



# Environmental and Social Management Plan for the Eurasia Tunnel Project Istanbul, Turkey

November 2012  
Operation Period: June, 2018

ERM Group, Germany and UK  
ELC-Group, Istanbul



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(ATAŞ - the Eurasia Tunnel Operation,  
Construction and Investment Inc. Co.)

## Environmental and Social Management Plan for the Eurasia Tunnel Project Istanbul, Turkey.

November 2012 for and on behalf of  
Environmental Resources Management

Approved by: Raimund Vogelsberger

Signed:

Position: Partner

Date: November 07, 2012

Operation Period: June, 2018

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PROJECT NO. P0106067

This Environmental and Social Management Plan (ESMP) of the ATAŞ EURASIA Tunnel Project is the updated version of the ESMP included in the Final Environmental and Social Impact Assessment (ESIA) document published in January 2012 on the project homepage ([www.avrayatuneli.com](http://www.avrayatuneli.com)). It represents the current state of the Tentative Design Schedule\*, and includes new information with respect to the following:

- Environmental and Social Action Plan (ESAP)
- Stakeholder Survey conducted Dec. 2011/ Jan 2012;
- Entitlement Matrix; and
- Updated Stakeholder Engagement Plan.

The ESMP table below is divided into Design-, Construction- and Operation Phases of the Project. It specifies for the key environmental and social issues the related measures/actions to be taken by whom, by when and how compliance can be tracked. (It should be noted that the ESMP implementation will be embedded within the framework of the integrated Environmental and Social Management System, which will apply for ATAŞ and all contractors involved with the Project). Please refer to the end of the table for abbreviations.

\* Note: The Timing in the ESMP will be updated as soon as the Detailed Design Schedule has been revised by the EPCC.

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
<b>1.1 LAND (PERMANENT AND TEMPORARY LAND TAKE)</b>					
<p>a) The Project design shall be modified where feasible to reduce the number of buildings to be expropriated to a minimum. Expropriation of property and land will be carried out in accordance with the Land Acquisition Compensation and Resettlement Plan (LACRP - separate document).</p> <p>A number of cases where the land take may be reduced have already been identified, and these shall be further investigated. In the course of the detailed design phase the number of buildings to be expropriated was able to be reduced from 18 to 10 buildings so far. All of those are business structures. No residential building will be affected by full expropriation.</p>	ATAŞ / EPCC	All land take to be confirmed as being justified and fully required before completion of detailed design	<p>All land take is justified in writing by design</p> <p>Register of properties to be expropriated to be maintained by</p>	<p>Audit of final design for each section of route prior to construction</p> <p>Check if LACRP is implemented accordingly</p>	<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
		(currently scheduled for July 2013 )	ATAS. Census completed. To be provided to the LTA for verification.		
b) Design shall provide for reinstatement of use of all land temporarily used during construction and for enhancement where possible.	ATAS	Before completion of detailed design (currently scheduled for July 2013) , implemented within 3 months after road construction	Design includes reinstatement and enhancement measures	Audit of design document, visual check of sites after 3 months	<b>Completed</b>
c) ATAS will prepare a Coastal Park Reinstatement Plan for approval by DLH and relevant authorities. The Coastal Park Reinstatement Plan will be reviewed and agreed on by the Environmental Consultant (EC) and the Lenders Technical Advisor (LTA). This Plan will illustrate how the remaining parks of the Coastal park (post-construction) will be protected and improved.	ATAS / EPCC	Coastal Park Reinstatement Plan prepared and reviewed by EC and LTA before the completion of detailed design (currently	Coastal Park Reinstatement Plan approved by DLH, relevant authorities, EC, LTA  Park Reinstatement Plan include actions	Mitigation measures are to be reviewed following the public consultation exercise.	<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
		scheduled for July 2013)			
<b>1.2 ACCESS RESTRICTIONS</b>					
<p>a) The Project design shall provide improved pedestrian crossings at designated points as per Employer's Requirements. This shall include pedestrian footbridges at existing crossing locations on the European Side, including linking the Metro station with the Yenikapi ferry terminal. Pedestrian footbridges shall be designed with ramps or other facilities (such as elevators) for the use of pushchairs, wheelchairs and baggage trolleys.</p> <p>The planned pedestrian footbridge located at km4+615m shall be moved 200 m further to the east of Yenikapi to provide better connectivity to Kumkapi Train Station subject to Design Changes approval from the DLH and relevant authorities. The existing three footbridges on the Asian Side shall be replaced with upgraded structures providing proper and adequate access for all users. Two other footbridges will be retained.</p> <p>The Project design shall include, where existing road space is available, paths with a minimum width of 2.5 m to cater for pedestrians and cyclists along the project roadway. Where roads space is not available for the provision of this pedestrian and cyclist facility (this is typically due to the presence of archaeological and cultural heritage structures) or where there are overriding health and safety risks from adjacent road traffic associated, then a reduced path will be provided where possible and in consultation with relevant authorities.</p> <p>An additional pedestrian underpass/overpass or another structure serving similar purpose shall be provided as part of the Project design to provide access to the Marble Tower at Mermerkule, subject to consultation and the required approvals from DLH and relevant authorities.</p> <p>Disability requirements of the EU to be considered.</p>	ATAŞ / EPCC	Before the completion of detailed design (currently scheduled for July 2013)	Confirmation that final design includes the stated measures	Audit of final design documents; visual check after construction completion	<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
b) Design shall provide for replacement car parking areas and bus stops for people visiting the Coastal Park.	ATAŞ / EPCC	Before the completion of detailed design (currently scheduled for July 2013)	Confirmation that final design includes the stated measures	Audit of final design documents; visual check after construction completion	<b>Completed</b>
<b>1.3 SAFETY</b>					
a) The structural elements (tunnel, roads, bridges, underpasses) of the project shall be (i) designed and (ii) constructed in accordance with Turkish standards and to comply with specified international standards for structural integrity and safety.	ATAŞ / EPCC	Before completion of detailed design; (currently scheduled for July 2013), implemented during construction	Design includes the measures complying with specified standards	Audit of final design; inspection of completed elements	<b>Completed</b>
b) The tunnel shall be designed to comply with the American Design Code NFPA 502 in relation to safety and with EU Directive 2004/54 on the minimum safety requirements for tunnels in the Trans-European Road Network.  Design to be approved by Supervision Organization.	ATAŞ / EPCC	Before completion of detailed tunnel design (currently scheduled for May 2013)	Design includes the measures complying with specified standards	Audit of final design; inspection of completed elements	<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
c) Further studies shall be carried out to assess the risks from earthquakes, tsunamis, floods and storms and the Project shall be designed to address these risks, including meeting and exceeding the seismic standards required by the Turkish Seismic Code (2007), as per Design Manual which is subject to Supervision Organization approval.	ATAŞ / EPCC	Seismic Analysis for tunnel and approaches 3 months before completion of detailed design (currently scheduled for July 2013)	Studies have been conducted; Design includes measures complying with specified standards	Audit of final design; inspection of completed elements	<b>Completed</b>
d) Specific measures shall be planned to mitigate the effects of tsunami waves and to prevent inflow into the tunnel, including increasing the height of the sea wall and elevating the approach to the tunnel so that the entrance is above wave heights forecast in the design scenarios.	ATAŞ / EPCC	Before completion of detailed design (currently scheduled for July 2013)	Design includes the stated measures	Audit of final design; inspection of completed elements	<b>Completed</b>
e) Further studies shall be carried to assess the risk from ground liquefaction (from earthquakes), and the tunnel and approach road structures shall be located at sufficient depth below the sea bed to protect the structure from liquefaction risk. Additionally, appropriate ground improvements shall be carried out as part of construction.	ATAŞ / EPCC	Seismic Analysis for tunnel and approaches 3 months before completion of detailed design (currently	Studies have been conducted; Design includes the stated measures; Subsequent design change to be recorded	Audit of final design; inspection of completed elements	<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
		scheduled for July 2013); implementation during construction	through the design change management systems		
f) The Operations Building shall be designed to include parking for special fire trucks needed for the tunnel and a room for the emergency team.	ATAŞ / EPCC	Before completion of detailed design (currently scheduled for July 2013)	Design includes the stated measures	Audit of final design; inspection of completed elements	<b>Completed</b>
<b>1.4 VISUAL INTRUSION</b>					
a) The Project shall not impact on the silhouette of the historic peninsula of Istanbul as seen from the Bosphorus. Elements of the Project shall be designed so that no structure exceeds approximately 7 m above existing ground-level so that the Project remains below the line of the old sea walls and the city beyond them and no structure intrudes into the view of the old city. Mitigation measures requested by UNESCO shall be discussed and implemented in consultation with DLH and other relevant authorities.	ATAŞ / EPCC	Before completion of detailed design (currently scheduled for July 2013)	Design includes the stated measures	Audit of final design; inspection of completed elements; Review of consultation records and as-built records	<b>Completed</b>
<b>1.5 WATER ENVIRONMENT</b>					
a) A review of the proposed drainage system shall be carried out to consider how the system will interface with the existing storm water network and to ensure an appropriate drainage arrangement is provided.  Design to be reviewed by Supervision Organization. Drainage design, especially drainage interface section, should be in line with requirements and standards	ATAŞ / EPCC	4 months before completion of detailed design (currently	Studies have been conducted; Design includes the stated	Audit of final design; inspection of completed elements	<b>Completed</b>



