan	-Legislative -IFC EHS Guidelines -PS4 -Project-level needs	MOJV's own resources	-MOJV	2019 Q3	-Written Community Health and Safety Plan -No unresolved grievances related with community health and safety	To be done
4.2.	Implement measures to ensure structural safety, traffic safety and pedestrian safety during operation	-KGM's technical requirements -PS4	MOJV's own resources	-MOJV	2019 Q3	-Written Operation and Maintenance Plans/Procedures covering health and safety aspects for community -Accident statistics during operation -No unresolved grievances related with the locations of passage structures (culverts, underpasses, overpasses, etc.)	To be done
4.3.	Implement measures to avoid geological/geotechnical risks during operation	-KGM's technical req. -Project-level needs -PS4	MOJV's own resources	-MOJV	2019 Q3	- Status of structural motion, undermining, maintenance requirements of engineering structures to be identified through site audits by experts	To be done
PS 6 Biodiversity Conservation and Sustainable Management of Living Natural Resources							
6.1.	Implement Afforestation Plan	-PS6 -Volunteer	MOJV's own resources	-MOJV -Related Ministry	2019 Q3	-Afforestation protocols made with the Ministry of Forestry and Water Affairs	Ongoing

No.	Mitigation Measure/Action	Requirement (Legislative, IFC PSs, Best Practice, Volunteer, Project-level needs)	Resources, Investment Needs	Responsibilities	Timetable	Target and Evaluation Criteria for Successful Implementation	Status
						-As mentioned in the ESIA report and in Afforestation Plan (Annex 4) the number of trees to be removed will be 864.099 while the amount of plantation will be five times of this number. -Monitoring of afforestation activities conducted in line with Afforestation Plan and protocols made	
6.2.	Develop and implement methodologies of ecological bridge monitoring and apply monitoring activities after bank approval	-PS6 -Project level needs	MOJV's own resources	MOJV -Fauna experts	2019 Q3	- Ecological bridge designed and operated for needs of terrestrial fauna species	On-going
PS 7	Indigenous Peoples						
7.1.	Not Applicable (NA)	NA	NA	NA	NA	NA	NA