1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
outlined by the relevant authorities and in the Employers Requirements.		scheduled for May 2013)	measures		
b) The road drainage system shall be designed in accordance with the Employers Requirements and to allow for containment of foreseeable major spills of fuel or other transported liquids on roadways. Design should consider vehicle run-off, oil/fuel spillage and interceptors. Drainage design, especially drainage interface section, should be in line with requirements and standards outlined in the relevant authorities and the Employers Requirements.	ATAŞ / EPCC	Before completion of detailed design (currently scheduled for July 2013)	Design includes the stated measures	Audit of final design; inspection of completed elements	<b>Completed</b>
<b>1.6 CULTURAL HERITAGE</b>					
a) Construction near historic features shall be planned and undertaken so as to minimize the risk of any physical damage. Personnel operating equipment in the vicinity of historic features shall be trained and informed of the need to take particular care not to cause damage, and the records of this training shall be kept.  All proposed structures such as new junction at Yenikapı and Samatya underpass shall be designed to minimize the disturbance to archaeological deposits subjecting to relevant local authorities.  The Preservation Councils (Council No 4 , Council No 5, Council No 6, and the Renovation Council) have approved the project route subject to the following conditions being met: <ul style="list-style-type: none"> <li>Results of the archaeogeophysical survey shall be submitted to Protective Council No 4 and the Renovation Council.</li> <li>The project route shall not enter into the buffer zone of any designated historic sites.</li> <li>Where the archaeogeophysical investigations have identified the potential for archaeological remains to exist at the road section of Atatürk Caddesi joining to Yenikapı Interchange a Government-approved qualified</li> </ul>	ATAŞ / EPCC	Archeo-Geophysical Investigation finished by end of October 2012.  Design for underpasses reflecting results of survey before completion of detailed design (currently scheduled	Design includes the stated measures  Project construction drawings and as built records.  Evidence of survey results being submitted to Councils, and written records of approval by Preservation	Inspection of construction sites  Audit of final design; inspection of completed elements	<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
<p>archaeologist (a representative of Preservation Council) shall be present on site to observe during site clearance and excavation of areas where there is potential for finds. Finds shall not be disturbed until they can be properly investigated and assessed by a competent specialist and they shall then be removed to an appropriate museum or similar facility.</p> <p>The junction at Yenikapi is currently designed as an underpass. However, an option is being discussed with IMM and DLH redesign the interchange to minimise the risk of disturbing archaeological deposits beneath the modern reclaimed ground. The final design at this location will be agreed and developed with IMM and DLH during the detailed design stage.</p> <p>The Samatya underpass shall be relocated slightly to the west to minimize the risk of disturbing archaeological deposits.</p>		for July 2013)	Councils Appointment of government approved archaeologist.		
<p>b) Chance Finds Procedure, to be implemented in the event that archaeological remains are identified by the watching brief to be prepared and to include detailed descriptions of the methodologies to be employed for:</p> <ul style="list-style-type: none"> <li>• Methodology for protection of archaeological remains from construction activities, prior to archaeological excavation and recording</li> <li>• Excavation and recording of archaeological remains and artefacts, including digital capture techniques, where appropriate</li> <li>• Palaeoenvironmental sampling of suitable archaeological deposits.</li> <li>• Excavation and storage of fragile and/or financially valuable artefacts.</li> </ul> <p>Detailed archaeological method statement for recording archaeological remains at Yenikapi interchange to be prepared and to include detailed descriptions of the methodologies to be employed for:</p> <ul style="list-style-type: none"> <li>• Removal of modern material that overlies archaeological layers</li> <li>• Archaeological excavation and recording of archaeological remains and artefacts, including digital capture techniques, where appropriate</li> <li>• Palaeoenvironmental sampling of suitable archaeological deposits.</li> </ul>	ATAŞ / EPCC	Archeo-Geophysical Chance Finds Procedure prepared by end of October 2012;  To be implemented during construction	Design includes the stated measures.  Production of Archaeological Mitigation Design (to be approved by Protective Councils), to include:  • Detailed archaeological method statement for recording archaeological	Inspection of construction sites  Audit of procedures and implementation of methodology	<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
<ul style="list-style-type: none"> <li>Excavation, conservation and storage of fragile and/or financially valuable artifacts.</li> </ul> <p>Human Remains</p> <p>A detailed methodology for the excavation of human remains will be produced, including provision for appropriate storage and reburial according to local custom/religious practice.</p> <p>Project design for post excavation analysis to be prepared and include detailed methodologies for :</p> <ul style="list-style-type: none"> <li>Analysis of materials identified by the post-excavation assessment as having potential for further study</li> <li>Analysis of palaeoenvironmental samples and samples for scientific dating of archaeological deposits.</li> <li>Procedures for the disposal of artefacts and samples for which long term storage is not considered appropriate.</li> <li>Procedures for the long term storage of archaeological artefacts</li> </ul>			<p>al remains at Yenikapi interchange.</p> <ul style="list-style-type: none"> <li>Chance Finds Procedure, to be implemented in the event that archaeological remains are identified by the watching brief.</li> </ul> <p>Preparation of a detailed methodology for the excavation of human remains.</p> <p>Project design for post excavation analysis.</p>		

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
c) ATAŞ shall develop a route-wide public information and education scheme on both the European and Asian sides. The purpose shall be to inform the local community and visitors to the Coastal Park of the historical context of the area and its archaeological significance and of proposed mitigation measures to prevent impacts on archaeological remains. The form and detail of this public scheme shall be developed in consultation with the Municipality of Istanbul and UNESCO. Public information and education proposals to be included in the Coastal Park Reinstatement Plan (1.1 c).	ATAŞ / EPCC	Before completion of detailed design (currently scheduled for July 2013)	Design includes the stated measures.  Evidence of consultations with Cultural Heritage authorities	Audit of final design; inspection of completed elements	<b>Completed</b>
<b>1.7 NOISE AND VIBRATION</b>					
a) A detailed Traffic Noise Study shall be carried out during development of the detailed design to identify and predict traffic noise levels at sensitive receptors and determine the optimum noise abatement measures to achieve compliance with Turkish standards and with the IFC threshold of 3 dB(A) maximum additional noise impact for each receptor. Potential noise reduction measures may include inter alia: <ul style="list-style-type: none"> <li>paving with porous asphalt to reduce road-noise</li> <li>installation of noise barrier walls along the route where feasible</li> <li>insulating hospitals, schools and other sensitive structures.</li> </ul> Studies will be reviewed and approved by Supervision Organization, the EC and the LTA.	ATAŞ / EPCC	Traffic Noise study conducted, reviewed and approved by EC and LTA 3 months before completion of detailed design (currently scheduled for July 2013)	Study completed and measures identified and included in designs		<b>Completed</b>
b) The use of low-noise road surfacing shall be adopted at locations along the route where there are sensitive receptors who are being significantly impacted by the Project (as identified in the detailed Traffic Noise Study: see 1.7 a) above).	ATAŞ / EPCC	Pavement Design completed before	Project construction drawings, approvals and		<b>Completed</b>

1. PROJECT STAGE: DESIGN Topic/ Action	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion	Status
		completion of detailed design (currently scheduled for July 2013)	as-built records.		

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>* Note regarding specific timing: Given the current status of the project in the design phase and the fact that the approved Work Program for the construction has not yet been finalised, it is thus not feasible to provide the specific deadlines in terms of month and year for Construction Stage activities in this section of the ESMP.</p>					
<p><b>2.1 LAND, ACCESS AND DISTURBANCE OF THE COMMUNITY</b></p>					
<p>a) As far as possible ATAS shall make use of areas of vacant and unused land for temporary construction purposes in order to minimise adverse impacts on existing land use.</p> <p>Land used temporarily during construction shall be reinstated as soon as practicably possible after completion of works in the relevant section. Where compensation is required, it will be determined in line with the LACRP.</p>	<p>ATAŞ / EPCC</p>	<p>During construction period</p>	<p>Vacant land used for temporary sites where available.</p> <p>All plots identified for use are detailed in Construction Management Plan (CMP) prepared and maintained by ATAS, including provisions for onsite security and procedures for reinstatement/handover at completion of construction.</p>	<p>Prior inspection of proposed temporary construction areas;</p> <p>Re-inspection of areas subsequent to reinstatement</p>	<p><b>Completed</b></p>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			Areas for use are shown on construction phase drawings. Records of land temporarily used being returned to owners.		
<p>b) No new borrow pits or quarries shall be established for the Project and all material will be obtained from existing licensed facilities.</p> <p>Dedicated asphalt and hot-mix plants shall be located as far as possible from the nearest sensitive receptor (e.g. residential houses, schools, hospitals, places of worship, play areas), in locations to be approved by the local environmental authorities, and with emission controls in accordance with the local environmental regulations and EU standards.</p>	ATAŞ / EPCC	During construction period	<p>Only existing sites used</p> <p>CMP includes :</p> <ul style="list-style-type: none"> <li>• details of all sources for materials</li> <li>• identification of opportunities for use of recycled or low carbon</li> </ul>	<p>Spot-check of EPCC files to verify source of materials</p> <p>Field inspection of facility locations</p>	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			sources <ul style="list-style-type: none"> <li>location s of asphalt and hot-mix plants</li> </ul>		
c) New and upgraded pedestrian crossing shall be installed before old crossings are removed.	ATAS / EPCC	During construction period	New Crossings built and adopted prior to removal of existing crossings  Approval letters issued by Environmental Authorities	Regular inspection of crossing works	<b>Completed</b>
d) ATAS shall minimize the period during which any area of the Coastal Park is made inaccessible and to facilitate safe access to remaining useable areas.  ATAS shall seek to re-open any parts of the Coastal Park as soon as is practicable and safe to do so and shall maintain access to the shoreline and fishing ports at all times.	ATAS / EPCC	During construction period and post-construction	Proposals are included within Coastal Park Reinstatement Plan	Regular inspection of road works and Coastal Park	<b>Completed</b>
e) The tunnel boring operation (i.e. the Tunnel Boring Machine) shall be started from the Asian side to avoid impacting on the Coastal Park and the historic peninsula from tunnel related activities.	ATAS / EPCC	During construction period	TBM assembled on Asian	Regular inspection of TBM area and historic peninsula	<b>Completed</b>



2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			side		
<p>f) A detailed Construction Traffic Management Plan to be prepared and finalized and following review and comment from the Lenders and the EC; necessary approvals shall be obtained from relevant authorities, and properly implemented to minimize negative impact on community during construction.</p> <p>Plan to include driver awareness, road safety audits, signage, information and awareness rising among the general public. Communication with public to be via an agreed mechanism and commensurate with the issue. This mechanism is described in the Stakeholder Engagement Plan (SEP).</p> <p>Throughout the approach road works, two lanes will be available for traffic in each direction and additional two lanes to take directional flow in the morning and evening peaks on the European side. The Construction Traffic Management Plan will include the construction of all U-turns and intersections to permit continued traffic movement.</p> <p>Access will be maintained for the existing land uses, buildings and facilities along the route to the extent feasible. Preliminary assessment of the affected parties is provided in the LACRP. Where temporary diversions and alternative access arrangements are required due to the Project, the relevant land use, businesses or residents will be informed by ATAS well in advance of the alternative access arrangements. Businesses subject to fully restricted vehicle access during construction and/or operation and therewith loss in business will be compensated in accordance with the Resettlement Policy Framework (RPF - ESIA Annex D-2) and the LACRP.</p> <p>Information related to traffic diversions will also be freely available on the Project Website.</p>	ATAŞ / EPCC	Construction Traffic Management Plan prior to begin of construction in the Project area; Implementation during construction period	Construction Traffic Management Plan in place  Diversion lanes built before underpasses  Mitigation Measures of LACRP in place	Regular inspection of road works	<b>Completed</b>
g) Temporary work areas shall be reinstated as soon as possible after completion of works in the relevant section of the route.	ATAŞ / EPCC	During construction period and post-construction	All temporary work areas no longer in use	Regular inspection of construction areas	<b>Completed</b>

<b>2. PROJECT STAGE: CONSTRUCTION</b>	<b>Responsibilities</b>	<b>Timing * see note</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>	<b>Status</b>
			reinstated as soon as practicable		
h) Expropriation of land and property shall be implemented in accordance with the Project RPF and the LACRP.	DLH supported by ATAS	Prior to begin of construction period in the relevant Project area	Expropriation and Resettlement implemented in accordance with RPF and the LACRP; agreements documented and filed	Audit of files; interviews with DLH and sampling of affected persons to verify adherence to RPF and LACRP	<b>Completed</b>
i) ATAS shall set-up and manage an expropriation Grievance Mechanism which shall be implemented in accordance with international performance standards to receive and address specific concerns about compensation and relocation that are raised by displaced persons or members of host communities, including a recourse mechanism designed to resolve disputes in an impartial manner.	ATAS	Grievance Mechanism in place Prior to begin of construction period	Expropriation and Resettlement implemented smoothly and as per RPF and LACRP; respective protocols and agreements documented and filed	Audit of Grievance Mechanism files and records	<b>Completed</b>
j) Where public land is to be acquired it shall be transferred between the relevant state agencies under the terms of the Law Governing Expropriation.	DLH supported by	Prior to completion of	Documentation of	Audit of documents	<b>Completed</b>

<b>2. PROJECT STAGE: CONSTRUCTION</b>	<b>Responsibilities</b>	<b>Timing * see note</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>	<b>Status</b>
	ATAŞ	expropriation	transfer		
k) High-volume construction materials shall be sourced from as close as possible to the Project location to minimize transport routes and disturbance.	ATAŞ / EPCC	During construction period	Procurement procedures reference local sourcing; records kept on sources of materials	Audit of procedures; spot check of purchasing records	<b>Completed</b>
<b>2.2 SOILS AND CONTAMINATED LAND DURING CONSTRUCTION</b>					
a) ATAS shall adopt good construction site practice for protection of soils and to follow IFC EHS Guidelines on Construction Materials Extraction and the IFC EHS Guidelines for Toll Roads. Specific measures shall include, but not be limited to: the protection of newly exposed soil surfaces from erosion (e.g. covering with plastic sheets or other protective cover); the proper removal topsoil, overburden, and low-quality materials; its stockpiling near the site and preservation for rehabilitation.	ATAŞ / EPCC	During construction period	Topsoils are stockpiled and preserved  Newly exposed soils are covered or otherwise protected in heavy rain; absence of muddy runoff  Soils and Contaminated Materials Method Statement produced, demonstrating	Regular inspection of construction sites and implemented measures  Regular inspection of soil and material piles  Regular inspection of project area to confirm that soils are protected and absence of muddy runoff	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			adherence to IFC EHS Guidelines. Method Statement includes health and safety procedures, and emergency procedures for containing and managing accidental spillages		
b) A Waste Management Plan shall be developed and implemented by ATAS and all its contractors. Please refer to Section 2.4 a)	ATAŞ / EPCC	Plan in place prior to begin of Construction; Implementation during construction period	Plan in place; planned measures are implemented	Audit of plan; regular inspection of implemented measures	<b>Completed</b>
c) In road sections where the existing road surface is replaced, old road surface material shall be re-used in paving or for other purposes as far as practicable. Old asphalt containing tar and polycyclic aromatic hydrocarbons shall be treated as a hazardous waste (refer to section 2.4).	ATAŞ / EPCC	During construction period	Old road material is treated as waste only where re-use is not	Regular inspection of management of waste road materials	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			<p>practicable; relevant materials are handled as haz wastes;</p> <p>Documentation of waste disposal</p>		
<p>d) Fuels, oils and chemicals shall be stored on an impervious base protected by a bund, and drip trays shall be used for fuelling mobile equipment. Any spillages from handling with fuel and liquids shall be immediately contained on site and the contaminated soil removed from the site for suitable treatment and disposal.</p>	<p>ATAŞ / EPCC</p>	<p>During construction period</p>	<p>Proper storage areas exist for hazardous liquids; spill control equipment is present; areas do not show evidence of un-treated spillages</p>	<p>Regular inspection of storage areas shows that spills are contained and cleaned up</p>	<p><b>Completed</b></p>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>e) Aggregates and road asphalt shall be sourced from quarries, borrow pits, crushing plants and asphalt plants operating with valid environmental and other permits and licenses and where the sites are managed in full compliance with applicable environmental standards and specifications.</p> <p>Where practicable recycled materials and materials certified as being from “green” or lower carbon sources shall be used.</p>	ATAŞ / EPCC	During construction period	CMP must include: <ul style="list-style-type: none"> <li>• details of all sources for materials</li> <li>• identification of opportunities for use of recycled or low carbon sources</li> </ul>	Audit of procedures and permits; spot check of facilities and compliance status  Records of construction materials supply sources.	<b>Completed</b>
<p>f) Implement procedures for identifying and dealing with contaminated materials when encountered during construction (“chance-find contamination”). Relevant staff to be trained and aware of required measures. Contaminated material to be contained on site, remediated or disposed of in an appropriately licensed disposal facility.</p>	ATAŞ / EPCC	Procedures in place before begin of construction;  Implementation during construction period	Procedures in place and implemented for chance-find contamination; staff familiar with requirements	Audit of procedures; Regular inspection of implemented measures; spot check on staff awareness	<b>Completed</b>
<b>2.3 WATER POLLUTION DURING CONSTRUCTION</b>					
<p>a) A permit for discharge of effluent either to surface water or sewers under the Water Pollution Control Regulation 2004 No. 25687 shall be obtained and any discharges made shall be in accordance with the permit conditions and in</p>	ATAŞ / EPCC	Procedures in place before construction	Procedures in place; permits are	Audit of procedures; Regular inspection of implemented measures;	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
accordance with the requirements of EHS Guidelines to protect public health and safety and conserve water resources.		and implemented during construction period	obtained and planned measures are implemented	review of permits	
<p>b) To protect the Sea of Marmara from the adverse effects of construction run-off the following measures shall be undertaken:</p> <ul style="list-style-type: none"> <li>• Drainage from excavations shall be collected, and treated to remove contaminants prior to discharge in accordance with required permits</li> <li>• Perimeter drains shall be installed around all working areas to collect run-off and direct it to settlement tanks before discharge in accordance with required permits</li> <li>• Channels, bunds and sandbag barriers shall be provided on site to direct run-off to the collection system</li> <li>• There will be no direct discharge of contaminated run-off from work sites to the Marmara Sea or Kurbagali Creek</li> <li>• Run-off from construction sites shall be, as far as possible, discharged to the existing road drainage system</li> <li>• All exposed earth shall be surfaced or vegetated as per landscaping design as soon as possible after works have been completed to minimise erosion</li> <li>• Works shall be programmed to minimise surface excavation works during the rainy season</li> <li>• A plan shall be devised for management of the site during periods of heavy rainfall. High sediment generating activities such as road paving shall be avoided and exposed surfaces and stored materials covered to reduce erosion of sediments into surface waters</li> <li>• Spoil and soil storage areas and open stores of construction materials shall be designed and managed to control loss of sediments into run-off by minimising the length and angle of slopes.</li> <li>• The size and duration of exposure of areas of open ground shall be kept to</li> </ul>	ATAS / EPCC	During construction period	<p>Permits are obtained if needed; otherwise no water discharges are made to sea</p> <p>Preparation of written heavy rainfall site management plan and evidence of implementation</p> <p>Records of regular site inspections</p>	<p>Audit of permits; Regular inspection of project area to check if any discharges being made</p> <p>Check of drainage areas, coastal area of Marmara Sea and Kurbagali Creek during rainfall to see if impacts of runoff visible</p>	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>the minimum needed for the works</p> <ul style="list-style-type: none"> <li>• Trafficked areas shall be covered with coarse stone ballast to reduce disturbance of soils</li> <li>• Sweeping rather than washing shall be used to keep roads and other surfaces clear of dust</li> <li>• Construction equipment shall be cleaned away from surface waters and in areas connected to the sewerage system</li> <li>• Biodegradable cleaning agents shall be used for removal of asphalt residues from road laying plant</li> <li>• All existing manholes shall be covered and temporarily sealed to prevent construction materials entering the drainage system</li> <li>• Surface water drains within the site shall be kept clear and clean at all times</li> <li>• All facilities and structures shall be regularly inspected and maintained to ensure proper and efficient operation at all times, and especially after heavy rainfall. Sediment deposits shall be regularly removed and disposed of either on site (if uncontaminated) or at a suitably licensed facility.</li> </ul>					
<p>c) Sewage collected from sanitary facilities located in site offices, at work camps and at portable WCs shall either be collected onsite and transported by tanker for disposal at the local sewage treatment works or discharged directly to sewers in accordance with a permit obtained under the Water Pollution Control Regulation 2004 No. 25687. No direct discharge to surface waters shall take place.</p>	<p>ATAŞ / EPCC</p>	<p>During construction period</p>	<p>Either local sewage collection facilities exist or pipes to the sewers; tanker trucks are taking sewage to local sewage works.</p>	<p>Regular inspection of sanitary facilities to confirm disposal methods and check of trucking records</p>	<p><b>Completed</b></p>



2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
d) Use of cement and wet concrete in or close to any exposed areas or any watercourse shall be carefully controlled and all washing waters from equipment used to mix or transport cement and concrete shall be collected and recycled as far as possible and any residues disposed off-site at a suitably licensed facility.	ATAŞ / EPCC	During construction period	Cement and concrete works near surface waters do not cause water contamination	Regular inspection of project area to confirm that waters are not impacted by such works (absence of discoloration, impacts)	<b>Completed</b>
e) If grouting above the tunnel is required, this shall be undertaken only from within the tunnel to prevent any risk of pollution of the marine environment.	ATAŞ / EPCC	During construction period	Grouting activity is performed from tunnel-side; marine environment is not impacted by grouting works	Regular inspection during any grouting works to confirm correct procedures; no marine impacts observed	<b>Completed</b>
f) All waste spills shall be promptly cleaned up. Spill Response Kits including absorbent materials suitable for the materials to be handled on site, shall be held at secure, clearly signposted locations. Instructions shall be provided with the kits and personnel shall be trained in their use. They should be provided at locations of high risk activities e.g. refueling areas.	ATAŞ / EPCC	Prior to start of construction	Spill Response Plan in place, staff trained, and all measures required by plan implemented  Fuel handling	Audit of Plan; regular inspection of measures; check on staff awareness of spill response action	<b>Completed</b>

<b>2. PROJECT STAGE: CONSTRUCTION</b>	<b>Responsibilities</b>	<b>Timing * see note</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>	<b>Status</b>
			areas do not show evidence of un-treated spillages		
<p>g) Formulate and implement an integrated pest management (IPM) program that will entail coordinated use of pest and environmental information along with appropriate available pest control methods.</p> <p>Pesticides will be handled, stored, applied, and disposed in accordance with relevant Turkish Law and FAO (Food and Agriculture) International Code of Conduct on the Distribution and Use of Pesticides.</p>	ATAŞ / EPCC	Prior to start of construction	IPM implemented and related measures taken		<b>Completed</b>
<p>h) The effluent from wheel washing shall be collected and subjected to settlement to reduce suspended solids prior to recycling of the wash water as far as possible, and any surplus shall be discharged into the existing road drainage system. Collected soil shall be removed for disposal at a suitable licensed facility at least weekly.</p>	ATAŞ / EPCC	During construction period	<p>Records of disposal at licensed facilities</p> <p>Reports of audits; records of regular site inspections</p>	Regular inspection of construction sites, records and audit reports	<b>Completed</b>
<b>2.4 HAZARDOUS AND NON-HAZARDOUS WASTE</b>					
<p>a) A Waste Management Plan (WMP) complying with international best practice, EU Waste Framework Directive and relevant Turkish regulation and covering all types of construction waste shall be developed and implemented by ATAS and all its contractors. All workers to be trained in WMP requirements.</p> <p>The WMP should also refer to health and safety procedures, and emergency procedures for containing and managing accidental spillages. All waste spills shall be promptly cleaned up.</p>	ATAŞ / EPCC	Plan in place before construction and implemented during construction	Plan in place; measures implemented and project staff familiar with relevant requirement	Regular inspection of required measures on and off site and spot-check on staff awareness	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			s		
<p>b) Surplus spoil from the cut and cover and shaft excavations shall be removed for off-site disposal.</p> <p>Inventories of construction materials shall be managed to minimize the amount of surplus material requiring disposal and where possible any surplus materials shall be returned to the supplier, alternative uses shall be found or the material recycled.</p> <p>Spoil and other surplus material arising from the works which is classed as 'acceptable fill' shall, wherever practicable, be recovered and used in the construction works. Relevant authorities shall be consulted regarding this on a site by site basis to ensure the re-use of waste materials is acceptable. Surplus material which cannot be utilized on site shall be made available to third parties for reuse on local development projects.</p>	ATAŞ / EPCC	During construction period	<p>Excavated material is reused directly or stockpiled for future; efforts to find alternative uses are documented</p> <p>These requirements are addressed in the Construction Management Plan and Waste Management Plan</p>	Regular inspection of material handling/reuse; audit of documents	<b>Completed</b>
<p>c) Surplus tunneling spoil shall be disposed of at locations as approved by the relevant authorities. No excavated soil, construction and debris wastes shall be disposed of or deposited in seas, lakes, rivers, streets, forests and any other place that may cause adverse effects on the environment, except at recovery, storage, treatment and disposal facilities operating under a valid license from the relevant authorities.</p>	ATAŞ / EPCC	During construction period	Contract exists for hauling spoil to licensed sites; copies of licences held on file	Audit of contracts and licenses; regular inspection of required measures on and off site and spot-check on hauliers and final disposal locations	<b>Completed</b>
<p>d) Spoil transport shall be carefully managed and controlled (e.g. use of tarpaulins</p>	ATAŞ /	During	Haulage	Audit of contracts and	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>on trucks) to prevent spread of dust and dirt on roads. Trucks shall be visually checked prior to their departure to ensure that the spoil is safely and securely loaded.</p>	EPCC	construction period	contract includes measures to prevent release and impacts, and hauliers are implementing	licenses; spot-check on hauliers including full route to disposal areas	
<p>e) Wastes shall be collected and stored on site in accordance with the WMP in containers of a suitable size and design to be provided for secure storage and segregation of all wastes. Containers shall be clearly labeled with the type of waste and placed in dedicated areas. A plan showing where wastes of different types can be deposited shall be available to staff.</p>	ATAŞ / EPCC	During construction period	Properly labelled waste containers are located at dedicated areas on site	Regular inspection to confirm presence and adequacy of waste containers	<b>Completed</b>
<p>f) Biodegradable waste shall be collected daily and shall not be permitted to accumulate such that it may present an environmental and health hazard.</p> <p>The construction site shall be regularly inspected to ensure waste facilities are correctly used and are kept clean and tidy.</p>	ATAŞ / EPCC	During construction period	Contract exists for bio-waste containers to be collected daily; such wastes are not accumulated ; Responsibility for inspection allocated to suitable qualified	Audit of contract; Regular inspection to confirm bio-waste containers are emptied and no fouling waste is accumulated Check on job description; regular inspection of waste management on site; check on records	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			staff; Inspection records maintained; waste mgmt facilities are tidy		
g) Materials suitable for recycling, including stripped road surfacing material and demolition wastes will be segregated and these wastes either recycled within the Project or elsewhere where the facilities and markets exist for this in the area (in accordance to WMP (2.4.a)).	ATAŞ / EPCC	During construction period	Evidence that markets have been sought for recyclable materials; materials segregated used as far as practicable;  WMP includes these measures	Audit of records; regular inspection of segregated storage	<b>Completed</b>
h) Waste shall be transported in marked vehicles designed to minimize the risk of release of materials and windblown debris. Drivers employed by the ATAS shall be trained in the handling and disposal of their cargo and shall carry documents describing the nature of the waste and its degree of hazard. Waste transport and disposal subcontractors shall be required to comply with the same requirements.	ATAŞ / EPCC	During construction period	Contract with waste haulier specifies requirements; trucks carry relevant documents and drivers	Audit of contract; regular checks on trucks and drivers	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			trained and aware of requirements		
i) Full records shall be maintained of the type, quantity, composition, origin, disposal destination and method of transport for all wastes.	ATAŞ / EPCC	During construction period	Records held on file	Spot-check on records	<b>Completed</b>
<p>j) All hazardous waste including asbestos, dyes, fluorescents, mercury, acids and similar materials shall be collected and stored separately in Temporary Hazardous Waste Storage Areas and disposed of in accordance with the provisions of the National Hazardous Waste Control Regulation and EU waste directives. Access to hazardous waste areas shall be restricted to suitably trained staff.</p> <p>All hazardous materials used in slurry treatment shall be stored in a secure, bunded area and used under careful supervision to minimize any risk of accidental releases into the environment.</p> <p>No hazardous materials shall be stored in excavated areas and all handling of hazardous materials shall be under special supervision.</p>	ATAŞ / EPCC	During construction period	Hazardous waste areas with restricted access are designated and used; Contracts in place for proper disposal of hazardous wastes	Audit of hazardous waste disposal contract; Regular inspection to confirm hazardous waste areas are in place (containers present, access restricted) and are being used appropriately	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>k) Waste oils and oily wastes shall be managed in accordance with the system of categorization under the Waste Oils Regulation:</p> <ul style="list-style-type: none"> <li>• Category I waste oils shall be recycled by way of refining or regeneration at facilities licensed by the Ministry of Environment and Forestry.</li> <li>• Category II waste oils may be used as secondary fuel in facilities licensed by the Ministry for this purpose.</li> <li>• Category III waste oils not appropriate for refining and regeneration, posing risk to human and environmental health if used as fuel, must be treated as hazardous waste and handled, managed and disposed of in accordance with Turkish regulations and in a suitably licensed waste facility.</li> </ul>	ATAŞ / EPCC	During construction	Procedures in place; relevant staff familiar with requirements and measures implemented	Audit of procedures; regular inspection of waste oil handling and spot checks on staff awareness	<b>Completed</b>
<b>2.5 HAZARDOUS MATERIALS IN CONSTRUCTION</b>					
a) Special chemicals used in tunnelling shall be selected to be of no or low hazard to environment	ATAŞ / EPCC	During tunnelling	All chemicals low or no hazard	Audit of chemicals used	<b>Completed</b>
<p>b) Selection, storage, use and disposal of hazardous materials shall be strictly controlled during construction in accordance with relevant national and EU Directives requirements regarding worker health and safety and environmental protection, and good industry practice.</p> <p>Hazardous Materials Management Plan applicable to all sub-contractors to be prepared by ATAS to ensure compliance with Turkish regulations and EU requirements; to be approved by Supervision Organization.</p> <p>For hazardous waste please refer to Section 2.4</p>	ATAŞ / EPCC	Hazardous Material Management Plan prepared before begin of construction ; Plan in place and implemented during construction	Preparation of Hazardous Materials Management Plan (HMMP); Plan in place and measures implemented; staff aware of requirement	Audit of plan; regular inspection of hazardous materials handling, spot checks on staff awareness	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			s		
<p>c) Fuels, oils, chemicals and stores of other harmful substances shall be stored on an impervious base protected by a bund of a capacity equal to 110% of the storage capacity of the largest tank.</p> <p>All fuel stored on site shall be kept in appropriately labeled drums or bulk tanks located in a designated place away from any surface waters (reference to requirements of the Regulation on Safety and Health Signs (No. 25325) and Turkish Standard (TS) EN 3864, and EU Directive 92/58/EEC should be made), open drains or manholes unless these are connected to an oil interceptor.</p> <p>Refueling shall take place well away from any surface water in areas with impervious bunding or other containment. Drip trays shall be used for fuelling mobile equipment. All necessary precautionary and good construction site management measures shall be undertaken during re-fuelling of vehicles or equipment shall take place within excavated areas. Generally, such practices will be avoided but this will not be possible in at all times during the construction of the tunneling section of the project.</p> <p>Chemicals used in TBM tunneling to protect and lubricate the TBM and to stabilize the grout used to seal the tunnel lining segments, shall be selected to be of no or low hazard to the water environment. Despite their low environmental hazard these substances shall be treated as hazardous in the event of their disposal as waste.</p> <p>Bitumen compounds used in laying the wearing course of the road and specialist chemicals used in tunneling and waterproofing of structures shall be prevented from discharging to the environment and all handling of these materials shall be under strict supervision.</p> <p>Chemicals used in for sub-sea grouting shall not be allowed to enter sea or inland surface waters. All chemicals shall be contained and handled to avoid risk of contaminating water within the tunnel.</p>	<p>ATAŞ / EPCC</p>	<p>Procedures in place and implemented during construction</p>	<p>Procedures in place; relevant staff familiar with requirements and measures implemented</p>	<p>Audit of procedures; regular inspection of waste oil handling and spot checks on staff awareness</p>	<p><b>Completed</b></p>



2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<b>2.6 CONSTRUCTION NOISE AND VIBRATION</b>					
<p>a) A Noise Monitoring Program shall be set up to measure construction noise levels at the closest sensitive receptors as work starts on each new section along the route. If levels at receptors exceed the standards, measures will be taken to reduce emissions so that the limit values are met. Lessons-learned from preceding work-sections shall be considered when setting up and performing the new sections of road works.</p> <p>ATAS shall ensure that local residents and managers of other sensitive facilities are kept advised of planned noisy periods and shall respond to any questions or complaints in accordance with the Grievance Procedure established for the Project.</p>	ATAS / EPCC	Noise Monitoring Program prepared before begin of construction; Implementation during Construction	<p>Noise monitoring records available showing any limit exceedances</p> <p>Documents exist to demonstrate that actions are taken to mitigate any limit exceedances, and to show that local residents/managers are informed of noisy work periods and activities</p> <p>Records of noise complaints</p>	<p>Audit of monitoring records and meeting minutes etc to show that remedial actions are undertaken for any noise-limit exceedances;</p> <p>Check of Grievance Logs</p>	<b>Completed</b>
<p>b) The Project shall conform with noise standards set out in the Turkish Regulation on the Assessment and Management of Environmental Noise (CGDYY) and the Turkish Regulation on Control of Excavated Soil, Construction and Demolition Wastes.</p>	ATAS / EPCC	During construction	Monitored noise levels around construction	Audit of monitoring records during start of activity at each construction area	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			sites		
<p>c) <i>Timing of work activities</i></p> <ul style="list-style-type: none"> <li>Noise-generating activities will be performed during night time only when essential and in accordance with a special permit obtained for the purpose from the relevant authority taking into account the Istanbul Metropolitan Municipality, Department of Environment Protection and Control, Directorate of Environment Protection Letter dated 14.04.2011.</li> <li>Generally, blasting or other very noisy activities shall not be carried out when nearby schools, hospitals, places of worship, restaurants and places of entertainment are in operation. If noisy activities cannot be avoided at such times, scheduling of these works shall be discussed with the relevant premises to agree on suitable working periods and mitigation measures.</li> </ul>	ATAŞ / EPCC	During construction	<p>Compliance with evening and night-time limits</p> <p>Evidence that local residents are informed in advance of evening/ night-time work, and that work-schedules have been discussed with representatives of local schools, hospitals, etc.</p> <p>Records of noise complaints, and solutions where applicable</p>	<p>Audit of relevant permits, noise monitoring records and correspondence with local residents, schools, hospitals, etc.</p> <p>Spot checks with local residents</p>	<b>Completed</b>
d) <i>Specification of equipment</i>	ATAŞ /	During	All	Spot-check of equipment in	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<ul style="list-style-type: none"> <li>• The selection of all construction equipment will be based on European Directive 2000/14/EU on sound emission of equipment operated outdoors where applicable and relevant.</li> <li>• Where construction equipment is provided with sealed acoustic covers or enclosures, these will be kept closed whenever the machines are in use.</li> <li>• Machines will be shut down or throttled down to a minimum when not in operation.</li> <li>• Maintenance procedures will be implemented to keep equipment in good working condition to minimize extraneous noises caused by poor performance.</li> <li>• If practicable and safe, audible reversing alarms will not be used near sensitive receptors.</li> <li>• Where practicable, demolition works will be carried out using equipment which breaks concrete by bending rather than by percussive methods.</li> <li>• The slurry treatment plant located at the Asian side will be acoustically shielded such that the external sound pressure level is below 85 dB(A).</li> <li>• On site structures such as containers, offices, boundary hoardings shall be used to screen sensitive receptors from noise sources as far as possible. Where necessary, movable noise barriers (2-2.5 m high) shall be erected to ensure receptor noise levels are less than the limit values adjacent to noisy activities.</li> </ul>	EPCC	construction	<p>equipment is compliant</p> <p>Records of noise complaints.</p> <p>Records of noise monitoring on site.</p> <p>Reports of regular ESMP / ESMS audits</p>	the field (Construction phase)	
<p><i>e) Location of noisy equipment</i></p> <p>Noisy activities taking place within construction sites shall be located as far as possible away from sensitive receptors including homes, places of worship, schools and hospitals. In particular:</p> <ul style="list-style-type: none"> <li>• crushers shall be sited at least 50 metres from sensitive receptors</li> <li>• excavation of hard materials within 50 metres of sensitive receptors shall be carried out by hydraulic or electrical power</li> <li>• piling within 100m of sensitive premises shall be carried out using bored</li> </ul>	ATAŞ / EPCC	During construction	<p>Equipment locations conform to the minimum distances</p> <p>Correct technologies are used in</p>	<p>Regular site inspections</p> <p>Audit of blasting records</p>	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>piling or casings driven by torque and hydraulic pressure.</p> <ul style="list-style-type: none"> <li>Small fully controlled charges shall be used if any blasting is required on the approach roads.</li> </ul> <p>Should an emergency or temporary situation arise where the above distance are not possible, then ATAS will undertake prior consultation with the relevant authorities to ensure that the temporary impacts on potential receptors are minimized through the use of additional mitigation (e.g. additional acoustic screening, limitations on construction activities etc.) and good construction management and monitoring.</p>			<p>sensitive areas for piling, excavation and demolition works</p> <p>Records kept of all blasting activity</p>		
<p>f) Blasting for the New Austrian Tunneling Method (NATM) works shall be carried out using modern, controlled blasting methods which maximize blast efficiency, limit noise and vibration, protect the surrounding rock mass and maximize the accessibility of drilling work. An emulsion type explosive suitable for hard rock and wet conditions, with low production of smoke and odors and safe handling, shall be used.</p> <p>Blasting and percussive piling in the vicinity of historic structures and other sensitive premises shall not be permitted. All blasting and piling shall be undertaken in accordance with the Employer's Requirements. Where piling in the vicinity of historic structures and other sensitive premises is essential, bored piles or casings driven by torque and hydraulic pressure shall be used.</p>	ATAŞ / EPCC	During construction	<p>Such blasting specifications are stated in the Work Plan; contractor is familiar with the specs and follows them</p> <p>Detailed blasting and vibration method statement are produced to include methodology for</p>	<p>Audit of Work Plan specs; Spot-check interview of contractor; visual check in field when blasting to confirm.</p> <p>Field inspection of piling works</p>	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			blasting, health and safety arrangements, and details of any roads or nearby properties that require closure/evacuation during the works  Records of blasting.  Records of vibration monitoring on site.  Records of vibration complaints, and remediative actions taken if required  Piling in sensitive areas is not being done via the		

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			restricted methods		
<p>g) Vibration monitoring shall be undertaken to demonstrate compliance with guidance on acceptable vibration at the foundations of buildings as given in Employer's Requirements and British Standard BS7385. Monitoring shall be carried out prior to and during piling activities at buildings within 100 meters of piling locations. The guideline values shall be reduced to 50% or less for historic buildings that may be in poor repair and houses.</p> <p>If the limits are exceeded on a regular basis (for more than 3 days in a 6-day period), then construction shall stop and the cause of the vibration shall be investigated and if necessary remedial action shall be undertaken, for example selecting a different construction technique. The new construction method shall be monitored to ensure it is operating within the vibration limits.</p> <p>The following structures shall be inspected prior to and during construction to check for any surface or structural damage and if any impact is detected work shall cease until remedial measures are taken and alternative methods shall then be used to avoid further damage:</p> <ul style="list-style-type: none"> <li>• standing sections of the City Sea Walls along the Project route</li> <li>• protected historic chimneys at Kazlıçeşme</li> <li>• Mermerkule</li> <li>• Church of Ss. Sergius and Bacchus /Mosque of Küçük Ayasofya</li> <li>• House of Justinian (in the Palace and Harbour of Boukoleon).</li> </ul>	ATAŞ/ EPCC	During construction	<p>Vibration monitoring records available showing any limit exceedances.</p> <p>Records of vibration complaints, details of how complaints have been addressed.</p>	Audit of vibration monitoring data to check compliance and remedial action (where required)	<b>Completed</b>
<p>h) ATAŞ shall monitor vibration on commencement of relevant activities to ensure the limits for vibration established in the Turkish Regulation on the Assessment and Management of Environmental Noise (CGDYY), are not exceeded. If they are exceeded, measures shall be taken to reduce vibration.</p> <p>ATAŞ shall identify locations such as universities, hospitals and recording studios which may contain equipment sensitive to vibration and hold discussions with the relevant institutions to ensure construction is managed to avoid adverse effects on use of the equipment.</p>	ATAŞ / EPCC	During construction	Vibration monitoring is being performed and documented at the specified	Audit of vibration monitoring records and docs re protection of sensitive equipment	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			<p>locations.</p> <p>Documentation exists to show that agreed procedures exist to protect any vibration-sensitive equipment.</p> <p>Records of vibration complaints and discussions with institutions.</p> <p>Production of detailed methodology for managing and avoiding impacts upon sensitive receptors. Methodology contains procedures for</p>		

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			identifying and addressing issues that may arise during construction.		
<b>2.7 CONSTRUCTION DUST AND AIR QUALITY</b>					
<p>a) Turkish Regulation on Control of Excavated Soil, Construction and Demolition Wastes requires measures to be taken to minimize dust emissions from excavations. The following measures shall be adopted to control the release of dust and other emissions from construction:</p> <ul style="list-style-type: none"> <li>• Dust generating areas shall be controlled by water spraying, particularly under dry weather conditions</li> <li>• Stockpiles shall be sited to minimise the potential for dust generation taking into account prevailing wind directions and the locations of sensitive receptors. Dust generation shall be controlled using wind shields and water spraying as necessary in dry periods</li> <li>• The drop height of dusty materials shall be kept as low as possible.</li> <li>• If crushing of construction material or waste is required, crushers shall be located away from sensitive receptors.</li> <li>• On-site speed limits shall be applied and enforced for trucks travelling on unpaved surfaces (10 km/h);</li> <li>• Trucks transporting dusty materials off-site shall be covered before leaving the site.</li> <li>• Construction vehicles shall not be permitted to keep engines running while waiting to enter the site or waiting on-site.</li> <li>• Wheel washing facilities shall be available and used so that trucks leaving the site do not spread dirt onto neighbouring roads.</li> </ul>	ATAS / EPCC	During construction	All measure undertaken as specified	Regular site inspections	<b>Completed</b>



<b>2. PROJECT STAGE: CONSTRUCTION</b>	<b>Responsibilities</b>	<b>Timing * see note</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>	<b>Status</b>
<ul style="list-style-type: none"> <li>• Public roads used by site traffic shall be swept regularly to prevent accumulation of dust and dirt.</li> <li>• Site machinery shall be shut down or throttled down to a minimum when not in use</li> <li>• Equipment shall be regularly maintained to keep it in good working condition and minimise exhaust gas emissions caused by poor performance.</li> <li>• Training shall be provided to operators of equipment and truck drivers to ensure awareness of requirements for control of dust and other sources of air pollution</li> </ul>					
<p>b) Construction-dust deposition levels around at the nearest sensitive receptors to construction sites and at control locations shall be monitored monthly using dust deposit gauges. If the annual average deposition rate exceeds 0.35 grams per square meter per day, or exceeds the same value by more than 50% in any one month; ATAS will implement all reasonably practicable measures to reduce dust emissions in accordance with the TA Luft guidance and Turkish Regulations. The level of dust deposition at control locations shall be considered in determining what is reasonably practicable in the circumstances.</p>	ATAS / EPCC	During construction	Dust monitoring undertaken  Remedial action undertaken where required	Audit of dust monitoring results and required remedial action	<b>Completed</b>
<p>c) Training shall be provided to operators of equipment and truck drivers to ensure they are awareness of requirements for control of dust and other sources of air pollution.</p>	ATAS / EPCC	During construction	Training undertaken	Audit of training records and spot checks on awareness of site workers.	<b>Completed</b>
<b>2.8 BIODIVERSITY AND NATURE CONSERVATION</b>					
<p>a) A detailed tree survey shall be carried out to determine the species, age, height and condition of all trees to be felled and this information will be used to plan replacement planting.</p>	ATAS	Prior to begin of construction	Tree Survey is complete and documented	Audit of the tree survey document	<b>Completed</b>
<p>b) The ATAS shall consider the potential loss of trees in deciding on temporary work areas, with the aim of avoiding unnecessary felling.</p>	ATAS / EPCC	Prior to begin of construction	Number of trees felled in temporary	Audit of the tree survey document	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
			work areas		
c) Vegetation clearance and felling of trees where birds may be nesting shall be undertaken only outside the nesting period between March and August.	ATAŞ / EPCC	During construction	No clearance of vegetation or felling of trees during March to August without prior checks for presence of nesting birds	Field audit during tree felling	<b>Completed</b>
d) Trees to be felled shall first be inspected to identify whether bats are roosting or hibernating in the trees and, if this is the case, the affected animals will be relocated to a suitable alternative site. If bats are disturbed alternative habitat shall be provided in the form of bat boxes (artificial roosts) located in suitable trees.  Bat specialists with local knowledge must be consulted with regard to providing suitable alternative roost sites, taking into account seasonal constraints.	ATAŞ / EPCC	Prior to felling of trees	Number of trees felled where bats are detected  Implementation of measures to protect bats	Field audit during tree felling	<b>Completed</b>
e) All felled trees shall be replaced by new planting on at least a one-for-one basis, and three-for-one for large and old trees. Species shall be selected with a view to using native species where suited to the location. A mix shall be used to provide early cover using fast-growing species and longer term succession. Final planting plan to be included in the Coastal Park Reinstatement Plan (1.1 c). If there is insufficient land available for replacement tree planting along the roadside and in the Coastal Park, alternative planting areas shall be identified elsewhere in the city.	ATAŞ / EPCC	After completion of construction	Tree Survey includes replacement plans for felled trees	Audit of Tree Survey and inspection of new planting.	<b>Completed</b>
f) Actions shall be taken to improve the amenity and biodiversity value of remaining and new areas of planting by replacing poor specimens and filling gaps during the construction phase. Final planting plan to be included in the Coastal Park	ATAŞ	On completion of construction and during	Periodic inspections of	Regular site inspections	<b>Completed</b>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>Reinstatement Plan (1.1 c). Regular maintenance around areas under the control of ATAS will be undertaken during the operational phase of the project.</p>		operations	vegetation/tree areas are made by qualified persons and maintenance and replacement undertaken as required		
<p><b>2.9 CULTURAL HERITAGE</b></p>					
<p>a) An archaeological watching brief will be maintained by a government approved archaeologist (a representative of Preservation Councils) at the locations specified in Table 11.2 of the ESIA and any other locations that are required following consultation. In the event that archaeological remains are identified, a chance finds procedure will be implemented to ensure that such remains are properly recorded and removed to an appropriate museum or similar facility for study and long-term curation.</p> <p>Where there is evidence of palaeo-environmental deposits (evidence of past history in fossils, organic residues, minerals, etc) soils shall be sampled and analysed by a suitably qualified specialist. Results of all investigations shall be published.</p> <p>Excavation, conservation and storage of fragile and/or financially valuable artifacts.</p> <p>Post-excavation assessment report to include the following, as a minimum:</p> <ul style="list-style-type: none"> <li>• Full lists of archaeological artefacts and samples obtained by the archaeological excavations and watching brief</li> <li>• An assessment of the condition of artefacts and statement of potential for further study</li> <li>• A full stratigraphic record of deposits, structures and artefacts encountered during the archaeological excavations.</li> </ul>	ATAS / EPCC	Watching brief in place prior to begin of construction; implemented during construction	<p>Project construction drawings and as built records.</p> <p>Records of training.</p> <p>Evidence of survey results being submitted to Councils, and written records of approval by Protective Councils</p> <p>Post-excavation assessment</p>	<p>Inspection of construction sites</p> <p>Audit of procedures and implementation of methodology</p>	<b>Completed</b>

<b>2. PROJECT STAGE: CONSTRUCTION</b>	<b>Responsibilities</b>	<b>Timing * see note</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>	<b>Status</b>
			<p>report.</p> <p>Academic report of the results of the archaeological excavations and post-excavation analysis.</p> <p>Production of 'popular report' to disseminate the results of the investigations to the wider public. Report to be published in an appropriate format.</p>		
<b>2.10 CONSTRUCTION LABOUR AND WORKING CONDITIONS</b>					
<p>a) ATAS shall develop and implement a Project HR Policy and procedures shall be in compliance with relevant requirements of Turkish law and the provisions international performance standards. A copy of the policy shall be given to all Project staff.</p>	<p>ATAS / EPCC</p>	<p>Prior to begin of construction</p>	<p>Project Policy and procedures in place</p>	<p>Annual audit of HR policy and implementation of procedures.</p>	<p><b>Completed</b></p>

2. PROJECT STAGE: CONSTRUCTION	Responsibilities	Timing * see note	Indicators of Completion	Monitoring of Completion	Status
<p>b) The Project shall endeavor to employ local people from Turkey including Istanbul as far as possible and within the regulations of Turkish law.</p> <p>If workers are brought in from outside Istanbul they shall be housed in dedicated accommodation designed to meet the requirements of Turkish Regulations, international performance standards and IFC/EBRD guidance on workers' accommodation.</p>	ATAŞ / EPCC	During construction	<p>Proportion of workforce from Istanbul.</p> <p>Worker housing meets standards and local residents are not disturbed by the workers</p>	Inspection of worker housing locations; no complaints by workers or local residents	<b>Completed</b>
<p>c) The Project shall, in accordance with Turkish Labour Laws, not employ any children who are not fifteen years old and the employment of children between fifteen and seventeen years old will be restricted to specific non-hazardous and non-arduous tasks subject to individual risk assessment. ATAS has procedures in place to verify the age of workers. Sub-contractors will be required to demonstrate that their employees and their own contractors do not use child or forced labour</p>	ATAŞ / EPCC	During construction	No workers under 15; all workers between 15 and 17 have non-hazardous and non-arduous duties	Audit of employee records and spot checks on site	<b>Completed</b>
<p>d) A fair, equitable and just wage shall be paid to all construction and operation workers on the Project and all salaries shall comply with the requirements of Turkish law.</p>	ATAŞ / EPCC	During construction	All wages paid in accordance with applicable Turkish laws	Audit of employee records and spot checks on site	<b>Completed</b>
<p>e) As part of the implementation of the Employment Policy Document requirements, the workers grievance mechanism shall be agreed prior to first</p>	ATAŞ	Workers Grievance	Grievance procedure in	Audit of procedure; check on records and that any	<b>Completed</b>

<b>2. PROJECT STAGE: CONSTRUCTION</b>	<b>Responsibilities</b>	<b>Timing * see note</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>	<b>Status</b>
disbursement. The grievance mechanism shall meet both Turkish Regulations and PS/PR2 requirements; and be widely publicized. It should allow issues to be raised anonymously by workers.		Mechanism in place prior to begin of construction; implemented during construction	place and workers are aware of it	grievances are followed up	

3. PROJECT STAGE: OPERATION	Responsibilities	Timing	Indicators of Completion	Monitoring of Completion
<b>3.1 SAFETY</b>				
<p>a) A comprehensive Emergency and Response Plan (ERP) shall be prepared for operation of the tunnel to address all foreseeable incidents including fire, explosion, road accidents, earthquake, tsunami, flooding, terrorist activity and other threats. The plan shall consider restrictions on materials that can be carried through the tunnel (e.g. explosives, gases etc.).</p> <p>The ERP shall be prepared in consultation with the local emergency services, and shall include plans to prevent, prepare for and respond to emergencies affecting road users (vehicles and pedestrians) and the community. All necessary information shall be conveyed to road users and the wider community.</p> <p>Frequency of testing emergency response plans to be risk based and tailored to construction activities and potential impact to sensitive receptors. Consultation with local emergency services should be undertaken.</p> <p>The ERP should include offsite and areas overlapping ATAS responsibility areas. EC Tunnel Directive 2004/54/EC to be complied with.</p> <p>Road safety audit to be undertaken by qualified independent third party.</p> <p>An Emergency and Disaster Management Committee shall be set up to be responsible for planning measures to prevent and respond to emergencies in the tunnel.</p> <p>The ERP and the terms of reference for the Emergency and Disaster Management Committee should be reviewed and agreed by the LTA</p>	ATAS	Prior to start of tunnel operations	Plan and all required equipment, facilities and services in place.; evidence of liaison with local emergency services and communications with potentially affected people	Audit of plan and required measures; spot-checks with relevant third parties
<b>3.2 WATER POLLUTION</b>				
<p>a) During the operation phase all road and tunnel drainage shall be collected at sumps located at the low points along the route (at underpasses and in the tunnel) and discharged to the municipal storm water sewer system in accordance with required permits.</p> <p>Dewatering shall be discharged to the Sea or to the sewage system. Permits for any discharges shall be obtained from the competent authority and appropriate pre-</p>	ATAS	During operation	All drainage collected and discharged as required  Hazardous spills contained and cleaned up	Regular inspection of route and drainage facilities

<b>3. PROJECT STAGE: OPERATION</b>	<b>Responsibilities</b>	<b>Timing</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>
<p>treatment shall be undertaken before any discharge to Sea.</p> <p>Road drainage which is contaminated by spills (of hazardous liquids) shall be separately collected and subjected to appropriate treatment prior to disposal in an appropriately licensed manner.</p>			<p>Reports of audits; records of regular site inspections</p>	
<b>3.3 WASTE</b>				
<p>a) All operational waste shall be managed in accordance with legal requirements, including wastes generated from treatment of road drainage and from clean up of spills.</p>	ATAŞ / EPCC	During operations	<p>All operational waste disposed of appropriately</p> <p>Operational Waste Management Plan to be provided at least 6 months prior to the start of operations.</p> <p>Records of transportation and off-site disposal of waste.</p> <p>Reports of audits; Records of regular site inspections.</p> <p>Register of spill incidents.</p>	<p>Regular inspection of route, drainage and facilities</p> <p>Review of related documentations</p>
<b>3.4 COASTAL PARK</b>				
<p>a) ATAS shall compensate for the loss of Coastal Park areas by carrying out improvements to the remainder of the Park after construction in consultation with the DLH and relevant authorities. Improvements to be included in the Coastal Park Reinstatement Plan (1.1 c).</p>	ATAŞ / EPCC	Post-construction/ during operation	<p>Proposals to be included within Coastal Park Reinstatement Plan</p> <p>Coastal Park improved</p>	<p>Mitigation measures are to be reviewed following the public consultation exercise</p>



<b>3. PROJECT STAGE: OPERATION</b>	<b>Responsibilities</b>	<b>Timing</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>
<b>3.5 NOISE AND AIR QUALITY</b>				
<p>a) The Project shall work with the municipal traffic authorities (Istanbul Traffic Control Centre (IBB)) to design and develop traffic management and other initiatives to encourage drivers to minimize emissions. These may include:</p> <ul style="list-style-type: none"> <li>• supporting public campaigns on regular vehicle maintenance</li> <li>• raising awareness regarding the relationship between driving behaviour and emissions through public information</li> <li>• installing speed control displays to limit speed</li> <li>• using the Project's variable message signs to allow vehicle speeds to be controlled to minimise congestion.</li> </ul>	ATAŞ	During operations	Meetings are held with the IBB and third parties to agree actions; signs are posted along the project route	Check on records of meetings and evidence of other activities
<p>b) Electronic traffic signs shall be used to provide information to drivers to facilitate smooth traffic flow to reduce noise and emissions, e.g. advice on driving speed, upcoming traffic, and general tips for minimizing vehicle emissions.</p>	ATAŞ	During operations	Electronic signs show useful guidance	Check of signage
<p>c) ATAS shall monitor ambient air quality at a continuously operating air quality monitoring station to measure ambient air concentrations and determine whether ambient air quality standards are being exceeded.</p> <p>If continuous monitoring indicates that ambient concentrations are increasing to near the limit value, variable message signs will be used to slow down traffic to reduce emissions. Depending on the measured effect of traffic on air quality, other locations may be selected for monitoring monthly average concentrations.</p> <p>Consideration to be given to increasing the flow rate as an additional mitigation measures to reduce pollutant concentration near vent shafts.</p>	ATAŞ / IBB	During operations	Air quality monitoring in place; speed reductions implemented when limits are approached.	Audit of air monitoring records. If continuous monitoring indicates that ambient concentrations are increasing to near the limit value, necessary actions will be determined and applied such as variable message signs will be used to slow down traffic etc.
<p>d) ATAŞ shall carry out noise monitoring during the year after opening of the Project to determine whether environmental noise standards are being met. Monitoring locations shall be selected at representative buildings along the scheme which could be sensitive to noise. The success of noise mitigation measures and the need for further mitigation will be evaluated from the results of these measurements.</p>	ATAŞ	For 2 years after opening	Noise monitoring in place; speed reductions implemented when limits are approached.  Records of noise monitoring after	Audit of noise monitoring records  The monitoring period may be extended subject to the results of this initial

<b>3. PROJECT STAGE: OPERATION</b>	<b>Responsibilities</b>	<b>Timing</b>	<b>Indicators of Completion</b>	<b>Monitoring of Completion</b>
			opening  Where locations are identified in which additional noise reduction measures are required, these are designed, agreed and implemented as soon as is practicable	monitoring

## ABBREVIATIONS

ATAS	Avrasya Tüneli İşletme İnşaat ve Yatırım A.Ş. - The Eurasia Tunnel Operation, Construction and Investment Company
DLH	Turkish Ministry of Transport, General Directorate for the Construction of Railways, Seaports and Airports
EPCC	Engineering, Procurement and Construction Contractor
ERP	Emergency Response Plan
HMMP	Hazardous Materials Management Plan
EC	Environmental Consultant
IFC	International Finance Corporation
LACRP	Land Acquisition, Compensation and Resettlement Plan
LTA	Lenders Technical Advisor
PR	Performance Requirement of the EBRD
PS	Performance Standard of the IFC
RPF	Resettlement Policy Framework
SEP	Stakeholder Engagement Plan (standalone document explaining how the Project sponsors will engage with the public/stakeholders throughout ETP implementation)
WMP	Waste Management Plan